Purchasing Division

Invitation for Bid

IFB-4156-16-DH
North Avenue Complete Streets Project (12th Street to 23rd Street)
RE-BID

Responses Due:

February 10, 2016 prior to 3:00pm
Accepting Electronic Responses Only
Responses Only Submitted Through the Rocky Mountain E-Purchasing System (RMEPS)
https://www.rockymountainbidsystem.com/default.asp
(Purchasing Representative does not have access or control of the vendor side of RMEPS. If website or other problems arise during response submission, vendor MUST contact RMEPS to resolve issue prior to the response deadline. 800-835-4603)

Purchasing Representative:
Duane Hoff Jr., Senior Buyer
duaneh@gjcity.org
970-244-1545

This document has been developed specifically to solicit competitive responses for this solicitation, and may not be the same as previous City of Grand Junction/Mesa County solicitations. All vendors are urged to thoroughly review this solicitation prior to responding. Submittal by **FAX, E-MAIL, OR HARD COPY IS NOT ACCEPTABLE** for this solicitation.

Invitation for Bids

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1. Instructions to Bidders

1.1. **Purpose:** The City of Grand Junction is soliciting competitive bids from qualified and interested companies for all labor, equipment, and materials required to provide improvements to the North Avenue corridor, from 12th Street to 23rd Street. All dimensions and scope of work should be verified by Contractors prior to submission of bids.

Pursuant to subsections 102.04 and 102.05, it is recommended that bidders on this project review the work site and plan details with an authorized Department representative. Prospective bidders shall contact one of the following listed authorized Department representatives at least 12 hours in advance of the time they wish to go over the project.

Senior Buyer, City of Grand Junction:	Duane Hoff Jr.
Office Phone:	(970) 244-1545
Email:	duaneh@gjcity.org

1.2. **Pre-Bid Briefing:** **Prospective bidders are encouraged to attend a pre-bid briefing on January 20, 2016 at 10:00am**. Meeting location shall be at City Hall Auditorium, 250 N. 5th Street, Grand Junction CO. The purpose of this visit will be to inspect and to clarify the contents of this Invitation for Bids (IFB).

1.3. **The Owner:** The Owner is the City of Grand Junction and/or Mesa County, Colorado and is referred to throughout this Solicitation. The term Owner means the Owner or his authorized representative.

1.4. **Prequalification Requirement:** **CITY ONLY** Contractors submitting bids over $50,000 must be pre-qualified in accordance with the City's *"Rules and Procedures for Pre-qualification of Contractors*". All bids received by the specified time will be opened, but the City will reject bids over $50,000 from contractors who have not been prequalified. Application forms for prequalification are available at the Administration Office of the Department of Public Works and Planning, City Hall, 250 North Fifth Street, Room 245. Call 970-256-4126 or 970-244-1555 for additional information. Due to the time required to process applications, *all applications must be submitted no later than two weeks prior to the Response Due Date*. Application link: http://www.gjcity.org/PreQualification.aspx

1.5. **Submission:** ***Each proposal shall be submitted in electronic format only, and only through the Rocky Mountain E-Purchasing website (https://www.rockymountainbidsystem.com/default.asp).*** *This site offers both "free" and "paying" registration options that allow for full access of the Owner's documents and for electronic submission of proposals. (Note: "free" registration may take up to 24 hours to process. Please Plan accordingly.)* Please view our "**Electronic Vendor Registration Guide"** at http://www.gjcity.org/BidOpenings.aspx for details. (Purchasing Representative

does not have access or control of the vendor side of RMEPS. If website or other problems arise during response submission, vendor **MUST** contact RMEPS to resolve issue prior to the response deadline. **800-835-4603**)

1.6. Instructions for Completing Microsoft Excel Bid Schedules Spreadsheet: All Price Bids must be made upon the provided Microsoft Excel Bid Schedules Spreadsheet, and ***submitted in the same electronic format***. This is a separate attachment to this solicitation. **NOTE:** Each Bid Schedule is contained in it's own tab located at the bottom of the spreadsheet. The tabs are labeled as follows:

- Instructions (follow these instructions to complete each Bid Schedule);
- Bid Sch_Base;
- Bid Sch_Add Alt 1;
- Bid Sch_Add Alt 2;
- Bid Sch_Add Alt 3;
- Bid Summary (this is for totaling purposes only).

There are 4 separate bid schedules for this project. The Bidder shall submit a bid for each schedule utilizing the provided Microsoft Excel Bid Schedules Spreadsheet. The schedules for this project are as follows:

Base Project: Consists of all concrete work, landscaping, irrigation, utilities, pedestrian light foundations and wiring the entire length of the project on the north side of the roadway, construction of medians at 85+65 to 88+22 and 91+85 to 92+45, and construction the eastbound to southbound deceleration lane at 84+25 to 86+15 on the south side of the roadway.

Add Alternate 1: Consists of construction of medians 68+10 to 69+75 and 93+25 to 97 +50, and median landscaping and irrigation the entire length of the project.

Add Alternate 2: Consists of all remaining concrete work, relocation of fences, utilities, pedestrian light foundations and wiring, and landscaping the entire length of the project on south side of the roadway.

Add Alternate 3: Consists of installation of benches, trash and recycle receptacles, bike racks and news racks the entire length of the project on both north and south sides of the roadway.

The Bidder's proposal shall specify a unit bid price for each pay item in all bid schedules. Failure to include unit bid prices for each bid item in all bid schedules shall be cause for rejection of the Bidder's proposal.

1.7. Exclusions: No oral, telephonic, emailed, or facsimile bid will be considered

1.8. Contract Documents: The complete IFB and bidder's response compose the Contract Documents. Copies of these documents can be obtained from the City Purchasing website, http://www.gjcity.org/BidOpenings.aspx.

1.9. Examination of Specifications: Bidders shall thoroughly examine and be familiar with the project Statement of Work. The failure or omission of any Offeror to receive or examine any form, addendum, or other document shall in no way relieve any Offeror from any obligation with respect to his bid. The submission of a bid shall be taken as evidence of compliance with this section.

1.10. Questions Regarding Statement of Work: Any information relative to interpretation of Scope of Work or specifications shall be requested of the Purchasing Representative, in writing, in ample time prior to the response time.

1.11. Addenda & Interpretations: If it becomes necessary to revise any part of this solicitation, a written addendum will be posted electronically on the City's website at http://www.gjcity.org/BidOpenings.aspx. The Owner is not bound by any oral representations, clarifications, or changes made in the written specifications by Owner, unless such clarification or change is provided in written addendum form from the City Purchasing Representative.

1.12. Taxes: The Owner is exempt from State retail and Federal tax. The bid price must be net, exclusive of taxes.

1.13. Offers Binding 60 Days: Unless otherwise specified, all formal offers submitted shall be binding for sixty (60) calendar days following opening date, unless the Bidder, upon request of the Purchasing Representative, agrees to an extension.

1.14. Collusion Clause: Each bidder by submitting a bid certifies that it is not party to any collusive action or any action that may be in violation of the Sherman Antitrust Act. Any and all bids shall be rejected if there is evidence or reason for believing that collusion exists among bidders. The Owner may, or may not, accept future bids for the same services or commodities from participants in such collusion.

1.15. Public Disclosure Record: If the bidder has knowledge of their employee(s) or sub-contractors having an immediate family relationship with a City/County employee or elected official, the bidder must provide the Purchasing Representative with the name(s) of these individuals. These individuals are required to file an acceptable "Public Disclosure Record", a statement of financial interest, before conducting business with the City/County.

2. General Contract Conditions for Construction Projects

2.1. The Contract: This Invitation for Bid, submitted documents, and any negotiations, when properly accepted by the City/County, shall constitute a contract equally binding between the City/County and Contractor. The contract represents the entire and integrated agreement between the parties hereto and supersedes all prior negotiations, representations, or agreements, either written or oral. The contract may be amended or modified with Change Orders, Field Orders, or Addendums.

2.2. The Work: The term Work includes all labor necessary to produce the construction required by the Contract Documents, and all materials and equipment incorporated or to be incorporated in such construction.

2.3. Execution, Correlation, Intent, and Interpretations: The Contract Documents shall be signed in not less than triplicate by the Owner (City/County) and Contractor. City/County will provide the contract. By executing the contract, the Contractor represents that he/she has visited the site, familiarized himself with the local conditions under which the Work is to be performed, and correlated his observations with the requirements of the Contract Documents. The Contract Documents are complementary, and what is required by any one, shall be as binding as if required by all. The intention of the documents is to include all labor, materials, equipment and other items necessary for the proper execution and completion of the scope of work as defined in the technical specifications and drawings contained herein. All drawings, specifications and copies furnished by the City/County are, and shall remain, City/County property. They are not to be used on any other project, and with the exception of one contract set for each party to the contract, are to be returned to the owner on request at the completion of the work.

2.4. The Owner: The Owner is the City of Grand Junction and/or Mesa County, Colorado and is referred to throughout the Contract Documents. The term Owner means the Owner or his authorized representative. The Owner shall, at all times, have access to the work wherever it is in preparation and progress. The Contractor shall provide facilities for such access. The Owner will make periodic visits to the site to familiarize himself generally with the progress and quality of work and to determine, in general, if the work is proceeding in accordance with the contract documents. Based on such observations and the Contractor's Application for Payment, the Owner will determine the amounts owing to the Contractor and will issue Certificates for Payment in such amounts, as provided in the contract. The Owner will have authority to reject work which does not conform to the Contract documents. Whenever, in his reasonable opinion, he considers it necessary or advisable to insure the proper implementation of the intent of the Contract Documents, he will have authority to require the Contractor to stop the work or any portion, or to require special inspection or testing of the work, whether or not such work can be then be fabricated, installed, or completed. The Owner will not be responsible for the acts or omissions of the Contractor, and sub-Contractor, or any of their agents or employees, or any other persons performing any of the work.

2.5. Contractor: The Contractor is the person or organization identified as such in the Agreement and is referred to throughout the Contract Documents. The term Contractor means the Contractor or his authorized representative. The Contractor shall carefully study and compare the General Contract Conditions of the Contract, Specification and Drawings, Scope of Work, Addenda and Modifications and shall at once report to the Owner any error, inconsistency or omission he may discover. Contractor shall not be liable to the Owner for any damage resulting from such errors, inconsistencies or omissions. The Contractor shall not commence work without clarifying Drawings, Specifications, or Interpretations.

2.6. Sub-Contractors: A sub-contractor is a person or organization who has a direct contract with the Contractor to perform any of the work at the site. The term sub-contractor is referred to throughout the contract documents and means a sub-contractor or his authorized representative.

2.7. Award of Sub-Contractors & Other Contracts for Portions of the Work: As soon as practicable after bids are received and prior to the award of the contract, the successful Contractor shall furnish to the Owner, in writing for acceptance, a list of the names of the sub-contractors or other persons or organizations proposed for such portions of the work as may be designated in the proposal requirements, or, if none is so designated, the names of the sub-contractors proposed for the principal portions of the work. Prior to the award of the contract, the Owner shall notify the successful Contractor in writing if, after due investigation, has reasonable objection to any person or organization on such list. If, prior to the award of the contract, the Owner has a reasonable and substantial objection to any person or organization on such list, and refuses in writing to accept such person or organization, the successful Contractor may, prior to the award, withdraw their proposal without forfeiture of proposal security. If the successful Contractor submits an acceptable substitute with an increase in the proposed price to cover the difference in cost occasioned by the substitution, the Owner may, at their discretion, accept the increased proposal or may disqualify the Contractor. If, after the award, the Owner refuses to accept any person or organization on such list, the Contractor shall submit an acceptable substitute and the contract sum shall be increased or decreased by the difference in cost occasioned by such substitution and an appropriate Change Order shall be issued. However, no increase in the contract sum shall be allowed for any such substitution unless the Contractor has acted promptly and responsively in submitting a name with respect thereto prior to the award.

2.8. Supervision and Construction Procedures: The Contractor shall supervise and direct the work, using his best skill and attention. He shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the work under the contract.

2.9. Warranty: The Contractor warrants to the Owner that all materials and equipment furnished under this contract will be new unless otherwise specified, and that all work will be of good quality, free from faults and defects and in conformance with the Contract Documents. All work not so conforming to these standards may be considered defective. If required by Owner, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. If within ten (10) days after written notice to the Contractor requesting such repairs or replacement, the Contractor should neglect to make or undertake with due diligence to the same, the City may make such repairs or replacements. All indirect and direct costs of such correction or removal or replacement shall be at the Contractor's expense. The Contractor will also bear the expenses of making good all work of others destroyed or damaged by the correction, removal or replacement of his defective work.

2.10. Permits, Fees, & Notices: The Contractor shall secure and pay for all permits, governmental fees and licenses necessary for the proper execution and completion of the work. The Contractor shall give all notices and comply with all laws, ordinances, rules, regulations and orders of any public authority bearing on the performance of the work. If the Contractor observes that any of the Contract Documents are at variance in any respect, he shall promptly notify the Owner in writing, and any necessary changes shall be adjusted by approximate modification. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the Owner, he shall assume full responsibility and shall bear all costs attributable.

2.11. Responsibility for Those Performing the Work: The Contractor shall be responsible to the Owner for the acts and omissions of all his employees and all sub-contractors, their agents and employees, and all other persons performing any of the work under a contract with the Contractor.

2.12. Use of the Site: The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents, and shall not unreasonably encumber the site with any materials or equipment.

2.13. Cleanup: The Contractor at all times shall keep the premises free from accumulation of waste materials or rubbish caused by his operations. At the completion of work he shall remove all his waste materials and rubbish from and about the project, as well as all his tools, construction equipment, machinery and surplus materials.

2.14. Insurance Requirements: The selected Bidder agrees to procure and maintain, at its own cost, policy(s) of insurance sufficient to insure against all liability, claims, demands, and other obligations assumed by the Bidder pursuant to this Section. Such insurance shall be in addition to any other insurance requirements imposed by this Contract or by law. The Bidder shall not be relieved of any liability, claims, demands, or other obligations assumed pursuant to this Section by reason of its failure to procure or maintain insurance in sufficient amounts, durations, or types.
Bidder shall procure and maintain and, if applicable, shall cause any Subcontractor of the Bidder to procure and maintain insurance coverage listed below. Such coverage shall be procured and maintained with forms and insurers acceptable to the Owner. All coverage shall be continuously maintained to cover all liability, claims, demands, and other obligations assumed by the Bidder pursuant to this Section. In the case of any claims-made policy, the necessary retroactive dates and extended reporting periods shall be procured to maintain such continuous coverage. Minimum coverage limits shall be as indicated below unless specified otherwise in the Special Conditions:

(a) Worker Compensation insurance to cover obligations imposed by applicable laws for any employee engaged in the performance of work under this Contract, and Employers' Liability insurance with minimum limits of:

One Million Dollars ($1,000,000) each accident,
One Million Dollars ($1,000,000) ($500,000) disease - policy limit, and
One Million Dollars ($1,000,000) disease - each employee

(b) General Liability insurance with minimum combined single limits of:

One Million Dollars ($1,000,000) each occurrence and
One Million Dollars ($1,000,000) per job aggregate.

The policy shall be applicable to all premises and operations. The policy shall include coverage for bodily injury, broad form property damage (including completed operations), personal injury (including coverage for contractual and employee acts), blanket contractual, products, and completed operations. The policy shall include coverage for explosion, collapse, and underground hazards. The policy shall contain a severability of interests provision.

(c) Comprehensive Automobile Liability insurance with minimum combined single limits for bodily injury and property damage of not less than:

One Million Dollars ($1,000,000) each occurrence and
One Million Dollars ($1,000,000) aggregate

This policy shall provide coverage to protect the contractor against liability incurred as a result of the professional services performed as a result of responding to this Solicitation.

With respect to each of Bidder's owned, hired, or non-owned vehicles assigned to be used in performance of the Work. The policy shall contain a severability of interests provision. The policies required by paragraphs (b), and (c) above shall be endorsed to include the City and/or County, and the City's and/or County's officers and employees as additional insureds. Every policy required above shall be primary insurance, and any insurance carried by the Owner, its officers, or its employees, or carried by or provided through any insurance pool of the Owner, shall be excess and not contributory insurance to that provided by Bidder. No additional insured endorsement to any required policy shall contain any exclusion for bodily injury or property damage arising from completed operations. The Bidder shall be solely responsible for any deductible losses under any policy required above.

2.15. Indemnification: The Contractor shall defend, indemnify and save harmless the Owner, and all its officers, employees, insurers, and self-insurance pool, from and against all liability, suits, actions, or other claims of any character, name and description brought for or on account of any injuries or damages received or sustained by any person, persons, or property on account of any negligent act or fault of the Contractor, or of any Contractor's agent, employee, sub-contractor or supplier in the execution of, or performance under, any contract which may result from proposal award. Contractor shall pay any judgment with cost which may be obtained against the Owner growing out of such injury or damages.

2.16. Miscellaneous Conditions: Material Availability: Contractors must accept responsibility for verification of material availability, production schedules, and other pertinent data prior to submission of bid. It is the responsibility of the bidder to notify the Owner immediately if materials specified are discontinued, replaced, or not available for an extended period of time. OSHA Standards: All bidders agree and warrant that services performed in response to this invitation shall conform to the standards declared by the US Department of Labor under the Occupational Safety and Health Act of 1970 (OSHA). In the event the services do not conform to OSHA standards, the Owner may require the services to be redone at no additional expense to the Owner.

2.17. Time: The Contract Time is the period of time allotted in the Contract Documents for completion of the work. The date of commencement of the work is the date established in a Notice to Proceed. If there is no Notice to Proceed, it shall be the date of the Contract or such other date as may be established therein, or as established as entered on the Bid Form. The Date of Substantial Completion of the work or designated portions thereof is the date certified by the Owner when construction is sufficiently complete, in accordance with the Contract Documents.

2.18. Progress & Completion: The Contractor shall begin work on the date of commencement as defined in the Contract, and shall carry the work forward expeditiously with adequate forces and shall complete it within the contract time.

2.19. Payment & Completion: The Contract Sum is stated in the Contract and is the total amount payable by the Owner to the Contractor for the performance of the work under the Contract Documents. Upon receipt of written notice that the work is ready for final inspection and acceptance and upon receipt of application for payment, the Owner's Project Manager will promptly make such inspection and, when he finds the work acceptable under the Contract Documents and the Contract fully performed, the Owner shall make payment in the manner provided in the Contract Documents.

2.20. Quantities of Work and Unit Price: Materials or quantities stated as unit price items in the Bid are supplied only to give an indication of the general scope of the Work. The City does not expressly or by implication agree that the actual amount of Work or material will correspond therewith, and reserves the right after award to increase or decrease the quantity of any unit item of the Work without a change in the unit price. The City also reserves the right to make changes in the Work including the right to delete any bid item in its entirety or add additional bid items.

2.21. Bid Bond: Each Bid shall as a guaranty of good faith on the part of the Bidder be accompanied by a Bid Guaranty consisting of: a certified or cashier's check drawn on an approved national bank or trust company in the state of Colorado, and made payable without condition to the City; or a **Bid Bond** written by an approved corporate surety in favor of the City. The amount of the Bid Guaranty shall not be less than 5% of the total Bid amount. Once a Bid is accepted and a Contact is awarded, the apparent successful bidder has ten calendar days to enter into a contractor in the form prescribed and to furnish the bonds with a legally responsible

and approved surety. Failure to do so will result I forfeiture of the Bid Guaranty to the City as Liquidated Damages.

2.22. Performance & Payment Bonds: Contractor shall furnish a Performance and a Payment Bond, each in an amount at least equal to that specified for the contract amount as security for the faithful performance and payment of all Contractor's obligations under the Contract Documents. These bonds shall remain in effect for the duration of the Warranty Period (as specified in the Special Conditions). Contractor shall also furnish other bonds that may be required by the Special Conditions. All bonds shall be in the forms prescribed by the Contract Documents and be executed by such sureties as (1) are licensed to conduct business in the State of Colorado and (2) are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff, Bureau of Accounts, U.S. Treasury Department. All bonds singed by an agent must be accompanied by a certified copy of the Authority Act. If the surety on any bond furnished by the Contractor is declared bankrupt, or becomes insolvent, or its rights to do business in Colorado are terminated, or it ceases to meet the requirements of clauses (1) and (2) of this section, Contractor shall within five (5) days thereafter substitute another bond and surety, both of which shall be acceptable to the City.

2.23. Retention: The Owner will deduct money from the partial payments in amounts considered necessary to protect the interest of the Owner and will retain this money until after completion of the entire contract. The amount to be retained from partial payments will be five (5) percent of the value of the completed work, and not greater than five (5) percent of the amount of the Contract. When the retainage has reached five (5) percent of the amount of the Contract no further retainage will be made and this amount will be retained until such time as final payment is made.

2.24. Liquidated Damages for Failure to Enter Into Contract: CITY ONLY Should the Successful Bidder fail or refuse to enter into the Contract within ten Calendar Days from the issuance of the Notice of Award, the City shall be entitled to collect the amount of such Bidder's Bid Guaranty as Liquidated Damages, not as a penalty but in consideration of the mutual release by the City and the Successful Bidder of all claims arising from the City's issuance of the Notice of Award and the Successful Bidder's failure to enter into the Contract and the costs to award the Contract to any other Bidder, to readvertise, or otherwise dispose of the Work as the City may determine best serves its interest.

2.25. Liquidated Damages for Failure to Meet Project Completion Schedule: CITY ONLY If the Contractor does not achieve Final Completion by the required date, whether by neglect, refusal or any other reason, the parties agree and stipulate that the Contractor shall pay liquidated damages to the City for each such day that final completion is late. As provided elsewhere, this provision does not apply for delays caused by the City. The date for Final Completion may be extended in writing by the Owner.

The Contractor agrees that as a part of the consideration for the City's awarding of this Contract liquidated damages in the daily amount of **$500.00** is reasonable and necessary to pay for the actual damages resulting from such delay. The parties agree that the real costs and injury to the City for such delay include hard to quantify items such as: additional engineering, inspection and oversight by the City and its agents; additional contract administration; inability to apply the efforts of those employees to the other work of the City; perceived inefficiency of the City; citizens having to deal with the construction and the Work, rather than having the benefit of a completed Work, on time; inconvenience to the public; loss of reputation and community standing for the City during times when such things are very important and very difficult to maintain.

The Contractor must complete the Work and achieve final completion included under the Bid Schedule in the number of consecutive calendar days after the City gives is written Notice to Proceed. When the Contractor considers the entire Work ready for its intended use, Contractor shall certify in writing that the Work is substantially complete. In addition to the Work being substantially complete, Final Completion date is the date by which the Contractor shall have fully completed all clean-up, and all items that were identified by the City in the inspection for final completion. Unless otherwise stated in the Special Conditions, for purposes of this liquidated damages clause, the Work shall not be finished and the Contract time shall continue to accrue until the City gives its written Final Acceptance.

If the Contractor shall fail to pay said liquidated damages promptly upon demand thereof after having failed to achieve Final Completion on time, the City shall first look to any retainage or other funds from which to pay said liquidated damages; if retainage or other liquid funds are not available to pay said liquidated damages amounts, the Surety on the Contractor's Performance Bond and Payment Bond shall pay such liquidated damages. In addition, the City may withhold all, or any part of, such liquidated damages from any payment otherwise due the Contractor. Liquidated damages as provided do not include any sums to reimburse the City for extra costs which the City may become obligated to pay on other contracts which were delayed or extended because of the Contractor's failure to complete the Work within the Contract Time. Should the City incur additional costs because of delays or extensions to other contracts resulting from the Contractor's failure of timely performance, the Contractor agrees to pay these costs that the City incurs because of the Contractor's delay, and these payments are separate from and in addition to any liquidated damages.

The Contractor agrees that the City may use its own forces or hire other parties to obtain Substantial or Final Completion of the work if the time of completion has elapsed and the Contractor is not diligently pursuing completion. In addition to the Liquidated Damages provided for, the Contractor agrees to reimburse the City for all expenses thus incurred.

2.26. Contingency/Force Account: Contingency/Force Account work will be authorized by the Owner's Project Manager and is defined as minor expenses to cover miscellaneous or unforeseen expenses related to the project. The expenses are

not included in the Drawings, Specifications, or Scope of Work and are necessary to accomplish the scope of this contract. Contingency/Force Account Authorization will be directed by the Owner through an approved form. Contingency/Force Account funds are the property of the Owner and any Contingency/Force Account funds, not required for project completion, shall remain the property of the Owner. Contractor is not entitled to any Contingency/Force Account funds, that are not authorized by Owner or Owner's Project Manager.

2.27. Protection of Persons & Property: The Contractor shall comply with all applicable laws, ordinances, rules, regulations and orders of any public authority having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss. Contractor shall erect and maintain, as required by existing safeguards for safety and protection, and all reasonable precautions, including posting danger signs or other warnings against hazards promulgating safety regulations and notifying owners and users of adjacent utilities. When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct by the Contractor in the execution of the work, or in consequence of the non-execution thereof by the Contractor, he shall restore, at his own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, rebuilding, or otherwise restoring as may be directed, or it shall make good such damage or injury in an acceptable manner.

2.28. Changes in the Work: The Owner, without invalidating the contract, may order changes in the work within the general scope of the contract consisting of additions, deletions or other revisions, the contract sum and the contract time being adjusted accordingly. All such changes in the work shall be authorized by Change Order and shall be executed under the applicable conditions of the contract documents. A Change Order is a written order to the Contractor signed by the Owner issued after the execution of the contract, authorizing a change in the work or an adjustment in the contract sum or the contract time. The contract sum and the contract time may be changed only by Change Order.

2.29. Claims for Additional Cost or Time: If the Contractor wishes to make a claim for an increase in the contract sum or an extension in the contract time, he shall give the Owner written notice thereof within a reasonable time after the occurrence of the event giving rise to such claim. This notice shall be given by the Contractor before proceeding to execute the work, except in an emergency endangering life or property in which case the Contractor shall precede in accordance with the regulations on safety. No such claim shall be valid unless so made. Any change in the contract sum or contract time resulting from such claim shall be authorized by Change Order.

2.30. Minor Changes in the Work: The Owner shall have authority to order minor changes in the work not involving an adjustment in the contract sum or an extension of the contract time and not inconsistent with the intent of the contract documents.

2.31. Field Orders: The Owner may issue written Field Orders which interpret the Contract Documents in accordance with the specifications, or which order minor changes in the work in accordance with the agreement, without change in the contract sum or time. The Contractor shall carry out such Field Orders promptly.

2.32. Uncovering & Correction of Work: The Contractor shall promptly correct all work rejected by the Owner as defective or as failing to conform to the contract documents whether observed before or after substantial completion and whether or not fabricated installed or competed. The Contractor shall bear all costs of correcting such rejected work, including the cost of the Owner's additional services thereby made necessary. If within one (1) year after the date of completion or within such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the contract documents, any of the work found to be defective or not in accordance with the contract documents, the Contractor shall correct it promptly after receipt of a written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discover of condition. All such defective or non-conforming work under the above paragraphs shall be removed from the site where necessary and the work shall be corrected to comply with the contract documents without cost to the Owner. The Contractor shall bear the cost of making good all work of separate Contractors destroyed or damaged by such removal or correction. If the Owner prefers to accept defective or non-conforming work, he may do so instead of requiring its removal and correction, in which case a Change Order will be issued to reflect an appropriate reduction in the payment or contract sum, or, if the amount is determined after final payment, it shall be paid by the Contractor.

2.30. Amendment: No oral statement of any person shall modify or otherwise change, or affect the terms, conditions or specifications stated in the resulting contract. All amendments to the contract shall be made in writing by the Owner.

2.31. Assignment: The Contractor shall not sell, assign, transfer or convey any contract resulting from this IFB, in whole or in part, without the prior written approval from the Owner.

2.32. Compliance with Laws: Bids must comply with all Federal, State, County and local laws governing or covering this type of service and the fulfillment of all ADA (Americans with Disabilities Act) requirements.

2.33. Confidentiality: All information disclosed by the Owner to the Contractor for the purpose of the work to be done or information that comes to the attention of the Contractor during the course of performing such work is to be kept strictly confidential.

2.34. Conflict of Interest: No public official and/or City/County employee shall have interest in any contract resulting from this IFB.

2.35. Contract Termination: This contract shall remain in effect until any of the following occurs: (1) contract expires; (2) completion of services; (3) acceptance of services or, (4) for convenience terminated by either party with a written *Notice of Cancellation* stating therein the reasons for such cancellation and the effective date of cancellation.

2.36. Employment Discrimination: During the performance of any services per agreement with the Owner, the Contractor, by submitting a Bid, agrees to the following conditions:

2.36.1. The Contractor shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, age, handicap, or national origin except when such condition is a legitimate occupational qualification reasonably necessary for the normal operations of the Contractor. The Contractor agrees to post in conspicuous places, visible to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

2.36.2. The Contractor, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, shall state that such Contractor is an Equal Opportunity Employer.

2.36.3. Notices, advertisements, and solicitations placed in accordance with federal law, rule, or regulation shall be deemed sufficient for the purpose of meeting the requirements of this section.

2.37. Immigration Reform and Control Act of 1986 and Immigration Compliance: The Offeror certifies that it does not and will not during the performance of the contract employ illegal alien workers or otherwise violate the provisions of the Federal Immigration Reform and Control Act of 1986 and/or the immigration compliance requirements of State of Colorado C.R.S. § 8-17.5-101, *et.seq.* (House Bill 06-1343).

2.38. Ethics: The Contractor shall not accept or offer gifts or anything of value nor enter into any business arrangement with any employee, official, or agent of the Owner.

2.39. Failure to Deliver: In the event of failure of the Contractor to deliver services in accordance with the contract terms and conditions, the Owner, after due oral or written notice, may procure the services from other sources and hold the Contractor responsible for any costs resulting in additional purchase and administrative services. This remedy shall be in addition to any other remedies that the Owner may have.

2.40. Failure to Enforce: Failure by the Owner at any time to enforce the provisions of the contract shall not be construed as a waiver of any such provisions. Such failure to enforce shall not affect the validity of the contract or any part thereof or the right of the Owner to enforce any provision at any time in accordance with its terms.

2.41. Force Majeure: The Contractor shall not be held responsible for failure to perform the duties and responsibilities imposed by the contract due to legal strikes, fires, riots, rebellions, and acts of God beyond the control of the Contractor, unless otherwise specified in the contract.

2.42. Independent Contractor: The Contractor shall be legally considered an Independent Contractor and neither the Contractor nor its employees shall, under any circumstances, be considered servants or agents of the Owner. The Owner shall be at no time legally responsible for any negligence or other wrongdoing by the Contractor, its servants, or agents. The Owner shall not withhold from the contract payments to the Contractor any federal or state unemployment taxes, federal or state income taxes, Social Security Tax or any other amounts for benefits to the Contractor. Further, the Owner shall not provide to the Contractor any insurance coverage or other benefits, including Workers' Compensation, normally provided by the Owner for its employees.

2.43. Nonconforming Terms and Conditions: A bid that includes terms and conditions that do not conform to the terms and conditions of this Invitation for Bid is subject to rejection as non-responsive. The Owner reserves the right to permit the Contractor to withdraw nonconforming terms and conditions from its bid prior to a determination by the Owner of non-responsiveness based on the submission of nonconforming terms and conditions.

2.44. Ownership: All plans, prints, designs, concepts, etc., shall become the property of the Owner.

2.45. Oral Statements: No oral statement of any person shall modify or otherwise affect the terms, conditions, or specifications stated in this document and/or resulting agreement. All modifications to this request and any agreement must be made in writing by the Owner.

2.46. Patents/Copyrights: The Contractor agrees to protect the Owner from any claims involving infringements of patents and/or copyrights. In no event shall the Owner be liable to the Contractor for any/all suits arising on the grounds of patent(s)/copyright(s) infringement. Patent/copyright infringement shall null and void any agreement resulting from response to this IFB.

2.47. Remedies: The Contractor and Owner agree that both parties have all rights, duties, and remedies available as stated in the Uniform Commercial Code.

2.48. Venue: Any agreement as a result of responding to this IFB shall be deemed to have been made in, and shall be construed and interpreted in accordance with, the laws of the City of Grand Junction, Mesa County, Colorado.

2.49. Expenses: Expenses incurred in preparation, submission and presentation of this IFB are the responsibility of the company and cannot be charged to the Owner.

2.50. Sovereign Immunity: The Owner specifically reserves its right to sovereign immunity pursuant to Colorado State Law as a defense to any action arising in conjunction to this agreement.

2.51. Non-Appropriation of Funds: The contractual obligation of the Owner under this contract is contingent upon the availability of appropriated funds from this fiscal year budget as approved by the City Council or Board of County Commissioners from this fiscal year only. State of Colorado Statutes prohibit obligation of public funds beyond the fiscal year for which the budget was approved. Anticipated expenditures/obligations beyond the end of the current Owner's fiscal year budget shall be subject to budget approval. Any contract will be subject to and must contain a governmental non-appropriation of funds clause.

2.52. Cooperative Purchasing: Purchases as a result of this solicitation are primarily for the City/County. Other governmental entities may be extended the opportunity to utilize the resultant contract award with the agreement of the successful provider and the participating agencies. All participating entities will be required to abide by the specifications, terms, conditions and pricings established in this Bid. The quantities furnished in this bid document are for only the City/County. It does not include quantities for any other jurisdiction. The City or County will be responsible only for the award for its jurisdiction. Other participating entities will place their own awards on their respective Purchase Orders through their purchasing office or use their purchasing card for purchase/payment as authorized or agreed upon between the provider and the individual entity. The City/County accepts no liability for payment of orders placed by other participating jurisdictions that choose to piggy-back on our solicitation. Orders placed by participating jurisdictions under the terms of this solicitation will indicate their specific delivery and invoicing instructions.

2.53. Keep Jobs in Colorado Act: Contractor shall be responsible for ensuring compliance with Article 17 of Title 8, Colorado Revised Statutes requiring 80% Colorado labor to be employed on public works. Contractor shall, upon reasonable notice provided by the Owner, permit the Owner to inspect documentation of identification and residency required by C.R.S. §8-17-101(2)(a). If Contractor claims it is entitled to a waiver pursuant to C.R.S. §8-17-101(1), Contractor shall state that there is insufficient Colorado labor to perform the work such that compliance with Article 17 would create an undue burden that would substantially prevent a project from proceeding to completion, and shall include evidence demonstrating the insufficiency and undue burden in its response.

Unless expressly granted a waiver by the Owner pursuant to C.R.S. §8-17-101(1), Contractor shall be responsible for ensuring compliance with Article 17 of Title 8, Colorado Revised Statutes requiring 80% Colorado labor to be employed on public works. Contractor shall, upon reasonable notice provided by the Owner, permit the Owner to inspect documentation of identification and residency required by C.R.S. §8-17-101(2)(a).

2.53.1. "Public project" is defined as:

(a) any construction, alteration, repair, demolition, or improvement of any land, building, structure, facility, road, highway, bridge, or other public improvement suitable for and intended for use in the promotion of the public health, welfare, or safety and any maintenance programs for the upkeep of such projects
(b) for which appropriate or expenditure of moneys may be reasonably expected to be $500,000.00 or more in the aggregate for any fiscal year
(c) except any project that receives federal moneys.

3. Statement of Work

3.1. General: The North Avenue Complete Streets project is an important component of the revitalization of a commercial corridor in the heart of Grand Junction. Until the 1990's North Avenue (U.S. Highway 6) was the primary retail tax generator for the community, but has been in steady decline the last 20 years due to aging infrastructure, and obsolete development. A Corridor Plan and Strategy has been developed to guide the revitalization of this important east-west corridor. This approximately ¾ mile project from 12th Street to 23rd Street, which connects Colorado Mesa University, Lincoln Park, Stocker Stadium, and the Veterans Affairs Medical Center, is the first segment of the entire 3-mile corridor to receive these improvements.

3.2. Project Description: The Project is a safety and multi-modal transportation enhancement project which includes construction of detached sidewalks on both sides of North Avenue consistent in both alignment and width, providing consistent landscape areas on both sides of the roadway, constructing raised and landscaped medians with the existing traffic islands between 12th Street and 23rd Street, and constructing storm drain and water quality features. This Project includes but is not limited to 4350 SY concrete sidewalk, 960 SY concrete pavement, 4933 LF curb and gutter, and 6 CY concrete wall. Storm drainage reconstruction includes 178 LF 12-inch concrete pipe, 65 LF 8-inch plastic pipe and 8 inlets. Landscaping includes, but is not limited to 109 trees, 295 shrubs, 97 perennials, inorganic mulch ground cover, approximately 0.5 acres of seeding lawn, and urban design features such as 19 benches, 18 trash and recycle receptacles and 6 bicycle racks.

The project is funded through the FHWA Transportation, Community and System Preservation Fund (TCSP), administered through Colorado Department of Transportation and the Colorado Energy and Mineral Assistance fund, administered through Colorado Department of Local Affairs. Federal Aid Project No. TCSP M555 029, Project Code: 19365. Underutilized Disadvantaged Business Enterprise (DBE) goal: ____%. The On-the-Job Training goal for this Project is set at: 320 hours.

NOTE: The information for DBE Percent Participation requirement will be posted in a future addendum to this solicitation.

The total budgeted funding for this project is $2,000,000. However, per CDOT regulations, should it be deemed necessary; and at the Owner's discretion, City

Council approval, and appropriation of funds, the final awarded contract amount may be as high as 110% of project budget (example: up to, $2,200,000).

3.3. Special Conditions & Provisions:

3.3.1 Pre-Bid Briefing: **Prospective bidders are encouraged to attend a pre-bid briefing on January 20, 2016 at 10:00am**. Meeting location shall be at City Hall Auditorium, 250 N. 5th Street, Grand Junction CO. The purpose of this visit will be to inspect and to clarify the contents of this Invitation for Bids (IFB).

3.3.2 The City would like to remind Contractors that are submitting bids for this solicitation process to pay close attention to the DBE (Disadvantaged Business Enterprise) documents, and their requirements. Please be thorough in your review and completion of all forms. CDOT has documented significant delays to projects, including Local Agency projects, due to submitted bids not showing or meeting target Disadvantaged Business Enterprise (DBE) goals and incorrectly documenting Good Faith Efforts, as well as documents not being signed or fully completed.

3.3.3 Pricing: See Section 1.6 "Instructions for Completing Microsoft Excel Bid Schedules Spreadsheet" for pricing submission details.

Pricing shall be all inclusive to include, but not be limited to: all labor, equipment, supplies, materials, freight (F.O.B. Destination – Freight Pre-paid and Allowed to each site), travel, and all other costs related to the successful completion of each project site.

The Owner shall not pay nor be liable for any other additional costs including but not limited to: taxes, shipping charges, insurance, interest, penalties, termination payments, attorney fees, liquidated damages, etc.

3.3.4 Licenses and Permits: Unless otherwise specified in the solicitation documents, Contractor is responsible for obtaining all necessary licenses and permits required for Construction, at Contractors expense. See Section 2.10

3.3.5 Freight/Shipping: All freight/shipping shall be F.O.B. Destination – Freight Pre-Paid and Allowed to the project site.

3.3.6 Contractor Staging Area: Awarded Contractor shall coordinate with Owner for proposed project staging area. Mesa County shall provide a staging and storage area on location.

3.3.7 Product/Materials Quantities: Contractor shall be responsible for determining all measurements for correctness, and all quantities of products/materials required for successful project completion.

3.3.8 Product Ordering: Upon Contract Award, Contactor(s) may begin order product prior to the project start times in order to have products and supplies ready and available when project is scheduled to begin.

3.3.9 Sub-Contractor's List: See Section 2.7 "Award of Sub-Contractors & Other Contracts for Portions of the Work". **Each Contractor and their sub-contractors shall be required to pass a back ground check.**

3.3.10 Award: It is the intent of the Owner to award the contract to a single Contractor that is determined to be the lowest responsive and responsible bidder for any combination of bundled bid schedules as listed below. It is also the Owner's intent to award a bundled bid schedule based on following priority (1=highest priority, 6-lowest priority:

Priority Level	Scenario
1	Base Bid + Alternate 1 + Alternate 2 + Alternate 3
2	Base Bid + Alternate 1 + Alternate 2
3	Base Bid + Alternate 2 + Alternate 3
4	Base Bid + Alternate 2
5	Base Bid + Alternate 1
6	Base Bid

However, the City reserves the right to award the project in any combination of bid schedules provided in this solicitation, as is deemed in the best interest of the City, and within the guidelines, requirements, and approval of CDOT. Note that all documentation requirements for this solicitation process will also be taken into consideration for contract award.

3.3.11 Contract: A binding contract shall consist of: (1) the IFB and any amendments thereto, (2) the bidder's response (bid) to the IFB, (3) clarification of the bid, if any, and (4) the City's Purchasing Department's acceptance of the bid by "Notice of Award" or by "Purchase Order". All Exhibits and Attachments included in the IFB shall be incorporated into the contract by reference.

A. The contract expresses the complete agreement of the parties and, performance shall be governed solely by the specifications and requirements contained therein.

B. Any change to the contract, whether by modification and/or supplementation, must be accomplished by a formal contract amendment signed and approved by and between the duly authorized representative of the bidder and the City Purchasing Division or by a modified Purchase Order prior to the effective date of such modification. The bidder expressly and explicitly understands and agrees that no other method and/or no other document, including acts and oral communications by or from any person, shall be used or construed as an amendment or modification to the contract.

3.3.12 In accordance with 24-109-102 CRS, protests, if any, must be submitted in writing within seven working days after contract award. Pursuant to 24-109-104 CRS, if a protest is sustained and the protesting bidder should have been awarded the contract and was not, the protestor shall be entitled to recover only the reasonable costs incurred in connection with the solicitation, including bid

preparation costs. Reasonable costs shall not include attorney fees. The protestor shall not be entitled to recover any other costs.

3.3.13 Bid Response Submittal: Contractor shall provide the following information with their bid response:

- Completed and Signed Contractor's Bid Form

- Completed Microsoft Excel Bid Schedules Spreadsheet (submitted in it's original MS Excel format)

- Bid Bond

- Completion of All other required documents within the solicitation documents.

3.4. Scope of Work/Specifications: See attached Drawings, Scope, Specifications, and other related requirements and documents. Microsoft Excel Bid Schedule Spreadsheet is a separate attachment.

3.5. IFB Tentative Time Schedule:

Invitation For Bids available	December 31, 2015
Pre-Bid Meeting	January 20, 2016
Inquiry deadline, no questions after this date	January 28, 2016
Addendum Posted	February 3, 2016
Submittal deadline for proposals	February 10, 2016
CDOT Review	February 11 – 25, 2016
City Council Approval	March 16, 2016
Contract execution (unless Council approval required)	March 17, 2016
Bonding & Insurance Cert due	March 24, 2016
Work begins no later than	March 25, 2016
Substantial Completion	120 Calendar Days from Notice to Proceed
Final Completion	140 Calendar Days from Notice to Proceed

3.6. Questions Regarding Scope of Services:

Duane Hoff Jr., Senior Buyer
City of Grand Junction
duaneh@gjcity.org

4. Contractor's Bid Form

Bid Date: _____

Project: IFB-4156-16-DH "North Avenue Complete Streets Project (12th Street to 23rd Street) RE-BID"

Bidding Company: _____

Name of Authorized Agent: _____

Email _____

Telephone_____ **Address**_____

City_____**State**_____**Zip**_____

The undersigned Bidder, in compliance with the Invitation for Bids, having examined the Instruction to Bidders, General Contract Conditions, Statement of Work, Specifications, and any and all Addenda thereto, having investigated the location of, and conditions affecting the proposed work, hereby proposes to furnish all labor, materials and supplies, and to perform all work for the Project in accordance with Contract Documents, within the time set forth and at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the Contract Documents, of which this Contractor's Bid Form is a part.

The undersigned Contractor does hereby declare and stipulate that this offer is made in good faith without collusion or connection to any person(s) providing an offer for the same work, and that it is made in pursuance of, and subject to, all terms and conditions of the Instructions to Bidders, the Specifications, and all other Solicitation Documents, all of which have been examined by the undersigned.

The Contractor also agrees that if awarded the Contract, to provide insurance certificates within ten (10) working days of the date of Notification of Award. Submittal of this offer will be taken by the Owner as a binding covenant that the Contractor will be prepared to complete the project in its entirety.

The Owner reserves the right to make the award on the basis of the offer deemed most favorable, to waive any formalities or technicalities and to reject any or all offers. It is further agreed that this offer may not be withdrawn for a period of sixty (60) calendar days after closing time. Submission of clarifications and revised offers automatically establish a new thirty day (30) period.

RECEIPT OF ADDENDA: the undersigned Contractor acknowledges receipt of Addenda to the Solicitation, Specifications, and other Contract Documents.

State number of Addenda received: _____.

It is the responsibility of the Bidder to ensure all Addenda have been received and acknowledged.

Project: **North Ave Complete Streets IFB-4156-16-DH**

Project Number: TCSP M555-029

Project Code: 19365

Subject: **Notes and Clarifications**

1. The City requires prequalification of the General Contractor submitting bids. The Contractor must also be prequalified with Colorado Department of Transportation (CDOT).
2. A CDOT Pollution Permit is not required of the Contractor since the North Avenue Complete Streets project is active through the Intergovernmental Agreement (IGA) 19365 between CDOT and the City of Grand Junction.
3. The Traffic Control Plan (TCP) included in the plan sheets is the minimum standard provided by CDOT. The selected Contractor shall provide a TCP for approval by the City and CDOT at the Preconstruction Meeting. A traffic control plans must be prepared by a certified TCS. Please see the section 630 of the CDOT Special Provisions document.
4. The median landscape boulder features, while shown in the plans sheets will not be part of this contract.
5. Contractor is responsible for the Storm Water Permit. There are two permits required, one from 5-2-1 Drainage Authority (http://521drainageauthority.org/) and the other from Colorado Department of Public Health & Environment (https://www.colorado.gov/pacific/cdphe/news/water-quality-permits).
6. The contractor is responsible for QC testing of all materials in accordance with the CDOT Standard Specifications. The City will provide QA for concrete, asphalt and base materials.
7. Contract Item Number 207-002110 Stockpile Topsoil is intended for all top soil being removed, stored and replaced at Lincoln Park Golf Course. All topsoil removed from Lincoln Park Golf Course should be replaced along the park for reseeding. Any disturbed lawn or turf should be removed since the golf course will be reseeded. The quantity for topsoil in Contract Item Number 207-00205 are required for other planting or landscape areas.
8. Anchor bolts for pedestrian light foundations are ½” x 18” with 90-degree bend or J, Type A325, unless otherwise approved by the Project Engineer. The foundations should only be exposed a few inches.
9. Concrete mixes to be used on this project are CDOT Class D and Class P unless otherwise specified.

FEDERAL PROJECT NO.: TCSP M555-029 December 31, 2015
PROJECT CODE: 19365

COLORADO DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISIONS
NORTH AVENUE COMPLETE STREETS PROJECT

The 2011 Standard Specifications for Road and Bridge Construction controls construction of this project. The following special provisions supplement or modify the Standard Specifications and take precedence over the Standard Specifications and plans.

PROJECT SPECIAL PROVISIONS

COLORADO DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISIONS
NORTH AVENUE COMPLETE STREETS PROJECT
STANDARD SPECIAL PROVISIONS

Name	Date	No. of Pages
Revision of Sections 101, 508, 614, and 710 – Treated Timber	(July 31, 2014)	1
Revision of Section 101 and 630 – Construction Zone Traffic Control	(April 30, 2015)	2
Revision of Section 102 – Contents of Proposal Forms	(April 9, 2015)	1
Revision of Section 103 – Colorado Resident Bid Preference	(February 3, 2011)	1
Revision of Section 105 – Construction Surveying	(July 31, 2014)	1
Revision of Section 105 – Disputes and Claims for Contract Adjustments	(October 29, 2015)	33
Revision of Section 105 – Violation of Working Time Limitation	(February 3, 2011)	1
Revision of Sections 105 and 106 – Conformity to the Contract of Hot Mix Asphalt (Less than 5000 Tons)	(January 15, 2015)	8
Revision of Sections 105, 106, 412, 601 and 709 - Conformity to the Contract of Portland Cement Concrete Pavement and Dowel Bars and Tie Bars for Joints	(April 30, 2015)	24
Revision of Section 106 – Buy America Requirements	(November 6, 2014)	1
Revision of Section 106 – Certificates of Compliance and Certified Test Reports	(February 3, 2011)	1
Revision of Section 106 – Material Sources	(October 31, 2013)	1
Revision of Section 106 – Supplier List	(January 30, 2014)	1
Revision of Sections 106 and 412 – Surface Texture of Portland Cement Concrete Pavement	(October 29, 2015)	3
Revision of Section 107 – Contractor Obtained Stormwater Construction Permit	(July 31, 2014)	1
Revision of Section 107 – Project Payrolls	(May 2, 2013)	1
Revision of Section 107 - Responsibility for Damage Claims, Insurance Types, and Coverage Limits	(February 3, 2011)	1
Revision of Section 107 – Warning Lights for Work Vehicles and Equipment	(January 30, 2014)	1
Revision of Section 108 – Delay and Extension of Contract Time	(April 30, 2015)	2
Revision of Section 108 – Liquidated October 29, 2015)	1	
Revision of Section 108 – Notice to Proceed	(July 31, 2014)	1
Revision of Section 108 – Project Schedule	(July 31, 2014)	6
Revision of Section 108 – Subletting of Contract	(January 31, 2013)	1
Revision of Section 108 - Payment Schedule (Single Fiscal Year)	(April 30, 2015)	1
Revision of Section 109 – Asphalt Cement Cost Adjustment (Asphalt Cement Included in the Work)	(August 3, 2015)	2
Revision of Section 109 - Compensation for Compensable Delays	(May 5, 2011)	1
Revision of Section 109 – Fuel Cost Adjustment	(February 3, 2011)	2
Revision of Section 109 – Measurement of Quantities	(February 3, 2011)	1
Revision of Section 109 – Measurement of Water	(January 06, 2012)	1
Revision of Section 109 – Prompt Payment	(January 31, 2013)	1
Revision of Section 109 – Scales	(October 29, 2015)	1
Revision of Sections 203, 206, 304 and 613 - Compaction	(July 19, 2012)	2
Revision of Section 206 – Imported Material for Structure Backfill	(July 19, 2012)	2
Revision of Sections 206 and 601 – Maturity Meters and Concrete Form and Falsework Removal	(December 18, 2015)	3
Revision of Section 208 – Erosion Control Supervisor	(April 30, 2015)	1
Revision of Section 212 – Seed	(April 26, 2012)	1
Revision of Section 213 – Mulching	(January 31, 2013)	4
Revision of Section 250 – Environmental, Health and Safety Management	(January 15, 2015)	14
Revision of Sections 304 and 703 – Aggregate Base Course (RAP)	(October 31, 2013)	1
Revision of Section 401 – Compaction of Hot Mix Asphalt	(April 26, 2012)	1

STANDARD SPECIAL PROVISIONS

Revision of Section 401 – Compaction Pavement Test Section (CTS)	(July 19, 2012)	1
Revision of Section 401 – Composition of Mixtures – Voids Acceptance	(February 3, 2011)	1
Revision of Section 401 – Plant Mix Pavements	(February 3, 2011)	1
Revision of Section 401 – Reclaimed Asphalt Pavement	(May 2, 2013)	2
Revision of Section 401 – Temperature Segregation	(February 3, 2011)	1
Revision of Section 401 – Tolerances for Hot Mix Asphalt (Voids Acceptance)	(January 6, 2012)	1
Revision of Section 401 and 412 – Safety Edge	(May 2, 2013)	2
Revision of Section 412 – Portland Cement Concrete Pavement Finishing	(February 3, 2011)	1
Revision of Sections 412, 601, and 711 - Liquid Membrane-Forming Compounds for Curing Concrete	(May 5, 2011)	1
Revision of Section 507, 601, and 606 – Macro Fiber-Reinforced Concrete	(May 2, 2013)	1
Revision of Section 601 – Concrete Batching	(February 3, 2011)	1
Revision of Section 601 – Concrete Finishing	(February 3, 2011)	1
Revision of Section 601 – Concrete Form and Falsework Removal	(July 28, 2011)	2
Revision of Section 601 – Concrete Slump Acceptance	(October 29, 2015)	1
Revision of Section 601 – Depositing Concrete Under Water	(May 2, 2013)	1
Revision of Section 601 – Fiber-Reinforced Concrete	(May 2, 2013)	1
Revision of Section 601 – QC Testing Requirements for Structural Concrete	(May 8, 2014)	1
Revision of Section 601 – Structural Concrete Strength Acceptance	(April 30, 2015)	1
Revision of Sections 601 and 701 – Cements and Pozzolans	(November 6, 2014)	4
Revision of Section 603 – Culvert Pipe Inspection	(October 2, 2014)	1
Revision of Sections 603, 624, 705, 707, and 712 – Drainage Pipe	(April 30, 2015)	3
Revision of Section 614 – Blank Out Sign (LED) (Speed Radar)	(Dec. 29, 2011)	6
Revision of Section 627 and 708 – Pavement Marking Paint	(January 31, 2013)	2
Revision of Section 630 – Retroreflective Sign Sheeting	(May 8, 2014)	1
Revision of Section 702 – Bituminous Materials	(October 29, 2015)	11
Revision of Section 703 - Aggregate for Bases	(October 31, 2013)	1
Revision of Section 703 – Aggregate for Cover Coat Material	(October 29, 2015)	1
Revision of Section 703 – Aggregate for Hot Mix Asphalt	(November 1, 2012)	2
Revision of Section 703 – Concrete Aggregate	(July 28, 2011)	1
Revision of Section 712 – Geotextiles	(November 1, 2012)	2
Revision of Section 712 – Water for Mixing or Curing Concrete	(February 3, 2011)	1
Revision of Section 713 - Epoxy Pavement Marking	(January 15, 2015)	2
Revision of Section 713 – Sign Panel Backgrounds	(November 6, 2014)	1
Affirmative Action Requirements – Equal Employment Opportunity	(February 3, 2011)	10
Disadvantaged Business Enterprise (DBE) Requirements	(Dec. 26, 2013)	9
Minimum Wages, Colorado, U.S. Department of Labor General Decision Number CO150024, Highway Construction for Larimer, Mesa, and Weld counties.	(January 9, 2015)	7
On the Job Training	(July 29, 2011)	3
Partnering Program	(February 3, 2011)	1
Required Contract Provisions – Federal-Aid Construction Contracts	(October 31, 2013)	14
Special Construction Requirements, Fire Protection Plan	(November 1, 2012)	2

COMMENCEMENT AND COMPLETION OF WORK

The Contractor shall commence work under the Contract on or before the 15th day following Contract execution or the 30th day following the date of award, whichever comes later, unless such time for beginning the work is changed by the Chief Engineer in the "Notice to Proceed." The Contractor shall complete all work for Schedule A, Schedule B, Schedule C and Schedule D (as may be awarded) within 140 calendar days in accordance with the "Notice to Proceed."

Stockpiling of materials before the beginning date is subject to the Engineer's approval. If such approval is given, stockpiled material will be paid for in accordance with Sections 109 and 626.

Section 108 of the Standard Specifications is hereby revised for this project as follows:

Subsection 108.03 shall include the following:

Salient features for this project are:
(1) Clearing and grubbing
(2) Preliminary BMP's
(3) Storm Drain Pipe and manhole installation
(4) Removal operations
(5) Concrete work
(6) Asphalt patching
(7) Irrigation installation
(8) Landscape installation
(9) Permanent BMP installation

Subsection 108.08 shall include the following:

-Time will not be charged starting from May 28 through June 4, 2016, due to JUCO Event.
-Time will not be charge for July 4, 2016

The contractor shall prioritize the construction of the Right Deceleration lane at the Veterans Affairs Medical Center (VAMC) west entrance regardless of which add alternates are selected for construction. If Add Alternate 2, the improvements along the south side of the roadway are included in the scope of work, these improvements should be prioritized for construction such that the construction of the Right Deceleration lane is prioritized.

DISADVANTAGED BUSINESS ENTERPRISE (DBE) CONTRACT GOAL

This is a federally-assisted construction project. As described in the CDOT DBE Standard Special Provision, the Bidder shall make good faith efforts to meet the following contract goal:

___% Percent DBE participation.

NOTE: The information for DBE Percent Participation requirement will be posted in a future addendum to this solicitation.

ON THE JOB TRAINING CONTRACT GOAL

The Department has determined that On the Job Training shall be provided to trainees with the goal of developing full journey workers in the types of trade or classification involved. The contract goal for On the Job Trainees working in an approved training plan in this Contract has been established as follows:

Minimum number of total On the Job Training required: 320 hours

REVISION OF SECTION 102
PROJECT PLANS AND OTHER DATA

Section 102 of the Standard Specifications is hereby revised for this project as follows:

Subsection 102.05 shall include the following:

Plans, Specifications and other Bid Documents are available for review or download on the City's Purchasing website http://www.gjcity.org/bids.aspx and the Rocky Mountain E-Purchasing website https://www.rockymountainbidsystem.com/default.asp .

Complete sets of *Bid Documents* shall be used in preparing Bids; neither City nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of *Bid Documents*.

REVISION OF SECTION 202
REMOVAL AND RELOCATION OF TREES

Section 202 of the Standard Specifications is hereby revised for this project as follows:

Subsection 202.02 shall include the following:

This work includes the removal of trees as directed by the Engineer. This work includes the preservation from injury or defacement of all vegetation and objects designated to remain.

The Engineer will establish environmental limits. All trees, shrubs, plants, grasses, and other vegetative materials shall remain, except as designated by the Engineer.

Once all directed clearing, trimming, and pruning is completed and accepted, no additional clearing, trimming, cutting, or pruning will be allowed unless approved, in writing, by the City Engineer. The City Engineer shall be responsible for identifying the removal of tree branches, stumps, shrubs and/or other plant materials beyond those trees identified in the removal plans for removal and/or transplant. The Contractor shall coordinate with the City Engineer to have tree branches, stumps, shrubs, and other plant materials marked for removal and to identify locations for trees to be relocated.

This work shall be done by a Contractor or subcontractor who is a qualified tree surgeon and a member of the National Arborist Association. The firm's or individual's name and qualifications shall be submitted at the preconstruction conference for the Engineer's approval. A list of references and other clients shall be included with the qualifications statement. A written description of work methods and time schedules shall be submitted and approved in writing by the Engineer prior to work commencing.

Access for the removal or pruning of trees will be extremely limited. Trees shall be felled at the risk of the Contractor. Strict limits of disturbance will be defined and shall be adhered to. Branches on trees or shrubs shall be removed as directed by the Engineer. All trimming shall be done by skilled workmen. All work shall be done according to the following requirements:

(I) Pruning shall be done with proper, sharp, clean tools in such a manner as to preserve the natural character of the tree.

(2) All final cuts shall leave no projections on or off the branch and shall not be cut so close as to eliminate the branch collar.

(3) To avoid bark stripping, all branches 2 inches in diameter and larger shall be cut using the 3-cut method. These branches shall be lowered to the ground by proper ropes.

(4) Tools used on trees known or found to be diseased, shall be disinfected with alcohol before they are used on other trees.

(5) Structural weaknesses, decayed trunk or branches, or split crotches shall be reported to the Engineer.

(6) When cutting back or topping trees, the Contractor shall use the drop crotch method and avoid cutting back to small suckers. Smaller limbs and twigs shall be removed in such a manner so as to leave the foliage pattern evenly distributed.

(7) When reducing size (cut back or topping) not more than one third of the total area shall be reduced at a single operation.

REVISION OF SECTION 202
REMOVAL AND RELOCATION OF TREES

(8) Climbing spikes shall not be used on trees not scheduled for removal. All brush, branches, limbs, and foliage hauled off site. Stumps shall be ground 8 inches below ground level.

Subsection 202.12 shall include the following:

Pay Item	Pay Unit
Removal of Tree	Each
Relocation of Tree	Each

Chipping, stockpiling mulch, and hauling and stockpiling trunks and limbs will not be paid for separately but shall be included in the work.

All clearing and grubbing directed by the Engineer will be paid for as lump sum under the clearing and grubbing item.

REVISION OF SECTION 213
MULCHING

Section 213 of the Standard Specifications is hereby revised for this project as follows:

In Subsection 213.02, include the following:

Inorganic Mulch for shrub bed mulch shall be ¼" inch tan granite rock, as is naturally available in the region. Rock mulch shall be free of trash, sticks or roots. Submit sample to the Engineer for approval at least 30 days prior to placing on project.

Landscape boulders shall be natural granite stone (blasted or shot rock will not be accepted) without fractures or structural defects. Landscape boulders to be approved by the Landscape Architect at the source. Sizes shall vary and match contract documents. Prior to installation, contractor shall provide shop drawings describing layout and positioning of the selected boulders for approval.

In Subsection 213.03, include the following:

g) Inorganic Mulch (Decorative). A 3-inch layer of ¼" rock material shall be uniformly applied to all planting beds as shown on the plans or as directed.

h) Landscape Boulders. Landscape boulders shall be installed at the locations shown per the Drawings and Details. Locations of all landscape boulders shall be approved by the Landscape Architect prior to installation. Shop drawings describing layout and positions of the boulders shall be provided to the landscape architect by the contractor.

Subsection 213.05, include the following:

Payment will be made under:

Pay Item	Pay Unit
Inorganic Mulch (1/4" Granite)	CY
Landscape Boulders	Each

REVISION OF SECTION 214
PLANTING

Section 214 of the Standard Specifications is hereby revised for this project as follows:

In Subsection 214.02, delete paragraph seven and replace with the following:

Before any substitutions of Contractor-furnished plant material will be considered, the Contractor shall make inquiries of all commercial sources at their disposal. Written statements concerning the availability of the plant species and sizes designated on the plans shall be obtained. If the designated plant species are available in a size different than indicated on the plans, this information shall be included in the statement. If the Contractor fails to locate the designated plant species (or size), the Contractor shall make inquiries of all sources designated by the Engineer. Written statements concerning the availability of plant species and sizes shall be submitted by the Contractor to the Engineer 60 days prior to the planting season. Substitutions of other sizes or species will be considered only after such statements have been submitted or when all sources have been exhausted.

Subsection 214.02, delete section "(c) Stakes" and replace with the following:

All stakes are to be wood stakes. Wood stakes shall be 2 inches x 2 inches square, or 2 ½ inch diameter and 6 feet long free from bends. Wood stakes shall be made of untreated wood guaranteed to last in the ground at least two growing seasons. The bottom of wood stakes shall be pointed.

Subsection 214.03, delete section (a) and replace with the following:

Areas to be planted shall be brought to the lines and grades designated and approved. The locations of trees and shrubs on the planting plans are approximate to the degree that unsuitable planting locations shall be avoided. The Contractor shall stake locations as accurately as possible. All locations and layouts shall be approved by Landscape Architect before preparatory work for planting is started.
All layout staking for planting shall be done by the Contractor and shall be approved by the Landscape Architect before planting holes are prepared.

Subsection 214.03 section (c) shall include the following:

Contractor shall expose root flare.

Subsection 214.04 shall include the following:

The Contractor shall shield guy wires from trees with white PVC tubing to make the wire visible for pedestrians and bicyclists - the cost to be included in the cost of the plants. The Contractor shall maintain staking and guying until the end of the Landscape Establishment period. The Contractor shall remove all guying wire, straps and stakes at the end of the Landscape Establishment period.

Subsection 214.06 shall include the following:

Fertilizer, tree wrapping, tree staking and protection fencing shall not be measured or paid for separately, but shall be included in the unit bid price of the plants.

REVISION OF SECTION 304
AGGREGATE BASE COURSE

Section 304 of the Standard Specifications is hereby revised for this project as follows:

Subsection 304.02 shall include the following:

Materials for the base course shall be Aggregate Base Course (Class 6) as shown in subsection 703.03

The aggregate base course (Class 6) must meet the gradation requirements and have a resistance value of at least 78 respectively when tested by the Hveem Stabilometer method.

REVISION OF SECTION 403
HOT MIX ASPHALT

Section 403 of the Standard Specifications is hereby revised for this project as follows:

Subsection 403.02 shall include the following:

The design mix for hot mix asphalt shall conform to the following:

Table 403-1

Property	Test Method	Value For Grading
		Patching
Air Voids, percent at: N (design)	CPL 5115	3.5 – 4.5
Lab Compaction (Revolutions): N (design)	CPL 5115	75
Stability, minimum	CPL 5106	28
Aggregate Retained on the 4.75 mm (No. 4) Sieve for S, SX and SG, and on the 2.36mm (No. 8) Sieve for ST and SF with at least 2 Mechanically Induced fractured faces, % minimum*	CP 45	60
Accelerated Moisture Susceptibility Tensile Strength Ratio (Lottman), minimum	CPL 5109 Method B	80
Minimum Dry Split Tensile Strength, kPa (psi)	CPL 5109 Method B	205 (30)
Grade of Asphalt Cement, Top Layer		PG 76-28
Grade of Asphalt Cement, Layers below Top		PG 64-22
Voids in the Mineral Aggregate (VMA) % minimum	CP 48	See Table 403-2
Voids Filled with Asphalt (VFA), %	AI MS-2	65 - 80
Dust to Asphalt Ratio Fine Gradation Coarse Gradation	CP 50	 0.6 - 1.2 0.8 – 1.6

Note: AI MS-2 = Asphalt Institute Manual Series 2

Note: Mixes with gradations having less than 40% passing the 4.75 mm (No. 4) sieve shall be approached with caution because of constructability problems.

Note: Gradations for mixes with a nominal maximum aggregate size of one-inch or larger are considered a coarse gradation if they pass below the maximum density line at the #4 screen.
Gradations for mixes with a nominal maximum aggregate size of 3/4” to 3/8” are considered a coarse gradation if they pass below the maximum density line at the #8 screen.
Gradations for mixes with a nominal maximum aggregate size of #4 or smaller are considered a coarse gradation if they pass below the maximum density line at the #16 screen.

*Fractured face requirements for SF may be waived by RME depending on project conditions.

REVISION OF SECTION 403
HOT MIX ASPHALT

All mix designs shall be run with a gyratory compaction angle of 1.25 degrees and properties must satisfy Table 403-1. Form 43 will establish construction targets for Asphalt Cement and all mix properties at Air Voids up to 1.0 percent below the mix design optimum. CDOT will establish the production asphalt cement and volumetric targets based on the Contractor's mix design and the relationships shown between the hot mix asphalt mixture volumetric properties and asphalt cement contents on the Form 429. CDOT may select a different AC content other than the one shown at optimum on the Contractor's mix design in order to establish the production targets as contained on the Form 43. Historically, Air Voids adjustments typically result in asphalt cement increases from 0.1 to 0.5 percent. Contractors bidding the project should anticipate this change and factor it into their unit price bid.

Table 403-2

	Minimum Voids in the Mineral Aggregate (VMA)			
Nominal Maximum Size*, mm (inches)	***Design Air Voids **			
	3.5%	**4.0%**	**4.5%**	**5.0%**
37.5 (1½)	11.6	11.7	11.8	N/A
25.0 (1)	12.6	12.7	12.8	
19.0 (¾)	13.6	13.7	13.8	
12.5 (½)	14.6	14.7	14.8	
9.5 (⅜)	15.6	15.7	15.8	
4.75 (No. 4)	16.6	16.7	16.8	16.9
	* The Nominal Maximum Size is defined as one sieve larger than the first sieve to retain more than 10%. ** Interpolate specified VMA values for design air voids between those listed. *** Extrapolate specified VMA values for production air voids beyond those listed.			

The Contractor shall prepare a quality control plan outlining the steps taken to minimize segregation of HMA. This plan shall be submitted to the Engineer and approved prior to beginning the paving operations. When the Engineer determines that segregation is unacceptable, the paving shall stop and the cause of segregation shall be corrected before paving operations will be allowed to resume.

CDOT approved Warm Mix Asphalt (WMA) may be allowed on this project in accordance with CP 59. Unique requirements for WMA design, production and acceptance testing as documented during CDOT WMA approval shall be submitted and approved prior to creation of the Form 43 and before any WMA production on the project. Delays to the project due to WMA submittal and review will be considered within the Contractor's control and will be non-excusable.

REVISION OF SECTION 403
HOT MIX ASPHALT

Hot mix asphalt for patching shall conform to the gradation requirements for Hot Mix Asphalt (Grading 64-22).

Acceptance samples shall be taken at the location specified in either Method B or C of CP 41.

Subsection 403.03 shall include the following:

The Contractor shall use an approved anti-stripping additive. The amount of additive used shall be a minimum of 0.5 percent by weight of the asphalt cement. The additive shall be added at the refinery or at the hot plant. If liquid anti-stripping additive is added at the plant, an approved in-line blender must be used. The blender shall be in the line from the storage tank to the drier drum or pugmill. The blender shall apply sufficient mixing action to thoroughly mix the asphalt cement and anti-stripping additive.

The Contractor shall construct the work such that all roadway pavement placed prior to the time paving operations end for the year, shall be completed to the full thickness required by the plans. The Contractor's Progress Schedule shall show the methods to be used to comply with this requirement.

Delete subsection 403.05 and replace with the following:

403.05 The accepted quantities of hot mix asphalt will be paid for in accordance with subsection 401.22, at the contract unit price per ton for the bituminous mixture.

Payment will be made under:

Pay Item	**Pay Unit**
Hot Mix Asphalt (Grading __)(__)(PG ____)	Ton
Hot Mix Asphalt (Grading __)(__)	Ton
Hot Mix Asphalt (Patching)(Asphalt)	Ton

Aggregate, asphalt recycling agent, asphalt cement, additives, hydrated lime, and all other work and materials necessary to complete each hot mix asphalt item will not be paid for separately, but shall be included in the unit price bid. When the pay item includes the PG binder grade, any change to the submitted mix design optimum asphalt cement content to establish production targets on the Form 43 will not be measured and paid for separately, but shall be included in the work. No additional compensation will be considered or paid for any additional asphalt cement, plant modifications and additional personnel required to produce the HMA as a result in a change to the mix design asphalt cement content.

Historically, typical asphalt cement increases reflected on the Form 43 are from 0.1 to 0.5 percent. However, the Contractor should anticipate the AC increases typical of his mixes. Contractors bidding the project should anticipate this change and factor it into their unit price bid.

When the pay item does not include the PG binder grade, asphalt cement will be measured and paid for in accordance with Section 411. Asphalt cement used in Hot Mix Asphalt (Patching) will not be measured and paid for separately, but shall be included in the work.

Excavation, preparation, and tack coat of areas to be patched will not be measured and paid for separately, but shall be included in the work.

REVISION OF SECTION 603
REINFORCED CONCRETE PIPE

Section 603 of the Standard Specifications is hereby revised for this project as follows:

Subsection 603.02 shall include the following:

Reinforced concrete pipe shall be manufactured from concrete that meets the requirements for severity of sulfate exposure Class 2 specified in subsection 601.04.

Reinforced concrete pipe shall be coated in accordance with subsection 706.07.

REVISION OF SECTION 613
PEDESTRIAN LIGHTING

Section 613 of the Standard Specifications is hereby revised for this project as follows: Subsection

613.01 Description of the main paragraph shall be modified to the following:

This work consists of furnishing and installing foundations, light standards, luminaires, lamps, conduit, cable, wiring and incidental materials for pedestrian lighting in accordance with these specifications and in conformance with the details, lines, grades and locations shown on the plans or established.

Subsection 613.02 Materials, paragraph 1 shall be modified to the following:

Pedestrian lighting materials shall conform to the requirements of Section 715, and shall be compatible with the requirements of the local utility company unless otherwise noted in this section or on the electrical drawings.

Subsection 613.02 Materials; section (b) shall be modified to the following:

Light Standard. A complete light standard includes the pedestrian pole, luminaire head, base, grounding system, and all hardware.

Subsection 613.02 Materials; section (i); Materials List shall be modified to the following:

Before releasing any materials, the Contractor shall submit to the Engineer for approval three copies of a complete list of all of the equipment and materials related to the installation of the pedestrian luminaries that he intends to install. This list shall include, but is not limited to, the following:

Light standards, anchor bolts, luminaire mountings, luminaire specifications, lamps, and ballasts Luminaire photometric data on disc in IES format from an independent testing facility (if requested) Cables, splicing and termination devices
Conduits, conduit bends and splices, and electrical bushings
Fuseholders, fuses and cable disconnect devices
Splice boxes
Wiring and connection diagrams of all cabinets, circuits, luminaires, etc. Load
Centers (pedestals), Lighting Controls

The list shall include the brand name, any identifying numbers, relevant technical data, and any other information necessary for maintenance forces to procure exact replacements of any and all equipment and material used on the project. All equipment shall be new and first quality.

The Contractor shall supply manufacturer descriptions of luminaire, pole materials, assemblies, fabrication, performance, and installation. Submittals shall also indicate color for review and approval. The Landscape Architect and Engineer must approve all shop drawings, submittals, and material descriptions before the Contractor may order from supplier.

REVISION OF SECTION 613
PEDESTRIAN LIGHTING

The Contractor shall furnish to the Engineer three copies of all Certificates of Compliance supplied by the manufacturer of the equipment. This equipment shall include, but is not limited to, the following:

Luminaire mountings
Light standards, distribution and accessories
Electrical wire and cable
Lighting Control Centers (pedestals)
Circuit breakers
Photoelectric cells
Luminaires, lamps and ballasts
Ground rods
Anchor bolts
Photometric data

Subsection 613.05 Light Standards shall include the following:

Light Standard assemblies shall be fabricated and placed in accordance with the details and dimensions shown on the landscape and electrical plans, or as directed by the Engineer. The careful erection and aligning of the components furnished shall be considered a most essential feature of the installation and shall be as near to true vertical alignment as practical.

Prior to installation, all Light Standards shall be stored above ground, on skids in manufacturer's packaging to prevent damage.

Subsection 613.06 Luminaires and Lamps shall include the following:

New pedestrian luminaires shall be anchored and secured to pole as indicated in manufacturer's instructions. Luminaires shall be adjusted vertically and horizontally to provide the required mounting height and maximum light distribution on the sidewalk.

Subsection 613.12 shall include the following:

Electrical Contractor will be responsible for the materials and installation (furnish and install) of the pedestrian luminaires. The local utility company will be responsible for the materials and installation (furnish and install) of the street luminaires.

622.28 Payment will be made under:

Pay Item	Pay Unit
1 Inch Electrical Conduit (Irrigation)	Linear Foot
2 Inch Electrical Conduit (Pedestrian)	Linear Foot
Wiring (Pedestrian Lighting)	Lump Sum
Pedestrian Light Standard	Each
Pedestrian Light Foundation	Each
Lighting Control Center	Each

REVISION OF SECTION 622
SITE FURNISHINGS

Section 622 is hereby revised to the Standard Specifications for this project as follows:

DESCRIPTION

622.1 This work consists of furnishing and installing site furnishings according to the location indicated on the plans.

MATERIALS

622.2 Contractor shall install site furnishings according to manufacturer's instructions. The

following includes the site furnishings included as part of this project:

Bench: MLB510-MVA Bench - Maglin Site Furniture Inc., 27 Bysham Park Drive, Woodstock, Ontario N4T 1P1 Canada. Toll Free: (800) 716.5506. Phone: (519) 539.6776. Fax: (877) 260.9393. Website: www.maglin.com. E-mail: sales@maglin.com, or approved equivalent.

H: 31 3/8" x L: 70.00" x D: 23 5/8"

- Surface Mounted ~~with Center Arm,~~ Color- Slate Fine Tex

Trash and Recycling Receptors: MLWR250-32-ST Trash Container - - Maglin Site Furniture Inc., 27 Bysham Park Drive, Woodstock, Ontario N4T 1P1 Canada. Toll Free: (800) 716.5506. Phone: (519) 539.6776. Fax: (877) 260.9393. Website: www.maglin.com. E-mail: sales@maglin.com, or approved equivalent.

H: 34.00" x D: 25.50"

- Surface Mounted, Side Opening, Color- Slate Fine Tex
- Bottle/Can Lid as indicated in drawings.

Bicycle Racks: Loop Bicycle Rack - Landscape Forms, Inc., 431 Lawndale Avenue, Kalamazoo, Michigan 49048. Toll Free (800) 521-2546. Phone (269) 381-0396. Fax (269) 381-3455. Website www.landscapeforms.com. E-mail: specify@landscapeforms.com., or approved equivalent.

- Surface Mounted, Color – Olive

Product Data: Submit manufacturer's product data, storage and handling requirements and recommendations, installation methods and available colors, styles, patterns and textures.

Shop Drawings: Submit manufacturer's shop drawings, including plans and elevations, indicating overall dimensions.

Samples: Submit manufacturer's samples of materials, finishes, and colors.

Warranty: Manufacturer's standard warranty.

CONSTRUCTION REQUIREMENTS

622.05 Install site furnishings in accordance with manufacturer's instructions at locations indicated on the plans.

REVISION OF SECTION 622
SITE FURNISHINGS

Install site furnishings level and anchor securely in place.

Finish Damage: Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Engineer.

Component Damage: Remove and replace damaged components.

METHOD OF MEASUREMENT

622.27 Site furnishings will be measured by the number of items indicated on the plans and details

BASIS OF PAYMENT

622.28 Payment will be made under:

Pay Item	Pay Unit
Bench	EA
Trash and Recycling Receptors	EA
Bicycle Racks	EA

Payment will be full compensation for all materials, labor, and equipment required to place site furnishings.

REVISION OF SECTION 623
IRRIGATION SYSTEM

Section 623 of the Standard Specifications is hereby revised for this project as follows: In

Subsection 623.03 Backflow Preventer, Delete and Replace with the following:

Pressure Vacuum Breaker shall be a Reduced Pressure Backflow, Febco 825YA, bronze body with black fusion epoxy coating, including Blow-out/Flush Fitting, two check valves, a relief valve, two gate or ball valves, and test cocks for field testing, unions at both ends

In Subsection 623.04 Automatic Controllers, delete and replace with the following:

Satellite Hardware: Provide, install and test control system complete with interface components, communication hardware, and satellite control units. To ensure compatibility with City of Grand Junction's existing Rain Bird Maxicom Central Control system acceptable manufacturer and model is Rain Bird ESP SAT 40 SS Ped Link.

Communication System: City has an existing radio communication system.

Satellite Controller Assembly: As presented in drawings. Acceptable manufacturer and model is Rain Bird ESP SAT 40 Station SS Ped Link, with Maxi Interface Board ESPMIBLINK, and Link Radio Modem Kit H41004.

Satellite Controller Assembly enclosure: Pre-assembled and tested by the local authorized central control system representative, and as presented conceptually in the construction documents. Power Supply (PTPWRSUPP) and Surge Protection Kit (AG2401) with satellite controller assembly. Constructed of stainless steel with free-flow ventilation. Prepare shop drawings to show the exact placement of all components housed in the enclosure. Basic Capabilities:

a. 100% solid state electrical components with heavy-duty electrical surge protection for input and output circuits.
b. 24 VAC transformer capable of operating a minimum of six solenoids simultaneously.
c. Non-volatile memory and battery backup of at least 14 days.
d. Manual activation of remote control valves from satellite and hand held radio.
e. Quantity of stations to match drawings and installation details.

Electrical Conduit: Use PVC Schedule 40 conduit conforming to dimensions and tolerances established by ASTM Standard D-1785. Use Schedule 40, Type 1, PVC Solvent weld sweep fittings for PVC conduit conforming to ASTM standards D2466 and D1784 for buried installations. Use rigid metallic conduit with sweep elbows for above grade installations.

Wire Markers: Pre-numbered or labeled with indelible nonfading ink, made of permanent, nonfading material.

Installation: City of Grand Junction requires that all Maxicom and controller equipment be accomplished by a contractor experienced with installation of Maxicom systems.

Lighting Protection: Provide one 12'' x 36'' x 0.0625'' ground plate, one 5/8'' x 10 foot copper clad UL listed grounding rod. 30 feet of #6 AWG bare copper grounding wire, two 6-inch round valve boxes, and one CADWELD connector at satellite controller.

REVISION OF SECTION 623
IRRIGATION SYSTEM

In Subsection 623.07 Sprinkler Heads, delete section (a) Pop-up Sprays and replace with the following:

(a) *Pop-up Sprays*. Pop-up Sprays shall be Rain Bird 1806 SAM/PRS Pop up Spray head body with Hunter MP Rotator Nozzles. Minimum pop-up height for turf heads shall be 6 inches.
(b) *Bubbler Heads*. Shall be Rain Bird 1402 bubbler head.

In Subsection 623.08 Flow Sensor, delete and replace with the following:

Flow Sensor shall be Rain Bird 1.5" FS-150 Plastic in-line that transmits an electronic pulse through conductors to Controller. Provide at least 15 inches of straight unobstructed pipe upstream of the sensor and at least 7.5 inches of straight unobstructed pipe downstream from the sensor. Flow Meter shall be 3002.

In Subsection 623.10, delete section (b) and replace with the following:

(c) *Lateral Line Pipe*. Lateral line pipe shall be Class 200 PVC manufactured from virgin material in conformance with ASTM D 2241. Pipe size shall be as shown on drawings. Fittings shall be injected-molded schedule 40 PVC conforming to ASTM D 2609, cell classification 12454-B.

In Subsection 623.10, delete section (d) and replace with the following:

(d) Swing Pipe. All sprinkler heads with less than 5 gallons per minute flow shall have Rain Bird Sp-100 Swing Pipe, SB Series Spiral Barb Fittings, as shown in detail. Maximum length of swing pipe to be 10 ft, minimum length to be 2 ft. No Spiral Barbed fittings are to be used without prior approval from the Landscape Architect.

In Subsection 623.13, Strainer, delete.

Delete subsection 623.28 Final Landscape Acceptance, and replace with the following:

Before final landscape acceptance is granted, the Contractor shall perform an overall operation and pressure test and confirm the irrigation system is correctly functioning. This includes two weeks of automatic operation from the City of Grand Junction irrigation "Central Computer". The Contractor shall inspect all irrigation components and make repairs and adjustments as necessary. The Contractor shall complete spring start-up (pressurization) and repair all damage to the irrigation system.

Subsection 623.33, Basis of Payment, add the following to the other pay items: Pay

Item	Pay Unit
Sprinkler System	LS
F/A Sprinklers	F/A

Design and construction for modification of Force Account Sprinklers irrigation system consists of modifying and matching materials of the existing irrigation systems of the adjacent property owners shown on plans (for golf course and retail center) and adjusting, capping, extending, or installing existing irrigation equipment in areas to be revised by construction is to paid for F/A Sprinklers. Contractor is to provide head-to-head coverage and matched precipitation by adjusting head locations, nozzle sizes and pipe sizes where needed to match the existing irrigation system and comply with available flow rates.

REVISION OF SECTION 626
PUBLIC INFORMATION SERVICES
(TIER III)

Section 626 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

This work consists of providing regular and continuous public information services throughout the duration of the project. Final approval of approach and collateral will be given by the Project Engineer with review by Regional Communications Manager.

Anticipated communications issues on this project include:

(1) Construction schedule and phasing, lane closures, driveway closures, business access during construction, property restoration of adjacent parcels, use of temporary construction easements, revisions/relocations to bus stops, work affecting the Park/Golf Course, utility work, irrigation work, landscaping work, median work.

CONSTRUCTION REQUIREMENTS

(a) *Public Information Manager (PIM).* The Contractor shall provide a full-time Public Information Manager (PIM) who will be the responsible charge for all activities associated with public information services. The PIM shall have professional experience in Public/Media Relations, Marketing or other related field and good verbal and written communications skills. PIM may be a qualified member of the Contractor's personnel, provided he/she has limited project duties outside those duties relating to Public Information Services. As part of the key project staff submittal prior to the Preconstruction Conference, the Contractor shall submit the name, contact information and qualifications of the PIM for this project for approval by the Engineer with consultation from the Region Communications Manager.

(b) *Daily/Regular Activities of the PIM.* Throughout the duration of the project, the PIM shall be responsible for the following:

(1) *On Call/On Site.* The PIM shall be available on call or on site on every working day and available upon the Engineer's request at other than normal working hours. The PIM shall maintain communications with the Engineer, as well as coordinate with CDOT's Regional Communications Manager, regarding all aspects of public information related to this project.

Public Information Line/Communications. The PIM shall establish a public information office equipped with a telephone, voicemail, computer and email address. The public information office may be located off-site or within the PIM's field office, provided that the telephone line is a local call line. The voicemail greeting for the project information line shall provide an updated message each week, or each day if necessary, concerning the project's completion date and forthcoming activities on the project and allow the recording of a message from the caller. If unable to answer the public information line, the PIM shall check and respond to voicemail messages throughout each day of construction operations and lane closures are being carried out. The PIM shall track inquiries made by citizens and businesses, including names, addresses, phone numbers, and subsequent action taken during construction; these customer inquiries and follow-up action shall be entered into Dialog, a web-

based contact and issue tracking database provided by the Department. The system shall be used to provide a report to the Engineer and

Regional Communications Manager each week. All inquiries and complaints shall be followed up with a return phone call or email from either the PIM and, when necessary, the Engineer or Regional Communications Manager.

The PIM shall conform to Table 626-1 in responding to correspondence from stakeholders and the public:

Table 626-1
RESPONSE PROTOCOL

TYPE OF COMMUNICTION	TIMING OF RESPONSE
Hotline Calls	Check messages throughout day Respond same day (initial call) or within 24 hours (including weekends if work is occurring)
Email	Same day (within two business days for high volume situations)
Call from CDOT Staff	As soon as possible

(2) *Photos/Video.* The PIM shall take and submit photos of the project work on regular intervals, using an approved camera. A cell phone camera is permitted. Photographs shall include all areas of work for use in reports to interested agencies, social media, and flyers. A minimum of two photographs shall be submitted each week, more photos being required with increased complexity or progress of the project, as directed by the Engineer and the Region Communications Manager.

(3) *Project Meetings.* The PIM shall be available by phone or in person, as requested by the Engineer, to participate in weekly project meetings held on-site. At the meetings, PIM will discuss communications issues of the week and work with the Regional Communications Manager and Engineer to provide timely details for upcoming media advisories/press releases, lane closure reports, website updates and information line recordings.

(4) *Media Relations.* The PIM shall immediately notify Project Engineer and Regional Communications Manager of any on-site situations involving the media. Should media call, the PIM will provide only the Regional Communications Manager's contact information. CDOT will address all media inquiries and media requests, will distribute media releases, traffic advisories and other information. The PIM shall develop media releases and traffic advisories based on major construction milestones or as requested by CDOT, using the CDOT template provided by the Department.

REVISION OF SECTION 626
PUBLIC INFORMATION SERVICES
(TIER III)

(5) *Lane Closure Reports.* PIM shall submit a Lane Closure Report each Thursday, for the following week's activities, to the contacts listed on the Report and at the end of the spec. Please contact the Regional Communications Manager for an electronic copy of this report.

(6) *Website Updates (When called for in the contract).* The PIM shall follow CDOT's Information Systems guidelines to develop internet web page content specifically for this project and provide consistent updates with the latest project information (web page development experience is not necessary as the PIM will simply supply information for the CDOT web page template). This web page will be located on CDOT's main web site, as per CDOT Information Systems procedures, and updates will be sent to CDOT's web administrator for uploading. It shall contain all appropriate links to/from other sites if applicable, e.g., local city, county, bus service, etc. PIM will ensure the web site is kept up to date with pertinent schedule information, new photos, contact information, etc.

(7) *Press Releases.* At least one week prior to the project start date, the PIM shall prepare a press release for media (Regional Communications Manager can provide template). The press release will be reviewed by the Engineer and Regional Communications Manager, who will distribute to media via e-mail (media list may be provided to PIM for future distribution). Press releases/media advisories will be prepared by PIM and sent to Engineer and Regional Communications Manager prior to every update to the project work zone and/or project schedule or at the request of the Regional Communications Manager and/or Engineer.

(c) *Construction Signing.* A minimum of one week prior to start of work, the Contractor shall erect signs at both ends of the project limits, indicating the estimated dates when the project will commence and end. The signs shall include the Contractor's name and public information contact number. All construction signing shall be in accordance with Section 630.

(d) *Project Fliers.* At least 10 working days prior to the start of work, the PIM shall prepare and deliver a flier to each property owner having direct access to the highway work zone. The flier shall be developed using a template provided by the Region Communications Manager. An email containing the flier shall be sent to all those known to use the project limits having significant or daily use of the roadway contained within the project corridor. Examples of these are bus services, community centers, schools. Additional fliers may be required, as directed by the Engineer in consultation with the Region Communications Manager, and may be delivered via http://uspseverydoordirectmail.com, the use of a mailing list from county GIS mapping, or other approved method
The flier shall provide the anticipated project start and end date, location and description of work, traffic impacts and hours/days of operation, PIM's project information line, email address, web address, project map (if necessary) and a construction safety message as defined by the department. Flier may also contain PIM logo, if desired. Fliers shall be reviewed by PIM, then provided to the Engineer and CDOT's Regional Communications Manager for review 48 hours prior to distribution. Final approval is provided by Project Engineer. The PIM shall contact the Region Communications Manager for a flier template which will include CDOT's logo, project logo, or both.

REVISION OF SECTION 626
PUBLIC INFORMATION SERVICES
(TIER III)

Language Assistance for LEP Persons. CDOT is required to provide access to Limited English Proficient (LEP) persons. LEP persons are individuals for whom English is not their primary language and who have a limited ability to read, write, speak or understand English. Examples of language assistance include, but are not limited to, translation of meeting notices and interpretation services at meetings. At a minimum, the PIM shall work with CDOT to provide interpretation services upon request by an LEP person. Additionally, if the community to which the project flyers shall be distributed has greater than 5 percent LEP persons, the flyers shall be translated. The PIM shall document all measures taken to communicate with LEP persons and record all requests for language assistance.

(e) *Deliverables Protocol to CDOT.* The PIM shall conform to Table 626-2 in submitting the following for Department review and approval prior to dissemination:

Table 626-2
DELIVERABLES AND SUBMITTAL TIME TO CDOT

Deliverable	When to be submitted
Public Information Manager Contact	Prior to PIM's Notice to Proceed (NTP) with key staff approval
PIM Contact Information	At Pre-Construction Meeting
Emergency Response Telephone Tree (when required in the Contract)	30 days following Pre-Construction Meeting
Local Telephone Hotline	At Pre-Construction Meeting
Stakeholder Distribution List (if required for non-work zone flyer recipients and emergency service providers)	At Pre-Construction Meeting
Lane Closure Reports	Weekly, on Thursday by noon
Traffic Advisories/Media Releases	48 hours prior to scheduled distribution date
Fliers, posters or other public material	5 Working Days prior to the scheduled distribution date In cases of rapid response, 48 hours prior to distribution
Photos/Video	Twice a month or as requested.
Public Contact Report	Submit a report using Dialog once a week

REVISION OF SECTION 626
PUBLIC INFORMATION SERVICES
(TIER III)

(f) *Deliverable protocols to the public.* The PIM shall conform to Table 626-3 in submitting the following information to the public:

Table 626-3
DELIVERABLES AND SUBMITTAL TIME TO THE PUBLIC

Deliverable	When to be published
Full road closures, detours, and major traffic impacts lasting seven days or longer	14 days prior to the beginning of activity in any area of the Project.
Major project activities (such as major lane shifts, bridge demolitions, etc.) lasting seven days or less	7 days prior to the beginning of the activity
Other remaining types of construction Activities in any area of the Project including: ▪ Night Work ▪ Utilities ▪ Change of business/residential access	7 days prior to the beginning of activity in any area of the Project or as determined jointly by teams
Other construction updates (e.g., cancellation of planned closures, additional lane closures, closure removals, major traffic shifts, etc.) that directly impact the public.	As soon as known with at least 24 hours' notice

(g) Public Information Contact Sheet. The following Public Information Contact Sheet shall be completed by the PIM with the names of contact as appropriate to the project:

Public Information Services Contact Sheet

Owners:

Colorado Department of Transportation, Maintenance Superintendent/Resident Engineer
Name: Mike Goolsby
Address:
Phone/s: (970) 683-6306
Email:

REVISION OF SECTION 626
PUBLIC INFORMATION SERVICES
(TIER III)

Colorado Department of Transportation Regional Communications Manager

Name: Tracy Trulove
Address:
Phone/s: (970) 384-3371
Email: tracy.trulove@state.co.us

Colorado Department of Transportation Web Site Administrator

Tara Galvez
4201 E. Arkansas Ave., Ste. 277
Phone: (303) 757-9361
Email: tara.galvez@dot.state.co.us

Colorado Department of Transportation's Colorado Traffic Management Center (24-hours/day)

425 –C Corporate Circle
Golden, Colorado 80401
Phone: (303) 512 – 5830 or 800-353-6604
Fax: (303) 274 - 9394

City Of Grand Junction

City Manager's Office Contact
City Public Information Manager
Sam Rainguet
250 N. 5th St
Phone/s: (970) 244-1507
Email: samr@ci.grandjct.co.us

City Public Works
Engineering Manager
Trent Prall
250 N. 5th St
Phone/s: (970) 244-4047
Email: trentonp@ci.grandjct.co.us

REVISION OF SECTION 626
PUBLIC INFORMATION SERVICES
(TIER III)

METHOD OF MEASUREMENT

The Engineer will monitor the PIM and all public information services. When the PIM provides acceptable public information services in accordance with these specifications, partial payments for the pay item Provide Public Information Services will be made as the work progresses. Failure to provide acceptable public information services will result in withholding of payment for this item. These partial payments will be made as follows:

Partial payments for public information services will be made once each month as work progresses. The monthly partial payments will be determined by pro-rating the lump sum bid amount by the number of months in the actual construction schedule.

BASIS OF PAYMENT

Payment will be made under:

Pay Item	**Pay Unit**
Public Information Services	Lump Sum

Payment for Public Information Services will be full compensation for all work, materials and equipment to provide public information throughout the project in accordance with this specification.

Construction Signs will be measured and paid for in accordance with Section 630.

REVISION OF SECTION 630
PORTABLE MESSAGE SIGN PANEL

Section 630 of the Standard Specifications is hereby revised for this project as follows:

Subsection 630.01 shall include the following:

This work includes furnishing, operating, and maintaining a portable message sign panel.

Add subsection 630.031 immediately following subsection 630.03 as follows:

630.031 Portable Message Sign Panel. Portable message sign panel shall be furnished as a device fully self-contained on a portable trailer, capable of being licensed for normal highway travel, and shall include leveling and stabilization jacks. The panel shall display a minimum of three - eight character lines. The panel shall be a dot-matrix type with an LED legend on a flat black background. LED signs shall have a pre-default message that activates before a power failure. The sign shall be solar powered with independent back-up battery power. The sign shall be capable of 360 degrees rotation and shall be able to be elevated to a height of at least five feet above the ground measured at the bottom of the sign. The sign shall be visible from one-half mile under both day and night conditions. The message shall be legible from a minimum of 750 feet. The sign shall automatically adjust its light source to meet the legibility requirements during the hours of darkness. The sign enclosure shall be weather tight and provide a clear polycarbonate front cover.

Solar powered message signs shall be capable of operating continuously for 10 days without any sun. All instrumentation and controls shall be contained in a lockable enclosure. The sign shall be capable of changing and displaying sign messages and other sign features such as flash rates, moving arrows, etc.

Each sign shall also conform to the following:

(1) In addition to the onboard solar power operation with battery back-up, each sign shall be capable of operating on a hard wire, 100-110 VAC, external power source.

(2) All electrical wiring, including connectors and switch controls necessary to enable all required sign functions shall be provided with each sign.

(3) Each sign shall be furnished with an operating and parts manual, wiring diagrams, and trouble-shooting guide.

(4) The portable message sign shall be capable of maintaining all required operations under Colorado mountain-winter weather conditions.

(5) Each sign shall be furnished with an attached license plate and mounting bracket.

(6) Each sign shall be wired with a 7-prong male electric plug for the brake light wiring system.

Subsection 630.13 shall include the following:

The portable message sign panel shall be on the project site at least __10 calendar days_ prior to the start of active roadway construction. Maintenance, storage, operation, relocation to different sites during the project, and all repairs of portable message sign panels shall be the responsibility of the Contractor.

Subsection 630.15 shall include the following:

Portable message sign panels will be measured one of the two following ways:

(1) By the actual number of days each portable message sign is used on the project as approved by the Engineer.

(2) By the maximum number of approved units in use on the project at any one time.

REVISION OF SECTION 630
PORTABLE MESSAGE SIGN PANEL

Subsection 630.16 shall include the following:

Pay Item	**Pay Unit**
Portable Message Sign Panel	Day
Portable Message Sign Panel	Each

REVISION OF SECTION 630
TRAFFIC CONTROL PLAN - GENERAL

The key elements of the Contractor's method of handling traffic (MHT) are outlined in subsection 630.10(a).

Section 630 of the Standard Specifications is hereby revised for this Project as follows:

Subsection 630.10 shall include the following:

The Contractor shall submit for approval to the City Project Engineer, a Traffic Control Plan (TCP) prepared by an American Traffic Safety Services Association (ATSSA) certified individual or a professional traffic engineer, consistent with the M.U.T.C.D. 7 days prior to the pre-construction meeting. The City shall provide comment and/or acceptance of the TCP. The contractor shall use the approved TCP for the Method of Handling Traffic (MHT).

The components of the TCP for this project include but not limited to the following:

(1) Subsection 104.04 and Section 630 of the specifications.
(2) Standard Plan S-630-1and Standard Plan S-630-2.
(3) Schedule of Construction Traffic Control Devices.
(4) Signing Plans.
(5) Construction phasing details.
(6) Detour Details.
(7) Access for businesses and property owners at all times during the construction period.

Unless otherwise approved by the Engineer, the Contractor’s equipment shall follow normal and legal traffic movements. The Contractor’s ingress and egress of the work area shall be accomplished with as little disruption to traffic as possible. Traffic control devices shall be removed by picking up the devices in a reverse sequence to that used for installation. This may require moving backwards through the work zone. When located behind barrier or at other locations shown on approved traffic control plans, equipment may operate in a direction opposite to adjacent traffic.

CDOT may have entered into operating agreements with one or more law enforcement organizations for cooperative activities. Under such agreements, at the sole discretion of CDOT, law enforcement personnel may enter the work zone for enforcement purposes and may participate in the Contractor’s traffic control activities. The responsibility under the Contract for all traffic control resides with the Contractor and any such participation by law enforcement personnel in Contractor traffic control activities will be referenced in either the Special Provisions or General Notes of the plans depending on whether the Contractor is to hire local law enforcement or if CDOT is contracting with Colorado State Patrol for uniformed traffic control. Nothing in this Contract is intended to create an entitlement, on the part of the Contractor, to the services or participation of the law enforcement organization.

Special Traffic Control Plan requirements for this project are as follows:

At least one week prior to starting construction, the Contractor shall notify the City Project Engineer of the date the Contractor intends to start construction.

During the construction of this project, traffic shall use the present traveled roadway unless identified on the plans or approved by the Engineer.

REVISION OF SECTION 630
TRAFFIC CONTROL PLAN - GENERAL

The Contractor shall not have construction equipment or materials in the lanes open to traffic at any time, unless approved by the Engineer.

Only one lane in each direction may be closed to traffic at any time unless approved by the Engineer. Traffic shall not be delayed for more than 5 minutes or as directed by the Engineer. The Engineer may require revisions to the Contractor's TCP or associated MHTs if it is determined that implementation of the plan results in excessive delays to the traveling public. New or revised MHTs shall be submitted at least seven days before implementation, unless otherwise approved by the Engineer.

In addition to the items required for MHTs in Section 630 as revised, each TCP submittal shall address temporary bus stops. The Contractor shall be required to coordinate with Grand Valley Transit bus routing to determine the stop locations and maintain appropriate signage at each stop.

The Contractor shall develop and maintain a MHT for pedestrian circulation. The Contractor shall provide and maintain a safe environment for pedestrians surrounding work zones at all times. The Contractor shall provide and maintain appropriate pedestrian detour signage at each intersection to direct pedestrians. Where a segment of the sidewalk is closed during the construction, a new pathway or the sidewalk on the opposite side of the street shall be maintained with proper signage that marks detour routes for pedestrians. MHTs shall detail all of the Pedestrian devices and fence necessary for that operation.

Night work may be allowed on this project as approved by the engineer. All traffic control for night work shall be in accordance with the MUTCD. Adequate illumination of flagging stations shall include the use of light plants whenever night flagging operations are being conducted, as approved by the Engineer. Light plants and multiple mobilizations of light plants will not be paid for separately but shall be included in the work.

All available public parking is reserved for the public. Contractor and subcontractor employee personal vehicle parking is prohibited in these locations. Parking of Contractor or subcontractor vehicles or construction equipment in existing public parking space is allowed only in the zones that are closed for construction. Parking of Contractor, subcontractor or employee construction or personal vehicles (or construction equipment) in private residential or business parking space is also strictly prohibited. Suitable transportation to the work site for personnel whose vehicles are parked off site shall be provided by the Contractor.

The required TCS Diary shall be submitted to the Engineer by 10:00 a.m. each following day and shall include a listing of all flagging hours, labor hours, and traffic control devices in use.

All Construction Zone Traffic Control Devices shall be continuously maintained in accordance with Section 630 of the Standard Specifications. The TCS shall establish a set maintenance and cleaning schedule. A copy of the maintenance and cleaning schedule shall be provided to the Engineer.

Access Maintenance Plan

Unless otherwise included in the plans or directed by the Engineer, the Contractor shall maintain continuous access to all roadways, side streets, walkways, alleyways, driveways, and other sidewalks and pathways at all times. Sidewalks shall remain open to pedestrians to the greatest extent practicable. If a sidewalk has to be closed, an alternate access shall be provided with appropriate signage. To the greatest extent possible, driveways shall be re-constructed when the access is closed for concrete pavement placement.

REVISION OF SECTION 630
TRAFFIC CONTROL PLAN - GENERAL

At least 7 calendar days prior to beginning work on any driveway or private access, the Contractor shall notify each business or resident of the expected construction schedule.

The Contractor shall develop an Access Maintenance Plan (AMP) in coordination with all affected owners and tenants. A sample form of the AMP shall be developed for this purpose by the Contractor and submitted to the Engineer for review and approval. The AMP shall address any special needs any business or residence has for Americans with Disabilities Act (ADA) access or any other special needs. A place on the AMP form shall address special needs and ADA issues.

The AMP shall detail the effects to the accesses including closing dates, time and duration, and, if applicable, barricades, fencing and temporary means of access with all affected owners and tenants in a work area. The AMP shall include the address, the station location, the work periods affected, and show documentation of coordination, including the appropriate property owner signatures, and the date of the contact. Contact information regarding the companies that make frequent deliveries to the affected businesses shall be obtained and details of access changes shall be provided to these companies by the Public Information Manager along with other routine public information.

The signed AMP shall be submitted, as part of the corresponding method of handling traffic, to the Project Engineer for approval one week prior to the start of any work which will affect the signatory properties. If the Contractor is unable to obtain approval and signatures, documentation of "good faith efforts" to obtain said approval and signatures shall be submitted.

The Contractor will not be allowed to begin work until the plan is accepted. If Contractor does not have approved AMP forms completed for all accesses within a work area, the Engineer may delay progress of work for the affected accesses. Such delay shall not be the basis for a claim for additional contract time or compensation.

The Contractor shall not perform any work requiring lane closure on the roadway between the hours of 7 A.M. and 9 A.M and between the hours of 3:30 P.M. and 6:30 P.M., or as directed.

The Contractor shall not perform any construction work and shall not have any materials or equipment present within the project site anywhere east of the centerline of 15th Street until after the conclusion of the Holiday season; specifically, from the beginning of construction until after January 3rd, 2016.

All costs incidental to the foregoing requirements shall be included in the original contract prices for the project.

FORCE ACCOUNT ITEMS

DESCRIPTION

This special provision contains the Department's estimate for force account items included in the Contract. The estimated amounts marked with an asterisk will be added to the total bid to determine the amount of the performance and payment bonds. Force Account work shall be performed as directed by the Engineer.

BASIS OF PAYMENT

Payment will be made in accordance with subsection 109.04. Payment will constitute full compensation for all work necessary to complete the item.

Force account work valued at $5,000 or less, that must be performed by a licensed journeyman in order to comply with federal, state, or local codes, may be paid for after receipt of an itemized statement endorsed by the Contractor.

Force Account Item	Estimated Quantity	Amount
F/A Minor Contract Revisions	F.A.	$ 75,000*
F/A Partnering Program	F.A.	$ 250
F/A On the Job Trainee	320 Hour	$ 800
F/A Fuel Cost Adjustment	F.A.	$ 1,000
F/A Erosion Control	F.A.	$ 3,000
F/A Lighting by Others	F.A.	$ 10,000
F/A Sprinklers	F.A.	$ 6,500

Note that the Amounts listed above are totals for the Base Project and all Add Alternates. Refer to Project Schedule for respective F/A amounts.

F/A Minor Contract Revisions – This work consists of minor work authorized and approved by the Engineer, which is not included in the Contract plans or specifications and is necessary to accomplish the scope of work of this Contract.

F/A Partnering – This work is described in Standard Special Provision, “Partnering Program”.

F/A Fuel Cost Adjustment – This work is described in Standard Special Provision, Revision of Section 109 – Fuel Cost Adjustment.

F/A On-the-Job Trainee – This work is described in Standard Special Provision, “On the Job Training”.

F/A Erosion Control – This force account will be used to pay for additional erosion control measures not itemized in the plan sheets.

F/A Sprinklers – This work is described in the Project Special Provision, Section 623.

UTILITIES

Known utilities within the limits of this project are:

• City of Grand Junction	Bret Guillory	970-244-1590
• Xcel Energy	Jon Price	970-244-2693

The following utilities are within the limits of this project but are not expected to be involved.

• Centurylink	Chris Johnson	970-244-4311

The work described in these plans and specifications requires coordination between the Contractor and the utility companies in accordance with subsection 105.11 in conducting their respective operations as necessary to complete the utility work with minimum delay to the project.

The work listed below shall be performed by the Contractor in accordance with the plans and specifications, and as directed by the Engineer. The Contractor shall keep each utility company advised of any work being done to its facility, so that the utility company can coordinate its inspections for final acceptance of the work with the Engineer.

- City of Grand Junction – Contact: Bret Guillory, 970-244-1590
  Contractor's Responsibilities:
  - The contractor shall give the City of Grand Junction three weeks notice before utilities are relocated.
  - Adjust all impacted sewer manholes to final grade of the roadway, sidewalk or terrain, per City of Grand Junction Standard Contract Document for Capital Improvements Construction, as shown on plans.
  - Adjust all water valves, valve boxes, water meters to final grade of the roadway, sidewalk or terrain, per City of Grand Junction Standard Contract Document for Capital Improvements Constructin, as shown on plans.
  - Reset or relocation of fire hydrants, per City of Grand Junction Standard Contract Document for Capital Improvements Construction, as shown on the plans.
  - Remove storm drain pipes as shown on plans.
  - Install storm sewer pipe, inlets and manholes on north side of roadway at approximate ML Sta 77+00, 85+00, 87+00 and 88+50, per City of Grand Junction Standard Contract Document for Capital Improvements Construction. Notify City of Grand Junction during excavation and installation of storm sewer as shown on plans.

  City of Grand Junction Responsibilities:
  - Provide rings and covers necessary to adjust water utilities.

- Xcel Energy – Contact: Jon Price, 970-244-2693
  Contractor's Responsibilities:
  - Adjust all impacted pull boxes to final grade of the roadway, median, sidewalk or terrain.
  - Coordinate with Xcel Energy to reasonably accommodate Xcel's construction work occuring concurrent with the Contractor's work.

  Xcel Energy's Responsibilities:
  - Relocate utility if a conflict is present.
  - Install new underground electric feeds to the existing Street Lighting and install Pedestrian Lighting system; all work being done concurrent with the Contractor's work.

- Centurylink – Contact: Chris Johnson, 970-244-4311
  Contractor Responsibilities:
  - Coordinate with utility owner if a conflict is discovered during construction.

  Centurylink's Responsibilities:
  - Relocate utility if a conflict is present.

GENERAL:

The Contractor shall comply with Article 1.5 of Title 9, CRS ("Excavation Requirements") when excavation or grading is planned in the area of underground utility facilities. The Contractor shall notify all affected utilities at least two (2) business days, not including the day of notification, prior to commencing such operations. The Contractor shall contact the Utility Notification Center of Colorado (UNCC) at (8-1-1) or 1-800-922-1987 to have locations of UNCC registered lines marked by member companies. All other underground facilities shall be located by contacting the respective company. Utility service laterals shall also be located prior to beginning excavating or grading.

The location of utility facilities as shown on the plan and profile sheets, and herein described, were obtained from the best available information.

All costs incidental to the foregoing requirements will not be paid for separately but shall be included in the work.

MATERIALS CONTAMINATED WITH RADIOACTIVE MILL TAILINGS

In the 1940's, 50's and 60's radioactive uranium mill tailings were used in the Grand Junction area as bedding and backfill material for construction of pipelines, building foundations, parking lots, sidewalks and roadways. When radioactive mill tailings are found in, under or adjacent to pipe, asphalt pavement, concrete or other materials designated for removal, the Contractor shall contact the Colorado Department of Public Health and Environment (CDPHE), Radiation and Hazardous Waste Division (phone no. (970) 248-7164) for material characterization.

If the radioactive level of the contaminated material exceeds the threshold level, as determined by the CDPHE representative, the material shall be either decontaminated in accordance with CDPHE requirements, or transported to the designated radioactive materials containment facility located at the City Shops, 333 West Avenue for disposal. Prior to loading, all concrete, pipe and other materials contaminated with mill tailings shall be broken into pieces, which are no greater than six feet in any dimension. The Contractor shall take all necessary precautions to separate uncontaminated materials from those that have been contaminated with mill tailings. Prior to transporting radioactive mill tailings or other materials contaminated with mill tailings, the transporter shall make arrangements with the City Construction Inspector or call the City Construction Engineering office at (970) 244-1453 to make arrangements for opening and closing the radioactive materials containment facility.

Trucks used to haul uranium mill tailings and other radioactive materials shall be prepared to prevent spillage. Tailgate diapers shall be used on truck tailgates that are not leak proof. Tailgate diapers shall be 6-mil or thicker polyethylene and shall cover the entire tailgate and 4 feet back on the sides and bottom of the bed. Each load shall be covered with a bedcover made of canvas, or other approved material, and shall be securely tied down. After dumping the material at the designated containment site, the bed of each truck shall swept or washed out to remove all remaining radioactive material. Each truck driver hauling radioactive mill tailings or materials contaminated with mill tailings shall have in his possession a document listing the name and address of the transporter, a description of the radioactive materials being transported, the address or location where the radioactive materials came from and the address of the destination (City Shops, 333 West Avenue).

TRENCHING AND TUNNELING NEAR TREES

One of the primary goals of this project is to save some of the existing trees on North Avenue. The large existing trees provide needed shade, as well as beauty and grace to the area. To save the trees, efforts will concentrate on the construction methods taking place as we work in and around the roots of the trees.

All roots are important to the health of the tree. Roots spread to where soil conditions provide nutrients, moisture, and especially oxygen, which is usually near the surface. About 85% of a tree's roots are within the top 18" of soil. Root ends taper out to tiny nonwoody threads, some with "root hairs". They are often within inches of the surface. Some species have tap roots protruding down from the center of the tree. Trees with tap roots, if any, will be identified by Parks and Rec personnel.

Roots typically spread out from ½ to 2 times the height of a tree, or farther. However, the essential mass of roots is usually considered to be within the "dripline", the area underneath the tree's branches. The dripline area is sacred ground for tree protection.

Trenching

Roots with a sharply cut end will quickly produce a flush of new roots, helping the tree to recover from its injury. A crushed or torn root leads to decay and few new roots.

Trench carefully by hand or machine near trees, sawing roots over 2" in diameter. Make the cut flush with the side of the trench closest to the tree. No need to paint or treat the ends. When roots 2" or larger are accidentally broken, dig out enough of the trench side to saw through an undamaged portion of the root.

In trenches where roots have been cut, backfill as soon as possible or keep all root ends moist with wet burlap, peat moss or similar material. In this arid climate, small roots can die in 10 or 15 minutes. Large, woody roots should never be exposed for more than an hour. Wind makes conditions even worse.

Compact the backfill to original firmness, but no more. Too much compaction removes pores and will prevent or slow root growth. Water the backfill. This will keep roots moist and remove large air pockets that might retard growth of new roots.

Trenching should come no closer to the tree than the dripline.

Boring

Since most roots live in the top 18" of soil, boring 24" deep will usually do little damage. However, root patterns vary depending on species and size of tree and the kind of soil. For this project, we recommend boring 36" deep beneath trees that are less that 12" in diameter, and 48" deep for trees greater than 12" in diameter. If leeway permits, it is best to bore 1' to 2' on either side of the tree's center. In this way, the tunnel will miss the tap root in case there is one.

If at all possible, minimize the work pit size.

Spoil Piles

Shovels or backhoes removing stored soil can cut into the surface and destroy absorbing roots, adding more injury to the tree. If even an inch of soil is left after backfilling or hauling away soil, it can cut off vital oxygen. So, please pile excavated soil on the side of the trench opposite the tree. If this is not possible, place the soil on a

plastic tarp, plywood or thick bed of mulch.

Protect tree by erecting a fence at or just outside dripline. Please notify Parks and Rec personnel if any branches are broken or damaged.

Please refer to “Trenching & Tunneling Near Trees, A Field Pocket Guide for Qualified Utility Workers”, by Dr. James R. Fazio, The National Arbor Day Foundation, 100 Arbor Avenue, Nebraska City, NE 68410 (402) 474-5655. www.arborday.org

REVISION OF SECTIONS 101 AND 630
CONSTRUCTION ZONE TRAFFIC CONTROL

Sections 101 and 630 of the Standard Specifications are hereby revised for this project as follows:

In subsection 101.01 add the following:

MASH Manual for Assessing Safety Hardware

In subsection 630.01, delete the first paragraph and replace with the following:

630.01 This work consists of furnishing, installing, moving, maintaining, and removing temporary traffic signs, advance warning arrow panels, flashing beacon (portable), barricades, channelizing devices, delineators, temporary traffic signals, mobile pavement marking zones, masking and unmasking existing signs in construction zones, and concrete barriers as required by the Manual on Uniform Traffic Control Devices for Streets and Highways and the Colorado Supplement thereto, in accordance with the Contract. Devices shall comply with the performance criteria contained in NCHRP Report 350 (only applicable for devices developed prior to 2011) or MASH (acceptable for all devices). Devices temporarily not in use shall, as a minimum, be removed from the shoulder area. Moving will include devices removed from the project and later returned to use.

In subsection 630.02, delete the second paragraph, and replace with the following:

Temporary sign support assembly shall be timber, perforated square metal tubing inserted into a larger base post or slip base or perforated metal U-channel with a slip base. The temporary sign support assembly shall conform to NCHRP (only applicable for sign support assemblies developed prior to 2011) or MASH (acceptable for all sign support assemblies), and AASHTO requirements regarding temporary sign supports during construction.

Subsection 630.02 shall include the following:

If a timber post is selected, it shall conform to the requirements of subsection 614.02.

In subsection 630.07(a), delete the first paragraph and replace with the following:

(a) *Stackable Vertical Panels***.** Stackable vertical panels shall comply with the crash test requirements contained in NCHRP Report 350 (only applicable for vertical panels developed prior to 2011) or MASH (acceptable for all vertical panels) and shall meet MUTCD requirements for vertical panels. Vertical panels shall be retroreflectorized with Type IV sheeting, in accordance with subsection 630.02. The stackable vertical panels shall have the following properties:

In subsection 630.07(b), delete the first paragraph and replace with the following:

(b) *Stackable Tubular Markers.* Stackable tubular markers shall comply with the crash test requirements contained in NCHRP Report 350 (only applicable for stackable tubular markers developed prior to 2011) or MASH (acceptable for all stackable tubular markers) and shall conform to MUTCD requirements for Tubular Markers. The stackable tubular markers shall have the following properties:

In subsection 630.09, delete the second and third paragraphs, and replace with the following:

Work zone devices designated by FHWA as Category I, II, or III, shall comply with the performance criteria contained in NCHRP Report 350 (only applicable for devices developed prior to 2011) or MASH (acceptable for all devices). Devices designated as Category IV, including but not limited to portable or trailer-mounted devices such as flashing arrow panels, temporary traffic signals, area lighting supports, and changeable message signs are not required to meet NCHRP 350 or MASH requirements.

Except for Category IV devices, the Contractor shall obtain and present to the Engineer the manufacturer's written NCHRP 350 (only applicable for devices developed prior to 2011) or MASH (acceptable for all devices) certification for each work zone device before it is first used on the project.

In subsection 630.10(a) (3) (iii), delete the third paragraph, and replace with the following:

Groups 1 and 2 shall each be equipped with a truck-mounted Advance Warning Flashing or Sequencing Arrow Panel (C Type), and a truck mounted impact attenuator. The impact attenuator shall be located on the rearmost vehicle of each group. A separate vehicle for this attenuator may be used. Each truck-mounted impact attenuator shall be certified by the manufacturer to be able to withstand a 62 MPH impact in accordance with NCHRP 350, Test Level 3 (only applicable for truck-mounted impact attenuators developed prior to 2011) or MASH, Test Level 3 (acceptable for all truck-mounted impact attenuators). The cone setting truck and the cone pickup truck shall not be the same vehicle.

In subsection 630.16, delete the 5th paragraph.

April 9, 2015

REVISION OF SECTION 102
CONTENTS OF PROPOSAL FORMS

Section 102 of the Standard Specifications is hereby revised for this project as follows:

Delete subsection 102.02 and replace with the following:

102.02 Contents of Proposal Forms. The Department will publish bidding opportunities to perspective bidders on the CDOT Business Center web site. The forms on this web site will state the location and description of the contemplated construction and will show the estimate of the various quantities and types of work to be performed or materials to be furnished, and will have a schedule of items for which unit bid prices are invited. The proposal form will state the time in which the project must be completed, the amount of the proposal guaranty, and the date, time and place of the opening of proposals.

All bidders on projects shall submit electronic bids only. Innovative delivery method projects such as Design-Build, CMGC and Best Value, are not subject to this electronic bidding requirement.

The plans, specifications, and other documents designated in the proposal form, will be considered a part of the proposal.

The prospective bidder shall pay the Department the sum stated in the Invitation for Bids for each set of plans.

February 3, 2011

REVISION OF SECTION 103
COLORADO RESIDENT BID PREFERENCE

Section 103 of the Standard Specifications is hereby revised for this project as follows:

Subsection 103.01 shall include the following:

(a) *Colorado Resident Bid Preference.* A resident bidder shall be allowed a preference against a nonresident bidder from a state or foreign country equal to the preference given or required by the state or foreign country in which the nonresident bidder is a resident.

Resident bidder means:

(1) A person, partnership, corporation, or joint venture which is authorized to transact business in Colorado and which maintains its principal place of business in Colorado: or,

(2) A person, partnership, corporation, or joint venture which is authorized to transact business in Colorado, which maintains a place of business in Colorado, and which has paid Colorado unemployment compensation taxes in at least seventy-five percent of the eight quarters immediately prior to bidding on a construction contract for a public project.

To determine the resident bid preference status of a bidder, the bidder shall submit a completed Form 604 with the proposal. Failure to submit the residency Form with the proposal will be justification for and may result in the rejection of the proposal and forfeiture of the proposal guaranty.

The proposals will be treated as follows:

(1) All proposals will be checked for accuracy by the Department.

(2) The dollar amount of the checked proposal from nonresident bidders will be adjusted by a percentage equal to the percentage preference given or required by the state or foreign country of the bidder's residency. If the state or foreign country does not give or require a residency preference, no adjustment in the proposal dollar amount will be made.

(3) Adjusted proposals from nonresident bidders will then be compared to proposals from resident bidders, and the bidder with the lowest total will be considered the apparent low bidder.

(4) Should a nonresident bidder be the apparent low bidder, in accordance with paragraph (3) above, an award will be made on the basis of the original proposal, not the adjusted proposal.

(5) The Department will proceed with its normal award procedure.

July 31, 2014

REVISION OF SECTION 105
CONSTRUCTION SURVEYING

Section 105 of the Standard Specifications is hereby revised for this project as follows:

In subsection 105.13, delete (a) and replace with the following:

(a) *Contractor Surveying*. When the bid schedule contains pay item 625, Construction Surveying, the Department will provide control points and bench marks as described in the Contract. The Contractor shall furnish and set construction stakes establishing lines and grades in accordance with the provisions of Section 625. The Engineer may order extra surveying which will be paid for at a negotiated rate not to exceed $150 per hour.

In subsection 105.13 (b), delete the sixth paragraph and replace with the following:

The Contractor shall be held responsible for the preservation of all stakes and marks, and if any are destroyed, disturbed or removed by the Contractor, subcontractors, or suppliers, the cost of replacing them will be charged against the Contractor and will be deducted from the payment for the work at a negotiated rate not to exceed $150 per hour.

REVISION OF SECTION 105
DISPUTES AND CLAIMS FOR
CONTRACT ADJUSTMENTS

Section 105 of the Standard Specifications is hereby revised for this project as follows:

Delete subsections 105.22, 105.23 and 105.24 and replace with the following:

105.22 Dispute Resolution. Subsections 105.22, 105.23, and 105.24 detail the process through which the parties (CDOT and the Contractor) agree to resolve any issue that may result in a dispute. The intent of the process is to resolve issues early, efficiently, and as close to the project level as possible. Figure 105-1 in the standard special provisions outlines the process. Specified time frames may be extended by mutual agreement of the Engineer and the Contractor. In these subsections, when a time frame ends on a Saturday, Sunday or holiday, the time frame shall be extended to the next scheduled work day.

A dispute is a disagreement concerning contract price, time, interpretation of the Contract, or all three between the parties at the project level regarding or relating to the Contract. Disputes include, but are not limited to, any disagreement resulting from a delay, a change order, another written order, or an oral order from the Project Engineer, including any direction, instruction, interpretation, or determination by the Project Engineer, interpretations of the Contract provisions, plans, or specifications or the existence of alleged differing site conditions.

The term "merit" refers to the right of a party to recover on a claim or dispute, irrespective of quantum, based on the substance, elements, and grounds of that claim or dispute. The term "quantum" refers to the quantity or amount of compensation or time deserved when a claim or dispute is found to have merit.

Disputes from subcontractors, material suppliers, or any other entity not party to the Contract shall be submitted through the Contractor. Review of a pass-through dispute does not create privity of Contract between CDOT and the subcontractor.

If CDOT does not respond within the specified timelines, the Contractor may advance the dispute to the next level.

When the Project Engineer is a Consultant Project Engineer, actions, decisions, and determinations specified herein as made by the Project Engineer shall be made by the Resident Engineer.

The dispute resolution process set forth in this subsection shall be exhausted in its entirety prior to initiation of litigation or arbitration. Failure to comply with the requirements set forth in this subsection shall bar either party from any further administrative, equitable, or legal remedy. If a deadline is missed that does not prejudice either party, further relief shall be allowed.

All disputes and claims shall be submitted within 30 days of the date of the certified letter submitting the CDOT Form 96, Contractor Acceptance of Final Estimate, to the Contractor.

When a project has a landscape maintenance period, the Project Engineer will grant partial acceptance in accordance with subsection 105.21(a). This partial acceptance will be project acceptance of all the construction work performed prior to this partial acceptance. All disputes and claims related to the work in which this partial acceptance is granted shall be submitted within 30 days of the Project Engineer’s partial acceptance.

Failure to provide notification of a dispute or claim within the time periods listed above releases the State of Colorado from all disputes and claims for which notice has not already been submitted in accordance with the Contract.

All disputes and claims seeking damages calculated on a Total Cost or Modified Total Cost basis will not be considered unless the party asserting such damages establishes all the legal requirements therefore, which include:

(1) The nature of the particular losses makes it impossible or highly impractical to determine them with a reasonable degree of accuracy.

(2) The Contractor's bid or estimate was realistic.

(3) The Contractor's actual costs were reasonable.

(4) The Contractor was not responsible for the cost overrun.

Should the Contractor's dispute use the Total Cost approach for calculating damages, damages will be determined by subtracting the contract amount from the total cost of performance. Should the Contractor's dispute use the Modified Total Cost approach for calculating damages, if the Contractor's bid was unrealistic in part, and/or some of its costs were unreasonable and/or some of its damages were caused by its own errors, those costs and damages will be deducted from the total cost of performance to arrive at the Modified Total Cost. The Total Cost or Modified Total Cost basis for calculating damages shall not be available for any disputes or claims seeking damages where the Contractor could have kept separate cost records at the time the dispute arose as described in subsection 105.22(a).

(a) *Document Retention*. The Contractor shall keep full and complete records of the costs and additional time incurred for each dispute for a period of at least three years after the date of final payment or until dispute is resolved, whichever is more. The Contractor, subcontractors, and lower tier subcontractors shall provide adequate facilities, acceptable to the Engineer, for an audit during normal business hours. The Contractor shall permit the Engineer or Department auditor to examine and copy those records and all other records required by the Engineer to determine the facts or contentions involved in the dispute. The Contractor shall identify and segregate any documents or information that the Contractor considers particularly sensitive, such as confidential or proprietary information.

Throughout the dispute, the Contractor and the Project Engineer shall keep complete daily records of extra costs and time incurred, in accordance with the following procedures:

1. Daily records shall identify each operation affected, the specific locations where work is affected, and the potential effect to the project's schedule. Such records shall also reflect all labor, material, and equipment applicable to the affected operations.
2. On the first work day of each week following the date of the written notice of dispute, the Contractor shall provide the Project Engineer with the daily records for the preceding week. If the Contractor's records indicate costs greater than those kept by the Department, the Project Engineer will meet with the Contractor and present his records to the Contractor at the meeting. The Contractor shall notify the Engineer in writing within three work days of any inaccuracies noted in, or disagreements with, the Department's records.

(b) *Initial Dispute Resolution Process*. To initiate the dispute resolution process the Contractor shall provide a written notice of dispute to the Project Engineer upon the failure of the Parties to resolve the issue through negotiation. Disputes will not be considered unless the Contractor has first complied with specified issue resolution processes such as those specified in subsections 104.02, 106.05, 108.08(a), and 108.08(d).

The Contractor shall supplement the written notice of dispute within 15 days with a written Request for Equitable Adjustment (REA) providing the following:

(1) The date of the dispute

(2) The nature of the circumstances which caused the dispute

(3) A statement explaining in detail the specific provisions of the Contract and any basis, legal or factual, which support the dispute.

(4) If any, the estimated quantum, calculated in accordance with methods set forth in subsection 105.24(b)12., of the dispute with supporting documentation

(5) An analysis of the progress schedule showing the schedule change or disruption if the Contractor is asserting a schedule change or disruption.

The Contractor shall submit as much information on the quantum and impacts to the Contract time as is reasonably available with the REA and then supplement the REA as additional information becomes available. If the dispute escalates to the DRB process the DRB shall not hear any issue or consider any information that was not contained in the Request for Equitable Adjustment and fully submitted to the Project Engineer and Resident Engineer during the 105.22 process.

(c) *Project Engineer Review*. Within 15 days after receipt of the REA, the Project Engineer will meet with the Contractor to discuss the merits of the dispute. Within seven days after this meeting, the Project Engineer will issue a written decision on the merits of the dispute.

The Project Engineer will either deny the merits of the dispute or notify the Contractor that the dispute has merit. This determination will include a summary of the relevant facts, Contract provisions supporting the determination, and an evaluation of all scheduling issues that may be involved.

If the dispute is determined to have merit, the Contractor and the Project Engineer will determine the adjustment in payment, schedule, or both within 30 days. When a satisfactory adjustment is determined, it shall be implemented in accordance with subsections 106.05, 108.08, 109.04, 109.05 or 109.10 and the dispute is resolved.

If the Contractor accepts the Project Engineer's denial of the merits of the dispute, the dispute is resolved and no further action will be taken. If the Contractor does not respond in seven days, it will be assumed he has accepted the denial. If the Contractor rejects the Project Engineer's denial of the merits of the dispute or a satisfactory adjustment of payment or schedule cannot be agreed upon within 30 days, the Contractor may further pursue resolution of the dispute by providing written notice to the Resident Engineer within seven days, according to subsection 105.22(d).

(d) *Resident Engineer Review.* Within seven days after receipt of the Contractor's written notice to the Resident Engineer of unsatisfactory resolution of the dispute, the Project Engineer and Resident Engineer will meet with the Contractor to discuss the dispute. Meetings shall continue weekly for a period of up to 30 days and shall include a Contractor's representative with decision authority above the project level.

If these meetings result in resolution of the dispute, the resolution will be implemented in accordance with subsections 108.08, 109.04, 109.05, or 109.10 and the dispute is resolved.

If these meetings do not result in a resolution or the participants mutually agree that they have reached an impasse, the dispute shall be presented to the Dispute Review Board in accordance with subsection 105.23.

105.23 Dispute Review Board. A Dispute Review Board (DRB) is an independent third party that will provide specialized expertise in technical areas and administration of construction contracts. The DRB will assist in and facilitate the timely and equitable resolution of disputes between CDOT and the Contractor in an effort to avoid animosity and construction delays, and to resolve disputes as close to the project level as possible. The DRB shall be established and operate as provided herein and shall serve as an independent and impartial board.

There are two types of DRBs: the "On Demand DRB" and the "Standing DRB". The DRB shall be an "On Demand DRB" unless a "Standing DRB" is specified in the Contract. An On Demand DRB shall be established

only when the Project Engineer initiates a DRB review in accordance with subsection 105.23(a). A Standing DRB, when specified in the Contract, shall be established at the beginning of the project.

(a) *Initiation of Dispute Review Board Review*. When a dispute has not been resolved in accordance with subsection 105.22, the Project Engineer will initiate the DRB review process within 5 days after the period described in subsection 105.22(d).

(b) *Formation of Dispute Review Board*. DRBs will be established in accordance with the following procedures:

1. CDOT, in conjunction with the Colorado Contractors Association, will maintain a statewide list of suggested DRB candidates experienced in construction processes and the interpretation of contract documents and the resolution of construction disputes. The Board members shall be experienced in highway and transportation projects. After December 31, 2013 only individuals who have completed training (currently titled DRB Administration & Practice Training) through the Dispute Resolution Board Foundation or otherwise approved by CDOT can be a DRB member. When a DRB is formed, the parties shall execute the agreement set forth in subsection 105.23(l).

2. If the dispute has a value of $250,000 or less, the On Demand DRB shall have one member. The Contractor and CDOT shall select the DRB member and execute the agreement within 30 days of initiating the DRB process. If the parties do not agree on the DRB member, each shall select five candidates. Each party shall numerically rank their list using a scale of one to five with one being their first choice and five being their last choice. If common candidates are listed, but the parties cannot agree, that common candidate with the lowest combined numerical ranking shall be selected. If there is no common candidate, the lists shall be combined and each party shall eliminate three candidates from the list. Each party shall then numerically rank the remaining candidates, with No. 1 being the first choice. The candidate with the lowest combined numerical ranking shall be the DRB member. The CDOT Project Engineer will be responsible for having all parties execute the agreement.

3. If the dispute has a value over $250,000, the On Demand DRB shall have three members. The Contractor and CDOT shall each select a member and those two members shall select a third. Once the third member is approved the three members will nominate one of them to be the Chair and execute the agreement within 45 days of initiating the DRB process.

4. The Standing DRB shall always have three members. The Contractor and CDOT shall each select a member and those two members shall select a third member. Once the third member is approved the three members will nominate one of them to be the Chair.. The Contractor and CDOT shall submit their proposed Standing DRB members within 5 days of execution of the Contract. The third member shall be selected within 15 days of execution of the Contract. Prior to construction starting the parties shall execute the Three Party Agreement. The CDOT Project Engineer will be responsible for having all parties execute the agreement. The Project Engineer will invite the Standing DRB members to the Preconstruction and any Partnering conferences.

5. DRB members shall not have been involved in the administration of the project under consideration. DRB candidates shall disclose to the parties the following relationships:

   (1) Prior employment with either party
   (2) Prior or current financial interests or ties to either party
   (3) Prior or current professional relationships with either party
   (4) Anything else that might bring into question the impartiality or independence of the DRB member
   (5) Prior to agreeing to serve on a DRB, members shall notify all parties of any other CDOT DRB's they are serving or that they will be participating in another DRB.

   If either party objects to the selection of a potential DRB member based on the disclosures of the potential member, that potential member shall not be placed on the Board.

6. There shall be no ex parte communications with the DRB at any time.

7. The service of a Board member may be terminated only by written agreement of both parties.

8. If a Board member resigns, is unable to serve, or is terminated, a new Board member shall be selected within four weeks in the same manner as the Board me member who was removed was originally selected.

(c) *Additional Responsibilities of the Standing Disputes Review Board*

1. General. Within 120 days after the establishment of the Board, the Board shall meet at a mutually agreeable location to:

   (1) Obtain copies of the Contract documents and Contractor's schedules for each of the Board members.
   (2) Agree on the location of future meetings, which shall be reasonably close to the project site.
   (3) Establish an address and telephone number for each Board member for the purposes of Board business.

2. Regular meetings. Regular meetings of the Board shall be held approximately every 120 to 180 days throughout the life of the Contract, except that this schedule may be modified to suit developments on the job as the work progresses. Regular meetings shall be attended by representatives of the Contractor and the Department.

3. The Board shall establish an agenda for each meeting which will cover all items that the Board considers necessary to keep it abreast of the project such as construction status, schedule, potential problems and solutions, status of past claims and disputes, and potential claims and disputes. Copies of each agenda shall be submitted to the Contractor and the Department at least seven days before the meeting date. Oral or written presentations or both shall be made by the Contractor and the Department as necessary to give the Board all the data the Board requires to perform its functions. The Board will prepare minutes of each meeting, circulate them to all participants for comments and approval, and issue revised minutes before the next meeting. As a part of each regular meeting, a field inspection trip of all active segments of the work at the project site may be made by the Board, the Contractor, and the Department.

4. Advisory Opinions

   (1) Advisory opinions are typically used soon after the parties find they have a potential dispute and have conducted preliminary negotiations but before expenditure of additional resources and hardening their positions. Advisory opinions provide quick insight into the DRB's likely assessment of the dispute. This process is quick and may be entirely oral and does not prejudice the opportunity for a DRB hearing.
   (2) Both parties must agree to seek an advisory opinion and so notify the chairperson. The procedure for requesting and issuing advisory opinions should be discussed with the DRB at the first meeting with the parties.
   (3) The DRB may or may not issue a written opinion, but if a written advisory opinion is issued, it must be at the specific request of both parties.
   (4) The opinion is only advisory and does not require an acceptance or rejection by either party. If the dispute is not resolved and a hearing is held, the oral presentations and advisory opinion are completely disregarded and the DRB hearing procedure is followed.
   (5) Advisory opinions should be limited to merit issues only.

(d) *Arranging a Dispute Review Board Hearing*. When the Project Engineer initiates the DRB review process, the Project Engineer will:

1. Contact the Contractor and the DRB to coordinate an acceptable hearing date and time. The hearing shall be held at the Resident Engineer's office unless an alternative location is agreed to by both parties. Unless otherwise agreed to by both parties the DRB hearing will be held within 30 days after the DRB agreement is signed by the CDOT Chief Engineer.
2. Ensure DRB members have copies of all documents previously prepared by the Contractor and CDOT pertaining to the dispute, the DRB request, the Contract documents, and the special provisions at least two weeks before the hearing.

(e) *Pre-Hearing Submittal*: At least fifteen days prior to the hearing, CDOT and the Contractor shall submit by e-mail to the DRB Chairperson their parties pre-hearing position paper. The DRB Chairperson shall simultaneously distribute by e-mail the pre-hearing position papers to all parties and other DRB members, if any. At the same time, each party shall submit a copy of all its supporting documents to be used at the hearing to all DRB Members and the other party unless the parties have agreed to a common set of documents as discussed in #2 below. In this case, CDOT shall submit the common set of documents to the Board and the Contractor. The pre-hearing position paper shall contain the following:

1. A joint statement of the dispute, and the scope of the desired decision. The joint statement shall summarize in a few sentences the nature of the dispute. If the parties are unable to agree on the wording of the joint statement, each party's position paper shall contain both statements, and identify the party authoring each statement. The parties shall agree upon a joint statement at least 20 days prior to the hearing and submit it to the DRB or each party's independent statement shall be submitted to the DRB and the other party at least 20 days prior to the hearing.

2. The basis and justification for the party's position, with reference to specific contract language and other supporting documents for each element of the dispute. To minimize duplication and repetitiveness, the parties may identify a common set of documents that will be referred to by both parties and submit them in a separate package to the DRB. The engineer will provide a hard copy of the project plans and Project and Standard Special Provisions, if necessary, to the DRB. Other standard CDOT documents such as Standard Specifications and M&S Standards are available on the CDOT website.

   (1) If any party contends that they are not necessary to the proceedings, the DRB shall determine that issue in the first instance. Should the DRB determine that a dispute does not involve a party, that party shall be relieved from participating in the DRB hearing and paying any further DRB costs.
   (2) When the scope of the hearing includes quantum, the requesting party's position paper shall include full cost details, calculated in accordance with methods set forth in subsection 105.24(b)12. The Scope of the hearing will not include quantum if CDOT has ordered an audit and that audit has not been completed.

3. A list of proposed attendees at the hearing. In the event of any disagreement, the DRB shall make the final determination as to who attends the hearing.

4. A list of any intended experts including their qualifications and a summary of what their presentation will include and an estimate of the length of the presentation.

The number of copies, distribution requirements, and time for submittal shall be established by the DRB and communicated to the parties by the Chairperson.

A pre-hearing phone conference with all DRB members and the parties shall be conducted as soon as a hearing date is established but no later than 10 days prior to the hearing. The DRB Chairperson shall explain the specifics of how the hearing will be conducted including how the two parties will present their information to the DRB (Ex: Each party makes a full presentation of their position or presentations will be made on a "point by point" basis with each party making a presentation only on an individual dispute issue before moving onto to the next issue). If the pre-hearing position papers and documents have been received by the Board prior to the conference call, the DRB Chairperson shall at this conference discuss the estimated hours of review and research activities for this dispute (such as time spent evaluating and preparing recommendations on specific issues presented to the DRB). If the pre-hearing position papers and documents have not been received by the Board prior to the conference call, another conference call will be scheduled during the initial conference call to discuss the estimated hours of review. Compensation for time agreed to in advance by the parties will be made at an agreed rate of $125 per hour in accordance with subsection 105.23 (k) 2. Compensation for the phone conference time will also be made at an agreed to rate of $125 per hour in accordance with subsection 105.23 (k) 2. The Engineer shall coordinate the phone conference.

(f) *Dispute Review Board Hearing.* The DRB shall preside over a hearing. The chairperson shall control the hearing and conduct it as follows:

1. An employee of CDOT presents a brief description of the project and the status of construction on the project.
2. The party that requested the DRB presents the dispute in detail as supported by previously submitted information and documentation in the pre-hearing position paper. No new information or disputes will be heard or addressed by the DRB.
3. The other party presents its position in detail as supported by previously submitted information and documentation in the pre-hearing position paper. No new information or disputes will be heard or addressed by the DRB.
4. Employees of each party are responsible for leading presentations at the DRB hearing.
5. Attorneys shall not participate in the hearing unless the DRB specifically addresses an issue to them or unless agreed to by both parties. Should the parties disagree on attorney participation, the DRB shall decide on what, if any, participation will be permitted. Attorneys representing the parties are permitted to attend the hearing, provided their presence has been noted in the pre-hearing submittal.
6. Either party may use experts. A party intending to offer an outside expert's analysis at the hearing shall disclose such intention in the pre-hearing position paper. The expert's name and a general statement of the area of the dispute that will be covered by his presentation shall be included in the disclosure. The other party may present an outside expert to address or respond to those issues that may be raised by the disclosing party's outside expert.
7. If both parties approve, the DRB may retain an outside expert. The DRB chairperson shall include the cost of the outside expert in the DRB's regular invoice. CDOT and the Contractor shall equally bear the cost of the services of the outside expert employed by the DRB.
8. Upon completion of their presentations and rebuttals, both parties and the DRB will be provided the opportunity to exchange questions and answers. All questions shall be directed to the chairperson first. Attendees may respond only when board members request a response.
9. The DRB shall hear only those disputes identified in the written request for the DRB and the information contained in the pre-hearing submittals. The board shall not hear or address other disputes. If either party attempts to discuss a dispute other than those to be heard by the DRB or attempts to submit new information, the chairperson shall inform such party that the board shall not hear the issue and shall not accept any additional information. The DRB shall not hear any issue or consider any information that was not contained in the Request for Equitable Adjustment and fully submitted to the Project Engineer and Resident Engineer during the 105.22 process.
10. If either party fails to timely deliver a position paper, the DRB may reschedule the hearing one time. On the final date and time established for the hearing, the DRB shall proceed with the hearing using the information that has been submitted.
11. If a party fails to appear at the hearing, the DRB shall proceed as if all parties were in attendance.

(g) *Dispute Review Board Recommendation*. The DRB shall issue a Recommendation in accordance with the following procedures:

1. The DRB shall not make a recommendation on the dispute at the meeting. Prior to the closure of the hearing, the DRB members and the Contractor and CDOT together will discuss the time needed for analysis and review of the dispute and the issuance of the DRB's recommendation. The maximum time shall be 30 days unless otherwise agreed to by both parties. At a minimum, the recommendation shall contain all the elements listed in Rule 35, Form of Award, of the Arbitration Regular Track Provisions listed at the end of subsection 105.24.

2. After the meeting has been closed, the DRB shall prepare a written Recommendation signed by each member of the DRB. In the case of a three member DRB, where one member dissents that member shall prepare a written dissent and sign it.

3. The chairperson shall transmit the signed Recommendation and any supporting documents to both parties.

(h) *Clarification and Reconsideration of Recommendation.* Either party may request clarification or reconsideration of a decision within ten days following receipt of the Recommendation. Within ten days after receiving the request, the DRB shall provide written clarification or reconsideration to both parties unless otherwise agreed to by both parties.

Requests for clarification or reconsideration shall be submitted in writing simultaneously to the DRB and to the other party.

The Board shall not accept requests for reconsideration that amount to a renewal of a prior argument or additional argument based on facts available at the time of the hearing. The Board shall not consider any documents or arguments which have not been made a part of the pre-hearing submittal other than clarification and data supporting previously submitted documentation.

Only one request for clarification or reconsideration per dispute from each party will be allowed.

(i) *Acceptance or Rejection of Recommendation.* CDOT and the Contractor shall submit their written acceptance or rejection of *the* Recommendation, in whole or in part, concurrently to the other party and to the DRB within 14 days after receipt of the Recommendation or following receipt of responses to requests for clarification or reconsideration.

If the parties accept the Recommendation or a discreet part thereof, it will be implemented in accordance with subsections 108.08, 109.04, 109.05, or 109.10 and the dispute is resolved.

If either party rejects the Recommendation in whole or in part, it shall give written explanation to the other party within 14 days after receiving the Recommendation. When the Recommendation is rejected in whole or in part by either party, the other party may either abandon the dispute or pursue a formal claim in accordance with subsection 105.24.

If either party fails to submit its written acceptance or rejection of the Dispute Board’s recommendation, according to these specifications, such failure shall constitute that party’s acceptance of the Board’s recommendation.

(j) *Admissibility of Recommendation*. Recommendations of a DRB issued in accordance with subsection 105.23 are admissible in subsequent proceedings but shall be prefaced with the following paragraph:

This Recommendation may be taken under consideration with the understanding that:

1. The DRB Recommendation was a proceeding based on presentations by the parties.

2. No fact or expert witnesses presented sworn testimony or were subject to cross-examination.

3. The parties to the DRB were not provided with the right to any discovery, such as production of documents or depositions.

4. There is no record of the DRB hearing other than the Recommendation.

(k) *Cost and Payments.*

1. General Administrative Costs. The Contractor and the Department shall equally share the entire cost of the following to support the Board's operation:

   (1) Copies of Contract and other relevant documentation
   (2) Meeting space and facilities
   (3) Secretarial Services

(4) Telephone

(5) Mail

(6) Reproduction

(7) Filing

2. The Department and the Contractor shall bear the costs and expenses of the DRB equally. Each DRB board member shall be compensated at an agreed rate of $1,200 per day if time spent on-site per meeting is greater than four hours. Each DRB board member shall be compensated at an agreed rate of $800 per day if time spent on-site per meeting is less than or equal to four hours. The time spent traveling to and from each meeting shall be reimbursed at $50 per hour if the travel distance is more than 50 miles. The agreed daily and travel time rates shall be considered full compensation for on-site time, travel expenses, transportation, lodging, time for travel of more than 50 miles and incidentals for each day, or portion thereof that the DRB member is at an authorized DRB meeting. No additional compensation will be made for time spent by DRB members in review and research activities outside the official DRB meetings unless that time, (such as time spent evaluating and preparing recommendations on specific issues presented to the DRB), has been specifically agreed to in advance by the Department and Contractor. Time away from the project that has been specifically agreed to in advance by the parties will be compensated at an agreed rate of $125 per hour. The agreed amount of $125 per hour shall include all incidentals. Members serving on more than one DRB, regardless of the number of meetings per day, shall not be paid more than the all-inclusive rate per day or rate per hour for an individual project.

3. Payments to Board Members and General Administrative Costs. Each Board member shall submit an invoice to the Contractor for fees and applicable expenses incurred each month following a month in which the Board members participated in Board functions. Such invoices shall be in the format established by the Contractor and the Department. The Contractor shall submit to the Department copies of all invoices. No markups by the Contractor will be allowed on any DRB costs. The Department will split the cost by authorizing 50 percent payment on the next progress payment. The Contractor shall make all payments in full to Board members within seven calendar days after receiving payment from the Department for this work.

(l) *Dispute Review Board Three Party Agreement.*

DISPUTE REVIEW BOARD
THREE PARTY AGREEMENT
COLORADO PROJECT NO.

THIS THREE PARTY AGREEMENT, made as of the date signed by the Chief Engineer below, by and between: the Colorado Department of Transportation, hereinafter called the "Department"; and

_____,
hereinafter called the "Contractor"; and

_____,
_____,
_____,
and

_____,
hereinafter called the "Dispute Review Board" or "Board".

WHEREAS, the Department is now engaged in the construction of the
_____[Project Name]_____

and

WHEREAS, the Contract provides for the establishment of a Board in accordance with subsections 105.22 and 105.23 of the specifications.

NOW, THEREFORE, it is hereby agreed:

ARTICLE I
DESCRIPTION OF WORK AND SERVICES

The Department and the Contractor shall form a Board in accordance with this agreement and the provisions of subsection 105.23.

ARTICLE II
COMMITMENT ON PART OF THE PARTIES HERETO

The parties hereto shall faithfully fulfill the requirements of subsection 105.23 and the requirements of this agreement.

ARTICLE III
COMPENSATION

The parties shall share equally in the cost of the Board, including general administrative costs (meeting space and facilities, secretarial services, telephone, mail, reproduction, filing) and the member's individual fees. Reimbursement of the Contractor's share of the Board expenses for any reason is prohibited.

The Contractor shall make all payments in full to Board members. The Contractor will submit to the Department an itemized statement for all such payments, and the Department will split the cost by including 50 percent payment on the next progress payment. The Contractor and the Department will agree to accept invoiced costs prior to payment by the Contractor.

DISPUTE REVIEW BOARD
THREE PARTY AGREEMENT PAGE 2
COLORADO PROJECT NO.

Board members shall keep all fee records pertaining to this agreement available for inspection by representatives of the Department and the Contractor for a period of three years after the termination of the Board members' services.

Payment to each Board member shall be at the fee rates established in subsection 105.23 and agreed to by each Board member, the Contractor, and the Department. In addition, reimbursement will be made for applicable expenses.

Each Board member shall submit an invoice to the Contractor for fees incurred each month following a month in which the members participated in Board functions. Such invoices shall be in the format established by the Contractor and the Department.

Payments shall be made to each Board member within 60 days after the Contractor and Department have received all the applicable billing data and verified the data submitted by that member. The Contractor shall make payment to the Board member within seven calendar days of receipt of payment from the Department.

ARTICLE IV
ASSIGNMENT

Board members shall not assign any of the work to be performed by them under this agreement. Board members shall disclose any conflicts of interest including but not limited to any dealings with the either party in the previous five years other than serving as a Board member under other contracts.

ARTICLE V
COMMENCEMENT AND TERMINATION OF SERVICES

The commencement of the services of the Board shall be in accordance with subsection 105.23 of the specifications and shall continue until all assigned disputes under the Contract which may require the Board's services have been heard and a Recommendation has been issued by the Board as specified in subsection 105.23. If a Board member is unable to fulfill his responsibilities for reasons specified in subsection 105.23(b)7, he shall be replaced as provided therein, and the Board shall fulfill its responsibilities as though there had been no change.

ARTICLE VI
LEGAL RELATIONS

The parties hereto mutually agree that each Board member in performance of his duties on the Board is acting as an independent contractor and not as an employee of either the Department or the Contractor. Board members will guard their independence and avoid any communication about the substance of the dispute without both parties being present.

The Board members are absolved of any personal liability arising from the Recommendations of the Board. The parties agree that members of the dispute review board panel are acting as mediators for purposes of C.R.S. § 13-22-302(4) and, as such, the liability of any dispute review board member shall be limited to willful and wanton misconduct as provided for in C.R.S. § 13-22-305(6)

DISPUTE REVIEW BOARD
THREE PARTY AGREEMENT PAGE 3
COLORADO PROJECT NO.

IN WITNESS HEREOF, the parties hereto have caused this agreement to be executed the day and year first written above.

BOARD MEMBER: _____.

BY: _____.

BOARD MEMBER: _____.

BY: _____.

BOARD MEMBER: _____.

BY: _____.

CONTRACTOR: _____.

BY: _____.
TITLE:

COLORADO DEPARTMENT OF TRANSPORTATION

BY: _____ Date: _____.
TITLE: CHIEF ENGINEER

105.24 Claims for Unresolved Disputes. The Contractor may file a claim only if the disputes resolution process described in subsections 105.22 and 105.23 has been exhausted without resolution of the dispute. Other methods of nonbinding dispute resolution, exclusive of arbitration and litigation, can be used if agreed to by both parties.

This subsection applies to any unresolved dispute or set of disputes between CDOT and the Contractor with an aggregate value of more than $15,000. Unresolved disputes with an aggregate value of more than $15,000 from subcontractors, materials suppliers or any other entity not a party to the Contract shall be submitted through the Contractor in accordance with this subsection as a pass-through claim. Review of a pass-through claim does not create privity of Contract between CDOT and any other entity.

Subsections 105.22, 105.23 and 105.24 provide both contractual alternative dispute resolution processes and constitute remedy-granting provisions pursuant to Colorado Revised Statutes which must be exhausted in their entirety.

Merit-binding arbitration or litigation proceedings must commence within 180-calendar days of the Chief Engineer's decision, absent written agreement otherwise by both parties.

The venue for all unresolved disputes with an aggregate value $15,000 or less shall be the County Court for the City and County of Denver.

Non-binding Forms of alternative dispute resolution such as Mediation are available upon mutual agreement of the parties for all claims submitted in accordance with this subsection.

The cost of the non-binding ADR process shall be shared equally by both parties with each party bearing its own preparation costs. The type of nonbinding ADR process shall be agreed upon by the parties and shall be conducted within the State of Colorado at a mutually acceptable location. Participation in a nonbinding ADR

process does not in any way waive the requirement that merit-binding arbitration or litigation proceedings must commence within 180-calendar days of the Chief Engineer's decision, absent written agreement otherwise by both parties.

(a) *Notice of Intent to File a Claim*.

Within 30 days after rejection of the Dispute Resolution Board's Recommendation issued in accordance with subsection 105.23, the Contractor shall provide the Region Transportation Director with a written notice of intent to file a claim. The Contractor shall also send a copy of this notice to the Resident Engineer. For the purpose of this subsection Region Transportation Director shall mean the Region Transportation Director or the Region Transportation Director's designated representative. CDOT will acknowledge in writing receipt of Notice of Intent within 7 days.

(b) *Claim Package Submission*. Within 60 days after submitting the notice of intent to file a claim, the Contractor shall submit five copies of a complete claim package representing the final position the Contractor wishes to have considered. All claims shall be in writing and in sufficient detail to enable the RTD to ascertain the basis and amount of claim. The claim package shall include all documents supporting the claim, regardless of whether such documents were provided previously to CDOT.

If requested by the Contractor the 60 day period may be extended by the RTD in writing prior to final acceptance. As a minimum, the following information shall accompany each claim.

1. A claim certification containing the following language, as appropriate:

A. For a direct claim by the Contractor:

CONTRACTOR'S CLAIM CERTIFICATION

Under penalty of law for perjury or falsification, the undersigned,_____(name)_____, (title)_____, of _____(company)_____, hereby certifies that the claim of $_____for extra compensation and ____ Days additional time, made herein for work on this contract is true to the best of my knowledge and belief and supported under the Contract between the parties.

This claim package contains all available documents that support the claims made herein and I understand that no additional information, other than for clarification and data supporting previously submitted documentation, may be presented by me.

Dated _____/s/_____

Subscribed and sworn before me this __ day of_____.

_____

NOTARY PUBLIC

My Commission Expires: _____

B. For a pass-through claim:

PASS-THROUGH CLAIM CERTIFICATION

Under penalty of law for perjury or falsification, the undersigned,_____(name)_____, (title)_____, of _____(company)_____, hereby certifies that the claim of $_____ for extra compensation and ____ Days additional time, made herein for work on this Project is true to the best of my knowledge and belief and supported under the contract between the parties.

This claim package contains all available documents that support the claims made herein and I understand that no additional information, other than for clarification and data supporting previously submitted documentation, may be presented by me.

Dated _____/s/_____

Subscribed and sworn before me this __day of _____ .

_____ NOTARY PUBLIC

My Commission Expires: _____

Dated _____/s_____

The Contractor certifies that the claim being passed through to CDOT is passed through in good faith and is accurate and complete to the best of my knowledge and belief.

Dated _____/s/_____

Subscribed and sworn before me this __ day of _____.

_____ NOTARY PUBLIC

My Commission Expires: _____

2. A detailed factual statement of the claim for additional compensation, time, or both, providing all necessary dates, locations, and items of work affected by the claim. The Contractor's detailed factual statement shall expressly describe the basis of the claim and factual evidence supporting the claim. This requirement is not satisfied by simply incorporating into the claim package other documents that describe the basis of the claim and supporting factual evidence.
3. The date on which facts were discovered which gave rise to the claim.
4. The name, title, and activity of all known CDOT, Consultant, and other individuals who may be knowledgeable about facts giving rise to such claim.
5. The name, title, and activity of all known Contractor, subcontractor, supplier and other individuals who may be knowledgeable about facts giving rise to such claim.
6. The specific provisions of the Contract, which support the claim and a statement of the reasons why such provisions support the claim.
7. If the claim relates to a decision of the Project Engineer, which the Contract leaves to the Project Engineer's discretion, the Contractor shall set out in detail all facts supporting its position relating to the decision of the Project Engineer.
8. The identification of any documents and the substance of all oral communications that support the claim.
9. Copies of all known documents that support the claim.
10. The Dispute Review Board Recommendation.
11. If an extension of contract time is sought, the documents required by subsection 108.08(d).
12. If additional compensation is sought, the exact amount sought and a breakdown of that amount into the following categories:

    A. These categories represent the only costs that are recoverable by the Contractor. All other costs or

categories of costs are not recoverable:

(1) Actual wages and benefits, including FICA, paid for additional labor
(2) Costs for additional bond, insurance and tax
(3) Increased costs for materials
(4) Equipment costs calculated in accordance with subsection 109.04(c) for Contractor owned equipment and based on certified invoice costs for rented equipment
(5) Costs of extended job site overhead
(6) Salaried employees assigned to the project
(7) Claims from subcontractors and suppliers at any level (the same level of detail as specified herein is required for all such claims)
(8) An additional 16 percent will be added to the total of items (1) through (7) as compensation for items for which no specific allowance is provided, including profit and home office overhead.
(9) Interest shall be paid in accordance with CRS 5-12-102 beginning from the date of the Notice of Intent to File Claim

B. In adjustment for the costs as allowed above, the Department will have no liability for the following items of damages or expense:

(1) Profit in excess of that provided in 12.A.(8) above
(2) Loss of Profit
(3) Additional cost of labor inefficiencies in excess of that provided in A. above
(4) Home office overhead in excess of that provided in A. above
(5) Consequential damages, including but not limited to loss of bonding capacity, loss of bidding opportunities, and insolvency
(6) Indirect costs or expenses of any nature in excess of that provided in A. above
(7) Attorney's fees, claim preparation fees, and expert fees

(c) *Audit.* An audit may be performed by the Department for any dispute or claim, and is mandatory for all disputes and claims with amounts greater than $250,000. All audits will be complete within 60 days of receipt of the complete claim package, provided the Contractor allows the auditors reasonable and timely access to the Contractor's books and records. For all claims with amounts greater than $250,000 the Contractor shall submit a copy of certified claim package directly to the CDOT Audit Unit at the following address:

Division of Audit
4201 E. Arkansas Ave
Denver, Co. 80222

(d) *Region Transportation Director Decision*. When the Contractor properly files a claim, the RTD will review the claim and render a written decision to the Contractor to either affirm or deny the claim, in whole or in part, in accordance with the following procedure.

The RTD may consolidate all related claims on a project and issue one decision, provided that consolidation does not extend the time period within which the RTD is to render a decision. Consolidation of unrelated claims will not be made.

The RTD will render a written decision to the Contractor within 60 days after the receipt of the claim package or receipt of the audit whichever is later. In rendering the decision, the RTD: (1) will review the information in the Contractor's claim; (2) will conduct a hearing if requested by either party; and (3) may consider any other information available in rendering a decision.

The RTD will assemble and maintain a claim record comprised of all information physically submitted by the Contractor in support of the claim and all other discoverable information considered by the RTD in reaching a decision. Once the RTD assembles the claim record, the submission and consideration of additional information, other than for clarification and data supporting previously submitted documentation, at any subsequent level of review by anyone, will not be permitted.

The RTD will provide a copy of the claim record and the written decision to the Contractor describing the information considered by the RTD in reaching a decision and the basis for that decision. If the RTD fails to render a written decision within the 60 day period, or within any extended time period as agreed to by both parties, the Contractor shall either: (1) accept this as a denial of the claim, or (2) appeal the claim to the Chief Engineer, as described in this subsection.

If the Contractor accepts the RTD decision, the provisions of the decision shall be implemented in accordance with subsections 108.08, 109.04, 109.05, or 109.10 and the claim is resolved.

If the Contractor disagrees with the RTD decision, the Contractor shall either: (1) accept the RTD decision as final, or (2) file a written appeal to the Chief Engineer within 30 days from the receipt of the RTD decision. The Contractor hereby agrees that if a written appeal is not properly filed, the RTD decision is final.

(e) *Chief Engineer Decision*. When a claim is appealed, the RTD will provide the claim record to the Chief Engineer. Within 15 days of the appeal either party may submit a written request for a hearing with the Chief Engineer or duly authorized Headquarters delegates. The Chief Engineer or a duly authorized Headquarters delegate will review the claim and render a decision to affirm, overrule, or modify the RTD decision in accordance with the following.

The Contractor's written appeal to the Chief Engineer will be made a part of the claim record.

The Chief Engineer will render a written decision within 60 days after receiving the written appeal. The Chief Engineer will not consider any information that was not previously made a part of the claim record, other than clarification and data supporting previously submitted documentation.

The Contractor shall have 30 days to accept or reject the Chief Engineer's decision. The Contractor shall notify the Chief Engineer of its acceptance or rejection in writing.

If the Contractor accepts the Chief Engineer's decision, the provisions of the decision will be implemented in accordance with subsections 108.08, 109.04, 109.05, or 109.10 and the claim is resolved.

If the Contractor disagrees with the Chief Engineer's decision, the Contractor shall either (1) pursue an alternative dispute resolution process in accordance with this specification or (2) initiate litigation or merit binding arbitration in accordance with subsection 105.24(f).

If the Chief Engineer does not issue a decision as required, the Contractor may immediately initiate either litigation or merit binding arbitration in accordance with subsection 105.24(f).

For the convenience of the parties to the Contract it is mutually agreed by the parties that any merit binding arbitration or De Novo litigation shall be brought within 180-calendar days from the date of the Chief Engineer's decision. The parties understand and agree that the Contractor's failure to bring suit within the time period provided, shall be a complete bar to any such claims or causes of action.

(f) *De Novo Litigation or Merit Binding Arbitration*. If the Contractor disagrees with the Chief Engineer's decision, the Contractor may initiate de novo litigation or merit binding arbitration to finally resolve the claim that the Contractor submitted to CDOT, depending on which option was selected by the Contractor on Form 1378 which shall be submitted at the preconstruction conference. Such litigation or arbitration shall be strictly limited to those claims that were previously submitted and decided in the contractual dispute and claims processes outlined herein. This does not preclude the joining in one litigation or arbitration of multiple claims from the same project provided that each claim has gone through the dispute and claim process specified in subsections 105.22 through 105.24. The parties may agree, in writing, at any time, to pursue some other form of alternative dispute resolution.

Any offer made by the Contractor or the Department at any stage of the claims process, as set forth in this subsection, shall be deemed an offer of settlement pursuant to Colorado Rule of Evidence 408 and therefore inadmissible in any litigation or arbitration.

If the Contractor selected litigation, then de novo litigation shall proceed in accordance with the Colorado Rules of Civil Procedure and the proper venue is the Colorado State District Court in and for the City and County of Denver, unless both parties agree to the use of arbitration.

If the Contractor selected merit binding arbitration, or if both parties subsequently agreed to merit binding arbitration, arbitration shall be governed by the modified version of ARBITRATION PROVIDER's Construction Industry Arbitration Rules which follow. Pursuant to the modified arbitration rules (R35 through R39), the arbitrators shall issue a binding decision with regard to entitlement and a non-binding decision with regard to quantum. If either party disagrees with the decision on quantum, the disagreeing party may seek a trial de novo in Denver District Court with regard to quantum only.

AMERICAN ARBITRATION ASSOCIATION CONSTRUCTION INDUSTRY ARBITRATION RULES MODIFIED FOR USE WITH CDOT SPECIFICATION SUBSECTION 105.24

REGULAR TRACK PROCEDURES

R-1. Agreement of Parties

(a) The parties shall be deemed to have made these rules a part of their Contract. These rules and any amendments shall apply in the form in effect at the time the administrative requirements are met for a demand

for arbitration. The parties, by written agreement, may vary the procedures set forth in these rules. After appointment of the arbitrator, such modifications may be made only with the consent of the arbitrator.

(b) Unless the parties determine otherwise, the Fast Track Procedures shall apply in any case in which aggregate claims do not exceed $100,000, exclusive of interest and arbitration fees and costs. Parties may also agree to use these procedures in larger cases. Unless the parties agree otherwise, these procedures will not apply in cases involving more than two parties except for pass-through claims. The Fast Track Procedures shall be applied as described in Sections F-1 through F-13 of these rules, in addition to any other portion of these rules that is not in conflict with the Fast Track Procedures.

(c) Unless the parties agree otherwise, the Procedures for Large, Complex Construction Disputes shall apply to all cases in which the disclosed aggregate claims of any party is at least $1,000,000, exclusive of claimed interest, arbitration fees and costs. Parties may also agree to use these procedures in cases involving claims under $1,000,000, or in nonmonetary cases. The Procedures for Large, Complex Construction Disputes shall be applied as described in Sections L-1 through L-4 of these rules, in addition to any other portion of these rules that is not in conflict with the Procedures for Large, Complex Construction Disputes.

(d) All other cases shall be administered in accordance with Sections R-1 through R-45 of these rules.

R-2. Independent Arbitration Provider and Delegation of Duties

When parties agree to arbitrate under these rules, or when they provide for arbitration by an independent third-party (Arbitration Provider) and arbitration is initiated under these rules, they thereby authorize the Arbitration Provider to administer the arbitration. The authority and duties of the Arbitration Provider are prescribed in the parties' Contract and in these rules, and may be carried out through such of the Arbitration Provider's representatives as it may direct. The Arbitration Provider will assign the administration of an arbitration to its Denver office

R-3. Initiation of Arbitration

Arbitration shall be initiated in the following manner.

(a) The Contractor shall, within 30 days after the Chief Engineer issues a decision, submit to the Chief Engineer written notice of its intention to arbitrate (the "demand"). The demand shall indicate the appropriate qualifications for the arbitrator(s) to be appointed to hear the arbitration.

(b) CDOT may file an answering statement with the Contractor within 15 days after receiving the demand. If a counterclaim is asserted, it shall contain a statement setting forth the nature of the counterclaim, the amount involved, if any, and the remedy sought.

(c) The Chief Engineer shall retain an Arbitration Provider, such as the American Arbitration Association, which will administer an arbitration pursuant to these Rules, except to the extent that such rules conflict with the specifications, in which case the specifications shall control.

(d) The Arbitration Provider shall confirm its retention to the parties.

R-4. Consolidation or Joinder

If the parties' agreement or the law provides for consolidation or joinder of related arbitrations, all involved parties will endeavor to agree on a process to effectuate the consolidation or joinder.

If they are unable to agree, the Arbitration Provider shall directly appoint a single arbitrator for the limited purpose of deciding whether related arbitrations should be consolidated or joined and, if so, establishing a fair and appropriate process for consolidation or joinder. All requests for consolidation or joinder must be submitted to the Arbitration Provider prior to the appointment of an arbitrator or within 90 days of the date the Arbitration Provider determined that all administrative filing requirements were satisfied, whichever is later. The Arbitration Provider may take reasonable administrative action to accomplish the consolidation or joinder as directed by the arbitrator. Requests for consolidation or joinder submitted beyond these timeframes shall not be permitted absent a determination by the Merits Arbitrator that good cause was shown for the late request.

To request consolidation of arbitrations, the requesting party must have filed a demand for arbitration, including the applicable arbitration provision(s) from the parties' contract(s) and must provide a written request for consolidation which provides the supporting reasons for such request.

To request joinder of parties, the requesting party must file with the AAA a written request to join parties to an existing arbitration which provides the names and contact information for such parties, names and contact information for the parties' representatives, if known, and supporting reasons for such request.

R-5. Appointment of Arbitrator

An arbitrator shall be appointed in the following manner:

(a) Immediately after the Arbitration Provider is retained, the Arbitration Provider shall send simultaneously to each party to the dispute an identical list of 10 names of potential arbitrators. The parties are encouraged to agree to an arbitrator from the submitted list and to advise the ARBITRATION PROVIDER of their agreement. Absent agreement of the parties, the arbitrator shall not have served as the mediator in the mediation phase of the instant proceeding.

(b) If the parties cannot agree to arbitrator(s), each party to the dispute shall have 15 calendar days from the transmittal date in which to strike names objected to, number the remaining names in order of preference, and return the list to the Arbitration Provider. If a party does not return the list within the time specified, all persons named therein shall be deemed acceptable. From among the persons who have been approved on both lists, and in accordance with the designated order of mutual preference, the Arbitration Provider shall invite an arbitrator to serve.

(c) Unless both parties agree otherwise one arbitrator shall be used for claims less than $250,000 and three arbitrators shall be used for claims $250,000 and greater. Within 15 calendar days from the date of the appointment of the last arbitrator, the Arbitration Provider shall appoint a chairperson.

(d) The entire claim record will be made available to the arbitrators by the Chief Engineer within 15 calendar days from the date of the appointment of the last arbitrator.

R-6. Changes of Claim

The arbitrator(s) will not consider any information that was not previously made a part of the claim record as transmitted by the Chief Engineer, other than clarification and data supporting previously submitted documentation.

R-7. Disclosure

(a) Any person appointed or to be appointed as an arbitrator shall disclose to the Arbitration Provider any circumstance likely to give rise to justifiable doubt as to the arbitrator's impartiality or independence, including any bias or any interest in the result of the arbitration or any relationship with the parties or their representatives. Such obligation shall remain in effect throughout the arbitration.

(b) Upon receipt of such information from the arbitrator or another source, the Arbitration Provider shall communicate the information to the parties and, if it deems it appropriate to do so, to the arbitrator and others.

(c) In order to encourage disclosure by arbitrators, disclosure of information pursuant to this Section R-6 is not to be construed as an indication that the arbitrator considers that the disclosed circumstances are likely to affect impartiality or independence.

(d) In no case shall an arbitrator be employed by, affiliated with, or have consultive or business connection with the claimant Contractor or CDOT. An arbitrator shall not have assisted either in the evaluation, preparation, or presentation of the claim case either for the Contractor or the Department or have rendered an opinion on the merits of the claim for either party, and shall not do so during the proceedings of arbitration.

R-8. Disqualification of Arbitrator

(a) Any arbitrator shall be impartial and independent and shall perform his or her duties with diligence and in good faith, and shall be subject to disqualification for: (i) partiality or lack of independence, (ii) inability or refusal to perform his or her duties with diligence and in good faith; and/or (iii) any grounds for disqualification provided by applicable law.

(b) Upon objection of a party to the continued service of an arbitrator, or on its own initiative, the Arbitration Provider shall determine whether the arbitrator should be disqualified under the grounds set out above, and shall inform the parties of its decision, which decision shall be conclusive.

R-9. Communication with Arbitrator

No party and no one acting on behalf of any party shall communicate *ex parte* with an arbitrator or a candidate for arbitrator concerning the arbitration.

R-10. Vacancies

(a) If for any reason an arbitrator is unable to perform the duties of the office, the Arbitration Provider may, on proof satisfactory to it, declare the office vacant. Vacancies shall be filled in accordance with the applicable provisions of these rules.

(b) In the event of a vacancy in a panel of neutral arbitrators after the hearings have commenced, the remaining arbitrator or arbitrators may continue with the hearing and determination of the controversy, unless the parties agree otherwise.

(c) In the event of the appointment of a substitute arbitrator, the panel of arbitrators shall determine in its sole discretion whether it is necessary to repeat all or part of any prior hearings.

R-11. Jurisdiction

(a) The arbitrator shall have the power to rule on his or her own jurisdiction, including any objections with respect to the existence, scope or validity of the arbitration agreement.

(b) The arbitrator shall have the power to determine the existence or validity of a contract of which an arbitration clause forms a part. Such an arbitration clause shall be treated as an agreement independent of the other terms of the contract. A decision by the arbitrator that the contract is null and void shall not for that reason alone render invalid the arbitration clause.

(c) A party must object to the jurisdiction of the arbitrator or to the arbitrability of a claim or counterclaim no later than 15 days after the Arbitration Provider confirms its retention to the parties. The arbitrator may rule on such objections as a preliminary matter or as part of the final award.

R-12. Administrative Conference

At the request of any party or upon the Arbitration Provider's own initiative, the Arbitration Provider may conduct an administrative conference, in person or by telephone, with the parties and/or their representatives. The conference may address such issues as arbitrator selection, potential exchange of information, a timetable for hearings and any other administrative matters.

RuleR-13. Preliminary Hearing

(a) At the request of any party or at the discretion of the arbitrator or the Arbitration Provider, the arbitrator may schedule as soon as practicable a preliminary hearing with the parties and/or their representatives. The preliminary hearing may be conducted by telephone at the arbitrator's discretion.

(b) During the preliminary hearing, the parties and the arbitrator should discuss the future conduct of the case, including clarification of the issues and claims, a schedule for the hearings and any other preliminary matters.

R-14. Pre-Hearing Exchange and Production of Information

(a) *Authority of arbitrator.* The arbitrator shall manage any necessary exchange of information among the parties with a view to achieving an efficient and economical resolution of the dispute, while at the same time promoting equality of treatment and safeguarding each party's opportunity to fairly present its claims and defenses.

(b) *Documents.* The arbitrator may, on application of a party or on the arbitrator's own initiative:

i. require the parties to exchange documents in their possession or custody on which they intend to rely;

ii. require the parties to update their exchanges of the documents on which they intend to rely as such documents become known to them;

iii. require the parties, in response to reasonable document requests, to make available to the other party documents, in the responding party's possession or custody, not otherwise readily available to the party seeking the documents, reasonably believed by the party seeking the documents to exist and to be relevant and material to the outcome of disputed issues; and

iv. require the parties, when documents to be exchanged or produced are maintained in electronic form, to make such documents available in the form most convenient and economical for the party in possession of such documents, unless the arbitrator determines that there is good cause for requiring the documents to be produced in a different form. The parties should attempt to agree in advance upon, and the

arbitrator may determine, reasonable search parameters to balance the need for production of electronically stored documents relevant and material to the outcome of disputed issues against the cost of locating and producing them.

(a) At the request of any party or at the discretion of the arbitrator, consistent with the expedited nature of arbitration, the arbitrator may direct:

i. the production of documents and other information;
ii. require the parties to update their exchanges of the documents on which they intend to rely as such documents become known to them;
and/or
iii. the identification of any witnesses to be called.

(b) At least five business days prior to the hearing, the parties shall exchange copies of all exhibits they intend to submit at the hearing.

(c) The arbitrator is authorized to resolve any disputes concerning the exchange of information.

(d) Additional discovery may be ordered by the arbitrator in extraordinary cases when the demands of justice require it.

R-15. Date, Time, and Place of Hearing

(a) The arbitrator shall set the date, time, and place for each hearing and/or conference. The parties shall respond to requests for hearing dates in a timely manner, be cooperative in scheduling the earliest practicable date, and adhere to the established hearing schedule.

(b) The parties may mutually agree on the locale where the arbitration is to be held. Absent such agreement, the arbitration shall be held in the City and County of Denver.

(c) The Arbitration Provider shall send a notice of hearing to the parties at least ten calendar days in advance of the hearing date, unless otherwise agreed by the parties.

R-16. Attendance at Hearings

The arbitrator and the Arbitration Provider shall maintain the privacy of the hearings unless the law provides to the contrary. Any person having a direct interest in the arbitration is entitled to attend hearings. The arbitrator shall otherwise have the power to require the exclusion of any witness, other than a party or other essential person, during the testimony of any other witness. It shall be discretionary with the arbitrator to determine the propriety of the attendance of any person other than a party and its representative.

R-17. Representation

Any party may be represented by counsel or other authorized representative. A party intending to be so represented shall notify the other party and the Arbitration Provider of the name and address of the representative at least three calendar days prior to the date set for the hearing at which that person is first to appear.

R-18. Oaths

Before proceeding with the first hearing, each arbitrator may take an oath of office and, if required by law, shall do so. The arbitrator may require witnesses to testify under oath administered by any duly qualified person and, if it is required by law or requested by any party, shall do so.

R-19. Stenographic Record

Any party desiring a stenographic record shall make arrangements directly with a stenographer and shall notify the other parties of these arrangements at least three days in advance of the hearing. The requesting party or parties shall pay the cost of the record. If the transcript is agreed by the parties, or determined by the arbitrator to be the official record of the proceeding, it must be provided to the arbitrator and made available to the other parties for inspection, at a date, time, and place determined by the arbitrator.

R-20. Interpreters

Any party wishing an interpreter shall make all arrangements directly with the interpreter and shall assume the costs of the service.

R-21. Postponements

The arbitrator for good cause shown may postpone any hearing upon agreement of the parties, upon request of a party, or upon the arbitrator's own initiative.

R-22. Arbitration in the Absence of a Party or Representative

Unless the law provides to the contrary, the arbitration may proceed in the absence of any party or representative who, after due notice, fails to be present or fails to obtain a postponement. An award shall not be made solely on the default of a party. The arbitrator shall require the party who is present to submit such evidence as the arbitrator may require for the making of an award.

R-23. Conduct of Proceedings

(a) The Contractor shall present evidence to support its claim. CDOT shall then present evidence supporting its defense. Witnesses for each party shall also submit to questions from the arbitrator and the adverse party. The arbitrator has the discretion to vary this procedure; provided that the parties are treated with equality and that each party has the right to be heard and is given a fair opportunity to present its case.

(b) The arbitrator, exercising his or her discretion, shall conduct the proceedings with a view to expediting the resolution of the dispute and may direct the order of proof, bifurcate proceedings, and direct the parties to focus their presentations on issues the decision of which could dispose of all or part of the case. The arbitrator shall entertain motions, including motions that dispose of all or part of a claim or that may expedite the proceedings, and may also make preliminary rulings and enter interlocutory orders.

(c) The parties may agree to waive oral hearings in any case.

R-24. Evidence

(a) The arbitrators shall consider all written information available in the claim record and all oral presentations in support of that record by the Contractor and CDOT. Conformity to legal rules of evidence shall not be necessary.

(b) The arbitrators shall not consider any written documents or arguments which have not previously been made a part of the claim record, other than clarification and data supporting previously submitted documentation. The arbitrators shall not consider an increase in the amount of the claim, or any new claims.

(c) The arbitrator shall determine the admissibility, relevance, and materiality of any evidence offered. The arbitrator may request offers of proof and may reject evidence deemed by the arbitrator to be cumulative, unreliable, unnecessary, or of slight value compared to the time and expense involved. All evidence shall be taken in the presence of all of the arbitrators and all of the parties, except where: (i) any of the parties is absent, in default, or has waived the right to be present, or (ii) the parties and the arbitrators agree otherwise.

(d) The arbitrator shall take into account applicable principles of legal privilege, such as those involving the confidentiality of communications between a lawyer and client.

(e) An arbitrator or other person authorized by law to subpoena witnesses or documents may do so upon the request of any party or independently.

R-25. Evidence by Affidavit and Post-hearing Filing of Documents or Other Evidence

(a) The arbitrator may receive and consider the evidence of witnesses by declaration or affidavit, but shall give it only such weight as the arbitrator deems it entitled to after consideration of any objection made to its admission.

(b) If the parties agree or the arbitrator directs that documents or other evidence be submitted to the arbitrator after the hearing, the documents or other evidence, unless otherwise agreed by the parties and the arbitrator, shall be filed with the Arbitration Provider for transmission to the arbitrator. All parties shall be afforded an opportunity to examine and respond to such documents or other evidence.

R-26. Inspection or Investigation

An arbitrator finding it necessary to make an inspection or investigation in connection with the arbitration shall direct the Arbitration Provider to so advise the parties. The arbitrator shall set the date and time and the Arbitration Provider shall notify the parties. Any party who so desires may be present at such an inspection or investigation. In the event that one or all parties are not present at the inspection or investigation, the arbitrator shall make an oral or written report to the parties and afford them an opportunity to comment.

R-27. Interim Measures

(a) The arbitrator may take whatever interim measures he or she deems necessary, including injunctive relief and measures for the protection or conservation of property and disposition of perishable goods.

(b) A request for interim measures addressed by a party to a judicial authority shall not be deemed incompatible with the agreement to arbitrate or a waiver of the right to arbitrate.

R-28. Closing of Hearing

When satisfied that the presentation of the parties is complete, the arbitrator shall declare the hearing closed.

If documents or responses are to be filed as provided in Section R-24, or if briefs are to be filed, the hearing shall be declared closed as of the final date set by the arbitrator for the receipt of documents, responses, or briefs. The time limit within which the arbitrator is required to make the award shall commence to run, in the absence of other agreements by the parties and the arbitrator, upon the closing of the hearing.

R-29. Reopening of Hearing

The hearing may be reopened on the arbitrator's initiative, or by direction of the arbitrator upon application of a party, at any time before the award is made. If reopening the hearing would prevent the making of the award within the specific time agreed to by the parties in the arbitration agreement, the matter may not be reopened

unless the parties agree to an extension of time. When no specific date is fixed by agreement of the parties, the arbitrator shall have 15 calendar days from the closing of the reopened hearing within which to make an award.

R-30. Waiver of Rules

Any party who proceeds with the arbitration after knowledge that any provision or requirement of these rules has not been complied with and who fails to state an objection in writing shall be deemed to have waived the right to object.

R-31. Extensions of Time

The parties may modify any period of time by mutual agreement. The Arbitration Provider or the arbitrator may for good cause extend any period of time established by these rules, except the time for making the award. The Arbitration Provider shall notify the parties of any extension.

R-32. Serving of Notice

(a) Any papers, notices, or process necessary or proper for the initiation or continuation of an arbitration under these rules; for any court action in connection therewith, or for the entry of judgment on any award made under these rules, may be served on a party by mail addressed to the party or its representative at the last known address or by personal service, in or outside the state where the arbitration is to be held, provided that reasonable opportunity to be heard with regard thereto has been granted to the party.

(b) The Arbitration Provider, the arbitrator and the parties may also use overnight delivery, electronic facsimile transmission (fax), or electronic mail (email) to give the notices required by these rules.

(c) Unless otherwise instructed by the Arbitration Provider or by the arbitrator, any documents submitted by any party to the Arbitration Provider or to the arbitrator shall simultaneously be provided to the other party or parties to the arbitration.

R-33. Majority Decision

When the panel consists of more than one arbitrator, unless required by law or by the arbitration agreement, a majority of the arbitrators must make all decisions; however, in a multi-arbitrator case, if all parties and all arbitrators agree, the chair of the panel may make procedural decisions.

Where there is a panel of three arbitrators, absent an objection of a party or another member of the panel, the chairperson of the panel is authorized to resolve or delegate to another member of the panel to resolve any disputes related to the exchange of information or procedural matters without the need to consult the full panel.

R-34. Time of Award

The award shall be made promptly by the arbitrator and, unless otherwise agreed by the parties or specified by law, no later than 30 calendar days from the date of closing the hearing, or, if oral hearings have been waived, from the date of the Arbitration Provider’s transmittal of the final statements and proofs to the arbitrator.

R-35. Form of Award

After complete review of the facts associated with the claim, the arbitrators shall render a written explanation of their decision. When three arbitrators are used, and only two arbitrators agree then the award shall be signed by the two arbitrators. The arbitrator's decision shall include:

(a) A summary of the issues and factual evidence presented by the Contractor and the Department concerning the claim;

(b) Decisions concerning the validity of the claim;

(c) Decisions concerning the value of the claim as to cost impacts if the claim is determined to be valid;

(d) The contractual and factual bases supporting the decisions made including an explanation as to why each and every position was accepted or rejected;

(e) Detailed and supportable calculations which support any decisions.

R-36. Scope of Award

(a) The arbitrator may grant any remedy or relief that the arbitrator deems just and equitable and within the scope of the agreement of the parties, including, but not limited to, equitable relief and specific performance of a contract.

(b) In addition to the final award, the arbitrator may make other decisions, including interim, interlocutory, or partial rulings, orders, and awards. (c) The award of the arbitrator may include interest at the statutory rate and from such date as the arbitrator may deem appropriate.

R-37. Delivery of Award to Parties

Parties shall accept as notice and delivery of the award the placing of the award or a true copy thereof in the mail addressed to the parties or their representatives at the last known address, personal or electronic service of the award, or the filing of the award in any other manner that is permitted by law.

R-38. Modification of Award

Within 10 calendar days after the transmittal of an award, the arbitrator on his or her initiative, or any party, upon notice to the other parties, may request that the arbitrator correct any clerical, typographical, technical or computational errors in the award. The arbitrator is not empowered to redetermine the merits of any claim already decided.

If the modification request is made by a party, the other parties shall be given 10 calendar days to respond to the request. The arbitrator shall dispose of the request within 25 calendar days after transmittal by the Arbitration Provider to the arbitrator of the request.

If applicable law provides a different procedural time frame, that procedure shall be followed.

R-39. Appeal of Award

Appeal of the arbitrators' decision concerning the merit of the claim is governed by the Colorado Uniform Arbitration Act, C.R.S. §§ 13-22-202 to -230. Either party may appeal the arbitrator's decision on the value of the claim to the Colorado State District Court in and for the City and County of Denver for trial de novo.

R-40. Release of Documents for Judicial Proceedings

The Arbitration Provider shall, upon the written request of a party, furnish to the party, at its expense, certified copies of any papers in the Arbitration Provider's possession that may be required in judicial proceedings relating to the arbitration.

R-41. Applications to Court and Exclusion of Liability

(a) No judicial proceeding by a party relating to the subject matter of the arbitration shall be deemed a waiver of the party's right to arbitrate.

(b) Neither the Arbitration Provider nor any arbitrator in a proceeding under these rules is a necessary or proper party in judicial proceedings relating to the arbitration.

(c) Parties to these rules shall be deemed to have consented that judgment upon the arbitration award may be entered in any federal or state court having jurisdiction thereof.

(d) Parties to an arbitration under these rules shall be deemed to have consented that neither the Arbitration Provider nor any arbitrator shall be liable to any party in any action for damages or injunctive relief for any act or omission in connection with any arbitration under these rules.

R-42. Administrative Fees

The Arbitration Provider shall prescribe filing and other administrative fees and service charges to compensate it for the cost of providing administrative services. The fees in effect when the fee or charge is incurred shall be applicable. Such fees and charges shall be borne equally by the parties.

The Arbitration Provider may, in the event of extreme hardship on the part of any party, defer or reduce the administrative fees.

R-43. Expenses

The expenses of witnesses for either side shall be paid by the party producing such witnesses. All other expenses of the arbitration, including required travel and other expenses of the arbitrator, Arbitration Provider representatives, and any witness and the cost of any proof produced at the direct request of the arbitrator, shall be borne equally by the parties.

R-44. Neutral Arbitrator's Compensation

Arbitrators shall be compensated a rate consistent with the arbitrator's stated rate of compensation.

If there is disagreement concerning the terms of compensation, an appropriate rate shall be established with the arbitrator by the Arbitration Provider and confirmed to the parties.

Such compensation shall be borne equally by the parties.

R-45. Deposits

The Arbitration Provider may require the parties to deposit in advance of any hearings such sums of money as it deems necessary to cover the expense of the arbitration, including the arbitrator's fee, if any, and shall render an accounting to the parties and return any unexpended balance at the conclusion of the case.

R-46. Interpretation and Application of Rules

The arbitrator shall interpret and apply these rules insofar as they relate to the arbitrator's powers and duties by a majority vote. If that is not possible, either an arbitrator or a party may refer the question to the Arbitration Provider for final decision. All other rules shall be interpreted and applied by the Arbitration Provider.

R-45. Suspension for Nonpayment

If arbitrator compensation or administrative charges have not been paid in full, the Arbitration Provider may so inform the parties in order that the parties may advance the required payment. If such payments are not made, the arbitrator may order the suspension or termination of the proceedings. If no arbitrator has yet been appointed, the Arbitration Provider may suspend the proceedings.

FAST TRACK PROCEDURES

F-1. Limitations on Extensions

In the absence of extraordinary circumstances, the Arbitration Provider or the arbitrator may grant a party no more than one seven-day extension of the time in which to respond to the demand for arbitration or counterclaim as provided in Section R-3.

F-2. Changes of Claim

The arbitrator will not consider any information that was not previously made a part of the claim record as transmitted by the Chief Engineer, other than clarification and data supporting previously submitted documentation

F-3. Serving of Notice

In addition to notice provided above, the parties shall also accept notice by telephone. Telephonic notices by the Arbitration Provider shall subsequently be confirmed in writing to the parties. Should there be a failure to confirm in writing any such oral notice, the proceeding shall nevertheless be valid if notice has, in fact, been given by telephone.

F-4. Appointment and Qualification of Arbitrator

Immediately after the retention of the Arbitration Provider, the Arbitration Provider will simultaneously submit to each party a listing and biographical information from its panel of arbitrators knowledgeable in construction who are available for service in Fast Track cases. The parties are encouraged to agree to an arbitrator from this list, and to advise the Arbitration Provider of their agreement, or any factual objections to any of the listed arbitrators, within 7 calendar days of the transmission of the list. The Arbitration Provider will appoint the agreed-upon arbitrator, or in the event the parties cannot agree on an arbitrator, will designate the arbitrator from among those names not stricken for factual objections.

The parties will be given notice by the Arbitration Provider of the appointment of the arbitrator, who shall be subject to disqualification for the reasons specified above. Within the time period established by the Arbitration Provider, the parties shall notify the Arbitration Provider of any objection to the arbitrator appointed. Any objection by a party to the arbitrator shall be for cause and shall be confirmed in writing to the Arbitration Provider with a copy to the other party or parties.

F-5. Preliminary Telephone Conference

Unless otherwise agreed by the parties and the arbitrator, as promptly as practicable after the appointment of the arbitrator, a preliminary telephone conference shall be held among the parties or their attorneys or representatives, and the arbitrator.

F-6. Exchange of Exhibits

At least 2 business days prior to the hearing, the parties shall exchange copies of all exhibits they intend to submit at the hearing. The arbitrator is authorized to resolve any disputes concerning the exchange of exhibits.

F-7. Discovery

There shall be no discovery, except as provided in Section F-4 or as ordered by the arbitrator in extraordinary cases when the demands of justice require it.

F-8. Date, Time, and Place of Hearing

The arbitrator shall set the date and time, and place of the hearing, to be scheduled to take place within 30 calendar days of confirmation of the arbitrator's appointment. The Arbitration Provider will notify the parties in advance of the hearing date. All hearings shall be held within the City and County of Denver.

F-9. The Hearing

(a) Generally, the hearing shall not exceed 1 day. Each party shall have equal opportunity to submit its proofs and complete its case. The arbitrator shall determine the order of the hearing, and may require further submission of documents within two business days after the hearing. For good cause shown, the arbitrator may schedule 1 additional hearing day within 7 business days after the initial day of hearing.

(b) Generally, there will be no stenographic record. Any party desiring a stenographic record may arrange for one pursuant to the provisions above.

F-10. Time of Award

Unless otherwise agreed by the parties, the award shall be rendered not later than 14 calendar days from the date of the closing of the hearing or, if oral hearings have been waived, from the date of the Arbitration Provider’s transmittal of the final statements and proofs to the arbitrator.

F-11. Time Standards

The arbitration shall be completed by settlement or award within 45 calendar days of confirmation of the arbitrator's appointment, unless all parties and the arbitrator agree otherwise or the arbitrator extends this time in extraordinary cases when the demands of justice require it and such agreement is memorialized by the arbitrator prior to the expiration of the initial 45-day period.

F-12. Arbitrator's Compensation

Arbitrators will receive compensation at a rate to be suggested by the Arbitration Provider regional office.

PROCEDURES FOR LARGE, COMPLEX CONSTRUCTION DISPUTES

L-1. Large, Complex Construction Disputes

The procedures for large, complex construction disputes shall apply to any claim with a value exceeding $500,000 or as agreed to by the parties.

L-2. Administrative Conference

Prior to the dissemination of a list of potential arbitrators, the Arbitration Provider shall, unless the parties agree otherwise, conduct an administrative conference with the parties and/or their attorneys or other representatives by conference call. The conference call will take place within 14 days after the retention of the Arbitration Provider. In the event the parties are unable to agree on a mutually acceptable time for the conference, the Arbitration Provider may contact the parties individually to discuss the issues contemplated herein. Such administrative conference shall be conducted for the following purposes and for such additional purposed as the parties or the Arbitration Provider may deem appropriate:

(a) To obtain additional information about the nature and magnitude of the dispute and the anticipated length of hearing and scheduling;

(b) To discuss the views of the parties about the technical and other qualifications of the arbitrators;

(c) To obtain conflicts statements from the parties; and

(d) To consider, with the parties, whether mediation or other non-adjudicative methods of dispute resolution might be appropriate.

L-3. Arbitrators

(a) Large, Complex Construction Cases shall be heard and determined by three arbitrators.

(b) The Arbitration Provider shall appoint arbitrator(s) in the manner provided in the Regular Construction Industry Arbitration Rules.

L-4. Preliminary Hearing

As promptly as practicable after the selection of the arbitrator(s), a preliminary hearing shall be held among the parties and/or their attorneys or other representatives and the arbitrator(s). Unless the parties agree otherwise, the preliminary hearing will be conducted by telephone conference call rather than in person.

At the preliminary hearing the matters to be considered shall include, without limitation:

(a) Service of a detailed statement of claims, damages and defenses, a statement of the issues asserted by each party and positions with respect thereto, and any legal authorities the parties may wish to bring to the attention of the arbitrator(s);

(b) Stipulations to uncontested facts;

(c) The extent to which discovery shall be conducted;

(d) Exchange and premarking of those documents which each party believes may be offered at the hearing;

(e) The identification and availability of witnesses, including experts, and such matters with respect to witnesses including their biographies and expected testimony as may be appropriate;

(f) Whether, and the extent to which, any sworn statements and/or depositions may be introduced;

(g) The extent to which hearings will proceed on consecutive days;

(h) Whether a stenographic or other official record of the proceedings shall be maintained;

(i) The possibility of utilizing mediation or other non-adjudicative methods of dispute resolution; and

(j) The procedure for the issuance of subpoenas.

By agreement of the parties and/or order of the arbitrator(s), the pre-hearing activities and the hearing procedures that will govern the arbitration will be memorialized in a Scheduling and Procedure Order.

L-5. Management of Proceedings

(a) Arbitrator(s) shall take such steps as they may deem necessary or desirable to avoid delay and to achieve a just, speedy and cost-effective resolution of Large, Complex Construction Cases.

(b) Parties shall cooperate in the exchange of documents, exhibits and information within such party's control if the arbitrator(s) consider such production to be consistent with the goal of achieving a just, speedy and cost effective resolution of a Large, Complex Construction Case.

(c) The parties may conduct such discovery as may be agreed to by all the parties provided, however, that the arbitrator(s) may place such limitations on the conduct of such discovery as the arbitrator(s) shall deem appropriate. If the parties cannot agree on production of document and other information, the arbitrator(s), consistent with the expedited nature of arbitration, may establish the extent of the discovery.

(d) At the discretion of the arbitrator(s), upon good cause shown and consistent with the expedited nature of arbitration, the arbitrator(s) may order depositions of, or the propounding of interrogatories to such persons who may possess information determined by the arbitrator(s) to be necessary to a determination of the matter.

(e) The parties shall exchange copies of all exhibits they intend to submit at the hearing 10 business days prior to the hearing unless the arbitrator(s) determine otherwise.

(f) The exchange of information pursuant to this rule, as agreed by the parties and/or directed by the arbitrator(s), shall be included within the Scheduling and Procedure Order.

(g) The arbitrator is authorized to resolve any disputes concerning the exchange of information.

(h) Generally hearings will be scheduled on consecutive days or in blocks of consecutive days in order to maximize efficiency and minimize costs.

The following flow chart provides a summary of the disputes and claims process described in subsections 105.22, 105.23, and 105.24

Figure 105-1
DISPUTES AND CLAIMS FLOW CHART

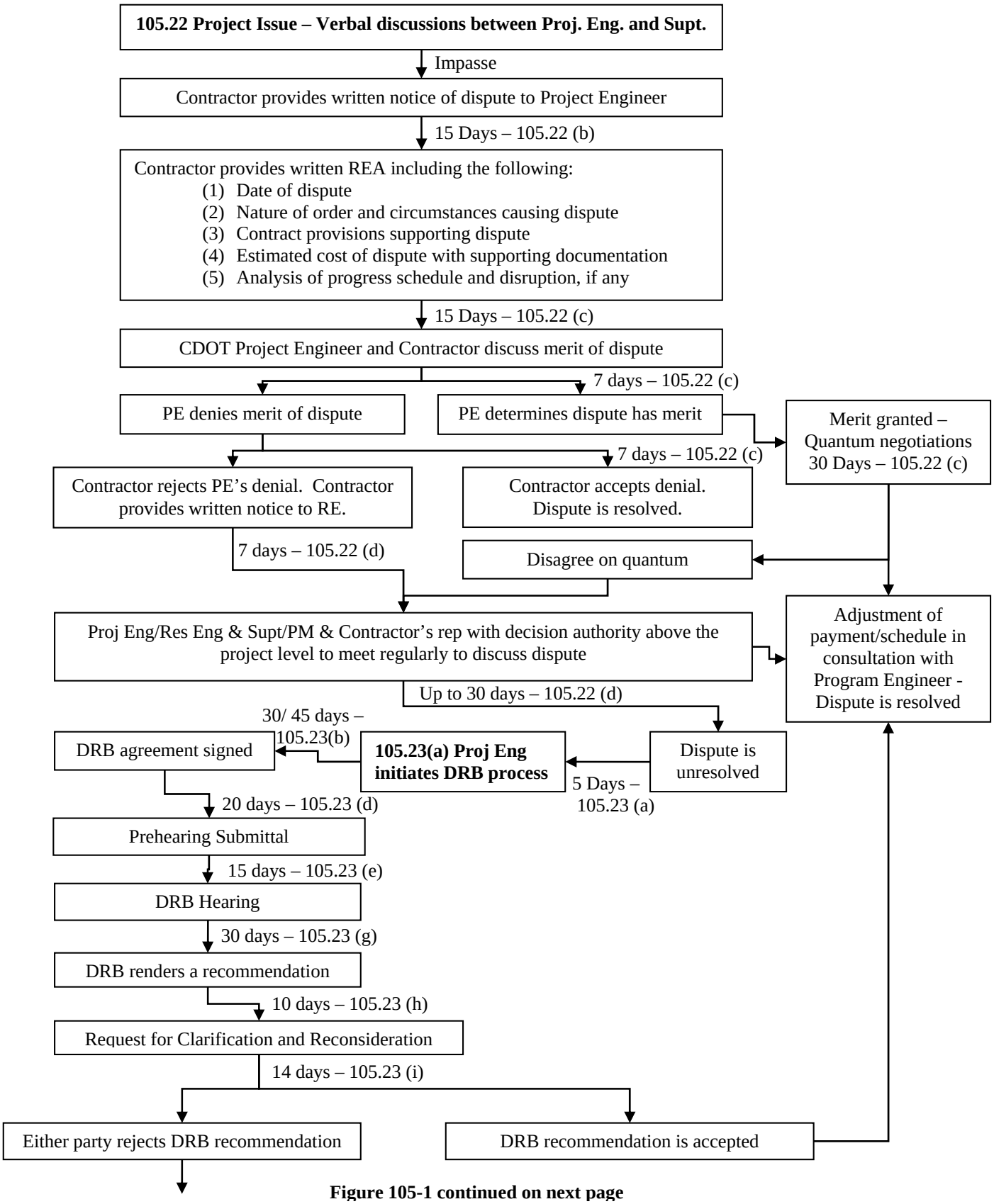
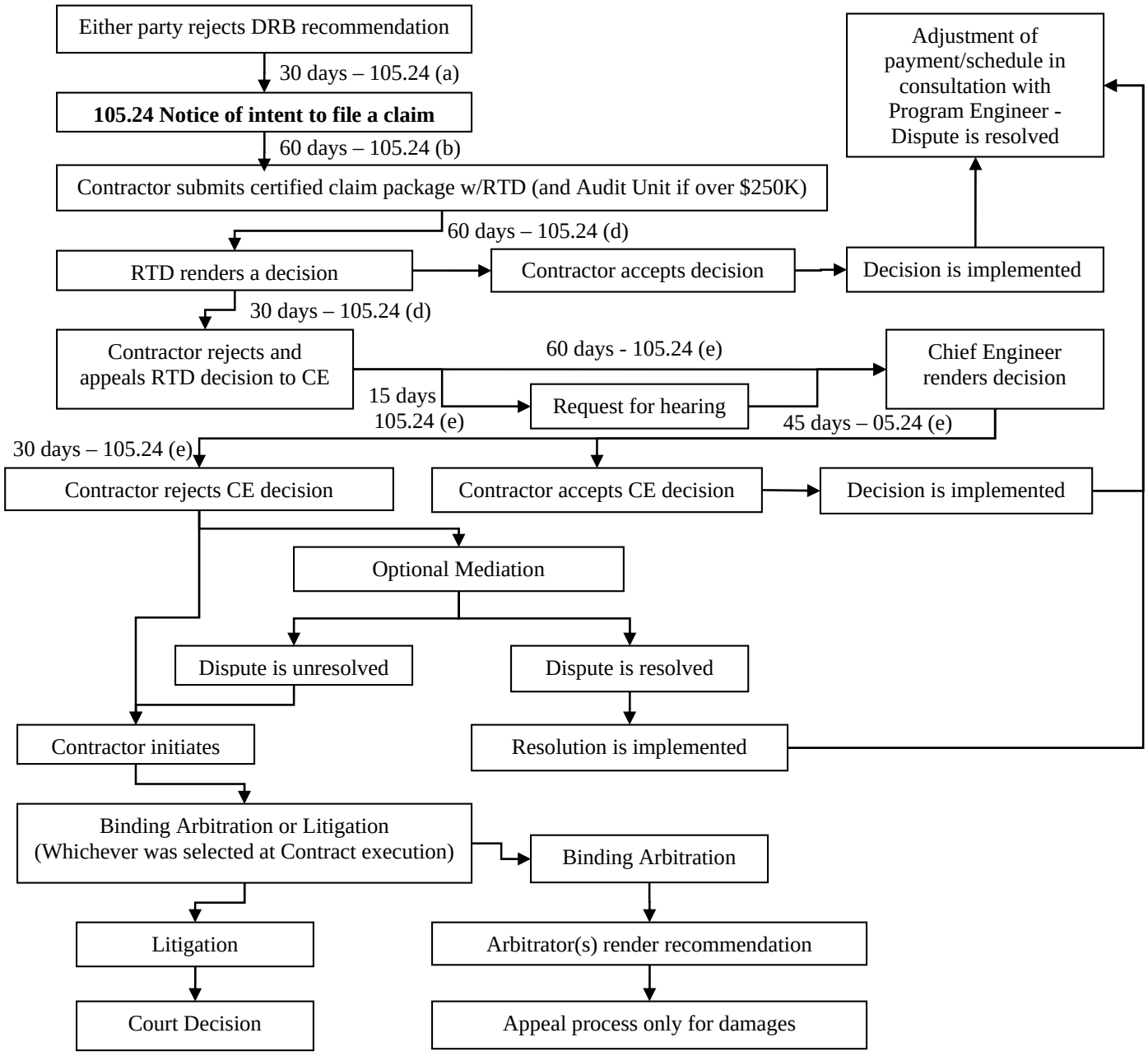


Figure 105-1 continued on next page

Figure 105-1 (continued)



REVISION OF SECTION 105
HOT MIX ASPHALT PAVEMENT SMOOTHNESS

Section 105 of the Standard Specifications is hereby revised for this project as follows:

Delete subsection 105.07 and replace with the following:

105.07 Conformity to Roadway Smoothness Criteria of HMA. Roadway smoothness testing and corrective work shall be performed as described below. The pavement smoothness category shall be HRI Category II unless shown on the plans.

(a) *Smoothness Quality Control Testing.*

1. The Contractor shall perform Smoothness Quality Control (SQC) testing. The test results shall be submitted to the Engineer within 48 hours of completion. SQC test results shall show the Half Car Roughness Index (HRI) for each 0.10 mile section and shall show the results for localized roughness.

   All traffic control costs associated with SQC testing will be paid for in accordance with Section 630.

   SQC testing shall be performed on the first 2,000 tons for the final layer.

   SQC testing shall be performed using the Contractor's inertial profiler, pursuant to the methods described in subsection 105.07(b) and in accordance with the manufacturer's recommendations. The Contractor's Profiler shall be certified according to CP 78. A list of certified profilers is located at http://www.dot.state.co.us/DesignSupport/.

   Production shall be suspended if SQC testing indicates that corrective work is required in accordance with subsection 105.07 (c). If the SQC data becomes available after production has started for the day, suspension will begin at the end of that production day. Production will remain suspended until the problem is identified and corrected. Each time production is suspended, corrective actions shall be proposed in writing by the Contractor. Production will not be allowed to resume until the proposed corrective actions have been accepted by the Project Engineer in writing.

   When production resumes, the Contractor shall profile the first 2,000 tons of HMA. The conditions above for suspension of work will apply.

2. The finished transverse and longitudinal surface elevation of the pavement shall be measured using a 10 foot straightedge. Areas to be measured will be directed by the Engineer. The Contractor shall furnish an approved 10 foot straightedge, depth gauge and operator to aid the Engineer in testing the pavement surface. Areas showing high spots of more than 3/16 inch in 10 feet shall be marked and diamond ground until the high spot does not exceed 3/16 inch in 10 feet.

(b) Initial Smoothness Acceptance Testing. The Contractor shall perform Smoothness Acceptance Testing (SA) which will be used for acceptance and calculation of incentive and disincentive adjustments.

All traffic control costs associated with SA testing will be paid for in accordance with Section 630.

1. Longitudinal Pavement Surface Smoothness Acceptance. Pavement surfaces shall be tested and accepted for longitudinal smoothness as described herein.

   A. Testing Procedure (General). The longitudinal surface smoothness of the final pavement surface shall be tested by the Contractor in accordance with CP 74 and using the Contractor's high-speed profiler (HSP). The Contractor's Profiler shall be certified according to CP 78. A list of certified profilers is located at http://www.dot.state.co.us/DesignSupport/

   The HSP instrumentation shall be verified in accordance with CP 74 prior to measurements. The Contractor shall lay out a distance calibration site. The distance calibration site shall be located no more than ten miles from the Project limits. The distance calibration site shall be 1056 feet long and shall be on a relatively flat, straight section of pavement as approved by the Engineer. The site

shall have a speed limit equal to the Project's highest speed limit that allows for the HSP to operate uninterrupted. The limits of the site shall be clearly marked and the distance shall be measured to an accuracy of +/- 3 inches. The Contractor shall provide in writing the site location to the Engineer. The cost of the distance calibration site will not be measured and paid for separately, but shall be included in the work.

The entire length of each through lane, climbing lane and passing lane including bridge approaches, bridge decks and intersections from the beginning to the end of the project shall be profiled in their planned final configuration. Shoulders less than 12 foot in width and medians will not be profiled and will not be subject to incentive/disincentive adjustments. Shoulders with a width of 12 feet or greater, ramps, tapers, turn slots, acceleration lanes and deceleration lanes will be profiled, but will not be subject to incentive/disincentive adjustments. Shoulders with a width of 12 feet or more, ramps, tapers, turn slots, acceleration lanes and deceleration lanes will be evaluated for localized roughness corrective work. The profile of the entire length of a lane shall be taken at one time. However, the Engineer may break a project into sections to accommodate Project phasing.

A sufficient distance shall be deleted from the profile to allow the profiler to obtain the testing speed plus a 300 foot distance to stop and start when required. Incentive/disincentive adjustments will not be made for this area. The final surface of these areas shall be tested in accordance with subsection 105.07(a) 2.

Shoulders less than 12 foot in width and medians constructed as part of this project shall be measured in accordance with subsection 105.07(a) 2.

The profile shall include transverse joints when pavement is placed by the project on both sides of the joint. When pavement is placed on only one side of the joint, the profile shall start 25 feet outside the project paving limits. The profile of the section of pavement 25 feet outside the paving limits to 25 feet inside paving limits will not be subjected to incentive or disincentive adjustments, but will be evaluated for localized roughness.

The profile of the area 25 feet each side of every railroad crossing, cattle guard, bus pad, manhole, gutter pan and intersection (where there is a planned breakpoint in the profile grade line in the direction of traffic) shall be deleted from the profile before the HRI is determined. Incentive/disincentive adjustments will not be made for these areas. Areas deleted from the profile shall be tested in accordance with subsection 105.07(a) 2.

When both new pavement and a new bridge or new bridge pavement are being constructed in a project, the profile of the area 25 feet each side of the bridge deck shall be deleted from the profile before the HRI is determined. Incentive/disincentive adjustments will not be made for this area. Areas deleted from the profile shall be tested in accordance with subsection 105.07(a) 2. The bridge deck will be evaluated for localized roughness. Corrective work required in these areas will not be measured and paid for separately, but shall be included in the work. For all other projects, the profile of the area 25 feet each side of the bridge deck shall be deleted from the profile before the HRI is determined. Incentive/disincentive adjustments will not be made for this area. If the Engineer determines that corrective work is required in this area, payment will be made in accordance with subsection 109.04.

The Contractor shall notify the Engineer in writing at least five working days in advance of his intention to perform SA testing. The Contractor shall profile the Project within 14 days after the completion of paving operations. The Engineer will witness the SA profiling and take immediate possession of the SA data.

The Contractor shall not perform any corrective work that will affect the pavement smoothness for ten working days after completion of the SA testing or as approved by the Engineer. This time is to allow for the Department to analyze the data and perform smoothness verification testing.

B. Smoothness Testing Procedures. The Contractor shall mark the profiling limits and excluded areas. The Engineer will verify that the Contractor's marks are located properly. The Contractor shall use traffic cones with reflective tape or reflective tape on the pavement at the beginning and end of each lane for triggering the start and stop locations on the profiler and at any other location, where portions of the profile are being deleted. These locations shall be marked with temporary paint so that the Department's profiler uses the same locations for smoothness verification testing.

The ambient temperature shall be at least 34 °F for the profiler to operate.

The Contractor shall clear the lanes to be tested of all debris before profiling.

The Contractor shall submit a Method for Handling Traffic (MHT) to the Engineer for approval at least five days in advance of SA testing. The MHT shall detail the methods for traffic control that will allow for continuous non-stop profiling of each lane to be profiled at a minimum speed of 15 mph. The Contractor shall provide the traffic control in accordance with the approved MHT.

Each lane shall be profiled at least once. Profiling shall be at a constant speed (+/- 5 mph of the distance calibration speed) with a minimum speed of 15 mph and a maximum speed of 70 mph. Shoulders with a width of 12 feet or more, ramps, tapers, turn slots, acceleration lanes and deceleration lanes shall be profiled**.** The profile shall be taken in the planned direction of travel. The left and right wheel paths shall be profiled simultaneously. The collected profiles shall be turned over immediately to the Engineer and will be analyzed using CP 74.

(1) The Department will determine a HRI for each 0.1 mile section or fraction thereof of completed pavement. The HRI consists of the left and right wheel path's profile passed through the International Roughness Index (IRI) filter.

The Contractor's SA test results will be available within ten working days of the completion of SA testing. The Engineer will give the Contractor a report that will include the lane profiled, the HRI in 0.10 mile increments and a summary of areas requiring corrective work. The Engineer may determine that it is necessary for the Contractor to re-profile a lane.

Areas requiring corrective work will be determined according to subsection 105.07(c) 1.

Sections less than 0.01 miles in length shall not be subject to corrective work as specified by Table 105-6. Sections less than 0.01 miles in length shall be included in the Localized Roughness determination.

C. Acceptance and incentive/disincentive adjustments for pavement smoothness will be made on a square yard basis in accordance with the following:

Incentive and Disincentive adjustments will be based on the HRI for each 0.1 mile section or fraction thereof. Incentive/Disincentive adjustments for Pavement Smoothness will be made in accordance with Table 105-6**.** Sections less than 0.01 miles in length will not be subject to disincentives.

Incentive payments will not be made until all localized roughness areas have been corrected.

Table 105-6
HMA PAVEMENT SMOOTHNESS (INCHES/MILE)
HALF-CAR ROUGHNESS INDEX

Pavement Smoothness Category	Incentive Payment ($/sqyd)	No Incentive or Disincentive	Disincentive Payment ($/sqyd)	Corrective Work Required
I	When HRI ≤ 40.0 I = $1.28	When HRI ≥ 63.0 and ≤ 72.0 I = $0.00	When HRI > 72.0 and < 90.0 I = 5.12 – 0.07111 x HRI	When HRI > 90.0
	When HRI > 40.0 and < 63.0 I = 3.51 – 0.05565 x HRI		When HRI ≥ 90.0 I = – $1.28	
II	When HRI ≤ 35.0 I = $1.28	When HRI ≥ 58.0 and ≤ 67.0 I = $0.00	When HRI > 67.0 and < 85.0 I = 4.76 – 0.07111 x HRI	When HRI > 85.0
	When HRI > 35.0 and < 58.0 I = 3.23 – 0.05565 x HRI		When HRI ≥ 85.0 I = – $1.28	
III	When HRI ≤ 45.0 I = $1.28	When HRI ≥ 70.0 and ≤ 80.0 I = $0.00	When HRI > 80.0 and < 100.0 I = 5.12 – 0.064 x HRI	When HRI > 100.0
	When HRI > 45.0 and < 70.0 I = 3.584 – 0.0512 x HRI		When HRI ≥ 100 I = - $1.28	

(c) *Corrective Work.*

The Department will analyze the SA testing for acceptance and indicate areas requiring corrective work in accordance with subsection 105.07(b). Corrective work shall be proposed in writing by the Contractor. Corrective work shall not be performed until approved in writing by the Engineer. The Contractor shall not perform any corrective work on the final layer until after the Engineer returns the results of the Initial Smoothness Acceptance testing and after the Department's Smoothness Verification testing, if performed. The Contractor shall perform corrective work in the areas indicated by the SA testing.

Corrective work on lower layers shall be at the Contractor's discretion.

The Contractor shall profile the roadway to verify the required corrective work has been completed.

If the Contractor elects to perform corrective work prior to the completion of initial SA testing, the entire 0.10 mile section, or fraction thereof, will not be eligible for incentive payment, but will be eligible for disincentive. The Engineer will not modify the limits of the 0.10 mile sections to group corrective work areas in an effort to reduce the number of sections impacted by this decision.

The Contractor may elect to perform additional corrective work to reduce or eliminate the disincentive payment for each 0.1 mile section or fraction thereof after the initial SA testing and the Department's verification testing.

The criteria for determining if a 0.1 mile section or fraction thereof requires corrective work is specified in Table 105-6. In addition to determining if a 0.1 mile section or fraction thereof requires corrective work, the profiles shall be analyzed for areas of Localized Roughness.

Localized Roughness. The profiles shall be analyzed to determine where areas of localized roughness occur. The profile shall be summarized using the continuous HRI reporting system using an averaging length of 25 feet. The FHWA's latest version of ProVal software will shall be used to generate the continuous HRI report. ProVal can be downloaded at http://www.roadprofile.com.

Areas of localized roughness are determined to be where the continuous HRI report exceeds the values in Table 105-9. Areas of localized roughness greater than 15.0 feet in length shall be considered deficient, and require corrective work.. Areas of localized roughness less than 25 feet in distance that contain a valve box shall be tested in accordance with subsection 105.07 (a) 2. for corrective work.

Table 105-9
CONTINUOUS HRI USING 25 FOOT AVERAGING FOR LOCALIZED ROUGHNESS CORRECTIVE WORK ON HMA PAVEMENTS

HRI SMOOTHNESS CATEGORY	HRI In/mile
I	135.0
II	125.0
III	150.0

1. Corrective Methods. Corrective work shall consist of diamond grinding, an approved overlay, or removal and replacement.

   Corrective work shall conform to of one of the following conditions:

   (1) Removal and Replacement. The pavement requiring corrective work shall be removed, full width of the lane and the full thickness of the layer in accordance with subsection 202.09.

   The removal area shall begin and end with a transverse butt joint, which shall be constructed with a transverse saw cut perpendicular to centerline. Replacement material shall be placed in sufficient quantity so the finished surface conforms to grade and smoothness requirements. Sections removed and replaced shall be at least 0.20 miles in length.

   (2) Overlay. The overlay shall cover the full width of the pavement including shoulders. The area overlaid shall begin and end with a transverse butt joint, which shall be constructed with a transverse saw cut and asphalt removal. All material shall be approved hot bituminous mixtures that meet all contract requirements. The overlay shall be placed so that the finished surface conforms to grade and smoothness requirements. The overlay area shall be compacted to the specified density. The overlay thickness shall be equivalent to that of the final layer in accordance with the Contract. Sections overlaid shall be at least 0.20 miles in length.

   (3) Diamond Grinding. Grinding shall not reduce planned pavement thickness by more than 0.3 inches. Diamond grinding shall be the full width of the lane. The entire ground area of the final pavement surface shall be covered with a Tack Coat conforming to Section 407 (CSS-1h at 0.1 gallons per square yard of diluted emulsion; the emulsion shall be diluted with water at the rate of 50 percent water and 50 percent emulsion) when grinding is complete. Cores shall be taken to verify that minimum pavement thicknesses have been maintained. A minimum of one core shall be taken every

100 cumulative feet or fraction thereof per lane of diamond grinding, as directed by the Engineer. Coring shall be at the Contractor's expense.

(d) *Final Smoothness Acceptance Testing.* After the Contractor has completed the required corrective work and any additional corrective work, the Contractor shall retest the pavement in accordance with subsection 105.07(b). If the Contractor requests to do additional corrective work to reduce disincentive after Final SA Testing, the Contractor shall perform an additional Final SA Testing for the project. A charge of $500 will be assessed to the Contractor for each additional Final SA Testing. Time count will be charged pursuant to contract requirements during the time period required for all Final SA Testing. Delays associated with additional Final SA Testing will be considered non-excusable and non-compensable.

The Contractor shall notify the Engineer pursuant to 105.07(b) to schedule the final SA testing.

Final acceptance and incentive/disincentive adjustments for pavement smoothness will be made on a square yard basis in accordance with the following:

Incentive payments will be based on the HRI for each 0.1 mile section or fraction thereof from the Contractor's initial SA testing. Those sections which earned incentives or full payment based on the initial SA testing will not be re-evaluated for incentive after final SA testing.

The disincentive payment will be based on the HRI for each 0.1 mile section or fraction thereof from the Contractor's Initial SA testing or the Contractor's Final SA testing, whichever is less. Those sections which had disincentive levels indicated by the initial SA, will be re-evaluated for disincentive. The Contractor may eliminate all disincentives on those 0.1 mile sections; however, no incentives may be earned in these areas, regardless of the final smoothness.

(e) *Department Smoothness Verification Testing (SV).* The Department may elect to perform smoothness verification (SV) testing using the Department's inertial profiler, with the methods described in subsection 105.07(b). The Engineer will notify the Contractor of the Department's intention to perform SV testing. All traffic control costs associated with Department SV testing will be paid for by the Department in accordance with Section 630.

The Contractor's SA test results will be compared to the Department's SV test results. The Contractor's SA test results will be considered acceptable and will be used for incentive/disincentive payment if the following criteria are met:

(1) The difference in HRI for a 1/10 mile section is less than 6.1 inches/mile for a minimum of 90 percent of the 1/10mile sections for each lane.
(2) The difference in average HRI for each lane is less than 6.1 inches/mile.
(3) The difference in the length of each lane is less than 0.2 percent

When the Contractor's SA test results are not considered acceptable, the Department's SV test results will be used for incentive/disincentive payment and the Contractor's profiler certification will be evaluated pursuant to CP 78. The Department will have 30 days to complete this evaluation.

The Contractor will be assessed a charge of $1,000 for SV testing when the Contractor's SA test results are not considered acceptable.

(f) *HRI Category IV: HMA Recycling Treatments Thin Lifts and Urban Rehabilitation treatments smoothness criteria.* For HRI Category IV pavements, the following shall be used for acceptance:

An HRI for each 0.1 mile section shall be determined on the original pavement surface prior to beginning the work.

An HRI for each 0.1 mile section shall be determined on the pavement surface after the work is complete.

When a 0.1 mile section has a final HRI greater than 80.0 in/mile and the final HRI is greater than the HRI prior to performing the work, that 0.1 mile section shall be corrected by a method approved in writing by the Engineer. Corrective work shall be such that the resulting final HRI is equal to or less than the initial HRI or 80.0 in/mile, whichever is greater. All costs associated with corrective work shall be at the Contractor's expense, including but not limited to traffic control, additional hot mix asphalt, grinding and milling.

Incentive/disincentive adjustments for smoothness will not be made for Category IV. Localized Roughness determinations will not be made for HRI Category IV.

The pavement smoothness for HMA Recycling Treatments and Thin Lifts that will be overlaid with a final riding surface will not be evaluated by the Department for acceptance.

May 8, 2014

REVISION OF SECTION 105
PORTLAND CEMENT CONCRETE PAVEMENT SMOOTHNESS

Section 105 of the Standard Specifications is hereby revised for this project as follows:

In subsection 105.08 (b) 1. A. delete the eighth paragraph and replace with the following:

The profile shall include transverse joints when pavement is placed by the project on both sides of the joint. When pavement is placed on only one side of the joint, the profile shall start 25 feet outside the project paving limits.

In subsection 105.08 (b) 1. B. add the following:

The ambient temperature shall be at least 34 °F for the profiler to operate.

In subsection 105.08 (b) 1. C. delete the third and fourth paragraph and replace with the following:

Incentive/Disincentive adjustments for Pavement Smoothness will be made in accordance with Table 105-10. Sections less than 0.01 miles in length will not be subject to disincentives. The profile of the section of pavement 25 feet outside the paving limits to 25 feet inside the paving limits will not be subjected to incentive or disincentive adjustments, but will be evaluated for localized roughness.

Incentive payments will not be made until all localized roughness areas have been corrected.

In subsection 105.08 (c) delete the sixth and seventh paragraphs and replace with the following:

Localized Roughness. The profiles shall be analyzed to determine where areas of localized roughness occur. The profile shall be summarized using the continuous HRI reporting system using an averaging length of 25 feet. The latest version of FHWA's ProVal software shall be used to generate the continuous HRI report. ProVal can be downloaded at http://www.roadprofile.com.

Areas of localized roughness are determined to be where the continuous HRI report exceeds the values in Table 105-11. Areas of localized roughness greater than 15.0 feet in length shall be considered deficient, and require corrective work. Areas of localized roughness less than 25 feet in distance that contain a valve box shall be tested in accordance with subsection 105.08 (a) 2. for corrective work.

In subsection 105.08 (c) add the following to the ninth paragraph:

Diamond grinding shall be the full width of the lane.

February 3, 2011

REVISION OF SECTION 105
VIOLATION OF WORKING TIME LIMITATION

Section 105 of the Standard Specifications is hereby revised for this project as follows:

Subsection 105.03 shall include the following:

If there is a violation of the working time limitations for traffic control as set forth in the special provisions, a written notice to stop work will be imposed on the Contractor at the start of the next working day. Work shall not resume until the Contractor assures the Engineer, in writing, that there will not be a reoccurrence of the working time violation. If more violations take place, the Engineer will notify the Contractor in writing that there will be a price reduction charge for each incident in accordance with this specification. This incident price reduction charge will be deducted from any money due the Contractor. This price reduction will not be considered a penalty but will be a price reduction for failure to perform traffic control in compliance with the Contract.

An incident is any violation up to 30 minutes in duration. Each 30 minutes or increment thereof will be considered as an incident. A price reduction will be assessed for each successive or cumulative 30 minute period in violation of the working time limitations, as determined by the Engineer. The price reduction for each incident will increase at a progressive rate starting with $150 for the second incident and increasing to $1200 for the fifth and subsequent incidents in accordance with the following schedule. A 15 minute grace period will be allowed at the beginning of the second incident on the project before the price reduction is applied. This 15 minute grace period applies only to the second incident.

The number of incident charges will be accumulative throughout the duration of the Contract.

PRICE REDUCTION SCHEDULE

Incident	Incident Rate	Total Price Reduction
1st	Notice to Stop Work	----
2nd	$150	$150
3rd	300	450
4th	600	1,050
5th	1,200	2,250
6th	1,200	3,450
Etc.	1,200	4,650
	Etc.	Etc.

REVISION OF SECTIONS 105 AND 106
CONFORMITY TO THE CONTRACT OF HOT MIX ASPHALT
(LESS THAN 5000 TONS)

Sections 105 and 106 of the Standard Specifications are hereby revised for this project as follows:

Delete subsection 105.05 and replace with the following:

105.05 Conformity to the Contract of Hot Mix Asphalt. Conformity to the Contract of all Hot Mix Asphalt, Item 403, except Hot Mix Asphalt (Patching) and temporary pavement will be determined by tests and evaluations of elements that include asphalt content, gradation, in-place density and joint density in accordance with the following:

All work performed and all materials furnished shall conform to the lines, grades, cross sections, dimensions, and material requirements, including tolerances, shown in the Contract.

For those items of work where working tolerances are not specified, the Contractor shall perform the work in a manner consistent with reasonable and customary manufacturing and construction practices.

When the Engineer finds the materials or work furnished, work performed, or the finished product are not in conformity with the Contract and has resulted in an inferior or unsatisfactory product, the work or material shall be removed and replaced or otherwise corrected at the expense of the Contractor.

Materials will be sampled randomly and tested by the Department in accordance with Section 106 and with the applicable procedures contained in the Department's Field Materials Manual. The approximate maximum quantity represented by each sample will be as set forth in Section 106. Additional samples may be selected and tested as set forth in Section 106 at the Engineer's discretion.

A process will consist of either a single test value or a series of test values resulting from related tests of an element of the Contractor’s work and materials. An element is a material or workmanship property that can be tested and evaluated for quality level by the Department approved sampling, testing, and analytical procedures. All materials produced will be assigned to a process. A change in process is defined as a change that affects the element involved. For any element, with the exception of the process for joint density element, a process normally will include all produced materials associated with that element prior to a change in the job mix formula (Form 43). For joint density, a new process will be established for each new layer of pavement or for changes in joint construction. Density measurements taken within each compaction test section will be a separate process. The Engineer may separate a process in order to accommodate small quantities or unusual variations.

Evaluation of materials for pay factors (PF) will be done using only the Department’s acceptance test results. Each process will have a PF computed in accordance with the requirements of this Section. Test results determined to have sampling or testing errors will not be used.

Except for in-place density measurements taken within a compaction test section, any test result for an element greater than the distance 2 x V (see Table 105-2) outside the tolerance limits will be designated as a separate process and the pay factor will be calculated in accordance with subsection 105.05(a). An element pay factor less than zero shall be zero. The calculated PF will be used to determine the Incentive/Disincentive Payment (I/DP) for the process.

In the case of in-place density or joint density the Contractor will be allowed to core the exact location (or immediately adjacent location for joint density) of a test result more than 2 x V outside the tolerance limit. The core must be taken and furnished to the Engineer within eight hours after notification by the Engineer of the test result. The result of this core will be used in lieu of the previous test result. Cores not taken within eight hours after notification by the Engineer will not be used in lieu of the test result. All costs associated with coring will be at the Contractor s expense.

(a) *Representing Small Quantities.* When it is necessary to represent a process by only one or two test results, PF will be the average of PFs resulting from the following:

If the test result is within the tolerance limits then PF = 1.00

If the test result is above the maximum specified limit, then

$$PF = 1.00 - [0.25(T_O - T_U)/V]$$

If the test result is below the minimum specified limit, then

$$PF = 1.00 - [0.25(T_L - T_O)/V]$$

Where: PF = pay factor.
V = V factor from Table 105-2.
T_O = the individual test result.
T_U = upper specification limit.
T_L = lower specification limit.

The calculated PF will be used to determine the I/DP for the process.

(b) *Determining Quality Level.* Each process with three or more test results will be evaluated for a quality level (QL) in accordance with Colorado Procedure 71.

(c) *Gradation Element.* Each specified sieve, with the exception of 100 percent passing sieves, will be evaluated for QL separately. The lowest calculated QL for a sieve will be designated as the QL for gradation element for the process.

(d) *Joint Density Element.* Joint Density will be tested according to subsection 401.17.

(e) *Process Pay Factor.* Using the calculated QL for the process, compute PF as follows: The final number of random samples (Pn) in each process will determine the final pay factor. . As test values are accumulated for each process, Pn will change accordingly. When the process has been completed, the number of random samples it contains will determine the computation of PF, based on Table 105-3 and formula (1) below. When Pn is from 3 to 9, or greater than 200, PF will be computed using the formulas designated in Table 105-3. Where Pn is equal to or greater than 10 and less than 201, PF will be computed by formula (1):

$$(1)\quad PF = \frac{(PF_1 + PF_2)}{2} + \left[\frac{(PF_2 + PF_3)}{2} - \frac{(PF_1 + PF_2)}{2}\right] \times \frac{(Pn_2 - Pn_X)}{(Pn_2 - Pn_3)}$$

Where, when referring to Table 105-3:
PF_1= PF determined at the next lowest Pn formula using process QL
PF_2= PF determined using the Pn formula shown for the process QL
PF_3= PF determined at the next highest Pn formula using process QL
Pn_2= the lowest Pn in the spread of values listed for the process Pn formula
Pn_3= the lowest Pn in the spread of values listed for the next highest Pn formula
Pn_X= the actual number of test values in the process

When evaluating the item of Furnish Hot mix asphalt, the PF for the element of In-Place Density shall be 1.0.

Regardless of QL, the maximum PF in relation to Pn is limited in accordance with Table 105-3.

As test results become available, they will be used to calculate accumulated QL and PF numbers for each process. The process I/DP's will then be calculated and accumulated for each element and for the item. The test results and the accumulated calculations will be made available to the Contractor upon request.

Numbers from the calculations will be carried to significant figures and rounded according to AASHTO Standard Recommended Practice R-11, Rounding Method.

(f) *Evaluation of Work*. When the PF of a process is 0.75 or greater, the finished quantity of work represented by the process will be accepted at the appropriate pay factor. If the PF is less than 0.75, the Engineer may:

1. Require complete removal and replacement with specification material at the Contractor's expense;

   or

2. Where the finished product is found to be capable of performing the intended purpose and the value of the finished product is not affected, permit the Contractor to leave the material in place.

If the material is permitted to remain in place the PF for the process will not be greater than 0.75. When condition red, as described in Section 106, exists for any element, resolution and correction will be in accordance with Section 106. Material, which the Engineer determines is defective, may be isolated and rejected without regard to sampling sequence or location within a process.

If removal and replacement is required because the joint density PF for a process is below 0.75, the Contractor shall remove and replace the full lane width adjacent to and including at least 6 inches beyond the visible joint line for the entire length of joint representing the process. If the lane removed is adjacent to another joint, that joint shall also be removed to a point 6 inches beyond the visible joint line. When a single joint density core is more than 2V outside the tolerance limits, the removal and replacement limits shall be identified by coring the failing joint at 25 foot intervals until two successive cores are found to be 1V or less below the minimum tolerance limit. If removal and replacement is required, the Contractor shall submit documentation identifying the process to be used to correct the area in question in writing. The process will be approved by the Engineer before commencing the corrective work.

Table 105-2
"W" AND "V" FACTORS FOR VARIOUS ELEMENTS

Hot Mix Asphalt		
Element	**V Factor**	**W Factor**
2.36 mm (No. 8) mesh and larger sieves	2.80	N/A
600 µm (No. 30) mesh sieve	1.80	N/A
75 µm (No. 200) mesh sieve	0.80	N/A
Gradation	N/A	15
Asphalt Content	0.20	25
In-place Density	1.10	45
Joint Density	1.60	15

Table 105-3
FORMULAS FOR CALCULATING PF BASED ON PN

Pn	**When Pn as shown at left is 3 to 9, or greater than 200, use designated formula below to calculate Pay Factor, PF = ..., when Pn is 10 to 200, use formula (1) above:**	**Maximum PF**
3	$0.31177 + 1.57878 (QL/100) - 0.84862 (QL/100)^2$	1.025
4	$0.27890 + 1.51471 (QL/100) - 0.73553 (QL/100)^2$	1.030
5	$0.25529 + 1.48268 (QL/100) - 0.67759 (QL/100)^2$	1.030
6	$0.19468 + 1.56729 (QL/100) - 0.70239 (QL/100)^2$	1.035
7	$0.16709 + 1.58245 (QL/100) - 0.68705 (QL/100)^2$	1.035
8	$0.16394 + 1.55070 (QL/100) - 0.65270 (QL/100)^2$	1.040
9	$0.11412 + 1.63532 (QL/100) - 0.68786 (QL/100)^2$	1.040
10 to 11	$0.15344 + 1.50104 (QL/100) - 0.58896 (QL/100)^2$	1.045
12 to 14	$0.07278 + 1.64285 (QL/100) - 0.65033 (QL/100)^2$	1.045
15 to 18	$0.07826 + 1.55649 (QL/100) - 0.56616 (QL/100)^2$	1.050
19 to 25	$0.09907 + 1.43088 (QL/100) - 0.45550 (QL/100)^2$	1.050
26 to 37	$0.07373 + 1.41851 (QL/100) - 0.41777 (QL/100)^2$	1.055
38 to 69	$0.10586 + 1.26473 (QL/100) - 0.29660 (QL/100)^2$	1.055
70 to 200	$0.21611 + 0.86111 (QL/100)$	1.060
$\geq$ 201	$0.15221 + 0.92171 (QL/100)$	1.060

(g) *Process I/DP Computation.*

$I/DP = (PF - 1)(QR)(UP)(W/100)$

Where:
- I/DP = Incentive/Disincentive Payment
- PF = Pay Factor
- QR = Quantity in Tons of HMA Represented by the Process
- UP = Unit Bid Price of Asphalt Mix
- W = Element Factor from Table 105-2

When AC is paid for separately UP shall be:

$$UP = [(Ton_{HMA})(UP_{HMA}) + (Ton_{AC})(UP_{AC})]/Ton_{HMA}$$

Where:
- Ton_{HMA} = Tons of Asphalt Mix
- UP_{HMA} = Unit Bid Price of Asphalt Mix
- Ton_{AC} = Tons of Asphalt Cement
- UP_{AC} = Unit Bid Price of Asphalt Cement

For the joint density element:

$$UP = UP_{HMA}$$

Where: UP_{HMA} is as defined above.

When AC is paid for separately UP shall be:

$$UP = [(BTon_{HMA})(BUP_{HMA}) + (BTon_{AC})(BUP_{AC})]/BTon_{HMA}$$

Where:
- $BTon_{HMA}$ = Bid Tons of Asphalt Mix
- BUP_{HMA} = Unit Bid Price of Asphalt Mix
- $BTon_{AC}$ = Bid Tons of Asphalt Cement
- BUP_{AC} = Unit Bid Price of Asphalt Cement

(h) *Element I/DP.* The I/DP for an element shall be computed by accumulating the process I/DP's for that element.

(i) *I/DP for a Mix Design.* The I/DP for a mix design shall be computed by accumulating the individual I/DP's for the asphalt content, in-place density, and gradation elements for that mix design. The accumulated quantities of materials for each element must be the same at the end of I/DP calculations for a mix design.

(j) *Project I/DP.* The I/DP for the project shall be computed by accumulating the mix design I/DP's and the joint density I/DP's. The accumulated quantities of materials for each element must be the same at the end of I/DP calculations for the project.

Delete subsection 106.05 and replace with the following:

106.05 Sampling and Testing of Hot Mix Asphalt. All hot mix asphalt, Item 403, except Hot Mix Asphalt (Patching) and temporary pavement shall be tested in accordance with the following program of process control testing and acceptance testing:

The Contract will specify whether process control testing by the Contractor is mandatory or voluntary.

REVISION OF SECTIONS 105 AND 106
CONFORMITY TO THE CONTRACT OF HOT MIX ASPHALT
(LESS THAN 5000 TONS)

(a) *Process Control Testing.*

1. Mandatory Process Control. When process control testing is mandatory the Contractor shall be responsible for process control testing on all elements and at the frequency listed in Table 106-1. Process control testing shall be performed at the expense of the Contractor.

   After completion of compaction, in-place density tests for process control shall be taken at the frequency shown in Table 106-1. The results shall be reported in writing to the Engineer on a daily basis. Daily plots of the test results with tonnage represented shall be made on a chart convenient for viewing by the Engineer. All of the testing equipment used for in-place density testing shall conform to the requirements of acceptance testing standards, except nuclear testing devices need not be calibrated on the Department's calibration blocks.

   For elements other than in-place density, results from quality control tests need not be plotted, or routinely reported to the Engineer. This does not relieve the Contractor from the responsibility of performing such testing along with appropriate plant monitoring as necessary to assure that produced material conforms to the applicable specifications. Quality control test data shall be made available to the Engineer upon request.

2. Voluntary Process Control. The Contractor may conduct process control testing. Process control testing is not required, but is recommended on the elements and at the frequency listed in Table 106-1.

   All of the testing equipment used for in-place density testing shall conform to the requirements of acceptance testing standards, except nuclear testing devices need not be calibrated on the Department's calibration blocks.

(b) *Acceptance Testing.* Acceptance testing is the responsibility of the Department. For acceptance testing the Department will determine the locations where samples or measurements are to be taken and as designated in Section 403. The maximum quantity of material represented by each test result, the elements, the frequency of testing and the minimum number of test results will be in accordance with Table 106-1. The location or time of sampling will be based on the stratified random procedure as described in CP 75. Acceptance sampling and testing procedures will be in accordance with the Schedule for Minimum Materials Sampling, Testing and Inspection in the Department's Field Materials Manual. Samples for project acceptance testing shall be taken by the Contractor in accordance with the designated method. The samples shall be taken in the presence of the Engineer. Where appropriate, the Contractor shall reduce each sample to the size designated by the Engineer. The Contractor may retain a split of the each sample which cannot be included as part of the Contractor's process control testing. Dispute of the acceptance test results in accordance with CP-17 will not be allowed unless a provision for check testing has been included in the Contract and it has been successfully completed. All materials being used are subject to inspection and testing at any time prior to or during incorporation into the work.

Table 106-1
SCHEDULE FOR MINIMUM SAMPLING AND TESTING

Element	Process Control	Acceptance
Asphalt Content	1/500 tons	1/1000 tons
Theoretical Maximum Specific Gravity	1.1000 tons, minimum 1/day	1/1000 tons, minimum 1/day
Gradation	1/Day	1/2000 tons
In-Place Density	1/500 tons	1/500 tons
Joint Density	1 core/2500 linear feet of joint	1 core /5000 linear feet of joint
Aggregate Percent Moisture (3)	1/2000 tons or 1/Day if less than 2000 tons	1/2000 tons
Percent Lime (3) (4)	1/Day	Not applicable

Notes:

(1) The minimum number of in-place density tests for acceptance will be 5.

(2) Process control tests for gradation are not required if less than 250 tons are placed in a day. The minimum number of process control tests for gradation shall be one test for each 1000 tons or fraction thereof.

(3) Not to be used for incentive/disincentive pay. Test according to CP 60B and report results from Form 106 or Form 565 on Form 6.

(4) Verified per Contractor's QC Plan.

(c) *Reference Conditions.* Three reference conditions can exist determined by the Moving Quality Level (MQL). The MQL will be calculated in accordance with the procedure in CP 71 for Determining Quality Level (QL). The MQL will be calculated using only acceptance tests. The MQL will be calculated on tests 1 through 3, then tests 1 through 4, then tests 1 through 5, then thereafter on the last five consecutive test results. The MQL will not be used to determine pay factors. The three reference conditions and actions that will be taken are described as follows:

1. Condition green will exist for an element when an MQL of 90 or greater is reached, or maintained, and the past five consecutive test results are within the specification limits.

2. Condition yellow will exist for all elements at the beginning of production or when a new process is established because of changes in materials or the job-mix formula, following an extended suspension of work, or when the MQL is less than 90 and equal to or greater than 65. Once an element is at condition green, if the MQL falls below 90 or a test result falls outside the specification limits, the condition will revert to yellow or red as appropriate.

3. Condition red will exist for any element when the MQL is less than 65. The Contractor shall be notified immediately in writing and the process control sampling and testing frequency increased to a minimum rate of 1/250 tons for that element. The process control sampling and testing frequency shall remain at 1/250 tons until the process control QL reaches or exceeds 78. If the QL for the next five process control tests is below 65, production will be suspended.

   If gradation is the element with MQL less than 65, the Department will test one randomly selected sample in the first 1250 tons produced in condition red. If this test result is outside the tolerance limits, production will be suspended. (This test result will not be included as an acceptance test.)

   After condition red exists, a new MQL will be started. Acceptance testing will stay at the frequency shown in Table 106-1. After three acceptance tests, if the MQL is less than 65, production will be suspended.

   Production will remain suspended until the source of the problem is identified and corrected. Each time production is suspended, corrective actions shall be proposed in writing by the Contractor and approved in writing by the Engineer before production may resume.

   Upon resuming production, the process control sampling and testing frequency for the elements causing the condition red shall remain at 1/250 tons. If the QL for the next five process control tests is below 65, production will be suspended again. If gradation is the element with MQL less than 65, the Department will test one randomly selected sample in the first 1250 tons produced in condition red. If this test result is outside the tolerance limits, production will be suspended.

REVISION OF SECTIONS 105, 106, 412, 601 AND 709
CONFORMITY TO THE CONTRACT OF PORTLAND CEMENT CONCRETE PAVEMENT AND DOWEL BARS AND TIE BARS FOR JOINTS

Sections 105, 106, 412, 601 and 709 of the Standard Specifications are hereby revised for this project as follows:

Delete subsection 105.06 and replace with the following:

105.06 Conformity to the Contract of Portland Cement Concrete Pavement. Conformity to the Contract of all Portland Cement Concrete Pavement, Item 412, will be determined in accordance with the following:

When the Engineer finds that the materials furnished, the work performed, or the finished product does not conform with the Contract, or the Pay Factor (PF) for an element's process is less than 0.75 but that reasonably acceptable work has been produced, the Engineer will determine the extent of the work that will be accepted and remain in place. The Engineer will use a Contract Modification Order to document the justification for allowing the work to remain in place and the price adjustment that will be applied.

When the Engineer finds the materials furnished, work performed, or the finished product is not in conformity with the Contract, or the PF for an element's process is less than 0.75 and has resulted in an inferior or unsatisfactory product, the work or material shall be removed and replaced or otherwise corrected by and at the expense of the Contractor. When the PF for any process is 0.75 or greater, the finished quantity of work represented by the process will be accepted at the calculated pay factor.

Materials will be sampled and tested by the Contractor and the Department in accordance with subsection 106.06 and with procedures contained in the Department's Field Materials Manual. The approximate quantity represented by each sample will be as set forth in subsection 106.06, Tables 106-2 and 106-3. Additional samples may be selected and tested at the Engineer's discretion.

(a) Incentive and Disincentive Payments (I/DP) will be made based on a statistical analysis that yields Pay Factors (PF) and Quality Levels (QL). The PF and QL will be made based on test results for the elements of compressive strength and pavement thickness (compressive strength criteria) or the elements of flexural strength and pavement thickness (flexural strength criteria). The Department will indicate in the plans whether compressive strength or flexural strength criteria will be used. If the acceptance criteria is not indicated, flexural strength criteria shall be used..

Incentive or Disincentive payment will not be made for thickness of concrete pavement furnished by the Contractor and placed by others.

When compressive strength criteria is indicated, then the QL will be calculated for the elements of compressive strength and pavement thickness on a process basis. When flexural strength criteria is indicated, then the QL will be calculated for the elements of flexural strength and pavement thickness on a process basis. A separate process will be established for an element when a change in the process affects that element. A process will consist of the test results from a series of random samples. Test results determined to have sampling or testing errors will not be used. All materials produced will be assigned to a process. A change in process is defined as a change that affects the element involved. Changes in mix design, material source, design pavement thickness, or the method being utilized to place the pavement are considered changes in process. The following is provided to clarify changes in processes for each element:

1. Construction of mainline pavement, including the shoulders if placed with the mainline, is a single process, providing there are no changes in process as described above.
2. Construction of ramps, acceleration and deceleration lanes, shoulders placed separately, and areas requiring hand work are considered separate processes.
3. A change in the mix design is a process change for the compressive strength element or the flexural strength element, but is not a process change for the pavement thickness element.

(b) When it is necessary to represent material by one or two tests, each individual test shall have a PF computed in accordance with the following:

If the value of the test is at or above the lower tolerance limit, then PF = 1.000. If the value of the test is below the lower tolerance limit, then:

$PF = 1.00 – [0.25(T_L - T_0)/V]$

where: PF = pay factor.

V = V factor from Tables 105-4 or 105-5.

T_0 = the individual test value.

T_L= lower tolerance limit.

(c) The following procedures will be used to compute Incentive and Disincentive Payments (I/DP), quality levels (QL), and pay factors (PF) for processes represented by three or more tests:

1. Quality Level (QL) will be calculated according to CP-71.

2. Compute the PF for the process. When the process has been completed, the number of tests (Pn) it includes shall determine the formula to be used to compute the final pay factor in accordance with the following:

A. For compressive strength and pavement thickness:

When 3 ≤ Pn ≤ 5

If QL ≥ 85, then PF = 1.00 + (QL - 85)0.001333

If QL < 85, then PF = 1.00 + (QL - 85)0.005208

When 6 ≤ Pn ≤ 9

If QL ≥ 90, then PF = 1.00 + (QL - 90)0.002000

If QL < 90, then PF = 1.00 + (QL - 90)0.005682

When 10 ≤ Pn ≤ 25

If QL ≥ 93, then PF = 1.00 + (QL - 93)0.002857

If QL < 93, then PF = 1.00 + (QL - 93)0.006098

When Pn ≥ 26

If QL ≥ 95, then PF = 1.00 + (QL - 95)0.004000

If QL < 95, then PF = 1.00 + (QL - 95)0.006757

B. For flexural strength:

When 3 ≤ Pn ≤ 5

If QL ≥ 85, then PF = 1.00 + (QL - 85)0.002000

If QL < 85, then PF = 1.00 + (QL - 85)0.005208

When 6 ≤ Pn ≤ 9

If QL ≥ 90, then PF = 1.00 + (QL - 90)0.003000

If QL < 90, then PF = 1.00 + (QL - 90)0.005682

When 10 ≤ Pn ≤ 25

If QL ≥ 93, then PF = 1.00 + (QL - 93)0.004286

If QL < 93, then PF = 1.00 + (QL - 93)0.006098

When Pn ≥ 26

If QL ≥ 95, then PF = 1.00 + (QL - 95)0.006000

If QL < 95, then PF = 1.00 + (QL - 95)0.006757

3. Compute the I/DP for the process:

I/DP = (PF-1)(QR)(UP)

where: QR = Quantity Represented by the process.
UP = Unit Price bid for the Item.

The total I/DP for an element shall be computed by accumulating the individual I/DP for each process of that element.

(d) As acceptance test results become available, they will be used to calculate accumulated QL and Incentive and Disincentive Payments (I/DP) for each element and for the item. The Contractor's test results and the accumulated calculations shall be made available to the Engineer upon request. The Engineer's test results and the calculations will be made available to the Contractor as early as reasonably practical. Numbers from the calculations shall be carried to significant figures and rounded according to AASHTO Standard Recommended Practice R-11, Rounding Method.

I/DP will be made to the Contractor in accordance with subsection 412.24(a). During production, interim I/DP will be computed for information only. The Pn will change as production continues and test results accumulate. The Pn at the time an I/DP is computed shall determine the formula to be used.

(e) The Contractor shall not have the option of accepting a price reduction or disincentive in lieu of producing specification material. Continued production of non-specification material will not be permitted. Material which is obviously defective may be isolated and rejected without regard to sampling sequence or location within a process.

(f) When compressive strength is indicated, the Contractor may take cores at his own expense and in accordance with Colorado Procedure 65 to provide an alternative determination of strength to replace acceptance test results with a compressive strength less than 4,500 psi. The higher value of the 28 day compressive strength of acceptance cylinders or the corresponding core’s compressive strength will be used for I/DP.

When flexural strength is indicated, the Contractor may take cores at his own expense and in accordance with Colorado Procedure 65 to provide an alternative determination of strength to replace QC test results with a flexural strength less than 650 psi. The cores shall be obtained prior to 45 days after placement. The higher value of the 28 day flexural strength of QC beams or the corresponding core’s flexural strength will be used for I/DP.

Table 105-4
"V" FACTORS AND INCENTIVE PAYMENTS
COMPRESSIVE STRENGTH CRITERIA

Element	V factor	Maximum Incentive Payment	Lower Tolerance Limit, T_L	Plan Value
Compressive Strength	400 psi	3.00 percent	4,500 psi	4,500 psi
Pavement Thickness	0.4 inch	2.00 percent	Plan Thickness -0.4 inch	Plan Thickness

Table 105-5
"V" FACTORS AND INCENTIVE PAYMENTS
FLEXURAL STRENGTH CRITERIA

Element	V factor	Maximum Incentive Payment	Lower Tolerance Limit, T_L	Plan Value
Flexural Strength	50 psi	3.00%	570 psi	650 psi
Pavement Thickness	0.4 inch	2.00%	Plan Thickness -0.4"	Plan Thickness

Sand Equivalence. If compressive strength criteria is indicated then the sand equivalence (SE) as determined by CP 37 will be considered acceptable when the running average of three consecutive tests is greater than 80 percent and no individual test result is less than 75 percent. When the running average of three consecutive SE tests falls below 80 percent or an individual SE test result falls below 75 percent, paving operations shall be suspended. The Contractor shall submit a written plan to correct the low SE test results to the Engineer for approval. The Contractor shall not continue paving operations until the Engineer approves the plan in writing and three SE test results from random samples in the stockpile are above 80 percent.
Delete subsection 106.06 and replace with the following:

106.06 Sampling and Testing of Portland Cement Concrete Paving. All Portland Cement Concrete Pavement, Item 412, shall be tested in accordance with the following quality control and acceptance testing procedures:

(a) *Quality Control Testing*. The Contractor shall be responsible for quality control testing of all elements listed in Table 106-2 or 106-3. Quality control testing shall be performed at the expense of the Contractor. The Contractor shall develop a quality control plan (QCP) in accordance with the following:

1. Quality Control Plan. For each element listed in Tables 106-2 or 106-3, the QCP must provide adequate details to ensure that the Contractor will perform quality control. The Contractor shall submit the QCP to the Engineer at the preconstruction conference. The Contractor shall not start any work on the project until the Engineer has approved the QCP in writing.

   A. Frequency of Tests or Measurements. The QCP shall indicate a random sampling frequency, which shall be equal to or more frequent than that shown in Table 106-2 or 106-3. The quality control tests shall be independent of acceptance tests.

   B. Test Result Chart. Each quality control test result, the appropriate area, volume, and the tolerance limits shall be plotted. The chart shall be posted daily at a location convenient for viewing by the Engineer.

   C. Quality Level Chart. The QL for each element in Table 106-2 or 106-3 shall be plotted. The QL shall

be calculated in accordance with the procedure in CP 71 for Determining Quality Level. The QL shall be calculated on tests 1 through 3, then tests 1 through 4, then tests 1 through 5, then thereafter the last five consecutive test results. The area of material represented by the last test result shall correspond to the QL.

D. F-test and t-test Charts. If flexural strength criteria is indicated, then the results of F-test and t-test analysis between the Department's verification tests of flexural strength and the Contractor's quality control tests of flexural strength shall be shown on charts. The F-test and t-test shall be calculated in accordance with standard statistical procedures using all verification tests and quality control tests completed to date. When a verification test is completed, the F-test and t-test calculations shall be redone. The area of material represented by the last test result shall correspond to the F-test and t-test. A warning value of 5 percent and an alert value of 1 percent shall be shown on each chart. The chart shall be posted daily at a location convenient for viewing by the Engineer.

2. Point of Sampling. The material for quality control testing shall be sampled by the Contractor using CP 61. The location where material samples will be taken shall be indicated in the QCP.

3. Testing Standards. The QCP shall indicate which testing standards will be followed. Acceptable standards are Colorado Procedures, AASHTO and ASTM. The order of precedence is Colorado Procedures, AASHTO procedures and then ASTM procedures.

   The compressive strength test for quality control will be the average strength of two test cylinders cast in plastic molds from a single sample of concrete, cured under standard laboratory conditions, and tested three to seven days after molding.

4. Testing Supervisor Qualifications. The person in charge of and responsible for the quality control testing shall be identified in the QCP. This person shall be present on the project and possess one or more of the following qualifications:
   A. Registration as a Professional Engineer in the State of Colorado.
   B. Registration as an Engineer in Training in the State of Colorado with two years of paving experience.
   C. A Bachelor of Science in Civil Engineering or Civil Engineering Technology with three years of paving experience.
   D. National Institute for Certification in Engineering (NICET) certification at level III or higher in the subfields of Transportation Engineering Technology, Highway Materials, or Construction Materials Testing Engineering Technology, Concrete and four years of paving experience.

5. Technician Qualifications. Technicians performing tests shall meet the requirements of Colorado Procedure 10.

6. Testing Equipment. All of the testing equipment used to conduct quality control testing shall conform to the standards specified in the test procedures and be in good working order. If flexural strength criteria is indicated, then the Contractor shall provide the following equipment and supplies which will not be paid for separately but shall be included in the work:

   A. A separate, temperature controlled facility of at least 300 square feet usable space. This facility shall be used exclusively for the molding, storage and testing of concrete test specimens as required. This facility shall be provided in addition to other facilities required in Section 620. The storage facility shall have sufficient water storage capacity for curing all required test specimens. The storage facility shall provide separate storage tanks for each type of required testing. Each storage tank shall have a continuously recording thermometer and sufficient blank charts for the project. Temperatures of each storage tank shall be recorded for the duration of the project.

   B. A machine for testing flexural strength of concrete specimens. The machine shall be one of the following or an approved equal:

1. Forney model number FHS-300 with a Co-Pilot digital monitor.
2. Humboldt model number HCM-3000 with a iD Digital Indicator
3. Gilson model number MC-400 with Pro Controller

Both the Contractor and the Engineer will use this machine for testing concrete specimens. The machine shall meet the requirements of AASHTO T 97 and T 22 and the following: The machine and the flexural strength assembly shall be of a rigid construction. The applied vertical load shall be uniformly distributed to the third points and uniformly across the width of the beam (transverse distribution). Uniform distribution of the load is defined as less than a 3 percent variation in the load between each of the nine strain gages placed in the middle third section of the tension face for loads from 1,000 to 10,000 pounds. Two firms that can evaluate and assess the ability of the machine to distribute the load evenly are KPFF Consulting Engineers, Chicago Illinois 847-859-7790 and Construction Testing Laboratories, Skokie Illinois 847-965-7500 . Other firms may be capable of evaluating and assessing the load distribution of the machine. The Engineer must approve the firm prior to assessing the machine. The machine shall be ready for use and certified two days before paving begins. After the machine has been certified and accepted by the Engineer it shall not be moved until all portland cement concrete paving and flexural strength acceptance tests have been completed. A weekly check of the planeness of all bearing surfaces on the flexural strength apparatus shall be made and recorded in the Contractor's QC notebook for each week that flexural strength testing occurs. If the nominal maximum aggregate size of the mix is ¾ inches or less, then the Contractor shall also provide a separate flexural strength apparatus that is configured to test 4x4x14 inch beam specimens. Swapping flexural strength apparatuses will not require recertification of the test machine.

C. Beam molds for molding all test specimens required. Beam molds shall have a cross section of approximately 6 inches by 6 inches. All beam molds shall be checked by the Contractor prior to being placed in service and monthly. The checks of each beam mold shall be recorded in the Contractor's QC notebook. This shall include all testing described in subsection 106.06. If the nominal maximum aggregate size of the mix is ¾ inches or less, then the Contractor shall also provide beam molds with a cross section of 4 inches by 4 inches and a minimum length of 14 inches.

7. Reporting and Record Keeping. The Contractor shall report the results of the tests to the Engineer in writing at least once per day.

The Contractor shall assemble a Quality Control (QC) notebook and update it daily. This notebook shall contain all worksheets, test results forms, test results charts and quality level charts for each of the elements listed in Table 106-2 or 106-3. The Contractor shall submit examples of worksheets, test result forms and test results charts in accordance with CP 12B as part of the Contractor's Quality Control Plan (QCP). The Contractor shall submit the QC notebook to the Engineer for review once a month on the date agreed to at the Pre-Construction Conference.

The QC notebook will be returned to the Contractor with a list of recognized deficiencies within two working days after submittal. Deficiencies may include, but are not limited to, the failure to submit the notebook on time or an absence of the required reports. For any month in which deficiencies are identified, the QC notebook will be submitted for review two weeks after the QC notebook is returned. Upon the second recognized deficiency the Engineer will notify the Contractor, and the pay estimate shall be withheld until the Contractor submits, in writing, a report detailing the cause for the recognized deficiency. The report shall include how the Contractor plans to resolve the deficiencies. Additional recognized deficiencies will result in a delay of the pay estimate until the Contractor has identified and resolved the deficiency along with revising and resubmitting his QCP to address these issues. Once the Engineer has reviewed and approved the revised QCP the estimate may be paid. Upon submittal of the QC notebook for the semi-final estimate, the QC notebook shall become the property of the Department.

The Contractor shall make provisions such that the Engineer can inspect quality control work in progress, including QC notebook, sampling, testing, plants, and the Contractor's testing facilities at any time.

8. Optimized Gradation. The Contractor will be required to perform quality control testing of the combined aggregate gradation (CAG) when an Optimized Gradation (OG) is used for Class E or P Concrete. The combined aggregate gradation testing frequency shall be three per day. Test one shall be sampled and tested after full production begins but before production reaches 100 cubic yards. Test two shall be sampled and tested after four hours of continuous production or production reaches 1000 cubic yards, whichever comes first. Test three shall be sampled and tested after seven hours of continuous production or production reaches 1750 cubic yards, whichever comes first. The frequency shall be a minimum of one per day if production is less than 750 cubic yards.

   The Department will perform one gradation each day that may be a split of one of the three daily QC samples. This data will not be used to determine acceptability of the material but as information only.

   The Contractor's gradation test data will be used to calculate the coarseness factor (CF) and workability factor (WF) and must plot within the workability box. No corrective action shall be required if the data falls within the workability box.

   When the Contractor's gradation test results and the CF and WF fall outside the workability box, the Contractor shall immediately make corrections to bring the aggregate gradation within the workability box and notify the Engineer. If two or more consecutive test results for any single day or two successive days are found to fall outside the workability box, the Contractor shall immediately suspend production and provide a written corrective plan to the Engineer for approval prior to resuming production.

   Upon being allowed to resume production, the Contractor shall follow the daily sampling frequency. If the next two consecutive gradation tests indicate the CF and WF plot inside the workability box, the Contractor may continue production. If the first two aggregate samples do not have CF and WF that fall inside the workability box, production shall be suspended.

   Prior to resuming production the Contractor shall be required to sample the individual aggregate stockpiles at two or more locations to determine the range of variability within each stockpile, make appropriate adjustments to the percentages for each aggregate component, and discharge and sample the combined aggregates. The combined aggregate gradation shall be tested to determine if the CF and WF fall inside the workability box. Production can resume if the CF and WF plot within the workability box. Production will continue to be suspended for additional evaluation of stockpiles and aggregate feed rates until gradation sampling and testing indicate the CF and WF fall inside the workability box.

   All gradation test information during production shall be provided to the Engineer daily. The Contractor shall immediately report all gradation test data to the Engineer for evaluation during periods when production is suspended or upon resuming production. The Contractor will be notified in writing in all cases when production may resume or shall remain suspended.

(b) *Acceptance Testing.* Acceptance testing frequencies shall be in accordance with the Schedule (Quality Assurance) in the Department's Field Materials Manual. Except for flexural strength, acceptance tests will be conducted by and at the expense of the Department. Acceptance sampling and testing procedures will be in accordance with the Department's Field Materials Manual with the following exceptions and inclusions:

A split sample from an acceptance test shall not be used for a quality control test. The Engineer will designate the location where samples are to be taken. Samples shall be taken by the Contractor in accordance with CP 61. The Engineer will be present during the sampling and take possession of all acceptance samples. Samples transported in different containers will be combined and mixed before molding specimens. All materials are subject to inspection and testing at all times.

Pavement thickness acceptance will be determined by cores.

The compressive strength test for acceptance will be the average compressive strength of three test cylinders cast in plastic molds from a single sample of concrete and cured under standard laboratory conditions prior to testing. If the compressive strength of any one specimen differs from the average by more than 10 percent, that specimen will be deleted and the average strength will be determined using the remaining two specimens. If the compressive strength of more than one specimen differs from the average by more than 10 percent the average strength will be determined using all three specimens. Each set of three cylinders will be tested at 28 days after molding.

Acceptance tests for flexural strength shall be the Contractor's quality control tests. The flexural strength tests shall be the average flexural strength of four test beams. The test beams shall be prepared according to AASHTO T 23. The flexural strength of each specimen shall be measured according to AASHTO T 97 with the following additional requirements: If the flexural strength of only one specimen differs from the average by more than 10 percent, that specimen shall be deleted and the average strength shall be determined using the remaining three specimens. If the flexural strength of more than one specimen differs from the average by more than 10 percent, the test value shall be the average of all four specimens. Each set of four beams shall be tested at 28 days after molding. If the nominal maximum aggregate size of the mix is ¾ inches or less, then the Contractor shall prepare three additional test beams using the 4x4x14 inch molds. The 4x4x14 inch specimens will be tested 28 days. The results of the 4x4x14 inch specimens will be for information only and will not be used to determine the acceptability of the concrete. Results of the 4x4x14 inch specimens will be reported to the Engineer with the corresponding acceptance test results. These additional specimens are being used to evaluate the validity of using smaller test specimens for acceptance.

(c) *Verification Testing.* Verification testing will be used only when flexural strength criteria is indicated and is the responsibility of the Department. The Department will determine the locations where samples or measurements are to be taken. The location of sampling shall be based on a stratified random procedure.

Verification sampling and testing procedures will be in accordance with Sections 105, 106, 412, the Schedule for Minimum Materials Sampling, Testing and Inspection in the Department's Field Materials Manual, and CP 13. Samples for verification testing shall be taken by the Contractor in accordance with CP 61 in the presence of the Engineer.

An analysis of test results will be performed after all test results are known using the t-test and F-test statistical methods with an alpha value set at 0.05. If either the above t-test and F-test analysis shows a significant difference, then the following items shall be checked: comparison of beam fracture locations and types, computations and flexural testing machine outputs, curing tank temperature charts, slump and air contents, plant batch tickets for major changes, review of sampling, molding, testing procedures, along with IAT check tests and any other investigations that may clarify the significant differences. If after a review of the data no reasons can be determined for the significant difference, the Department's test data shall be used for determining Quality Levels and Incentive or Disincentive according to the methods in this Section.

(d) *Check Testing.* The Contractor and the Engineer shall conduct a check testing program (CTP) prior to the placement of any concrete pavement. The check testing program will include a conference directed by the Region Materials Engineer, the Contractor's testers and the Department's testers concerning methods, procedures and equipment for compressive or flexural strength testing. Check testing shall be completed before any portland cement concrete pavement is placed. A set of three cylinders or four beams will be molded by both the Contractor and the Department's project testers from a split sample. The specimens will be sampled, molded and cured for seven days and tested for compressive or flexural strength according to the procedures of Section 106. The Department's Independent Assurance Tester will also mold, cure and test a set of three cylinders or four beams, but the Independent Assurance Test results will not be entered in the check testing analysis. If the results of the check tests do not meet the following criteria, then the check testing will be repeated until the following criteria are met:

(1) The average of the Contractor's test results and the average of the Department's test results shall be

within 10 percent of the average of all test results.

(2) Each specimen test result shall be within 15 percent of the average of all test results.

When compressive strength criteria is indicated, a check test must also be conducted on the sand equivalent test. A set of 5 sand equivalents will be run by both the Contractor's and the Department's project tester, from a split sample. The average of the absolute differences between tests taken by the quality control personnel and the acceptance testing personnel will be compared to the acceptable limits shown in Table 13-1 of CP 13. The CTP will be continued until the acceptance and quality control test results are within the permissible ranges shown in Table 13-1 of CP 13.

During production, split samples of randomly selected acceptance tests will be compared to the permissible ranges shown in Table 13-1 of CP 13. The minimum frequency will be as shown in Table 106-3.

If production has been suspended and then resumed, the Engineer may order a CTP between tests taken by quality control and acceptance testing persons to assure the test results are within the permissible ranges shown in Table 13-1 of CP 13. Check test results shall not be included in quality control testing. The Region Materials Engineer shall be called upon to resolve differences if a CTP shows unresolved differences beyond the ranges shown in Table 13-1 of CP 13.

(e) *Independent Assurance Testing*. The sample for the IAT will be a split sample of the Contractor's quality control test. The Department's representative performing verification tests shall also use a split sample of the Contractor's quality control test and participate in the IAT. The IAT for flexural strength will be the average flexural strength of four test beams prepared according to the requirements of Section 106 and cured for seven days in the field before being transferred to the IAT lab. IAT specimens will be tested at 28 days.

(f) *Testing Schedule.* All samples used to determine Incentive or Disincentive payment by quality level formulas in accordance with Section 105, will be selected by a stratified random process.

Table 106-2
QC TESTING SCHEDULE - ITEM 412
PORTLAND CEMENT CONCRETE
PAVEMENT, FLEXURAL STRENGTH CRITERIA

Element	Minimum Testing Frequency Contractor's Quality Control
Aggregate Gradation and Sand Equivalent	For the first five days, minimum of 1/day, then 1/10,000 sq. yds. After 5 days, 1/40,000 sq. yds.
Slump	First three loads each day, then as needed for control.
Water Cement Ratio	First three loads each day, then 1/500 cu. yds.
Air Content and Yield	Minimum of 1/day, then 1/2,500 sq. yds.
Flexural Strength	Minimum of 1/day, then 1/2,500 sq. yds.
Compressive Strength	1/10,000 sq. yds.
Pavement Thickness	In accordance with subsection 412.21.
Pull Test Joints	Minimum of six transverse and six longitudinal joint locations for the 1st 2500 linear feet, then three transverse and three longitudinal joints thereafter
Load Transfer Dowel Bar Placement	In accordance with subsection 412.13 (b) 2
Texture Depth	1 per 528 linear feet in each lane and shoulder wider than 8 feet.

Table 106-3
QC TESTING SCHEDULE - ITEM 412
PORTLAND CEMENT CONCRETE
PAVEMENT, COMPRESSIVE STRENGTH CRITERIA

Element	Minimum Testing Frequency Contractor's Quality Control
Aggregate Gradation	Minimum of 1/day, then 1/10,000 sq. yds.
Slump	First three loads each day, then as needed for control.
Compressive Strength, Air Content, Yield, and Sand Equivalent	Minimum of 1/day, then 1/2,500 sq. yds.
Pavement Thickness	In accordance with subsection 412.21.
Pull Test Joints	Minimum of six transverse and six longitudinal joint locations for the 1st 2500 linear feet, then three transverse and three longitudinal joints thereafter
Load Transfer Dowel Bar Placement	In accordance with subsection 412.13 (b) 2
Texture Depth	1 per 528 linear feet in each lane and shoulder wider than 8 feet.
Water Cement Ratio	First three loads each day, then 1/500 cu. yds.

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REVISION OF SECTIONS 105, 106, 412, 601 AND 709
CONFORMITY TO THE CONTRACT OF PORTLAND CEMENT CONCRETE PAVEMENT AND DOWEL BARS AND TIE BARS FOR JOINTS

Subsection 412.10 shall include the following:

The Contractor shall provide a MIT-Scan-2 which is manufactured by MIT GmbH.

The Contractor shall ensure the MIT-Scan-2 is calibrated for the specific dowel bar size or load transfer device being placed, and is operating within the manufacturer's tolerances. The Contractor shall also ensure that the operator of the MIT-Scan-2 is fully competent in the use of the device. The Contractor shall supply the serial number of the device to be utilized on the project.

In subsection, 412.13 (a) 3rd paragraph, delete the first sentence and replace with the following:

Holes with a diameter 1/4 inch greater than the bar diameter shall be drilled laterally into the hardened concrete slabs at one half the slab depth, 36 inches on center, 15 to 16 inches deep.

In subsection 412.13 (a), delete the 5th paragraph and replace with the following:

When tie bars are placed in plastic state concrete or drilled and epoxied into a construction joint, and if required by the Engineer, the Contractor shall demonstrate by testing at least 15 of the tie bars that the bar pullout resistance is at least 11,250 pounds with slippage of 1/16 inch or less. If two or more tie bars do not meet the required pullout resistance, then another 15 tie bars shall be tested. If any of the second 15 do not meet the required pullout resistance, then all remaining tie bars shall be tested. The Contractor shall perform additional pullout tests and take corrective action when and as directed. All steps taken to test bars, and to correct, repair or replace failed tie bars and the surrounding failed area shall be at the Contractor's expense. Concrete strength shall have a compressive strength of at least 2500 psi before testing. ASTM E488 shall be used for performing pullout testing..

Delete subsection 412.13 (b) 1 and 412.13 (b) 2 and replace with the following:

1. Longitudinal Weakened Plane Joints. Epoxy coated deformed steel tie bars shall be inserted into the plastic state concrete after the auger. In the event the tie bars are placed behind the machine paving mold, vibration will be required during placement. Other methods of bar placement may be acceptable if the Contractor can demonstrate satisfactory performance of the alternate method. Proposals of alternate methods or additional costs associated with other methods shall be at the Contractor's expense. Tie bars shall be placed according to a method approved by the Engineer. The Contractor shall use an MIT Scan-2 to evaluate the location of tie bars that cannot be visually inspected. Each longitudinal joint located within the dowel bar test locations described in subsection 412.13 (b) 2 that were not visually inspected shall be evaluated with the MIT Scan-2. The MIT Scan-2 shall be calibrated for the tie bar size placed. The tie bars shall be located within the middle third of the slab, and a minimum of ½ inch below the saw cut. Tie bars shall have a minimum embedment of 12 inches on each side of the joint. The weakened plane joint shall be made by sawing in hardened concrete in accordance with the plan details.

Tie bars that are cut during sawing operations shall be replaced at the contractor's expense. Tie bars that are located less than 2 inches above the bottom of the slab shall be replaced at the contractor's expense. Tie bars that are not embedded a minimum of 12 inches on each side of the joint shall be replaced. When the spacing between two in-place tie bars exceeds 40 inches but less than 72 inches, a tie bar will be installed halfway between the two tie bars, unless this installation location is within 12 inches of a transverse weakened plane joint. When the spacing between two in-place tie bars exceeds 72 inches, tie bars will be installed at an even spacing not to exceed 36 inches, but shall not be installed within 12 inches of a transverse weakened plane joint. The Contractor shall submit to the Engineer a method for replacing the tie bars. The Contractor shall not proceed to replace the tie bars until the method for replacement has been approved by the Engineer.

2. Transverse Weakened Plane Joints. When dowel bars are specified in the Contract, they shall be installed within the tolerances and of the size, grade, and spacing specified. Horizontal support wires or shipping braces shall be non-deformed bars or wires with a diameter less than or equal to 0.307 inches (gauge 0 wire). The number of horizontal support wires or shipping braces shall be limited to five per assembly. The horizontal support wires or shipping braces shall not be cut prior to concrete placement. The center of the dowel assembly or the insertion location shall be marked on both sides of the pavement slab for reference in sawing the joint. Dowel bars shall be furnished in a rigid welded assembly or placed by a dowel bar insertion (DBI) machine.

When a DBI is used, the Contractor shall submit details and specifications of the proposed slip-form paver and DBI to the Engineer a minimum of 14 calendar days prior to the Concrete Pavement Pre-Paving Conference. The Contractor shall detail his methodology for ensuring correct marking of dowel bar insertion points and correct sawing of the joints. The Contractor shall ensure that the slip-form paver is compatible with the DBI.

The rigid assembly shall be fabricated from number 1/0 wire or heavier with vertical support wires every 1 foot. Assembly shall be securely fastened to the subbase and constructed to firmly hold all the dowel bars at T/2 depth, parallel to each other and to the pavement grade and alignment.

See Standard Plan M-412-1 for schematic describing the measurement of each tolerance.

.A weighted-score system will be used to conduct a joint-by-joint evaluation of rotational misalignments of the dowel bars. The Joint Score is a measure of the combined effects of rotational misaligned dowel bars at a joint. A Joint Score is determined by summing the product of the weights (given in Table 412-1) and the number of bars in each misalignment category and adding 1. For example, if a joint has four misaligned bars in the 0.6 to 0.8 inch range, the joint score is 9; if a joint has one misaligned bar in the range 0.6 to 0.8 inch and one bar in the 1 to 1.5 inch range, the score is 8. A Joint Score of 10 is the critical level, above which the risk of joint locking is considered high.

Table 412-1
WEIGHTING FACTORS USED TO DETERMINE JOINT SCORE

Range of Rotational Misalignment	Weight
< 0.6 in.	0
≥ 0.6 in and < 0.8 in.	2
≥ 0.8 in and < 1 in.	4
≥ 1 in	5

Individual Dowel Bar Rejection Criteria:

Rotational Alignment:
Any bar with a misalignment greater than 1.5 in.
Longitudinal (side) shift:
Any bar that is not embedded at least 6 inches on each side of the joint
Depth:
Any bar within the top 3 inches of the pavement or at a depth less than the saw-cut depth.
Any bar within the bottom 3 inches of the pavement

When rigid assemblies are used to install dowel bars and the bars are rejected for depth, the Contractor may core the pavement to verify the MIT Scan depth results.

13
REVISION OF SECTIONS 105, 106, 412, 601 AND 709
CONFORMITY TO THE CONTRACT OF PORTLAND CEMENT CONCRETE PAVEMENT AND DOWEL BARS AND TIE BARS FOR JOINTS

Joint Rejection Criteria:

Any joint with a Joint Score greater than 10. An individual joint may be allowed if the two longitudinally adjacent joints each have a joint score less than or equal to 10

Any joint that does not have at least three acceptable dowel bars in each wheel path.

Corrective Measures: The following corrective measures will be allowed for the bars or joints that are rejected.

Rotational misalignment.

Saw-cut the misaligned bars. Joints with less than three un-cut bars in each wheel path will require the addition of dowel bars using an approved dowel bar retrofit method.

Longitudinal (side) Shift and missing bars.

Addition of dowel bars using an approved dowel bar retrofit method.

Depth.

Inadequate cover above the bar—Remove the bar and install a replacement bar using an approved dowel bar retrofit method.

Inadequate cover below the bar— Addition of dowel bars using an approved dowel bar retrofit method.

Retrofitted dowel bars shall not exceed the dowel bar rejection criteria.

In addition to the above procedures, the Contractor may propose removal and replacement of the affected slabs.

The Contractor shall submit his method of repair to the Engineer for approval.

The Contractor shall demonstrate his ability to place dowel bars in conformance with the specifications by placement of a test section.

The test section shall be a minimum of 300 feet in length. Upon completion of the test section, the Contractor shall shut down paving operations. During the shutdown period, the Contractor shall evaluate all joints in the test section using the MIT-Scan-2, analyze the results and submit the results to the Engineer. Paving operations shall not be restarted until the Engineer approves the test section results. The test section will be found acceptable if 85% of the dowel bars placed are found to be within the rejection criteria. All dowel bars exceeding the Rejection Criteria must be addressed using the above corrective measures. The Contractor may continue paving at his own risk before the test section evaluation is complete.

If the Project has less than 500 linear feet of pavement, the test section will not be required. If a Project does not have sections of continuous pavement greater than 45 linear feet, the test section will not be required.

Upon completion of the test section(s) and for each week of production, the Contractor shall prepare an electronic report generated using MagnoProof software and submit it to the Engineer at the start of each working week during production for the previous weeks work. All data shall be submitted in the manufacturer's native file format, along with the calibration files.

The electronic report shall include the following:

(1) Contract number, date, highway number and direction of traffic.
(2) Joint number, lane number and station.
(3) Bar number and x-location of dowel bar.
(4) Horizontal and vertical misalignment of each bar in inches.
(5) Overall misalignment of each bar in inches of each bar
(6) Side shift of each bar in inches.
(7) Depth to center of each bar in inches.
(8) Joint Score

(9) All measurements exceeding the rejection criteria shall be highlighted in red.

Due to potential magnetic interference from tie bars, dowel bars located within 15 inches of a tied joint shall not be included in the evaluation.

When the test section is found to be unacceptable, the Contractor shall perform corrective actions and place a second test section. If the second test section is found to be unacceptable, the Contractor shall pave no more than 500 feet per day until an acceptable test section has been achieved.

Once a test section is successfully completed, Dowel Bar Placement testing frequency shall be a minimum of one location per 1,250 linear feet of each continuous lane including climbing lanes, passing lanes, acceleration and deceleration lanes and ramps. Sections greater than 45 linear feet and less than 1,250 linear feet require a minimum one of test location. . Testing locations shall be determined by a random procedure so that each area has a randomly selected transverse joint location. At each location, five consecutive joints shall be tested.

Sections of continuous pavement constructed by the project less than 45 linear feet will not require Dowel Bar Placement Testing.

When any joint score is greater than10 or any one bar in a single joint exceeds the rejection criteria, joints shall be tested in each direction from the rejected joint, until two consecutive joints in each direction are found to be within the rejection criteria.

All delays or costs associated with equipment being rejected for use by the Engineer will not be paid for by the Department, and will be considered a Non-excusable Delay in accordance with subsection 108.08 (c) 2.

When concrete shoulders or widenings are constructed subsequent to the driving lanes, transverse weakened plane joints shall immediately be formed in the plastic concrete of these widenings to create an extension of the existing transverse joint. This tooled joint shall be formed in such a manner that it controls the cracking and shall be sawed and sealed in accordance with the above requirements.
In subsection 412.21, delete the first sentence in the sixth paragraph.

In subsection 601.02, delete Class E and P Concrete from Table 601-1 and replace with the following:

Concrete Class	Required Field Compressive Strength (psi)	Cementitious Material Content: Minimum or Range (lbs/yd^3)	Air Content: % Range (Total)	Water /Cementitious Material Ratio: Maximum or Range
E	4500 at 28 days	520	4 – 8	0.44
P	4500 at 28 days	520	4 – 8	0.44

In subsection 601.02, delete the sixth and ninth paragraphs and replace with the following:

Class E concrete is used for fast track pavements needing early strength in order to open a pavement to service soon after placement. Class E concrete shall meet the requirements of Class P concrete. ASTM C150 Type III or ASTM C1157 Type HE cement may be used. Accelerating admixtures may be used.

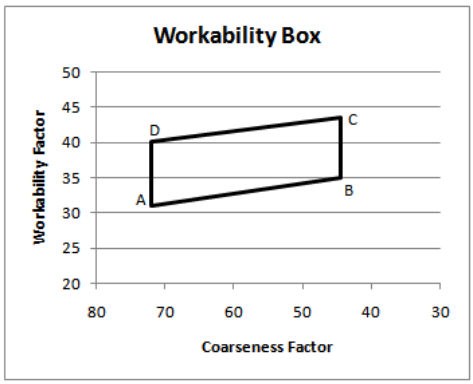
Class P concrete is used in pavements. Additional requirements are: The Required Field Flexural Strength shall be 650 psi when flexural strength acceptance is specified. The laboratory trial mix shall produce a minimum average 28 day flexural strength 700 psi. Two aggregate gradation options are available:

(a) *Standard Gradation (SG).* The concrete mix shall consist of a minimum 55 percent AASHTO M 43 size No. 357 or No. 467 coarse aggregate by weight of total aggregate. If all transverse joints are doweled, the concrete mix shall consist of a minimum 55 percent AASHTO M 43 sizes No. 57, No. 6, No. 67, No. 357, or No. 467 coarse aggregate by weight of total aggregate.

(b) *Optimized Gradation (OG).* Aggregate proportions must be a result of an optimized combined aggregate gradation (CAG) developed by an approved mix design technique such as Shilstone or KU Mix. The amount of aggregate in the CAG passing the 19 mm (¾ inch) sieve and retained on the12.5 mm (½ inch) sieve shall be a minimum of 8 percent for the trial mix design. The coarseness factor (CF) and workability factor (WF) must plot within the workability box (ABCD) depicted graphically by the following 4 coordinate points:

a. Point A> (CF,WF) 72, 31
b. Point B> (CF,WF) 44.5, 35
c. Point C> (CF,WF) 44.5, 43.5
d. Point D> (CF,WF) 72, 40

Figure 601-1



CF = (S / T) x 100
Where:
S = Percent Cumulative Retained on 9.5 mm (3/8 inch) Sieve
T = Percent Cumulative retained on 2.36 mm (No. 8) Sieve

WF is the percent passing the 2.36 mm (No. 8) sieve. Increase workability factor by 2.5 percentage points for every 94 pounds per cubic yard of cementitious material used in excess of 564 pounds per cubic yard in the mix design. Decrease workability factor by 2.5 percentage points for every 94 pounds per cubic yard of cementitious material used below 564 pounds per cubic yard in the mix design. Do not adjust the workability factor if the amount of cementitious material is 564 pounds per cubic yard.

Delete Subsection 601.05 (7) and replace with the following:

(7) Class E and P concrete shall include AASHTO T97 (ASTM C78) Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading). When compressive strength is indicated, at least two specimens will be tested at 7 days and four specimens at 28 days. When flexural strength is indicated, at least two specimens will be tested at 3, 7 and 14 days and four specimens at 28 days.

When flexural strength is indicated, the mix design shall include AASHTO T198 (ASTM C496) Splitting Tensile Strength of Cylindrical Concrete Specimens. At least two specimens will be tested at 3, 7and 14 and

28 days. The splitting tensile strength specimens for each age shall be cast from the same trail batch as the same age flexural strength specimens. Multiple trial batches may be used. The Engineer will verify the correlation curve during production by casting and testing Splitting Tensile specimens. If the correlated flexural strength of the splitting tensile sample is not within 50 psi of the verification beam specimen's flexural strength, a new correlation curve shall be required if low flexural strength specimen are to be evaluated.

Subsection 601.05 shall include the following in the second paragraph:

(8) Class P concrete with an OG shall indicate the gradation proportions that results in a combined aggregate gradation corresponding to compliance within the specified CF and WF box and shall include the following charts used to perform aggregate gradation analysis:
  (i) Coarseness Factor
  (ii) Workability Factor
  (iii) 0.45 power
  (iv) Combined gradation

Delete Subsection 601.06 (10) and (11) and replace with the following:

(10) Weights of fine and coarse aggregates or combined weight when an OG is pre-blended
(11) Moisture of fine and coarse aggregates or combined moisture when an OG is pre-blended

Subsection 601.06 (c) shall include the following:

Aggregates for Class P concrete using an OG, a combination of aggregates (stockpiled separately) shall be combined prior to the stationary charging drum to meet the approved CAG.

In subsection, 709.03, delete the first paragraph and replace with the following:

709.03 Dowel Bars and Tie Bars. Tie bars for longitudinal and transverse joints shall conform to AASHTO M 284 and shall be grade 60, epoxy-coated, and deformed. Bar size shall be as designated on the Standard Plan M-412-1.

Colorado Procedure 65-15a
Standard Practice for

EVALUATING LOW CONCRETE STRENGTH TEST RESULTS OF CONCRETE CYLINDERS

1. SCOPE

1.1 Field test procedures and strength test results for standard molded and cured cylinders and beams shall be evaluated separately for each class of concrete. Such evaluation shall be conducted to determine if tests have been conducted in accordance with the ASTM, AASHTO and/or approved CDOT procedures and specifications.

1.1.1 The evaluation process will include investigation to ensure that proper procedures were followed in the following areas:

-Molding
-Curing methods and temperatures
-Initial curing period
-Laboratory curing period
-Testing procedure
-Personnel qualifications

NOTE: Contact the Central Laboratory at (303) 398-6543 at least 48 hours before coring so that additional instruction can be given.

1.2 This practice is comprised of two methods. Method A for evaluation of low concrete compressive strength and Method B for the evaluation of low concrete flexural strength.

2. EVALUATION

2.1 Should cylinders or beams fall below the specified strength, a field investigation will be conducted as follows:

2.1.1 If test procedures outlined in Subsection 1.1 were not followed, results will be considered to be invalid and the tests shall be discarded. If cores are required, they will be at the expense of CDOT to replace acceptance cylinders and at the expense of the Contractor to replace QC beams.

2.1.2 The concrete supplier will furnish concrete batch tickets of the suspected low strength concrete for comparison against approved mix design.

2.1.3 Batch tickets will be checked to determine job site water addition.

2.1.4 Evaluation of the concrete in question will be made based on Subsections 2.1.1, 2.1.2 and 2.1.3.

3. Section Deleted

4. CORING

4.1 This procedure describes the method used to obtain and evaluate cores from in-place concrete. This will be performed in accordance with the latest revision of AASHTO T 24 (ASTM C 42), with the exception that immediately after removal from the structure, cores will be cured at a temperature between 60° - 80°F (15° - 27°C) and at a relative humidity below 60% for the first 24 hours.

4.2 Cores taken for the determination of strength shall be of a standard size and within appropriate tolerance.

NOTE 1 Bits cut approximately 1/4" smaller than nominal OD (outside diameter). The 4 1/4" and 6 1/4" OD bits produce 4" and 6".

5. APPARATUS

5.1 The apparatus shall be as described in AASHTO T 24 (ASTM C 42).

Method A Compressive Strength

6. PROCEDURE

6.1 Within 45 days after placement, cores with a diameter at least 3 times the nominal maximum size of the coarse aggregate used in the concrete

shall be obtained in accordance with AASHTO T 24 (ASTM C 42). The cores shall be conditioned in accordance with Subsection 4.1. The cores will then be tested for compressive strength between 24 and 48 hours after removal.

6.2 At least 3 representative cores shall be taken from the concrete represented by each out- of-specification cylinder set.

6.3 Coring location shall be in locations directed by the Engineer. .

6.4 Core holes shall be filled with low slump concrete or mortar.

6.5 If the compressive strength of any one core differs from the average by more than 10% that core will be discarded and the average will be determined using the compressive strengths of the remaining two cores. If more than one core's compressive strength differs from the average by more than 10%, the average will be determined using all three cores.

6.6 Pay factors for strength of structural concrete shall be according to Table 601-3 of the CDOT Standard Specifications, and will be used to price reduce the cores or standard test cylinders, whichever are higher in strength. Pay factors for concrete pavement will be evaluated according to subsection 105.06 of the CDOT Standard Specifications.

6.7 The following examples are for structural concrete in accordance with Subsection 601.17 of the CDOT Standard Specifications:

Example 1:

Given: f'_c = 3000 psi
Concrete test cylinders averaged 2800 psi.

	PSI
Core 1	2900
Core 2	2850
Core 3	2450

Average compressive strength of 3 cores = 2730 psi.

Find: Is the concrete in the structure adequate under CDOT specifications?

Solution:

Test Evaluation:

f'_c = 3000 psi

Average compressive strength of 3 cores - 2730 psi

Do any compressive strengths differ from the average by more than 10%?

10% of Average compressive strength = 273 psi

Core 1: 2900 - 2730 = 170 psi, < 273 therefore OK

Core 2: 2850 - 2730 = 120 psi, < 273 therefore OK

Core 3: 2730 - 2450 = 280 psi, > 273 therefore - discard core and re-compute average compressive strength using two remaining cores.

New average compressive strength = 2875 psi

Use Table 601-3 to compute appropriate price reduction based on 2875 psi, since core strengths were higher than the cylinders strengths.

Example 2:
Price Reduction of Concrete

In this example calculation, a certain project has a pay item for 720 cubic yards of Concrete Class D (bridge). The contractor bid $700 per cubic yards. To cover this quantity 8 sets of cylinders were molded and tested for compressive strength at 28 days. Some of the test results showed the concrete had less than the required 28-day compressive strength of 4500 psi. The project engineer has used all eight sets of cylinders to calculate the appropriate price reduction.

Test Number	Cylinder Strength psi	Cylinder Strength psi	Cylinder Strength psi	Average Cylinder Strength Psi
1	4510	4270	4580	4450
2	6200	6100	6250	6180
3	3800	4310	3840	3980
4	4210	4380	4060	4220
5	4040	3830	3790	3890
6	4130	4020	3930	4030
7	4710	4670	4790	4720
8	4960	5160	5200	5110

TABLE 65-1

The average strength of three 28-day cylinders is used to determine the acceptability of concrete placed in a structure. The break results of test numbers 1, 3, 4, 5 & 6 are below the required 28-day strength of 4500 psi for bridge decks. According to Section 601.17(c) of the *CDOT Standard Specification for Road and Bridge Construction* "The concrete will be considered acceptable when the running average of three consecutive strength tests is equal to or greater than the specified strength and no single test falls below the specified strength by more than 3.5 MPa (500 psi)."

Test Number	Average Cylinder Strength psi	Average of Three Consecutive Tests (psi)	Strength Below f_c' psi
1	4450	---	---
2	6180	---	---
3	3980	4870	520
4	4220	4793	280
5	3890	4030	610
6	4030	4047	470
7	4720	4213	---
8	5110	4620	---

TABLE 65-2

The table above shows that the running average of three consecutive tests fall below the required strength of 4500 psi, and the concrete placed will be price reduced according to the pay factors in Table

601-3 in Subsection 601.17. Test numbers 3, 4, 5, & 6 are represented in the low consecutive averages and will be price reduced. Test number 1 is considered acceptable and will not be price reduced because its running average with the next two tests is greater than the required strength, and it is not more than 500 psi below the required strength.

To price reduce the low strength results you need to know the bid price for the concrete, and the quantity represented by each test. As stated above, the concrete was bid at $700.00 per cubic yard. The contractor placed 720 cubic yards of Concrete Class D (bridge). The 720 cubic yards are represented by 8 sets of cylinders. Therefore, on this project the Engineer determined that each test represents 90 cubic yards. This is only an example and the quantity represented per test shall be determined by the Project Engineer. The formula for price reduction is:

$$PR = P \times (1 - PF) \times CY$$

Where:

PR = Price Reduction,
P = Bid Price of Concrete,
PF = Pay Factor from Table 601-3 of Subsection 601.17,
CY = Cubic Yards represented by the test.

Test Number	Average Strength Psi	Average of Three Consecutive Tests (psi)	Strength Below f_c' psi	Pay Factor Table 601-2E	Price Reduction
1	4450	---	---	---	---
2	6180	---	---	---	---
3	3980	4870	520	0.65	$22,050.00
4	4220	4793	280	0.92	$ 5,040.00
5	3890	4030	610	0.54	$28,980.00
6	4030	4047	470	0.75	$15,750.00
7	4720	4213	---	---	---
8	5110	4620	---	---	---
				Total Price Reduction	$71,820.00

TABLE 65-3

The Contractor has the option to obtain cores from the areas represented by tests 3, 4, 5 & 6 before the concrete is 45 days old. Coring will be in accordance to CP 65. In this case the contractor elected to obtain cores from the bridge deck. The following is a summary of the core break results:

Test Area	Core Strength psi	Core Strength psi	Core Strength psi	Average Core Strength psi
3	4230	4010	4100	4110
4	4630	4570	4510	4570
5	3690	3740	3700	3710
6	4270	4510	4400	4390

TABLE 65-4

The core strength results will replace the cylinder strength results if the core strengths are higher. In this case, cores from areas 3, 4 & 6 will replace the cylinder strength results for tests 3, 4 & 6. The following table shows the new price reductions:

Test Number	Average Cylinder Strength psi	Average Core Strength psi	Strength Below f_c' psi	Pay Factor Table 601-2E	Price Reduction
1	4450	---	---	---	---
2	6180	---	---	---	---
3	~~3980~~	4110	390	0.84	$ 10,080.00
4	~~4220~~	4570	---	---	---
5	3890	~~3710~~	610	0.54	$28,980.00
6	~~4030~~	4390	110	0.96	$ 2,520.00
7	4720	---	---	---	---
8	5110	---	---	---	---
		Total Adjusted Price Reduction			$41,580.00

TABLE 65-5

Method B Flexural Strength

7. PROCEDURE

7.1 Within 45 days after placement, cores of the same size as the splitting tensile cylinders used in the trial mix shall be obtained in accordance with AASHTO T 24 (ASTM C 42). The cores shall be conditioned in accordance with Subsection 4.1. The cores will then be tested for splitting tensile strength between 24 and 48 hours after removal.

7.2 At least 3 representative cores shall be taken from a single slab represented by each low flexural strength. A core containing rebar or dowel bars shall be discarded and a new core shall be taken.

7.3 Coring location shall be in locations directed by the Engineer. .

7.4 Core holes shall be filled with low slump concrete or mortar.

7.5 If the splitting tensile strength of any one core differs from the average by more than 10% that core will be discarded and the average will be determined using the splitting tensile of the remaining two cores. If more than one core's splitting tensile strength differs from the average by more than 10%, the average will be determined using all three cores.

7.6 The flexural strength of the concrete will be determined by using a correlation of the concrete's flexural strength to its splitting tensile strength.

7.6.1 Using the flexural strength and splitting tensile strengths from the concrete's trial mix, for each age, plot the flexural strength on one axis and the splitting tensile strength on the second axis. Determine a linear equation relating the two strengths.

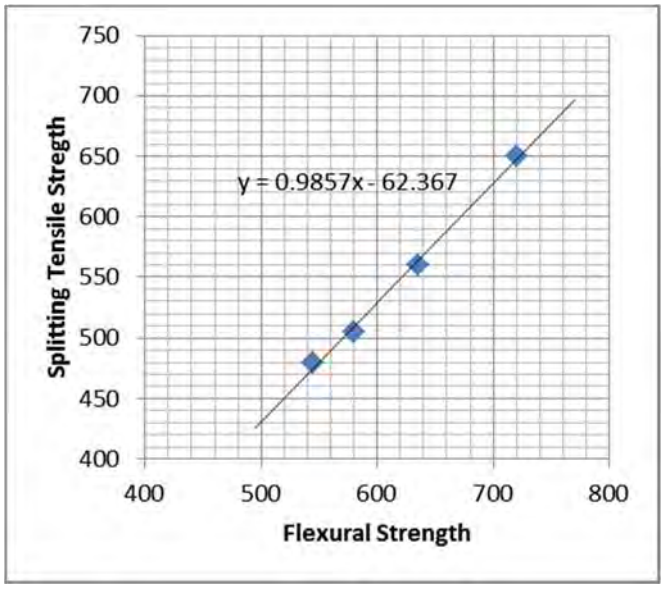
7.6.2 Using the average splitting tensile strength from a set of cores, and the equation in section 7.6.1, determine the corresponding flexural strength.

7.7 Pay factors for concrete pavement will be evaluated according to subsection 105.06 of the CDOT Standard Specifications.

Example 3:

The following example shows a plot of flexural strength and splitting tensile strength.

Age	Average Flexural Strength (psi)	Average Splitting Tensile Strength (psi)
3	545	480
7	580	505
14	635	560
28	720	650



November 6, 2014

REVISION OF SECTION 106
BUY AMERICA REQUIREMENTS

Section 106 of the Standard Specifications is hereby revised for this project as follows:

Subsection 106.11 shall include the following:

The Contractor shall maintain a document summarizing the date and quantity of all steel and iron material delivered to the project. The document shall show the pay item, quantity of material delivered to the project, along with the quantity of material installed by the cutoff date for the monthly progress payment. The summary shall also reconcile the pay item quantities to the submitted Buy America certifications. The Contractor shall also maintain documentation of the project delivered cost of all foreign steel or iron permanently incorporated into the project. Both documents shall be submitted to the Engineer within five days of the cutoff date for the monthly progress payment. A monthly summary shall be required even if no steel or iron products are incorporated into the project during the month. The summary document does not relieve the Contractor of providing the necessary Buy America certifications of steel and or iron prior to permanent incorporation into the project.

February 3, 2011

REVISION OF SECTION 106
CERTIFICATES OF COMPLIANCE AND
CERTIFIED TEST REPORTS

Section 106 of the Standard Specifications is hereby revised for this project as follows:

In subsection 106.12, delete the second paragraph and replace it with the following:

The original Certificate of Compliance shall include the Contractor's original signature as directed above. The original signature (including corporate title) on the Certificate of Compliance, under penalty of perjury, shall be of a person having legal authority to act for the manufacturer. It shall state that the product or assembly to be incorporated into the project has been sampled and passed all specified tests in conformity to the plans and specifications for this project. One legible copy of the fully signed Certificate of Compliance shall be furnished to the Engineer prior to installation of material. The original shall be provided to the Engineer before payment for the represented item will be made.

In subsection 106.13, delete the second paragraph and replace it with the following:

The Certified Test Report shall be a legible copy or an original document and shall include the Contractor's original signature as directed above. The signature (including corporate title) on the Certified Test Report, under penalty of perjury, shall be of a person having legal authority to act for the manufacturer or the independent testing laboratory. It shall state that the test results show that the product or assembly to be incorporated into the project has been sampled and passed all specified tests in conformity to the plans and specifications for this project. One legible copy or original document of the fully signed Certified Test Report shall be furnished to the Engineer prior to installation of material. Failure to comply may result in delays to the project or rejection of the materials.

REVISION OF SECTION 106
MATERIAL SOURCES

Section 106 of the Standard Specifications is hereby revised for this project as follows:

In subsection 106.02 (a), delete the third paragraph and replace with the following:

The Contract will indicate whether the Department has or has not obtained the necessary County or City Zoning Clearance and the required permit from Colorado Department of Natural Resources needed to explore and remove materials from the available source. If the Department did not obtain the necessary clearances or permits, the Contractor shall obtain them. Any delays to the project or additional expenses that are incurred while these clearances or permits are being obtained shall be the responsibility of the Contractor. The Contractor shall ensure that the requirements of the permits do not conflict with the pit construction and reclamation requirements shown in the Contract for the available source.

In subsection 106.02 (b), delete the first paragraph and replace with the following:

(b) *Contractor Source.* Sources of sand, gravel, or borrow other than available sources will be known as contractor sources. The contractor source will be tested by the Department and approved by the Engineer prior to incorporation of the material into the project. If the submitted materials do not meet the contract specifications it will become the Contractor's responsibility to re-sample and test the material. The Contractor will supply the Department with passing test results from an AASHTO accredited laboratory and signed and sealed by a Professional Engineer. If requested by the Engineer, the Department will then re-sample and re-test the material for compliance to the contract specifications. The Contractor shall produce material which meets contract specifications throughout construction of the project.

The cost of sampling, testing, and corrective action by the Contractor will not be paid for separately but shall be included in the work.

January 30, 2014

REVISION OF SECTION 106
SUPPLIER LIST

Section 106 of the Standard Specifications is hereby revised for this project as follows:

Subsection 106.01 shall include the following:

Prior to beginning any work the Contractor shall submit to the Engineer a completed Form 1425, Supplier List. During the performance of the Contract, the Contractor shall submit an updated Form 1425 when requested by the Engineer.

Failure to comply with the requirements of this subsection shall be grounds for withholding of progress payments.

REVISION OF SECTIONS 106 AND 412
SURFACE TEXTURE OF PORTLAND CEMENT CONCRETE PAVEMENT

Sections 106 and 412 of the Standard Specifications are hereby revised for this project as follows:

Subsection 106.06 (a) shall include the following:

The Contractor shall submit the proposed method of PCCP texturing at the Pre-Construction conference for approval by the Engineer. The Contractor shall perform process control (PC) testing for the pavement surface texture depth in accordance with CP 77 Method B. All PC results for surface texture depth measurements shall be included in the Contractor's QC notebook. The start of PC testing for texturing depth shall be completed within 24 hours after the first 500 linear feet of textured pavement is placed for each lane. Paving shall not proceed until results are accepted by the Engineer.

Surface texture will be considered acceptable when the average texture depth (ATD) of the panel is greater than 0.05 inch. When the ATD is less than 0.05 inches, the Contractor shall determine the area represented by this test. The area shall be determined by taking additional tests at 15 foot intervals parallel to the centerline in each direction from the affected location until two consecutive tests are found to be within the specified limits. Any surface with unacceptable texturing exceeding 25 linear feet in any lane or shoulder greater than 8 feet wide shall be diamond ground full width of the lane. Upon the second unacceptable test result, the Contractor shall notify the Engineer, in writing, the action taken to provide an acceptable surface texture.

Subsection 106.06 (b) shall include the following

The Department will perform surface texture acceptance testing in accordance with CP 77 Method B. The Department will determine the panel locations where acceptance test measurements are to be taken. One stratified random acceptance test per 2,500 linear feet or fraction thereof in each lane and shoulder wider than 8 feet shall be taken with a minimum of one test per day when the Contractor is paving.

When the Department locates areas of surface texture that do not meet the minimum ATD, the Contractor will be notified and the Contractor shall be responsible for identifying the limits of the deficient texture depth. After the Engineer approves the limits, the Contractor shall correct the deficient surface texture by diamond grinding full lane width to provide an ATD greater than 0.05 inch at no additional cost to the project. Correcting surface texture deficiencies shall occur prior to pavement smoothness testing and pavement thickness determinations.

In subsection 106.06, delete the Tining Depth element from Tables 106-2 and 106-3 and replace with the following:

Table 106-2

Element	Minimum Testing Frequency Contractor's Quality Control
Average Texture Depth	1 per 528 linear feet in each lane and shoulder wider than 8 feet.

Table 106-3

Element	Minimum Testing Frequency Contractor's Quality Control
Average Texture Depth	1 per 528 linear feet in each lane and shoulder wider than 8 feet.

Delete subsection 412.07 (c)

Delete subsection 412.12 (c) and (d) and replace with the following:

(c) *Final Finish and Stationing*. The final surface of the pavement shall be uniformly textured with a broom, burlap drag, artificial turf or diamond ground in order to obtain the specified texture depth. Surface imperfections resulting from the texturing operation shall be corrected by the Contractor at no additional cost.

Broom, burlap drag or artificial turf texture shall be installed within 15 minutes after strike-off, or as pavement conditions allow
Diamond grinding shall be performed using diamond blades mounted on a self-propelled machine designed for diamond grinding and texturing concrete pavement. The equipment shall have a positive means of vacuuming the grinding residue from the pavement surface, leaving the surface in a clean, near-dry condition. Diamond grinding shall not occur until the concrete has attained strength of at least 2,500 psi.

The diamond grinding process shall produce a pavement surface that is true to grade and uniform in appearance. The grooves shall be evenly spaced. Any ridges on the outside edge next to the shoulder, auxiliary, or ramp lanes greater than 3/16 inch high shall be feathered out to the satisfaction of the Engineer in a separate, feather pass operation.

The pavement surface after diamond grinding shall have no depressions or misalignment of slope in the longitudinal direction exceeding 1/8 inch in 12 feet when measured with a 12 foot straightedge placed parallel to the centerline. All areas of deviation shall be reground at no additional cost.

Stationing shall be stamped into the outside edge of the pavement, as shown on the plans.

Delete subsection 412.14 and replace with the following:

412.14 Curing. Immediately after the finishing operations have been completed the entire surface and exposed sides of the newly placed concrete, shall be sprayed uniformly with a curing compound meeting the requirements of ASTM C309, Type 2. The ASTM C309 Type 2 curing compound shall be volatile organic content (VOC) compliant.

The curing compound shall be applied within 10 minutes after the final finish has been applied. Failure to cover the surface of the concrete within 10 minutes shall be cause for immediate suspension of the paving operations.

An initial application of curing compound shall be applied under pressure by mechanical sprayers at the rate of not less than 1 gallon per 180 square feet of pavement surface. A second application of curing compound shall be applied within 30 minutes after the initial application. The second application rate shall be not less than 1 gallon per 180 square feet of pavement surface. Alternatively, the Contractor may apply the curing compound in one application of not less than 1 gallon per 120 square feet. Additional curing compound shall be applied as needed to ensure that 100 percent of the pavement is covered. The spraying equipment shall be fully automated, equipped with a tank agitator, and a wind guard. During application, the compound shall be in a thoroughly mixed condition with the pigment uniformly dispersed throughout the vehicle and the compound shall be stirred continuously by effective mechanical means. Hand spraying of irregular widths or shapes and surfaces exposed by removal of forms will be permitted. Curing compounds shall not be applied to the inside faces of joints to be sealed.

Should the curing film become damaged from any cause, within 72 hours after concrete placement, except for Class E concrete open to traffic, the damaged portions shall be repaired immediately with additional curing compound, payment for which shall be at the Contractor's expense.

The sides of pavement slabs shall be immediately sprayed with curing compound when the forms are removed.

Delete subsection 412.18(2) and replace with the following:

(2) Corrective work for texturing.

Delete subsection 412.22 and replace with the following:

412.22 Opening to Traffic. The pavement shall not be opened to traffic until the concrete has achieved a compressive strength of 3000 psi. Concrete compressive strength shall be determined by maturity meters. Prior to opening the pavement to traffic the roadway shall be cleaned, as approved.

Prior to placement of concrete whose strength will be determined with maturity meters, the Contractor shall provide the Engineer a report of maturity relationships in accordance with CP 69. The Contractor shall provide maturity meters and all necessary wires and connectors. The Contractor shall be responsible for the placement and maintenance of the maturity meters and wires. At a minimum a maturity meter will be placed at a minimum of once per day and then once per 5,000 square yards. Placement shall be as directed by the Engineer.

For placements with multiple maturity meters, the lowest compressive strength shall determine when the pavement may be opened to traffic.

If a maturity meter fails, is tampered with, is destroyed or was not placed, the section of pavement represented by the maturity meter shall remain closed to traffic for a period of 28 days. The Contractor may choose at his own expense to core the section of pavement represented by the maturity meter. Cores will be obtained and tested according to CP 65. Cores will be a minimum of 4 inches in diameter. A minimum of three cores in a two square foot area will be obtained. If the compressive strength of any one core differs from the average by more than 10 percent that compressive strength will be deleted and the average strength will be determined using the compressive strength of the remaining two cores. If the compressive strength of more than one core differs from the average by more than 10 percent the average strength will be determined using all three compressive strengths of the cores. To open the section of pavement, the average compressive strength of the cores shall be a minimum of 3,000 psi.

In subsection 412.24 (a) delete the second paragraph and replace with the following:

The price per square yard of Concrete Pavement shall be full compensation for furnishing and placing all materials, including any dowels, tie bars, joint materials, texturing, sawing, finishing, and rumble strips.

July 31, 2014

REVISION OF SECTION 107
CONTRACTOR OBTAINED STORMWATER CONSTRUCTION PERMIT

Section 107 of the Standard Specifications is hereby revised for this project as follows:

Subsection 107.25 shall include the following:

(d) *Contractor Obtained CDPS-SCP Stormwater Permit .* This project is covered by a Colorado Discharge Permit System Stormwater Construction Permit (CDPS-SCP). The Contractor shall apply for and obtain the permit upon award of the Contract. The Contractor shall submit a copy of the CDPS-SCP to the Engineer prior to or at the project Pre-construction Conference. If a Utility Company has pulled a permit for the area prior to the Contractor being on site, then the Contractor shall coordinate with the Utility Company to transfer those areas over to the Contractor prior to work commencing. The Contractor shall not commence construction until the CDPS-SCP has been obtained from CDPHE and submitted to the Engineer. A copy of the Permit shall be placed in the project SWMP notebook.

Prior to final acceptance, a project walk through shall be conducted in accordance with subsection 208.10 (c). The walk through shall take place upon sufficient completion of the project, as determined by the Engineer.

Upon receipt of written final acceptance of the water quality work from the Engineer and written concurrence from the Maintenance Superintendent, the Contractor shall transfer the CDPS-SCP to the CDOT Maintenance Superintendent. The transfer forms will only be signed if the project is in an acceptable state as determined by the Maintenance Superintendent and the CDOT Region Water Pollution Control Manager (RWPCM). CDOT will submit the Application of Transfer of Ownership to the CDPHE. Under no circumstances shall the Contractor inactivate the permit.

Until the transfer has been completed, the Contractor shall continue to adhere to all permit requirements. Requirements shall include inspections, BMP installation, BMP maintenance and BMP repair, including seeded areas. All documentation shall be submitted to the Engineer and placed in the SWMP notebook.

All costs associated with the Contractor applying for, holding, and transferring the CDPS-SCP permit between parties will not be measured and paid for separately, but shall be included in the work in accordance with subsection 107.02.

May 2, 2013

REVISION OF SECTION 107
PROJECT PAYROLLS

Section 107 of the Standard Specifications is hereby revised for this project as follows:

Subsection 107.01 shall include the following:

As related to the Form FHWA 1273, Required Contract Provisions Federal-Aid Construction Contracts, the Contractor shall check all Contractor and subcontractor project payrolls regarding accuracy of pay classification, pay hours, and pay rates. The Contractor shall sign and date all payrolls signifying this check has been performed.

February 3, 2011

REVISION OF SECTION 107
RESPONSIBILITY FOR DAMAGE CLAIMS,
INSURANCE TYPES AND COVERAGE LIMITS

Section 107 of the Standard Specifications is hereby revised for this project as follows:

Delete subsection 107.15(c) and replace it with the following:

(c) Each insurance policy shall include provisions preventing cancellation or non-renewal without at least 30 days prior notice to Contractor. The Contractor shall forward to the Engineer any such notice received within seven days of the Contractor's receipt of such notice.

January 30, 2014

REVISION OF SECTION 107
WARNING LIGHTS FOR WORK VEHICLES AND EQUIPMENT

Section 107 of the Standard Specifications is hereby revised for this project as follows:

Subsection 107.06 (b) shall include the following:

All work vehicles and mobile equipment shall be equipped with one or more functioning warning lights mounted as high as practicable, which shall be capable of displaying in all directions one or more flashing, oscillating, or rotating lights for warning roadway traffic. The lights shall be amber in color. The warning lights shall be activated when the work vehicle or mobile equipment is operating within the roadway, right of way or both. All supplemental lights shall be SAE Class 1 certified.

REVISION OF SECTION 108
DELAY AND EXTENSION OF CONTRACT TIME

Section 108 of the Standard Specifications is hereby revised for this project as follows:

In subsection 108.08, delete (c) and (d) and replace with the following:

(c) Delay. Any event, action or factor that extends the performance period of the Contract.

1. *Excusable Delay:* A delay that was beyond the Contractor's control and was not due to the Contractor's fault or negligence. The Department may grant a contract time extension for an excusable delay.

   A. *Compensable Delay*: A delay that the Department, not the Contractor, is responsible for entitling the *Contractor* to a time extension and monetary compensation. Monetary compensation for compensable delays will be made in accordance with Subsection 109.10.

   B. *Noncompensable Delay:* An excusable delay that neither the Contractor nor the Department is responsible for that may entitle the Contractor to a contract time extension but no additional monetary compensation. Contract time allowed for the performance of the work may be extended for delays due to force majeure (i.e. acts of God, acts of the public enemy, terrorist acts, fires, floods, area wide strikes, embargoes, or unusually severe weather).

2. *Nonexcusable Delay*: A delay that was reasonably foreseeable or within the control of the Contractor for which the Department will not grant monetary compensation or a contract time extension.

3. *Concurrent Delay.* Independent delays to critical activities occurring at the same time.

   A. The *Department* will not grant a time extension or additional compensation for the period of time that a non-excusable delay is concurrent with an excusable delay.

   B. The Department may grant time but no compensation for the period of time that a non-compensable delay is concurrent with a compensable delay.

Delays in delivery of materials or fabrication scheduling resulting from late ordering, financial considerations, or other causes that could have been foreseen or prevented will be considered nonexcusable delays. However, delays caused by fuel shortage or delay in delivery of materials to the Contractor due to some unusual market condition caused by industry-wide strike, national disaster, area-wide shortage, or other reasons beyond the control of the Contractor which prevent procurement of materials or fuel within the allowable contract time limits will be considered excusable delays.

(d) Extension of Contract Time. The Contractor's assertion that insufficient contract time was specified is not a valid reason for an extension of contract time. For time extension requests, the Contractor shall provide a two-part submittal: part one shall consist of a written notice of the delay and part two shall consist of the Contractor's delay documentation and supporting analysis.

Part 1: The Contractor shall provide the written notice of delay within seven days of the delay occurrence. The notice shall describe the delay and include documentation substantiating the nature and cause of the delay. Failure to submit the written notice constitutes a waiver of entitlement to additional time or compensation.
Part 2: This shall be submitted within 30 days of the written notice. The Contractor shall include all documentation needed to support the time extension request. In order to request additional contract time for an unexpected delay, the Contractor shall provide a contemporaneous schedule analysis in accordance with subsection 108.03. The schedule analysis shall show that the delayed activity or activities were on the critical path or became critical due to the delay.

The Engineer will base a determination of an allowable contract time extension on:

(1) The current Schedule in effect at the time of the alleged delay;
(2) The supporting documentation submitted by the Contractor;
(3) The contemporaneous schedule analysis; and
(4) Any other relevant information available to the Engineer.

For a time extension request resulting from a change order, the Contractor shall demonstrate the delay to the project completion date by:

(1) Inserting a fragnet containing the change order activities into an unprogressed copy of the schedule that is current at the time of the change order;
(2) tying the fragnet into the schedule logic; and
(3) Recalculating the schedule.

The Department will not consider delays to activities which do not affect the performance period of the Contract as a basis for a Contract time extension. If the Engineer grants a contract time extension, the revised Contract Completion date will be in effect as though it were the original contract date.

A Contractor's failure to have an approved, or approved with comments, current project schedule in place will preclude the Department from considering a Contractor's a time extension request.

October 29, 2015

REVISION OF SECTION 108
LIQUIDATED DAMAGES

Section 108 of the Standard Specifications is hereby revised for this project as follows:

In subsection 108.09, delete the Schedule of Liquidated Damages and replace with the following:

Original Contract Amount ($)		**Liquidated Damages per Calendar Day ($)**
From More Than	**To And Including**	
0	150,000	500
150,000	500,000	1,000
500,000	1,000,000	1,600
1,000,000	2,000,000	2,300
2,000,000	4,000,000	4,100
4,000,000	10,000,000	5,800
10,000,000	----	7,000

July 31, 2014

REVISION OF SECTION 108
NOTICE TO PROCEED

Section 108 of the Standard Specifications is hereby revised for this project as follows:

Delete subsection 108.02 and replace with the following:

108.02 Notice to Proceed. The Contractor shall not commence work prior to the issuance of a Notice to Proceed. The "Notice to Proceed" will stipulate the date on which contract time commences. When the Contractor proceeds with work prior to that date, contract time will commence on the date work actually begins. The Contractor shall commence work under the Contract on or prior to the 15th day following Contract execution or the 30th day following the date of award, whichever comes later, or in accordance with the selected start date allowed in the special provisions.

REVISION OF SECTION 108
PROJECT SCHEDULE

Section 108 of the Standard Specifications is hereby revised for this project as follows:

Delete subsection 108.03 and replace with the following:

108.03 Project Schedule.

(a) *Definitions.*

Activity. An activity is a project element on a schedule that affects completion of the project. An activity has a description, start date, finish date, duration, and one or more logic ties.

Activity ID. A unique, alphanumeric, identification code assigned to an activity and remains constant throughout the project.

Bar Chart. A simple depiction of a Project Schedule without relationships or supporting logic of the schedule.

Calendar. Defined work periods and no work periods that determine when project activities can occur. Multiple calendars may be used for different activities; e.g., a 5-day work-week and a 7-day work-week calendar.

Constraint. A restriction imposed in a schedule, which fixes a value that would otherwise be calculated within the schedule. Examples of values that can be fixed by a constraint include start date, end date, and completion date.

Critical Path. The sequence of activities that determines the duration of the project.

Critical Path Method Scheduling. (CPM Scheduling) is a logic-based planning technique using activity durations and relationships between activities to calculate a schedule determining the minimum total project duration.

Data Date. The starting point from which to schedule all remaining work.

Duration. The estimated amount of time needed to complete an activity.

Float. The amount of time between the earliest date an activity can start and the latest date when an activity must start ,or the earliest date an activity can finish and latest date when an activity can finish before the activity becomes critical. The time between the Project Schedule completion date and the Contract completion date is not considered float.

Gantt Chart. A time-scaled graphical display of the project's schedule.

Lag. A time-value assigned to a relationship.

Logic. Relationships between activities defining the sequence of work (See also predecessor activity and successor activity).

Milestone. An activity, with no duration used to represent an event.

Open-Ended Activity. An activity that does not have both a predecessor activity and a successor activity.

Predecessor Activity. An activity that is defined by schedule logic to precede another activity.

Relationship. The interdependence between activities.

Salient Feature. An item of work that is of special interest for CDOT in coordinating the project schedule but may not affect the overall completion of the project.

Successor Activity. An activity that is defined by schedule logic to follow another activity.

Time-Scaled Logic Diagram. Gantt chart that illustrates logic links depicting both schedule logic and the time at which activities are performed.

(b) *Project Schedule* **-** *General*

The Contractor shall use either Microsoft Project or Primavera Scheduling software to develop and manage a CPM Project Schedule to plan, schedule, and report the progress of the work. Prior to, or at the Pre-construction Conference, the Contractor shall notify the Engineer in writing, which scheduling software the Contractor shall use to manage the project. The Contractor's selection and use of particular scheduling software cannot be changed after the first schedule submittal. If the Contractor selects Primavera, the Contractor shall calculate the schedule using the Retained Logic scheduling option. The Department will not allow use of bar charts for the Project Schedule.

The Contractor shall submit schedules for approval by the Engineer. The purpose of these schedules is to allow the Contractor and the Department to jointly manage the work and evaluate progress. The schedules also serve to evaluate the affect of changes and delays to the scheduled project completion. Either party may require a formal schedule review meeting.

The Contractor's schedule shall consist of a time-scaled logic diagram and shall show the logical progression of all activities required to complete the work.

The Contractor shall use activity descriptions that ensure the work is easily identifiable. The Contractor shall show the no-work days in the schedule calendars.

The Contractor shall use durations for individual construction activities that do not exceed 15 calendar days unless approved by the Engineer. The Contractor may group a series of activities with an aggregate duration of five days or less into a single activity. Non-construction activities may have durations exceeding 15 working days, as approved by the Engineer.

The Contractor may include summary bars in the schedule as long as the detailed activities to complete the work are displayed.

The Contractor shall not use the following:
(1) Negative lags
(2) Lags in excess of 10 working days without approval by the Engineer. The Contractor's written request shall justify the need for the lag. Lags shall be identified.
(3) Start-to-finish relationships.
(4) Open-ended activities - every activity shall have at least one predecessor activity and at least one successor activity, except for the first and last activities in the network. If the contractor uses a start-to-start relationship to link two activities, then both of those two activities should also have successor activities linked by either a finish-to-start or a finish-to-finish relationship.
(5) Constraints without approval by the Engineer. The Contractor's written request shall explain why the use of constraints in the schedule is necessary.

The Project Schedule shall show all activities required by all parties to complete the work. The Project Schedule shall include subcontracted work, delivery dates for critical material, submittal and review periods, permits and governmental approvals, milestone requirements, utility work by others and no work periods. The Contractor, its subcontractors, suppliers, and engineers, at any tier, shall perform the work according to the approved Project Schedule.

Float within the Baseline Schedule or any other Project Schedule is not for the exclusive use or benefit of either party, but is a project resource available to both parties as needed until it is depleted.

For any schedule submittal that shows completion in less than 85 percent of the Contract Time, the Contractor shall submit planned production rates in the schedule for all activities with float of 10 days or less. The Engineer may require additional methods statements for activities with float of 10 days or less.

The Engineer's review of the schedule will not exceed 10 calendar days. The Engineer will provide the Contractor with one of the following responses within 10 days after receipt of the Project Schedule:

(1) Approved, no exceptions taken;
(2) Approved-as-Noted; or
(3) Revise and Resubmit within 10 days.

The Contractor shall not assume that approval of the Project Schedule relieves the Contractor of its obligation to complete all work within the Contract Time.

(c) *Schedule Submittals.* The Contractor shall include a time-scaled logic diagram with all schedule submittals that:

(1) Is plotted on a horizontal time-scale in accordance with the project calendar.

(2) Uses color to clearly identify the critical path.

(3) Is based on early start and early finish dates of activities.

(4) For Schedule Updates and Schedule Revisions, shows actual completion dates up to but not including the data date.

(5) Clearly shows the sequence and relationships of all activities necessary to complete the contract work.

(6) Includes an activity block for each activity with the following information:

Activity ID	**Activity Description**
Original Duration	Total Float
Early start date	Early finish date
Late start date*	Late finish date*
Actual Start date^	Actual Finish date^
Calendar used on the activity	Activity Responsibility
Remaining Duration^	Duration Percent Complete^
Gantt chart (time-scaled logic diagram)	
*Required with the Preliminary and Baseline Schedule. ^Required with the Project Schedule Update and Schedule Revision.	

The Contractor shall include the following with all schedule submittals:

(1) A Job Progress Narrative Report that includes the following:
- (i) A description of the work performed since the previous month's schedule update.
- (ii) A description of problems encountered or anticipated since the previous month's schedule submission.
- (iii) A description of unusual labor, shift, equipment, or material conditions or restrictions encountered or anticipated.

(iv) The status of all pending items that could affect the schedule.
(v) Explanations for milestones forecasted to occur late.
(vi) Scheduled completion date status and any change from the previous month's submission.
(vii) An explanation for a scheduled completion date forecasted to occur before or after the contract completion date or contract time.
(viii) Schedule Delays:
1. A description of current and anticipated delays including: Identification of the delayed activity or activities by Activity ID(s) and description(s).
2. Delay type with reference to the relevant specification subsection.
3. Delay cause or causes.
4. Effect of the delay on other activities, milestones, and completion dates.
5. Identification of the actions needed to avoid a potential or mitigate an actual delay.
6. A description of the critical path impact and effect on the scheduled completion date in the previous month's schedule update.
(ix) A list of all added and deleted activities along with an explanation for the change.
(x) All logic and duration changes along with an explanation for the change.

(2) A Predecessor Activity and Successor Activity report that defines all schedule logic and clearly indicates all logical relationships and constraints.
(3) An Early Start report listing all activities, sorted by actual start/early start date.
(4) A Float report listing all activities sorted in ascending order of available float.
(5) A Critical Path report listing all activities not yet complete with the percent complete, sorted by float and then by early start.
(6) A listing of all non-work days.

For all required schedule submittals, the Contractor shall submit two electronic copies on two compact disk, USB flash drive, or other media as directed by the Engineer. Electronic copies of CPM schedules shall be submitted both in the native schedule format and in "PDF" format. The Contractor shall also provide two printed copies of the CPM Schedule and all reports.

Each schedule submittal shall be appropriately labeled as a Preliminary Schedule, Baseline Schedule, Project Schedule Update, or Schedule Revision. The title bar shall include the CDOT project number, subaccount, project name, contractor name, schedule data date. If an originally submitted schedule is revised during review, the title bar shall also include a revision number (REV1, REV2, etc.) and revision date.

(d) *Preliminary Schedule.* Within 14 days of award of the Contract, the Contractor may submit a Preliminary Schedule showing all planned activities from the Notice to Proceed through the first 60 days of the project. If the Contractor elects not to submit a Preliminary Schedule, then the Contractor shall submit a complete Baseline Schedule within 14 days of award of the Contract, which will be subject to all requirements of a Baseline submittal. The Preliminary Schedule shall not show any progress and it will be approved by the Engineer before work can commence. The Preliminary Schedule shall be used as the basis for the Baseline Schedule.

(e) *Baseline Schedule.* If the Contractor elects to submit a Preliminary Schedule, within 45 days of the award of Contract, the Contractor shall submit a Baseline Schedule that includes all work activities completed within Contract Time. The Contractor shall not show progress in the Baseline Schedule. Further partial payments will not be made beyond 60 days after the start of Contract Time unless the Baseline Schedule is approved. When approved, the Baseline Schedule shall become the Project Schedule.

The Contractor shall use all information known by the Contractor at the time of bid submittal to develop the Baseline Schedule.

If the Contractor elects to submit a Baseline Schedule in lieu of a Preliminary Schedule, the Baseline Schedule shall be approved before work can commence.

(f) *Methods Statements.* The Contractor shall submit a Methods Statement for each salient feature or as directed by the Engineer that describes all work necessary to complete the feature. The Contractor shall include the following information in the Methods Statement:
(1) Salient feature name;
(2) Responsibility for the salient feature work;
(3) Planned work procedures;
(4) The planned quantity of work per day for each salient feature using the same units of measure as the applicable pay item;
(5) The anticipated labor force by labor type;
(6) The number, types, and capacities of equipment planned for the work;
(7) The planned time for the work including the number of work days per week, number of shifts per day, and the number of hours per shift.

(g) *Project Schedule Update.* The Contractor shall submit a monthly update of the Project Schedule updated through the cut-off date for the monthly progress pay estimate, and a projection for completing all remaining activities. A schedule update may show a completion date that is different than the Contract completion date, after the baseline schedule is approved. Approval of this schedule shall not relieve the Contractor of its obligation to complete the work within the Contract Time. In this case, the Contractor shall provide an explanation for a late scheduled completion date in the Job Progress Narrative Report included with the schedule submittal.

When approved, the Project Schedule Update will become the Project Schedule. The Engineer will not issue a monthly progress payment if the Engineer has not received the Project Schedule Update. The Engineer will not make monthly progress payments for the months following the Project Schedule Update submission until the Engineer approves the Project Schedule Update.

When the project has a maintenance or landscape establishment period, the Engineer may waive the monthly update requirement. The Contractor shall submit a final Project Schedule Update that shows all work through the final acceptance date.

(h) *Weekly Planning Schedule.* The Contractor shall submit, in writing, a Weekly Planning Schedule that shows the Contractor's and all Subcontractor's planned activities for a minimum of two weeks immediately following the date of submittal and actual days worked versus planned for the week prior to the date of submittal. This schedule shall include the description, duration and sequence of work activities and anticipated lane closures for the upcoming two weeks. The Weekly Planning Schedule may be a time-scaled logic diagram or other standard format as approved by the Engineer. subsection 108.03(c) Schedule Submittal requirements for reports do not apply to the Weekly Planning Schedule.

(i) *Schedule Revision.* A Schedule Revision is required in the event of any major change to the work. Examples of major changes are:

(1) Significant changes in logic or methods of construction or changes to the critical path;
(2) Addition, deletion, or revision of activities required by contract modification order;
(3) Approval of a Contractor submitted Value Engineering Change Proposal;
(4) Delays in milestones or project completion;
(5) Phasing revisions, or;
(6) If the Engineer determines that the schedule does not reflect the actual work.

6
REVISION OF SECTION 108
PROJECT SCHEDULE

This revision shall include a description of the measures necessary to achieve completion of the work within the Contract Time. The Contractor may also need to submit revised Methods Statements. The Contractor shall provide a Schedule Revision within 10 days of written notification and shall include the diagrams and reports as described in subsection 108.03 (b) Schedule - General and (c) Schedule Submittals. In this case, the Contractor shall provide an explanation for a late scheduled completion date in the Job Progress Narrative Report included with the schedule.

Once approved, the Schedule Revision becomes the Project Schedule.

(j) *Payment.* All costs relating to the requirements of this subsection will not be paid for separately, but shall be included in the work.

January 31, 2013

REVISION OF SECTION 108
SUBLETTING OF CONTRACT

Section 108 of the Standard Specifications is hereby revised for this project as follows:

Delete subsection 108.01 and replace with the following:

108.01 Subletting of Contract. The Contractor shall not sublet, sell, transfer, assign, or dispose of the Contract or Contracts, or any portion thereof without written permission of the Engineer. Prior to beginning any work by subcontractor, the Contractor shall request permission from the Engineer by submitting a completed Sublet Permit Application, CDOT Form No. 205. The subcontract work shall not begin until the Contractor has received the Engineer's written permission. The Contractor shall make all project related written subcontracts, agreements, and purchase orders available to the Engineer for viewing, upon request and at a location convenient to the Engineer.

The Contractor will be permitted to sublet a portion of the Contract, however, the Contractor's organization shall perform work amounting to 30 percent or more of the total original contract amount. Any items designated in the contract as "specialty items" may be performed by subcontract. The cost of "specialty items" so performed by subcontract may be deducted from the total original contract amount before computing the amount of work required to be performed by the Contractor's own organization. The original contract amount includes the cost of material and manufactured products which are to be purchased or produced by the Contractor and the actual agreement amounts between the Contractor and a subcontractor. Proportional value of a subcontracted partial contract item will be verified by the Engineer. When a firm both sells material to a prime contractor and performs the work of incorporating the materials into the project, these two phases shall be considered in combination and as constituting a single subcontract.

The calculation of the percentage of subcontracted work shall be based on subcontract unit prices.

Subcontracts or transfer of Contract shall not release the Contractor of liability under the Contract and Bond.

April 30, 2015

REVISION OF SECTION 108
PAYMENT SCHEDULE (SINGLE FISCAL YEAR)

Section 108 of the Standard Specifications is hereby revised for this project as follows:

Delete subsection 108.04, and replace with the following:

108.04 Payment Schedule. The Contractor shall prepare a payment schedule which shall show the dollar amount of work the Contractor expects to be complete within a single State Fiscal Year (July 1 to June 30). The schedule shall cover the period from the commencement of work to the expected completion date as shown on the Contractor's progress schedule. The payment schedule may be prepared using standard spreadsheet software such as MS Excel and submitted in electronic format.

The Contractor shall submit the payment schedule at the preconstruction conference.

The amounts shown shall include planned force account work and expected incentive payments.

If the Contractor fails to submit the payment schedule by the required date, the Engineer will withhold further progress payments until such time as the Contractor has submitted it.

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REVISION OF SECTION 109
ASPHALT CEMENT COST ADJUSTMENT
(ASPHALT CEMENT INCLUDED IN THE WORK)

Section 109 of the Standard Specifications is hereby revised for this project as follows:

Subsection 109.06 shall include the following:

(i) *Asphalt Cement Cost Adjustments.* Contract cost adjustments will be made to reflect increases or decreases in the monthly average price of asphalt cement from the average price for the month preceding the month in which bids were received for the Contract. These cost adjustments are not a change to the contract unit prices bid.

1. Cost adjustments will be based on the asphalt cement price index established by the Department and calculated as shown below. The index will be the average for the month of the daily Hardisty WCS spot price. This will be calculated by applying the monthly Hardisty WCS differential (as published on http://www.fhr.com/refining/crude_oil.aspx) from the West Texas Intermediate (WTI) daily spot price (as published on http://www.up.com/customers/surcharge/wti/prices/index.htm). The daily prices and the average index number for the month will be posted as soon as they are available on the CDOT website at:

   http://www.coloradodot.info/business/designsupport/construction-specifications/2011-Specs/asphalt-cement-cost-adjustment

2. Cost adjustments will be made on a monthly basis subject to the following conditions:

   A. Adjustment will be based on the pay quantities on the monthly partial pay estimate for the following two pay items when measured by the ton and asphalt cement is included in the pay items:

Item No.	Item	Pay Unit
403*	Hot Mix Asphalt (Grading __) (Asphalt)	Ton
403	Stone Matrix Asphalt (Grading __) (Asphalt)	Ton
*Hot Mix Asphalt (Patching) is not subject to asphalt cement cost adjustment.		

   B. A cost adjustment will be made only when the asphalt cement price index varies by more than 5 percent from the asphalt cement price index at the time of bid, and only for that portion of the variance in excess of 5 percent. Cost adjustments may be either positive or negative dollar amounts.

   C. Asphalt cement cost adjustments will not be made for any partial estimate falling wholly after the expiration of contract time.

   D. Adjustment formula:

   EP greater than BP:
   ACCA = (EP – 1.05 BP)(PA) (Q)

   EP less than BP:
   ACCA = (EP – 0.95 BP) (PA) (Q)

Where:

BP	=	Average Asphalt Cement price index for the calendar month prior to the calendar month in which bids are opened
EP	=	Average Asphalt Cement price index for the calendar month prior to the calendar month in which the partial estimate pay period ends
ACCA	=	Asphalt Cement Cost Adjustment
PA	=	Percent of the paving mixture that is asphalt cement. Asphalt Cement content will be determined by the weighted average of all asphalt cement content percentages obtained from the field acceptance tests for that item (Use decimal in formula, e.g.: 0.05.). If Reclaimed Asphalt Pavement (RAP), Reclaimed Asphalt Shingles (RAS), or both is used, the percent of Virgin Asphalt Cement added to the mix will be determined by subtracting the percent of asphalt cement in the RAP, RAS, or both from the percent of asphalt cement in the mix as calculated from Revision of Section 401, Reclaimed Asphalt Pavement and Revision of Section 401 Reclaimed Asphalt Shingles.
Q	=	Increased pay quantity for all 403 items shown above on the monthly partial pay estimate in Tons.

Example:	Bids are opened on July 16. The BP will be the average of the daily postings for June 1 through June 30. For an estimate cut-off date selected by the Contractor at the Pre-Construction Conference of the 20th of the month a February estimate will include HMA quantities measured from the 21st of January through the 20th of February, and the EP index used to calculate ACCA will be the average of the daily pricesfor January 1 through January 31 as established by CDOT)

E. Cost adjustment will not be made for the quantity of any item that is left in place at no pay or for material removed and replaced at the Contractor's expense.

F. Cost adjustments will not be made to items of work added to the Contract by Change Order after the award of the Contract.

G. The asphalt cement cost adjustment will be the sum of the individual adjustments for each of the pay items shown above. No adjustment will be made for asphalt cement costs on items other than those shown above.

H. Asphalt cement cost adjustments resulting in an increased payment to the Contractor will be paid for under the planned force account item: Asphalt Cement Cost Adjustment. Asphalt cement cost adjustments resulting in a decreased payment to the Contractor will be deducted from monies owed the Contractor.

REVISION OF SECTION 109
ASPHALT CEMENT COST ADJUSTMENT
(ASPHALT CEMENT PAID SEPARATELY)

Section 109 of the Standard Specifications is hereby revised for this project as follows:

Subsection 109.06 shall include the following:

(i) *Asphalt Cement Cost Adjustments.* Contract cost adjustments will be made to reflect increases or decreases in the monthly average price of asphalt cement from the average price for the month preceding the month in which bids were received for the Contract. These cost adjustments are not a change to the Contract unit prices bid.

1. Cost adjustments will be based on the asphalt cement price index established by the Department and calculated as shown below. The index will be the average for the month of the daily Hardisty WCS spot price. This will be calculated by applying the monthly Hardisty WCS differential (as published on http://www.fhr.com/refining/crude_oil.aspx) from the West Texas Intermediate (WTI) daily spot price (as published on http://www.up.com/customers/surcharge/wti/prices/index.htm). The daily prices and the average index number for the month will be posted as soon as they are available on the CDOT website at:

http://www.coloradodot.info/business/designsupport/construction-specifications/2011-Specs/asphalt-cement-cost-adjustment

1. Cost adjustments will be made on a monthly basis subject to the following conditions:

A. Adjustment will be based on the pay quantities on the monthly partial pay estimate for the following pay item when measured by the ton:

Item No.	Item	Pay Unit
411	Asphalt Cement (__)*	Ton
*Asphalt cement used with HMA (Patching) is not subject to asphalt cost adjustment.		

B. A cost adjustment will be made only when the asphalt cement price index varies by more than 5 percent from the asphalt cement price index at the time of bid, and only for that portion of the variance in excess of 5 percent. Cost adjustments may be either positive or negative dollar amounts.

C. Asphalt cement price adjustments will not be made for any partial estimate falling wholly after the expiration of contract time.

D. Adjustment formula:

EP greater than BP:

$$ACCA = (EP - 1.05\ BP)\ (Q)$$

EP less than BP:

$$ACCA = (EP - 0.95\ BP)\ (Q)$$

Where:

BP = Average Asphalt Cement price index for the calendar month prior to the calendar month in which bids are opened.

EP = Average Asphalt Cement price index for the calendar month prior to the calendar month in which the partial estimate pay period ends.

ACCA = Asphalt Cement Cost Adjustment.

Q = Increased pay quantity for 411 item shown above on the monthly partial pay estimate in Tons.

Example:	Bids are opened on July 16. The BP will be the average of the daily postings for June 1 through June 30. For an estimate cut-off date selected by the Contractor at the Pre-Construction Conference of the 20th of the month a February estimate will include HMA quantities measured from the 21st of January through the 20th of February, and the EP index used to calculate ACCA will be the average of the daily postings for January 1 through January 31 as established by CDOT)

E. Cost adjustments will not be made for the quantity of any item that is left in place at no pay or for material removed and replaced at the Contractor's expense.

F. Cost adjustments will not be made to items of work added to the Contract by Change Order after the award of the Contract.

G. The asphalt cement cost adjustment will be the sum of the individual adjustments for each of the pay items shown above. No adjustment will be made for asphalt cement costs on items other than those shown above.

H. Asphalt cement cost adjustments resulting in an increased payment to the Contractor will be paid for under the planned force account item: Asphalt Cement Cost Adjustment. Asphalt cement cost adjustments resulting in a decreased payment to the Contractor will be deducted from monies owed the Contractor.

May 5, 2011

REVISION OF SECTION 109
COMPENSATION FOR COMPENSABLE DELAYS

In subsection 109.10, delete the first two paragraphs and replace with the following:

109.10 Compensation for Compensable Delays. If the Engineer determines that a delay is compensable in accordance with either subsection 105.22, 105.23, 105.24, or 108.08, monetary compensation will be determined in accordance with this subsection.

(a) These categories represent the only costs that are recoverable by the Contractor. All other costs or categories of costs are not recoverable:

(1) Actual wages and benefits, including FICA, paid for additional labor not otherwise included in (5) below;

(2) Costs for additional bond, insurance and tax;

(3) Increased costs for materials;

(4) Equipment costs calculated in accordance with subsection 109.04(c) for Contractor owned equipment and based on invoice costs for rented equipment;

(5) Costs of extended job site overhead;

(6) Costs of salaried employees not otherwise included in (1) or (5) above incurred as a direct result of the delay;

(7) Claims from subcontractors and suppliers at any level (the same level of detail as specified herein is required for all such claims);

(8) An additional 16 percent will be added to the total of items (1) through (7) as compensation for items for which no specific allowance is provided, including profit and home office overhead.

REVISION OF SECTION 109
FUEL COST ADJUSTMENT

Section 109 of the Standard Specifications is hereby revised for this project as follows:

Subsection 109.06 shall include the following:

(h) *Fuel Cost Adjustments.* Contract cost adjustments will be made to reflect increases or decreases in the monthly average prices of gasoline, diesel and other fuels from the average price for the month preceding the month in which bids were received for the Contract. These cost adjustments are not changes to the Contract unit prices bid. When bidding, the Contractor shall specify on the Form 85 whether the cost adjustment will apply to the Contract. After bids are submitted, the Contractor will not be given any other opportunity to accept or reject this adjustment. If the Contractor fails to indicate a choice on the Form 85, the cost adjustment will not apply to the Contract. If the fuel cost adjustment is accepted by the Contractor, the adjustment will be made in accordance with the following criteria:

1. Cost adjustments will be based on the fuel price index established by the Department and calculated as shown in subsection 109.06(h)2.D below. The index will be the monthly average of the rates posted by the Oil Price Information Service (OPIS) for Denver No. 2 Diesel. The rate used will be the *OPIS Average* taken from the OPIS Standard Rack table for *Ultra-Low Sulfur w/Lubricity Gross Prices* (ULS column), expressed in dollars per gallon and rounded to two decimal places.

2. Cost adjustments will be made on a monthly basis subject to the following conditions:

   A. Adjustment will be based on the pay quantities on the monthly partial pay estimate for each of the pay items listed in the table below for which fuel factors have been established. Adjustment will be made only when the pay item is measured by the pay unit specified in the table:

Item	Pay Unit	Fuel Factor (FF)
202-Removal of Asphalt Mat (Planing)	Square Yard	0.006 Gal/SY/Inch depth
203-Excavation (muck, unclassified) Embankment, Borrow	Cubic Yard	0.29 Gal/CY
203-Rock Excavation	Cubic Yard	0.39 Gal/CY
206-Structure Excavation and Backfill [applies only to quantities paid for by separate bid item; no adjustment will be made for pay items that include structure excavation & backfill, such as RCP(CIP)]	Cubic Yard	0.29 Gal/CY
304-Aggregate Base Course (Class___)	Cubic Yard	0.85 Gal/CY
304-Aggregate Base Course (Class___)	Ton	0.47 Gal./Ton
307-Processing Lime Treated Subgrade	Square Yard	0.12 Gal/SY
310-Full Depth Reclamation	Square Yard	0.06 Gal/SY
403-Hot Mix Asphalt (HMA) (Grading __) *	Ton	2.47 Gal/Ton
403-Stone Matrix Asphalt (Grading __)	Ton	2.47 Gal/Ton
405-Heating and Scarifying Treatment	Square Yard	0.44 Gal/SY
405-Heating and Repaving Treatment	Square Yard	0.44 Gal/SY
405-Heating and Remixing Treatment	Square Yard	0.44 Gal/SY
406-Cold Bituminous Pavement (Recycle)	Square Yard	0.01 Gal/SY/Inch depth
412- Concrete Pavement (___Inch)	Square Yard	0.03 Gal/SY/Inch thickness
412-Place Concrete Pavement**	Square Yard	0.03 Gal/SY/Inch thickness
*Hot Mix Asphalt (Patching) is not subject to fuel cost adjustment. **Use the thickness shown on the plans.		

REVISION OF SECTION 109
FUEL COST ADJUSTMENT

B. A fuel cost adjustment will be made only when the current fuel price index varies by more than 5 percent from the price index at the time of bid, and only for that portion of the variance in excess of 5 percent. Fuel cost adjustments may be either positive or negative dollar amounts.

C. Fuel cost adjustments will not be made for any partial estimate falling wholly after the expiration of contract time.

D. Adjustment formula:

EP greater than BP:

$$FA = (EP - 1.05\ BP)(Q)(FF)$$

EP less than BP:

$$FA = (EP - 0.95\ BP)(Q)(FF)$$

Where:

BP	=	Average fuel price index for the calendar month prior to the calendar month in which bids are opened
EP	=	Average fuel price index for the calendar month prior to the calendar month in which the partial estimate pay period ends
FA	=	Adjustment for fuel costs in dollars
FF	=	Fuel usage factor for the pay item
Q	=	Pay quantity for the pay item on the monthly partial pay estimate

Note: When the pay item is based on area, and the rate of fuel use varies with thickness, Q should be determined by multiplying the area by the thickness. For example: for 1000 square yards of 8-inch concrete pavement Q should be 8000.

Example: Bids are opened on July 16. The BP will be the average of the daily postings for June 1 through June 30. For an estimate cut-off date selected by the Contractor at the Pre-Construction Conference of the 20th of the month a February estimate will include HMA quantities (Q) measured from the 21st of January through the 20th of February, the FF will be 2.47 Gal/Ton, and the EP index used to calculate FA will be the average of the daily postings for January 1 through January 31 as established by CDOT.

E. Fuel cost adjustment will not be made for the quantity of any item that is left in place at no pay.

F. Fuel cost adjustments will not be made to items of work added to the Contract by Change Order after the award of the Contract.

The fuel cost adjustment will be the sum of the individual adjustments for each of the pay items shown. No adjustment will be made for fuel costs on items other than those shown. The factors shown are aggregate adjustments for all types of fuels used, including but not limited to gasoline, diesel, propane, and burner fuel. No additional adjustments will be made for any other type of fuel.

Fuel cost adjustments resulting in an increased payment to the Contractor will be paid for under the planned force account item: Fuel Cost Adjustment. Fuel cost adjustments resulting in a decreased payment to the Contractor will be deducted from monies owed the Contractor.

REVISION OF SECTION 109
MEASUREMENT OF QUANTITIES

Section 109 of the Standard Specifications is hereby revised for this project as follows:

In subsection 109.01, delete the 17th paragraph and replace it with the following:

Vehicles used to haul material being paid for by weight shall bear a plainly legible identification mark. Each of these vehicles shall be weighed empty daily at times directed by the Engineer. The Contractor shall furnish to the Engineer, in writing, a vehicle identification sheet that lists the following for each delivery vehicle to be used on the project:

(1) identification mark
(2) vehicle length
(3) tare weight
(4) number of axles
(5) the distance between extreme axles
(6) information related to legal weight, including the Permit No. and permitted weight of each vehicle for which the State has issued an overweight permit.

This information shall be furnished prior to time of delivery of the material and at any subsequent time the Contractor changes vehicles, combination vehicles, axle length relationships, or overweight permitting of vehicles.

January 6, 2012

REVISION OF SECTION 109
MEASUREMENT OF WATER

Section 109 of the Standard Specifications is hereby revised for this project as follows:

In subsection 109.01, delete the twenty-sixth paragraph and replace with the following:

Water may be measured either by volume or weight. Water meters shall be accurate within a range of ± 3 percent. When water is metered, the Contractor shall use an approved metering device and shall furnish the Engineer a certificate showing the meter has been accurately calibrated within the time allowed in the following schedule:

2 inch	4 years
4 inch to 6 inch	2 years
8 inch to 10 inch	1 year

January 31, 2013

REVISION OF SECTION 109
PROMPT PAYMENT

Section 109 of the Standard Specifications is hereby revised to include the following:

Subsection 109.06 (e) shall include the following:

The Contractor shall submit the Form 1418, Monthly Payment Report, along with the project schedule updates, in accordance with subsections 108.03 (b) or 108.03 (c) (3). Failure to submit a complete and accurate Form 1418 shall be grounds for CDOT to withhold subsequent payments or retainage to the Contractor.

October 29, 2015

REVISION OF SECTION 109
SCALES

Section 109 of the Standard Specifications is hereby revised for this project as follows:

In subsection 109.01, delete the 11th paragraph and replace with the following:

Materials measured or proportioned by weight shall be weighed on accurate scales. Scales shall be accurate within the allowable tolerances as prescribed by State law. The scales shall be tested for accuracy by the Colorado Department of Agriculture or an approved Colorado Department of Agriculture vendor (https://www.colorado.gov/pacific/aginspection/scale-companies) as least once each year, each time the scales are relocated, and as often as the Engineer may deem necessary. Scales shall be furnished by the Contractor or the Contractor may utilize commercial scales.

REVISION OF SECTIONS 203, 206, 304 AND 613
COMPACTION

Sections 203, 206, 304 and 613 of Standard Specifications are hereby revised for this project as follows:

In subsection 203.03 (a), delete the fifth paragraph and replace with the following:

1. *Soil Embankment.* Soil embankment consists of materials with 50 percent or more of the material passing the 4.75 mm (No. 4) sieve.

   A soil embankment may also have more than 50 percent of the material retained on the 4.75 mm (No. 4) sieve, but no more than 30 percent of the material retained on the 19 mm (3/4 inch) sieve.

   Soil embankment shall be constructed with moisture density control in accordance with the requirements of subsection 203.07.

2. *Rock Embankment.* Rock embankment consist of materials with 50 percent or more of the material retained on the 4.75 mm (No. 4) sieve and with more than 30 percent of the material retained on the 19 mm (3/4 inch) sieve. All material shall be smaller than 6 inches. Rock embankments shall be constructed without moisture density control in accordance with the requirements of subsection 203.08.

Delete Subsection 203.07 and replace with the following:

203.07 Construction of Embankment and Treatment of Cut Areas with Moisture and Density Control. Soil embankments shall be constructed with moisture and density control and the soil upon which the embankments are to be constructed shall be scarified to a depth of 6 inches and compacted with moisture and density control. The moisture content of the soil at the time of compaction shall be as specified or directed.

The material shall be removed from the full width of roadbed in all cut sections to the designated depth. The soil below the designated depth shall be thoroughly scarified to a depth of 6 inches and the moisture content increased or reduced, as necessary, to obtain the moisture content specified. This scarified layer shall then be compacted to the relative compaction specified.

All embankment material shall be compacted to not less than 95 percent relative compaction. Maximum dry density of all soil types encountered or used will be determined in accordance with AASHTO T 99 as modified by CP 23.

Soils shall be compacted at ± 2 percent of Optimum Moisture Content (OMC) as determined by AASTHO T 99. Soils having greater than 35 percent passing the 75 µm (No. 200) sieve shall be compacted to 0 to 3 percent above OMC. Soils which are unstable at the above moisture content shall be compacted at lower moisture content to the specified density.

Additional work involved in drying embankment material to the required moisture content shall be included in the contract price paid for excavating or furnishing the material with no additional compensation.

Density requirements will not apply to materials which cannot be tested in accordance with the above procedures for determining maximum dry density. Compaction for materials which cannot be tested shall be in accordance with subsection 203.08.

Claystone or soil-like non-durable shale shall be pulverized and compacted to the specified moisture and percent of relative compaction and shall be compacted with a heavy tamping foot roller, weighing at least 30 tons. Each tamping foot roller shall protrude from the drum a minimum of 4 inches. Each embankment layer shall receive a minimum of three or more coverages with the tamping foot roller to obtain density. One coverage consists of one pass over the entire surface designated. One pass consists of the passing of an acceptable tamping foot roller over a given spot. The roller shall be operated at a uniform speed not exceeding 3 miles per hour. No additional compensation will be made for additional roller coverages to achieve specified density requirements.

In subsection 206.03, delete the fourth and fifth paragraphs and replace with the following:

Backfill shall consist of approved materials uniformly distributed in layers brought up equally on all sides of the structure. Each layer of backfill shall not exceed 6 inches before compacting to the required density and before successive layers are placed. Structure backfill (Class 1) shall be compacted to a density of not less than 95 percent of maximum dry density determined in accordance with AASHTO T 180 as modified by CP 23. Backfill shall be compacted at ± 2 percent of Optimum Moisture Content (OMC).

Structure backfill (Class 2) shall be compacted to a density of not less than 95 percent of maximum dry density. The maximum dry density and OMC for A-1, A-2-4. A-2-5 and A-3 materials will be determined in accordance with AASHTO T 180 as modified by CP 23. The maximum dry density and OMC for all other materials will be determined in accordance with AASHTO T 99 as modified by CP 23. Materials shall be compacted at ± 2percent of Optimum Moisture Content (OMC). Materials having greater than 35 percent passing the 75 µm (No. 200) sieve shall be compacted at 0 to 3 percent above OMC.

In subsection 304.06, delete the first paragraph and replace with the following:

304.06 Shaping and Compaction. Compaction of each layer shall continue until a density of not less than 95 percent of the maximum density determined in accordance with AASHTO T 180 as modified by CP 23 has been achieved. The moisture content shall be at +/-2 percent of optimum moisture content. The surface of each layer shall be maintained during the compaction operations so that a uniform texture is produced and the aggregates are firmly keyed. Moisture conditioning shall be performed uniformly during compaction.

In subsection 613.07, delete the 15th paragraph and replace with the following:

Trenching shall be backfilled and compacted as follows: Backfill shall be deposited in uniform layers. The thickness of each layer shall be 6 inches or less thick prior to compaction. The space under the conduit shall be completely filled. The remainder of the trench and excavation shall be backfilled to the finished grade. The backfill material shall be compacted to the density of not less than 95 percent of maximum dry density. The maximum dry density and optimum moisture content (OMC) for A-1, A-2-4. A-2-5 and A-3 materials will determined in accordance with AASHTO T 180 as modified by CP 23. The maximum dry density and OMC for all other materials will determined in accordance with AASHTO T 99 as modified by CP 23. Materials shall be compacted at ± 2percent of Optimum Moisture Content (OMC). Materials having greater than 35 percent passing the 75 µm (No. 200) sieve shall be compacted at 0 to 3 percent above OMC. Each layer shall be mechanically compacted by tamping with power tools approved by the Engineer. Compaction methods or equipment that damage the conduit shall not be used.

REVISION OF SECTION 206
IMPORTED MATERIAL FOR STRUCTURE BACKFILL

Section 206 of the Standard Specifications is hereby revised for this project as follows:

Subsection 206.02 (a) shall include the following:

Imported Material used as structure backfill for pipes (storm sewer, cross culverts, side drains, etc) shall be tested for compatibility with the selected pipe material.

When Nonreinforced Concrete Pipe or Reinforced Concrete Pipe is used, the imported material shall be tested for sulfate and pH.

When Corrugated Steel Pipe, Bituminous Coated Corrugated Steel Pipe or Precoated Corrugated Steel Pipe is used, the imported material shall be tested for sulfates, chlorides, pH and resistivity.

When Aramid Fiber Bonded Corrugated Steel Pipe or Corrugated Aluminum Pipe is used, the imported material shall be tested for pH and resistivity.

When Plastic pipe is selected, the imported material does not need to be tested for sulfates, chlorides, pH and resistivity.

Sulfates, chlorides, pH and resistivity shall be determined by the following procedures:

(1) Water soluble sulfates using CP-L 2103 Method B.
(2) Chlorides using CPL 2104
(3) Resistivity using ASTM G57
(4) pH using ASTM G51.

The average of three consecutive tests shall show the imported material's sulfate, chloride, pH and resistivity is not greater than the limits corresponding to the Pipe Class in Table 206-1 or 206-2 for the pipe class specified on the plans. No single test shall have a result more than 20 percent greater than that corresponding to the limit in Table 206-1 or Table 206-2 for sulfates, chlorides and resistivity. No single test shall have a result more than 5 percent outside the limit in Table 206-1 for pH. The remaining sample material from a single failing test shall be split into three equal portions. CDOT shall receive one portion, the Contractor shall receive one portion and the remaining portion shall be retained by the Project. CDOT and the Contractor's Lab shall retest the failed sample; if the results from those tests are within 10 percent of each other, the results will be averaged. The averaged result will be used for Contract compliance. If the results from the Labs are not within 10 percent of each other, the remaining sample portion will be sent to an independent laboratory for testing using the testing requirements specified above. The independent laboratory will be mutually agreed upon by the Department and the Contractor. The Independent Lab's test result will be used for Contract compliance.

If the imported material's sulfates, chlorides, and resistivity are less than the limits and the pH is within the limits in Table 203-1 or 203-2, CDOT will bear all costs associated with the independent lab test. If the imported material's sulfates, chlorides, and resistivity is greater than the limits and the pH is outside the limits in Table 206-1 or 206-2, all costs associated with independent lab testing shall be at the Contractor's expense.

Embankment represented by failing tests shall be removed from the project and replaced at the Contractor's expense.

Table 206-1
SULFATE, CHLORIDE AND PH OF IMPORTED MATERIAL

	SOIL		
Pipe Class	Sulfate (SO_4) % max	Chloride (Cl) % max	pH
0 , 7	0.05	0.05	6.0-8.5
1, 7	0.10	0.10	6.0-8.5
2, 8	0.20	0.20	6.0-8.5
3, 9	0.50	0.50	6.0-8.5
4, 9	1.00	1.00	5.0-9.0
5, 10	2.00	2.00	5.0-9.0
6, 10	>2.00	>2.00	<5 or >9

Table 206-2
RESISTIVITY AND PH OF IMPORTED MATERIAL

SOIL SIDE	
Resistivity, R (Ohm – cm)	pH
≥1,500	5.0-9.0
≥250	3.0-12.0

REVISION OF SECTIONS 206 AND 601
MATURITY METER AND CONCRETE
FORM AND FALSEWORK REMOVAL

Sections 206 and 601 of the Standard Specifications are hereby revised for this project as follows:

In subsection 206.03, delete the ninth paragraph and replace with the following:

Backfill material shall not be deposited against newly constructed masonry or concrete structures, until the concrete has developed a compressive strength of 0.8 f 'c, except in cases where the structures support lateral earth pressure. Concrete compressive strength for structures supporting lateral earth pressure shall conform to subsection 601.12 (o). Concrete compressive strength shall be determined by maturity meters.

In subsection 601.09, delete (h) and replace with the following:

(h) *Removal of Forms*. The forms for any portion of the structure shall not be removed until the concrete is strong enough to withstand damage when the forms are removed.

Unless specified in the plans, forms shall remain in place for members that resist dead load bending until concrete has reached a compressive strength of at least 80 percent of the required 28 day strength, 0.80f'c. Forms for columns shall remain in place until concrete has reached a compressive strength of at least 1,000 psi. Forms for sides of beams, walls or other members that do not resist dead load bending shall remain in place until concrete has reached a compressive strength of at least 500 psi.

Forms and supports for cast-in-place concrete box culverts (CBCs) shall not be removed until the concrete compressive strength exceeds 0.6 f_c' for CBCs with spans up to and including 12 feet, and 0.67 f_c' for CBCs with spans exceeding 12 feet but not larger than 20 feet. Forms for CBCs with spans larger than 20 feet shall not be removed until after all concrete has been placed in all spans and has attained a compressive strength of at least 0.80f'c.

Concrete compressive strength shall be determined by maturity meters. At the pre-pour conference, the Contractor shall submit the location where maturity meters will be placed.

The Contractor shall provide maturity meters and all necessary wires and connectors. The Contractor shall be responsible for the placement and maintenance of the maturity meter and wire. . At a minimum a maturity meter will be placed at the mid-span of beams and at support locations. Placement shall be as directed by the Engineer.

For structures with multiple maturity meters, the lowest compressive strength shall determine when the forms can be removed.

Acceptance cylinders shall not be used for determining compressive strength to remove forms.

When field operations are controlled by maturity meters, the removal of forms, supports and housing, and the discontinuance of heating and curing may begin when the concrete is found to have the required compressive strength.

Forms for median barrier, railing or curbs, may be removed at the convenience of the Contractor after the concrete has hardened.

All forms shall be removed except permanent steel bridge deck forms and forms used to support hollow abutments or hollow piers when no permanent access is available into the cells. When permanent access is provided into box girders, all interior forms and loose material shall be removed, and the inside of box girders shall be cleaned.

REVISION OF SECTIONS 206 AND 601
MATURITY METER AND CONCRETE
FORM AND FALSEWORK REMOVAL

In subsection 601.11, delete (e) and replace with the following:

(e) Falsework Removal. Unless specified in the plans or specifications, falsework shall remain in place until concrete has attained a minimum compressive strength of 0.80f'c.

Falsework supporting any span of a simple span bridge shall not be released until after all concrete, excluding concrete above the bridge deck, has attained a compressive strength of at least 0.80f'c.

Falsework supporting any span of a continuous or rigid frame bridge shall not be released until after all concrete, excluding concrete above the bridge deck, has been placed in all spans and has attained the compressive strength of at least 0.80f'c.

Falsework for arch bridges shall be removed uniformly and gradually, beginning at the crown, to permit the arch to take its load slowly and evenly.

Falsework supporting overhangs and deck slabs between girders shall not be released until the deck concrete has attained a compressive strength of at least 0.80f'c.

Falsework for pier caps which will support steel or precast concrete girders shall not be released until the concrete has attained a compressive strength of at least 0.80f'c. Girders shall not be erected onto such pier caps until the concrete in the cap has attained the compressive strength of at least 0.80f'c.

Falsework for cast-in-place prestressed portions of structures shall not be released until after the pre-stressing steel has been tensioned.

Concrete compressive strength shall be determined by maturity meters. At the pre-pour conference, the Contractor shall submit the location that maturity meters will be placed.

The Contractor shall provide maturity meters and all necessary wires and connectors. The Contractor shall be responsible for the placement and maintenance of the maturity meters and wires. At a minimum a maturity meter will be placed at the mid-span of beams and at support locations. Placement shall be as directed by the Engineer.

For structures with multiple maturity meters, the lowest compressive strength shall determine when the falsework can be removed.

Acceptance cylinders shall not be used for determining compressive strength to remove falsework.

Subsection 601.12 (I) shall include the following after the first paragraph:

Concrete compressive strength shall be determined by maturity meters.

Subsection 601.12 shall include the following:

(o) Backfilling Structures that Support Lateral Earth Pressure. Concrete compressive strengths shall reach f'c before backfilling operations can begin with heavy equipment, such as skid-steers or self-powered riding compactors. Concrete compressive strengths shall reach 0.8 f'c before backfilling operations can begin with hand operated equipment. Concrete compressive strength shall be determined by maturity meters.

3
REVISION OF SECTIONS 206 AND 601
MATURITY METER AND CONCRETE
FORM AND FALSEWORK REMOVAL

Delete subsections 601.13 (2) and 601.13 (3) and replace with the following:

(2) The minimum curing period shall be from the time the concrete has been placed until the concrete has met a compressive strength of 80 percent of the required field compressive strength. The Contractor shall develop a maturity relationship for the concrete mix design in accordance with CP 69. The Contractor shall provide the maturity meter and all necessary thermocouples, thermometers, wires and connectors. The Contractor shall place, protect and maintain the maturity meters and associated equipment. Locations where the maturity meters are placed shall be protected in the same manner as the rest of the structure.

Subsection 601.17 shall include the following:

(f) *Maturity Meter Strength*. When maturity meters are specified for determining strength for removing forms, removing false work, backfilling against structures or loading the structure, the Contractor shall provide the Engineer a report of maturity relationships in accordance with CP 69 prior to placement of concrete.

If a maturity meter fails, is tampered with, is destroyed or was not placed, the following shall apply:

The minimum curing time or waiting time for removing forms, removing false work, backfilling against structures or loading the structure shall be 28 days.

The Contractor may choose at his own expense to core the structure represented by the maturity meter. Cores will be obtained and tested according to CP 65. Cores will be a minimum of 4 inches in diameter. A minimum of three cores in a two square foot area will be obtained. If the compressive strength of any one core differs from the average by more than 10 percent that compressive strength will be deleted and the average strength will be determined using the compressive strength of the remaining two cores. If the compressive strength of more than one core differs from the average by more than 10 percent the average strength will be determined using all three compressive strengths of the cores. The average compressive strength of the cores shall be achieve the specified compressive strength of the structure. A structure may only be cored once.

April 30, 2015

REVISION OF SECTION 208
EROSION CONTROL SUPERVISOR

Section 208 of the Standard Specifications is hereby revised for this project as follows:

In subsection 208.03(c), delete the first paragraph and replace with the following:

(c) *Erosion Control Supervisor*. When included in the Contract, the Contractor shall assign to the project an individual to serve in the capacity of the Erosion Control Supervisor (ECS). The ECS shall be a person other than the Superintendent. The ECS shall be experienced in all aspects of construction and have satisfactorily completed the Transportation Erosion Control Supervisor (TECS) training program authorized by the Department. A copy of the TECS certificate shall be placed in the SWMP Notebook confirming certification number and that the qualification has not expired. Proof that this requirement has been met shall be submitted to the Engineer prior to or at the environmental preconstruction conference. The ECS shall act as the SWMP Administrator on the project. The SWMP Administrator shall be responsible for oversight of the implementation, maintenance, and revision of the SWMP for the duration of the project. The ECS shall use the information provided in CDOT's Erosion Control and Stormwater Quality Guide and the CDPS-SCP.

April 26, 2012

REVISION OF SECTION 212
SEED

Section 212 of the Standard Specifications is hereby revised for this project as follows:

In subsection 212.02 (a), delete the first paragraph and replace with the following:

(a) *Seed.* All seed shall be furnished in bags or containers clearly labeled to show the name and address of the supplier, the seed name, the lot number, net weight, origin, the percent of weed seed content, the guaranteed percentage of purity and germination, pounds of pure live seed (PLS) of each seed species, and the total pounds of PLS in the container. All seeds shall be free from noxious weed seeds in accordance with current state and local lists and as indicated in Section 213. The Contractor shall furnish to the Engineer a signed statement certifying that the seed is from a lot that has been tested by a recognized laboratory for seed testing within thirteen months prior to the date of seeding. The Engineer may obtain seed samples from the seed equipment, furnished bags or containers to test seed for species identification, purity and germination. Seed tested and found to be less than 10 percent of the labeled certified PLS and different than the specified species will not be accepted. Seed which has become wet, moldy, or damaged in transit or in storage will not be accepted.

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REVISION OF SECTION 213
MULCHING

Section 213 of the Standard Specifications is hereby revised for this project as follows:

In subsection 213.01, delete the last paragraph and replace with the following:

This work includes furnishing and applying spray-on mulch blanket or bonded fiber matrix on top of rock cuts and slopes after seeding or as temporary stabilization as shown on the plans or as directed by the Engineer.

In subsection 213.02, delete the eighth paragraph and replace with the following:

The hydromulch material for hydraulic mulching shall consist of virgin wood fibers manufactured expressly from clean whole wood chips. The chips shall be processed in such a manner as to contain no growth or germination inhibiting factors. Fiber shall not be produced from recycled materials such as sawdust, paper, cardboard, or residue from pulp and paper plants. The wood cellulose fibers of the mulch must maintain uniform suspension in water under agitation. Upon application, the mulch material shall form a blotter like mat covering the ground. This mat shall have the characteristics of moisture absorption and percolation and shall cover and hold seed in contact with the soil. The Contractor shall obtain certifications from suppliers that laboratory and field testing of their product has been accomplished, and that it meets all of the foregoing requirements pertaining to wood cellulose fiber mulch.

In subsection 213.02, delete the eleventh paragraph and replace with the following:

Material for mulch tackifier shall consist of a free-flowing, noncorrosive powder produced either from the natural plant gum of Plantago Insularis (Desert Indianwheat) or pre-gelatinized 100 percent natural corn starch polymer. The powders shall possess the following properties:

Plantago Insularis (Desert Indianwheat):

Property	**Requirement**	**Test Method**
(1) pH 1% solution	6.5 - 8.0	
(2) Mucilage content	75% min.	ASTM D7047

Pre-gelatinized 100 percent natural corn starch polymer:

(1)	Organic Nitrogen as protein	5.5-7%
(2)	Ash content	0-2%
(3)	Fiber	4-5%
(4)	pH 1% solution	6.5 – 8.0
(5)	Size	100% thru 850 microns (20 mesh)
(6)	Settleable solids	<2%

All fibers shall be colored green or yellow with a biodegradable dye.

Delete the last paragraph in subsection 213.02 and replace with the following:

(a) *Spray-on Mulch Blanket.* Spray on mulch blanket shall be one of the following, unless otherwise shown on the plans:

(1) Spray-on Mulch Blanket (Type 1) shall be a hydraulically applied matrix containing organic fibers, water soluble cross-linked tackifier, reinforcing natural and/or synthetic interlocking fibers. Mulch Blanket (Type 1) shall conform to the following:

Properties	Requirement	Test Method
Organic Fibers	71% Min.	ASTM D 2974
Cross linked Tackifiers	10% +/- 2% Min.	
Reinforcing Interlocking Fibers	10% +/- 1% Min.	
Biodegradability	100%	ASTM D 5338
Ground Cover @ Application Rate	90% Min.	ASTM D 6567
Functional Longevity	12 Months Min.	
Cure Time	< 8 hours	
Application		
Application Rate	3,000 lb./acre	

The organic fiber shall not contain lead paint, printing ink, varnish, petroleum products, seed germination inhibitors, or chlorine bleach. The organic fibers and reinforcing interlocking fibers cannot be produced from sawdust, cardboard, paper, or paper by-products.

(2) Spray-on Mulch Blanket (Type 2) shall be a hydraulically applied matrix pre-packaged in 50 pound bags containing both a soil and fiber stabilizing compound and thermally processed wood fiber.

The sterilized weed-free wood fiber mulch shall be manufactured through a thermo-mechanical defibrating process containing a specific range of fiber lengths averaging 0.25 inches or longer.

Mulch Blanket (Type 2) shall meet the following requirements:

Property	Requirement	Test Method
Fiber Retention On 28-Mesh Screen	≥ 40%	Tyler Ro-Tap Method
Moisture Content	12% ± 2%	Total Air Dry Weight Basis
Organic Matter	99.2% ± 0.2%	Oven Dry Weight Basis
Ash Content	0.8% ± 0.2%	Oven Dry Weight Basis
pH At 3% Consistency In Water	4.5-7.0 ± 0.5%	
Sterilized Weed-Free	Yes	
Non-Toxic To Plant Or Animal Life	Yes	

The soil and fiber stabilizing compound shall be composed of linear anionic copolymers of acrylamide pre-packed within the bag having a minimum content of 1.0 percent. The compound shall conform to the following:

Property	Requirement
Molecular Weight	≥ 12x106
Charge Density	> 25%
Non-Toxic To Plant Or Animal Life	Yes

(b) *Bonded Fiber Matrices (BFM).* BFM shall consist of hydraulically-applied matrix with a minimum of 70 percent non-toxic thermally processed or refined long strand organic fibers and water soluble tackifier to provide erosion control and designed to be functional for a minimum of 9 months. BFMs form an erosion-resistant

blanket that promotes vegetation and prevents soil erosion. The BFM shall be 100 percent biodegradable. The binder in the BFM should also be biodegradable. Biodegradable BFMs should not be applied immediately before, during, or immediately after rainfall if the soil is saturated. BFM shall conform to the following requirements:

Property	Requirement	Test Method
Ground Cover (%)	95	ASTM 6567
Bio-degradability (%)	100	ASTM 5338
Functional Longevity (months)	9 month minimum	
Cure Time (hours)	24-48	
Cross-linked tackifier	10% minimum	
Application		
Application Rate (lbs./Acre)	3000	

The fibers shall not contain lead paint, printing ink, varnish, petroleum products, seed germination inhibitors, or chlorine bleach. Fiber shall not be produced from sawdust, cardboard, paper, or paper by-products.

In subsection 213.03 (b) 2, delete the second paragraph and replace with the following:

Application Rate: Apply this as an overspray at the following rate or as approved by the Engineer.

Powder	**Fiber**	**Water**
200 lbs./Acre	300 lbs./Acre	2000 gal./Acre

In subsection 213.03, delete (f) and replace with the following:

(f) *Spray-on Mulch Blanket.* Spray-on Mulch Blanket shall strictly comply with the Manufacturer's mixing recommendations and installation instructions. No chemical additives with the exception of fertilizer, soil pH modifiers, extended-term dyes and bio nutrients will be permitted. Apply Spray-on mulch blanket in a uniform application using a minimum 22 degree arc type nozzle. Apply hydro slurry in two direction (from top of slope down and from toe of the slope up, as well as, be applied at a minimum of two layers).

Hydromulching vessel shall be filled with water to at least 1/3 capacity (high enough to cover agitators) prior to adding any material. Continue to fill vessel with water and slowly add the fibers while agitators are in motion. Run agitators at ¾ speed. Continue to mix tank a minimum of 10 minutes prior to application.

Co-polymer shall not be used use in channels, swales, or other areas where concentrated flows are anticipated and should not be used on saturated soils that have groundwater seeps.

Subsection 213.03 shall include the following:

(g) *Bonded Fiber Matrices (BFM).* Bonded fiber matrices shall strictly comply with the Manufacturer's mixing recommendations and installation instructions. No chemical additives with the exception of fertilizer, soil pH modifiers, extended-term dyes and bio stimulant materials shall be permitted. BFM shall be applied in a uniform application using a minimum 22 degree arc type nozzle. Apply BFM in two direction (from top of slope down and from toe of the slope up, as well as, be applied at a minimum of two layers.

Biodegradable BFMs should not be applied immediately before, during, or immediately after rainfall if the soil is saturated.

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REVISION OF SECTION 213
MULCHING

Product shall not be used use in channels, swales, or other areas where concentrated flows are anticipated and should not be used on saturated soils that have groundwater seeps.

Foot traffic, mechanical traffic or grazing shall not be permitted on treated areas until vegetated. Treated areas damaged due to circumstances beyond Contractor's control shall be repaired or re-applied as ordered. Payment for corrective work, when ordered, shall be at contract rates.

In subsection 213.04, delete the first paragraph and replace with the following:

The quantity of hay and straw mulch, wood chip mulch, wood fiber and, spray-on mulch tackifier, bonded fiber matrix and tackifier will not be measured but shall be the quantity designated in the Contract, except that measurements will be made for revisions requested by the Engineer, or for discrepancies of plus or minus five percent of the total quantity designated in the Contract. Measurement for acres will be by slope distances.

In subsection 213.04, delete the fourth paragraph and replace with the following:

Spray-on Mulch Blanket and Bonded Fiber Matrix will be measured by the acre or by the actual pounds of product applied, as shown on the plans. The area will be calculated on the basis of actual or computed slope measurements. The Contractor shall verify prior to application, weight of spray on mulch blanket and bonded fiber matrix bags for certification of materials and application rate.

Subsection 213.05 shall include the following:

Payment will be made under:

Pay Item	**Pay Unit**
Bonded Fiber Matrix	Acre
Bonded Fiber Matrix	Pound
Spray on Mulch Blanket	Pound

Payment for spray-on mulch blanket and bonded fiber matrix will be full compensation for all work and materials necessary to complete this item.

SECTION 250
ENVIRONMENTAL, HEALTH AND SAFETY MANAGEMENT

Section 250 of the Standard Specifications is hereby deleted for this projected and replaced with the following:

DESCRIPTION

250.01 This work consists of protection of the environment, persons, and property from contaminants that may be encountered on the Project. This includes monitoring the work for encounters with contaminants or suspected soil and groundwater contaminants; the management of solid, special, and hazardous waste; and management of visual emissions associated with hazardous waste, when encountered on the project.

250.02 The Contractor shall furnish all personnel, materials, equipment, laboratory services and traffic control necessary to perform the contamination monitoring, testing, and site remediation when required. Traffic control shall be in accordance with the requirements of Section 630.

Monitoring equipment used to detect flammable gas, oxygen level, and toxic gas shall be capable of detection to meet the following standards:

Instrument Detection		
Constituent	**Threshold Limit**	**Increments**
Flammable Gas	1% LEL	1%
Oxygen	19%	0.1%
Toxic Gas	1 PPM	1 PPM
LEL = lower explosive limit PPM = parts per million		

CONSTRUCTION REQUIREMENTS

250.03 General. Prospective bidders, including subcontractors, are required to review the environmental documents available for this project. These documents are listed in subsection 102.05 as revised for this project.

This project may be in the vicinity of property associated with petroleum products, heavy metal based paint, landfill, buried foundations, abandoned utility lines, industrial area or other sites which can yield hazardous substances or produce dangerous gases. These hazardous substances or gases can migrate within or into the construction area and could create hazardous conditions. The Contractor shall use appropriate methods to reduce and control known landfill, industrial gases, and visible emissions from asbestos encounters and hazardous substances which exist or migrate into the construction area. The Contractor shall follow CDOT's *Asbestos-Contaminated Soil Management Standard Operating Procedure, dated August 22, 2011* for proper handling of asbestos-contaminated soil, and follow all applicable Solid and Hazardous Waste Regulations for proper handling of soils encountered that contain any other substance mentioned above.

Encountering suspected contaminated material, including groundwater, old foundations, building materials, demolition debris, or utility lines that may contain asbestos or be contaminated by asbestos, is possible at some point during the construction of this project. When suspected contaminated material, including groundwater, is encountered or brought to the surface, the procedures under subsection 250.03(d) and 250.05 shall be followed.

Transportation of waste materials on public highways, streets and roadways shall be done in accordance with Title 49, Code of Federal Regulations (CFR). All labeling, manifesting, transportation, etc. of waste materials generated on this project shall be coordinated with the Engineer. All hazardous waste manifests for waste materials generated on this project shall list the Colorado Department of Transportation as the generator of the waste materials except as otherwise noted. If the Contractor contaminates the site, the Contractor shall be listed as the generator on the hazardous waste manifests, permits, and other documents for such material. If the project is not on a State Highway or frontage road, then the appropriate local governmental entity having jurisdiction over the transportation system facility shall be listed as the hazardous waste generator.

If waste materials must be handled in a permitted treatment, storage and disposal (TSD) facility, the facility shall

be designated in writing by the Engineer. If the waste materials are the result of the Contractor's actions, the Contractor shall designate the facility.

The hazardous waste transportation phase of the work involves insurance required by law and regulations. If the waste materials are determined to be hazardous, the Contractor must submit proof that the transportation company is covered by the appropriate type and amount of insurance required by laws and regulations governing the transportation of hazardous waste.

The Contractor alone bears the responsibility for determining that the work is accomplished in strict accordance with all applicable federal, state and local laws, regulations, standards, and codes governing special waste, petroleum and hazardous substance encounters and releases.

The Contract will list known or suspected areas of contamination. Health and Safety Officer, Monitoring Technician, and Health and Safety Plan shall be required when so stated in the Contract.

(a) *Health and Safety Officer (HSO).* The Contractor shall designate a HSO, not the project superintendent, who shall have at least two years field experience in chemical related health and safety. The HSO shall be either a certified industrial hygienist (CIH), certified hazardous materials manager (CHMM), professional engineer (PE) licensed in the State of Colorado, certified safety professional (CSP), or registered environmental manager (REM) meeting the criteria set forth in 29 CFR 1926. When asbestos is present or is suspected to be present, the HSO shall have additional training and certification in accordance with the Air Quality Control Commission Regulation No. 8 Part B. The HSO shall meet the minimum training and medical surveillance requirements established by the Occupational Safety and Health Administration (OSHA) and the Environmental Protection Agency (EPA) for a supervisory Site Safety Official per 29 CFR 1962.65. The Contractor shall furnish documentation to the Engineer, at the preconstruction conference, that the above requirements have been met. 250.03.

The HSO shall *be* equipped with the following:

(1) Communication equipment as required in subsection 250.03(d)2.A. and a vehicle.

(2) Monitoring and detection equipment for flammable gas, oxygen sufficiency, toxic gas, radiological screening and other hazards. This includes, as required, a combustible gas indicator, flame ionization or photo ionization detector, oxygen meter, radiation monitor with Geiger Mueller detector and other foreseeable equipment.

(3) Depth gauging equipment, sampling equipment and sampling containers.

(4) Personal protective equipment (levels C and D) when required.

The HSO shall recommend and supervise those actions which will minimize the risk of hazardous substance related injury to the workers, Department personnel, the general public, property and the environment. Hazardous substance is defined in 29 CFR 1926.32. The HSO shall prepare written procedures for the monitoring of confined space entry and working in or near excavations, including but not limited to trenches and drill holes associated with this project. The HSO shall conduct or supervise all hazardous substance and solid waste related testing, sampling, monitoring and handling for this project to ensure compliance with applicable statutes and regulations, and other applicable environmental requirements under subsections 107.01 and 107.02.

The HSO shall be available for consultation and assistance with contaminated materials related testing, sampling, and field monitoring as required by the Engineer.

The HSO shall prepare and submit a bound and indexed final site report to the Engineer at the end of the project. This site report shall include a detailed summary of all contaminated materials and contaminated water that were encountered and their final disposition.

During each week the HSO is utilized, the HSO shall prepare a daily diary which shall be submitted to the Contractor and the Engineer. This diary shall be submitted at the end of the week and shall become a part of the Department's records. The diary shall contain a chronological log of activities on the project

including: dates and times on site, equipment used and calibrations, field monitoring results, visual observations, conversations, directives both given and received, and disposition of suspected hazardous substances. The Engineer will review this submittal and approve the actual number of hours to be paid.

(b) *Monitoring Technician (MT).* The Contractor shall designate a monitoring technician to be responsible for monitoring of hazardous substances during work on the project. The MT shall have a minimum of two years of actual field experience in assessment and remediation of hazardous substances that may be encountered during highway construction projects. The MT shall be experienced in the operation of monitoring devices, identifying substances based upon experience and observation, and field sampling (for testing) of all media that may be found on the site. Completion of the 40 hour hazardous waste and 8 hour supervisory training required by OSHA and U.S. EPA rules and regulations which complies with the accreditation criteria under the provisions of the proposed 29 CFR 1910.121 is required prior to beginning work. The Contractor shall furnish documentation at the Preconstruction Conference that demonstrates these requirements have been met.

The MT shall be equipped with the following:

(1) Communication equipment as required in subsection 250.03(d)2.A. and a vehicle.

(2) Monitoring and detection equipment for flammable gas, oxygen sufficiency, toxic gas, radiological screening and other hazards. This includes, as required, a combustible gas indicator, flame ionization or photo ionization detector, oxygen meter, radiation monitor with Geiger Mueller detector and other foreseeable equipment.

(3) Personal protective equipment (levels C and D) when required.

The MT shall be present on site and perform monitoring as required by 250.03(d) when work is being performed in areas of suspected contamination and on a predetermined basis throughout other work on the project.

The MT shall monitor for compliance with regulations, the project Health and Safety Plan and the Materials Management Plan (if they exist for the project), the Contract, and the environmental documents for the project. The MT shall immediately notify the Contractor, the Engineer and the HSO of any hazardous condition.

During each week the MT is utilized, the MT shall prepare a daily monitoring diary which shall be submitted to the Contractor, HSO and the Engineer. This diary shall be submitted at the end of the week and shall become a part of the Department's records. The diary shall contain a chronological log of activities on the project including: dates and times on site, equipment used and calibrations, field monitoring results, visual observations, conversations, directives both given and received, and disposition of suspected hazardous substances. The Engineer will review this submittal and approve the actual number of hours to be paid.

(c) *Health and Safety Plan (HASP).* The HSO shall prepare a written HASP for the project, formatted as shown in Appendix B, *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, DHHS (NIOSH) Publication Number 85-115, available from the Superintendent of Documents, U.S. Government Printing Office. The Contractor and the HSO shall review the environmental documents listed prior to preparation of the HASP.

Four signed copies of the HASP shall be furnished to the Engineer for acceptance. The Engineer shall have seven calendar days to review and accept or reject the proposed HASP. Within five calendar days after acceptance, the HSO shall distribute signed and stamped (or sealed) copies of the accepted HASP to each emergency response agency servicing the project area, the HASP designated emergency hospital, and five copies to the Engineer. Earth or demolition work shall not occur until after the HASP is accepted and the HASP has been distributed. The HASP shall also be available to the Contractor's employees, their representatives, and officials of OSHA, EPA, Colorado Department of Public Health and Environment (CDPHE), local government health department, Federal Highway Administration, and other appropriate agencies and officials as may be designated by the Engineer. The Engineer will distribute the accepted HASP to appropriate Department personnel. The HASP shall be kept current and shall be revised by the

HSO as warranted by changes in the field conditions.

All on-site workers (Contractor's, Department's, Utilities', and others) shall be briefed by the HSO on the contents of the HASP and any revisions thereof. The HSO shall conduct briefings (group or individual) to inform new employees, subcontractors, utility companies and other on-site workers of the HASP contents prior to their entry on site. All personnel involved in excavation or other soil disturbing activities shall receive the required two-hour Asbestos Awareness training by a Certified Asbestos Inspector, when asbestos discoveries are anticipated, or discoveries are made. A signature log of all briefing attendees shall be kept and furnished to the Engineer. The Contractor shall provide, as required, eye wash equipment and stations, emergency showers, hand and face washing facilities and first aid equipment.

The Contractor shall provide, as required, decontamination facilities for personnel and equipment employed in the work. The exact procedure for decontamination and frequency shall be included in the accepted HASP. Decontamination facilities shall meet the criteria set forth in the Code of Federal Regulations (29 CFR and 40 CFR).

(d) *Precautions and Procedures.* The following minimum precautions and procedures shall be followed during the construction of the project:

1. General construction precautions:

   A. All monitoring and piezometer wells and test borings shall be established or abandoned by the Contractor as regulated by the State Engineer's Office. Copies of all required permits, notification, and abandonment documents shall be submitted to the Engineer prior to payment approval.

   B. Hazardous substance related activities shall have a work plan for each work phase which shall be coordinated with the Engineer at least three working days prior to commencement of each phase of the work.

   C. The Contractor shall properly handle all investigation derived waste generated by this project. Documentation shall be submitted to the Engineer of all tests performed for Treatment, Storage and Disposal (TSD) determination; classification of waste; hauling records; TSD acceptance; manifest (if required); etc. in accordance with applicable laws and regulations.

   D. When the work may involve air emissions, the Contractor shall contact the Colorado Department of Public Health and Environment (CDPHE), Air Pollution Control Division to ascertain if an air pollution emission notice (APEN) or permit is required for this operation. The Contractor shall be responsible for filing the APEN and obtaining said permit, if required. The processing of air pollution permits, if required, in non-attainment areas or where public hearings are required, likely will take more than 90 days.

2. For construction on a known or potentially contaminated site, the following conditions shall apply, in addition to those listed in subsection 250.03(d)1:

   A. The HSO shall be on site or readily available by radio, telephone or pager at all times during the work. When on site, the HSO shall have an operational portable or mobile cellular telephone available for immediate use in areas where such service is available. When on site in cellular telephone non-service areas, the HSO shall have available, for immediate use, radio access to a site with telephone service. The HSO shall be notified at least 24 hours prior to the start of confined space entry, storage tank removal, drilling, excavation, trenching, or dewatering operations.

   B. The HSO shall designate the onsite monitoring equipment for flammable gases, oxygen deficient or enriched atmosphere, and toxic gases, such as but not limited to, a flame ionization detector, photoionization detector, combustible gas indicator, and oxygen meter. This designated equipment shall be on site during all construction operations and be utilized during trenching, drilling, excavating, confined space entry, underground storage tank removal, and other appropriate construction operations. The exact equipment to fulfill this requirement shall be specified in the accepted HASP.

The HSO shall conduct or supervise the monitoring. The monitoring equipment shall be calibrated as recommended by the manufacturer.

C. When drilling, trenching, or excavating in the presence of detectable concentrations of explosive gases, the soil shall be wetted and the operating equipment shall be provided with spark proof exhausts.

D. The Contractor, through the HSO, is responsible for ensuring that 29 CFR 1926 is fully complied with during the construction of the project.

E. Affected excavation operations shall be discontinued and personnel shall be removed from the affected excavation sites where any of the following levels are detected:

(1) 20.0 percent or more LEL flammable gas, or 10.0 percent in an underground or confined space,

(2) Permissible Exposure Limit (PEL) of any toxic gas,

(3) 19.5 percent or less oxygen,

(4) 25.0 percent or more oxygen,

(5) Greater than 2 mrem/hr. (Beta particle & photon radioactivity),

(6) Greater than 15 pCi/L (Gross alpha particle activity), or

(7) Other action levels as determined by the HSO.

(8) Uncovering of suspect Asbestos Containing Material (ACM), including but not limited to, buried facility components, active or abandoned utility lines, buried foundations and demolition debris, or miscellaneous ACM dispersed in the soil. The Contractor shall follow the procedures outlined in the HASP and 29 CFR 1926 to address these conditions. Work shall resume in these areas when approved by the Engineer.

F. Personnel shall be issued and utilize appropriate Health and Safety equipment as determined by the HSO, who shall provide the Engineer with a written explanation of what personal protective equipment (PPE) shall be worn, when, and by which personnel. Except in emergency cases, the Engineer shall be advised by the HSO of changes in the degree of PPE prior to implementation.

G. Personnel shall avoid the area immediately downwind of any excavation unless the excavation is monitored and declared safe.

H. The operators of excavating, trenching, or drilling equipment shall wear appropriate PPE as required in the HASP.

I. Exhaust blowers shall be present at the location where required in the accepted HASP.

J. The Contractor shall accomplish the work with employees who have been trained and equipped as required by the HASP and applicable provisions of 29 CFR 1910 and 29 CFR 1926.

K. Fire extinguishers, electrical equipment and wiring shall conform to the applicable requirements of 29 CFR 1926 and 49 CFR.

L. Smoking shall not be permitted within 50 feet of any excavation.

3. For construction within 1000 feet of a known or potentially contaminated site, the following conditions, in addition to those listed in subsection 250.03(d) 1. shall apply:

A. The areas under construction shall be checked with a combustible gas indicator before excavation begins to determine if flammable or combustible gas is in the area.

B. Excavations, trenches and drill holes shall be monitored by the HSO for flammable gas, toxic gas and oxygen deficiency or enrichment. This shall be carried out continuously unless the presence of flammable, combustible or toxic gas, or oxygen deficiency or enrichment in the area can be ruled out by the HSO. The recommendation to discontinue monitoring must be agreed to by the Engineer and the Contractor. Prior to implementation, this agreement shall be written, and shall contain specific

conditions that will require re-evaluation of the area.

C. When flammable or toxic gas is found in the area, those precautions and procedures in subsection 250.03(d)2 shall apply.

4. The following procedures shall be followed if the level of contamination as documented in the environmental documents referenced in subsection 102.05 as revised for this project is exceeded, or if previously unidentified contaminated air, soil or water, is encountered during the construction of the project:

A. Work in the immediate area of the release or discovery of contamination shall cease. The Engineer shall be immediately notified.

B. If no HSO is required by the Contract, the Contractor shall designate an HSO as directed, in accordance with subsection 250.03(a).

C. The Engineer may direct the HSO to evaluate the material for potential hazardous substance or other contamination or unsafe conditions. This evaluation may include, but is not limited to, on site field monitoring, on site testing, and on or off site laboratory analysis. Removal of storage tanks and surrounding contaminated soils shall be in accordance with applicable laws, regulations and established procedures. If the contaminated material cannot be placed in the embankment or remediated on site, it must be removed to an appropriate TSD facility, as designated in writing by the Engineer. The HSO shall supervise the necessary testing required to make appropriate TSD determinations. Disposal of the unsuitable material shall be considered as remediation work as described in subsection 250.03(d)4.D and 250.03(d)4.E.

D. If this site is determined to be contaminated with petroleum products, hazardous substances or other solid waste in excess of that indicated in the above listed site investigation documents, a thorough Site Investigation and Waste Management Plan shall be accomplished under the supervision of the HSO The Site Investigation and Waste Management Plan shall be submitted to the Engineer for approval and shall determine the extent of contamination and propose at least three types of remedial action for the contaminated area as required by applicable statutes and regulations. The HSO shall be available to assist the Engineer in explaining this study to the regulatory agencies. When requested by the Engineer, the Contractor shall prepare a Remediation Plan based on the selected remedial method, and shall submit this to the Engineer for approval. The time required for the Engineer's review of the Remediation Plan, including all necessary drawings, calculations, specifications, and other documentation will not exceed four weeks after a complete submittal is received. This work shall not be done unless authorized in writing by the Engineer.

E. If the site is determined to be contaminated with petroleum products; hazardous chemicals, materials, or wastes; or other solid wastes, and is required to be remediated, the HSO or other qualified individuals will supervise the Remediation Plan implementation as concurred to by the regulatory agencies, as directed. Hazardous Waste generated by remedial activities shall list the Colorado Department of Transportation as the hazardous waste generator on the required paperwork for projects on State Highways and their associated frontage roads. If this project is not on a State Highway or frontage road, then the appropriate local governmental entity having jurisdiction over the transportation system facility shall be listed as the hazardous waste generator. If the waste disturbed or produced was caused by Contractor negligence, the Contractor shall be listed as the hazardous waste generator. Remediation work shall be done only when authorized by the Engineer in writing.

250.04 Heavy Metal Based Paint Management. When the work includes the removal of paint or items covered with paint which may contain lead, chromium or other heavy metals, the requirements of this subsection shall apply in addition to the requirements of subsection 250.03.

SECTION 250
ENVIRONMENTAL, HEALTH AND SAFETY MANAGEMENT

The requirements of the HASP shall be in accordance with OSHA Publication Number 3142, *Working with Lead in the Construction Industry.*

Paint Removal and Waste Disposal work shall be performed in accordance with 29 CFR 1926.62, State and local air quality regulations, the Steel Structures Painting Council (SSPC) Guide for Containing Debris Generated During Paint Removal Operations, the *Industrial Lead Paint Removal Handbook* (SSPC 91-18), and the references contained therein.

The following minimum precautions and procedures shall be followed unless modified in the approved HASP or its updates:

(a) The Contractor shall contact the CDPHE, Air Pollution Control Division to ascertain if an air pollution permit is required for the cleaning or demolition work. If an air pollution permit is required, the Contractor shall obtain the permit. The Contractor shall furnish the Engineer with a copy of the permit application and the permit issued prior to starting cleaning or demolition activities. A copy of the Air Pollution Emission Notice [APEN] shall be provided to the Engineer, if such notice is required under the Colorado Air Quality Control Commission's regulations. The processing of air pollution permits in non-attainment areas, or where public hearings are required, likely will take more than 90 days.

(b) The Contractor shall contain paint chips, corrosion residues, and spent abrasives, herein referred to as waste materials, resulting from the cleaning or demolition operations. The Contractor shall not deposit or release waste material into the water, air or onto the ground below or adjacent to the structure. The Contractor shall conduct cleaning operations to minimize the waste materials produced. Prior to beginning the work, the Contractor shall submit to the Engineer for acceptance, a detailed methods statement for capturing, testing, and disposing of the removed materials. The Engineer will have seven calendar days to review, and accept or reject this methods statement.

(c) Abrasives utilized for blast cleaning shall be low-dusting and low waste. Unless approved otherwise, vacuum blasting or wheel blasting shall be used.

(d) The HSO shall sample and test the waste material for lead, chromium, and other paint associated heavy metals using the Toxicity Characteristic Leaching Procedure (TCLP) Test, Method 1311 of the EPA publication, Test Methods for Evaluating Solid Waste 846. Sample collection methodology and frequency shall be recommended by the HSO and accepted by the Engineer with an adequate number of samples taken to be representative of all waste material collected. If the waste material does not pass the TCLP test, it shall be disposed of in a permitted TSD facility as designated in writing by the Engineer. The waste materials handling decision shall be documented by a report (five copies) submitted to the Engineer. This documentation shall include a description of sample collection methodology, testing performed, test results and comparison of test results with hazardous waste requirements. The waste material shall not be held at an unpermitted TSD facility site in excess of Resource Conservation and Recovery Act (RCRA) temporary storage time limits.

(e) When an item coated with paint is removed, all loose paint shall be removed and collected from the item within 24 hours of the time it is removed or placed onto the ground. All loose paint shall be removed and collected from a painted item before it is removed from the site. The Contractor shall contain loose paint until it is removed and collected. Loose paint is defined as that which can be removed by manual scraping methods. Over waterways, the Contractor shall capture all paint debris by the method specified in the methods statement. The paint debris shall be collected on a daily basis and shall be stored in a properly labeled, tightly sealed container and placed in a secured location at the end of each working day.

(f) All painted steel components which are not designated to be salvaged shall be recycled. Contractor possession of the steel for future use shall be considered a form of recycling. Prior to transport of the components off-site, the Contractor shall obtain a letter from the recipients of the painted steel components stating that they have been fully informed of the contents of the paint and are capable of handling the paint. If the Contractor is to maintain future possession of the steel, the Contractor shall supply this letter. If there will

be more than one recipient of the painted material, one letter shall be obtained from each recipient. The Contractor shall provide a copy of each letter to the Engineer. If the painted steel components will be recycled by melting, the letter from the recipient is not required. The Contractor shall submit a letter stating the destination of the painted steel components and that they will be melted.

(g) When the work consists of the removal of a bridge or components of a bridge coated with paint which has been assumed to contain lead, chromium, other heavy metals, or a combination thereof the Contractor shall capture paint debris which is dislodged during removal operations. The Contractor may choose any method for dismantling the bridge, subject to the following required construction sequence limitations:

(1) The concrete deck shall be removed prior to removal of the steel superstructure.

(2) If the methods statement indicates that girders will be dropped to the ground during dismantling, all debris from the concrete deck removal operation shall be removed from the area below the bridge before any girders are dropped into this area.

(3) Girders may be cut and dropped only if the span is located entirely over land.

250.05 Material Handling. This work consists of the additional handling of groundwater and soils to be excavated for construction of the project which are suspected or known to be contaminated. This work also includes stockpiling or containerization, analytical sampling and testing, and final disposition of contaminated groundwater and soils requiring special handling.

The Contractor shall maintain vertical trench walls for the work in the specified areas of known or potential contamination, as shown on the plans. Shoring may be necessary to meet this requirement. The Contractor shall confine the removal of contaminated groundwater and soils encountered as a result of the excavation activities in the specified areas to the vertical and horizontal limits of structure excavation specified in the Contract. The Contractor shall be responsible for any contaminated materials generated beyond the limits of excavation. This shall include any sampling, analysis, and disposal required, and the costs thereof. The Contractor shall be listed as the generator of any such material. The limits of excavation shall be determined as 18 inches outside of structures, including sewers, water lines, inlets, manholes, and other underground structures to be constructed, or as directed.

Specific areas of known or potential contamination have been identified in the project plans. There is the potential of encountering contaminated groundwater and soil, which has not been summarized in the plans or specifications, at unknown locations on the site. Suspected contaminated soil and groundwater shall be handled by one of three methods as follows:

(a) *Materials Handling (Stockpile& Containerization).* When recommended by the HSO and authorized by the Engineer, material shall be stockpiled or containerized for analysis and characterization for proper handling and, disposal, or both. Sampling and testing of materials shall be as described in the Contract. If analysis indicates that soil samples are designated as uncontaminated, as determined by the criteria shown in the Contract or as determined by the CDPHE, the associated soils will not require any special handling and will become the property of the Contractor and may be used on site, subject to other requirements of the Contract. Health and safety monitoring and strict fugitive dust control shall be conducted during the placement of these soils. If analysis indicates that groundwater samples are designated as uncontaminated, as determined by the criteria shown in the Contract or as determined by the CDPHE, the groundwater shall be handled in accordance with subsection 107.25.

Stockpiled and containerized materials shall be secured in compliance with the following provisions until they are determined to be uncontaminated:

1. The Contractor shall not store the material for more than 90 days.
2. The Contractor shall prevent any runoff from infiltrating the ground or running out of the containment area.

3. Soils and groundwater containing different contaminants shall be placed in separate containers or stockpiles.
4. The Contractor shall prevent the dispersion of materials or the dilution or mixing of containers and stockpiles.
5. The ground surface on which the contaminated soils will be placed shall be covered with plastic sheeting which will withstand the placement and removal of stockpiled materials without breaching.
6. The ground surface shall be graded to drain toward the edge of the soil piles and the berm or trench around them shall be covered by plastic sheeting.
7. Proper security shall be provided in accordance with 40 CFR.

(b) *Solid Waste Disposal.* Soils determined to be contaminated, but not hazardous, as established by criteria in the Contract or as determined by CDPHE or other regulatory agencies having jurisdiction, shall be handled and disposed of, or both as recommended by the HSO and approved by the Engineer. The Contractor shall haul this material to a solid waste disposal facility.

(c) *Contaminated Groundwater Disposal*. Groundwater determined to be contaminated, but not hazardous, as established by criteria in the Contract or as determined by CDPHE or other regulatory agencies having jurisdiction, shall be handled and disposed of, or both as recommended by the HSO and approved by the Engineer. *The* Contractor shall prepare a dewatering plan proposing at least three types of treatment and/or disposal options of contaminated groundwater as required by applicable statutes and regulations. One of the treatment options shall include permitting and onsite treatment prior to discharge or disposal. The dewatering plan shall be submitted to the Engineer for approval four weeks before dewatering activities begin.

(d) *Hazardous Waste Disposal.* Soils and groundwater that are designated or suspected to be hazardous shall be containerized *immediately* upon excavation or upon discovery. Hazardous material shall be labeled and transported to a permitted treatment, storage and disposal (TSD) facility or to a hazardous waste disposal facility approved by the Engineer.

(e) *Additional Requirements.* Stockpiled or containerized material characterized as uncontaminated, contaminated or hazardous shall be stored and disposed of in a manner consistent with current established federal, state, and local regulations for waste materials.

Materials with contaminants not specifically regulated shall be disposed of by the Contractor as directed, in consultation with CDPHE. All areas where wastes are generated shall be reviewed by the HSO to identify potential contaminant sources that may result in a contaminated waste stream.

Contaminated groundwater and soils, which have been identified as solid waste or hazardous waste, requiring disposal according to federal, state, and local regulations, shall be transported in accordance with 49 CFR by the Contractor to an appropriately permitted treatment facility, landfill, incinerator or asphalt plant or other facility approved to accept the waste. CDPHE and the landfill or other treatment or disposal facility shall be notified by the HSO of the material to be disposed of and the corresponding analytical test results prior to shipment. Potentially contaminated water collected from the lined trench of a stockpile shall be treated as required by Colorado Wastewater Discharge Permit System (CDPS) permits, 29 CFR and 40 CFR and reimbursed separately in accordance with Contract requirements.

250.06 Sample delivery. This work consists of the collection, containerization and delivery of material samples for analysis to the testing facility designated in the Contract.

Environmental Protection Agency (EPA) protocol and standards shall be followed in the collection, containerization and transport of samples to be analyzed, including the documentation of the proper chain of custody of all samples. The Contractor shall collect sufficient sample material to perform the required analysis and is responsible for ensuring that appropriate climate control has been provided for sample transport. Sample delivery shall be made within the maximum allowable holding time for each sample type, not to exceed 24 hours,

excluding weekends. The time period required for sample collection and delivery to the testing facility will not be considered an excusable delay. The analysis to be completed and turnaround time shall be approved by the Engineer.

The Contractor shall provide the Engineer with a copy of documentation indicating that proper chain of custody requirements have been followed for all samples.

Quality control samples shall be provided by the Contractor in accordance with the quality control requirements of the testing facility designated in the Contract (quality control requirements are available from the Engineer). The Contractor shall prepare, label and transport these samples to the testing facility in conjunction with the delivery of other samples authorized for analysis by the Engineer, at no additional cost.

The Engineer may request splits of samples, in advance of collection, which shall be provided at no additional cost by the Contractor.

250.07 Asbestos-Containing Material Management. Environmental documents or plans listed in the special provisions should include known or suspected locations that could involve encounters with ACM during excavation and other soil disturbing construction activities. Unexpected discoveries of ACM may be made during excavation and soil disturbing construction activities. Asbestos contaminated soil, shall be properly managed or remediated, in accordance with subsection 250.07(a).

All asbestos related activities shall be performed by Colorado certified asbestos professionals, contractors, or consultants. Certifications are issued by the Colorado Department of Public Health and Environment (CDPHE), Indoor Air Quality Unit. A Colorado Certified Asbestos professional shall manage the management and disposal of asbestos contaminated soil and other ACM. The Indoor Air Quality Unit within CDPHE is the only unit that certifies such professionals. The Contactor shall furnish a copy of the license to the Engineer.

(a) *Regulatory Compliance.* Asbestos contaminated soil management is governed by 6 CCR 1007-2, Section 5, which includes and references regulatory compliance with Asbestos Hazard Emergency Response Act (AHERA) Colorado *Regulation* 8; Inspection and reporting protocol and demolition standards are governed by AHERA; Demolition and notification standards are governed by National Emission Standards for Hazardous Air Pollutants (NESHAPS); Colorado Regulation 8 governs all asbestos activities, demolition, permitting, and certification of Certified Asbestos Professionals in the State of Colorado. Colorado Regulation 8 is more stringent than AHERA and NESHAPS and supersedes federal regulations. Conflicting regulatory requirements between AHERA and NESHAPS, if not specifically addressed in Colorado Regulation 8, shall be addressed and approved protocol negotiated with CDPHE. The Contractor shall conform to all current regulations, policy directives, or both, issued by the EPA, CDPHE, and the Department.

(b) *Asbestos Management and Visual Inspections* Asbestos management must be performed by a certified asbestos professional. Final Inspections of the area of asbestos contaminated soil removal shall be performed by an Asbestos Consultant to determine what, if any, controls must be instituted to allow future activity in the excavation area. All final visual inspections shall be conducted only when soil is dry.

(c) *Permitting and Notification.* The CDPHE requires notification of any soil disturbing activity where asbestos is known, suspected, or discovered. A 24-hour notification to CDPHE is required prior to any soil disturbing activity of an unplanned asbestos discovery. A 10 working day notification to CDPHE is required prior to any soil disturbing activity in an area with known or potential material suspected of containing asbestos in or on the soil or asbestos-contaminated soil. Removal of asbestos-containing material on a facility component, that is located on or in soil that will be disturbed, with asbestos quantities above the following trigger levels must be permitted and abated in accordance with the requirements of Air Quality Control Commission Regulation No. 8 (5 CCR 1001-10, Part B):

(1) 260 linear feet on pipes,

(2) 160 square feet on other surfaces, or

(3) The volume of a 55-gallon drum.

All permit applications shall be submitted to the Colorado Department of Public Health and Environment a minimum of 10 days prior to start of work for approval. The permit application and notification shall be submitted simultaneously. The Contractor shall obtain all required State and local permits and shall be responsible for all associated fees. Permit application, notification, and waiver request forms shall be submitted to:

Colorado Department of Public Health and Environment Permit Coordinator/APCD - SS - B1 4300 Cherry Creek Drive South Denver, CO 80246-1530 Phone: (303) 692-3100 Fax: (303) 782-0278

Application and waiver forms are available on the CDPHE website: asbestos@state.co.us

(d) *CDOT's Asbestos-Contaminated Soil Management Standard Operating Procedure, dated August 22, 2011.* Asbestos contaminated soil shall be managed in accordance with 6 CCR 1007-2, Section 5, Asbestos Waste Management Regulations. Regulations apply only upon discovery of asbestos materials during excavation and soil disturbing activities on construction projects, or when asbestos encounters are expected during construction. The contractor shall comply with procedures detailed in the CDPHE's Asbestos-Contaminated Soil Guidance Document and CDOT's approved *Asbestos-Contaminated Soil Management Standard Operating Procedure, dated August 22, 2011*, including the following minimum requirements:

(1) Immediate actions and implementation of interim controls to prevent visible emissions, exposure, and asbestos contamination in surrounding areas.

(2) Soil Characterization.

(3) Training required for all personnel involved in excavation and other soil disturbing activities, once asbestos is encountered during construction or on projects where asbestos encounters are expected. Asbestos Awareness Training shall be given by a qualified and certified Asbestos Building Inspector with a minimum of six months experience inspecting asbestos contaminated soil.

(4) Assessment for the presence and extent, within the proposed area of disturbance, of asbestos discoveries, whether expected or unexpected, by a Certified Asbestos Inspector.

(5) Investigation and sampling required for risk assessment and management. Investigation, if required, shall be conducted by a Certified Asbestos Inspector.

(6) Risk assessment and determinations for further management or abatement.

(i) Risk assessment and determinations must be made by a Certified Asbestos Inspector, and coordinated with the Engineer.

(ii) Soil remediation is not necessarily required, depending on the circumstances.

(7) Submit 24-hour Notification of Unplanned Asbestos Discovery.

(8) Submit 10-day Notification of Planned Asbestos Management.

(9) Submit 24-hour Notification of Unplanned Asbestos Discovery.

(10) Submit 10-day Notification of Planned Asbestos Management.

(e) *Risk Assessment and Determinations for Further Management Or Remediation.* Risk assessment and determinations for further management or remediation must be closely coordinated with the Project Engineer and Project Manager of the Statewide Management Plan.

250.08 Methamphetamine Lab Sites. Demolition of former Methamphetamine (meth) labs is enforced by the Governing Authority, which varies from county to county. The Contractor shall demolish all buildings that are identified as former meth labs, as listed in public listings by the Governing Authority. The Contractor shall provide evidence of demolition to the Governing Authority, obtain receipt of such evidence by the Governing Authority, and shall submit these to Engineer immediately following demolition.

Septic tank removal at known meth lab sites shall undergo preliminary assessment by an Industrial Hygienist or Certified Industrial Hygienist to determine proper removal and disposal. Work shall proceed in accordance with the recommendations of the Hygienist.

METHOD OF MEASUREMENT

250.09 Environmental Health and Safety Management will not be measured, but will be paid for on a lump sum basis. This will include all work, materials, and hourly time charges by the HSO and other personnel required to accomplish the following:

(1) Preparation, submittal and briefing of the initial HASP

(2) Preparation and submittal of the Waste Management Plan

1. Preparation and Submittal of the Dewatering Plan
2. Preparation and Submittal of the Remediation Plan

(3) Procedures and equipment specified in subsections 250.03 - 250.07

(4) PPE (levels C and D) for Contractor's personnel for any contamination identified in the preconstruction investigations

(5) Preparation and submittal of the final site report

The quantity to be measured for Health and Safety Officer will be the total number of hours that the Health and Safety Officer is actually used, as authorized, for the following work:

(1) Field monitoring necessary to ensure the safety of workers on the site;

(2) Hours in excess of the items listed under Environmental Health and Safety Management;

(3) Hours that are necessary due to unforeseen site conditions; and

(4) Hours of additional consultation or field work that is requested by the Engineer.

Equipment specified in subsection 250.03(a), preparation and submittal of the daily HSO diary, travel to and from the project site, and PPE (Levels C and D) required for use by the HSO will not be measured and paid for separately, but shall be included in the hourly cost of the HSO.
The quantity to be measured for Monitoring Technician will be the total number of hours that Monitoring Technician is actually used as authorized. Equipment specified in subsection 250.03(b), supervision of the MT, preparation and submittal of the daily monitoring diary, travel to and from the project site, and PPE required for use by the MT (Levels C & D) will not be measured and paid for separately, but shall be included in the hourly cost of the MT.

Solid stockpiled materials will be measured by the cubic yard computed from cross sections by the average end area or other requirements acceptable method. Disposal of solid waste and solid hazardous waste materials will be measured by the cubic yard in the disposal container.

Materials Sampling and Delivery will be measured by the actual number of samples collected, containerized and transported to the testing facility indicated in the Contract.

Additional environmental health and safety management work required and authorized by the Engineer, but not included in the items listed above, will be considered extra work to be paid for in accordance with subsection 109.04, unless such work is caused by the Contractor's action.

BASIS OF PAYMENT

250.10 Partial payment for Environmental Health and Safety Management, as determined by the Engineer, will be made as the work progresses. The Contractor shall submit a schedule of environmental related Health and Safety Management work before the first partial payment is made. The schedule shall indicate the environmental related Health and Safety Management time for each work item that requires Contractor environmental related Health and Safety Management effort and the total time for the project.

The accepted quantity for Health and Safety Officer will be the number of hours actually used and approved for payment by the Engineer and will be paid for at the contract unit bid price.

The accepted quantity for Monitoring Technician will be the number of hours of onsite monitoring as approved by the Engineer and will be paid at the Contract unit price.

Environmental Health and Safety Management, Health and Safety Officer and Monitoring Technician bid items shall include vehicles, phone charges, supplies, printing, postage, office support, and all other miscellaneous costs associated with the work.

Payment for Groundwater Handling (Containerization & Analysis) will be paid for in accordance with subsection 109.04. Payment for Soil Handling (Stockpile) will be made at the contract unit price for all excavated material required to be stockpiled for analysis. The contract unit price will be full compensation for furnishing all materials, labor, equipment and incidentals necessary to complete this work, and all handling of the material prior to disposal. This includes haul, stockpile, and security. Payment for this work will be in addition to any payment made under other bid items for excavation, embankment or backfill on the project, or waste disposal of this material.

Payment for Solid Waste Disposal and Solid Hazardous Waste Disposal will be made at the appropriate contract unit price for the disposal of material determined to be either solid waste or solid hazardous waste. The contract unit prices will be full compensation for furnishing all materials, labor, equipment, tools, storage containers for transport, containerization of material for up to 60 days, and incidentals necessary to complete this work. This includes all handling of the material, loading for disposal, unloading for disposal, and borrow material required for replacement of excavated material disposed of offsite. It does not include stockpiling or containerization required for analysis which is included in the item Materials Handling (Stockpile & Containerization) paid for as described above. Payment for waste disposal fees and transport of hazardous waste will be made as shown below. Payment for this work will be in addition to any payment made under other bid items for excavation, embankment, backfill or material handling (stockpile & containerization) on the project.

(1) *Solid Waste.* Transport costs to the disposal facility and disposal fees will be included in the contract unit price for this work.

(2) *Solid Hazardous Waste.* Transport, Disposal and /or Treatment costs will be paid for by planned force account in accordance with subsection 109.04.

(3) *Liquid Hazardous Waste.* Transport, Disposal and /or Treatment costs will paid for by planned force account in accordance with subsection 109.04.

The cost of shoring required to limit the removal of contaminated materials to the specified limits shall be included in the bid unit prices for any excavation to be performed. Such shoring ordered by the Engineer in areas other than the specified areas of known or potential contamination, as shown in the plans, will be paid for in accordance with subsection 109.04.

Payment for Materials Sampling and Delivery will be made at the contract unit price for each material sample collected, containerized and transported to the laboratory testing facility as designated in the Contract. The Contract unit price will be full compensation for furnishing all materials, labor, equipment, tools and incidentals

necessary to complete this work including required sampling kits, containers, sample splits and quality control samples.

The Contractor shall be responsible for damage caused by Contractor negligence to the environment, persons, or property. Expenditures associated with actions of the Contractor shall be borne by the Contractor at no cost to the project.

Contaminated groundwater containerized, treated or disposed under the requirements of this specification will be paid for by planned force account in accordance with subsection 109.04.

The accepted quantities will be paid for at the contract unit price for each of the pay items listed below that appear in the bid schedule.

Pay Item	**Pay Unit**
Environmental Health and Safety Management	Lump Sum
Health and Safety Officer	Hour
Monitoring Technician	Hour
Materials Sampling and Delivery	Each
Materials Handling (Stockpile)	Cubic Yard
Solid Waste Disposal	Cubic Yard

October 31, 2013

REVISION OF SECTIONS 304 AND 703
AGGREGATE BASE COURSE (RAP)

Sections 304 and 703 of the Standard Specifications are hereby revised for this project as follows:

Subsection 304.06, shall include the following after the first paragraph:

Compaction of each reclaimed asphalt pavement aggregate layer shall continue until a wet density of not less than 95 percent of the maximum wet density when determined in accordance with a one point AASHTO T 180, Method D test has been achieved.

Subsection 304.08 shall include the following:

Pay Item	**Pay Unit**
Aggregate Base Course (RAP)	Ton, Cubic Yard

Subsection 703.03 shall include the following

Aggregate Base Coarse (RAP) shall be 100 percent reclaimed asphalt pavement material conforming to the requirements of Table 703-3A.

Table 703-3A
CLASSIFICATION FOR RECLAIMED ASPHALT PAVEMENT
AGGREGATE BASE COURSE

Sieve Size	**Mass Percent Passing Square Mesh Sieves**
	ABC (RAP)
50 mm (2”)	100
25 mm (1”)	85-100
19 mm (3/4”)	75-100
12.5 mm (1/2”)	55-90
9.5 mm (3/8”)	45-80
4.75 mm (#4)	25-55
1.18 mm (#16)	5-25
75 µm (#200)	0-5

April 26, 2012

REVISION OF SECTION 401
COMPACTION OF HOT MIX ASPHALT

Section 401 of the Standard Specifications is hereby revised for this project as follows:

In subsection 401.17, delete the first paragraph and replace with the following:

401.17 Compaction. The hot mix asphalt shall be compacted by rolling. Both steel wheel and pneumatic tire rollers will be required. The number, weight, and type of rollers furnished shall be sufficient to obtain the required density while the mixture is in a workable condition. Compaction shall begin immediately after the mixture is placed and be continuous until the required density is obtained. When the mixture contains unmodified asphalt cement (PG 58-28 or PG 64-22) or modified (PG 58-34), and the surface temperature falls below 185 °F, further compaction effort shall not be applied unless approved, provided the Contractor can demonstrate that there is no damage to the finished mat. If the mixture contains modified asphalt cement (PG 76-28, PG 70-28 or PG 64-28) and the surface temperature falls below 230 °F, further compaction effort shall not be applied unless approved, provided the Contractor can demonstrate that there is no damage to the finished mat.

Warm Mix Asphalt compaction requirements shall conform to CP 59.

In subsection 401.17, delete the third paragraph and replace with the following:

SMA shall be compacted to a density of 93 to 97 percent of the daily theoretical maximum specific gravity, determined according to CP 51. All other HMA shall be compacted to a density of 92 to 96 percent of the daily theoretical maximum specific gravity, determined according to CP 51. If more than one theoretical maximum specific gravity test is taken in a day, the average of the theoretical maximum specific gravity results will be used to determine the percent compaction. Field density determinations will be made in accordance with CP 44 or 81.

In subsection 401.17, second to last paragraph, delete the first sentence and replace with the following:

After production paving work has begun, a new Roller Pattern shall be demonstrated when a change in the compaction process is implemented.

July 19, 2012

REVISION OF SECTION 401
COMPACTION PAVEMENT TEST SECTION (CTS)

Section 401 of the Standard Specifications is hereby revised for this project as follows:

In subsection 401.17, delete the fifteenth paragraph and replace with the following:

Two sets of random cores shall be taken within the last 200 tons of the CTS. Each set shall consist of seven random cores. The Engineer will determine the coring locations using a stratified random sampling process. The locations of these cores will be such that one set can serve as a duplicate of the other. One set of these cores shall be immediately submitted to the Engineer. This set will be used for determining acceptance of the CTS and determining density correction factors for nuclear density equipment. Densities of the random samples will be determined by cores according to CP 44. Density correction factors for nuclear density equipment will be determined according to CP 81. Coring shall be performed under CDOT observation. Coring will not be measured and paid for separately but shall be included in the work. For SMA, a CTS is not used. The Contractor shall follow the requirements for the demonstration control strip in accordance with the Revision of Section 403, Stone Matrix Asphalt Pavement.

February 3, 2011

REVISION OF SECTION 401
COMPOSITION OF MIXTURES – VOIDS ACCEPTANCE

Section 401 of the Standard Specifications is hereby revised for this project as follows:

Subsection 401.02(a) shall include the following:

On projects with voids acceptance of hot mix asphalt, mix designs based on a theoretical rejection of baghouse fines may be used when necessary to meet CDOT mix design requirements if the following additional requirements are met. Written approval for use of theoretical rejection of baghouse fines mixture design shall be obtained before production of project material.

(1) Price adjustment for the hot mix asphalt shall be made based on voids acceptance criteria as prescribed in the latest version of the Standard Special Provision, Revision of Sections 105 and 106, Conformity to the Contract of Hot Mix Asphalt (Voids Acceptance). All costs associated with theoretical rejection of baghouse fines mix design, production, and acceptance shall be at the Contractor's expense.

(2) The Contractor shall submit a separate Quality Control (QC) plan for handling the rejection of baghouse fines. The plan shall identify the plan, equipment, and procedures that will be used for the rejection of baghouse fines. The plan shall include detailed information on baghouse control systems and actual data demonstrating consistent system functionality. The QC plan shall be approved in writing prior to production.

(3) The Contractor shall demonstrate that the material can be produced in accordance with one of the two procedures listed below. The Contractor shall supply project aggregate material for use in establishing acceptance testing equipment correction factors. Aggregate samples that have been produced according to CP-L 5117 to represent plant-produced material shall be provided by the mix design lab.

(i) The Contractor shall produce a minimum of 3000 tons of material. This material shall be placed on non thru lanes or offsite in locations approved by the Engineer. A minimum of 3 samples will be tested for AC content, air voids and VMA. QL's for each element will be determined in accordance with the contract documents. If the QL is equal to or greater than 65 for VMA and Asphalt Cement Content and the QL for the element of air voids is equal to or greater than 70, full production may commence. This material may be considered a separate process and price adjustment will be in accordance with subsection 105.05 or;

(ii) The Contractor shall construct a 500-ton test strip on the main line on the project. Tonnage other than 500 tons may be produced only if approved. Three samples in the last 200 tons will be tested for volumetric properties. After construction of the test section, production shall be halted until the testing is complete and element QL's are calculated. If the QL is equal to or greater than 65 for VMA and Asphalt Cement Content and the QL for the element of air voids is equal to or greater than 70, full production may commence. If the TQL is less than 65 or the QL for the element of air voids is less than 70, the material shall be removed and replaced at the Contractor's expense.

February 3, 2011

REVISION OF SECTION 401
PLANT MIX PAVEMENTS

Section 401 of the Standard Specifications is hereby revised for this project as follows:

Subsection 401.02(b) shall include the following:

After the Form 43 is executed, and all ingredients are available on the project, the Contractor shall notify the Engineer a minimum of one working day in advance of beginning production of the hot mix asphalt. Any changes in the Form 43 will require the same notification unless otherwise approved by the Engineer.

REVISION OF SECTION 401
RECLAIMED ASPHALT PAVEMENT

Section 401 of the Standard Specifications is hereby revised for this project as follows:

Subsection 401.02(b) shall include the following:

Reclaimed Asphalt Pavement (RAP) is allowed in hot mix asphalt (HMA) up to a maximum binder replacement of 23 percent for all lifts, provided all specifications for HMA are met. Fine Aggregate Angularity requirements shall apply only to the virgin fraction of the fine aggregate. The RAP shall not contain clay balls, vegetable matter, or other deleterious substances, and must meet the uniformity requirements as outlined below.

HMA Project Verification Testing for asphalt content and gradation will be performed at the frequencies listed in the Field Materials Manual in accordance with CP-L 5120.

The Contractor shall have an approved mix design for the amount of RAP to be used. The AC content of the RAP utilized in the Contractor RAP mix design shall be the average AC content determined in accordance with 1B or 1C, below, or alternatively, a minimum of five samples of the Contractors RAP stockpile may be sampled and the average AC content of the RAP be determined using AASHTO T-164, Method A or B, or in accordance with 1C below. The Contractor shall determine the total binder replaced by the binder in the RAP pursuant to the following equation:

Total Binder Replaced = (A x B) x 100/E
Where:
A = RAP % Binder Content *
B = RAP % in Mix *
E = Total Effective Binder Content *
* in decimal format (i.e. 2% is 0.02)

The Total Binder Replaced by the binder in the RAP shall not exceed 23 percent of the effective binder content of either the mix design or the produced mix.

The use of RAP shall be controlled in accordance with subsections 105.05 and 106.05. If the Contractor elects to use RAP, the following additional conditions shall apply:

1. The Contractor shall have an approved Quality Control (QC) Plan that details how the RAP will be processed and controlled. The QC plan shall address the following:

   A. RAP Processing Techniques. This requires a schematic diagram and narrative that explains the processing (crushing, screening, and rejecting) and stockpile operation for this specific project.

   B. Control of RAP Asphalt Binder Content (AASHTO T-164, Method A or B). RAP Asphalt Binder Content may also be determined in accordance with CP-L 5120, provided an RAP AC content correction factor is determined through correlation testing with AASHTO T-164, Method A or B. The correction factor shall be determined by performing correlation testing on the first five samples of the RAP AC content, then at a frequency of one for every five AC content tests thereafter. The correction factor shall be determined by calculating the average difference in AC content between CP-L 5120 and AASHTO T-164, Method A or B, and applying the correction to the AC content determined in accordance with CP-L 5120 :
      Frequency: 1/1000 tons of processed RAP material (minimum five tests)

   C. (Alternate) The Contractor may propose a RAP asphalt content correction factor to be used in conjunction with CP-L 5120. The proposed CP-L 5120 RAP asphalt content correction factor shall be used with all RAP asphalt contents tested for the mixture design and quality control sampling and testing. The methodology of the proposed CP-L 5120 RAP asphalt content correction factor shall be outlined in detail in the approved RAP QC Plan. At a minimum, the proposed CP-L 5120 correction factor shall identify the principal source locations of the RAP aggregate, gradation of the material tested, and specific ignition oven serial number used in all the RAP asphalt content testing. The RAP source

locations, material gradation, and specific equipment used shall substantiate the CP-L 5120 asphalt content correction factor used for the testing. The substantiation must be from data gathered from historical information or specific asphalt content correction data obtained from tests performed on similar virgin aggregate sources, virgin material gradations, and the specific equipment used.

D. Control of RAP Gradation (CP31 or AASHTO T-30):
Frequency: 1/1000 tons of processed RAP material (minimum three tests)

E. Process Control Charts shall be maintained for binder content and each screen listed in subsection 401.02(b), during addition of any RAP material to the stockpile. The Contractor shall maintain separate control charts for each RAP stockpile. The control charts shall be displayed and shall be made available, along with RAP AC extraction testing laboratory reports to the Engineer upon request

2. The processed RAP must be 100 percent passing the 31.5 mm (1¼ inch) sieve. The aggregate obtained from the processed RAP shall be 100 percent passing the 25.0 mm (1 inch) sieve. The aggregate and binder obtained from the processed RAP shall be uniform in all the measured parameters in accordance with the following:

UNIFORMITY*

Parameter	Standard Deviation
Binder Content	0.5
Percent Passing 19 mm (¾")	4.0
Percent Passing 12.5 mm (½")	4.0
Percent Passing 9.5 mm (⅜")	4.0
Percent Passing 4.75 mm (#4)	4.0
Percent Passing 2.36 mm (#8)	4.0
Percent Passing 600 μm (#30)	3.0
Percent Passing 75 μm (#200)	1.5
*Uniformity is the Maximum allowable Standard Deviation of test results of processed RAP.	

3. If RAP millings generated are incorporated in the same project, in accordance with CPL 5145 the Contractor shall pave with a virgin mix design until sufficient amount of processed RAP has been stockpiled and tested to allow full production of a RAP HMA mix.

February 3, 2011

REVISION OF SECTION 401
TEMPERATURE SEGREGATION

Section 401 of the Standard Specifications is hereby revised for this project as follows:

In subsection 401.16 delete the twelfth (last) paragraph and replace it with the following:

The Engineer may evaluate the HMA for low density due to temperature segregation any time industry best practices, as detailed on Form 1346, are not being followed or the Engineer suspects temperature segregation is occurring. The Engineer will first meet with the Contractor to discuss the paving practices that are triggering the temperature investigation. Areas across the mat, excluding the outside 1 foot of both edges of the mat, that are more than 25 °F cooler than other material across the width may be marked for density testing. Material for temperature comparison will be evaluated in 3-foot intervals behind the paver across the width of the mat. The material shall be marked and tested in accordance with CP 58. If four or more areas within a lot of 500 tons have densities of less than 93 percent of the material's maximum specific gravity for SMA mixes or less than 92 percent of the material's maximum specific gravity for all other HMA mixes, a 5 percent price disincentive will be applied to the 500 ton lot. The 500 ton count begins when the Engineer starts looking for cold areas, not when the first cold area is detected. This price disincentive will be in addition to those described in Sections 105 and 106. Only one area per delivered truck will be counted toward the number of low density areas. Temperature segregation checks will be performed only in areas where continuous paving is possible.

REVISION OF SECTIONS 401 AND 412
SAFETY EDGE

Sections 401 and 412 of the Standard Specifications are hereby revised for this project as follows:

Subsection 401.10 shall include the following:

The paver shall include an approved longitudinal paver wedge system to create a sloped safety edge as shown on the plans. The wedge system shall be attached to the screed and shall compact the HMA to a density at least as dense as the compaction imparted to the rest of the HMA layer by the paving screed. The system shall provide a sloped Safety Edge equal to 32 degrees plus or minus 5 degrees measured from the pavement surface cross slope extended. The use of a single plate strike off is not permitted. The system shall be adjustable to accommodate varying paving thicknesses. The Engineer may allow the Contractor to use handwork for short sections or to saw cut the sloped Safety Edge after paving operations are completed in areas such as transitions at driveways, intersections, interchanges.

The Contractor shall submit the proposed system for approval at the Preconstruction Conference. The Engineer may require proof that the system has been used on previous projects with acceptable results or may require a test section constructed prior to the beginning of work to demonstrate that it creates an acceptable wedge shape and compaction. Paving shall not begin until the system is approved in writing by the Engineer. The Safety Edge may be constructed on each lift of HMA or on the full specified plan depth on the final lift. The finished shape of the Safety Edge shall extend for the full depth of the asphalt pavement or for the top 5 inches whichever is less.

Subsection 401.22 shall include the following:

All costs associated with the construction of the Safety Edge will not be paid for separately, but shall be included in the work.

Subsection 412.07 shall include the following:

The Contractor shall use an approved longitudinal paver wedge system to create a sloped Safety Edge. The Contractor shall modify the paver screed to create a Safety Edge that meets the final cross-section shown on the plans. The system shall provide a sloped Safety Edge equal to 32 degrees plus or minus 5 degrees measured from the pavement surface cross slope extended. There may be areas where it is not possible to place the Safety Edge in conjunction with mainline paving but where the Safety Edge is required, such as transitions at driveways, intersections, interchanges, etc. In these areas the Engineer may allow the Contractor to use handwork for short sections or to saw cut the sloped Safety Edge after paving operations are completed.

The Contractor shall submit the proposed system for approval at the Preconstruction Conference. The Engineer may require proof that the system has been used on previous projects with acceptable results or may require a test section constructed prior to the beginning of work to demonstrate that it creates an acceptable wedge shape. Paving shall not begin until the system is approved in writing by the Engineer. The finished shape of the Safety Edge shall extend for the full depth of the concrete pavement or for the top 5 inches whichever is less.

Subsection 412.23 shall include the following:

Concrete Safety Edge will be measured by the actual number of linear feet that are installed and accepted.

Subsection 412.24 shall include the following:

Pay Item	**Pay Unit**
Concrete Safety Edge	Linear Foot

Payment for concrete safety edge will be full compensation for all work and materials required to complete the item.

February 3, 2011

REVISION OF SECTION 412
PORTLAND CEMENT CONCRETE PAVEMENT FINISHING

Section 412 of the Standard Specifications is hereby revised for this project as follows:

Delete subsection 412.12(a) and replace it with the following:

(a) *Hand Finishing*. Hand finishing should be minimized wherever possible. The Engineer shall be notified prior to hand finishing work and the proposed hand finished work shall be addressed in the Quality Control Plan for concrete finishing. Unless otherwise specified, hand finishing methods will be permitted only under the following conditions. Hand finished concrete shall be struck off and screeded with a portable screed that is at least 2 feet longer than the maximum width of the slab to be struck off. It shall be sufficiently rigid to retain its shape. Concrete shall be thoroughly consolidated by hand vibrators. Hand finishing shall not be allowed after concrete has been in-place for more than 30 minutes or when initial set has begun unless otherwise approved by the Engineer. Finishing tools made of aluminum shall not be used.

The Contractor shall provide a Quality Control Plan (QCP) to ensure that proper hand finishing is accomplished in accordance with current Industry standards in the concrete pavement placement. It shall also identify the Contractor's method for ensuring that the provisions of the QCP are met. The QCP shall be submitted to the Engineer at the Preconstruction Conference. Paving operations shall not begin until the Engineer has approved the QCP. The QCP shall identify and address issues affecting the quality of finished concrete pavement including but not limited to:

(1) Timing of hand finishing operations
(2) Methodology to place and transport concrete
(3) Equipment and tools to be utilized
(4) Qualifications and training of finishers and supervisors

When the Engineer determines that any element of the approved QCP is not being implemented or that hand finished concrete is unacceptable, work shall be suspended. The Contractor shall supply a written plan to address improperly placed material and how to remedy future hand finishing failures and bring the work into compliance with the QCP. The Engineer will review the plan for acceptability prior to authorizing the resumption of operations.

May 5, 2011

REVISION OF SECTIONS 412, 601 AND 711
LIQUID MEMBRANE-FORMING COMPOUNDS
FOR CURING CONCRETE

Sections 412, 601 and 711 of the Standard Specifications are hereby revised for this project as follows:

In subsection 412.14, first paragraph, delete the second sentence and replace with the following:

The impervious membrane curing compound shall meet the requirements of ASTM C 309, Type 2 and shall be volatile organic content (VOC) compliant.

In subsection 601.13 (b), first paragraph, delete the second sentence and replace with the following:

A volatile organic content (VOC) compliant curing compound conforming to ASTM C 309, Type 2 shall be used on surfaces where curing compound is allowed, except that Type 1 curing compound shall be used on exposed aggregate or colored concrete, or when directed by the Engineer.

In subsection 601.16 (a) 1., delete the first sentence and replace with the following:

1. Membrane Forming Curing Compound Method. A volatile organic content (VOC) compliant curing compound conforming to ASTM C 309, Type 2 shall be uniformly applied to the surface of the deck, curbs and sidewalks at the rate of 1 gallon per 100 square feet.

Delete subsection 711.01 and replace with the following:

711.01 Curing Materials. Curing materials shall conform to the following requirements:

Burlap Cloth made from Jute or Kenaf	AASHTO M 182
Liquid Membrane-Forming Compounds for Curing Concrete	ASTM C 309
Sheet Materials for Curing Concrete	AASHTO M 171*
*Only the performance requirements of AASHTO M171 shall apply.	

Straw used for curing shall consist of threshed straw of oats, barley, wheat, or rye. Clean field or marsh hay may be substituted for straw when approved by the Engineer. Old dry straw or hay which breaks readily in the spreading process will not be accepted.

February 3, 2011

REVISION OF SECTION 601
CONCRETE BATCHING

Section 601 of the Standard Specifications is hereby revised for this project as follows:

In subsection 601.06, delete (13) and (17) and replace with the following:

(13) Gallons of water added by truck operator, the time the water was added and the quantity of concrete in the truck each time water is added.

(17) Water to cementitious material ratio.

February 3, 2011

REVISION OF SECTIONS 601
CONCRETE FINISHING

Section 601of the Standard Specifications are hereby revised for this project as follows:

In subsection 601.12 (a) delete the fifth paragraph and replace it with the following:

Water shall not be added to the surface of the concrete to assist in finishing operations.

Hand finishing should be minimized wherever possible. The hand finishing methods shall be addressed in the Quality Control Plan for concrete finishing. Hand finished concrete shall be struck off and screeded with a portable screed that is at least 2 feet longer than the maximum width of the surface to be struck off. It shall be sufficiently rigid to retain its shape. Concrete shall be thoroughly consolidated by hand vibrators. Hand finishing shall not be allowed after concrete has been in-place for more than 30 minutes or when initial set has begun. Finishing tools made of aluminum shall not be used.

The Contractor shall provide a Quality Control Plan (QCP) to ensure that proper hand finishing is accomplished in accordance with current Industry standards. It shall identify the Contractor's method for ensuring that the provisions of the QCP are met. The QCP shall be submitted to the Engineer at the Preconstruction Conference. Concrete placement shall not begin until the Engineer has approved the QCP. The QCP shall identify and address issues affecting the quality finished concrete including but not limited to:

(1) Timing of hand finishing operations
(2) Methodology to place and transport concrete
(3) Equipment and tools to be utilized
(4) Qualifications and training of finishers and supervisors

When the Engineer determines that any element of the approved QCP is not being implemented or that hand finished concrete is unacceptable, work shall be suspended. The Contractor shall supply a written plan to address improperly placed material and how to remedy future hand finishing failures and bring the work into compliance with the QCP. The Engineer will review the plan for acceptability prior to authorizing the resumption of operations.

In subsection 601.14(a) delete the fourth paragraph.

REVISION OF SECTION 601
CONCRETE FORM AND FALSEWORK REMOVAL

Section 601 of the Standard Specifications is hereby revised for this project as follows:

In subsection 601.09, delete (h) and replace with the following:

(h) *Removal of Forms*. The forms for any portion of the structure shall not be removed until the concrete is strong enough to withstand damage when the forms are removed.

Unless specified in the plans, forms shall remain in place for members that resist dead load bending until concrete has reached a compressive strength of at least 80 percent of the required 28 day strength, 0.80f'c. Forms for columns shall remain in place until concrete has reached a compressive strength of at least 1,000 psi. Forms for sides of beams, walls or other members that do not resist dead load bending shall remain in place until concrete has reached a compressive strength of at least 500 psi.

Forms and supports for cast-in-place concrete box culverts (CBCs) shall not be removed until the concrete compressive strength exceeds 0.6 f_c' for CBCs with spans up to and including 12 feet, and 0.67 f_c' for CBCs with spans exceeding 12 feet but not larger than 20 feet. Forms for CBCs with spans larger than 20 feet shall not be removed until after all concrete has been placed in all spans and has attained a compressive strength of at least 0.80f'c.

Concrete compressive strength shall be determined using information concrete cylinders or by maturity meters. At the pre-pour conference, the Contractor shall submit the method of determining the structure's strength and the location where information cylinders will be taken or maturity meters placed.

If information cylinders are used they shall be cast by the Contractor and cured in the same manner as the structure. A set of information cylinders shall be taken for each concrete placement on the structure. A set of information cylinders shall be taken for any load of concrete that is being placed at the mid-span of beams and at support locations and other locations as directed by the Engineer. Casting of the information cylinders will be witnessed by the Engineer. The information cylinders shall remain in the molds and cured in the same manner as the structure until they are tested in the laboratory by the Engineer. Compressive strength shall be determined using the compressive strength of at least two information cylinders. The contractor shall be responsible for protecting the information cylinders from damage.

Prior to placement of concrete whose strength will be determined with maturity meters, the Contractor shall provide the Engineer a report of maturity relationships in accordance with CP 69. The Contractor shall provide maturity meters and all necessary wires and connectors. The Contractor shall be responsible for the placement and maintenance of the maturity meter and wire. . At a minimum a maturity meter will be placed at the mid-span of beams and at support locations. Placement shall be as directed by the Engineer.

For structures with multiple sets of information cylinders or maturity meters, the lowest compressive strength shall determine when the forms can be removed.

Acceptance cylinders shall not be used for determining compressive strength to remove forms.

When field operations are controlled by information cylinder tests or maturity meter, the removal of forms, supports and housing, and the discontinuance of heating and curing may begin when the concrete is found to have the required compressive strength.

Forms for median barrier, railing or curbs, may be removed at the convenience of the Contractor after the concrete has hardened.

All forms shall be removed except permanent steel bridge deck forms and forms used to support hollow abutments or hollow piers when no permanent access is available into the cells. When permanent access is provided into box girders, all interior forms and loose material shall be removed, and the inside of box girders shall be cleaned.

REVISION OF SECTION 601
CONCRETE FORM AND FALSEWORK REMOVAL

In subsection 601.11, delete (e) and replace with the following:

(e) Falsework Removal. Unless specified in the plans or specifications, falsework shall remain in place until concrete has attained a minimum compressive strength of 0.80f'c.

Falsework supporting any span of a simple span bridge shall not be released until after all concrete, excluding concrete above the bridge deck, has attained a compressive strength of at least 0.80f'c.

Falsework supporting any span of a continuous or rigid frame bridge shall not be released until after all concrete, excluding concrete above the bridge deck, has been placed in all spans and has attained the compressive strength of at least 0.80f'c.

Falsework for arch bridges shall be removed uniformly and gradually, beginning at the crown, to permit the arch to take its load slowly and evenly.

Falsework supporting overhangs and deck slabs between girders shall not be released until the deck concrete has attained a compressive strength of at least 0.80f'c.

Falsework for pier caps which will support steel or precast concrete girders shall not be released until the concrete has attained a compressive strength of at least 0.80f'c. Girders shall not be erected onto such pier caps until the concrete in the cap has attained the compressive strength of at least 0.80f'c.

Falsework for cast-in-place prestressed portions of structures shall not be released until after the pre-stressing steel has been tensioned.

Concrete compressive strength shall be determined using information concrete cylinders or by maturity meters. At the pre-pour conference, the Contractor shall submit the method of determining the structure's strength and the location that information cylinders will be taken or maturity meters placed.

If information cylinders are used they shall be cast by the Contractor and cured in the same manner as the structure. A set of information cylinders shall be taken for each concrete placement on the structure. A set of information cylinders shall be taken for any load of concrete that is being placed at the mid-span of beams and at support locations and other locations as directed by the Engineer. Casting of the information cylinders will be witnessed by the Engineer. The information cylinders shall remain in the molds and cured in the same manner as the structure until they are tested in the laboratory by the Engineer. Compressive strength shall be determined using the compressive strength of at least two information cylinders. The Contractor shall be responsible for protecting the information cylinders from damage.

Prior to placement of concrete whose strength will be determined with maturity meters, the Contractor shall provide the Engineer a report of maturity relationships in accordance with CP 69. The Contractor shall provide maturity meters and all necessary wires and connectors. The Contractor shall be responsible for the placement and maintenance of the maturity meters and wires. At a minimum a maturity meter will be placed at the mid-span of beams and at support locations. Placement shall be as directed by the Engineer.

For structures with multiple sets of information cylinders or maturity meters, the lowest compressive strength shall determine when the falsework can be removed.

Acceptance cylinders shall not be used for determining compressive strength to remove falsework.

REVISION OF SECTION 601
CONCRETE SLUMP ACCEPTANCE

Section 601 of the Standard Specifications is hereby revised for this project as follows:

Delete the fifth paragraph of Subsection 601.05 and replace with the following:

Except for Class BZ concrete, the slump of the delivered concrete shall be the slump of the approved concrete mix design plus or minus 2.0 inch. The laboratory trial mix must produce an average compressive strength at least 115 percent of the required field compressive strength specified in Table 601-1. When entrained air is specified in the Contract for Class BZ concrete, the trial mix shall be run with the required air content.

Delete Subsection 601.17 (b), 601.17 (d) and Table 601-3 and replace with the following:

(b) *Slump*. Slump acceptance, but not rejection, may be visually determined by the Engineer. Any batch that exceeds the slump of the approved concrete mix design by 2.0 inches will be retested. If the slump is exceeded a second time, that load is rejected. If the slump is greater than 2 inches lower than the approved concrete mix design, the load can be adjusted with a water reducer, or by adding water (if the w/cm allows) and retested.

Portions of loads incorporated into structures prior to determining test results which indicate rejection as the correct course of action shall be subject to reduced payment or removal as determined by the Engineer.

(d) *Pay Factors*. The pay factor for concrete which is allowed to remain in place at a reduced price shall be according to Table 601-3 and shall be applied to the unit price bid for Item 601, Structural Concrete.

If deviations occur in air content and strength within the same batch, the pay factor for the batch shall be the product of the individual pay factors.

Table 601-3
PAY FACTORS

Percent Total Air		**Strength**		
Deviations From Specified Air (Percent)	**Pay Factor (Percent)**	**Below Specified Strength (psi) [< 4500 psi Concrete]**	**Pay Factor (Percent)**	**Below Specified Strength (psi) [≥ 4500 psi Concrete]**
0.0-0.2	98	1-100	98	1-100
0.3-0.4	96	101-200	96	101-200
0.5-0.6	92	201-300	92	201-300
0.7-0.8	84	301-400	84	301-400
0.9-1.0	75	401-500	75	401-500
Over 1.0	Reject	Over 500	Reject	
			65	501-600
			54	601-700
			42	701-800
			29	801-900
			15	901-1000
			Reject	Over 1000

April 30, 2015

REVISION OF SECTION 601
ENTRAINED AIR OF CLASS BZ CONCRETE

Section 601 of the Standard Specifications is hereby revised for this project as follows:

In Subsection 601.05, delete the fifth paragraph and replace with the following:

Except for Class BZ concrete, the slump of the delivered concrete shall be the slump of the approved concrete mix design plus or minus 2.0 inch. The laboratory trial mix must produce an average compressive strength at least 115 percent of the required field compressive strength specified in Table 601-1. When entrained air is specified in the Contract for Class BZ concrete, the trial mix shall be run with the required air content.

May 2, 2013

REVISION OF SECTION 601
FIBER-REINFORCED CONCRETE

Section 601of the Standard Specifications is hereby revised for this project as follows:

Subsection 601.03 shall include the following:

Where Fiber-Reinforced Concrete is specified or designated in the plans, the concrete mix shall include approved polyolefin fibers. Unless otherwise specified, a minimum of 3.5 pounds per cubic yard of polyolefin fiber reinforcement shall be evenly distributed into the mix. Mixing shall be as recommended by the manufacturer such that the fibers do not ball up. Polyolefin fibers shall meet the requirements of ASTM C1116 and ASTM D7508.

Where Macro Fiber-Reinforced Concrete is specified or designated in the plans, the concrete mix shall include approved macro polyolefin fibers. Unless otherwise specified, a minimum of 4.0 pounds per cubic yard of macro polyolefin fiber reinforcement shall be evenly distributed into the mix. Macro Fiber-Reinforced Concrete shall have a residual strength of 170 psi as determined by ASTM C1609. Mixing shall be as recommended by the manufacturer such that the fibers do not ball up. Macro polyolefin fibers shall meet the requirements of ASTM C1116 and ASTM D7508 with the following exceptions:

(1) Tensile strength shall be a minimum of 65 ksi
(2) Modulus of Elasticity shall be a minimum of 1,000 ksi
(3) Cut length shall be 1.5 to 2.2 inches
(4) Aspect Ratio shall be 50 to 100

Subsection 601.05 shall include the following:

When Fiber-Reinforced Concrete is specified in the Contract, polyolefin fibers may be added to an approved mix design except when Macro Fiber-Reinforced Concrete is specified. If Macro Fiber-Reinforced Concrete is specified a new trial mix will be required. When polyolefin fibers are added to an approved concrete mix design, the Contractor shall submit a letter stamped by the Concrete Design Engineer approving the changes. The stamped letter shall include the following and will be approved by the Engineer prior to use:

(1) The mix design number, both the CDOT mix ID number and the suppliers mix ID number
(2) The brand and type of polyolefin fibers.
(3) The dosage of polyolefin fibers in pounds per cubic yard.
(4) Adjustment to the fine aggregate batch weight

Subsection 601.06 shall include the following:

(18) Weight of polyolefin fiber reinforcement

Subsection 601.19 shall include the following:

Polyolefin fiber reinforcement will not be measured and paid for separately, but shall be included in the work.

REVISION OF SECTION 601
QC TESTING REQUIREMENTS FOR STRUCTURAL CONCRETE

Section 601 of the Standard Specifications is hereby revised for this project as follows:

Delete the first paragraph of subsection 601.17 and subsection 601.17(a) and replace with the following:

601.17 Acceptance and Pay Factors. These provisions apply to all concrete. The Contractor shall sample 601 pay items for both QC and QA in accordance with CP 61. The Engineer will witness the sampling and take possession of the QA samples at a mutually agreed upon location. The Contractor shall be responsible for Quality Control (QC) testing for 601 pay items. QC testing shall be performed at least once per day and then once per 50 cubic yards for concrete slump, unit weight and concrete temperature for each 601 pay item.

(a) *Air Content*. The first three batches at the beginning of each day's production for each 601 pay item shall be tested by the Contractor's QC and CDOT's QA for air content. When the QC and QA air content measurements differ by more than 0.5 percent, both the QC and QA air meters shall be checked in accordance with ASTM C 231. When air content is below the specified limit, it may be adjusted in accordance with subsection 601.08. Successive batches shall be tested by the Contractor's QC and witnessed by the Engineer until three consecutive batches are within specified limits. After the first three batches, CDOT will follow the random minimum testing schedule. After the first three batches the Contractor shall perform QC testing at a frequency of one random sample per 50 cubic yards. Air content shall not be adjusted after a CDOT QA test.

Subsection 601.19 shall include the following:

The Contractor's QC testing will not be measured and paid separately, but shall be included in the work.

April 30, 2015

REVISION OF SECTION 601
STRUCTURAL CONCRETE STRENGTH ACCEPTANCE

Section 601 of the Standard Specifications is hereby revised for this project as follows:

In subsection 601.17 (c), delete the first paragraph and replace with the following:

(c) *Strength (When Specified).* The concrete will be considered acceptable when the running average of three consecutive strength tests per mix design for an individual structure is equal to or greater than the specified strength and no single test falls below the specified strength by more than 500 psi. A test is defined as the average strength of three test cylinders cast in plastic molds from a single sample of concrete and cured under standard laboratory conditions prior to testing. If the compressive strength of any one test cylinder differs from the average by more than 10 percent that compressive strength will be deleted and the average strength will be determined using the compressive strength of the remaining two test cylinders.

November 6, 2014

REVISION OF SECTIONS 601 AND 701
CEMENTS AND POZZOLANS

Sections 601 and 701 of the Standard Specifications are hereby revised for this project as follows:

In subsection 601.03, first paragraph, the following shall be added to the table:

High-Reactivity Pozzolans 701.04

Subsection 601.03 shall include the following:

Pozzolans shall consist of Fly Ash, Silica Fume and High-Reactivity Pozzolan.

In subsection 601.04, delete the third and fourth paragraphs and replace with the following

Cementitious material requirements are as follows:

Class 0 requirements for sulfate resistance shall be one of the following:

(1) ASTM C 150 Type I, II or V

(2) ASTM C 595 Type IL, IP, IP(MS), IP(HS) or IT

(3) ASTM C 1157 Type GU, MS or HS

(4) ASTM C 150 Type III cement if it is allowed, as in Class E concrete

Class 1 requirements for sulfate resistance shall be one of the following:

(1) ASTM C 150 Type II or V; Class C fly ash shall not be substituted for cement.

(2) ASTM C 595 Type IP(MS) or IP(HS).

(3) ASTM C 1157 Type MS or HS; Class C fly ash shall not be substituted for cement.

(4) When ASTM C 150 Type III cement is allowed, as in Class E concrete, it shall have no more than 8 percent C_3A. Class C fly ash shall not be substituted for cement.

(5) ASTM C 595 Type IL; having less than 0.10 percent expansion at 6 months when tested according to ASTM C 1012. Class C fly ash shall not be substituted for cement.

(6) ASTM C 595 Type IT; having less than 0.10 percent expansion at 6 months when tested according to ASTM C 1012.

Class 2 requirements for sulfate resistance shall be one of the following:

(1) ASTM C 150 Type V with a minimum of a 20 percent substitution of Class F fly ash by weight

(2) ASTM C 150 Type II or III with a minimum of a 20 percent substitution of Class F fly ash by weight. The Type II or III cement shall have no more than 0.040 percent expansion at 14 days when tested according ASTM C 452

(3) ASTM C 1157 Type HS; Class C fly ash shall not be substituted for cement.

(4) ASTM C 150 Type II, III, or V plus High-Reactivity Pozzolan where the blend has less than 0.05 percent expansion at 6 months or 0.10 percent expansion at 12 months when tested according to ASTM C 1012

(5) ASTM C 1157 Type MS plus Class F fly ash or High-Reactivity Pozzolan where the blend has less than 0.05 percent expansion at 6 months or 0.10 percent expansion at 12 months when tested according to ASTM C 1012

(6) A blend of portland cement meeting ASTM C 150 Type II or III with a minimum of 20 percent Class F fly ash by weight, where the blend has less than 0.05 percent expansion at 6 months or 0.10 percent expansion at 12 months when tested according to ASTM C 1012.

(7) ASTM C 595 Type IP(HS).

(8) ASTM C 595 Type IL plus Class F fly ash or High-Reactivity Pozzolan where the blend has less than 0.05 percent expansion at 6 months or 0.10 percent expansion at 12 months when tested according to ASTM C 1012

(9) ASTM C 595 Type IT; having less than 0.05 percent expansion at 6 months or 0.10 percent expansion at 12 months when tested according to ASTM C 1012.

Class 3 requirements for sulfate resistance shall be one of the following:

A blend of portland cement meeting ASTM C 150 Type II, III, or V with a minimum of a 20 percent substitution of Class F fly ash by weight, where the blend has less than 0.10 percent expansion at 18 months when tested according to ASTM C 1012.

(1) ASTM C 1157 Type HS having less than 0.10 percent expansion at 18 months when tested according to ASTM C 1012. Class C fly ash shall not be substituted for cement.

(2) ASTM C 1157 Type MS or HS plus Class F fly ash or High-Reactivity Pozzolan where the blend has less than 0.10 percent expansion at 18 months when tested according to ASTM C 1012.

(3) ASTM C 150 Type II,III, or V plus High-Reactivity Pozzolan where the blend has less than 0.10 percent expansion at 18 months when tested according to ASTM C 1012.

(4) ASTM C 595 Type 1L plus High-Reactivity Pozzolan where the blend has less than 0.10 percent expansion at 18 months when tested according to ASTM C 1012.

(5) ASTM C 595 Type IP(HS) or IT having less than 0.10 percent expansion at 18 months when tested according to ASTM C 1012.

(6) ASTM C 595 Type IL with a minimum of a 20 percent substitution of Class F fly ash by weight, where the blend has less than 0.10 percent expansion at 18 months when tested according to ASTM C 1012.

When fly ash or High-Reactivity Pozzolan is used to enhance sulfate resistance, it shall be used in a proportion greater than or equal to the proportion tested in accordance to ASTM C1012, shall be the same source and it shall have a calcium oxide content no more than 2.0 percent greater than the fly ash or High-Reactivity Pozzolan tested according to ASTM C 1012.

In subsection 601.05 delete the first paragraph and replace with the following:

601.05 Proportioning. The Contractor shall submit a Concrete Mix Design for each class of concrete being placed on the project. Concrete shall not be placed on the project before the Concrete Mix Design Report has been reviewed and approved by the Engineer. The Concrete Mix Design will be reviewed and approved following the procedures of CP 62. The Concrete Mix Design will not be approved when the laboratory trial mix data are the results from tests performed more than two years in the past or aggregate data are the results from tests performed more than two years in the past. The concrete mix design shall show the weights and sources of all ingredients including cement, pozzolan, aggregates, water, additives and the water to cementitious material ratio

(w/cm). When determining the w/cm, the weight of cementitious material (cm) shall be the sum of the weights of the cement, fly ash, silica fume and High-Reactivity Pozzolan.

In subsection 601.05, delete the 12th, 13th, 14th, 15th, and 16th paragraphs and replace with the following:

The Concrete Mix Design Report shall include Certified Test Reports showing that the cement, fly ash, High-Reactivity Pozzolan and silica fume meet the specification requirements and supporting this statement with actual test results. The certification for silica fume shall state the solids content if the silica fume admixture is furnished as slurry.

For all concrete mix designs with ASTM C150 cements, up to a maximum of 20 percent Class C, 30 percent Class F or 30 percent High-Reactivity Pozzolan by weight of total cementitious material may be substituted for cement.

For all concrete mix designs with ASTM C595 Type IL cements, up to a maximum of 20 percent Class C, 30 percent Class F or 30 percent High-Reactivity Pozzolan by weight of total cementitious material may be substituted for cement.

For all concrete mix designs with ASTM C595 Type IP, IP(MS), IP(HS) or IT cements; fly ash or High-Reactivity Pozzolan shall not be substituted for cement.

For all concrete mix designs with ASTM C1157 cements, the total pozzolan content including pozzolan in cement shall not exceed 30 percent by weight of the cementitious material content.

When the Contractor's use of fly ash or High-Reactivity Pozzolan results in delays to the project, when it is necessary to make changes in admixture quantities, the source, or the Contractor performs , the cost of such delays and corrective actions shall be borne by the Contractor.

The Contractor shall submit a new Concrete Mix Design Report meeting the above requirements when a change occurs in the source, type, or proportions of cement, fly ash, High-Reactivity Pozzolan, silica fume or aggregate. When a change occurs in the source of approved admixtures, the Contractor shall submit a letter stamped by the Concrete Mix Design Engineer approving the changes to the existing mix design. The change will need to be approved by the Engineer prior to use.

In subsection 601.06, second paragraph, delete (9) and replace with the following:

(9) Type, brand, and amount of cement, fly ash and High-Reactivity Pozzolan

In subsection 601.06, delete (a) and replace with the following:

(a) *Portland Cement, Fly Ash, High-Reactivity Pozzolan and Silica Fume*. These materials may be sacked or bulk. No fraction of a sack shall be used in a batch of concrete unless the material is weighed.

All bulk cement shall be weighed on an approved weighing device. The bulk cement weighing hopper shall be sealed and vented to preclude dusting during operation. The discharge chute shall be so arranged that cement will not lodge in it or leak from it.

Separate storage and handling equipment shall be provided for the fly ash, silica fume and High-Reactivity Pozzolan. The fly ash, silica fume, and High-Reactivity Pozzolan may be weighed in the cement hopper and discharged with the cement.

November 6, 2014

REVISION OF SECTIONS 601 AND 701
CEMENTS AND POZZOLANS

In subsection 701.01 delete and replace the second paragraph with the following:

All concrete, including precast, prestressed and pipe shall be constructed with one of the following hydraulic cements, unless permitted otherwise.

ASTM C 150 Type I
ASTM C 150 Type II
ASTM C 150 Type V
ASTM C 595 Type IL
ASTM C 595 Type IP
ASTM C 595 Type IP(MS)
ASTM C 595 Type IP(HS)
ASTM C 595 Type IT
ASTM C 1157 Type GU, consisting of no more than 15 percent limestone
ASTM C 1157 Type MS, consisting of no more than 15 percent limestone
ASTM C 1157 Type HS, consisting of no more than 15 percent limestone

In subsection 701.02 add the following after the first paragraph:

Blending of pozzolans according to ASTM D5370 is permitted to meet the requirements of ASTM C 618.

Add subsection 701.04 immediately following subsection 701.03 as follows:

701.04 High-Reactivity Pozzolans. High-Reactivity Pozzolans (HRP) shall conform to the requirements of AASHTO M321. HRPs are but not limited to metakaolin, rice hull ash, zirconium fume, ultra-fine fly ash, and fume from the production of 50 percent ferrosilicon (with SiO2 less than 85 percent).

HRPs shall meet the following optional requirement of AASHTO M321: The sulfate expansion at 14 days shall not exceed 0.045 percent

HRP shall be from a preapproved source listed on the Department's Approved Products List. The HRP intended for use on the project shall have been tested and accepted prior to its use. Certified Test Reports showing that the HRP meets the specification requirements and supporting this statement with actual test results shall be submitted to the Engineer.

The HRP shall be subject to sampling and testing by the Department. Test results that do not meet the physical and chemical requirements may result in the suspension of the use of HRP until the corrections necessary have been taken to ensure that the material conforms to the specifications.

October 2, 2014

REVISION OF SECTION 603
CULVERT PIPE INSPECTION

Section 603 of the Standard Specifications is hereby revised for this project as follows:

Delete the first paragraph of subsection 603.09 and replace with the following:

603.09 Backfilling. After the conduit or section of conduit is placed, it shall be inspected before any backfill is placed. Reinforced concrete pipe (RCP) shall be visually inspected in accordance with AASHTO LRFD Bridge Construction Specifications, Section 27.6. Conduit found to be damaged shall be replaced, and conduit found to be out of alignment or unduly settled shall be taken up and relaid. The trench shall then be backfilled with material in accordance with Section 206.

In subsection 603.09, delete the fifth paragraph.

Add subsection 603.091 immediately following subsection 603.09 as follows:

603.091 Deflection Testing of Metal and Plastic Pipe*.* After a metal or plastic pipe is backfilled and earthwork over the pipe is complete to the top of the subgrade, the pipe deflection shall be measured in the presence of the Engineer. The maximum allowable deflection shall be 5 percent. Deflection is a reduction in the nominal diameter of the pipe measured in any direction. Measurement shall be made using a mandrel, laser profile, or other method approved by the Engineer. Measurement shall be made 30 days or more following the pipe installation. Pipe having any deflections in excess of 5 percent at any location within the pipe shall be removed and reinstalled at the Contractor's expense. Pipe that is permanently deformed or damaged in any way shall be replaced at the Contractor's expense. Replaced pipe shall be retested 30 days or more after the installation in accordance with the method described above.

REVISION OF SECTIONS 603, 624, 705, 707 AND 712
DRAINAGE PIPE

Sections 603, 624, 705, 707 and 712 of the Standard Specifications are hereby revised for this project as follows:

Subsection 603.07 shall include the following:

Joint systems for siphons, irrigation systems, and storm drains shall be watertight.

Subsection 603.07(c) shall include the following:

Watertight joint systems for plastic pipe shall conform to subsection 705.03.

Subsection 624.02 shall include the following material type and requirement:

Abbreviation	**Description**	**Subsection**
ALT2 CSP	Aluminized Corrugated Steel Pipe Type 2	707.11
Plastic	Polyvinyl Chloride (PVC), Polyethylene (PE), Steel Reinforced Polyethylene (SRPE) and Polypropylene (PP)	712.13

In subsection 624.02 delete the third paragraph and replace it with the following:

Connecting bands shall receive the same corrosion protection as the pipe with which they are used. Coatings conforming to the requirements of Sections 706 and 707 will be permitted as applicable. Connecting bands and pipe extensions shall be of similar metal, or of non-metallic material, to avoid galvanic corrosion.

End sections for concrete or metal pipe shall be the same material as the pipe and meet the requirements for the same class as that specified for the pipe in accordance with Table 624-1.

Plastic end sections shall not be used. When plastic pipe is to be installed with end sections, steel or concrete end sections meeting the same class as that specified for the pipe in accordance with Table 624-1 shall be used.

In subsection 624.02 delete the fourth paragraph and replace it with the following:

The Contractor may furnish any pipe material allowed in Table 624-1 for the class of pipe specified in the Contract except for storm drains. The Contractor may furnish RCP, PVC, SRPE or PP allowed in Table 624-1 for the class of pipe specified in the Contract for storm drains. The Contractor shall state at the preconstruction conference the pipe materials intended to be furnished.

In subsection 624.02 delete Table 624-1 and replace it with the following:

TABLE 624-1
Materials Allowed for Class of Pipe

Material Allowed**	Class of Pipe*										
	0	**1**	**2**	**3**	**4**	**5**	**6**[4]	**7**	**8**	**9**	**10**[4]
CSP	Y	N	N	N	N	N	N	N	N	N	N
ALT2 CSP	Y	Y	Y	Y	Y	N	N	N	N	N	N
Bit. Co. CSP	Y	Y[1]	N	N	N	N	N	N	N	N	N
A.F. Bo. CSP	Y	Y	Y	Y	Y	Y	Y	N	N	N	N
CAP	Y	Y[2]	Y[2]	Y[2]	Y[2]	Y	N	N	N	N	N
PCSP - both sides	Y	Y	Y	Y	Y	Y	Y	N	N	N	N
PVC[6]	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
PE[6]	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
PP[6]	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SRPE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
RCP (SP0)[3,5]	Y	Y	N	N	N	N	N	Y	N	N	N
RCP (SP1)[3,5]	Y	Y	Y	N	N	N	N	Y	Y	N	N
RCP (SP2)[3,5]	Y	Y	Y	Y	Y	N	N	Y	Y	Y	N
RCP (SP3)[3,5]	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

* As determined by the Department in accordance with the CDOT *Pipe Selection Guide*. Determination is based on abrasion and corrosion resistance.

** Y=Yes; N=No.

[1] Coated Steel Structural Plate Pipe of equal or greater diameter, conforming to Section 510, may be substituted for Bit. Co. CSP at no additional cost to the project.

[2] Aluminum Alloy Structural Plate Pipe of equal or greater diameter, conforming to Section 510, may be substituted for CAP at no additional cost to the project.

[3] SP= Class of Sulfate Protection required in accordance with subsection 601.04 as revised for this project. RCP shall be manufactured using the cementitious material required to meet the SP class specified.

[4] For pipe classes 6 and 10, the RCP shall be coated in accordance with subsection 706.07 when the pH of either the soil or water is less than 5. The Contract will specify when RCP is to be coated.

[5] Concrete shall have a compressive strength of 4500 psi or greater.

[6] In accordance with subsection 712.13.

Subsection 624.03 shall include the following:

Joint systems for siphons, irrigation systems, and storm drains shall be watertight. Watertight joint systems for plastic pipe shall conform to subsection 705.03.

Installation for Aluminized Corrugated Steel Pipe Type 2 shall conform to all requirements for Corrugated Steel Pipe (CSP) including the fill height tables and requirements in Standard Plan M-603-1.

Subsection 705.03 shall include the following:

Watertight joint systems for plastic pipe shall be in accordance with ASTM D3212.

Add subsection 707.11 as follows:

707.11 Aluminized Corrugated Steel Pipe Type 2. Aluminized Corrugated Steel Pipe Type 2 shall conform to the requirements of AASHTO M 274.

In subsection 712.13 (b), delete (1) and (2) and replace with the following:

(1) AASHTO M 304 (Profile) for nominal pipe sizes of 4 to 36 inches.
(2) ASTM F794 (Profile) for nominal pipe sizes 4 to 36 inches with 46 psi minimum pipe stiffness

Add subsection 712.13 and (c) and (d) as follows:

(c) *Polypropylene (PP) Pipe.*

AASHTO M330 for nominal pipe sizes of 12 to 60 inches with the following exceptions: Type S and Type SP are acceptable (Type C, Type CP and Type D will not be accepted).

The Contractor shall provide a polypropylene (PP) pipe product that is prequalified under the AASHTO National Transportation Product Evaluation Program (NTPEP). Only products from suppliers whose manufacturing plant and PP pipe products comply with this specification shall be placed by the Contractor. The current list of plants and PP pipe products that meet these requirements is located at: www.ntpep.org. The Contractor shall use plants listed as compliant and a size listed in the NTPEP reports on PP Thermoplastic Pipe. Every Certificate of Compliance (COC) on each diameter PP pipe product delivered to the project shall include a statement that the product has been manufactured at a NTPEP inspected plant, has been tested by NTPEP, has a NTPEP product number, and is currently on the NTPEP website. The COC shall confirm that the supplied pipe meets the applicable specification limits in subsection 712.13. Manufacturers shall remain acceptable to CDOT as long as the results of verification samples and performance in the field are satisfactory. Any changes in the PP pipe formulation will require re-submittal for prequalification testing by NTPEP.

(d) *Steel Reinforced Polyethylene (SRPE)*. SRPE pipe shall be AASHTO MP 20 ribbed pipe for nominal pipe sizes 12 to 60 inches with the following exceptions:

(1) Nominal pipe sizes 30 to 60 inches are acceptable; nominal pipe sizes 12 to 27 inches will not be accepted.

REVISION OF SECTION 614
BLANK OUT SIGN (LED) (SPEED RADAR)

Section 614 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

This work consists of furnishing and installing a Light Emitting Diode (LED) Blank Out Sign (Speed Radar) equipped with a directional radar unit for changing the message on the sign for oncoming traffic. The sign shall face one direction and shall display a primary and a secondary message.

MATERIALS

LED Blank out signs shall meet the requirements as shown in the plans and as detailed in this specification. The display shall be a character matrix configuration of two lines of 5 x 7 pixel matrix characters that will allow the display of a pre-determined message defined in this specification. All display elements and modules shall be solid state. No mechanical or electromechanical elements or shutters shall be used.

All materials furnished, assembled, fabricated or installed under this item shall be new, corrosion resistant and in strict accordance with the Contract. All details and functionality listed in this specification will be thoroughly inspected and tested by the Department. Failure to meet all details and functionality detailed in this specification shall be grounds for rejection of the equipment.

The radar unit shall operate with the Blank out Sign to turn on and then change the primary sign message to a secondary message for the oncoming vehicles. The sign shall include a lockable power shut off mounted to the sign structure within 6 feet of ground level. The sign shall be fully compatible with the mounting hardware and support structure shown in the plans. The sign shall have a minimum design life of 20 years.

Materials shall conform to the applicable requirements of the National Electrical Code (NEC) and shall be a type currently recommended and approved by Underwriters' Laboratories, Inc.

All Materials furnished, assembled, fabricated or installed shall be new, corrosion resistant and in strict accordance with the details shown in the Contract, and the NEC.

The blank out signs shall be able to alternately display two fixed sign messages from a single housing in one direction. The primary message shall be a static message illuminated when a radar indication is triggered. When the radar indication is triggered the primary message shall turn on and once a speed threshold is reached a secondary message shall be illuminated intermittently. The intermittent display of the secondary message shall illuminate the message for a period of two seconds on, and then one second off, repeating for a period of 30 seconds or once it does not detect a vehicle exceeding the trigger speed. Once the 30 second period has been reached the display shall return to the static primary message being illuminated for an additional 30 seconds before being turned off completely or back to the second message if another vehicle approaches in excess of the selected speed. The entire message shall be able to be switched on or off. The sign layouts provided in the plans list the details for the message. The Contractor shall provide final message layouts to the Engineer for review and approval prior to fabrication of the blank out sign. When turned on, the blank out sign shall show the appropriate message and when turned off the sign shall be completely blank when not energized. No phantom words or legends shall be seen under any ambient light conditions when turned off.

The blank out signs shall be capable of dimming at night or during other low ambient light conditions.

The blank out sign shall be fully functional while operating over an ambient temperature range of –30 to +165 ° F including a relative humidity of 0 – 100 percent, condensing; and it shall be capable of withstanding wind speeds up to 120 mph in accordance with AASHTO *Standard Specifications for Structural Supports for Highway Signs Luminaires and Traffic Signals*.

(a) *Certifications.* Prior to start of the installation of the LED Blank out Signs the Contractor shall provide the following documentation to the Engineer:

(1) Shop drawings showing the sign housing and mounting brackets. Shop drawings shall be submitted in accordance with subsection 105.02.
(2) Documentation and information on sign software and hardware.

(b) *Sign Housing.* All component parts shall be easily and readily accessible by a single person for inspection and maintenance. Access shall be from the front by lifting the face of the sign. The housing shall be weather tight, and compliant to the NEMA 3R Standard. The sign housing shall be capable of withstanding a wind loading of 120 mph without permanent deformation or other damage. The performance of the sign, including the visibility and legibility of the display, shall not be impaired due to continuous vibration caused by wind, traffic or other factors. The housing shall be designed to accommodate mounting on the rear vertical plane and shall be structurally sufficient to be mounted to the sign support structure. The sign housing and structural components for the tilting system including bolts and welds, shall be structurally sufficient to perform under all applicable loading conditions including gravity, wind, traffic, weather, roadway deicers, maintenance, and other environmental factors. Certified shop drawings supporting the design of the sign housing and mounting system shall be submitted in accordance with subsection 105.02.

Except for the housing, all parts shall be made of corrosion resistant materials, such as plastic, stainless steel or aluminum. Painted steel is not acceptable. Self-tapping screws shall not be used. The exterior front face surfaces shall be finish coated by a system that meets or exceeds the American Architectural Manufacturers Association (AAMA) Specification No. 2605. The finish shall be matte black.

The housing shall be constructed of aluminum (minimum thickness of 0.100 inches) with a natural mill finish. All exterior seams shall be continuously welded by an inert gas process, except for the coated fascia material. The glazing shall be constructed of 0.236 – 0.250 inch thick clear polycarbonate sheets with surfaces that resist hazing from UV light, abrasion, and graffiti.

The glazing shall be protected by a coated aluminum mask with apertures punched directly in front of each pixel. The coating shall meet or exceed the requirements of AAMA Specification No. 2605.

The external front face panels shall be thermally insulated from the rest of the sign housing. The glazing, aluminum mask, and the external front face panels shall be easily replaceable from within the sign housing. The bottom panel of the housing shall have a minimum of four drain holes, with snap-in, drain filter plug inserts. The housing shall be rated for NEMA 3R with the door internally gasketed to provide the necessary seal. All corners shall be welded for stability and water tightness. Silicone or other sealant shall not be used to seal joints.

The sign housing shall come equipped with slotted aluminum extrusions mounted horizontally across the back of the sign. Each extrusion shall accept manufacturer supplied ½ inch stainless steel mounting hardware with bolts that slide within the extrusion for complete adjustability in the horizontal direction. This configuration shall allow the sign to be mounted to one round vertical steel post members.

The angular alignment of the sign housing shall be adjustable in the vertical direction to optimize the viewing angle for approach vehicles.

The ventilation system shall be natural convection or forced air. The system shall be designed to adequately cool the LED pixels along with the front and rear of the display module and all other internal components.

(c) *Equipment.* The equipment shall be modular in design such that major portions may be readily replaced in the field. Modules of unlike functions shall be mechanically keyed to prevent insertion into the wrong socket or connector.

All modules and assemblies shall be clearly identified with name, model number, serial number, and any other pertinent information required to facilitate equipment maintenance and replacement.

All external connections shall be made by means of connectors. The connectors shall be keyed to preclude improper hookups. All wires to and from the connectors shall be color-coded or appropriately marked.

(d) *Electronics*. All electronic components, except printed circuit boards, shall be commercially available, easily accessible, replaceable and individually removable using conventional electronics repair methods.

All Printed Circuit Boards (PCBs) shall be completely conformal coated with a silicone resin conformal coat. The exception for this coating shall be the pixels on the front of the PCB of the LED motherboards and any components in sockets.

All discrete components, such as resistors, capacitors, diodes, transistors, and integrated circuits shall be individually replaceable. Components shall be arranged such that they are easily accessible for testing and replacement. A transformer shall be installed inside the casing if required to step down 110V service to 12V for the LED lighting and radar detection. All circuit designs shall utilize high quality electronic components and shall provide a meantime before failure of at least four years.

The color of the pixels shall be amber and shall be 40 candelas at 20 mA. The brightness and color of each pixel shall be uniform over the entire face of the sign within the 15-degree cone of vision from 1,100 feet to 200 feet in all lighting conditions. Each pixel shall contain two strings of LEDs. The pixel strings shall be powered from a regulated DC power source and the LED current shall be maintained at 25 ± 3 mA per string to maximize life of the pixel. The failure of an LED in one string within a pixel shall not affect the operation of any other string or pixel. The LEDs shall be constructed of aluminum, indium, gallium, or phosphide.

Pixel power drawn from the DC supplies shall not exceed 1.5 watts per pixel, including the driving circuitry.

A photocell shall be installed on the sign. This device shall permit automatic light intensity measurement of light conditions at the sign location. The photocell shall be mounted in a manner to measure ambient light conditions.

Provisions shall be made to prevent perceivable brightening of the sign due to stray light from headlights shining upon the photo sensors at night.

The power supplies shall be paralleled in a diode OR configuration such that one supply may completely fail and the sign will still be supplied with enough power to run 40 percent of all pixels.

All cables shall be securely clamped or tied in the sign housing. Adhesive attachments shall not be used.

The Contractor shall locate the electrical power, as directed, and connect the source to the appropriate termination within the Blankout Sign. A manufacturer's representative shall be on site for the final inspection for up to three hours and to establish manufacturer's approval of the installation.

(e) *Communication.* The controller software shall be capable of displaying the following types of messages:

(1) Static messages capable of displaying one of two fixed messages

(2) Flashing messages with the following ranges of adjustable timing:
- (i) Message time on from 0.5 to 60 seconds in 0.5 second increments.
- (ii) Message time off from 0.5 to 60 seconds in 0.5 second increments.

(3) Alternating messages capable with the following ranges of adjustable timing:
- (i) Primary message time on from 0.5 to 60 seconds in 0.5 second increments.
- (ii) Primary message time off from 0 to 60 seconds in 0.5 second increments.
- (iii) Alternate message time on from 0.5 to 60 seconds in 0.5 second increments.
- (iv) Alternate message time off from 0 to 60 seconds in 0.5 second increments.

It shall be possible to flash the design message in an alternating message at the adjustable frequencies listed above for flashing messages. The flashing period shall be a sub-multiple of the associated alternating on time. It shall also be possible to flash the design message in a static message. It shall also be capable of the sign showing no messages (fully blank) until a radar trigger is registered by the system.

(f) *Radar.* The Blank out Sign shall be equipped with a directional radar unit for sensing and determining the speeds of oncoming traffic only. The radar unit shall be capable of detecting approach speeds from 5 to 100 mph. The radar shall detect average size vehicles from a distance of approximately 2000 feet. The radar shall be compatible with the remote programming requirements. The radar shall operate in a Radar Trip Mode.

In the Radar Trip Mode, the Blank Out Sign shall remain blank until a trigger is received and then display one of two messages under control of the radar: one when the radar indicates a vehicle is traveling above a configurable speed (or "trigger speed") and a second message when the radar indicates no vehicle traveling over the trigger speed. Note that each of these messages shall allow from one to two pages. To prevent flickering of the message if a vehicle is near the trigger speed, a message dwell time shall keep the message displayed for a configurable number of seconds after the vehicle has dropped below the trigger speed. The dwell time shall default to two seconds.

The radar unit shall be mounted outside of the sign. The radar gun shall be mounted on an adjustable bracket, allowing for minor adjustment of both azimuth and elevation.

(g) *Warranty.* The Contractor shall ensure that the manufacturer will warranty the product for a minimum of one year from the date of shipment. During the warranty period, the supplier or manufacturer shall repair with new or refurbished materials, or replace at no charge, any product containing a warranty defect. Product repaired or replaced under warranty by the manufacturer or supplier shall be returned with transportation prepaid.

During the warranty period, technical support shall be available from the manufacturer via telephone within 8 hours of the time a call is made by the Department, and this support shall be available from a factory-certified personnel or factory-certified installer at no additional charge to the Department.

(h) *Maintenance and Support.* The supplier shall maintain an adequate inventory of parts to support maintenance and repair of the blank out signs. These parts shall be available for delivery within 30 days of placement of an acceptable order at the supplier's then current pricing and terms of sale for said parts.

The supplier shall maintain an ongoing program of technical support for the blank out signs. This technical support shall be available via telephone, or via personnel sent to the installation site upon placement of an acceptable order at the supplier's then current pricing and terms of sale for on site technical support services.

Installation or training support up to three hours shall be provided by a factory authorized representative. All product documentation shall be written in the English language.

Four complete sets of operation and maintenance manuals shall be provided. The manuals shall include the following:

(1) Complete and accurate schematic diagrams, including a wiring diagram

(2) Complete installation procedures

(3) Complete performance specifications (functional, electrical, mechanical and environmental) on the unit

(4) Complete parts list including names of vendors for parts not identified by universal part numbers such as JEDEC, RETMA or EIA

(5) Pictorial of component layout on circuit board.

(6) Pin-out and pin-in of connectors.

(7) Complete maintenance and troubleshooting procedures.

(8) Complete stage-by-stage explanation of circuit theory and operation.

In-cabinet wiring diagram of the blank out sign shall be provided in each sign enclosure.

CONSTRUCTION REQUIREMENTS

The Contractor shall install the blank out sign as shown on the plans.

The sign and font size in the plans is the minimum; the size may be increased to meet the specifications.

The Contractor shall conduct all tests described herein, which include the following:

(a) *Operational Tests*. The following blank out sign functions shall be demonstrated for each of the signs installed on the project prior to acceptance:

(1) Turning on and off in daytime mode.

(2) Turning on and off in nighttime mode.

(3) Demonstration of the radar trip to change from the primary message to the secondary message.

(4) Demonstration of the dwell and flashing adjustments.

(5) Demonstration of the dimming features for the sign.

METHOD OF MEASUREMENT

The Blank Out Sign (LED) (Speed Radar) will be measured by the actual number that are furnished, installed and accepted.

BASIS OF PAYMENT

Payment will be made in accordance with the following:

The Engineer will authorize payment for 90 percent of the unit price bid upon completion of the installation and submittal of all certifications.

The Engineer will authorize payment for the remaining 10 percent of the unit price bid upon the successful completion of the testing and according to terms of the Contract.

Payment will be made under:

Pay Item	**Pay Unit**
Blank Out Sign (LED) (Speed Radar)	Each

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Payment will be full compensation for all labor, materials, and equipment necessary to complete the work, including the directional radar gun, sign controller, controller interface box, sign housing, electronics, communications, and standard warranty.

Having a manufacturer's representative on-site will not be measured and paid for separately, but shall be included in the work.

Testing, training and providing manuals will not be measured and paid for separately, but shall be included in the work.

REVISION OF SECTIONS 627 AND 708
PAVEMENT MARKING PAINT

Sections 627 and 708 of the Standard Specifications are hereby revised for this project as follows:

In subsection 627.04, delete the first paragraph and replace with the following:

627.04 Pavement Marking with Waterborne, Low Volatile Organic Compound (VOC) Solvent Base, and High Build Acrylic Waterborne Paint (High Build). Striping shall be applied when the air and pavement temperatures are no less than 45 °F for waterborne and high-build paint, and no less than 40 °F for low VOC solvent base paint on asphalt or portland cement concrete pavements. The pavement surface shall be dry and clean. Surface cleaning shall be required when there is deicing material on the road. Weather conditions shall be conducive to satisfactory results.

In subsection 627.04 delete the table and replace it with the following

	Description	**Paint**		
		Waterborne	Low VOC	High Build
Alignment	Lateral Deviation	2.0 inch per 200 foot Max		
Coverage Rate	Sq. Ft. per Gallon	90-100	90-100	67-73
Thickness	Mil	16-18	16-18	22-24
Width	Inches	Per Plans +/- 0.25		
Dry Time	Minutes	5-10	5-10	5-10
Beads	Application Rate, lbs/gal	7-8		9-10

Subsection 627.13 shall include the following:

Pay Item	**Pay Unit**
Pavement Marking Paint (High Build)	Gallon

Delete subsection 708.05 and replace with the following:

708.05 Pavement Marking Materials. Except for pavement marking paint, pavement marking materials shall be selected from the Department's Approved Products List (APL). Prior to start of work, a Certified Test Report (CTR) for all pavement marking materials shall be submitted in accordance with subsection 106.13.

For white paint, the color after drying shall be a flat-white, free from tint, and shall provide the maximum amount of opacity and visibility under both daylight and artificial light. For yellow paint, the Federal Standard 595B shall be used to designate colors and the ASTM E308 shall be used to quantitatively define colors. After drying, the yellow paint shall visually match Federal Standard 595B color chip number 33538, and shall be within 6 percent of central color, PR-1 Chart, where x = 0.5007 and y = 0.4555 (The four pairs of chromaticity coordinates determine the acceptable color in terms of the CIE 1931 Standard Colorimetric System measured with Standard Illuminant D65.)

(a) *Low VOC Solvent Base Paint*. Low VOC Paint shall be ready mixed, and shall be capable of being applied to Asphalt or Portland Cement Concrete Pavements.

(b) *Acrylic Waterborne Paint*. Acrylic waterborne paint shall be a lead-free, 100 percent Acrylic resin polymer waterborne *product*. The finished product shall maintain its consistency during application at temperatures compatible with conventional equipment.

(c) *High Build Acrylic Waterborne Paint.* High build acrylic waterborne paint binder (nonvolatile portion of vehicle) shall be 100 percent HD 21 acrylic cross linking polymer, by weight, as determined by infrared analysis or other chemical analysis available to the Department.

Waterborne and High Build Acrylic Waterborne paint shall meet the following requirements:

Performance Requirements: The paint shall be water resistant and shall show no softening or blistering.

Table 708-1
WATERBORNE AND HIGH BUILD ACRYLIC WATERBORNE PAINT

Property	**White**	**Yellow**	**Test Method**
Nonvolatile portion of vehicle (white and yellow), %	43.0	43.0	ASTM D 2205
Pigment Composition			
Percent by weight♦	60.0	60.0	ASTM D 4451 ASTM D 3723
Paint			
Titanium Dioxide Content, lb/gal	1.0	0.2	ASTM D 5381
Properties of the Finished Paint			
Total Non-volatiles, (solids) % by weight	77.0	77.0	FTMS 141C - Method 4053.1, ASTM D 2369, or ASTM D 4758
Density, lbs/gal ■	14.0-14.6	14.0-14.6	ASTM D 2205
Consistency (Viscosity) White and Yellow, Krebs-Stormer Units	85-95	85-95	ASTM D 562
Freeze Thaw Stability	Shall complete 5 or more test cycles successfully		ASTM D 2243
Fineness of Grind, Cleanliness Rating B, minimum	3	3	ASTM D 1210
Scrub Resistance	800	800	ASTM D2486
Directional Reflectance: [5 mil Wet Film]	90	50	ASTM E 1347
Dry Opacity (Contrast Ratio): [5 mil Wet Film]	0.95	0.95	ASTM D 2805

♦Percent by weight shall include percent of organic yellow pigment.
■Density shall not vary more than 0.3 lbs. /gal between batches.

May 8, 2014

REVISION OF SECTION 630
RETROREFLECTIVE SIGN SHEETING

Section 630 of the Standard Specifications is hereby revised for this project as follows:

In subsection 630.02, delete the sixth and seventh paragraphs, including Table 630-1, and replace them with the following:

Retroreflective sheeting for all signs requiring an orange background shall be Type VI or Type Fluorescent.

Retroreflective sheeting for all signs requiring a yellow background shall be Type Fluorescent.

Table 630-1
RETROREFLECTIVE SHEETING TYPES

Sheeting	**Type IV**	**Type VI (Roll-up sign material)**	**Type Fluorescent[1]**
Application	Work Zone	Work Zone	Work Zone
All Orange Construction Signs			X
Orange Construction Signs that are used only during daytime hours for short term or mobile operations		X[4]	X
Barricades (Temporary)	X		X
Vertical Panels	X		X
Flaggers Stop/Slow Paddle	X		X
Drums[2]	X		X
Non-orange Fixed Support signs with prefix "W"	X		
Special Warning Signs			X
STOP sign (R1-1) YIELD sign (R1-2) WRONG WAY sign (R5-1a) DO NOT ENTER sign (R5-1) EXIT sign (E5-1a)	X		
DETOUR sign (M4-9) or (M4-10)			X
All other fixed support signs[3]	X		X
All other signs used only during working hours	X		X
All other signs that are used only during daytime hours for short term or mobile operations	X	X[5]	X

1 Fluorescent Sheeting shall be of a brand that is on the CDOT Approved Products List.
2 Drum Sheeting shall be manufactured for flexible devices.
3 Fixed support signs are defined as all signs that must remain in use outside of working hours. They shall be mounted in accordance with Standard Plan S-630-1.
4 RS 24 only.
5 White only.

REVISION OF SECTION 702
BITUMINOUS MATERIALS

Section 702 of the Standard Specifications is hereby deleted for this project and replaced with the following:

702.01 Asphalt Cements.

(a) Superpave Performance Graded Binders. Superpave Performance Graded Binders shall conform to the requirements listed in Table 702-1. (Taken from AASHTO M 320)

Asphalt cement shall not be acid modified or alkaline modified.

Asphalt cement shall not contain any used oils that have not been re-refined. Modifiers that do not comply with environmental rules and regulations including 40 CFR Part 261.6(a) (3) (IV), and part 266/Subpart C shall not be added. Modifiers shall not be carcinogenic.

The supplier of the PG binder shall be certified in accordance with CP 11.

Table 702-1
SUPERPAVE PERFORMANCE GRADED BINDERS

Property	Requirement for PG Binder						AASHTO Test No.
	58-28	58-34	64-22	64-28	70-28	76-28	
Flash Point Temp., °C, minimum	230	230	230	230	230	230	T 48
Viscosity at 135 °C, Pa●s, maximum	3	3	3	3	3	3	T 316
Dynamic Shear, Temp. °C, where G*/Sin δ @ 10 rad/s ≥ 1.00 kPa	58	58	64	64	70	76	T 315
Ductility, 4 °C (5 cm/min.), cm minimum	-	-	-	50		-	T 51
Toughness, joules (inch-lbs)	-	-	-	12.4 (110)		-	CP-L 2210
Tenacity, joules (inch-lbs)	-	-	-	8.5 (75)		-	CP-L 2210
Acid or Alkali Modification (pass-fail)	Pass	Pass	Pass	Pass	Pass	Pass	CP-L 2214
RTFO Residue Properties							CP-L 2215
Mass Loss, percent maximum	1.00	1.00	1.00	1.00	1.00	1.00	CP-L 2215
Dynamic Shear, Temp. °C, where G*/Sin δ @ 10 rad/s ≥ 2.20 kPa	58	58	64	64	70	76	T 315
Elastic Recovery, 25 °C, percent min.	-	-	-	-	50	50	T 301
Ductility, 4 °C (5 cm/min.), cm minimum	-	-	-	20	-	-	T 51
PAV Residue Properties, Aging Temperature 100 °C							R 28
Dynamic Shear, Temp. °C, where G*●Sin δ @ 10 rad/s ≤ 5000 kPa	19	16	25	22	25	28	T 315
Creep Stiffness, @ 60 s, Test Temperature in °C	-18	-24	-12	-18	-18	-18	T 315
S, maximum, MPa	300	300	300	300	300	300	T 313
m-value, minimum	0.300	0.300	0.300	0.300	0.300	0.300	T 313

Acceptance Samples of the PG binder will be taken on the project in accordance with the Schedule in the Field Materials Manual.

The Department will test for acid modification and alkaline modification during the binder certification process. Thereafter, the Department will randomly test for acid modification and alkaline modification.

(b) Damp proofing. Asphalt for damp proofing shall conform to the requirements of ASTM D 449, and the asphaltic primer shall conform to the requirements of ASTM D 41.

702.02 Emulsified Asphalts. Emulsified asphalts shall conform to AASHTO M 140 or M 208 for the designated types and grades. Emulsified asphalt and aggregate used for surface seals shall be sampled and will be tested for information only in accordance with CP-L 2213.

Emulsified asphalt (HFMS-2S) with a residual penetration greater than 300 dmm shall conform to all properties listed in AASHTO M 140, Table 1 except that ductility shall be reported for information only.

(a) *Emulsion for Tack and Fog Coats.* Emulsions for tack and fog coats shall conform to the requirements listed in Table 702-2 or 702-3, prior to dilution.

Table 702-2
TACK AND FOG COAT EMULSIONS

Property		CSS-1h	SS-1h	AASHTO Test No.
Viscosity, at 25 ºC, Saybolt-Furol, s	min	20	20	T 59
	max	100	100	
Storage stability, 24 hr, % max[1]		1.0	1.0	T 59
Particle charge test		Positive		T 59
Sieve test, % max		0.10	0.10	T 59
Oil Distillate by volume, % max		3.0	3.0	T-59
Residue by distillation/ evaporation, % min[3]		57[3]	57[3]	T 59/ CP-L 2212[2]
Tests on residue:				
Penetration, 25 ºC, 100g, 5s, min, dmm		40	40	T 49
Penetration, 25 ºC, 100g, 5s, max, dmm		120	120	
Ductility, 25 ºC, 5 cm/min, cm, min		40	40	T 51
Solubility, in trichloroethylene% min		97.5	97.5	T 44

[1]If successful application is achieved in the field, the Engineer may wave this requirement.

[2] CP-L 2212 is a rapid evaporation test for determining percent residue of an emulsion and providing material for tests on residue. CP-L 2212 is for acceptance only. If the percent residue or any test on the residue fails to meet specifications, the tests will be repeated using the distillation test in conformance with AASHTO T-59 to determine acceptability.

[3] For polymerized emulsions the distillation and evaporation tests will in be in conformance with AASHTO T-59 or CP-L 2212 respectively with modifications to include 205 ± 5 ºC (400 ± 10 ºF) maximum temperature to be held for 15 minutes.

(b) *Emulsion for Chip Seals* Polymerized emulsions for chip seals shall conform to the requirements listed in Table 702-3. Emulsion for chip seals shall be an emulsified blend of polymerized asphalt, water, and emulsifiers. The asphalt cement shall be polymerized prior to emulsification and shall contain at least 3 percent polymer by weight of asphalt cement. The emulsion standing undisturbed for a minimum of 24 hours shall show no white, milky separation but shall be smooth and homogeneous throughout. The emulsion shall be pumpable and suitable for application through a distributor.

Table 702-3
POLYMERIZED EMULSIONS FOR CHIP SEALS

Property		CRS-2P	CRS-2P	CRS-2R	HFMS-2P	AASHTO Test No.
Tests on Emulsion:						
Viscosity, at 50 ºC, Saybolt-Furol, s	min	50	50	50	50	T 59
	max	450	450	450	450	
Storage stability, 24 hr, % max		1.0	1.0	1.0	1.0	T 59
Particle charge test		Positive	Positive	Positive		T 59
Sieve test, % max		0.10	0.10	0.10	0.10	T 59
Demulsibility[1], % min		40	40	40		T 59
Oil Distillate by volume, % max or range		3.0	3.0	3.0	3.0	T-59
Residue by distillation/ evaporation, % min[3]		65[3]	65[3]	65[3]	65[3]	T 59/ CP-L 2212[2]
Tests on residue:						
Penetration, 25 ºC, 100g, 5s, min, dmm		70	70	70	70	T 49
Penetration, 25 ºC, 100g, 5s, max, dmm		150	150	150	150	
Ductility, 25 ºC, 5 cm/min, cm, min		40			75	T 51
Ductility, 4 ºC, 5 cm/min, cm, min				40		
Solubility, in trichloroethylene% min[4]		97.5[4]	97.5[4]	97.5[4]	97.5[4]	T 44
Elastic Recovery, 25 ºC min					58	T 301
Float Test, 60 ºC, s min					1200	T 50
Toughness, in-lbs, min			70	90		CP-L 2210
Tenacity, in-lbs, min			45	45		CP-L 2210

[1]If successful application is achieved in the field, the Engineer may waive this requirement.

[2] CP-L 2212 is a rapid evaporation test for determining percent residue of an emulsion and providing material for tests on residue. CP-L 2212 is for acceptance only. If the percent residue or any test on the residue fails to meet specifications, the tests will be repeated using the distillation test in conformance with AASHTO T-59 to determine acceptability.

[3] For polymerized emulsions the distillation and evaporation tests will in be in conformance with AASHTO T-59 or CP-L 2212 respectively with modifications to include 205 ± 5 ºC (400 ± 10 ºF) maximum temperature to be held for 15 minutes.

[4] Solubility may be determined on the base asphalt cement prior to polymer modification.

(c) *Emulsion for Slurry Seals and Micro-Surfacing.* Emulsions for slurry seals and micro-surfacing shall conform to the requirements listed in Table 702-4. The modified emulsion shall contain a minimum of 3 percent polymer, SBR latex, or natural latex by weight.

Table 702-4
SLURRY SEAL AND MICRO-SURFACING EMULSIONS

Property		CQS-1hL	CQS-1hP	AASHTO Test No.
Viscosity, at 25 ºC, Saybolt-Furol, s	min	15	15	T 59
	max	100	100	
Storage stability, 24 hr, % max[1]		1.0	1.0	T 59
Particle charge test		Positive	Positive	T 59
Sieve test, % max		0.10	0.10	T 59
Oil Distillate by volume, % max		0.5	0.5	T-59
Residue by distillation/ evaporation, % min[3]		62[3]	62[3]	T 59/ CP-L 2212[2]
Penetration, 25 ºC, 100g, 5s, min, dmm		40	40	T 49
Penetration, 25 ºC, 100g, 5s, max, dmm		150	150	
Ductility, 25 ºC, 5 cm/min, cm, min		50	50	T 51
Solubility, in trichloroethylene% min		97.5	97.5	T 44

[1]If successful application is achieved in the field, the Engineer may wave this requirement.

[2] CP-L 2212 is a rapid evaporation test for determining percent residue of an emulsion and providing material for tests on residue. CP-L 2212 is for acceptance only. If the percent residue or any test on the residue fails to meet specifications, the tests will be repeated using the distillation test in conformance with AASHTO T-59 to determine acceptability.

[3] For polymerized emulsions the distillation and evaporation tests will in be in conformance with AASHTO T-59 or CP-L 2212 respectively with modifications to include 205 ± 5 ºC (400 ± 10 ºF) maximum temperature to be held for 15 minutes.

(d) *Emulsion for Prime Coat.* Emulsion for prime coat shall conform to the requirements of Table 702-5. Circulate before use if not used within 24 hours.

Table 702-5
ASPHALT EMULSION FOR PRIME COAT (AEP)

Property	Requirement	AASHTO Test No.
Viscosity, Saybolt Furol, at 50 °C (122 °F), s	20-150	T 59
% Residue	65% min.	T 59 to 260 °C (500 °F)
Oil Distillate by Volume, %	7% max.	T59
Tests on Residue from Distillation:		
Solubility in Trichloroethylene, %	97.5 min.	T 44

(e) *Recycling Agent.* Recycling Agent for Item 406, Cold Bituminous Pavement (Recycle), shall be either a high float emulsified asphalt (polymerized) or an emulsified recycling agent as follows:

1. High Float Emulsified Asphalt (Polymerized). High Float Emulsified Asphalt (Polymerized) for Cold Bituminous Pavement (Recycle) shall be an emulsified blend of polymer modified asphalt, water, and emulsifiers conforming to Table 702-6 for HFMS-2sP. The asphalt cement shall be polymerized prior to emulsification, and shall contain at least 3 percent polymer.

   The emulsion standing undisturbed for a minimum of 24 hours shall show no white, milky separation, and shall be smooth and homogeneous throughout.

   The emulsion shall be pumpable and suitable for application through a pressure distributor.

Table 702-6
HIGH FLOAT EMULSIFIED ASPHALT
(POLYMERIZED) (HFMS-2sP)

Property	Requirement		AASHTO Test
	Minimum	Maximum	
Tests on Emulsion:			
Viscosity, Saybolt Furol at 50 °C (122 °F), sec	50	450	T 59
Storage Stability test, 24 hours, %		1	T 59
Sieve test, %		0.10	T 59
% Residue[1]	65		T 59
Oil distillate by volume, %	1	7	T 59
Tests on Residue:			
Penetration, 25 °C (77 °F), 100g, 5 sec	150	300[2]	T 49
Float Test, 60 °C (140 °F), sec	1200		T 50
Solubility in TCE, %	97.5		T 44
Elastic Recovery, 4 °C (39.2 °F), %	50		T 301

[1]400 ± 10° F maximum temperature to be held for 15 minutes.
[2]When approved by the Engineer, Emulsified Asphalt (HFMS-2sP) with a residual penetration greater than 300 dmm may be used with Cold Bituminous Pavement (Recycle) to address problems with cool weather or extremely aged existing pavement. Emulsified Asphalt (HFMS-2sP) with a residual penetration greater than 300 dmm shall meet all properties listed in Table 702-4 except that Elastic Recovery shall be reported for information only.

2. *Emulsified Recycling Agent.* Emulsified Recycling Agent for use in Cold Bituminous Pavement (Recycle) shall conform to the requirements in Table 702-7.

Table 702-7
EMULSIFIED RECYCLING AGENT

Property	Requirement		Test
	Minimum	Maximum	
Tests on Emulsion:			
Viscosity @ 25 °C, SFS	20	200	ASTM D 244
Pumping Stability	Pass		GB Method[1]
Sieve Test, %w		0.1	ASTM D 244[2]
Cement Mixing, %w		2.0	ASTM D 244
Particle Charge	Positive		ASTM D 244
Conc. Of Oil Phase	64		ASTM D 244[3]
Tests on Residue:			
Viscosity @ 60 °C , CST	2000	4000	ASTM D 2170
Flash Point, COC, °C (° F)	232		ASTM D 92
Maltenes Dist. Ratio[4] $\frac{PC+A_1}{S+A_2}$	0.3	0.6	ASTM D 2006
PC/S Ratio	0.4		ASTM D 2006
Asphaltenes, % max.		11.0	ASTM D 2006

[1]Pumping stability is determined by charging 450 ml of emulsion into a one liter beaker and circulating the emulsion through a gear pump (Roper 29.B22621) having a 6.3 mm (1/4 inch) inlet and outlet. The emulsion passes if there is no significant separation after circulating ten minutes.
[2]Test procedure identical with ASTM D 244 except that distilled water shall be used in place of 2 percent sodium oleate solution.
[3]ASTM D 244 Evaporation Test for percent of residue is modified by heating 50 gram sample to 149°C (300 °F) until foaming ceases, then cooling immediately and calculating results.
[4]In the Maltenes Distribution Ratio Test by ASTM Method D 2006.

PC = Polar Compounds S = Saturates
A_1 = First Acidaffin A_2 = Second Acidaffins

(f) Asphalt Rejuvenating Agents. Asphalt rejuvenating agents (ARA) shall be composed of a petroleum resin-oil base uniformly emulsified with water and shall conform to the physical and chemical requirements of Table 702-8 or ASTM D 4552.

Table 702-8
ASPHALT REJUVENATING AGENT

Property	Test Method	Requirement
Viscosity, S.F., @ 25 °C (77 °F), s	ASTM D 244	20-40
[1]Residue, % min.	ASTM D 244	60-65
[2]Miscibility Test	ASTM D 244	No coagulation
[3]Sieve Test, % max.	ASTM D 244	0.10
Particle Charge Test	ASTM D 244	Positive
ASTM D244 (Mod):		
Viscosity, 60 °C (140 °F), mm^2/s	ASTM D 445	100 - 200
Flash Point, COC, °C, min.	ASTM D 92	196
Asphaltenes, % max.	ASTM D2006	1.0
[4]Maltenes Dist. Ratio $\frac{PC+A_1}{S+A_2}$	ASTM D 2006	0.3-0.6
Saturated Hydrocarbons, %	ASTM D 2006	21-28

[1] ASTM D244 Modified Evaporation Test for percent of residue is made by heating 50-gram sample to 149 °C (300 °F) until foaming ceases, then cooling immediately and calculating results.
[2] Test procedure identical with ASTM D244 except that 0.02 Normal Calcium Chloride solution shall be used in place of distilled water.
[3] Test procedure identical with ASTM D244 except that distilled water shall be used in place of 2% sodium oleate solution.
[4] In the Maltenes Distribution Ratio Test by ASTM Method D4124:

PC = Polar Compounds S = Saturates
A_1 = First Acidaffin A_2 = Second Acidaffins

For hot-in-place recycling ARA-1P is an acceptable alternative to ARA. ARA-1P shall meet the requirements below:

Emulsified Polymer Modified Asphalt Rejuvenating Agent (ARA-1P) for use in hot-in-place recycling of bituminous pavements shall be modified with a minimum of 1.5 percent styrene-butadiene solution polymer. The finished product shall conform to the physical requirements listed in Table 702-9 below.

Table 702-9
ARA-1P

Property	Test Method	Min	Max
Test on Emulsion			
Viscosity, Saybolt-Furol @ 77 ºF, s	ASTM D 244		100
Residue @ 350 ºF, %	ASTM D 244 Mod	60	
Sieve Test, %	ASTM D 244		0.10
Oil distillate, %	ASTM D 244		2.0
Test on Residue			
Penetration @ 39.2 ºF, 100g, 5s, dmm	ASTM D-5 Modified	150	250
Asphaltenes, %	ASTM D 4124		15

702.03 (unused)

702.04 Hot Poured Joint and Crack Sealant. Hot poured material for filling joints and cracks shall conform to the requirements of ASTM D 6690, Type II or Type IV. The concrete blocks used in the Bond Test shall be prepared in accordance with CP-L 4101.

Sealant material shall be supplied pre-blended, pre-reacted, and prepackaged. If supplied in solid form the sealant material shall be cast in a plastic or other dissolvable liner having the capability of becoming part of the crack sealing liquid. The sealant shall be delivered in the manufacturer's original sealed container.

Each container shall be legibly marked with the manufacturer's name, the trade name of the sealer, the manufacturer's batch or lot number, the application temperature range, the recommended application temperature, and the safe heating temperature.

The sealant shall be listed in CDOT's Approved Products List prior to use.

September 29, 2011

REVISION OF SECTION 702
HOT POURED JOINT AND CRACK SEALANT

Section 702 of the Standard Specifications is hereby revised for this project as follows:

In subsection 702.06, first paragraph, delete the first sentence and replace with the following:

Hot poured material for filling joints and cracks shall conform to the requirements of ASTM D 6690, Type II or Type IV.

REVISION OF SECTION 703
AGGREGATE FOR BASES

Section 703 of the Standard Specifications is hereby revised for this project as follows:

In subsection 703.03, first paragraph, delete the first sentence and replace with the following:

Aggregates for bases other than Aggregate Base Coarse (RAP) shall be crushed stone, crushed slag, crushed gravel, natural gravel, crushed reclaimed concrete or crushed reclaimed asphalt pavement (RAP). All materials except Aggregate Base Course (RAP) shall conform to the quality requirements of AASHTO M 147 except that the requirements for the ratio of minus 75 µm (No. 200) sieve fraction to the minus 425 µm (No. 40) sieve fraction, stated in 3.2.2 of AASHTO M 147, shall not apply.

The requirements for the Los Angeles wear test (AASHTO T 96 & ASTM C535) shall not apply to Class 1, 2, and 3. Aggregates for bases shall meet the grading requirements of Table 703-3 for the class specified for the project, unless otherwise specified.

REVISION OF SECTION 703
AGGREGATES FOR HOT MIX ASPHALT

Section 703 of the Standard Specifications is hereby revised for this project as follows:

Delete subsection 703.04 and replace with the following:

703.04 Aggregates for Hot Mix Asphalt. Aggregates for hot mix asphalt (HMA) shall be of uniform quality, composed of clean, hard, durable particles of crushed stone, crushed gravel, natural gravel, or crushed slag. Excess of fine material shall be wasted before crushing. A percentage of the aggregate retained on the 4.75 mm (No. 4) sieve for Gradings S, SX and SG— and on the 2.36 mm (No. 8) sieve for Gradings SF and ST—shall have at least two mechanically induced fractured faces when tested in accordance with Colorado Procedure 45. This percentage will be specified in Table 403-1, as revised for the project in Section 403. The angularity of the fine aggregate shall be a minimum of 45.0 percent when determined according to AASHTO T 304. Grading SF mixes, when determined by RME, may not require fine aggregate angularity of 45.0 percent. Aggregate samples representing each aggregate stockpile shall be non-plastic if the percent of aggregate passing the 2.36 mm (No. 8) sieve is greater than or equal to 10 percent by weight of the individual aggregate sample. Plasticity will be determined in accordance with AASHTO T 90. The material shall not contain clay balls, vegetable matter, or other deleterious substances.

The aggregate for Gradings ST, S, SX and SG shall have a percentage of wear of 45 or less when tested in accordance with AASHTO T 96.

Table 703-4
MASTER RANGE TABLE FOR HOT MIX ASPHALT

Sieve Size	Percent by Weight Passing Square Mesh Sieves				
	Grading SF**	**Grading ST**	**Grading SX**	**Grading S**	**Grading SG**
37.5 mm (1½″)					100
25.0 mm (1″)				100	90 – 100
19.0 mm (¾″)			100	90 – 100	
12.5 mm (½″)		100	90 – 100	*	*
9.5 mm (⅜″)	100	90 – 100	*	*	*
4.75 mm (#4)	90 – 100	*	*	*	*
2.36 mm (#8)	*	28 – 58	28 – 58	23 – 49	19 – 45
1.18 mm (#16)	30 – 54				
600 μm (#30)	*	*	*	*	*
300 μm (#50)					
150 μm (#100)					
75 μm (#200)	2 – 12	2 – 10	2 – 10	2 – 8	1 – 7

* These additional Form 43 Specification Screens will initially be established using values from the As Used Gradation shown on the Design Mix.
**SF applications are limited and the CDOT Pavement Design Manual should be referenced, prior to use.

Aggregates for stone matrix asphalt (SMA) shall be of uniform quality, composed of clean, hard, durable particles of crushed stone, crushed gravel, or crushed slag. A minimum of 90 percent of the particles retained on the 4.75 mm (No. 4) sieve shall have at least two mechanically induced fractured faces when tested in accordance with Colorado Procedure 45. The particles passing the 4.75 mm (No. 4) sieve shall be the product of crushing rock larger than 12.5 mm (½ inch) and shall be non-plastic when tested in accordance with AASHTO T 90.

Additionally, each source of aggregate for SMA shall meet the following requirements:

(1) No more than 30 percent when tested in accordance with AASHTO T 96 Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

(2) No more than 12 percent when tested in accordance with AASHTO T 104 Soundness of Aggregate by Use of Sodium Sulfate.

The aggregate for Hot Mix Asphalt (HMA) shall meet the requirements of Table 703-4A when tested in accordance with CP-L 4211 Resistance of Coarse Aggregate to Degradation by Abrasion in the Micro-Deval Apparatus. The Contractor shall be assessed a price reduction of $1000 for each production sample of the combined aggregate with a value greater than 20 according to CP-L 4211.

Table 703-4A
AGGREGATE DEGRADATION BY ABRASION
IN THE MICRO-DEVAL CP-L 4211

	Not to exceed
Combined Aggregate (Mix Design)	18
Combined Aggregate (1/10,000 tons, or fraction thereof during production)	20

October 29, 2015

SECTION 703
AGGREGATE FOR COVER COAT MATERIAL

Section 703 of the Standard Specifications is hereby revised for this project as follows:

Delete subsection 703.05 and replace with the following:

703.05 Aggregate for Cover Coat Material. Aggregates for cover coat material shall be crushed stone, crushed slag, crushed gravel, or natural gravel. Aggregates shall be composed of clean, tough, durable fragments free from an excess of flat, elongated, soft, or disintegrated pieces and free from fragments coated with dirt or other objectionable matter. Slag shall be air-cooled blast-furnace slag reasonably uniform in density.

The aggregate shall conform to the following requirements:

(1) Percentage of wear, Los Angeles Abrasion Test (AASHTO T 96), not more than 35.

(2) The maximum amount of flat and elongated aggregate with a ratio of 3:1 shall not exceed 12 percent as determined by ASTM D4791.

(3) When blast-furnace slag is used, weight per cubic foot shall be at least 70 pounds.

(4) For Type I, II, or IV cover coat material, 90 percent by weight of the particles retained on the 4.75 mm (No. 4) sieve shall have at least two fractured faces when tested in accordance with Colorado Procedure 45.

(5) Lightweight aggregate used for cover coat material shall be an aggregate prepared by expanding shale, clay, or slate in a rotary fired kiln. Lightweight aggregate shall have a dry loose unit weight of 35 to 55 pounds per cubic foot determined in accordance with AASHTO T 19, Shoveling Procedure. The total mass of the test sample of lightweight aggregate used in AASHTO T 96 (Los Angles Abrasion) shall be 2000 g.

Table 703-6
GRADATION SPECIFICATIONS FOR COVER COAT AGGREGATE

Sieve Size	Percent by Weight Passing Square Mesh Sieve		
	9.5 mm (⅜") Type 1	**12.5 mm (½") Type II**	**19.0 mm (¾")* Type IV**
19.0 mm (¾")			100
12.5 mm (½")		100	95-100
9.5 mm (⅜")	100	70-100	60-80
4.75 mm (No. 4)	0-15	0-4	0-10
75 µm (# 200)	0-1.5	0-1.5	0-1.5

*Type IV shall be used only with lightweight aggregates.

July 28, 2011

REVISION OF SECTION 703
CONCRETE AGGREGATES

Section 703 of the Standard Specifications is hereby revised for this project as follows:

Delete the second paragraph of subsection 703.00 and Table 703-1.

Delete subsections 703.01 and 703.02 and replace with the following:

703.01 Fine Aggregate for Concrete. Fine aggregate for concrete shall conform to the requirements of AASHTO M 6, Class A. The minimum sand equivalent, as tested in accordance with Colorado Procedure 37 shall be 80 unless otherwise specified. The fineness modulus, as determined by AASHTO T 27, shall not be less than 2.50 or greater than 3.50 unless otherwise approved.

703.02 Coarse Aggregate for Concrete. Coarse aggregate for concrete shall conform to the requirements of AASHTO M 80, Class A aggregates, except that the percentage of wear shall not exceed 45 when tested in accordance with AASHTO T 96.

REVISION OF SECTION 712
GEOTEXTILES

Section 712 of the Standard Specifications is hereby revised for this project as follows:

In subsection 712.08, delete the third and fourth paragraphs and replace with the following:

Physical requirements for all geotextiles shall conform to the requirements of AASHTO M-288. Materials shall be selected from the New York Department of Transportation's Approved Products List of Geosynthetic materials that meet the National Transportation Product Evaluation Program (NTPEP) and AASHTO M-288 testing requirements. The current list of products that meet these requirements is located at:

www.dot.ny.gov

The Geotextile Approved Products List may be accessed by clicking on the following tabs once on the NYDOT site to:

(1) A To Z Site Index
(2) Approved List
(3) Approved Products
(4) Materials and Equipment
(5) Geosynthetics for Highway Construction
(6) Geotextiles

In subsection 712.08, delete Table 712-2 and replace with the following

Table 712-2
TYPICAL VALUES OF PERMEABILITY COEFFICIENTS[1]

Turbulent Flow	Particle Size Range Millimeters (inches)		Effective Size	Permeability Coefficient k cm/s
	D max	D min	D 20 mm (inches)	
Derrick STONE	3000 (120)	900 (36)	1200 (48)	100
One-man STONE	300 (12)	100 (4)	150 (6)	30
Clean, fine to coarse GRAVEL	80 (3)	10 (¼)	13 (½)	10
Fine, uniform GRAVEL	8 (⅜)	1.5 ($^1/_{16}$)	3 (⅛)	5
Very coarse, clean, uniform SAND	3 (⅛)	0.8 ($^1/_{32}$)	1.5 ($^1/_{16}$)	3
Laminar Flow				
Uniform, coarse SAND	2 (⅛)	0.5 ($^1/_{64}$)	0.6	0.4
Uniform, medium SAND	0.5	0.25	0.3	0.1
Clean, well-graded SAND & GRAVEL	10	0.05	0.1	0.01
Uniform, fine SAND	0.25	0.05	0.06	40×10^{-4}
Well-graded, silty SAND & GRAVEL	5	0.01	0.02	4×10^{-4}
Silty SAND	2	0.005	0.01	1.0×10^{-4}
Uniform SILT	0.05	0.005	0.006	0.5×10^{-4}
Sandy CLAY	1.0	0.001	0.002	0.05×10^{-4}
Silty CLAY	0.05	0.001	0.0015	0.01×10^{-4}
CLAY (30% to 50% clay sizes)	0.05	0.0005	0.0008	0.001×10^{-4}
Colloidal CLAY (-2 μm 50%)	0.01	10	40	10^{-9}

[1] Basic Soils Engineering, R.K. Hough, 2nd Edition, Ronald Pess Co.; 1969, Page 76.

Note: Since the permeability coefficient of the soil will be unknown in most non-critical, non-severe applications for erosion control and drainage, the soil-permeability coefficients listed in Table 712-2 may be used as a guide for comparing the permeability coefficient of the fabric with that of the in-place soil

February 3, 2011

REVISION OF SECTION 712
WATER FOR MIXING OR CURING CONCRETE

Section 712 of the Standard Specifications is hereby revised for this project as follows:

Delete subsection 712.01 and replace it with the following:

712.01 Water. Water used in mixing or curing concrete shall be reasonably clean and free of oil, salt, acid, alkali, sugar, vegetation, or other substance injurious to the finished product. Concrete mixing water shall meet the requirements of ASTM C1602. The Contractor shall perform and submit tests to the Engineer at the frequencies listed in ASTM C1602. Potable water may be used without testing. Where the source of water is relatively shallow, the intake shall be so enclosed as to exclude silt, mud, grass, and other foreign materials.

REVISION OF SECTION 713
EPOXY PAVEMENT MARKING

Section 713 of the Standard Specifications is hereby revised for this project as follows:

Delete subsection 713.17 and replace with the following:

713.17 Epoxy Pavement Marking Material. Only epoxy pavement marking material that is on the Department's Approved Products List may be used. Batches or lots of approved products will be accepted on the project by certified test report (CTR). The CTR shall confirm that the material meets all CDOT requirements and is the same material that was preapproved in the product evaluation process.

(a) *Formulation.* Epoxy pavement marking material shall be a two component, 100 percent solids, material formulated to provide simple volumetric mixing ratio of two volumes of component A and one volume of component B unless otherwise recommended by the material manufacturer.

(b) *Composition.* The component A of both white and yellow shall be within the following limits:

Resin / Pigment Components (% by Weight)

Pigment	WHITE:	YELLOW:
TiO_2, ASTM D476, Type II	18-25	10-17
Organic Yellow		6-10
Epoxy Resin	75-82	73-84

The pigment for yellow epoxy shall contain no lead or other material such that the cured epoxy could be considered a hazardous waste under EPA or CDPHE regulations. The Contractor shall submit to the Engineer a manufacturer's certification of compliance with this requirement.

(c) *Epoxide Number.* The epoxy number of the epoxy resin shall be the manufacturers target value ± 50 as determined by ASTM D 1652 for white and yellow component A on pigment free basis.

(d) *Amine Number.* The amine number on the curing agent (component B) shall be the manufacturers target value ± 50 per ASTM D 2071.

(e) *Toxicity.* Upon heating to application temperature, the material shall not produce fumes which are toxic or injurious to persons or property.

(f) *Color.* The epoxy material, without drop-on beads, shall correspond following requirements:

White – Federal Standard No. 595B-17925. The Yellowness Index (YI) of white shall not exceed 8.0 per ASTM E-313-10 initially.

After 72 QUV exposure per ASTM G-154 with a UVA-340 Lamp at an irradiance of 0.89 W/m2/nm with alternating cycles of 4 hours U.V @ 140º F, and 4 hours humidity @ 122º F the YI shall not exceed 20 when measured per ASTM E-313.

The YI, after 500-hour QUV testing as above, shall not exceed 35.

Yellow – Materials for pavement markings shall meet the initial daytime chromaticity that fall within the box created by the following corner points:

Initial Daytime Chromaticity Coordinates (Corner Points)

	1	2	3	4
x	0.530	0.510	0.455	0.472
y	0.456	0.485	0.444	0.400

After 72-hour QUV exposure per ASTM G-154 with a UVA-340 Lamp at an irradiance of 0.89 W/m2/nm with alternating cycles of 4 hours U.V @ 140º F, and 4 hours humidity @ 122º F the Yellow shall fall within the initial chromaticity coordinates stated above.

(g) *Drying Time.* The epoxy pavement marking material shall have a setting time to a no-tracking condition of not more than 25 minutes at a temperature of 73° F and above.

(h) *Curing.* The epoxy material shall be capable of fully curing under the constant surface temperature condition of 35° F and above.

(i) *Adhesion to Concrete.* The catalyzed epoxy pavement marking material, when tested according to ACI Method 503, shall *have* such a high degree of adhesion to the specified (4000 psi minimum) concrete surface that there shall be a 100 percent concrete failure in the performance of this test

(j) *Hardness.* The epoxy pavement marking materials, when tested according to ASTM D 2240, shall have a minimum Shore D Hardness value of 80. Samples shall be allowed to cure at room temperature, 75 ± 2 °F for a minimum of 72 hours and a maximum of 168 hours prior to performing the indicated test.

(k) *Abrasion Resistance.* The abrasion resistance shall be evaluated on Taber Abrader with a 1000 gram load and CS-17 wheels. The duration of the test shall be 1000 cycles. The wear index shall be calculated based on ASTM test method C-501 and the wear index for the catalyzed material shall not be more than 80. The tests shall be run on cured samples of material which have been applied at film thickness of 15 ± ½ mils to code S-16 stainless steel plates. The samples shall be allowed to cure at 75 ± 2 °F for a minimum of 72 hours prior to performing the indicated tests.

(l) *Tensile Strength.* When tested according to ASTM D 638, the epoxy pavement marking materials shall have a tensile strength of not less than 6000 psi. The Type IV Specimens shall be cast in a suitable mold and pulled at the rate of ¼ inch per minute by a suitable dynamic testing machine. The samples shall be allowed to cure at room temperature (75 ± 2 °F) for a minimum of 72 hours and a maximum of 168 hours prior to performing the indicated tests.

(m) *Compressive Strength.* When tested according to ASTM D 695, the catalyzed epoxy pavement marking materials shall have a compressive strength of not less than 12,000 psi. The cast sample shall be conditioned at room temperature, 75 ± 2 °F, for a minimum of 72 hours and a maximum of 168 hours prior to performing the tests. The rate of compression of these samples shall be no more than ¼ inch per minute.

November 6, 2014

REVISION OF SECTION 713
SIGN PANEL BACKGROUNDS

Section 713 of the Standard Specifications is hereby revised for this project as follows:

In subsection 713.04, delete the third paragraph and replace with the following:

The aluminum sign blanks shall receive a chemical treatment conforming to ASTM B 449, Class 2 or ASTM B921 prior to placement of reflective sheeting.

A. AFFIRMATIVE ACTION REQUIREMENTS

Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246)

1. The Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area are as follows:

Goals and Timetable for Minority Utilization

Timetable - Until Further Notice			
Economic Area	**Standard Metropolitan Statistical Area (SMSA)**	**Counties Involved**	**Goal**
157 (Denver)	2080 Denver-Boulder	Adams, Arapahoe, Boulder, Denver, Douglas, Gilpin, Jefferson.....	13.8%
	2670 Fort Collins	Larimer.....	6.9%
	3060 Greeley	Weld.....	13.1%
	Non SMSA Counties	Cheyenne, Clear Creek, Elbert, Grand, Kit Carson, Logan, Morgan, Park, Phillips, Sedgwick, Summit, Washington & Yuma.....	12.8%
158 (Colo. Spgs. - Pueblo)	1720 Colorado Springs	El Paso, Teller.....	10.9%
	6560 Pueblo	Pueblo.....	27.5%
	Non SMSA Counties	Alamosa, Baca, Bent, Chaffee, Conejos, Costilla, Crowley, Custer, Fremont, Huerfano, Kiowa, Lake, Las Animas, Lincoln, Mineral, Otero, Prowers, Rio Grande, Saguache.....	19.0%
159 (Grand Junction)	Non SMSA	Archuleta, Delta, Dolores, Eagle, Garfield, Gunnison, Hinsdale, La Plata, Mesa, Moffat, Montezuma, Montrose, Ouray, Pitkin, Rio Blanco, Routt, San Juan, San Miguel	10.2%
156 (Cheyenne - Casper WY)	Non SMSA	Jackson County, Colorado.....	7.5%
GOALS AND TIMETABLES FOR FEMALE UTILIZATION Until Further Notice.....6.9% -- Statewide			

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts meet the goals established for the geographical area where the contract resulting form this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Par 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.

4. As used in this specification, and in the contract resulting from this solicitation, the "covered area" is the county or counties shown on the Invitation for Bids and on the plans. In cases where the work is in two or more counties covered by differing percentage goals, the highest percentage will govern.

B. STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS

Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246)

1. As used in these Specifications:

   a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;

   b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;

   c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.

   d. "Minority" includes;

      (i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
      (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
      (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
      (iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractor toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered Construction contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any office of Federal Contract Compliance Programs Office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following;

   a. Ensure and maintain a working environment free of harassment, intimidation , and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

   b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its union have employment opportunities available, and maintain a record of the organization's responses.

   c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source of community organization and of what action was taken with respect to each individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.

   d. Provide immediate written notification to the Director when the union with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when he Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

   e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

   f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc., by specific review of the policy with all management personnel and with all minority and female employees at least once a year, and by posting the Contractor's EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the Contractor's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foreman, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's workforce.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc. such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and Contractor's activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisor's adherence to and performance under the Contractor's EEO policies and affirmative action obligation.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union contractor-community, or other similar group of which the Contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these specifications provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goal and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even thought the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13 The Contractor in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form, however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

C. SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES.

1. *General.*

   a. Equal employment opportunity requirements not to discriminate and to take affirmative action to assure equal employment opportunity as required by Executive Order 11246 and Executive Order 11375 are set forth in Required Contract. Provisions (Form FHWA 1273 or 1316, as appropriate) and these Special Provisions which are imposed pursuant to Section 140 of Title 23, U.S.C., as established by Section 22 of the Federal-Aid highway Act of 1968. The requirements set forth in these Special Provisions shall constitute the specific affirmative action requirements for project activities under this contract and supplement the equal employment opportunity requirements set forth in the Required Contract provisions.

   b. The Contractor will work with the State highway agencies and the Federal Government in carrying out equal employment opportunity obligations and in their review of his/her activities under the contract.

   c. The Contractor and all his/her subcontractors holding subcontracts not including material suppliers, of $10,000 or more, will comply with the following minimum specific requirement activities of equal employment opportunity: (The equal employment opportunity requirements of Executive Order 11246, as set forth in Volume 6, Chapter 4, Section 1, Subsection 1 of the Federal-Aid Highway Program Manual, are applicable to material suppliers as well as contractors and subcontractors.) The Contractor will include these requirements in every subcontract of $10,000 or more with such modification of language as is necessary to make them binding on the subcontractor.

2. *Equal Employment Opportunity Policy*. The Contractor will accept as his operating policy the following statement which is designed to further the provision of equal employment opportunity to all persons without regard to their race, color, religion, sex, or national origin, and to promote the full realization of equal employment opportunity through a positive continuing program;

   It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, or national origin. Such action shall include; employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, preapprenticeship, and/or on-the-job training.

3. *Equal Employment Opportunity Officer*. The Contractor will designate and make known to the State highway agency contracting officers and equal employment opportunity officer (herein after referred to as the EEO Officer) who will have the responsibility for an must be capable of effectively administering and promoting an active contractor program of equal employment opportunity and who must be assigned adequate authority and responsibility to do so.

4. *Dissemination of Policy*.

   a. All members of the Contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the Contractor's equal employment opportunity policy and contractual responsibilities to provide equal employment opportunity in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum;

      (1) Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the Contractor's equal employment opportunity policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer or other knowledgeable company official.

(2) All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer or other knowledgeable company official, covering all major aspects of the Contractor's equal employment opportunity obligations within thirty days following their reporting for duty with the Contractor.

(3) All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer or appropriate company official in the Contractor's procedures for locating and hiring minority group employees.

b. In order to make the Contractor's equal employment opportunity policy known to all employees, prospective employees and potential sources of employees, i.e., schools, employment agencies, labor unions (where appropriate), college placement officers, etc., the Contractor will take the following actions:

(1) Notices and posters setting forth the Contractor's equal employment opportunity policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

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(2) The Contractor's equal employment opportunity policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

5. *Recruitment*.

a. When advertising for employees, the Contractor will include in all advertisements for employees the notation; "An Equal Opportunity Employer." All such advertisements will be published in newspapers or other publications having a large circulation among minority groups in the area from which the project work force would normally be derived.

b. The Contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants, including, but not limited to, State employment agencies, schools, colleges and minority group organizations. To meet this requirement, the Contractor will, through his EEO Officer, identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the Contractor for employment consideration.

In the event the Contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the Contractor's compliance with equal employment opportunity contract provisions. (The U.S. Department of Labor has held that where implementation of such agreements have the effect of discriminating against minorities or women, or obligates the Contractor to do the same, such implementation violates Executive Order 11246, as amended.)

c. The Contractor will encourage his present employees to refer minority group applicants for employment by posting appropriate notices or bulletins in areas accessible to all such employees. In addition, information and procedures with regard to referring minority group applicants will be discussed with employees.

`6. *Personnel Actions*. Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, or national origin. The following procedures shall be followed;

a. The Contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The Contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The Contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the Contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The Contract will promptly investigate all complaints of alleged discrimination made to the Contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the Contractor will inform every complainant of all of his avenues of appeal.

7. *Training and Promotion*.

a. The Contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.

b. Consistent with the Contractor's work force requirements and as permissible under Federal and State regulations, the Contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training.

c. The Contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The Contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.

8. *Unions*. If the Contractor relies in whole or in part upon unions as a source of employees, the Contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women with the unions, and to effect referrals by such unions of minority and female employees. Actions by the Contractor either directly or thorough a contractor's association acting as agent will include the procedures set forth below:

a. The Contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.

b. The Contractor will use best efforts to incorporate an equal employment opportunity clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, or national origin.

c. The Contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the Contractor, the Contractor shall so certify to the State highway department and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the Contractor with a reasonable flow of minority and women referrals within he time limit set forth in the collective bargaining agreement, the Contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion , sex or national origin; making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The U.S. Department of Labor has held that it shall be no excuse that the union with which the Contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the Contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such Contractor shall immediately notify the State highway agency.

9. *Subcontracting*.

a. The Contractor will use his best efforts to solicit bids from and to utilize minority group subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of minority-owned construction firms from State highway agency personnel.

b. The Contractor will use his best efforts to ensure subcontractor compliance with their equal employment opportunity obligations.

10. *Records and Reports.*

a. The Contractor will keep such records as are necessary to determine compliance with the Contractor's equal employment opportunity obligations. The records kept by the Contractor will be designed to indicate:

(1) The number of minority and nonminority group members and women employed in each work classification on the project.

(2) The Progress and efforts being made in cooperation with unions to increase employment opportunities for minorities and women (applicable only to contractors who rely in whole or in part on unions as a source of their work force).

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees, and

(4) The progress and efforts being made in securing the services of minority group subcontractors or subcontractors with meaningful minority and female representation among their employees.

b. All such records must be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the State highway agency and the Federal Highway Administration.

c. The Contractors will submit an annual report to the State highway agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form PR 1391.

DISADVANTAGED BUSINESS ENTERPRISE (DBE) REQUIREMENTS

1. Overview

The Disadvantaged Business Enterprise (DBE) Program is a federally-mandated program that seeks to ensure non-discrimination in the award of U.S. Department of Transportation (DOT)-assisted contracts and to create a level playing field on which DBEs can compete fairly for DOT-assisted contracts. To such end, CDOT sets a contract goal for DBE participation for each DOT-assisted Contract.

In order to be awarded the Contract, the bidder shall show that it has committed to DBE participation sufficient to meet the goal or has otherwise made good faith efforts to do so. CDOT will amend the goal prior to award if the lowest apparent bidder demonstrates that good faith efforts were made but sufficient commitments to meet the goal could not be obtained.

CDOT will monitor the progress of the Contractor throughout the project to ensure that the Contractor's DBE commitments are being fulfilled. Modifications to the commitments must be approved by CDOT. CDOT may withhold payment or seek other contractual remedies if the Contractor is not complying with the requirements of this special provision. Upon completion of the Contract, CDOT may reduce the final payment to the Contractor if the Contractor has failed to fulfill the commitments or made good faith efforts to meet the contract goal.

For general assistance regarding the DBE program and compliance, contact CDOT's Civil Rights and Business Resource Center (CRBRC) at (303)757-9234. For project specific issues, contact the Engineer.

All forms referenced herein can be found on the CDOT website in the forms library:

http://www.coloradodot.info/library/forms/cdot-forms-by-number

2. Contract Assurance

By submitting a proposal for this Contract, the bidder agrees to the following assurance and shall include it verbatim in all (including non-DBE) subcontracts:

> The contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as CDOT deems appropriate.

3. Definitions

Terms not defined herein shall have the meaning provided in the CDOT Standard Specifications for Road and Bridge Construction.

A. *Commitment.* A commitment is a portion of the Contract, identified by dollar amount and work area, designated by the bidder or Contractor for participation by a particular DBE. Commitments are submitted to CDOT via Form 1414, Anticipated DBE Participation Plan, or via Form 1420, DBE Plan Modification Request. Once approved, commitments are obligations of the Contract that are enforceable by CDOT.

B. *Commercially Useful Function (CUF).* Responsibility for the execution of the work and carrying out such responsibilities by actually performing, managing and supervising the work as further described in Section 8 below.

C. *Contract Goal.* The percentage of the contract designated by CDOT for DBE participation. The contract goal for this contract is provided in the Project Special Provision Disadvantaged Business Enterprise

Contract Goal.

(1) The bidder/Contractor shall make good faith efforts to fulfill the contract goal with eligible DBE participation. For determining whether the contract goal was met prior to award, the contract goal shall be based upon the proposal amount excluding force account items. For determining whether the contract goal was met during and upon completion of the project, the contract goal shall be based upon the total earnings amount.

(2) If the lowest apparent bidder demonstrates that it was unable to meet the contract goal but made good faith efforts to do so, the contract goal will be amended and the revised contract goal will be provided on Form 1417, Approved DBE Participation Plan.

D. *Disadvantaged Business Enterprise (DBE).* A Colorado-certified Disadvantaged Business Enterprise listed on the Colorado Unified Certification Program (UCP) DBE Directory at www.coloradodbe.org.

E. *DBE Program Manual.* The manual maintained by the CRBRC which details CDOT's policies and procedures for administering the DBE program. A copy of the DBE Program Manual is available on the CRBRC webpage.

F. *Eligible Participation.* Work by a DBE that counts toward fulfillment of the contract goal as described in Section 4 below.

G. *Good Faith Efforts.* All necessary and reasonable steps to achieve the contract goal which, by their scope, intensity, and appropriateness to the objective, could reasonably be expected to obtain sufficient DBE participation, even if not fully successful. Good faith efforts are evaluated prior to award and throughout performance of the Contract. For guidance on good faith efforts, see 49 CFR Part 26, Appendix A.

H. *Joint Check.* A check issued by the Contractor or one of its subcontractors to a DBE firm and a material supplier or other third party for materials or services to be incorporated into the work.

I. *Reduction.* A reduction occurs when the Contractor reduces a commitment to a DBE. A reduction constitutes a partial termination.

J. *Subcontractor.* An individual, firm, corporation or other legal entity to whom the Contractor sublets part of the Contract. For purposes of this special provision, the term subcontractor includes suppliers.

K. *Substitution.* Substitution occurs when a Contractor seeks to find another DBE to perform work on the contract as a result of a reduction or termination.

L. *Termination.* A termination occurs when a Contractor no longer intends to use a DBE for fulfillment of a commitment.

M. *Total Earnings Amount:* Amount of the Contract earned by the Contractor, including approved changes and approved force account work performed, but not including any deductions for liquidated damages, price reduced material, work time violations, overweight loads or liens. The amount of the Contract earned does not include plan force account items (i.e. OJT, pavement incentives, etc).

N. *Work Code.* A code to identify the work that a DBE is certified to perform. A work code includes a six digit North American Industry Classifications System code plus a descriptor. Work codes are listed on a firm's profile on the UCP DBE Directory. The Contractor may contact the CRBRC to receive guidance on whether a work code covers the work to be performed.

4. Eligible Participation

The following rules will be used to determine whether work performed by a DBE qualifies as eligible participation on the Contract:

A. *Work Must be Identified in Commitment.* The work performed by the DBE must be reasonably construed to be included in the work area and work code identified by the Contractor in the approved commitment.

(1) If the Contractor intends to use a DBE for work that was not listed in the commitment, the Contractor shall submit Form 1420, DBE Participation Plan Modification for approval of the modification. Unapproved work will not count toward the contract goal.

(2) A DBE commitment cannot be modified to include work for which the DBE was not certified at the time of the approval of the original commitment.

B. *DBE Must be Certified to Perform the Work.* The DBE must be certified to perform the work upon submission of the commitment and upon execution of the DBE's subcontract.

(1) When a commitment has been made, but upon review of Form 205 or 205B, Sublet Permit, CDOT determines that the DBE is no longer certified in the work code which covers the work to be performed, the Contractor may not use the DBE's participation toward the contract goal. The Contractor shall terminate the DBE commitment and seek substitute DBE participation in accordance with Section 9 below.

(2) A DBE's work will continue to count as eligible participation if the DBE was certified upon approval of Form 205 or 205B, Sublet Permit and the certification status changes during the performance of the work.

(3) Suppliers must be certified upon execution of the purchase order.

C. *DBE Performs the Work*. Eligible participation will only include work actually performed by the DBE with its own forces.

(1) Work performed by the DBE includes the cost of supplies and materials obtained by the DBE for its work on the Contract, including any equipment leased by the DBE, provided that such supplies or equipment are not purchased or leased from the Contractor or a subcontractor that is subletting to the DBE.

(2) If CDOT determines that a DBE has not performed a CUF on the project, no participation by such DBE shall count toward the contract goal.

D. *DBE Subcontracts to Another Firm.* When a DBE subcontracts part of the work, the value of the subcontracted work may only be counted toward the goal if the subcontractor is a DBE. Performance by non-DBE subcontractors, including non-DBE trucking firms and owner-operators, shall be deducted from the DBE's participation.

E. *DBE Received Payment for the Work.* Eligible participation only includes work for which the DBE has received payment, including the release of its retainage.

F. *Special Calculations for Suppliers.* When a DBE supplies goods on a project, the DBE may be classified as a manufacturer, dealer or broker. The DBE's status as a manufacturer, dealer or broker is determined on a contract-by-contract basis and is based upon the actual work performed.

(1) When a DBE is deemed to be acting as a manufacturer, one hundred percent of the commitment will count as eligible participation.

(2) When a DBE is deemed to be acting as a regular dealer (i.e. non-manufacturer supplier), only sixty percent of the commitment will count as eligible participation.

(3) When a DBE is deemed to be acting as a broker, only the reasonable brokerage fee will count as eligible participation.

G. *Reasonable Fee for Contract-Specific Services.* Services shall count toward the contract goal only if they are specifically required for the performance of the Contract. Non-contract specific expenses may not be counted toward the contract goal. Fees for services must be reasonable. Services include but are not limited to professional services, public involvement, etc. In the case of temporary employment placement agencies, only the placement fee for an individual to be specifically and exclusively used for work on the contract shall count as eligible participation.

H. *Pre-Approval for Joint Venture Participation.* When a DBE is a participant in a joint venture, the DBE must apply to CDOT to determine how much of the work performed by the joint venture will count toward the contract goal. The DBE shall complete Form 893, Information for Determining DBE Participation when a Joint Venture Includes a DBE. Form 893 shall be submitted to CDOT no less than ten days before the submission of the Proposal to ensure sufficient time for review.

5. Proposal Requirements

In order to be eligible for award, the following shall be submitted with the proposal, or, for electronic bidders, via email to cdot_hq_dbeforms@state.co.us by the proposal submission deadline. In order to avoid an error within the electronic bidding system, electronic bidders shall also enter the total percentage of anticipated eligible DBE participation into the Form 714 and electronically sign the form.

A. *Form 1413, Bidders List.* The bidder shall list each subcontractor (including both DBE and non-DBE subcontractors) that submitted a quote for participation on the project. Failure to submit a signed Form 1413 will result in rejection of the proposal.

B. *Form 1414, Anticipated DBE Participation Plan*. If the Contract Goal is greater than zero, the bidder shall submit Form 1414 to document anticipated DBE participation.

(1) If the Bidder has not obtained any DBE commitments, it shall still submit Form 1414 documenting zero anticipated participation. If the Contract Goal is greater than zero, failure to submit a signed Form 1414 shall result in rejection of the proposal.

(2) The bidder shall list the DBE, work area(s), commitment amount and estimated eligible participation for each commitment. Once Form 1414 is submitted, a commitment may only be terminated or reduced in accordance with Section 9 below. The bidder is responsible for ensuring that commitments, and the estimated eligible participation resulting therefrom, have been properly calculated prior to submitting its proposal.

(3) If the bidder is a DBE, the bidder must include itself in Form 1414 and list the work area(s) and amount that it intends to self-perform and count as eligible participation on the contract.

(4) Commitments may be made to second tier or lower DBE subcontractors; however, the Contractor is ultimately responsible for the fulfillment of the commitment and shall sign the Form 1415, Commitment Confirmation.

6. Additional Forms Due Prior to Award.

If the contract goal is greater than zero, or if the bidder has voluntarily made commitments, the Bidder shall submit the following forms within five calendar days of selection as the lowest apparent bidder:

A. *Form 1415, Commitment Confirmation*. A Form 1415, Commitment Confirmation shall be obtained from each DBE listed on Form 1414. The bidder shall complete Section 1 and the DBE shall complete Section 2 of Form 1415. Form 1415s shall be consistent with the commitments listed on Form 1414. The bidder shall not modify commitments listed on Form 1414 without good cause and approval from CDOT. The bidder shall contact CDOT if any issues arise which may require the bidder to alter or terminate a commitment.

B. *Form 1416, Good Faith Effort Report.* If the total eligible participation listed on Form 1414 does not meet the contract goal, the lowest apparent bidder shall also submit Form 1416, Good Faith Effort Report and any supporting documentation that the bidder would like considered by CDOT as evidence of good faith efforts.

7. Commitment and Good Faith Effort Review

A. *Commitment Review*. CDOT will evaluate the Form 1414 and each Form 1415 to ensure that it the commitment is valid and has been properly calculated. CDOT may investigate or request additional information in order to confirm the accuracy of a commitment. If CDOT determines that the total estimated eligible participation of the commitments does not meet the contract goal, within two business days of notice from CDOT or within the original five calendar day deadline, whichever is later, the bidder shall submit Form 1416 to CDOT.

B. *Good Faith Effort Review.* If the total eligible participation of Form 1414 and all supporting Form 1415s does not meet the contract goal, CDOT will review Form 1416 and all supporting documentation submitted by the bidder in order to determine whether the bidder has demonstrated good faith efforts to obtain DBE participation. CDOT will use 49 CFR Part 26, Appendix A as a guide for determining whether the bidder made good faith efforts to meet the contract goal. A bidder will be deemed to not have made good faith efforts if the bidder lists a DBE for a work area for which the DBE is not certified and the bidder cannot establish a reasonable basis for its determination. CDOT may consider and approve commitments made after submission of the bid if the Bidder demonstrates that (1) good faith efforts were made prior to submission of the bid and (2) there is a reasonable justification for not obtaining the commitments prior to submission of the bid.

C. *Administrative Reconsideration.* If CDOT determines that the bidder did not demonstrate good faith efforts to meet the contract goal, it will provide the bidder with written notice of its determination and an opportunity to appeal. The process for reconsideration is set forth in the *Good Faith Effort Appeal Process,* which is an Appendix I to the DBE Program Manual. A copy of the *Good Faith Effort Appeal Process* will be included in the written notice from CDOT.

D. *Form 1417, Approved DBE Participation Plan.* If CDOT determines that the bidder has met the contract goal or made good faith efforts to do so, CDOT will issue Form 1417, Approved DBE Participation Plan, documenting the approved commitments. If CDOT determines that the bidder did not meet the contract goal but made good faith efforts to do so, via the Form 1417 CDOT will amend the contract goal in accordance with the commitments that were obtained and attach an explanation of its determination.

8. Ongoing Oversight of DBE Participation

A. *Consistency Review.* CDOT will review Form 205 or 205B, Sublet Permit Application to determine whether the work being sublet is consistent with the DBE commitments. CDOT may withhold approval of the sublet or stop performance of the work if the Contractor has reduced, terminated, or otherwise modified the type or amount of work to be performed by a DBE without seeking prior approval.

B. *Form 1419, DBE Participation Report.* The Contractor shall submit Form 1419, DBE Participation Report to the Engineer on a quarterly basis (January 15, April 15, July 15, and October 15) and upon completion of the Contract. CDOT may withhold progress payments if the quarterly Form 1419 is not received on time. CDOT will not provide final payment on the Contract in accordance with subsection 109.09 of

CDOT's *Standard Specifications for Road and Bridge Construction* until the final Form 1419 has been reviewed and approved.

C. *Joint Checks*. All joint checks must be approved by CDOT before they are used in payment to a DBE. Joint checks used in payments to DBEs will be monitored closely to ensure (1) the DBE is performing a CUF and (2) the joint checks are not being used in a discriminatory manner. The Contractor shall request approval for the use of a joint check in a written letter signed by the DBE and the Contractor, stating the reason for the joint checks and the approximate number of checks that will be needed.

D. *Commercially Useful Function*. CDOT will monitor performance during the Contract to ensure each DBE is performing a CUF. If CDOT determines that a DBE is not performing a CUF, no work performed by such DBE shall count as eligible participation. The DBE, Contractor, and any other involved third parties may also be subject to additional enforcement actions.

(1) When determining whether a DBE is performing a CUF, CDOT will consider the amount of work subcontracted, industry practices, the amount the firm is to be paid compared to the work performed and eligible participation claimed, and any other relevant factors.

(2) With respect to material and supplies used on the Contract, in order to perform a CUF the DBE must be responsible for negotiating price, determining quality and quantity, ordering the material, installing the material, if applicable, and paying for the material itself.

(3) With respect to trucking, in order to perform a CUF, the DBE trucking firm must own and operate at least one fully licensed, insured and operational truck used on the Contract. Additionally, the DBE trucking firm must be responsible for the management and supervision of the entire trucking operation for which it is responsible on the Contract.

(4) A DBE does not perform a CUF when its role is limited to that of an extra participant in a transaction, contract or project through which funds are passed in order to obtain the appearance of DBE participation. CDOT will evaluate similar transactions involving non-DBEs in order to determine whether a DBE is an extra participant.

(5) If a DBE does not perform or exercise responsibility for at least 30 percent of the total cost of its contract with its own work force, or the DBE subcontracts a greater portion of the work than would be expected on the basis of normal industry practice for the type of work involved, CDOT will presume that the DBE is not performing a CUF. The DBE may present evidence to rebut this presumption.

(6) If the Contractor disagrees with CDOT's determination regarding CUF, in accordance with 49 CFR 26.55 the Contractor may seek review of the determination by the applicable USDOT operating administration, however, CUF determination is not subject to administrative appeal.

9. DBE Participation Plan Modifications

A. *Form 1420, DBE Participation Plan Modification Request***.** During the performance of the Contract, the Contractor shall use Form 1420, DBE Participation Plan Modification Request to communicate all requests for *termination*, reduction, substitution, and waivers to CDOT. One Form 1420 may include multiple requests and must be submitted at the time of the occurrence or, if that is not possible, within a reasonable time of the occurrence requiring termination, reduction, substitution or waiver.

B. *Commitment Terminations and Reductions.* No commitment shall be terminated or reduced without CDOT's approval. Terminations and reductions include, but are not limited to, instances in which a Contractor seeks to *perform* work originally designated for a DBE subcontractor with its own forces, those of an affiliate, a non-DBE firm or with another DBE firm. In order to receive approval, the Contractor shall:

(1) Have good cause for termination or reduction. Good cause may include:

(i) the DBE fails or refuses to execute a written contract;

(ii) the DBE fails or refuses to perform the work of its subcontract consistent with normal industry standards, provided that such failure is not the result of bad faith or discriminatory actions of the Contractor or one of its subcontractors;

(iii) the DBE fails to meet reasonable, nondiscriminatory bond requirements;

(iv) the DBE becomes bankrupt, insolvent, or exhibits credit unworthiness;

(v) the DBE is ineligible to work because of suspension or debarment proceedings or other state law;

(vi) the DBE is not a responsible contractor;

(vii) the DBE voluntarily withdraws from the project and provides written notice to CDOT,

(viii) the DBE is ineligible to receive DBE credit for the work required;

(ix) the DBE owner dies or becomes disabled and is unable to complete the work;

(x) the DBE ceases business operations or otherwise dissolves;

(xi) or other documented good cause that compels termination. Good cause does not exist if the Contractor seeks to terminate a DBE it relied upon to obtain the contract so that the Contractor can self-perform the work for which the DBE was engaged or so that the Contractor can substitute another DBE or non-DBE contractor after contract award.

(2) Provide the DBE notice of the Contractor's intent to terminate or reduce the commitment and the reason for such termination or reduction, with a copy to CDOT;

(3) In the notice of intent, provide the DBE at least five calendar days to respond to the notice and inform CDOT and the Contractor of the reasons, if any, why it objects to the proposed termination or reduction and any reasons that it shall not be approved. The Contractor is not required to provide the five calendar days written notice in cases where the DBE in question has provided written notice that it is withdrawing from the subcontract or purchase order. The notice period may be reduced by CDOT if required by public necessity.

(4) Following the notice period, if the Contractor decides to proceed, submit Form 1420 requesting approval of the termination or reduction.

(5) When a commitment is terminated or reduced (including when a DBE withdraws), make good faith efforts to find another DBE to substitute. These good faith efforts shall be directed at finding another DBE to perform at least the same amount of work under the contract as the participation that was terminated or reduced up to the contract goal.

C. *Contract Changes.* In the event of a contract change:

(1) If CDOT eliminates or reduces work committed to a DBE, such change shall be considered good cause for termination or reduction in accordance with Section 9.B above. The Contractor shall follow the processes outlined in Section 9.B but is not required to substitute. If the change

reduces the Contractor's DBE participation to below the contract goal, the Contractor shall indicate so on a Form 1420 and request a waiver of the unmet participation.

(2) If CDOT issues a change which increases or adds new work items, the Contractor shall ensure that it has obtained sufficient DBE participation to meet the Contract Goal, or has made good faith efforts to do so.

D. *Process for Substitution or Increase in Participation to Meet the Contract Goal.* When the Contractor must obtain additional DBE participation to meet the Contract Goal, whether resulting from an approved termination or reduction or a change to the Contract, the Contractor shall:

(1) Increase the participation of a DBE for any work items previously identified in an approved commitment without seeking CDOT approval; provided, however, that at its discretion, CDOT may request a Form 1420 documenting such additional participation; or

(2) If the Contractor needs to add new work to a commitment or obtain additional participation from a DBE that is not already participating on the contract pursuant to an approved commitment, submit a Form 1420 and Form 1415 requesting approval of the additional participation; or

(3) If the Contractor determines that additional DBE participation cannot be obtained, submit a Form 1420 requesting waiver of the participation. The Contractor shall include its justification for not obtaining additional participation and, at its discretion, CDOT may require additional information regarding the efforts of the Contractor.

10. Payment Reduction

The Contractor's retainage will not be released until CDOT has determined whether the Contractor will be subject to a payment reduction. Payment reductions will be calculated as follows:

A. *Failure to Fulfill Commitments.* If the Contractor terminated or reduced a commitment, the Contractor will be subject to a payment reduction for any termination or reduction which was not approved via a Form 1420.

B. *Failure to Meet Contract Goal.* If the Contractor failed to meet the contract goal, the Contractor will be subject to a payment reduction for the portion of the contract goal that was not met and was not waived via an approved Form 1420.

C. *Duplication.* The contractor will not be subject to duplicate reduction for the same offense.

D. *Adjustments.* CDOT may adjust the payment reduction wherein the Contractor demonstrates that its failure to obtain DBE participation was due to circumstances outside of its control.

11. Other Enforcement

A. *Investigations.* As it determines necessary, CDOT may conduct reviews or investigations of participants. All participants, including, but not limited to, DBE firms and applicants for DBE certification, complainants,

and contractors using DBE firms to meet contract goals, are required to cooperate fully and promptly with compliance reviews, certification reviews, investigations, and other requests for information.

B. *Intimidation and retaliation.* Participants shall not intimidate, threaten, coerce, or discriminate against any individual or firm for the purpose of interfering with any right or privilege secured by the DBE program or because the individual or firm has made a complaint, testified, assisted, or participated in any manner in an investigation, proceeding, or hearing under the DBE program.

C. *Consequences of Non-Compliance.* Failure to comply with subsections 11 A. or 11 B. shall be a ground for appropriate action against the party involved (e.g., with respect to recipients, a finding of noncompliance; with respect to DBE firms, denial of certification or removal of eligibility and/or suspension and debarment; with respect to a complainant or appellant, dismissal of the complaint or appeal; with respect to a contractor which uses DBE firms to meet goals, findings of non-responsibility for future contracts and/or suspension and debarment).

D. *Fraud and Misrepresentation*. If CDOT determines that a Contractor or subcontractor was a knowing and willing participant in any intended or actual subcontracting arrangement contrived to artificially inflate DBE participation or any other business arrangement determined by CDOT to be unallowable, or if the Contractor engages in repeated violations, falsification or misrepresentation, CDOT may:

(1) refuse to count any fraudulent or misrepresented DBE participation;

(2) withhold progress payments to the Contractor commensurate with the violation;

(3) suspend or reduce the Contractor’s prequalification status;

(4) refer the matter to the Office of Inspector General of the US Department of Transportation for investigation; or

(5) seek any other available contractual remedy.

Decision Nos. CO150024 dated January 02, 2015 supersedes **Decision Nos. CO140024** dated January 03, 2014.	**Modifications**			**ID**
	MOD Number	**Date**	**Page Number(s)**	
When work within a project is located in two or more counties and the minimum wages and fringe benefits are different for one or more job classifications, the higher minimum wages and fringe benefits shall apply throughout the project.				
General Decision No. CO150024 applies to the following counties: Larimer, Mesa, and Weld counties.				

General Decision No. CO150024

The wage and fringe benefits listed below reflect collectively bargained rates.

Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	POWER EQUIPMENT OPERATOR:			
	Drill Rig Caisson			
1714	Smaller than Watson 2500 and similar	24.73	9.15	
1715	Watson 2500 similar or larger	25.04	9.15	
	Oiler			
1716	Weld	24.88	9.15	
	The wage and fringe benefits listed below do not reflect collectively bargained rates.			
	CARPENTER:			
1717	Excludes Form Work	20.72	5.34	
	Form Work Only			
1718	Larimer, Mesa	18.79	3.67	
1719	Weld	16.54	3.90	
	CEMENT MASON/CONCRETE FINISHER:			
1720	Larimer	16.05	3.00	
1721	Mesa	17.53	3.00	
1722	Weld	17.48	3.00	
	ELECTRICIAN:			
	Excludes Traffic Signalization			
1723	Weld	33.45	7.58	
	Traffic Signalization			
1724	Weld	25.84	6.66	

General Decision No. CO150024

The wage and fringe benefits listed below do not reflect collectively bargained rates.

Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	FENCE ERECTOR:			
1725	Weld	17.46	3.47	
	GUARDRAIL INSTALLER:			
1726	Larimer, Weld	12.89	3.39	
	HIGHWAY/PARKING LOT STRIPING:			
	Painter			
1727	Larimer	14.79	3.98	
1728	Mesa	14.75	3.21	
1729	Weld	14.66	3.21	
	IRONWORKER:			
	Reinforcing (Excludes Guardrail Installation)			
1730	Larimer, Weld	16.69	5.45	
	Structural (Excludes Guardrail Installation)			
1731	Larimer, Weld	18.22	6.01	
	LABORER:			
	Asphalt Raker			
1732	Larimer	18.66	4.66	
1733	Weld	16.72	4.25	
1734	Asphalt Shoveler	21.21	4.25	
1735	Asphalt Spreader	18.58	4.65	
1736	Common or General	16.29	4.25	
1737	Concrete Saw (Hand Held)	16.29	6.14	
1738	Landscape and Irrigation	12.26	3.16	
1739	Mason Tender - Cement/Concrete	16.29	4.25	
	Pipelayer			
1740	Larimer	17.27	3.83	
1741	Mesa, Weld	16.23	3.36	
1742	Traffic Control (Flagger)	9.55	3.05	

General Decision No. CO150024 **The wage and fringe benefits listed below do not reflect collectively bargained rates.**				
Code	**Classification**	**Basic Hourly Rate**	**Fringe Benefits**	**Last Mod**
	LABORER (con't):			
	Traffic Control (Sets Up/Moves Barrels, Cones, Installs signs, Arrow Boards and Place Stationary Flags), (Excludes Flaggers)			
1743	Larimer, Weld	12.43	3.22	
1744	**PAINTER (Spray Only)**	16.99	2.87	
	POWER EQUIPMENT OPERATOR:			
	Asphalt Laydown			
1745	Larimer	26.75	5.39	
1746	Mesa, Weld	23.93	7.72	
1747	Asphalt Paver	21.50	3.50	
	Asphalt Roller			
1748	Larimer	23.57	3.50	
1749	Mesa	24.25	3.50	
1750	Weld	27.23	3.50	
	Asphalt Spreader			
1751	Larimer	25.88	6.80	
1752	Mesa, Weld	23.66	7.36	
	Backhoe/Trackhoe			
1753	Larimer	21.46	4.85	
1754	Mesa	19.81	6.34	
1755	Weld	20.98	6.33	
	Bobcat/Skid Loader			
1756	Larimer	17.13	4.46	
1757	Mesa, Weld	15.37	4.28	
1758	Boom	22.67	8.72	
	Broom/Sweeper			
1759	Larimer	23.55	6.20	
1760	Mesa	23.38	6.58	
1761	Weld	23.23	6.89	

General Decision No. CO150024

The wage and fringe benefits listed below do not reflect collectively bargained rates.

Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	POWER EQUIPMENT OPERATOR (con't):			
	Bulldozer			
1762	Larimer, Weld	22.05	6.23	
1763	Mesa	22.67	8.72	
1764	Crane	26.75	6.16	
	Drill			
1765	Larimer, Weld	31.39	0.00	
1766	Mesa	35.06	0.00	
1767	Forklift	15.91	4.68	
	Grader/Blade			
1768	Larimer	24.82	5.75	
1769	Mesa	23.42	9.22	
1770	Weld	24.53	6.15	
1771	Guardrail/Post Driver	16.07	4.41	
1772	**Loader** (Front End)			
1773	Larimer	20.45	3.50	
1774	Mesa	22.44	9.22	
1775	Weld	23.92	6.67	
	Mechanic			
1776	Larimer	27.68	4.57	
1777	Mesa	25.50	5.38	
1778	Weld	24.67	5.68	
	Oiler			
1779	Larimer	24.16	8.35	
1780	Mesa	23.93	9.22	
	Roller/Compactor (Dirt and Grade Compaction)			
1781	Larimer	23.67	8.22	
1782	Mesa, Weld	21.33	6.99	

General Decision No. CO150024

The wage and fringe benefits listed below do not reflect collectively bargained rates.

Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	POWER EQUIPMENT OPERATOR (con't.):			
	Rotomill			
1783	Larimer	18.59	4.41	
1784	Weld	16.22	4.41	
	Scraper			
1785	Larimer	21.33	3.50	
1786	Mesa	24.06	4.13	
1787	Weld	30.14	1.40	
	Screed			
1788	Larimer	27.20	5.52	
1789	Mesa	27.24	5.04	
1790	Weld	27.95	3.50	
1791	Tractor	13.13	2.95	
	TRAFFIC SIGNALIZATION:			
	Groundsman			
1792	Larimer	11.44	2.84	
1793	Mesa	16.00	5.85	
1794	Weld	16.93	3.58	
	TRUCK DRIVER:			
	Distributor			
1795	Larimer	19.28	4.89	
1796	Mesa	19.17	4.84	
1797	Weld	20.61	5.27	
	Dump Truck			
1798	Larimer	18.86	3.50	
1799	Mesa	15.27	4.28	
1800	Weld	15.27	5.27	

General Decision No. CO150024

The wage and fringe benefits listed below do not reflect collectively bargained rates.

Code	Classification	Basic Hourly Rate	Fringe Benefits	Last Mod
	TRUCK DRIVER (con't.):			
	Lowboy Truck			
1801	Larimer	18.96	5.30	
1802	Mesa, Weld	18.84	5.17	
1803	Mechanic	26.48	3.50	
	Multi-Purpose Specialty & Hoisting Truck			
1804	Larimer, Mesa	16.65	5.46	
1805	Weld	16.87	5.56	
1806	Pickup and Pilot Car	13.93	3.68	
1807	Semi/Trailer Truck	18.39	4.13	
1808	Truck Mounted Attenuator	12.43	3.22	
	Water Truck			
1809	Larimer	19.14	4.99	
1810	Mesa	15.96	5.27	
1811	Weld	19.28	5.04	

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a)(1)(ii)).

In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program.
If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7).
Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION NO. CO150024

ON THE JOB TRAINING

This training special provision is an implementation of 23 U.S.C. 140 (a). The Contractor shall meet the requirements of the FHWA 1273 for all apprentices and trainees.

As part of the Contractor's Equal Employment Opportunity Affirmative Action Program, training shall be provided on projects as follows:

1. The Contractor shall provide on the job training aimed at developing full journey workers in the skilled craft identified in the approved training plan. The Contractor shall provide at a minimum, required training hours listed in the Project Special Provisions for each project.

2. The primary objective of this specification is to train and upgrade women and minority candidates to full journey worker status. The Contractor shall make every reasonable effort to enroll and train minority and women workers. This training commitment shall not be used to discriminate against any applicant for training whether or not the applicant is a woman or minority.

3. The Contractor may employ temporary workers from CDOT supportive services providers to meet OJT requirements. Information pertaining to supportive services providers may be obtained by calling the CDOT OJT Coordinator at the number shown on the link http://www.coloradodot.info/business/equal-opportunity/training.html

4. An employee shall not be employed or utilized as a trainee in a skilled craft in which the employee has achieved journey status.

5. The minimum length and type of training for each skilled craft shall be as established in the training program selected by the Contractor and approved by the Department and the Colorado Division of the Federal Highway Administration (FHWA), or the U. S Department of Labor (DOL), Office of Apprenticeship or recognized state apprenticeship agency. To obtain assistance or program approval contact:

   CDOT Center for Equal Opportunity
   4201 East Arkansas Avenue
   Denver, CO 80222
   eo@dot.state.co.us
   1-800-925-3427

6. The Contractor shall pay the training program wage rates and the correct fringe benefits to each approved trainee employed on the project and enrolled in an approved program. The minimum trainee wage shall be no less than the wage for the Guardrail Laborer classification as indicated in the wage decision for the project.

7. The CDOT Regional Civil Rights Manager must approve all proposed apprentices and trainees for the participation to be counted toward the project goal and reimbursement. Approval must occur before training begins. Approval for the apprentice or trainee to begin work on a CDOT project will be based on:

   A. Evidence of the registration of the trainee or apprentice into the approved training program.
   B. The completed Form 838 for each trainee or apprentice as submitted to the Engineer.

8. Before training begins, the Contractor shall provide each trainee with a copy of the approved training program, pay scale, pension and retirement benefits, health and disability benefits, promotional opportunities, and company policies and complaint procedures.

9. Before training begins, the Contractor shall submit a copy of the approved training program and CDOT Form 1337 to the Engineer. Progress payments may be withheld until this is submitted and approved and may be withheld if the approved program is not followed.

10. On a monthly basis, the Contractor shall provide to the Engineer a completed On the Job Training Progress Report (Form 832) for each approved trainee or apprentice on the project. The Form 832 will be reviewed and approved by the Engineer before reimbursement will be made. The Contractor will be reimbursed for no more than the OJT Force Account budget. At the discretion of the Engineer and if funds are available, the Engineer may increase the force account budget and the number of reimbursable training hours through a Change Order. The request to increase the force account must be approved by the Engineer prior to the training.

11. Upon completion of training, transfer to another project, termination of the trainee or notification of final acceptance of the project, the Contractor shall submit to the Engineer a "final" completed Form 832 for each approved apprentice or trainee.

12. All forms are available from the CDOT Center for Equal Opportunity, through the CDOT Regional Civil Rights Manager, or on CDOT's website at http://www.coloradodot.info/business/bidding/Bidding%20Forms/Bid%20Winner%20Forms

13. Forms 838 and 832 shall be completed in full by the Contractor. Reimbursement for training is based on the number of hours of on the job training documented on the Form 832 and approved by the Engineer. The Contractor shall explain discrepancies between the hours documented on Form 832 and the corresponding certified payrolls.

14. The OJT goal (# of training hours required) for the project will be included in the Project Special Provisions and will be determined by the Regional Civil Rights Manager after considering:

    A. Availability of minorities, women, and disadvantaged for training;
    B. The potential for effective training;
    C. Duration of the Contract;
    D. Dollar value of the Contract;
    E. Total normal work force that the average bidder could be expected to use;
    F. Geographic location;
    G. Type of work; and
    H. The need for additional journey workers in the area
    I. The general guidelines for minimum total training hours are as follows:

Contract dollar value	Minimum total training hours to be provided on the project
Up to 1 million	0
>1 - 2 million	320
>2 - 4 million	640
>4 - 6 million	1280
>6 - 8 million	1600
>8 - 12 million	1920
>12 - 16 million	2240
>16 - 20 million	2560
For each increment of $5 million, over $20 million	1280

15. The number of training hours for the trainees to be employed on the project shall be as shown in the Contract. The trainees or apprentices employed under the Contract shall be registered with the Department using Form 838, and must be approved by the Regional Civil Rights Manager before training begins for the participation to be counted toward the OJT project goal. The goal will be met by an approved trainee or apprentice working on that project; or, if a Contractor's apprentice is enrolled in a DOL approved apprenticeship program and registered with CDOT using Form 838 and working for the Contractor on a non-CDOT project. The hours worked on the non-CDOT project may be counted toward the project goal with approved documentation on Form 832. Training hours will be counted toward one project goal.

16. Subcontractor trainees who are enrolled in an approved Program may be used by the Contractor to satisfy the requirements of this specification.

17. The Contractor will be reimbursed $2.00per hour worked for each apprentice or trainee working on a CDOT project and whose participation toward the OJT project goal has been approved

18. The Contractor shall have fulfilled its responsibilities under this specification if the CDOT Regional Civil Rights Manager has determined that it has provided acceptable number of training hours.

19. Failure to provide the required training will result in the following disincentives: A sum representing the number of training hours specified in the Contract, minus the number of training hours worked as certified on Form 832, multiplied by the journey worker hourly wages plus fringe benefits [(A hours – B hours worked) x (C dollar per hour + D fringe benefits)] = Disincentives Assessed. Wage rate will be determined by averaging the wages for the crafts listed on Form 1337. The Engineer will provide the Contractor with a written notice at Final Acceptance of the project informing the Contractor of the noncompliance with this specification which will include a calculation of the disincentives to be assessed.

February 3, 2011

PARTNERING PROGRAM

The Colorado Department of Transportation actively encourages partnering and invites the Contractor and his subcontractors and suppliers to participate in a voluntary partnering agreement for this project.

The following information summarizes the partnering process. More information is available through the Resident Engineer listed in the project special provisions.

This partnership will be structured to draw on the strengths of each organization to identify and achieve mutual goals. The objectives are effective and efficient Contract performance with reciprocal cooperation, and completion within budget, on schedule, and in accordance with the Contract.

This partnership will be bilateral in make-up and all costs associated with this partnership will be agreed to by both parties and will be shared equally. The Contractor shall assume full responsibility for all costs associated with partnering during the implementation of the partnering process. CDOT will reimburse the Contractor for the agreed amount.

The CDOT Program Engineer or the Resident Engineer will contact the Contractor within ten days after the award of this project to ask if the Contractor wants to implement this partnership initiative. If the Contractor agrees, the Contractor's on-site project manager shall meet with CDOT's Resident Engineer to plan a partnering development and team building workshop. At this planning session, arrangements shall be made to determine the facilitator and the workshop, attendees, agenda, duration, and location.

The workshop shall be held prior to the commencement of any major work item and preferably before the preconstruction conference. The following persons shall attend the workshop: CDOT's Resident Engineer, Project Engineer, and key project personnel; the Contractor's on-site project manager and key project supervision personnel; and the subcontractors' key project supervision personnel. The following personnel shall also be invited to attend as needed: project design engineer, key local government personnel, suppliers, design consultants, CDOT maintenance foreman, CDOT environmental manager, key railroad personnel, and key utility personnel. The Contractor and CDOT shall also have Regional or District managers and Corporate or State level managers on the partnering team.

Follow-up workshops may be held periodically throughout the duration of the Contract as agreed by the Contractor and the Engineer at the initial workshop. A closeout workshop shall be held to evaluate the effectiveness of the partnership.

The establishment of a partnership charter, which identifies the workshop participants' mutual goals on the project, will not change the legal relationship of the parties to the Contract or relieve either party from any terms of the Contract.

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

Attached is Form FHWA 1273 titled *Required Contract Provisions Federal-Aid Construction Contracts*. As described in Section I. General, the provisions of Form FHWA 1273 apply to all work performed under the Contract and are to be included in all subcontracts with the following modification:

For TAP (Transportation Alternatives Program) funded Recreational Trails projects, Section I (4) regarding convict labor and all of Section IV of the FHWA 1273 do not apply.

FHWA-1273 -- Revised May 1, 2012

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding $10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the

provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 “Contract provisions and related matters” with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH–1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b.(1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b.(1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g. , the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm

or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable

predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As

used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

3. Withholding for unpaid wages and liquidated damages. The FHWA or the contacting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term “perform work with its own organization” refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
(2) the prime contractor remains responsible for the quality of the work of the leased employees;
(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is

evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.
2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA

approval or that is estimated to cost $25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1**. Instructions for Certification – First Tier Participants:**

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. “First Tier Covered Transactions” refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. **Instructions for Certification - Lower Tier Participants:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost $25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. “First Tier Covered Transactions” refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of

Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

ATTACHMENT A - EMPLOYMENT AND MATERIALS PREFERENCE FOR APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS ROAD CONTRACTS

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

{contractor’s letterhead}

CERTIFICATE OF CONTRACTOR'S COMPLIANCE TO BUY AMERICAN CLAUSE

All steel materials permanently incorporated into:

Federal Aid Project STE M555-029 (Project Code: 19365)

North Avenue Complete Streets Project

City of Grand Junction, Colorado

were produced or manufactured in the United States, Puerto Rico, District of Columbia or in any of the territories and possessions of the United States, except as listed below:

___ No exceptions

___ Minor exceptions (Value less than 1/10 of 1% of construction cost or $2,500, whichever is greater. Documentation available in contractor's project files.)

Contractor: _____

_____ ___/___/___

(Name, title)

General Decision Number: CO150024 01/02/2015 CO24

Superseded General Decision Number: CO20140024

State: Colorado

Construction Type: Highway

Counties: Larimer, Mesa and Weld Counties in Colorado.

HIGHWAY CONSTRUCTION PROJECTS

Note: Executive Order (EO) 13658 establishes an hourly minimum wage of $10.10 for 2015 that applies to all contracts subject to the Davis-Bacon Act for which the solicitation is issued on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.10 (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/02/2015

* ENGI0009-012 10/23/2013

	Rates	Fringes
POWER EQUIPMENT OPERATOR:		
(3)- Drill Rig Caisson (smaller than Watson 2500 and similar)	$ 24.73	9.15
(4)-Oiler Weld County	$ 24.88	9.15
(5)-Drill Rig Caisson (Watson 2500 similar or larger)	$ 25.04	9.15

SUCO2011-009 09/15/2011

	Rates	Fringes
CARPENTER		
Excludes Form Work	$ 20.72	5.34
Form Work Only		
Larimer, Mesa	$ 18.79	3.67
Weld	$ 16.54	3.90
CEMENT MASON/CONCRETE FINISHER		
Larimer	$ 16.05	3.00
Mesa	$ 17.53	3.00
Weld	$ 17.48	3.00
ELECTRICIAN		
Excludes Traffic		

Signalization		
Weld	$ 33.45	7.58
Traffic Signaliztion		
Weld	$ 25.84	6.66
FENCE ERECTOR		
Weld	$ 17.46	3.47
GUARDRAIL INSTALLER		
Larmer, Weld	$ 12.89	3.39
HIGHWAY/PARKING LOT STRIPING:Painter		
Larimer	$ 14.79	3.98
Mesa	$ 14.75	3.21
Weld	$ 14.66	3.21
IRONWORKER, REINFORCING (Excludes Guardrail Installation)		
Larimer, Weld	$ 16.69	5.45
IRONWORKER, STRUCTURAL (Excludes Guardrail Installation)		
Larimer, Weld	$ 18.22	6.01
LABORER		
Asphalt Raker		
Larimer	$ 18.66	4.66
Weld	$ 16.72	4.25
Asphalt Shoveler	$ 21.21	4.25
Asphalt Spreader	$ 18.58	4.65
Common or General	$ 16.29	4.25
Concrete Saw (Hand Held)	$ 16.29	6.14
Landscape and Irrigation	$ 12.26	3.16
Mason Tender-Cement/Concrete	$ 16.29	4.25
Pipelayer		
Larimer	$ 17.27	3.83
Mesa, Weld	$ 16.23	3.36
Traffic Control (Flagger)	$ 9.55	3.05
Traffic Control (Sets Up/Moves Barrels, Cones, Install Signs, Arrow Boards and Place Stationary Flags)(Excludes Flaggers)		
Larimer, Weld	$ 12.43	3.22
PAINTER (Spray Only)	$ 16.99	2.87
POWER EQUIPMENT OPERATOR:		
Asphalt Laydown		
Larimer	$ 26.75	5.39
Mesa,Weld	$ 23.93	7.72
Asphalt Paver	$ 21.50	3.50
Asphalt Roller		
Larimer	$ 23.57	3.50
Mesa	$ 24.25	3.50

Weld	$ 27.23	3.50
Asphalt Spreader		
Larimer	$ 25.88	6.80
Mesa, Weld	$ 23.66	7.36
Backhoe/Trackhoe		
Larimer	$ 21.46	4.85
Mesa	$ 19.81	6.34
Weld	$ 20.98	6.33
Bobcat/Skid Loader		
Larimer	$ 17.13	4.46
Mesa, Weld	$ 15.37	4.28
Boom	$ 22.67	8.72
Broom/Sweeper		
Larimer	$ 23.55	6.20
Mesa	$ 23.38	6.58
Weld	$ 23.23	6.89
Bulldozer		
Larimer, Weld	$ 22.05	6.23
Mesa	$ 22.67	8.72
Crane	$ 26.75	6.16
Drill		
Larimer, Weld	$ 31.39	0.00
Mesa	$ 35.06	0.00
Forklift	$ 15.91	4.68
Grader/Blade		
Larimer	$ 24.82	5.75
Mesa	$ 23.42	9.22
Weld	$ 24.53	6.15
Guardrail/Post Driver	$ 16.07	4.41
Loader (Front End)		
Larimer	$ 20.45	3.50
Mesa	$ 22.44	9.22
Weld	$ 23.92	6.67
Mechanic		
Larimer	$ 27.68	4.57
Mesa	$ 25.50	5.38
Weld	$ 24.67	5.68
Oiler		
Larimer	$ 24.16	8.35
Mesa	$ 23.93	9.22
Roller/Compactor (Dirt and Grade Compaction)		
Mesa, Weld	$ 21.33	6.99
Roller/Compactor (Dirt and Grade Compaction		
Larimer	$ 23.67	8.22
Rotomill		
Larimer	$ 18.59	4.41
Weld	$ 16.22	4.41
Scraper		
Larimer	$ 21.33	3.50
Mesa	$ 24.06	4.13
Weld	$ 30.14	1.40
Screed		
Larimer	$ 27.20	5.52
Mesa	$ 27.24	5.04
Weld	$ 27.95	3.50
Tractor	$ 13.13	2.95

TRAFFIC SIGNALIZATION:

Groundsman
Larimier.....$ 11.44 2.84
Mesa.....$ 16.00 5.85
Weld.....$ 16.93 3.58

TRUCK DRIVER
Distributor
Larimer.....$ 19.28 4.89
Mesa.....$ 19.17 4.84
Weld.....$ 20.61 5.27
Dump Truck
Larimer.....$ 18.86 3.50
Mesa.....$ 15.27 4.28
Weld.....$ 15.27 5.27
Lowboy Truck
Larimer.....$ 18.96 5.30
Mesa,Weld.....$ 18.84 5.17
Mechanic.....$ 26.48 3.50
Multi-Purpose Specialty &
Hoisting Truck
Larimer, Mesa.....$ 16.65 5.46
Weld.....$ 16.87 5.56
Pickup and Pilot Car.....$ 13.93 3.68
Semi/Trailer Truck.....$ 18.39 4.13
Truck Mounted Attenuator....$ 12.43 3.22
Water Truck
Larimer.....$ 19.14 4.99
Mesa.....$ 15.96 5.27
Weld.....$ 19.28 5.04

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were

prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

COLORADO DEPARTMENT OF TRANSPORTATION

CONTRACTOR'S PROPOSAL

Contractor's name	
Contractor's code number	Prequal. expiration date

Proposal for Project No.(s)

I, the undersigned bidder for the project(s) listed above, hereby offer this proposal to the Chief Engineer, Department of Transportation, 4201 East Arkansas Ave., Denver CO 80222.

I UNDERSTAND the bidding and award for this project(s) shall be in accordance with the rules that implement the "Construction Bidding for Public Projects Act", Sections 24-92-101 et seq., C.R.S.

I FURTHER UNDERSTAND that if this proposal is accepted, the Invitation for Bids, Proposal, Plans, Standard Specifications, Supplemental Specifications, Special Provisions, Contract Form, and Contract Bonds shall be part of the complete contract.

I FURTHER UNDERSTAND that failure to include this Form #85 in the proposal will cause this proposal to be rejected.

IN PREPARING THIS PROPOSAL, I HAVE:

- examined the Plans, Specifications, and the site of the proposed project and I am satisfied as to the conditions to be met and the work to be accomplished.

- considered any revisions to the Plans and Specifications which were made after advertisement. Number of revisions:_____

IF THIS PROPOSAL IS ACCEPTED AND I AM AWARDED THE CONTRACT, I AGREE TO:

- execute a Contract and Bonds on forms provided by the Department of Transportation within 15 calendar days after the date of award. I understand that failure to do so will be just cause for cancellation of the award and forfeiture of the proposal guarantee.

- commence work within 20 calendar days (or other time as specified in the Notice to Proceed) after the award date. I will complete the work in accordance with the time stated in the project Specifications.

- accomplish the work on the project in accordance with the Plans and Specifications, under the direction and according to the instructions of the Chief Engineer or, authorized representative, at the unit prices named in this proposal.

- perform any increased or decreased quantities of work at the unit prices named in the Proposal, except for alterations as provided for in the Specifications. I understand the Bid Schedule of quantities shown in this proposal is approximate and subject to change and that the Department may, in its sole discretion, unilaterally increase the funds available under the Contract if the quantities increase.

- furnish all labor, machinery, equipment, materials, and supplies necessary to accomplish the work on the project.

- provide adequate compensation insurance to protect my employees working on the project.

ACCEPTANCE OF FUEL COST ADJUSTMENTS:

Bidders have the option to accept Fuel Cost Adjustments in accordance with the Revision of Section 109 – Fuel Cost Adjustment. To accept this standard special provision, the bidder must fill in an “X” next to “YES” below. No Fuel Cost Adjustment will be made due to fuel cost changes for bidders who answer “NO”. If neither line is marked, the Department will assume the bidder rejects Fuel Cost Adjustments for this project. After bids are submitted, bidders will not be given any other opportunity to accept or reject this adjustment.

(Mark only one line with an “X”):

_____ YES, I choose to accept Fuel Cost Adjustments for this project

_____ NO, I choose NOT to accept Fuel Cost Adjustments for this project (if neither line is marked, the default is “NO, I choose NOT to accept Fuel Cost Adjustments for this project”)

Company name	2nd company name (if joint venture)
Address	Address
County	County
By (signature)	By (signature)
Print name	Print name
Title	Title
Date	Date

Attest:

_____ **[seal]**

_____

_____

NOTE: This document must be signed in ink by an individual with legal authority to bind the contractor. It must also be attested by the corporate secretary and bear the seal of the corporation.

CONTRACTORS PROPOSAL CHECKLIST (For information Only)
The documents checked below are included in and made a part of this proposal. I have completed and signed all forms where indicated.

- ❑ Proposal Guarantee/Bid Bond (All Projects)
- ❑ Proposal (CDOT Form #85) (All Projects)
- ❑ Invitation for Bids, plus any revision notices (All Projects)
- ❑ Anti-Collusion Affidavit (CDOT Form #606) (All Projects)
- ❑ Disadvantaged Business Enterprise Bid Conditions Assurance (CDOT Form #714) (All Projects with DBE Goals)
- ❑ Statement of Residence for Bidder Preference (CDOT Form #604) (Non Federal Aid Projects Only)
- ❑ Bid Schedule (All Projects)

COLORADO DEPARTMENT OF TRANSPORTATION

CONTRACTORS PERFORMANCE CAPABILITY STATEMENT

Project #

1. List names of partnerships or joint ventures ☐ none

_____

_____

_____

2. List decreases in the contractors fiscal or workmanship qualifications compared to the last prequalification statement submitted to CDOT. (Attach additional sheets if necessary.)

a. Key personnel changes ☐ none

_____

_____

_____

b. Key equipment changes ☐ none

_____

_____

_____

c. Fiscal capability changes (legal actions, etc.) ☐ none

_____

_____

_____

d. Other changes that may effect the contractors ability to perform work. ☐ none

_____

_____

_____

_____

I DECLARE UNDER PENALTY OF PERJURY IN THE SECOND DEGREE, AND ANY OTHER APPLICABLE STATE OR FEDERAL LAWS, THAT THE STATEMENTS MADE ON THIS DOCUMENT ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE

Contractor's firm or company name	By	Date
	Title	

2nd Contractor's firm or company name (if joint venture)	By	Date
	Title	

COLORADO DEPARTMENT OF TRANSPORTATION

ANTI-COLLUSION AFFIDAVIT

PROJECT NO.
LOCATION

I hereby attest that I am the person responsible within my firm for the final decision as to the price(s) and amount of this bid or, if not, that I have written authorization, enclosed herewith, from that person to make the statements set out below on his or her behalf and on behalf of my firm.

I further attest that:

1. The price(s) and amount of this bid have been arrived at independently, without consultation, communication or agreement for the purpose or with the effect of restricting competition with any other firm or person who is a bidder or potential prime bidder.

2A. Neither the price(s) nor the amount of this bid have been disclosed to any other firm or person who is a bidder or potential prime bidder on this project, and will not be so disclosed prior to bid opening.

2B. Neither the prices nor the amount of the bid of any other firm or person who is a bidder or potential prime bidder on this project have been disclosed to me or my firm.

3A. No attempt has been made to solicit, cause or induce any firm or person who is a bidder or potential prime bidder to refrain from bidding on this project, or to submit a bid higher than the bid of this firm, or any intentionally high or non-competitive bid or other form of complementary bid.

3B. No agreement has been promised or solicited for any other firm or person who is a bidder or potential prime bidder on this project to submit an intentionally high, noncompetitive or other form of complementary bid on this project.

4. The bid of my firm is made in good faith and not pursuant to any consultation, communication, agreement or discussion with, or inducement or solicitation by or from any firm or person to submit any intentionally high, noncompetitive or other form of complementary bid.

5. My firm has not offered or entered into a subcontract or agreement regarding the purchase or sale of materials or services from any firm or person, or offered, promised or paid cash or anything of value to any firm or person, whether in connection with this or any other project, in consideration for an agreement or promise by any firm or person to refrain from bidding or to submit any intentionally high, noncompetitive or other form of complementary bid or agreeing or promising to do so on this project.

6. My firm has not accepted or been promised any subcontract or agreement regarding the sale of materials or services to any firm or person, and has not been promised or paid cash or anything of value by any firm or person, whether in connection with this or any other project, in consideration for my firm's submitting any intentionally high, noncompetitive or other form of complementary bid, or agreeing or promising to do so, on this project.

7. I have made a diligent inquiry of all members, officers, employees, and agents of my firm with responsibilities relating to the preparation, approval or submission of my firm's bid on this project and have been advised by each of them that he or she has not participated in any communication, consultation, discussion, agreement, collusion, or other conduct inconsistent with any of the statements and representations made in this affidavit.

8. I understand and my firm understands that any misstatement in this affidavit is and shall be treated as a fraudulent concealment from the Colorado Department of Transportation, of the true facts relating to submission of bids for this contract.

I DECLARE UNDER PENALTY OF PERJURY IN THE SECOND DEGREE, AND ANY OTHER APPLICABLE STATE OR FEDERAL LAWS, THAT THE STATEMENTS MADE ON THIS DOCUMENT ARE TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

Contractor's firm or company name	By	Date
	Title	
2nd contractor's firm or company name. (If joint venture.)	By	Date
	Title	

Sworn to before me this day of, 20

Notary Public	
My commission expires	
NOTE: This document must be signed in ink.	

COLORADO DEPARTMENT OF TRANSPORTATION

ASSIGNMENT OF ANTITRUST CLAIMS

PROJECT NO.

Contractor and Colorado Department of Transportation (CDOT) recognize that in actual economic practice antitrust violations ultimately impact on CDOT. Therefore, for good cause and as consideration for executing this contract and for receiving payments hereunder:

1. Contractor hereby irrevocably assigns to CDOT any and all claims it may now have or which may hereafter accrue to it under federal or state antitrust laws in connection with the particular project, goods or services purchased or acquired by CDOT pursuant to this contract.

2. Contractor hereby expressly agrees:

   a. That, upon becoming aware that a third party has commenced a civil action asserting on Contractor's behalf an antitrust claim which has been assigned to CDOT hereunder, Contractor shall immediately advise in writing:
      (1) Such third party that the antitrust claim has been assigned to CDOT, and
      (2) CDOT that such civil action is pending and of the date on which, in accordance with subparagraph a. (1) above, Contractor notified such third party that the antitrust claim had been assigned to CDOT;
   b. To take no action which will in any way diminish the value of the claims or rights assigned or dedicated to CDOT hereunder; and
   c. Promptly to pay over to CDOT its proper share of any payment under an antitrust claim brought on Contractor's behalf by any third party and which claim has been assigned to CDOT hereunder.

3. Further, Contractor agrees that in the event it hires one or more subcontractors to perform any of its duties under the contract, Contractor shall require that each such subcontractor:

   a. Irrevocably assign to CDOT (as a third party beneficiary) any and all claims that such subcontractor may have or which may thereafter accrue to the subcontractor under federal or state antitrust laws in connection with any goods or services provided by the subcontractor in carrying out the subcontractor's obligations to Contractor;
   b. Upon becoming aware that a third party has commenced a civil action on the subcontractor's behalf asserting an antitrust claim which has been assigned to CDOT hereunder, shall immediately advise in writing:
      (1) Such third party that the antitrust claim has been assigned to CDOT, and
      (2) Contractor and CDOT that such civil action is pending and of the date on which, in accordance with subparagraph b. (1) above, the subcontractor notified such third party that the antitrust claim had been assigned to CDOT;
   c. Take no action which will in any way diminish the value of the claims or rights assigned or dedicated to CDOT hereunder; and
   d. Promptly pay over to CDOT its proper share of any payment under an antitrust claim brought on the subcontractor's behalf by any third party and which claim has been assigned or dedicated to CDOT pursuant hereto.

I, acting in my capacity as officer of a bidder (bidders if a joint venture) do agree to the above assignment of antitrust claims.

Contractor's firm or company name	By	Date
	Title	
2nd contractor's firm or company name. (If joint venture.)	By	Date
	Title	

COLORADO DEPARTMENT OF TRANSPORTATION

STORMWATER FIELD INSPECTION REPORT - ACTIVE CONSTRUCTION

(1) Project Name:	(2) Project Contractor:	(3) Erosion Control Supervisor/SWMP Administrator:	
(4) CDOT Project Engineer/Representative:	(5) Inspector(s) (Name and Title):	(6) CDOT Project Number:	
(7) Project Code (Sub Account #):	(8) CDPS-SCP Certification#:	(9) CDOT Region:	(10) Date of Project Inspection:
(11) Weather at Time of Inspection:			

(12) REASON FOR INSPECTION / EXCLUSION

- ❑ Routine Inspection: (minimum every 14 Calendar Days)
- ❑ Runoff Event: (Post-storm event inspections must be conducted within 24 hours after the end of any precipitation or snowmelt event that causes surface erosion. If no construction activities will occur following a storm event, post-storm event inspections shall be conducted prior to re-commencing construction activities, but no later than 72 hours following the storm event. The occurrence of any such delayed inspection must be documented in the inspection record.) Routine inspections still must be conducted every 14 calendar days.

  Storm Start Date: Approximate End Time of Storm (hrs):

- ❑ Third Party Request:
- ❑ Winter Conditions Inspections Exclusion: Inspections are not required at sites where construction activities are temporarily halted, snow cover exists over the **entire site** for an extended period, and **melting conditions posing a risk of surface erosion do not exist.** This exception is applicable only during the period where **melting conditions do not exist**, and applies to the routine 14-day inspections, as well as the post-storm-event inspections. If **visual inspection** of the site verifies that all of these conditions are satisfied, document the conditions in section 18 (General Notes) and proceed to section 19 (Inspection Certification). Documentation must include: dates when snow cover occurred, date when construction activities ceased, and date when melting conditions began.
- ❑ Other:

(13) SWMP MANAGEMENT

	Yes	No	NA
(a) Is the SWMP notebook located on site?			
(b) Are changes to the SWMP documents noted and approved?			
(c) Are the inspection reports retained in the SWMP notebook?			
(d) Are corrective actions from the last inspection completed?			
(e) Is a Spill Prevention Control and Countermeasure Plan retained at the project site?			
(f) Is a list of potential pollutants retained at the site?			

(14) CURRENT CONSTRUCTION ACTIVITIES:

Estimate of disturbed area at the time of the inspection: _____ Acres

(15) BMPs ON SITE AT TIME OF INSPECTION

***See Inspection Report Instructions for more detail.**

	In SWMP	Used	Not Needed at this time
(a) EROSION CONTROL BMPs ON SITE			
Seeding	❑	❑	❑
Mulching/Mulch Tackifier	❑	❑	❑
Soil Binder	❑	❑	❑
Soil Retention Blankets	❑	❑	❑
Embankment Protector*	❑	❑	❑
Grading Techniques*	❑	❑	❑
Berm/Diversion	❑	❑	❑
Check Dams*	❑	❑	❑
Outlet Protection*	❑	❑	❑
Other:	❑	❑	❑
(c) BMPs FOR SPECIAL CONDITIONS			
Dewatering Structure	❑	❑	❑
Temp. Stream Crossing	❑	❑	❑
Clear Water Diversion	❑	❑	❑
Sensitive Area Fencing	❑	❑	❑
Other:	❑	❑	❑

	In SWMP	Used	Not Needed at this time
(b) SEDIMENT CONTROL BMPs ON SITE			
Stabilized Const. Entrance	❑	❑	❑
Sediment Trap	❑	❑	❑
Inlet Protection*	❑	❑	❑
Sediment Basin	❑	❑	❑
Perimeter Control*	❑	❑	❑
Other:	❑	❑	❑
(d) MATERIALS HANDLING, SPILL PREVENTION, WASTE MANAGEMENT AND GENERAL POLLUTION PREVENTION			
Stockpile Management*	❑	❑	❑
Materials Management*	❑	❑	❑
Concrete Waste Management*	❑	❑	❑
Saw Water Management*	❑	❑	❑
Solid Waste/Trash Management	❑	❑	❑
Street Sweeping	❑	❑	❑
Sanitary Facility*	❑	❑	❑
Vehicle and Equip. Management	❑	❑	❑
Other:	❑	❑	❑

(17) CONSTRUCTION SITE ASSESSMENT:**OFF SITE POLLUTANT DISCHARGES ARE A VIOLATION OF THE PERMIT AND REASON FOR IMMEDIATE PROJECT SUSPENSION**

(a) Is there evidence of discharge of sediment or other pollutants from the site? ❑ Yes ❑ No
*If yes, explain the discharge and the corrective actions in section 16 (Construction Site Assessment & Corrective Actions) or section 18 (General Notes).
(b) Has sediment or other pollutants discharging from the site reached state waters? ❑ Yes ❑ No
*If yes, see subsection 208.03(c) and Part II A.2 and 3 of the permit for reporting requirements.

(18) GENERAL NOTES

(19) INSPECTION CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Contractor's Erosion Control Supervisor/SWMP Administrator (Signature Required)	Date:
CDOT Project Engineer/CDOT Designee (Signature Required)	Date:

(20) COMPLIANCE CERTIFICATION

Corrective action(s) has been taken, or where a report does not identify any incidents requiring corrective action, the report shall contain a signed statement indicating the site is in compliance with the permit to the best of the signer's knowledge and belief.

Contractor's Erosion Control Supervisor/SWMP Administrator (Signature Required)	Date:
CDOT Project Engineer/CDOT Designee (Signature Required)	Date:

Stormwater Management Field Inspection Report Instructions (continued)

BMPs In SWMP/Used/Not Needed at this Time. This section can be used as follows:

❑ If the BMP is required by the SWMP and implemented, indicate by placing a ✔ in both the "In SWMP" and "Used" columns.

❑ If the BMP is required by the SWMP, but not implemented, indicate by placing a ✔ in the "In SWMP" and "Not Needed at this Time" columns.

(a) Erosion Control BMPs On Site

- Embankment Protector (e.g., temporary slope drains, open-chute drains, etc.)
- Grading Techniques (e.g., vertical tracking, scarifying, or disking the surface on the contour, etc.)
- Check Dams (e.g., rock check, erosion logs, erosion bales, silt berms, etc.)
- Outlet Protection (e.g., riprap, erosion log around top of headwall, etc.)

(b) Sediment Control BMPs On Site

- Inlet Protection (e.g., erosion logs, erosion bales, sand bags, gravel bags, etc.)
- Perimeter Control (e.g., silt fence, erosion logs, berms, etc.)

(d) Materials Handling, Spill Prevention, Waste Management and General Pollution Prevention

- Stockpile Management. Stockpiles shall be located away from sensitive areas. All erodible stockpiles (including topsoil) shall be contained by silt fence, berms or other sediment control devices throughout construction (also see subsection 208.07).
- Materials Management. Material that could contribute pollutants to stormwater shall have secondary containment or other equivalent protection (also see subsection 208.06(a).
- Concrete Waste Management. All concrete residue shall be contained in a signed structure as designed per subsection 208.02(j) and subsection 208.05(n). It shall be located a minimum of 50 feet from state waters.
- Saw Water Containment (e.g., pick-up broom or vacuum). Street washing is *not* allowed.
- Sanitary Facility. Temporary sanitary facilities shall be located 50 feet away from drainage ways, inlets, receiving waters, and located away from areas of high traffic, and areas susceptible to flooding or damage by construction equipment.

(16) Construction Site Assessment & Corrective Actions: Inspect the construction site and indicate where BMP feature(s) identified in section 15 (BMPs On Site at Time of Inspection), require corrective action. Erosion and sediment control practices identified in the SWMP shall be evaluated to ensure that they are operating correctly.

- Location. Site location (e.g., project station number, mile marker, intersection quadrant, etc.).
- BMP. Indicate the type of BMP at this location that requires corrective action (e.g., silt fence, erosion logs, soil retention blankets, etc.).
- Condition. Identify the condition of the BMP, using more than one letter (identified in section 16) if necessary.
- Description of Corrective Action and Preventative Measure Taken. Provide the proposed corrective action needed to bring the area or BMP into compliance. Once corrective actions are completed, state the measures taken to prevent future violations and ensure that the BMPs are operating correctly, including the required changes made to the SWMP.
- Date Completed & Initials. Date and initial when the corrective action was completed and the preventative measure statement finished.

(17) Construction Site Assessment: Was there any off site discharge of sediment at this site since the last inspection?
(a) Is there evidence of discharge of sediment or other pollutants from the site? **Off site pollutant discharges are a violation of the permit**. The construction site perimeter, all disturbed areas, material and/or waste storage areas that are exposed to precipitation, discharge locations, and locations where vehicles access the site shall be inspected for evidence of, or the **potential** for, pollutants leaving the construction site boundaries, entering the stormwater drainage system, or discharging to state water.
(b) Has sediment or other pollutants discharging from the site reached state waters? **Off site pollutant discharges are a violation of the permit.** If off site discharge has occurred, explain the discharge and the corrective actions in section 16 (Construction Site Assessment & Corrective Actions) or section 18 (General Notes).

(18) General Notes: Indicate any additional notes that add detail to the inspection; this may include positive practices noted on the project.

(19) Inspection Certification: In accordance with Part I, F.1.c of the CDPS-SCP, all reports for submittal shall be signed and certified for accuracy.

(20) Compliance Certification: In accordance with Part I, D.6.b.2.viii of the CDPS-SCP, compliance shall be certified through signature.

COLORADO DEPARTMENT OF TRANSPORTATION

DAILY STORMWATER LOG

In accordance with subsection 208.03(c) daily stormwater compliance inspections are required on all projects holding a Colorado Discharge Permit System – Stormwater Construction Permit (CDPS-SCP).

This form is to be used as the daily diary to evaluate BMPs used during construction activities.

See the instructions for more information.

Date:	Project number:	Sub-account number:

The entire site shall be inspected to determine whether BMPs are being implemented and maintained in accordance with the project's site specific SWMP and the CDPS-SCP. The Erosion Control Supervisor (ECS) or Superintendent shall identify if additional BMPs are needed, can be removed, or need maintenance. The **condition** of the currently used BMPs shall be recorded, using one or more of the following letters: (**I**) Incorrect Installation; (**M**) Maintenance is needed; (**F**) BMP failed to operate; (**A**) Additional BMP is needed; (**R**) Remove BMP. Only BMPs with the conditions above need be recorded. (Use the extra page at the end of this form if needed.)

The Project Engineer will approve and the Superintendent shall direct the work associated with any BMPs identified in this daily log to ensure compliance with the site specific SWMP and the CDPS-SCP.

CDPS-SCP States: "BMPs that are not operating effectively, have proven to be inadequate, or have failed must be addressed as soon as possible, immediately in most cases."

Location	BMP Type	Condition	Notes/Comments	Date Completed & Initials

** ALL BMPS ARE IN OPERATING CONDITION AND NO MAINTENANCE IS NEEDED. (initial the box to the right when this applies)	

Comments/General notes:(attach photos if necessary)

Inspection signature:

Superintendent or ECS Name:(Print)	Signature:	Date signed:

COLORADO DEPARTMENT OF TRANSPORTATION

DAILY STORMWATER LOG, ADDITIONAL PAGE

Date:	Project number:	Sub-account number:

The entire site shall be inspected to determine whether BMPs are being implemented and maintained in accordance with the project's site specific SWMP and the CDPS-SCP. The Erosion Control Supervisor (ECS) or Superintendent shall identify if additional BMPs are needed, can be removed, or need maintenance. The **condition** of the currently used BMPs shall be recorded, using one or more of the following letters: (**I**) Incorrect Installation; (**M**) Maintenance is needed; (**F**) BMP failed to operate; (**A**) Additional BMP is needed; (**R**) Remove BMP. Only BMPs with the conditions above need be recorded.

The Project Engineer will approve and the Superintendent shall direct the work associated with any BMPs identified in this daily log to ensure compliance with the site specific SWMP and the CDPS-SCP.

CDPS-SCP States: "BMPs that are not operating effectively, have proven to be inadequate, or have failed must be addressed as soon as possible, immediately in most cases."

Location	BMP Type	Condition	Notes/Comments	Date Completed & Initials

COLORADO DEPARTMENT OF TRANSPORTATION

BIDDERS LIST

Project Name and Number	Project Code	Proposal Date	Contractor	Region

Subcontractors/Suppliers/Vendors: The bidder must list all firms seeking to participate on the contract. This information is used by the Colorado Department of Transportation (CDOT) to determine overall goals for the Disadvantaged Business Enterprise Program. Failure to submit this form may result in the proposal being rejected.

Firm Name	Email	Work Proposed (Select all that apply)	DBE (Y/N)	Selected (Y/N)

I certify that the information provided herein is true and correct to the best of my knowledge.

Name	Signature/Initials	Title	Date

Work Proposed Categories:

1. *Materials and Supplies*
2. *Flagging and Traffic Control*
3. *Trucking and Hauling*
4. *Precast Concrete, Foundations, and Footings*
5. *Concrete Paving, Flatwork and Repair*
6. *Lighting and Electrical*
7. *Signs, Signal Installation, and Guardrail*
8. *Fencing*
9. *Buildings and Vertical Structures*
10. *Utility, Water and Sewer Lines*
11. *Structural Steel and Steel Reinforcement*
12. *Riprap and Anchored Retaining Walls*
13. *Landscape and Erosion Control*
14. *Bridge and Bridge Deck Construction*
15. *Asphalt Paving*
16. *Road and Parking Lot Marking*
17. *Chip Seal, Crack Seal, Joint Seal and Crack Fill*
18. *Bridge Painting and Coating*
19. *Stairway and Ornamental Metal*
20. *Parking Lots and Commercial Sidewalks*
21. *Clearing, Demolition, Excavation and Earthwork*
22. *Engineering and Surveying Services*
23. *Public Relations and Involvement*
24. *Piles and Deep Foundations*
25. *Waste Management and Recycling*
26. *Site Clean Up*
27. *Mechanical and HVAC*
28. *Tunnel Construction*
29. *Profiling and Grinding*
30. *Environmental Health and Safety*

This form must be submitted by the proposal deadline. For CDOT projects, submit to cdot_hq_dbeforms@state.co.us.

COLORADO DEPARTMENT OF TRANSPORTATION

ANTICIPATED DBE PARTICIPATION PLAN

Bidder:		Project:	
Contact:		Project Code:	
Phone:		Date of Proposal:	
Email:		Contract Goal:	
Preferred Contact Method:		Region:	

DBE Commitments

DBE Firm Name	Work to Be Performed	Commitment Amount	Eligible Participation
		Total Eligible Participation	
		Total Bid Amount	
		Total Eligible Participation Percentage	

Bidder Signature

This section must be signed by an individual with the authority to bind the Bidder. By signing this form, as an authorized representative of the Bidder, you declare under penalty of perjury in the second degree and any other applicable state or federal laws that the statements made in this document are true and complete to the best your knowledge. Further, you attest that you have read the Standard Special Provision Disadvantaged Business Enterprise Requirements and understand the following:

CDOT shall not award a contract until it has been determined that the contract goal has been met or that you have otherwise demonstrated good cause. Once your proposal has been submitted, commitments may not be modified or terminated without the approval of CDOT. If selected as the lowest apparent bidder, you shall submit a Form 1415 for each commitment listed above. If you have not met the contract goal, you will also be required to submit documentation of all good faith efforts to meet the contract goal.

It is your responsibility to ensure that the selected DBEs are certified for the work to be performed and that their eligible participation has been properly counted. For additional information and instructions on calculating eligible participation, see the Standard Special Provision Disadvantaged Business Enterprise Requirements.

Name	Title	Signature	Date

This form must be submitted by the proposal deadline. For CDOT projects, submit to cdot_hq_dbeforms@state.co.us.

COLORADO DEPARTMENT OF TRANSPORTATION

COMMITMENT CONFIRMATION

SECTION 1. This section must be completed by the Contractor.

Project:		Project Code:	
Bidder/Contractor:		Phone:	
Contact:		Email:	
DBE Firm Name:		DBE Phone:	
DBE Address:		DBE Email:	

Commitment Details

Category	Work to be Performed	DBE Work Code(s)	Commitment Amount	Eligible Participation
Construction				
Trucking				
Supplies				
Services				
		Total		

This section must be signed by an individual with the power to contractually bind the Bidder/Contractor. You declare under penalty of perjury in the second degree and any other applicable state or federal laws that the statements made in this document are complete, true and accurate to the best of your knowledge.

Bidder/Contractor Representative	Title	Signature	Date

SECTION 2. This section must be completed by the DBE. (Attach additional pages if necessary).

This document is not a contract with the Bidder/Contractor; it is an acknowledgement of the obligation that the Bidder/Contractor is making to CDOT. The amounts listed above may be less than the subcontractor or purchase order amount, but can never be more, and shall not reflect any mark up by the Bidder/Contractor. **All questions must be answered.**

Are you contracting directly with the Bidder/Contractor or with one of its subcontractors? If with a subcontractor, provide the firm name.	
Will you be purchasing supplies or materials or leasing or renting equipment from the Bidder/Contractor or its subcontractors? If so, explain.	
Do you intend to subcontract any portion of the work listed above? If yes, state to which firms, what work and the approximate amount. Include trucking subcontractors and owner-operators.	
Will you be providing trucking services on this project? If so, state how many of your own trucks and employees you will have on this project.	
Who within your firm will be supervising and responsible for your firm's work on this project?	
Will you be acting as a broker on this project? If so, state what you will be brokering and your approximate brokerage fee.	
Will you be acting as a supplier on this project? If so, please state what you will be supplying and whether you will manufacture the items.	

This section must be signed by an individual with the power to contractually bind the DBE. You declare under penalty of perjury in the second degree and any other applicable state or federal laws that the statements made in this document are complete, true and to the best of your knowledge. You attest that you are eligible to participate as a DBE on this contract for the work listed above and have the capacity to perform the work as stated.

DBE Representative	Title	Signature	Date

See the DBE Standard Special provision for additional information on completing and submitting this form.

Pre-award CDOT projects: Submit this form to the CDOT Civil Rights and Business Resource Center via fax to (303)757-9019. All originals must be sent to: CDOT Civil Rights and Business Resource Center, 4201 E. Arkansas Ave. Room 150, Denver, CO 80222.

Pre-award local agency projects: Submit this form to the local agency. All originals must be sent to: CDOT Civil Rights and Business Resource Center, 4201 E. Arkansas Ave. Room 150, Denver, CO 80222.

COLORADO DEPARTMENT OF TRANSPORTATION

GOOD FAITH EFFORT REPORT

Section 1. Contractor and Project Information

Bidder:		Project:	
Address:		Project Code:	
Contact Name:		Proposal Amount:	
Contact Phone:		Contract Goal Percentage:	
Contact Email:		Contract Goal Dollar Value:	

Section 2. Efforts to Achieve DBE Participation. Attach a narrative that answers the questions below and complete Page 2 (Subcontractor Quote Summary). Provide any supporting documentation which demonstrates your good faith efforts.

a. Describe your overall plan or approach to meeting the contract goal. Include how much and what work you intend to self-perform; how much and what work you intend to subcontract; what work areas were identified as subcontracting opportunities for DBEs; and the approximate number of DBEs per area.

b. Describe your efforts to obtain DBE participation (i.e. how you attempted to execute your plan or approach to meeting the contract goal). Include direct outreach (state the DBE solicited, date(s) and method of phone, email or fax); indirect outreach such as events, publications, and/or communication with minority and other organizations that you conducted to reach DBEs (state date(s), location and audience); other efforts you made to assist DBEs in competing for or obtaining contracts (accepting quotes from DBEs that may be higher than other subcontractors, modifications to contract scopes, unbundling, mentoring, etc.); and obstacles you encountered in assisting or contracting with DBEs. Cost alone shall not be a reason to reject a DBE and will be considered in the evaluation of Page 2.

c. If the eligible participation submitted on the Form 1414 was miscalculated, determined to be invalid, or otherwise did not meet the contract goal, provide your justification for such deficiencies and the remedies you have taken or intend to take to avoid the issue in the future. If you have obtained any additional commitments since submission of the bid, attach the Form 1415(s) and the reason why such commitments were not obtained prior to the proposal due date.

Section 3. Affidavit of Good Faith Efforts. The Bidder must show that it took all necessary and reasonable steps to achieve the DBE contract goal which by their scope, intensity and appropriateness to the objective, could reasonably be expected to obtain sufficient DBE participation, even if not fully successful. 49 CFR Part 26, Appendix A sets forth examples and guidance for good faith efforts. The contractor is not limited to the examples provided in 49 CFR Part 26, Appendix A and may provide any documentation that demonstrates good faith efforts to obtain DBE participation on this contract.

If, at any time, CDOT has reason to believe that any person or firm has willfully and knowingly provided incorrect information or made false statements, CDOT may initiate suspension or debarment proceedings against the person or firm under 49 CFR Part 29, take enforcement action under 49 CFR Part 31, Program Fraud and Civil Remedies, and/or refer the matter to the Department of Justice or Office of the Inspector General for criminal prosecution under 18 U.S.C. 1001, which prohibits false statements in Federal program.

By signing below, the Bidder hereby affirms that it has made good faith efforts and has documented all such efforts in this form and the attached supporting documentation.

I, _____, am the _____ of _____.

Representative Name Title Company

I have the authority to make this affidavit for and on behalf of my company. All information provided herein and attached as evidence of my company's good faith efforts is true and accurate to the best of my belief.

_____ _____

Signature Date

Notarization: Must be completed by a licensed notary.

County of _____ State of _____

Subscribed and sworn before me this _____ day of _____ SEAL

Notary Signature _____

Notary Address _____

_____

CDOT projects: Submit this form and all supporting documentation to the CDOT Civil Rights and Business Resource Center via fax to (303)757-9019. All originals must be sent to: CDOT Civil Rights and Business Resource Center, 4201 E. Arkansas Ave. Room 150, Denver, CO 80222.

Local agency projects: Submit this form and all supporting documentation to the local agency. All originals must be sent to: CDOT Civil Rights and Business Resource Center, 4201 E. Arkansas Ave. Room 150, Denver, CO 80222.

Subcontractor Quote Summary (Attach additional pages if necessary.)

Subcontractor	DBE (Y/N)	Work Type(s)	Quote Amount	Selected (Y/N)	Reason

Guidance Concerning Good Faith Efforts

The City would like to remind Contractors that are submitting bids for this solicitation process to pay close attention to the DBE (Disadvantaged Business Enterprise) documents, and their requirements. Please be thorough in your review and completion of all forms. CDOT has documented significant delays to projects, including Local Agency projects, due to submitted bids not showing or meeting target Disadvantaged Business Enterprise (DBE) goals and incorrectly documenting Good Faith Efforts.

CDOT follows 49 CFR26, Appendix A Guidance Concerning Good Faith Efforts when reviewing bids. This document is attached.

The following websites reference information that may be helpful in achieving the DBE goal found in the Project Special Provisions, or properly documenting Good Faith Effort should it not be possible to meet the aforementioned goal

Statewide DBE Directory
https://coucp.dbesystem.com/FrontEnd/VendorSearchPublic.asp?XID=9818&TN=coucp

Description of DBE Requirements and Good Faith Efforts Criteria
https://www.codot.gov/business/civilrights/dbe/utilizing-dbe-firms-on-construction-projects

CDOT Good Faith Effort Review process:
https://www.codot.gov/business/civilrights/dbe/good-faith-effort-guidance-construction-projects

assisted, or participated in any manner in an investigation, proceeding, or hearing under this part. If you violate this prohibition, you are in noncompliance with this part.

[64 FR 5126, Feb. 2, 1999, as amended at 68 FR 35556, June 16, 2003]

APPENDIX A TO PART 26—GUIDANCE CONCERNING GOOD FAITH EFFORTS

I. When, as a recipient, you establish a contract goal on a DOT-assisted contract, a bidder must, in order to be responsible and/or responsive, make good faith efforts to meet the goal. The bidder can meet this requirement in either of two ways. First, the bidder can meet the goal, documenting commitments for participation by DBE firms sufficient for this purpose. Second, even if it doesn't meet the goal, the bidder can document adequate good faith efforts. This means that the bidder must show that it took all necessary and reasonable steps to achieve a DBE goal or other requirement of this part which, by their scope, intensity, and appropriateness to the objective, could reasonably be expected to obtain sufficient DBE participation, even if they were not fully successful.

II. In any situation in which you have established a contract goal, part 26 requires you to use the good faith efforts mechanism of this part. As a recipient, it is up to you to make a fair and reasonable judgment whether a bidder that did not meet the goal made adequate good faith efforts. It is important for you to consider the quality, quantity, and intensity of the different kinds of efforts that the bidder has made. The efforts employed by the bidder should be those that one could reasonably expect a bidder to take if the bidder were actively and aggressively trying to obtain DBE participation sufficient to meet the DBE contract goal. Mere *pro forma* efforts are not good faith efforts to meet the DBE contract requirements. We emphasize, however, that your determination concerning the sufficiency of the firm's good faith efforts is a judgment call: meeting quantitative formulas is not required.

III. The Department also strongly cautions you against requiring that a bidder meet a contract goal (i.e., obtain a specified amount of DBE participation) in order to be awarded a contract, even though the bidder makes an adequate good faith efforts showing. This rule specifically prohibits you from ignoring *bona fide* good faith efforts.

IV. The following is a list of types of actions which you should consider as part of the bidder's good faith efforts to obtain DBE participation. It is not intended to be a mandatory checklist, nor is it intended to be exclusive or exhaustive. Other factors or types of efforts may be relevant in appropriate cases.

A. Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBEs who have the capability to perform the work of the contract. The bidder must solicit this interest within sufficient time to allow the DBEs to respond to the solicitation. The bidder must determine with certainty if the DBEs are interested by taking appropriate steps to follow up initial solicitations.

B. Selecting portions of the work to be performed by DBEs in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the prime contractor might otherwise prefer to perform these work items with its own forces.

C. Providing interested DBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.

D. (1) Negotiating in good faith with interested DBEs. It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBEs that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBEs to perform the work.

(2) A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBEs is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. Also, the ability or desire of a prime contractor to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Prime contractors are not, however, required to accept higher quotes from DBEs if the price difference is excessive or unreasonable.

E. Not rejecting DBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities. The contractor's standing within its industry, membership in specific groups, organizations, or

associations and political or social affiliations (for example union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids in the contractor's efforts to meet the project goal.

F. Making efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance as required by the recipient or contractor.

G. Making efforts to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services.

H. Effectively using the services of available minority/women community organizations; minority/women contractors' groups; local, state, and Federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBEs.

V. In determining whether a bidder has made good faith efforts, you may take into account the performance of other bidders in meeting the contract. For example, when the apparent successful bidder fails to meet the contract goal, but others meet it, you may reasonably raise the question of whether, with additional reasonable efforts, the apparent successful bidder could have met the goal. If the apparent successful bidder fails to meet the goal, but meets or exceeds the average DBE participation obtained by other bidders, you may view this, in conjunction with other factors, as evidence of the apparent successful bidder having made good faith efforts.

Colorado Department of Transportation		Prime Contractor Name:	Project Number:
SUBLET PERMIT APPLICATION			
Total Original Contract Amount:		Contact Name & Phone #:	Project Code:
Total Percent Sublet to date (in hundredths):	#DIV/0!		

Subcontract Information

Subcontract Name, Address, Phone:	Subcontract #:	Tier:	If Tier, to what subcontract:
	Substitute Contract: (Y/N)		
	Substitute DBE:		
	If Substitute, to what subcontractor:		

Subcontract Information (check all that apply)

☐ DBE ☐ ESB

WBS Element or Proposal Line #	Item Code	Item Description	Unit of Measure	Location for Design Builds Only	Quantity	Subcontractor Unit Price	Total Amount Sublet
							$ -
							$ -
							$ -
							$ -
							$ -
							$ -
							$ -
							$ -
							$ -
							$ -
							$ -
							$ -
					Total amount of above items:		$ -
					Total from page 2 (if applicable):		$ -
					Previous amount sublet under the Contract:		
					Total amount sublet:		$ -
					Percent of contract of the above items:		#DIV/0!

The Prime Contractor and the subcontractor agree to the following:

- All Prime Contract terms and conditions apply to the subcontract, and the subcontractor shall not commence work until the written subcontract has been fully executed.
- On Federal-Aid projects, the fully executed written subcontract shall include a copy of the form FHWA 1273.
- The subcontractor shall not commence work until the CDOT project engineer approves this Sublet Permit Application.
- The Prime Contractor and subcontractor shall:
  - Make partial payments to subcontractors and/or suppliers in accordance with subsection 107.01 and C.R.S. 24-91-103(2), the "Prompt Payment" statute.
  - Promptly notify subcontractors and/or suppliers of any reason for delaying partial payments.
  - Provide a copy of the monthly estimate to subcontractors who perform work for which payment was made.

I certify under penalty of perjury in the second degree, and other applicable state or federal laws, that the statements made on this document are true and complete to the best of my knowledge.

Prime Representative Signature: _____ Name: _____ Date: _____

Tier #1 Subcontractor Signature: _____ Name: _____ Date: _____

Tier #2 Subcontractor Signature: _____ Name: _____ Date: _____

Subcontract Approval - The application is approved subject to the terms of the Prime Contractor's Contract with CDOT. Nothing in this application shall create a contractual relationship between CDOT and the subcontractor. CDOT approval of this application is not an endorsement of the subcontractor and does not relieve the Prime Contractor of any responsibilities under the Contract with CDOT.

Project Engineer Signature: _____ Name: _____ Date: _____

Region Civil Rights Office: _____ Name: _____ Date: _____

Distribution: Contract and Market Analysis (Records Mgmt) - Original
Contractor
Region

Colorado Department of Transportation

SUBLET PERMIT APPLICATION

Total Original Bid Amount:	$ -	Prime Contractor Name:	Project Number:
		0	0
		Contact Name & Phone #:	Project Code:
		0	0
		0	0

WBS Element or Proposal Line #	Item Code	Item Description	Unit of Measure	Location for Design Builds Only	Quantity	Subcontractor Unit Price	Total Amount Sublet
							$ -
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							$ -
						Total amount of above items:	$ -

Distribution: Contract and Market Analysis (Records Mgmt) - Original
Contractor
Region

Oversight / NHS	
FHWA REGION VIII OVERSIGHT?	■ NO □ YES
NATIONAL HIGHWAY SYSTEM?	□ NO ■YES

City of Grand Junction, Department of Public Works, Utilities, and Planning

HIGHWAY CONSTRUCTION BID PLANS OF PROPOSED
FEDERAL AID PROJECT NO. TCSP M555-029
North Avenue Complete Streets Project
MESA COUNTY
CONSTRUCTION PROJECT CODE NO. 19365
NORTH AVENUE FROM 12th STREET TO 23rd STREET

Related Projects:	
P. E. UNDER PROJECT:	
Project Number	TCSP M555-029
Project Code:	19365
R.O.W. Projects:	
R.O.W. Project Description	TCSP M555-029

DESCRIPTION OF PROJECT

A REVITALIZATION PROJECT FOR NORTH AVENUE FROM 12th STREET TO 23RD STREET IMPLEMENTING "COMPLETE STREETS" DESIGN STANDARDS. THIS PROJECT IS A SAFETY AND A MULTI MODAL TRANSPORTATION ENHANCEMENT PROJECT WHICH INCLUDES CONSTRUCTION OF DETACHED SIDEWALK ON THE NORTH SIDE OF THE ROADWAY CONSISTENT IN ALIGNMENT AND WIDTH, PROVIDING CONSISTENT LANDSCAPE AREAS ON THE NORTH SIDE OF THE ROADWAY, AND CONSTRUCTING STORM DRAIN AND WATER QUALITY FEATURES.

A PRE-BID CONFERENCE WILL BE HELD ON January, 20, 2016 AT 10:00 _M AT GRAND JUNCTION CITY HALL LOCATED AT 250 NORTH 5TH STREET, GRAND JUNCTION, COLORADO TO PRESENT A BRIEF OVERVIEW OF THE PROJECT AND TO ANSWER QUESTIONS FROM PERSPECTIVE BIDDERS.

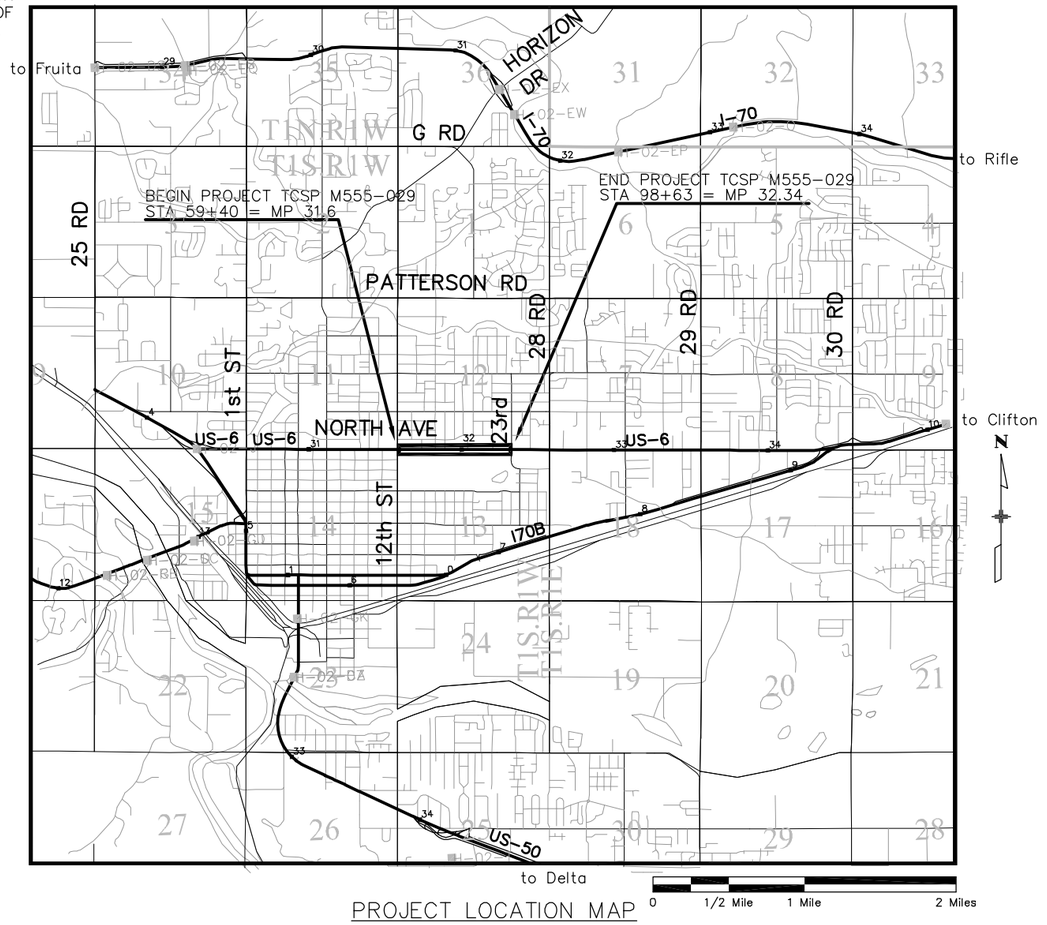
ADD ALTERNATE 1 CONSISTS OF CONSTRUCTING RAISED AND LANDSCAPED MEDIANS WITHIN THE EXISTING TRAFFIC ISLANDS THE LENGTH OF THE PROJECT CONSISTENT IN APPEARANCE.

ADD ALTERNATE 2 CONSISTS OF CONSTRUCTION OF DETACHED SIDEWALK ON THE SOUTH SIDE OF THE ROADWAY CONSISTENT IN ALIGNMENT AND WIDTH & PROVIDING CONSISTENT LANDSCAPE AREAS ON THE SOUTH SIDE OF THE ROADWAY FROM 12TH STREET TO 18TH STREET

TABULATION OF LENGTH & DESIGN DATA

STATION	ROADWAY	
	US 6	US 6
	FEET	MILES
BEGIN PROJECT TCSP M555-029 STA 59+40 = MP 31.6 END PROJECT TCSP M555-029 STA 98+63 = MP 32.34	3923	.74
PROJECT GROSS LENGTH	3923	0.74
2014 DESIGN TRAFFIC	DHV = 2,200 ADT = 21,800	

* FOR INFORMATION ONLY



PROJECT LOCATION MAP

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21–23	Summary of Earthwork Quantities
24–29	Tabulation of Removals
30	Tabulation of adjustments, modifications, and resets
31–33	Tabulation of Surfacing
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PLANS PREPARED BY:
CITY OF Grand Junction COLORADO

Know what's below. Call before you dig.

Print Date: at left	R1	Sheet Revisions			Colorado Department of Transportation	As Constructed
File Name: at left	0000	Date:	Comments	Init.	606 South 9th Street	No Revisions:
Horiz. Scale: As Noted Vert. Scale: As Noted					Grand Junction, CO, 81501	Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369	Void:
					Region 3 RBB	

Contract Information	Project No./Code
Contractor:	TCSP M555-029
Resident Engineer:	19365
Project Engineer:	Sheet Number 1
PROJECT STARTED: __/__/__ ACCEPTED: __/__/__	
Comments:	

N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\Tirtle Sheet.dwg, 12/29/2015 11:02:03 AM

North Avenue (U.S. Highway 6) Complete Streets Project

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COLORADO
DEPARTMENT OF TRANSPORTATION

M&S STANDARDS PLANS LIST

July 04, 2012

Revised on August 13, 2015

ALL OF THE M&S STANDARD PLANS, AS SUPPLEMENTED AND REVISED, APPLY TO THIS PROJECT WHEN USED BY DESIGNATED PAY ITEM OR SUBSIDIARY ITEM.

NEW OR REVISED STANDARD PLAN SHEETS APPLICABLE TO THIS PROJECT, INDICATED BY A MARKED BOX , ■ WILL BE ATTACHED TO THE PLANS.

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S-614-43		TRAFFIC LOOP AND MISCELLANEOUS SIGNAL DETAILS (10 SHEETS)	198-207
S-614-44	☐	PEDESTAL POLE SIGNALS (2 SHEETS) (REVISED ON NOVEMBER 03, 2014)	
S-614-50	☐	STATIC SIGN MONOTUBE STRUCTURES (12 SHEETS) (REVISED ON NOVEMBER 28, 2012)	~~208-219~~
S-614-60	☐	DYNAMIC SIGN MONOTUBE STRUCTURES (14 SHEETS) (REVISED ON NOVEMBER 28, 2012)	~~220-233~~
S-627-1	■	PAVEMENT MARKINGS (5 SHEETS) (REVISED ON JUNE 10, 2014)	~~234-238~~
S-630-1	■	TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION (20 SHEETS) (REVISED ON DECEMBER 08, 2014)	~~239-258~~
S-630-2		BARRICADES, DRUMS, CONCRETE BARRIERS (TEMP) AND VERTICAL PANELS	259
S-630-3		FLASHING BEACON (PORTABLE) DETAILS	260
S-630-4		STEEL SIGN SUPPORT (TEMPORARY) INSTALLATION DETAILS (2 SHEETS)	261-262
S-630-5	☐	PORTABLE RUMBLE STRIPS (TEMPORARY) (2 SHEETS) (REVISED ON AUGUST 13, 2015)	~~263-264~~
S-630-6		EMERGENCY PULL-OFF AREA (TEMPORARY)	265
S-630-7		ROLLING ROADBLOCKS FOR TRAFFIC CONTROL (3 SHEETS)	266-268

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Horiz. Scale: AS SHOWN AS SHOWN
Unit Information: City of GJ Unit Leader Initials: DPJ

Sheet Revisions

Date:	Comments	Init.

Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

As Constructed
No Revisions:
Revised:
Void:

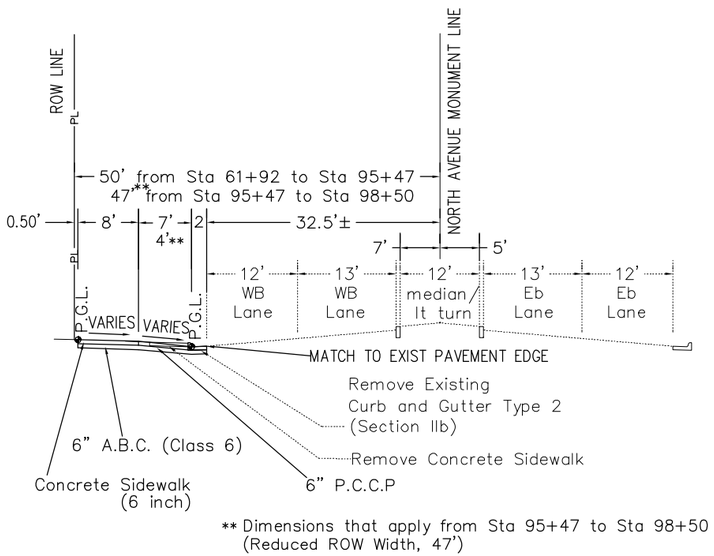
Standards Plans List

Designer: John C Smith
Detailer: John C Smith
Sheet Subset: SURV TAB
Structure Numbers: –
Subset Sheets: –

Project No./Code
TCSP M555-029
19365
Sheet Number 2

Driveway Station Ranges:

61+88.58 to 61+97.79
62+23.84 to 62+71.48
63+26.64 to 63+79.08
64+53.36 to 64+93.61
65+44.66 to 65+94.44
67+36.65 to 67+47.65
69+04.83 to 69+44.44
70+72.57 to 71+19.77
77+57.52 to 77+99.73
80+19.20 to 80+31.80
80+54.41 to 80+63.84
81+81.44 to 82+29.46
84+56.30 to 85+05.63
85+54.64 to 85+96.13
86+54.11 to 86+94.67
87+30.34 to 87+75.00
87+92.30 to 88+35.24
89+11.08 to 89+50.81
90+06.18 to 90+41.57
90+47.10 to 90+97.87
95+75.14 to 96+30.52
96+70.35 to 97+27.94
97+44.85 to 97+85.17

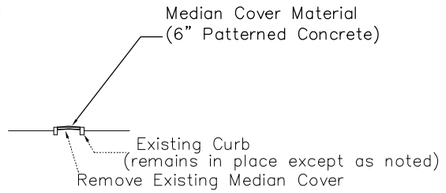


** Dimensions that apply from Sta 95+47 to Sta 98+50 (Reduced ROW Width, 47')

NORTH AVENUE NORTH DRIVEWAYS

Concrete Median Cover Station Ranges:

59+70.44 to 63+66.13
66+41.94 to 67+32.16
71+06.66 to 71+88.54
74+50.32 to 75+30.63
77+60.07 to 78+41.99
82+28.38 to 83+19.83
85+07.47 to 85+66.03
88+21.72 to 89+02.35
90+98.99 to 91+76.42
92+55.51 to 93+24.89
97+48.97 to 98+39.64

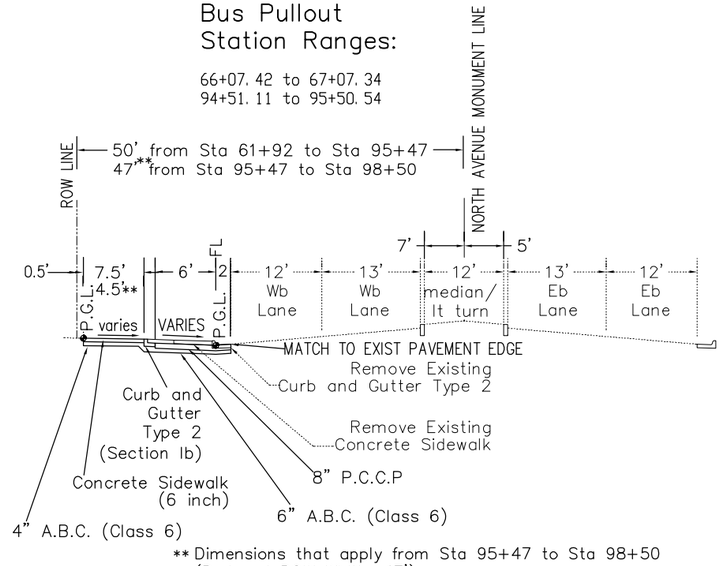


Typical Treatment For Medians 3 Ft Wide And Less From Back Curb To Back Curb

NORTH AVENUE MEDIAN TREATMENT

Bus Pullout Station Ranges:

66+07.42 to 67+07.34
94+51.11 to 95+50.54

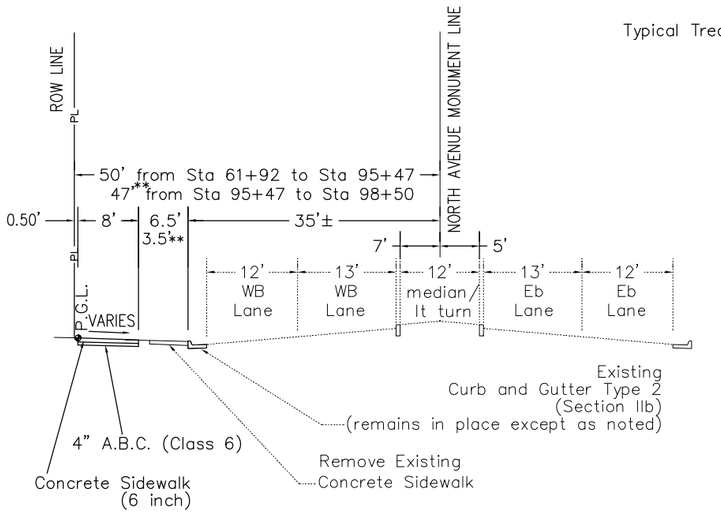


** Dimensions that apply from Sta 95+47 to Sta 98+50 (Reduced ROW Width, 47')

NORTH AVENUE NORTH BUS PULLOUTS

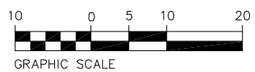
Sidewalk Station Ranges:

62+71.48 to 63+26.64
63+79.08 to 64+53.36
64+93.61 to 65+44.66
65+94.44 to 66+07.42
67+07.34 to 67+36.65
68+88.69 to 69+04.83
70+47.36 to 70+72.57
71+19.77 to 71+91.15
72+60.81 to 74+94.19
76+08.29 to 77+57.52
77+99.73 to 78+62.63
79+05.02 to 79+38.68
82+29.46 to 83+22.23
83+93.26 to 84+56.30
85+05.63 to 85+54.64
85+96.13 to 86+54.11
86+94.67 to 87+30.34
87+75.00 to 87+92.30
88+35.24 to 89+11.08
90+41.57 to 90+47.10
90+97.87 to 91+32.29
92+53.57 to 94+51.11
95+50.54 to 95+75.14
96+30.52 to 96+70.35
97+27.94 to 97+44.85
97+85.17 to 98+36.66



** Dimensions that apply from Sta 95+47 to Sta 98+50 (Reduced ROW Width, 47')

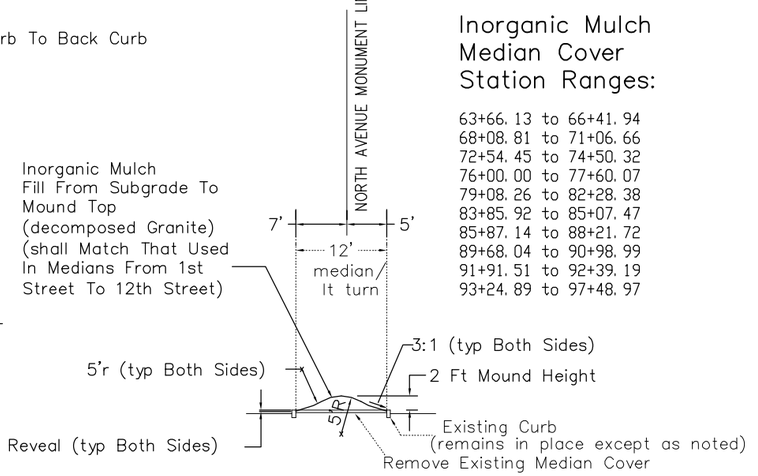
NORTH AVENUE NORTH SIDEWALK



P.G.L. = PROFILE GRADE LINE
P.C.C.P = PORTLAND CEMENT CONCRETE PAVEMENT

Inorganic Mulch Median Cover Station Ranges:

63+66.13 to 66+41.94
68+08.81 to 71+06.66
72+54.45 to 74+50.32
76+00.00 to 77+60.07
79+08.26 to 82+28.38
83+85.92 to 85+07.47
85+87.14 to 88+21.72
89+68.04 to 90+98.99
91+91.51 to 92+39.19
93+24.89 to 97+48.97



Typical Mounding For Medians 10 Ft Wide And Greater From Back Curb To Back Curb A Smooth Transition Shall be Provided to Back of Curb and Concrete Median Cover Grades.

NORTH AVENUE MEDIAN TREATMENT

N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\typical cross section.dwg, 8/21/2015 1:15:08 PM

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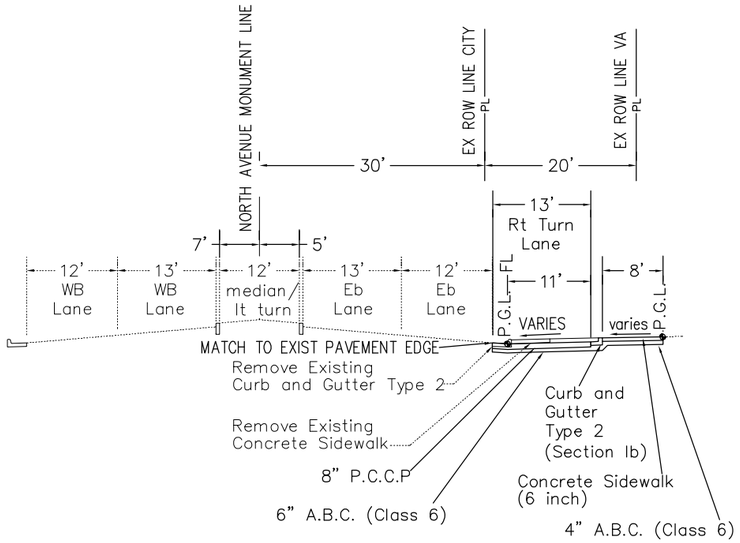
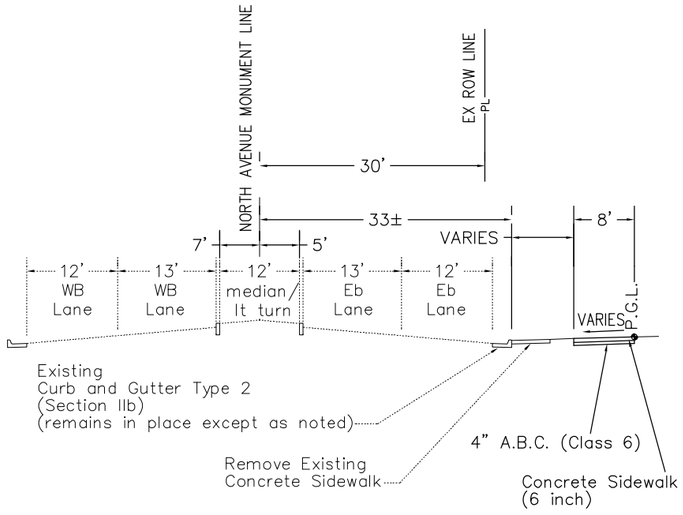
File Name: AT LEFT	Date: / Comments / Init.	606 South 9th Street, Grand Junction, CO, 81501	No Revisions:
Horiz. Scale: N.T.S. Vert. Scale: NA		Phone: 970-683-6351 FAX: 970-683-6369	Revised:
Unit Information: CITY GJ Unit Leader Initials: DPJ		Region 3 RBB	Void:

Typical Cross Section			Project No./Code
Designer: JOHN SMITH	Structure Numbers		TCSP M555-029
Detailer:: JOHN SMITH			19365
Sheet Subset: TYP XS	Subset Sheets: 1 of 2		Sheet Number 3



NORTH AVENUE VA RIGHT TURN LANE

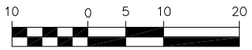
Right Turn Lane
Station Range: 84+25.01 to 85+71.32



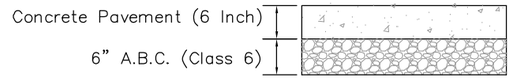
NORTH AVENUE SOUTH SIDEWALK

Sidewalk
Station Range:

66+17.90 to 84+25.01



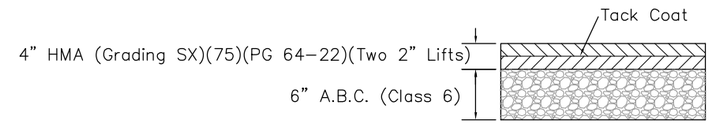
P.G.L. = PROFILE GRADE LINE
P.C.C.P = PORTLAND CEMENT CONCRETE PAVEMENT



DRIVEWAY CONCRETE PAVEMENT DETAIL

PAID AS 304-06000 & 412-00600

FRONTIER MOTOR LODGE EAST AND WEST DRIVEWAYS



DRIVEWAY ASPHALT PAVEMENT DETAIL

PAID AS 304-06000 & 403-34841

PAPA JOHN'S
AQUATIME
TAN PERFECTION/JOHNSON'S
KARATE DOJO
PIZZA HUT
MONUMENT INN
OLD GAS STATION WEST OF 18TH
WRIGLEY FIELD
VILLAGE INN EAST AND WEST DRIVEWAYS
ALLEY ACCESS WEST OF WENDY'S
WENDY'S
IPSWICH INN
OLD GAS STATION ZT 23RD

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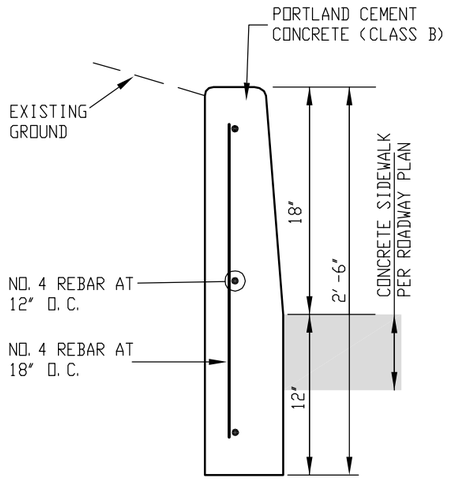
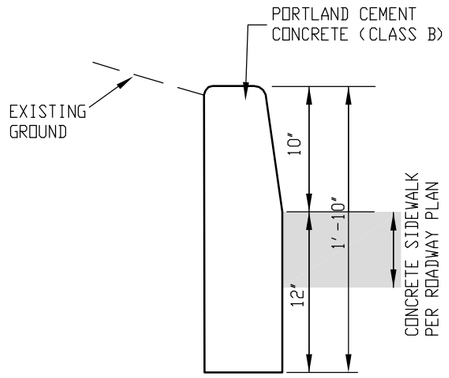
Unit Information: CITY GJ Unit Leader Initials: DPJ				Region 3 RBB	Void:

Typical Cross Section			Project No./Code
Designer: JOHN SMITH	Structure Numbers		TCSP M555-029
Detailer:: JOHN SMITH			19365
Sheet Subset: TYP XS	Subset Sheets:	2 of 2	Sheet Number 4



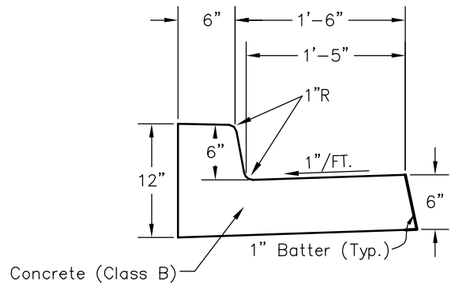
CONCRETE WALL (CLASS D) JOHNSON'S HOUSE OF FLOWER

Station Range: 67+33 to 67+50 Left



CURB TYPE 2 (SPECIAL) (10" HEIGHT)

Station Range: 62+66 to 62+92 Left
86+50 to 86+63 Left
86+95 to 87+06 Left



CURB AND GUTTER TYPE 2 (SECTION II-B) (SPECIAL)

Station Range: 59+43 to 59+70 Left (12th St.)
72+02 to 72+08 Left (15th St.)
72+47 to 72+48 Left (15th St.)
83+39 to 83+40 Left (18th St.)
83+73 to 83+74 Left (18th St.)
91+94 to 91+99 Left (21st St.)
92+33 to 92+38 Left (21st St.)
98+58 to 98+61 Left (23rd St.)

Note:

- All Curb and Gutter shall be monolithic and shall not be Key-Way Type 4 Curbs.

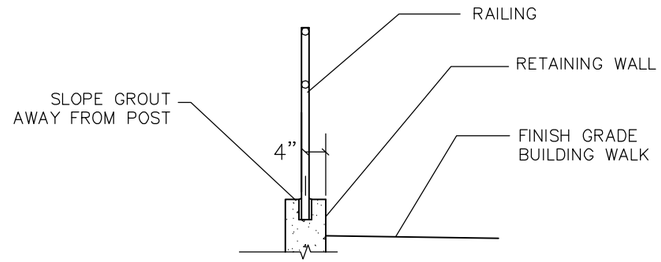
NOTES:

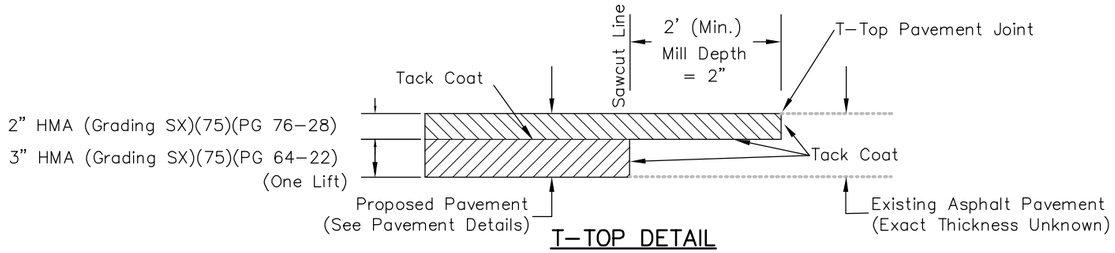
1. PIPES SHALL BE ALUMINUM AND MEET ASTM B241 OR B429 ALLOW 6063-T6 SCHEDULE 40 (STD. PIPE)

2. ALL ALUMINUM PARTS SHALL BE GIVEN A BRONZE ANOTIC COATING AT LEAST .0006 INCH THICK AND HOT WATER SEALED AND SHALL HAVE A UNIFORM FINISH.

3. ALL HANDRAILS SHALL EXTEND AT LEAST 12 INCHES BEYOND THE TOP AND BOTTOM OF THE RAMP SEGMENT AND SHALL BE PARALLEL WITH THE GROUND SURFACE

4. RAILING COLOR TO BE COORDINATED WITH PROPERTY OWNER. ALL SURFACES TO BE PAINTED FOLLOWING INSTALLATION.

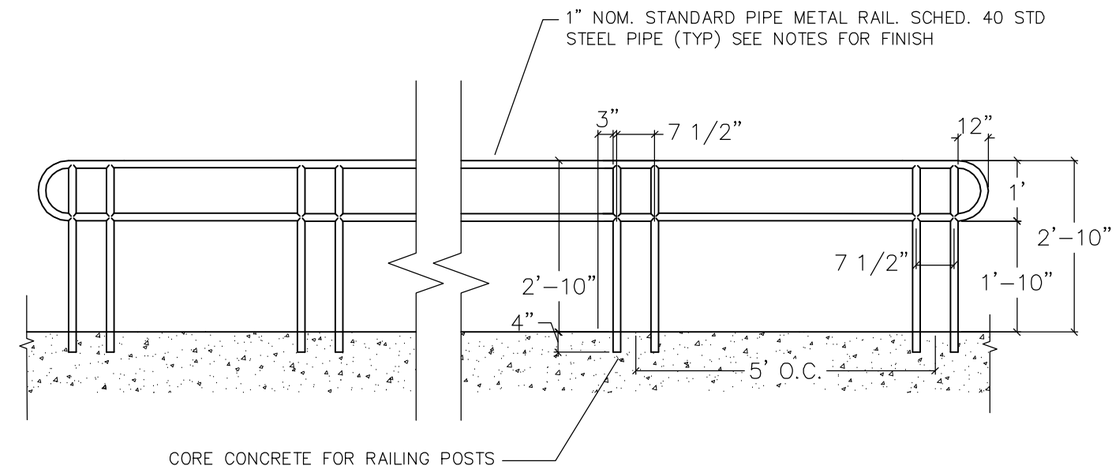




T-TOP DETAIL

GENERAL NOTES

NOTE
THE MINIMUM T-TOP ASPHALT THICKNESS SHALL BE 2-INCH AND THE MINIMUM WIDTH SHALL BE 2-FEET.



PEDESTRIAN RAILING DETAIL

N.T.S.

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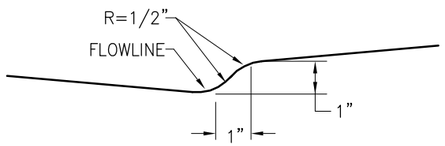
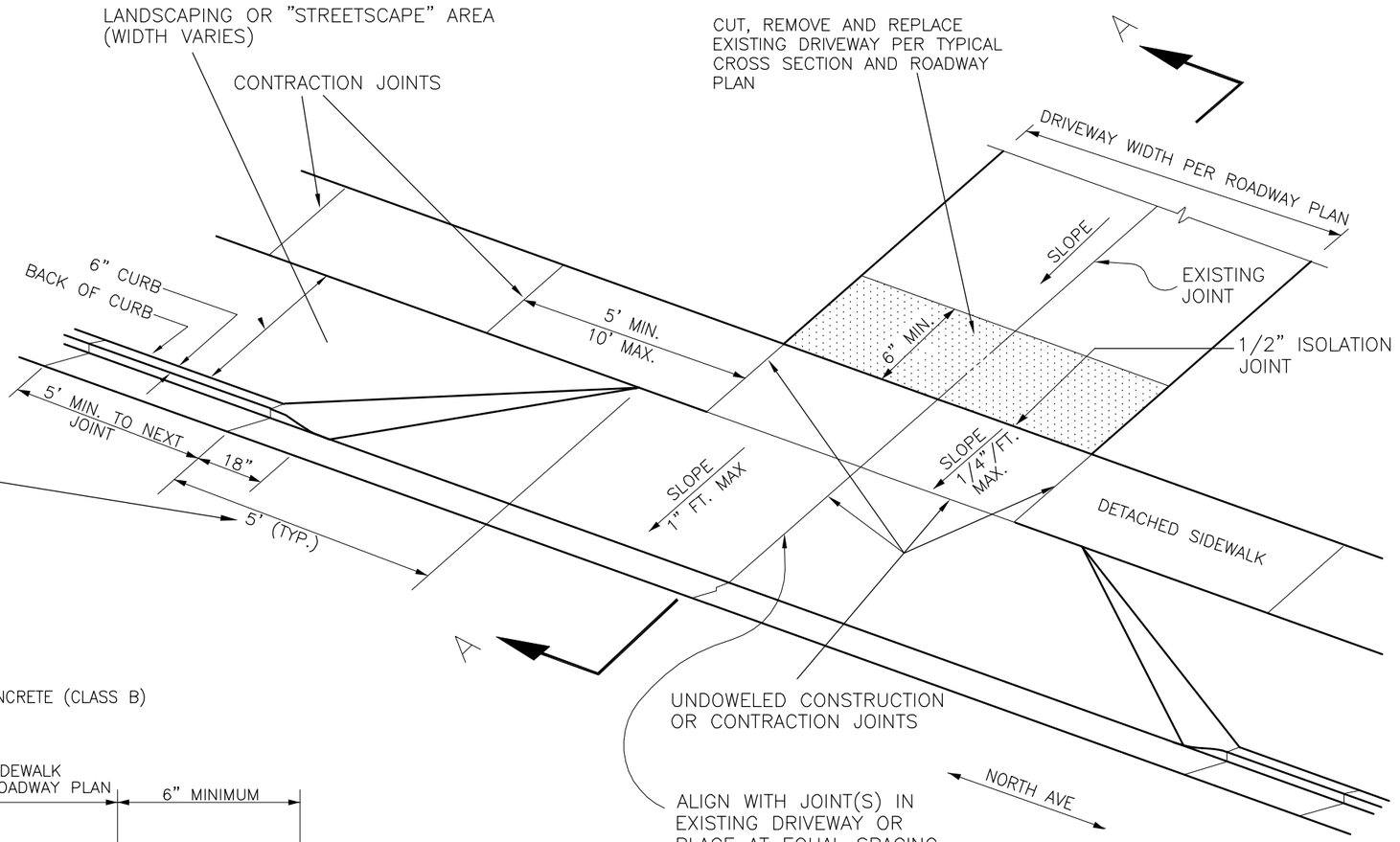
Unit Information: City of GJ Unit Leader Initials: DPJ		Phone: 970-683-6351 FAX: 970-683-6369	Void:
		Region 3 RBB	

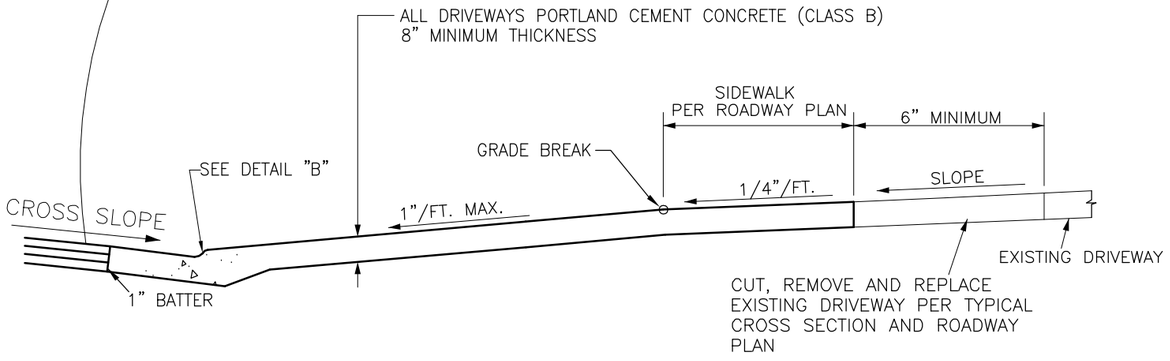
ROADWAY DETAILS		Project No./Code	
Designer: John C Smith	Structure Numbers: –	TCSP M555-029	
Detailer: John C Smith	–	19365	
Sheet Subset: R DET	Subset Sheets: 1 OF 2	Sheet Number	5



DETAIL "B"



CONCRETE DRIVEWAY ENTRANCE (SPECIAL)



SECTION AA

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Horiz. Scale: AS SHOWN AS SHOWN						Revised:	Designer: John C Smith / Structure Numbers: –	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:	Detailer: John C Smith / Structure Numbers: –	Sheet Number 6
							Sheet Subset: R DET / Subset Sheets: 2 OF 2	

APPROVED STORM DRAIN INLETS

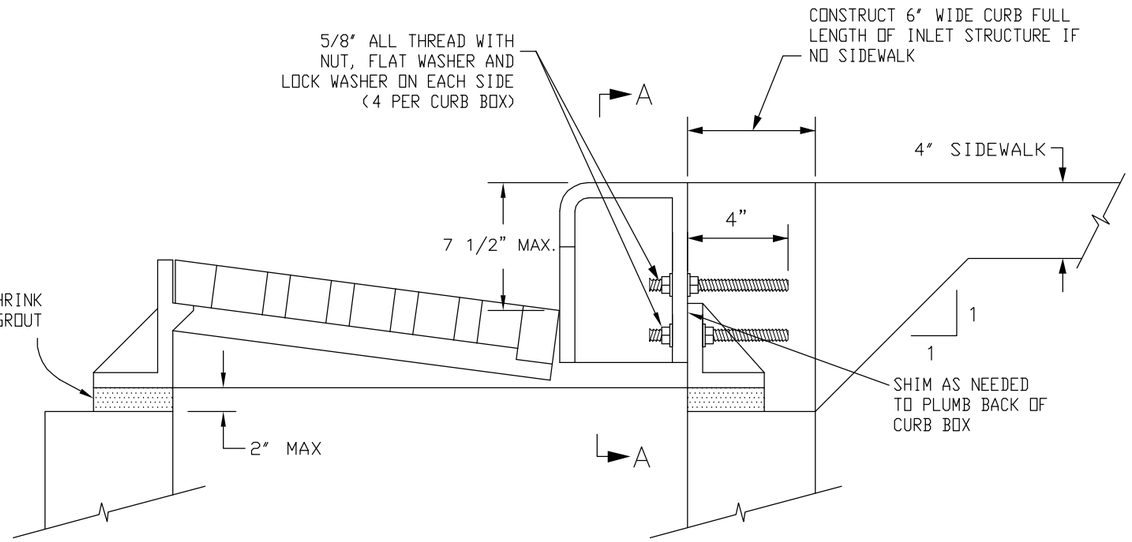
TYPE	GRATE AND FRAME DESIGNATION	CASTINGS GRATE TYPE	BOX DIM. INSIDE
SINGLE GRATE WITH CURB VERTICAL OPENING	CASTINGS IFG–3246–( ) C.I.	R,L,V,D	24 X 36"
DOUBLE GRATE WITH CURB OPENING	CASTINGS IFG–3246–( ) C.I. DOUBLE	R,L,V,D	24" X 73"
TRIPLE GRATE WITH CURB OPENING	CASTINGS IFG–3246–( ) C.I. TRIPLE	R,L,V,D	24" X 110"
AREA INLET	CASTINGS FG–1927–CI CASTINGS NO. 13 UR16	FLAT OR CONCAVE	20" X 30" 24" x 36"
INLET WITH DRIVE OVER CURB BOX	CASTINGS IFG–3246( ) DOC. I:	R,L,V,D	24 X 36"
STANDARD MANHOLE GRATE	CASTINGS MH–24–GBP CI		
C.D.O.T. TYPE R	SEE STANDARD M–604–12		
C.D.O.T. TYPE 13	SEE STANDARD M–604–13		

SHOW GRATE TYPE WHERE INDICATED BY ( )

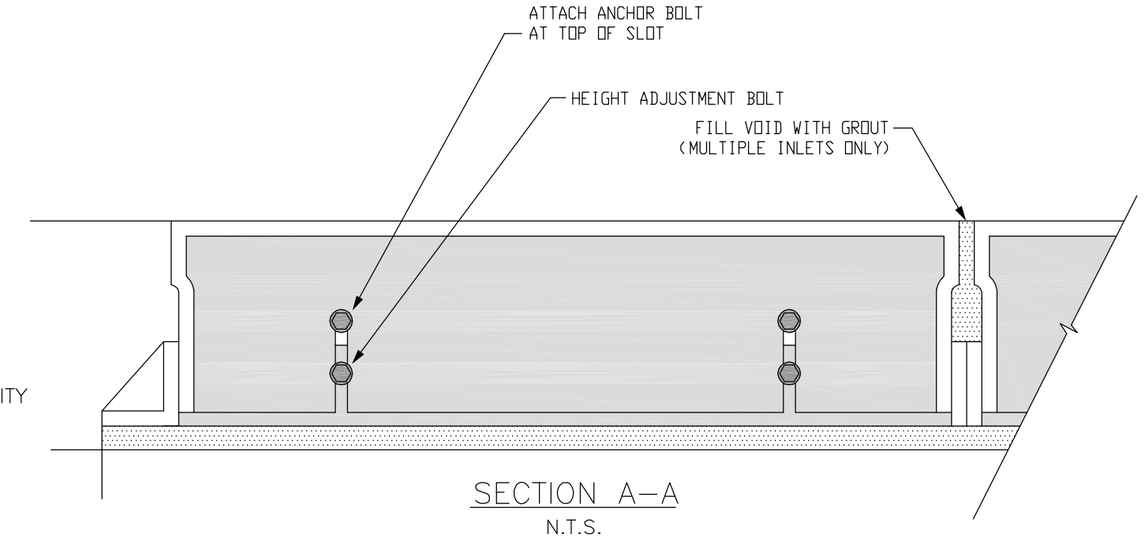
NOTE: USE TYPE R OR TYPE D GRATE WHERE INLET IS LOCATED IN SUMP CONDITION. USE TYPE V OR TYPE L GRATE WHERE GUTTER FLOW IS FROM ONE DIRECTION ONLY.

GRATES AND FRAMES FROM OTHER FOUNDARIES MAY BE USED WHEN APPROVED BY THE CITY ENGINEER.

PLACARD TO BE PLACED ON EACH STORM SEWER OPENING INSTALLED WITHIN THE SYSTEM SERVED BY THE CITY OF GRAND JUNCTION OBTAIN FROM THE CITY OF GRAND JUNCTION INSPECTION STAFF @ (970)244–1577



SIDE VIEW
N.T.S.



SECTION A–A
N.T.S.

INLET CURB BOX DETAIL

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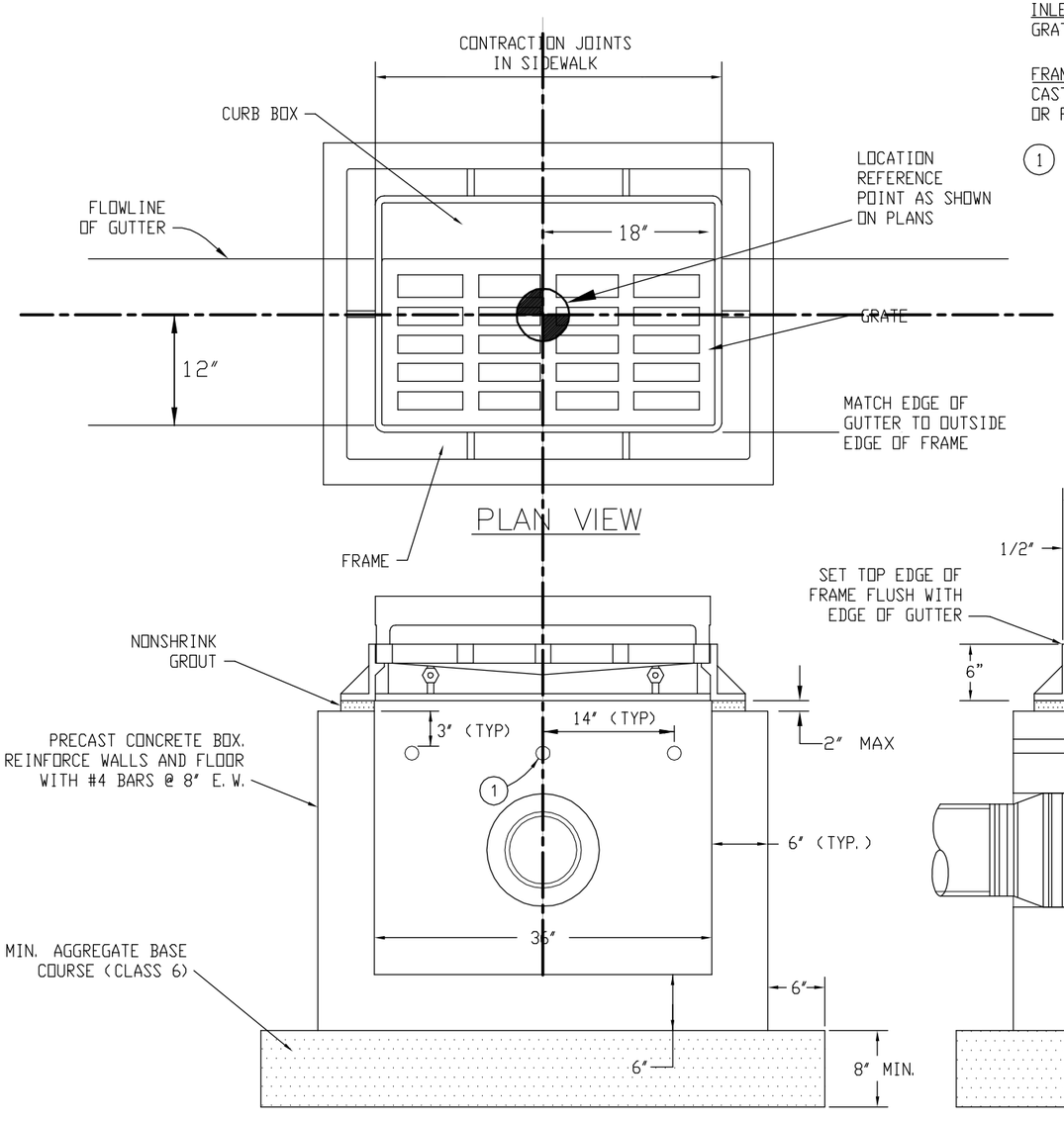
Unit Information: City of GJ Unit Leader Initials: DPJ		Region 3 RBB	Void:
Grand Junction COLORADO PUBLIC WORKS, UTILITIES & PLANNING			

Drainage Details Inlet Curb Box Detail			Project No./Code
			TCSP M555–029
Designer: JOHN SMITH	Structure Numbers	–	19365
Detailer: JOHN SMITH		–	
Sheet Subset: D DETAIL	Subset Sheets:	1 of 5	Sheet Number 7

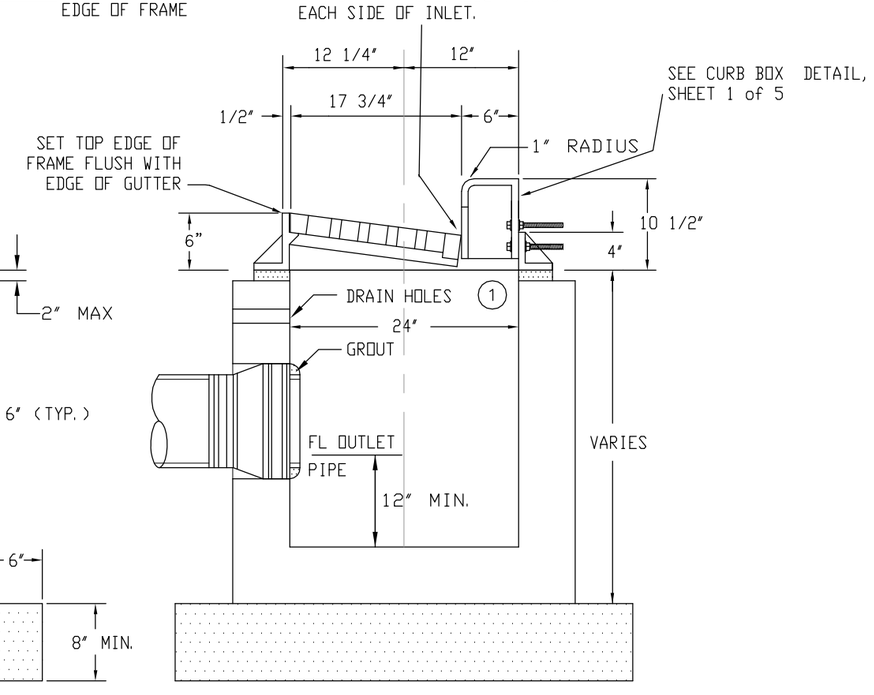


INLET TYPE
GRATE WITH CURB VERTICAL OPENING

FRAME & GRATE
CASTINGS IFG-3246-(GRATE TYPE L) - C. I.
OR PROJECT ENGINEER APPROVED EQUAL

(1) CAST 1½″ DRAIN HOLES IN FRONT SIDE OF BOX AS SHOWN. FILL HOLES W/ NON-SHRINK GROUT PRIOR TO BACKFILLING.

SET FLOWLINE OF FRAME AND GRATE 1″ TO 1-1/2″ BELOW NORMAL GUTTER FLOWLINE ELEVATION. TRANSITION CURB HEIGHT IN 3′ EACH SIDE OF INLET.



INLET SPECIAL

Print Date: @ LEFT	Sheet Revisions	Colorado Department of Transportation	As Constructed
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Horiz. Scale: NA Vert. Scale: NA		Phone: 970-683-6351 FAX: 970-683-6369	Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ		Region 3 RBB	Void:
Grand Junction COLORADO PUBLIC WORKS, UTILITIES & PLANNING			

Drainage Details Inlet Special			Project No./Code
Designer: JOHN SMITH	Structure Numbers	–	TCSP M555-029
Detailer: JOHN SMITH		–	19365
Sheet Subset: D DETAIL	Subset Sheets:	2 of 5	Sheet Number 8

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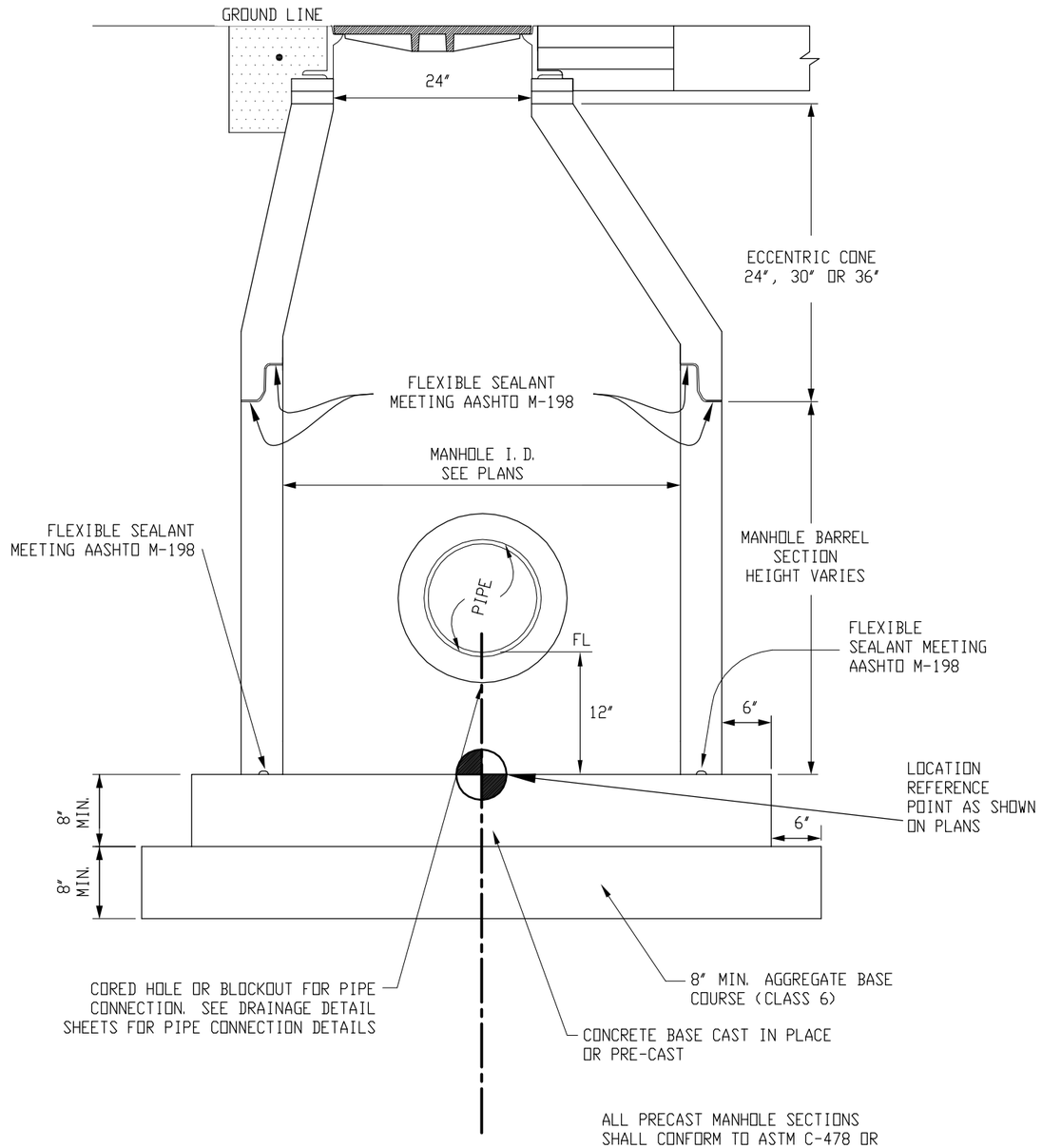
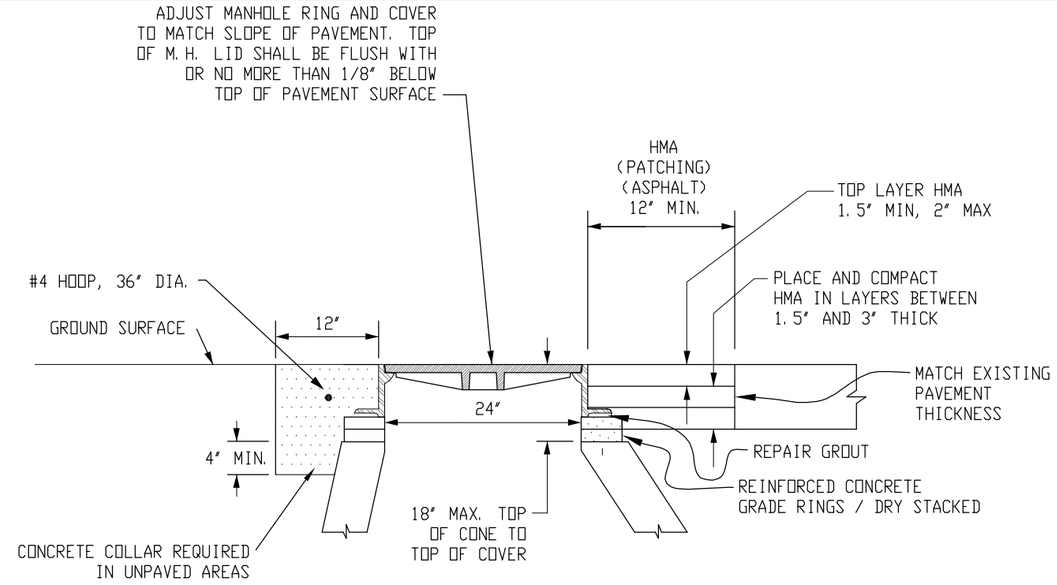
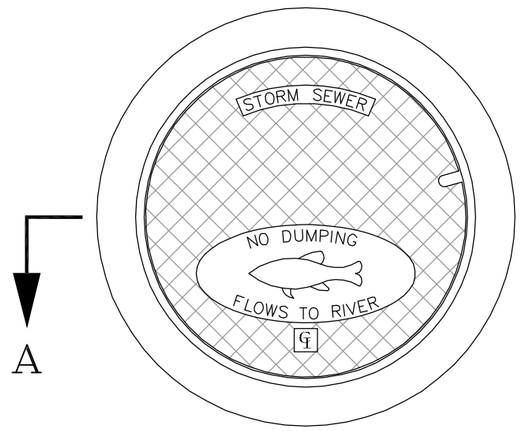


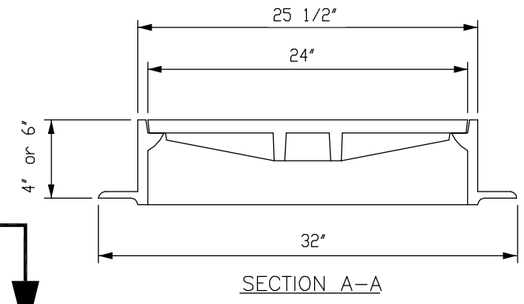
ALL PRECAST MANHOLE SECTIONS SHALL CONFORM TO ASTM C-478 OR AASHTO M-199.

STEPS REQUIRED IN STORM SEWER MANHOLES.





STANDARD M. H. RING & COVER
(CASTINGS INC. 24-B-CI (FISH)
OR PROJECT ENGINEER APPROVED EQUAL



SECTION A-A

NOTE:
WHERE A GRATE TYPE COVER IS
REQUIRED USE CASTINGS MH-24-GBP CI
OR PROJECT ENGINEER APPROVED EQUAL

MANHOLE SLAB BASE RING AND COVER

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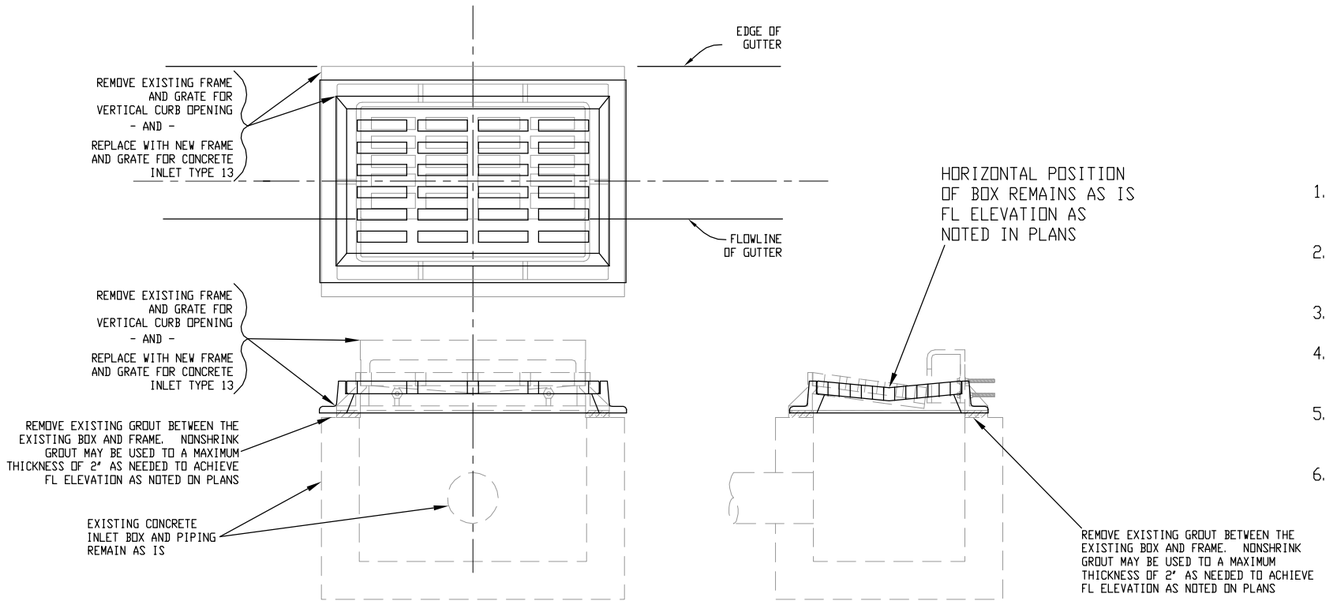
Print Date: @ LEFT	Sheet Revisions	Colorado Department of Transportation	As Constructed
File Name: Drainage Details	Date: / Comments / Init.	606 South 9th Street	No Revisions:
Horiz. Scale: NA Vert. Scale: NA		Grand Junction, CO, 81501	Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ		Phone: 970-683-6351 FAX: 970-683-6369	Void:
City of Grand Junction Colorado Public Works, Utilities & Planning		Region 3 RBB	

Drainage Details Manhole Slab Base		Project No./Code	
Designer: JOHN SMITH	Structure Numbers	–	TCSP M555-029
Detailer: JOHN SMITH		–	19365
Sheet Subset: D DETAIL	Subset Sheets: 3 of 5		Sheet Number 9

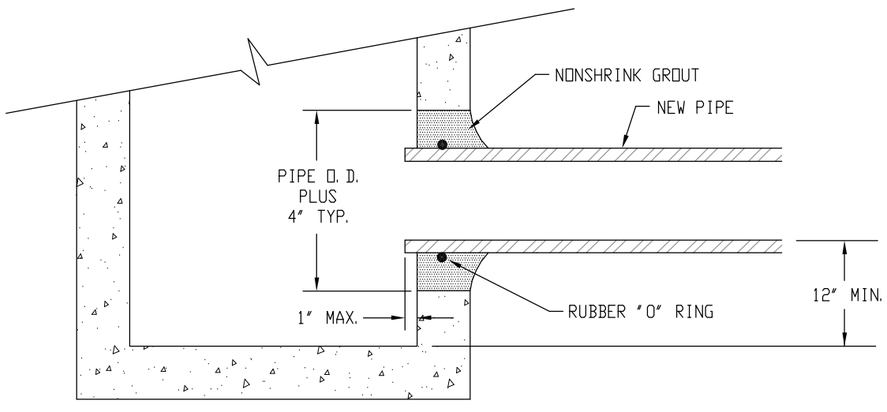


MODIFY INLET DETAIL

STA 62+64, 33' LEFT,
STA 69+12, 33' LEFT, AND
STA 85+65, 31' RIGHT,

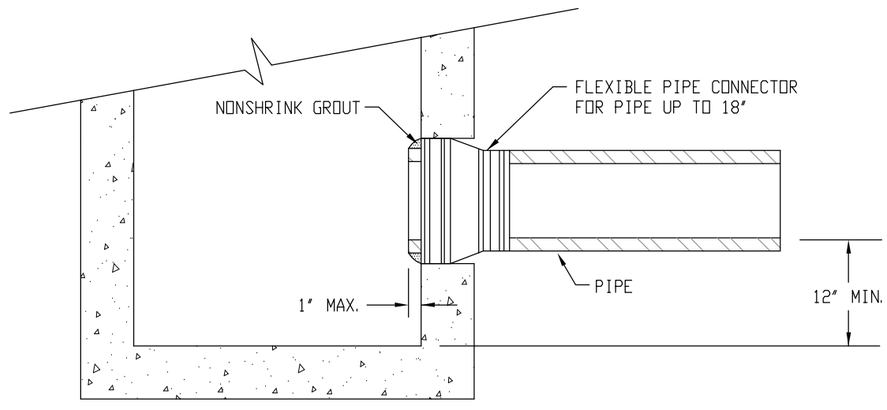
GENERAL NOTES

1. BACKFILL AROUND MANHOLES, INLET BOXES, AND OTHER STRUCTURES SHALL BE PLACED IN 8" LOOSE LIFTS AND COMPACTED TO 95% AASHTO T-180.
2. ALL BACKFILL MATERIAL SHALL BE UNIFORMLY ADJUSTED TO WITHIN 2% OF THE OPTIMUM MOISTURE CONTENT PRIOR TO PLACEMENT AND COMPACTION.
3. ALL PORTLAND CEMENT CONCRETE SHALL BE CLASS "B". (SECTION 601.02).
4. ANY EXISTING PAVEMENT NOT DESIGNATED FOR REMOVAL WHICH IS DAMAGED BY CONSTRUCTION SHALL BE REPLACED IN-KIND BY CONTRACTOR.
5. SEE APPROVED CONSTRUCTION DRAWINGS FOR ALL LOCATIONS, GRADES AND ELEVATIONS OF ALL DRAINAGE IMPROVEMENTS.
6. ALL WORK SHALL BE IN ACCORDANCE WITH APPROVED PLANS.



GROUTED PIPE CONNECTION

(FOR CONNECTIONS TO EXISTING STRUCTURES)



PVC PIPE CONNECTION

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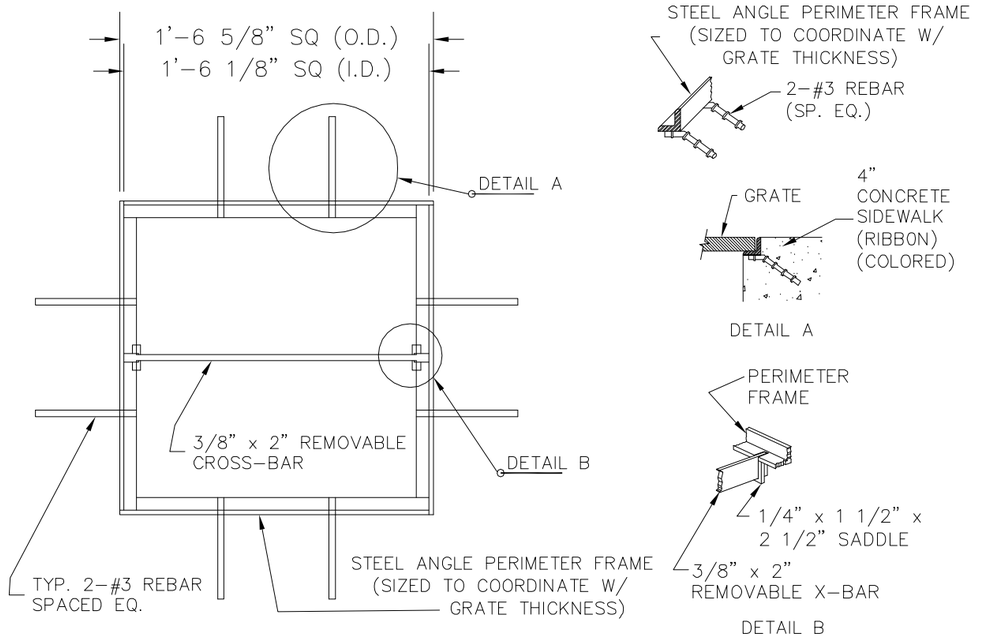
Horiz. Scale: NA Vert. Scale: NA		Phone: 970-683-6351 FAX: 970-683-6369	Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ		Region 3 RBB	Void:
Grand Junction COLORADO PUBLIC WORKS, UTILITIES & PLANNING			

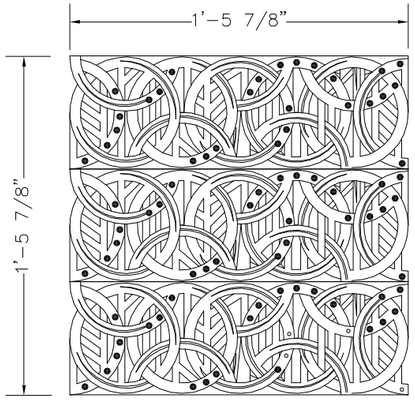
Drainage Details Pipe Connections			Project No./Code
Designer: JOHN SMITH	Structure Numbers	–	TCSP M555-029
Detailer: JOHN SMITH		–	19365
Sheet Subset: D DETAIL	Subset Sheets:	4 of 5	Sheet Number 10



DETAIL A

DETAIL B

GRATE FRAME FOR Inlet Type 13 (5 Foot) (Special)



18" SQ. DRAIN COVER

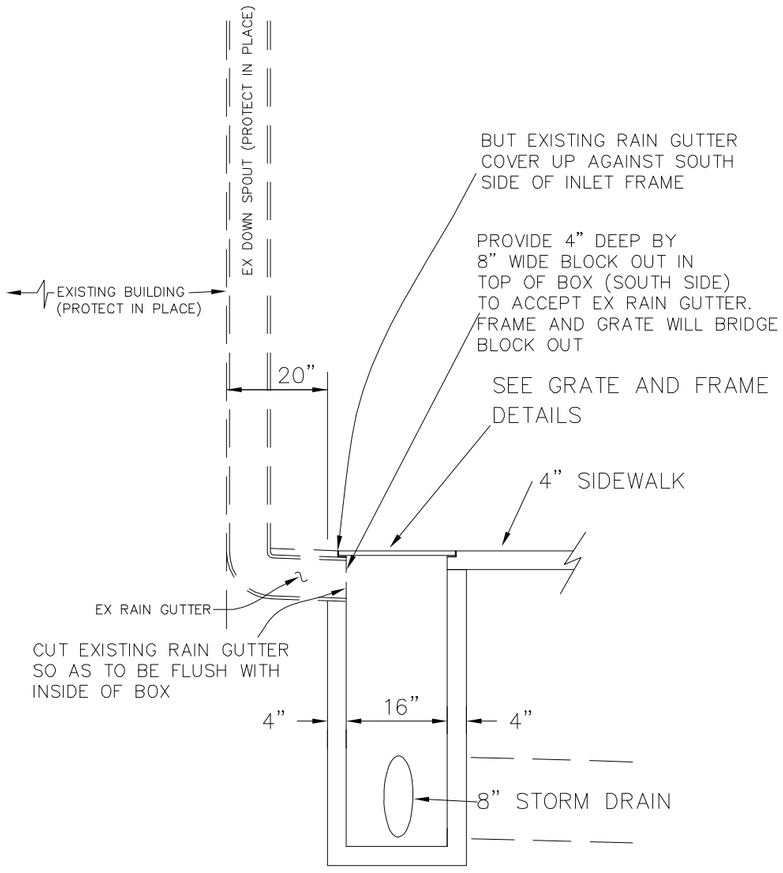
NOTE

1. URBAN ACCESSORIES 18 INCH SQ. MEDIUM DUTY "S" FRAME OR APPROVED EQUAL.
2. URBAN ACCESSORIES OT TITLE-24, 18 INCH SQ. DRAIN COVER OR APPROVED EQUAL.

NOTES:
1. DUCTILE IRON/ NATURAL FINISH
2. CAST IN ONE PIECE, 3/4" THICK
3. NO OPENINGS GREATER THAN 3/8"

GRATE FOR Inlet Type 13 (5 Foot) (Special)

N.T.S.



Inlet Type 13 (5 Foot) (Special)
N.T.S.

Print Date: @ LEFT		Sheet Revisions			Colorado Department of Transportation	As Constructed	Drainage Details Inlet Type 13 (5 Foot) (Special)			Project No./Code
File Name: Drainage Details		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:	Designer: JOHN SMITH	Structure Numbers	–	TCSP M555-029
Horiz. Scale: NA Vert. Scale: NA						Revised:	Detailer: JOHN SMITH		–	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:	Sheet Subset: D DETAIL	Subset Sheets:	5 of 5	Sheet Number 11
City of Grand Junction Colorado Public Works, Utilities & Planning										

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CONSTRUCTION

1. THE CONTRACTOR SHALL HAVE IN HIS POSSESSION AT ALL TIMES ONE(1) COPY OF THE AWARD SET PLANS AND SPECIFICATIONS.

2. THE COLORADO DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, DATED AUGUST 3, 2015, PROJECT SPECIAL PROVISIONS, PROJECT SPECIAL CONDITIONS, STANDARD SPECIAL PROVISIONS AND CDOT M AND S STANDARDS DATED AUGUST 13, 2015 CONTROL CONSTRUCTION OF THIS PROJECT.

3. THIS PROJECT IS DESIGNATED AS NON-SIGNIFICANT.

4. THE CONTRACTOR SHALL:
   A. NOTIFY CITY OF GRAND JUNCTION WATER AND SEWER, AND ALL CUSTOMERS AFFECTED BY OUTAGE OF WATER DURING CONSTRUCTION AT LEAST 48 HOURS PRIOR TO DISRUPTION OF SERVICE.
   B. NOTIFY GRAND JUNCTION POLICE DEPARTMENT, GRAND JUNCTION FIRE DEPARTMENT, GRAND JUNCTION DEPARTMENT OF PUBLIC WORKS, MESA COUNTY SHERIFF'S OFFICE, MESA COUNTY PUBLIC WORKS, COLORADO STATE PATROL, UTE WATER CONSERVANCY DISTRICT, UNITED STATES POSTAL SERVICE, COLORADO REGIONAL CENTER, GRAND VALLEY TRANSIT, AND FIRST STUDENT BUS COMPANY OF ALL STREET CLOSINGS AND EXISTING FIRE HYDRANTS TO BE TAKEN OUT OF SERVICE AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION AND UPDATED EVERY TWO WEEKS.

5. UNLESS OTHERWISE DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL LIMIT CONSTRUCTION ACTIVITIES TO THOSE AREAS WITHIN THE LIMITS OF DISTURBANCE AND/OR TOES OF SLOPE AS SHOWN ON THE PLANS AND CROSS SECTIONS. ANY DISTURBANCE BEYOND THESE LIMITS SHALL BE RESTORED TO ORIGINAL CONDITION BY THE CONTRACTOR AT HIS OWN EXPENSE. CONSTRUCTION ACTIVITIES IN ADDITION TO NORMAL CONSTRUCTION PROCEDURES SHALL INCLUDE THE PARKING OF VEHICLES OR EQUIPMENT, DISPOSAL OF LITTER, AND ANY OTHER ACTION WHICH WOULD ALTER EXISTING CONDITIONS.

6. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN PUBLIC AND PRIVATE ACCESS DRIVES FROM THE POINT OF DISRUPTION TO THE TRAVELED WAY. THE CONTRACTOR WILL NOT BE ALLOWED TO SHUT OFF ACCESS TO ANY PROPERTY AND MUST COORDINATE HIS WORK WITH THE PROPERTY OWNERS.

7. A 5-FOOT (10: 1 VERTICAL) TAPER SHALL BE USED ON ALL EXPOSED END OF CURB.

8. WATER SOURCE USED FOR MOISTURE DENSITY CONTROL SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND SHALL BE FREE OF EXCESSIVE SEDIMENTS OR OTHER CONTAMINANTS THAT MAY BE DETRIMENTAL TO EMBANKMENTS, SUB-BASES, AND BASE COURSE MATERIAL.

9. DURING CONSTRUCTION ACTIVITIES THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS WITHIN THE EASEMENT OR RIGHT OF WAY LIMITS.

10. SMOOTHNESS CATEGORY FOR CONCRETE PAVEMENT WILL BE HRI CATEGORY I.

11. PROOFROLLING WILL BE REQUIRED FOR THIS PROJECT AND WILL BE INCLUDED IN THE COST OF WORK.

12. THE CONTRACTOR SHALL NOT STOCKPILE MATERIAL WITHIN 10 FEET OF THE EDGE OF PAVEMENT FOR NORTH AVENUE.

13. SULFATE RESISTANT CONCRETE FOR THIS PROJECT SHALL BE CLASS 2.

14. ALL SLOPES WILL BE ROUGHENED AS DIRECTED BY THE ENGINEER. COSTS ASSOCIATED WITH THIS WORK SHALL BE INCIDENTAL TO THE EARTHWORK PAY ITEM.

15. TOPSOIL SHALL NOT BE IMPORTED TO THE SITE. EXISTING TOPSOIL SHALL BE STOCKPILED ON SITE AND SPREAD DURING GRADING AS DIRECTED BY THE ENGINEER.

16. THE CONTRACTOR SHALL BE REQUIRED TO FIELD VERIFY LENGTHS, DIAMETERS, ELEVATIONS, LOCATIONS, AND THICKNESS BEFORE ORDERING MATERIALS.

17. NO VERTICAL SLOPES SHALL BE LEFT OVERNIGHT UNPROTECTED. ALL UNPROTECTED VERTICAL SLOPES SHALL BE FLATTENED TO A 4:1 SIDE SLOPE PRIOR TO THE END OF THE WORK DAY, OR AS DIRECTED BY THE ENGINEER.

18. DURING CONSTRUCTION ACTIVITIES THE CONTRACTOR SHALL KEEP ALL EQUIPMENT, WORKERS AND MATERIALS WITHIN THE EXISTING RIGHT-OF-WAY OR TEMPORARY CONSTRUCTION EASEMENTS ACQUIRED FOR THIS PROJECT. ALL WORK SHALL BE PERFORMED WITHIN THE EXISTING RIGHT-OF-WAY AND/OR TEMPORARY CONSTRUCTION EASEMENTS ACQUIRED FOR THIS PROJECT. AT LOCATIONS WHERE WORK IS REQUIRED WITHIN CLOSE PROXIMITY TO THE RIGHT-OF-WAY BOUNDARIES AND/OR TEMPORARY CONSTRUCTION EASEMENT BOUNDARIES, THE CONTRACTOR SHALL PERFORM SUCH WORK FROM THE PROJECT SIDE OF THE RIGHT-OF-WAY AND/OR THE PROJECT SIDE OF THE TEMPORARY CONSTRUCTION EASEMENTS AND NOT TRESPASS ONTO PRIVATE PROPERTY.

ESTIMATED QUANTITIES

1. FOR PRELIMINARY PLAN QUANTITIES OF PAVEMENT MATERIALS, THE FOLLOWING RATES OF APPLICATION WERE USED:
   A. HOT MIX ASPHALT (GRADING SX) AT 110 LBS. PER SQ. YD./INCH.
   B. DILUTED EMULSIFIED ASPHALT (SLOW SETTING) FOR TACK COAT AT 0.10 GAL. PER SQ.YD. CONSISTING OF ONE PART EMULSIFIED ASPHALT (SLOW SETTING) AND ONE PART WATER.
   C. RATES OF APPLICATION SHALL BE DETERMINED BY THE ENGINEER AT THE TIME OF APPLICATION.

2. PLAN QUANTITIES ESTIMATING BASIS:
   A. AGGREGATE BASE COURSE (CLASS 3) AT 133 LBS. PER CU. FT.
   B. AGGREGATE BASE COURSE (CLASS 6) AT 133 LBS. PER CU. FT.
   C. AGGREGATE BASE COURSE (CLASS 7) (SPECIAL) AT 133 LBS. PER CU. FT.

3. IT IS ESTIMATED THAT THE FOLLOWING SHALL BE REQUIRED FOR THIS PROJECT, AS DIRECTED BY THE ENGINEER FOR MISCELLANEOUS WORK:
   - (201-00000) CLEARING AND GRUBBING - 0.20 AC
   - (203-01597) POTHOLING - 24 HOURS
   - (411-10255) EMULSIFIED ASPHALT - 100 GALLONS
   - (620-00020) SANITARY FACILITY - 1 EA
   - (625-00000) CONSTRUCTION SURVEYING - 1 LS
   - (626-00000) MOBILIZATION - 1 LS
   - (630) PUBLIC INFORMATION SERVICES - 1 LS

4. CLEARING AND GRUBBING SHALL INCLUDE REMOVAL OF ALL LOGS, LIMBS, BRUSH, BUSHES, GROUND COVER, SOD, LANSCAPING ITEMS, AND TRASH, ETC. TO AN OFF SITE LOCATION. THIS WORK WILL BE PAID FOR AS 201-00000 CLEARING AND GRUBBING, 1 LS.

5. AGGREGATE BASE COURSE (CL. 6) SHOWN TO BE PLACED UNDER CONCRETE CURBS, GUTTERS, SIDEWALKS, DRAINAGE PANS, INTERSECTION FILLETS, DRIVEWAY SECTIONS, AND CURB RAMPS IS DESIGNATED AS "AGGREGATE BASE COURSE (CLASS 6)" AND WILL BE MEASURED AND PAID FOR SEPARATELY.

6. ASPHALT MILLINGS MAY BE SUBSTITUTED FOR ABC CLASS 6 AS APPROVED BY CDOT. ANY USE OF ASPHALT MILLINGS THAT DOES NOT MEET THE APPROVED REQUIREMENTS SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.

ENVIRONMENTAL

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCEPTANCE AND CONTROL OF ALL SURFACE AND SUBSURFACE DRAINAGE AND GROUNDWATER ENTERING THE PROJECT AREA. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING DEWATERING IF NEEDED AT NO ADDITIONAL COST TO THE PROJECT. DEWATERING METHODS SHALL BE APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL OBTAIN A CONSTRUCTION DEWATERING PERMIT FOR ALL CONSTRUCTION ACTIVITIES.

2. SEE STORMWATER MANAGEMENT PLAN FOR EROSION CONTROL MEASURES TO BE USED DURING CONSTRUCTION. WHENEVER SEDIMENT IS TRANSPORTED ONTO A PUBLIC ROAD, THE ROAD SHALL BE CLEANED AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM ROADS BY SHOVELING OR SWEEPING AND BE TRANSPORTED TO A CONTROLLED SEDIMENT DISPOSAL AREA. STREET WASHING SHALL NOT BE ALLOWED. STREET SWEEPING METHODS/OPERATIONS SHALL BE APPROVED BY THE ENGINEER PRIOR TO COMMENCEMENT OF SWEEPING OPERATIONS. OPEN STYLE MECHANICAL BROOM WILL NOT BE ALLOWED FOR STREET SWEEPING.

3. ALL STAGING AREAS AND EQUIPMENT SHALL BE KEPT OUTSIDE WETLAND AND RIPARIAN AREAS AND SHALL BE LOCATED AT LEAST 100 FEET FROM ANY WATERCOURSE.

4. THE CONTRACTOR SHALL ADDRESS LOCAL DRAINAGE DURING EACH PHASE OF CONSTRUCTION. THIS WORK WILL NOT BE PAID SEPARATELY BUT SHALL BE CONSIDERED SUBSIDIARY TO THE WORK.

5. STORM WATER MANAGEMENT WILL REQUIRE MULTIPLE SEEDING AND MULCHING OPERATIONS. THE COST FOR SEEDING IN MULTIPLE OPERATIONS SHALL BE INCLUDED IN THE COST OF SEEDING AND MULCHING.

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Print Date: at left		Sheet Revisions			Colorado Department of Transportation	As Constructed	GENERAL NOTES			Project No./Code
File Name: at left		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:				TCSPC M555-029
Horiz. Scale: AS SHOWN AS SHOWN						Revised:	Designer: John C Smith	Structure Numbers	_	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB		Detailer: John C Smith		_	
						Void:	Sheet Subset:	Subset Sheets: 1 of 1		Sheet Number 12

UTILITIES

1. IT IS ESTIMATED THAT 25 HOURS WILL BE REQUIRED FOR POTHOLING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING AND COORDINATING WITH THE APPROPRIATE UTILITY REPRESENTATIVES TO BE ONSITE DURING POTHOLING AND SHALL LIKEWISE BE RESPONSIBLE FOR DETERMINING THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAYBE NECESSARY TO AVOID DAMAGE THERETO. THE CONTRACTOR SHALL REFER TO THE UTILITY SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

2. EXISTING UTILITY LINES AS SHOWN ON THE PLAN SHEETS ARE PLOTTED FROM THE BEST AVAILABLE INFORMATION, (ACSE STANDARD QUALITY LEVEL B). THE CONTRACTOR SHALL HAVE ALL MANHOLES AND WATER VALVES LOCATED IN ADVANCE AND MEASURED FOR RISER RING REQUIREMENT.

3. THE CONTRACTOR'S ATTENTION IS DIRECTED TO SUBSECTION 105.11 OF THE STANDARD SPECIFICATIONS AND THE UTILITY PROJECT SPECIAL PROVISIONS CONCERNING UTILITIES. THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH UTILITY OWNERS IN THEIR REMOVAL, ADJUSTMENT AND/OR RELOCATION OPERATIONS SO THAT THE UTILITY WORK CAN BE ACCOMPLISHED WITHOUT IMPACTING THE CONSTRUCTION SCHEDULE.

4. THE CONTRACTOR SHALL PROTECT EXISTING UTILITIES BY USING EVERY REASONABLE MEANS, INCLUDING FIELD LOCATION OF THE UTILITY. REPAIR OF DAMAGE TO THE EXISTING UTILITIES DURING CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL DOCUMENT THE CONDITION OF EXISTING UTILITIES (VISIBLE FACILITIES) WITH THE ENGINEER AND UTILITY REPRESENTATIVES PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES.

5. EXISTING UTILITY LINES AS SHOWN ON THE PLAN SHEETS ARE PLOTTED FROM THE BEST AVAILABLE INFORMATION, (ASCE STANDARD QUALITY LEVEL B).

6. UTILITY WORK NOT COMPLETED PRIOR TO THE START OF THE CONTRACTOR'S OPERATIONS WILL REQUIRE COORDINATION WITH CONTRACT WORK IN ACCORDANCE WITH SUBSECTION 105.11 OF THE STANDARD SPECIFICATIONS. THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH UTILITY OWNERS IN THEIR REMOVAL, ADJUSTMENT, AND/OR RELOCATION OPERATIONS SO THAT THE UTILITY WORK CAN BE ACCOMPLISHED WITHOUT IMPACTING THE CONSTRUCTION SCHEDULE.

7. THE CONTRACTOR SHALL COMPLY WITH ARTICLE 1.5 OF TITLE 9, CRS ("EXCAVATION REQUIREMENTS") WHEN EXCAVATING OR GRADING IS PLANNED IN THE AREA OF UNDERGROUND UTILITY FACILITIES. THE CONTRACTOR SHALL NOTIFY ALL AFFECTED UTILITIES AT LEAST TWO (2) BUSINESS DAYS, NOT INCLUDING THE ACTUAL DAY OF NOTICE, PRIOR TO COMMENCING SUCH OPERATIONS. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO (UNCC) AT 811 OR 1-800-922-1987, TO HAVE LOCATIONS OF UNCC REGISTERED LINES MARKED BY MEMBER COMPANIES. ALL OTHER UNDERGROUND FACILITIES SHALL BE LOCATED BY CONTACTING THE RESPECTIVE OWNER. FOR CDOT OWNED UTILITY FACILITIES THE CONTRACTOR SHALL CALL THE CDOT REGION 3 TRAFFIC SECTION AT 970-683-6271 TO REQUEST LOCATES. UTILITY SERVICE LATERALS SHALL ALSO BE LOCATED PRIOR TO BEGINNING EXCAVATION OR GRADING.

8. LOCATION AND NOTIFICATION OF BOTH UNCC MEMBER AND NON-MEMBER UTILITIES IS THE CONTRACTOR'S RESPONSIBILITY.

9. IT IS SUGGESTED THAT THE CONTRACTOR INITIATE A REQUEST TO EXCEL ENERGY AND CENTURY LINK FOR ANY CONSTRUCTION RELATED TEMPORARY ELECTRICAL POWER AND TELEPHONE SERVICE AS SOON AS POSSIBLE.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF ALL EXISTING UTILITIES AT PIPES, CULVERTS, CBC'S, AND OTHER AREAS OF EXCAVATION AS NECESSARY TO ENSURE THE UTILITIES WILL NOT BE IMPACTED.

11. POTHOLING OF AN AREA SHALL TAKE PLACE 10 DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION OPERATIONS IN THAT AREA.

811 Know what's **below.** **Call** before you dig.

UTILITY OWNERS:

ELECTRIC & GAS	TELEPHONE & FIBER OPTIC	CABLE TELEVISION	WATER	TRAFFIC SIGNALS	IRRIGATION	SANITARY SEWER AND STORM SEWER
XCEL ENERGY	CENTURY LINK	CHARTER	UTE WATER CONSERVANCY DISTRICT	CITY OF GRAND JUNCTION	CITY OF GRAND JUNCTION	CITY OF GRAND JUNCTION
2538 BLICHMAN AVE	2524 BLICHMAN AVE	2502 FORESIGHT CIRCLE	2190 H 1/4 ROAD	250 N 5TH STREET	250 N 5TH STREET	250 N 5TH STREET
GRAND JUNCTION, CO 81505	GRAND JUNCTION, CO 81505	GRAND JUNCTION, CO 81504	GRAND JUNCTION, CO 81505	GRAND JUNCTION, CO 81501	GRAND JUNCTION, CO 81501	GRAND JUNCTION, CO 81501
JON PRICE (970)244-2693	CHRIS JOHNSON (970)244-4311	JEFF VALDEZ (970) 263-2314	DARREL MOORE (970) 242-7491	PAUL JAGIM (970) 244-1542	MIKE VENDEGNA (970)254-3843	BRET GUILLORY (970) 244-1590

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File Name: at left		Date:	Comments	Init.	606 South 9th Street	No Revisions:		TCSPC M555-029
Horiz. Scale: AS SHOWN AS SHOWN					Grand Junction, CO, 81501	Revised:	Designer: John C Smith / Structure Numbers: –	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369		Detailer: John C Smith / –	
					Region 3 RBB	Void:	Sheet Subset: / Subset Sheets: 1 of 1	Sheet Number 13

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Tabulation or Plan Reference	Contract Item No.	Contract Item	Unit	Plan	As Const.
Gen Note	201-00000	Clearing and Grubbing	AC	0.20	
Removals	202-00001	Removal of Structure	EA	13	
Landscape	202-00010	Removal of Tree	EA	6	
Drain Remove	202-00019	Removal of Inlet	EA	2	
Drain Remove	202-00033	Removal of Pipe	LF	24	
Removals	202-00155	Removal of Wall	LF	7	
Removals	202-00190	Removal of Concrete Median Cover Material	SY	61	
Removals	202-00195	Removal of Median Cover	SY	61	
Removals	202-00200	Removal of Sidewalk	SY	1087	
Removals	202-00201	Removal of Curb	LF	981	
Removals	202-00202	Removal of Gutter	LF	375	
Removals	202-00203	Removal of Curb and Gutter	LF	2221	
Removals	202-00206	Removal of Concrete Curb Ramp	SY	65	
Removals	202-00210	Removal of Concrete Pavement	SY	1050	
Removals	202-00220	Removal of Asphalt Mat	SY	3817	
Removals	202-00250	Removal of Pavement Marking	SF	130	
Removals	202-00815	Removal of Sign (Special)	EA	1	
Final Signing	202-00821	Removal of Sign Panel	EA	1	
Summary of Earthwork	203-00010	Unclassified Excavation (CIP)	CY	906	
Gen Note	203-01597	Potholing	HOUR	24	
Stormwater	203-01622	Sweeping	HOUR	18	
Stormwater	207-00210	Stockpile Topsoil	CY	480	
Stormwater	208-00035	Aggregate Bag	LF	6	
Stormwater	208-00045	Concrete Washout Structure	EA	1	
Stormwater	208-00052	Storm Drain Inlet Protection (Type 2)	LF	80	
Stormwater	208-00070	Vehicle Tracking Pad	EA	1	
Stormwater	208-00103	Removal and Disposal of Sediment (Labor)	HOUR	24	
Stormwater	208-00105	Removal and Disposal of Sediment (Equipment)	HOUR	24	
Stormwater	208-00206	Erosion Control Supervisor	DAY	72	
Adjust, Mod, Resets	210-00050	Reset Fire Hydrant	EA	5	
Adjust, Mod, Resets	210-00065	Reset Monument (Type 3a)	EA	2	
Adjust, Mod, Resets	210-00810	Reset Ground Sign	EA	3	

Tabulation or Plan Reference	Contract Item No.	Contract Item	Unit	Plan	As Const.
Final Signing	210-00815	Reset Sign Panel	EA	10	
Adjust, Mod, Resets	210-00827	Reset Pull Box	EA	6	
Adjust, Mod, Resets	210-01000	Reset Fence	LF	460	
Adjust, Mod, Resets	210-01000	Reset Fence (Special) (Safety Screen)	LF	58	
Adjust, Mod, Resets	210-04010	Adjust Manhole	EA	3	
Adjust, Mod, Resets	210-04020	Modify Inlet	EA	3	
Adjust, Mod, Resets	210-04050	Adjust Valve Box	EA	0	
Adjust, Mod, Resets	210-04060	Adjust Water Meter	EA	8	
Stormwater	212-00032	Soil Conditioning	AC	0.40	
Landscape	207-00205	Topsoil	CY	1322	
Landscape	212-00011	Seeding Lawn	AC	0.02	
Landscape	212-00040	Soil Preparation Lawn	AC	0.02	
Landscape	213-00065	Inorganic Mulch	CY	165	
Landscape	213-00705	Landscape Boulder (Special)	EA	0	
Landscape	214-00145	Plant Protection Fence	LF	160	
Landscape	214-00230	Deciduous Tree (3 Inch Calliper)	EA	59	
Landscape	214-00350	Deciduous Shrub (5 Gallon Container)	EA	149	
Landscape	214-00910	Perennials (1 Gallon Container)	EA	12	
Surfacing	304-06000	Aggregate Base Course (CL 6)	TON	1468	
Surfacing	403-00720	Hot Mix Asphalt (Patching) (Asphalt)	TON	17	
Surfacing	403-34742	Hot Mix Asphalt (Grading SX)(75)(PG 64-22)	TON	150	
Surfacing	403-34771	Hot Mix Asphalt (Grading SX)(75)(PG 76-28)	TON	40	
Gen Note	411-10255	Emulsified Asphalt (Slow-Setting)	GAL	100	
Surfacing	412-00600	Concrete Pavement (6 inch)	SY	270	
Surfacing	412-00800	Concrete Pavement (8 inch)	SY	960	
SW,C&G,Median,Ramp	514-00100	Hand Rail	LF	32	
SW,C&G,Median,Ramp	601-03000	Concrete Class D (Wall)	CY	6	
Wall PP, M-601-20	601-40301	Structural Concrete Coating	SF	100	
Wall PP, M-601-20	602-00020	Reinforcing Steel (Epoxy Coated)	LB	270	
Drain Items	603-00120	12 Inch Non-Reinforced Concrete Pipe	LF	178	
Drain Items	603-50008	8 Inch Plastic Pipe	LF	65	
Drain Items	604-13006	Inlet Type 13 (5 Foot) (Special)	EA	2	
Drain Items	604-00305	Inlet Type C (5 Foot)	EA	6	
Drain Items	604-30005	Manhole Slab Base (5 Foot)	EA	2	
SW,C&G,Median,Ramp	608-00006	Concrete Sidewalk (6 Inch)	SY	2713	
SW,C&G,Median,Ramp	608-00010	Concrete Curb Ramp	SY	39	

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Unit Information: City of GJ Unit Leader Initials: DPJ

R1

Sheet Revisions

Date:	Comments	Init.
10-16-15	ADDENDUM ON 10-16-15	JE

Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

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SUMMARY OF APPROXIMATE QUANTITIES

Designer: John Smith
Detailer: John Smith
Sheet Subset: Removal
Structure Numbers
Subset Sheets: 1 of 2

Project No./Code
TCSP M555-029
19365
Sheet Number 14

Tabulation or Plan Reference	Contract Item No.	Contract Item	Unit	Plan	As Const.
SW,C&G,Median,Ramp	609-20000	Curb Type 2 (Section B) (Special)	LF	52	
SW,C&G,Median,Ramp	609-20010	Curb Type 2 (Section B)	LF	1258	
SW,C&G,Median,Ramp	609-21010	Curb and Gutter Type 2 (Section I-B)	LF	340	
SW,C&G,Median,Ramp	609-21020	Curb and Gutter Type 2 (Section II-B)	LF	1910	
SW,C&G,Median,Ramp	609-21900	Curb and Gutter Type 2 (Section II-B) (Special)	LF	190	
SW,C&G,Median,Ramp	610-00020	Median Cover Material (Patterned Concrete)	SF	0	
lighting	613-01200	2 inch Electrical Conduit	LF	4112	
lighting	613-04010	Conduit (4" Broadband)	LF	7600	
lighting	613-04010	Conduit (2" City Traffic)	LF	0	
lighting	613-07001	Type One Pull Box	ea	40	
lighting	613-07040	Pull Box (30"x48"x24") (broadband)	ea	18	
lighting	613-07040	Pull Box (30"x48"x24") (city Traffic)	ea	0	
lighting	613-10000	Wiring	ls	1	
lighting	613-30005	Light Standard and Luminaire (Pedestrian) (by others)	ea		
lighting	613-40012	Light Standard Foundation (Special)	ea	39	
lighting	613-501106	Lighting Control Center (special)	ea	1	
Final Signing	614-01503	Steel Sign Support (2" Round) (Post & Socket)	EA	6	
Irrigation	619-40120	1-1/2 Inch Copper Pipe	LF	40	
Irrigation	619-50080	1 Inch Plastic Pipe	LF	3080	
Irrigation	619-50100	1-1/4 Inch Plastic Pipe	LF	10	
Irrigation	619-50160	2 Inch Plastic Pipe (CL200)	LF	3100	
Irrigation	619-50160	2 Inch Plastic Pipe (SCH40 PVC Sleeve)	LF	2560	
Gen Note	620-00020	Sanitary Facility	EA	1	
SW,C&G,Median,Ramp	621-00650	Pedestrian Stair Structure	LS	1	
Urban Design Features	622-00010	Bicycle Rack	EA	0	
Urban Design Features	622-00250	Bench	EA	0	
Urban Design Features	622-00350	Trash Receptacle	EA	0	
Irrigation	623-00156	Irrigation Bubbler	EA	216	
Irrigation	623-00162	Drip Emitter Tubing	LF	2440	
Irrigation	623-00164	Drip Emitter	EA	400	
Irrigation	623-00166	3/4 Inch Emitter Valve Assembly	EA	14	
Irrigation	623-00602	2 Inch Plastic Pipe (Irrigation/Sleeve)	LF	830	
Irrigation	623-00604	4 Inch Plastic Pipe (Irrigation/Sleeve)	LF	590	
Irrigation	623-01712	1-1/2 Inch Backflow Preventer	EA	1	
Irrigation	623-02006	3/4 Inch Drain Valve	EA	3	
Irrigation	623-03108	1 Inch Automatic Control Valve	EA	14	
Irrigation	623-03116	1 1/2 Inch Automatic Control Valve (Master Control)	EA	1	
Irrigation	623-04000	Control Wire 24 Volt	LF	15000	
Irrigation	623-04000	Control Wire 24 Volt	LF	5000	
Irrigation	623-04002	Power Source Wire	LF	20	
Irrigation	623-04008	1 Inch Quick-Coupler Valve	EA	3	
Irrigation	623-05016	2 Inch Gate Valve	EA	4	

Tabulation or Plan Reference	Contract Item No.	Contract Item	Unit	Plan	As Const.
Irrigation	623-06900	Valve Box	EA	16	
Irrigation	623-06900	Valve Box	EA	23	
Irrigation	623-06901	Valve Box (Special)	EA	14	
Irrigation	623-07510	Weather Station	EA	1	
Irrigation	623-07600	1 1/2 Inch Flow Sensor	EA	1	
Irrigation	623-08432	40 Station Automatic Controller	EA	1	
Irrigation	623-xxxx	1/4" Distribution Pipe	LF	1000	
Irrigation	623-xxxx	Drip Line Blow-Out	EA	12	
Gen Note	625-00000	Construction Surveying	LS	1	
Gen Note	626-00000	Mobilization	LS	1	
Pavement Marking	627-00001	Pavement Marking Paint	GAL	6	
Pavement Marking	627-30405	Preformed Thermoplastic Pavement Marking (Right Turn Arrow)	SF	48	
Pavement Marking	627-30405	Preformed Thermoplastic Pavement Marking (Accessibility Parking)	SF	64	
Const Traffic Control	630-00000	Flagging	HOUR	330	
Const Traffic Control	630-00007	Traffic Control Inspection	DAYS	34	
Const Traffic Control	630-00012	Traffic Control Management	DAYS	64	
Const Traffic Control	630-80341	Construction Traffic Sign (Panel Size A)	EA	22	
Const Traffic Control	630-80342	Construction Traffic Sign (Panel Size B)	EA	16	
Const Traffic Control	630-80344	Construction Sign Panel (Special)	SF	21	
Const Traffic Control	630-80336	Barricade (Type 3 M-B)(Temporary)	EA	10	
Const Traffic Control	630-80358	Advanded Warning Flashion Arrow (type C)	DAYS	150	
Const Traffic Control	630-80359	Portable Message Sign Panel	DAYS	36	
Const Traffic Control	630-80360	Drum Channelizing Device	EA	80	
Const Traffic Control	630-80363	Drum Channelizing Device (With Light) (Flashing)	EA	80	
Const Traffic Control	630-80377	Portable Water Filled Barrier (Temporary)	LF	50	
Const Traffic Control	630-80380	Traffic Cone	EA	160	
Gen Note	630	Public Information Services	ls	1	
FA	700-70011	F/A Partnering	LS	1	
FA	700-70016	F/A Fuel Cost Adjustment	LS	1	
FA	700-70021	F/A On The Job Trainee	HOUR	192	
FA	700-70320	F/A Sprinklers	LS	1	
FA	700-70380	F/A Erosion Control	LS	1	
FA	700-73302	F/A Lighting by Others (Non-Utility) Paid by LS	LS	1	
MCR	MCR	Minor Contract Revisions	LS	1	

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Unit Information: City of GJ Unit Leader Initials: DPJ

Sheet Revisions

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Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

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No Revisions:
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SUMMARY OF APPROXIMATE QUANTITIES

Designer: John Smith
Detailer: John Smith
Sheet Subset: Removal
Structure Numbers
Subset Sheets: 2 of 2

Project No./Code
TCSP M555-029
19365
Sheet Number 15

Tabulation or Plan Reference	Contract Item No.	Contract Item	Unit	Plan	As Const.
Gen Note	201-00000	Clearing and Grubbing	AC	0.10	
Removals	202-00001	Removal of Structure	EA	0	
Landscape	202-00010	Removal of Tree	EA	1	
Drain Remove	202-00019	Removal of Inlet	EA	0	
Drain Remove	202-00033	Removal of Pipe	LF	0	
Removals	202-00155	Removal of Wall	LF	0	
Removals	202-00190	Removal of Concrete Median Cover Material	SY	648	
Removals	202-00195	Removal of Median Cover	SY	1378	
Removals	202-00200	Removal of Sidewalk	SY	0	
Removals	202-00201	Removal of Curb	LF	794	
Removals	202-00202	Removal of Gutter	LF	0	
Removals	202-00203	Removal of Curb and Gutter	LF	0	
Removals	202-00206	Removal of Concrete Curb Ramp	SY	0	
Removals	202-00210	Removal of Concrete Pavement	SY	0	
Removals	202-00220	Removal of Asphalt Mat	SY	133	
Removals	202-00250	Removal of Pavement Marking	SF	0	
Removals	202-00815	Removal of Sign (Special)	EA	0	
Final Signing	202-00821	Removal of Sign Panel	EA	0	
Summary of Earthwork	203-00010	Unclassified Excavation (CIP)	CY	41	
Gen Note	203-01597	Potholing	HOUR	8	
Stormwater	203-01622	Sweeping	HOUR	6	
Stormwater	207-00210	Stockpile Topsoil	CY	120	
Stormwater	208-00035	Aggregate Bag	LF	2	
Stormwater	208-00045	Concrete Washout Structure	EA	1	
Stormwater	208-00052	Storm Drain Inlet Protection (Type 2)	LF	25	
Stormwater	208-00070	Vehicle Tracking Pad	EA	1	
Stormwater	208-00103	Removal and Disposal of Sediment (Labor)	HOUR	8	
Stormwater	208-00105	Removal and Disposal of Sediment (Equipment)	HOUR	8	
Stormwater	208-00206	Erosion Control Supervisor	DAY	24	
Adjust, Mod, Resets	210-00050	Reset Fire Hydrant	EA	0	
Adjust, Mod, Resets	210-00065	Reset Monument (Type 3a)	EA	0	
Adjust, Mod, Resets	210-00810	Reset Ground Sign	EA	0	

Tabulation or Plan Reference	Contract Item No.	Contract Item	Unit	Plan	As Const.
Final Signing	210-00815	Reset Sign Panel	EA	0	
Adjust, Mod, Resets	210-00827	Reset Pull Box	EA	8	
Adjust, Mod, Resets	210-01000	Reset Fence	LF	0	
Adjust, Mod, Resets	210-01000	Reset Fence (Special) (Safety Screen)	LF	0	
Adjust, Mod, Resets	210-04010	Adjust Manhole	EA	0	
Adjust, Mod, Resets	210-04020	Modify Inlet	EA	0	
Adjust, Mod, Resets	210-04050	Adjust Valve Box	EA	5	
Adjust, Mod, Resets	210-04060	Adjust Water Meter	EA	0	
Stormwater	212-00032	Soil Conditioning	AC	0.48	
Landscape	207-00205	Topsoil	CY	1568	
Landscape	212-00011	Seeding Lawn	AC	0.00	
Landscape	212-00040	Soil Preparation Lawn	AC	0.00	
Landscape	213-00065	Inorganic Mulch	CY	197	
Landscape	213-00705	Landscape Boulder (Special)	EA	0	
Landscape	214-00145	Plant Protection Fence	LF	0	
Landscape	214-00230	Deciduous Tree (3 Inch Calliper)	EA	34	
Landscape	214-00350	Deciduous Shrub (5 Gallon Container)	EA	146	
Landscape	214-00910	Perennials (1 Gallon Container)	EA	85	
Surfacing	304-06000	Aggregate Base Course (CL 6)	TON	130	
Surfacing	403-00720	Hot Mix Asphalt (Patching) (Asphalt)	TON	0	
Surfacing	403-34742	Hot Mix Asphalt (Grading SX)(75)(PG 64-22)	TON	0	
Surfacing	403-34771	Hot Mix Asphalt (Grading SX)(75)(PG 76-28)	TON	0	
Gen Note	411-10255	Emulsified Asphalt (Slow-Setting)	GAL	0	
Surfacing	412-00600	Concrete Pavement (6 inch)	SY	0	
Surfacing	412-00800	Concrete Pavement (8 inch)	SY	0	
SW,C&G,Median,Ramp	514-00100	Hand Rail	LF	0	
SW,C&G,Median,Ramp	601-03000	Concrete Class D (Wall)	CY	0	
Wall PP, M-601-20	601-40301	Structural Concrete Coating	SF	0	
Wall PP, M-601-20	602-00020	Reinforcing Steel (Epoxy Coated)	LB	0	
Drain Items	603-00120	12 Inch Non-Reinforced Concrete Pipe	LF	0	
Drain Items	603-50008	8 Inch Plastic Pipe	LF	0	
Drain Items	604-13006	Inlet Type 13 (5 Foot) (Special)	EA	0	
Drain Items	604-00305	Inlet Type C (5 Foot)	EA	0	
Drain Items	604-30005	Manhole Slab Base (5 Foot)	EA	0	
SW,C&G,Median,Ramp	608-00006	Concrete Sidewalk (6 Inch)	SY	0	
SW,C&G,Median,Ramp	608-00010	Concrete Curb Ramp	SY	0	

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Unit Information: City of GJ Unit Leader Initials: DPJ

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Sheet Revisions

Date:	Comments	Init.
10-16-15	ADDENDUM ON 10-16-15	JE

Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
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Region 3 RBB

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SUMMARY OF APPROXIMATE QUANTITIES Add Alternate 1

Designer: John Smith
Detailer: John Smith
Sheet Subset: Removal
Structure Numbers
Subset Sheets: 1 of 2

Project No./Code
TCSP M555-029
19365
Sheet Number 16

Tabulation or Plan Reference	Contract Item No.	Contract Item	Unit	Plan	As Const.
SW,C&G,Median,Ramp	609-20000	Curb Type 2 (Section B) (Special)	LF	0	
SW,C&G,Median,Ramp	609-20010	Curb Type 2 (Section B)	LF	692	
SW,C&G,Median,Ramp	609-21010	Curb and Gutter Type 2 (Section I-B)	LF	0	
SW,C&G,Median,Ramp	609-21020	Curb and Gutter Type 2 (Section II-B)	LF	0	
SW,C&G,Median,Ramp	609-21900	Curb and Gutter Type 2 (Section II-B) (Special)	LF	0	
SW,C&G,Median,Ramp	610-00020	Median Cover Material (Patterned Concrete)	SF	3511	
lighting	613-01200	2 inch Electrical Conduit	LF	0	
lighting	613-04010	Conduit (4" Broadband)	LF	0	
lighting	613-04010	Conduit (2" City Traffic)	LF	0	
lighting	613-07001	Type One Pull Box	ea	0	
lighting	613-07040	Pull Box (30"x48"x24") (broadband)	ea	0	
lighting	613-07040	Pull Box (30"x48"x24") (city Traffic)	ea	0	
lighting	613-10000	Wiring	ls	0	
lighting	613-30005	Light Standard and Luminaire (Pedestrian)	ea	0	
lighting	613-40012	Light Standard Foundation (Special)	ea	0	
lighting	613-501106	Lighting Control Center (special)	ea	0	
Final Signing	614-01503	Steel Sign Support (2" Round) (Post & Socket)	EA	0	
Irrigation	619-40120	1-1/2 Inch Copper Pipe	LF	0	
Irrigation	619-50080	1 Inch Plastic Pipe	LF	2000	
Irrigation	619-50100	1-1/4 Inch Plastic Pipe	LF	120	
Irrigation	619-50160	2 Inch Plastic Pipe (CL200)	LF	0	
Irrigation	619-50160	2 Inch Plastic Pipe (SCH40 PVC Sleeve)	LF	0	
Gen Note	620-00020	Sanitary Facility	EA	1	
SW,C&G,Median,Ramp	621-00650	Pedestrian Stair Structure	LS		
Urban Design Features	622-00010	Bicycle Rack	EA		
Urban Design Features	622-00250	Bench	EA		
Urban Design Features	622-00350	Trash Receptacle	EA		
Irrigation	623-00156	Irrigation Bubbler	EA	168	
Irrigation	623-00162	Drip Emitter Tubing	LF	1420	
Irrigation	623-00164	Drip Emitter	EA	300	
Irrigation	623-00166	3/4 Inch Emitter Valve Assembly	EA	0	
Irrigation	623-00602	2 Inch Plastic Pipe (Irrigation/Sleeve)	LF	1220	
Irrigation	623-00604	4 Inch Plastic Pipe (Irrigation/Sleeve)	LF	580	
Irrigation	623-01712	1-1/2 Inch Backflow Preventer	EA	0	
Irrigation	623-02006	3/4 Inch Drain Valve	EA	0	
Irrigation	623-03108	1 Inch Automatic Control Valve	EA	0	
Irrigation	623-03116	1 1/2 Inch Automatic Control Valve (Master Control)	EA	0	
Irrigation	623-04000	Control Wire 24 Volt	LF	0	
Irrigation	623-04000	Control Wire 24 Volt	LF	0	
Irrigation	623-04002	Power Source Wire	LF	0	
Irrigation	623-04008	1 Inch Quick-Coupler Valve	EA	0	
Irrigation	623-05016	2 Inch Gate Valve	EA	0	

Tabulation or Plan Reference	Contract Item No.	Contract Item	Unit	Plan	As Const.
Irrigation	623-06900	Valve Box	EA	0	
Irrigation	623-06900	Valve Box	EA	11	
Irrigation	623-06901	Valve Box (Special)	EA	0	
Irrigation	623-07510	Weather Station	EA	0	
Irrigation	623-07600	1 1/2 Inch Flow Sensor	EA	0	
Irrigation	623-08432	40 Station Automatic Controller	EA	0	
Irrigation	623-xxxxx	1/4" Distribution Pipe	LF	500	
Irrigation	623-xxxxx	Drip Line Blow-Out	EA	14	
Gen Note	625-00000	Construction Surveying	LS	1	
Gen Note	626-00000	Mobilization	LS	1	
Pavement Marking	627-00001	Pavement Marking Paint	GAL	0	
Pavement Marking	627-30405	Preformed Thermoplastic Pavement Marking (Right Turn Arrow)	SF	0	
Pavement Marking	627-30405	Preformed Thermoplastic Pavement Marking (Accessibility Parking)	SF	0	
Const Traffic Control	630-00000	Flagging	HOUR	85	
Const Traffic Control	630-00007	Traffic Control Inspection	DAYS	10	
Const Traffic Control	630-00012	Traffic Control Management	DAYS	16	
Const Traffic Control	630-80341	Construction Traffic Sign (Panel Size A)	EA	0	
Const Traffic Control	630-80342	Construction Traffic Sign (Panel Size B)	EA	0	
Const Traffic Control	630-80344	Construction Sign Panel (Special)	SF	0	
Const Traffic Control	630-80336	Barricade (Type 3 M-B)(Temporary)	EA	0	
Const Traffic Control	630-80358	Advanded Warning Flashion Arrow (type C)	DAYS	50	
Const Traffic Control	630-80359	Portable Message Sign Panel	DAYS	12	
Const Traffic Control	630-80360	Drum Channelizing Device	EA	0	
Const Traffic Control	630-80363	Drum Channelizing Device (With Light) (Flashing)	EA	0	
Const Traffic Control	630-80377	Portable Water Filled Barrier (Temporary)	LF	0	
Const Traffic Control	630-80380	Traffic Cone	EA	0	
Gen Note	630	Public Information Services	ls	1	
FA	700-70011	F/A Partnering	LS	1	
FA	700-70016	F/A Fuel Cost Adjustment	LS	1	
FA	700-70021	F/A On The Job Trainee	HOUR	64	
FA	700-70320	F/A Sprinklers	LS	1	
FA	700-70380	F/A Erosion Control	LS	1	
FA	700-73302	F/A Lighting by Others (Non-Utility) Paid by LS	LS	1	
MCR	MCR	Minor Contract Revisions	LS	1	

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Unit Information: City of GJ Unit Leader Initials: DPJ

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Sheet Revisions

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SUMMARY OF APPROXIMATE QUANTITIES Add Alternate 1

Designer: John Smith
Detailer: John Smith
Sheet Subset: Removal
Structure Numbers
Subset Sheets: 2 of 2

Project No./Code
TCSP M555-029
19365
Sheet Number 17

Tabulation or Plan Reference	Contract Item No.	Contract Item	Unit	Plan	As Const.
Gen Note	201-00000	Clearing and Grubbing	AC	0.70	
Removals	202-00001	Removal of Structure	EA	0	
Landscape	202-00010	Removal of Tree	EA	6	
Drain Remove	202-00019	Removal of Inlet	EA	0	
Drain Remove	202-00033	Removal of Pipe	LF	0	
Removals	202-00155	Removal of Wall	LF	0	
Removals	202-00190	Removal of Concrete Median Cover Material	SY	0	
Removals	202-00195	Removal of Median Cover	SY	0	
Removals	202-00200	Removal of Sidewalk	SY	765	
Removals	202-00201	Removal of Curb	LF	0	
Removals	202-00202	Removal of Gutter	LF	0	
Removals	202-00203	Removal of Curb and Gutter	LF	429	
Removals	202-00206	Removal of Concrete Curb Ramp	SY	5	
Removals	202-00210	Removal of Concrete Pavement	SY	0	
Removals	202-00220	Removal of Asphalt Mat	SY	0	
Removals	202-00250	Removal of Pavement Marking	SF	0	
Removals	202-00815	Removal of Sign (Special)	EA	0	
Final Signing	202-00821	Removal of Sign Panel	EA	0	
Summary of Earthwork	203-00010	Unclassified Excavation (CIP)	CY	167	
Gen Note	203-01597	Potholing	HOUR	8	
Stormwater	203-01622	Sweeping	HOUR	6	
Stormwater	207-00210	Stockpile Topsoil	CY	1100	
Stormwater	208-00035	Aggregate Bag	LF	2	
Stormwater	208-00045	Concrete Washout Structure	EA	1	
Stormwater	208-00052	Storm Drain Inlet Protection (Type 2)	LF	25	
Stormwater	208-00070	Vehicle Tracking Pad	EA	1	
Stormwater	208-00103	Removal and Disposal of Sediment (Labor)	HOUR	8	
Stormwater	208-00105	Removal and Disposal of Sediment (Equipment)	HOUR	8	
Stormwater	208-00206	Erosion Control Supervisor	DAY	24	
Adjust, Mod, Resets	210-00050	Reset Fire Hydrant	EA	0	
Adjust, Mod, Resets	210-00065	Reset Monument (Type 3a)	EA	0	
Adjust, Mod, Resets	210-00810	Reset Ground Sign	EA	0	

Tabulation or Plan Reference	Contract Item No.	Contract Item	Unit	Plan	As Const.
Final Signing	210-00815	Reset Sign Panel	EA	3	
Adjust, Mod, Resets	210-00827	Reset Pull Box	EA	0	
Adjust, Mod, Resets	210-01000	Reset Fence	LF	1786	
Adjust, Mod, Resets	210-01000	Reset Fence (Special) (Safety Screen)	LF	565	
Adjust, Mod, Resets	210-04010	Adjust Manhole	EA	1	
Adjust, Mod, Resets	210-04020	Modify Inlet	EA	0	
Adjust, Mod, Resets	210-04050	Adjust Valve Box	EA	0	
Adjust, Mod, Resets	210-04060	Adjust Water Meter	EA	0	
Stormwater	212-00032	Soil Conditioning	AC	0.01	
Landscape	207-00205	Topsoil	CY	29	
Landscape	212-00011	Seeding Lawn	AC	0.54	
Landscape	212-00040	Soil Preparation Lawn	AC	0.54	
Landscape	213-00065	Inorganic Mulch	CY	0	
Landscape	213-00705	Landscape Boulder (Special)	EA	0	
Landscape	214-00145	Plant Protection Fence	LF	1820	
Landscape	214-00230	Deciduous Tree (3 Inch Calliper)	EA	16	
Landscape	214-00350	Deciduous Shrub (5 Gallon Container)	EA	0	
Landscape	214-00910	Perennials (1 Gallon Container)	EA	0	
Surfacing	304-06000	Aggregate Base Course (CL 6)	TON	364	
Surfacing	403-00720	Hot Mix Asphalt (Patching) (Asphalt)	TON	0	
Surfacing	403-34742	Hot Mix Asphalt (Grading SX)(75)(PG 64-22)	TON	0	
Surfacing	403-34771	Hot Mix Asphalt (Grading SX)(75)(PG 76-28)	TON	0	
Gen Note	411-10255	Emulsified Asphalt (Slow-Setting)	GAL	0	
Surfacing	412-00600	Concrete Pavement (6 inch)	SY	0	
Surfacing	412-00800	Concrete Pavement (8 inch)	SY	0	
SW,C&G,Median,Ramp	514-00100	Hand Rail	LF	0	
SW,C&G,Median,Ramp	601-03000	Concrete Class D (Wall)	CY	0	
Wall PP, M-601-20	601-40301	Structural Concrete Coating	SF	0	
Wall PP, M-601-20	602-00020	Reinforcing Steel (Epoxy Coated)	LB	0	
Drain Items	603-00120	12 Inch Non-Reinforced Concrete Pipe	LF	0	
Drain Items	603-50008	8 Inch Plastic Pipe	LF	0	
Drain Items	604-13006	Inlet Type 13 (5 Foot) (Special)	EA	0	
Drain Items	604-00305	Inlet Type C (5 Foot)	EA	0	
Drain Items	604-30005	Manhole Slab Base (5 Foot)	EA	0	
SW,C&G,Median,Ramp	608-00006	Concrete Sidewalk (6 Inch)	SY	1637	
SW,C&G,Median,Ramp	608-00010	Concrete Curb Ramp	SY	2	

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Unit Information: City of GJ Unit Leader Initials: DPJ

R1

Sheet Revisions

Date:	Comments	Init.
10-16-15	ADDENDUM ON 10-16-15	JE

Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

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SUMMARY OF APPROXIMATE QUANTITIES Add Alternate 2

Designer: John Smith
Detailer: John Smith
Sheet Subset: Removal
Structure Numbers
Subset Sheets: 1 of 2

Project No./Code
TCSP M555-029
19365
Sheet Number 18

Tabulation or Plan Reference	Contract Item No.	Contract Item	Unit	Plan	As Const.
SW,C&G,Median,Ramp	609-20000	Curb Type 2 (Section B) (Special)	LF	0	
SW,C&G,Median,Ramp	609-20010	Curb Type 2 (Section B)	LF	0	
SW,C&G,Median,Ramp	609-21010	Curb and Gutter Type 2 (Section I-B)	LF	0	
SW,C&G,Median,Ramp	609-21020	Curb and Gutter Type 2 (Section II-B)	LF	450	
SW,C&G,Median,Ramp	609-21900	Curb and Gutter Type 2 (Section II-B) (Special)	LF	0	
SW,C&G,Median,Ramp	610-00020	Median Cover Material (Patterned Concrete)	SF	0	
lighting	613-01200	2 inch Electrical Conduit	LF	4015	
lighting	613-04010	Conduit (4" Broadband)	LF	0	
lighting	613-04010	Conduit (2" City Traffic)	LF	3700	
lighting	613-07001	Type One Pull Box	ea	38	
lighting	613-07040	Pull Box (30"x48"x24") (broadband)	ea	0	
lighting	613-07040	Pull Box (30"x48"x24") (city Traffic)	ea	7	
lighting	613-10000	Wiring	ls	1	
lighting	613-30005	Light Standard and Luminaire (Pedestrian) (by others)	ea		
lighting	613-40012	Light Standard Foundation (Special)	ea	37	
lighting	613-501106	Lighting Control Center (special)	ea	0	
Final Signing	614-01503	Steel Sign Support (2" Round) (Post & Socket)	EA	3	
Irrigation	619-40120	1-1/2 Inch Copper Pipe	LF	0	
Irrigation	619-50080	1 Inch Plastic Pipe	LF	0	
Irrigation	619-50100	1-1/4 Inch Plastic Pipe	LF	0	
Irrigation	619-50160	2 Inch Plastic Pipe (CL200)	LF	0	
Irrigation	619-50160	2 Inch Plastic Pipe (SCH40 PVC Sleeve)	LF	336	
Gen Note	620-00020	Sanitary Facility	EA	1	
SW,C&G,Median,Ramp	621-00650	Pedestrian Stair Structure	LS	0	
Urban Design Features	622-00010	Bicycle Rack	EA	0	
Urban Design Features	622-00250	Bench	EA	0	
Urban Design Features	622-00350	Trash Receptacle	EA	0	
Irrigation	623-00156	Irrigation Bubbler	EA	0	
Irrigation	623-00162	Drip Emitter Tubing	LF	0	
Irrigation	623-00164	Drip Emitter	EA	0	
Irrigation	623-00166	3/4 Inch Emitter Valve Assembly	EA	0	
Irrigation	623-00602	2 Inch Plastic Pipe (Irrigation/Sleeve)	LF	0	
Irrigation	623-00604	4 Inch Plastic Pipe (Irrigation/Sleeve)	LF	0	
Irrigation	623-01712	1-1/2 Inch Backflow Preventer	EA	0	
Irrigation	623-02006	3/4 Inch Drain Valve	EA	0	
Irrigation	623-03108	1 Inch Automatic Control Valve	EA	0	
Irrigation	623-03116	1 1/2 Inch Automatic Control Valve (Master Control)	EA	0	
Irrigation	623-04000	Control Wire 24 Volt	LF	0	
Irrigation	623-04000	Control Wire 24 Volt	LF	0	
Irrigation	623-04002	Power Source Wire	LF	0	
Irrigation	623-04008	1 Inch Quick-Coupler Valve	EA	0	
Irrigation	623-05016	2 Inch Gate Valve	EA	0	

Tabulation or Plan Reference	Contract Item No.	Contract Item	Unit	Plan	As Const.
Irrigation	623-06900	Valve Box	EA	0	
Irrigation	623-06900	Valve Box	EA	0	
Irrigation	623-06901	Valve Box (Special)	EA	0	
Irrigation	623-07510	Weather Station	EA	0	
Irrigation	623-07600	1 1/2 Inch Flow Sensor	EA	0	
Irrigation	623-08432	40 Station Automatic Controller	EA	0	
Irrigation	623-xxxx	1/4" Distribution Pipe	LF	0	
Irrigation	623-xxxx	Drip Line Blow-Out	EA	0	
Gen Note	625-00000	Construction Surveying	LS	1	
Gen Note	626-00000	Mobilization	LS	1	
Pavement Marking	627-00001	Pavement Marking Paint	GAL	0	
Pavement Marking	627-30405	Preformed Thermoplastic Pavement Marking (Right Turn Arrow)	SF	0	
Pavement Marking	627-30405	Preformed Thermoplastic Pavement Marking (Accessibility Parking)	SF	0	
Const Traffic Control	630-00000	Flagging	HOUR	85	
Const Traffic Control	630-00007	Traffic Control Inspection	DAYS	10	
Const Traffic Control	630-00012	Traffic Control Management	DAYS	16	
Const Traffic Control	630-80341	Construction Traffic Sign (Panel Size A)	EA	0	
Const Traffic Control	630-80342	Construction Traffic Sign (Panel Size B)	EA	0	
Const Traffic Control	630-80344	Construction Sign Panel (Special)	SF	0	
Const Traffic Control	630-80336	Barricade (Type 3 M-B)(Temporary)	EA	0	
Const Traffic Control	630-80358	Advanded Warning Flashion Arrow (type C)	DAYS	50	
Const Traffic Control	630-80359	Portable Message Sign Panel	DAYS	12	
Const Traffic Control	630-80360	Drum Channelizing Device	EA	0	
Const Traffic Control	630-80363	Drum Channelizing Device (With Light) (Flashing)	EA	0	
Const Traffic Control	630-80377	Portable Water Filled Barrier (Temporary)	LF	0	
Const Traffic Control	630-80380	Traffic Cone	EA	0	
Gen Note	630	Public Information Services	ls	1	
FA	700-70011	F/A Partnering	LS	1	
FA	700-70016	F/A Fuel Cost Adjustment	LS	1	
FA	700-70021	F/A On The Job Trainee	HOUR	64	
FA	700-70320	F/A Sprinklers	LS	1	
FA	700-70380	F/A Erosion Control	LS	1	
FA	700-73302	F/A Lighting by Others (Non-Utility) Paid by LS	LS	1	
MCR	MCR	Minor Contract Revisions	LS	1	

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Unit Information: City of GJ Unit Leader Initials: DPJ

R1

Sheet Revisions

Date:	Comments	Init.
10-16-15	ADDENDUM ON 10-16-15	JE

Colorado Department of Transportation
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Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

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SUMMARY OF APPROXIMATE QUANTITIES Add Alternate 2

Designer: John Smith
Detailer: John Smith
Sheet Subset: Removal
Structure Numbers
Subset Sheets: 2 of 2

Project No./Code
TCSP M555-029
19365
Sheet Number 19

Tabulation or Plan Reference	Contract Item No.	Contract Item	Unit	Plan	As Const.
SW,C&G,Median,Ramp	609-20000	Curb Type 2 (Section B) (Special)	LF		
SW,C&G,Median,Ramp	609-20010	Curb Type 2 (Section B)	LF		
SW,C&G,Median,Ramp	609-21010	Curb and Gutter Type 2 (Section I-B)	LF		
SW,C&G,Median,Ramp	609-21020	Curb and Gutter Type 2 (Section II-B)	LF		
SW,C&G,Median,Ramp	609-21900	Curb and Gutter Type 2 (Section II-B) (Special)	LF		
SW,C&G,Median,Ramp	610-00020	Median Cover Material (Patterned Concrete)	SF		
lighting	613-01200	2 inch Electrical Conduit	LF		
lighting	613-04010	Conduit (4" Broadband)	LF		
lighting	613-04010	Conduit (2" City Traffic)	LF		
lighting	613-07001	Type One Pull Box	ea		
lighting	613-07040	Pull Box (30"x48"x24") (broadband)	ea		
lighting	613-07040	Pull Box (30"x48"x24") (city Traffic)	ea		
lighting	613-10000	Wiring	ls		
lighting	613-30005	Light Standard and Luminaire (Pedestrian)	ea		
lighting	613-40012	Light Standard Foundation (Special)	ea		
lighting	613-501106	Lighting Control Center (special)	ea		
Final Signing	614-01503	Steel Sign Support (2" Round) (Post & Socket)	EA		
Irrigation	619-40120	1-1/2 Inch Copper Pipe	LF		
Irrigation	619-50080	1 Inch Plastic Pipe	LF		
Irrigation	619-50100	1-1/4 Inch Plastic Pipe	LF		
Irrigation	619-50160	2 Inch Plastic Pipe (CL200)	LF		
Irrigation	619-50160	2 Inch Plastic Pipe (SCH40 PVC Sleeve)	LF		
Gen Note	620-00020	Sanitary Facility	EA		
SW,C&G,Median,Ramp	621-00650	Pedestrian Stair Structure	LS		
Urban Design Features	622-00010	Bicycle Rack	EA	6	
Urban Design Features	622-00250	Bench	EA	19	
Urban Design Features	622-00350	Trash Receptacle	EA	18	
Irrigation	623-00156	Irrigation Bubbler	EA		
Irrigation	623-00162	Drip Emitter Tubing	LF		
Irrigation	623-00164	Drip Emitter	EA		
Irrigation	623-00166	3/4 Inch Emitter Valve Assembly	EA		
Irrigation	623-00602	2 Inch Plastic Pipe (Irrigation/Sleeve)	LF		
Irrigation	623-00604	4 Inch Plastic Pipe (Irrigation/Sleeve)	LF		
Irrigation	623-01712	1-1/2 Inch Backflow Preventer	EA		
Irrigation	623-02006	3/4 Inch Drain Valve	EA		
Irrigation	623-03108	1 Inch Automatic Control Valve	EA		
Irrigation	623-03116	1 1/2 Inch Automatic Control Valve (Master Control)	EA		
Irrigation	623-04000	Control Wire 24 Volt	LF		
Irrigation	623-04000	Control Wire 24 Volt	LF		
Irrigation	623-04002	Power Source Wire	LF		
Irrigation	623-04008	1 Inch Quick-Coupler Valve	EA		
Irrigation	623-05016	2 Inch Gate Valve	EA		

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R1

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10-16-15	ADDENDUM ON 10-16-15	JE

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SUMMARY OF APPROXIMATE QUANTITIES Add Alternate 3

Designer: John Smith
Detailer: John Smith
Sheet Subset: Removal
Structure Numbers
Subset Sheets: 1 of 1

Project No./Code
TCSP M555-029
19365
Sheet Number 20

SUMMARY OF EARTHWORK QUANTITIES

INDEX Book	INDEX Page	INDEX Sheet		PROJECT TOTAL CU. YD.	PROJECT TOTAL *As Const.*
			UNCLASSIFIED EXCAVATION (CIP) (203-00010)	**CU. YD.**	*As Const.*
			ROADWAY (QUANTITY CALCULATED FROM CIVIL 3D)		
			NORTH AVENUE FROM STA 59+50 TO STA 98+75	1516	
			removal of pavement pay items	-331	
			removal of concrete pay items	-268	
			TOTAL FOR PAY QUANTITIES	**917**	
			WETTING (FOR INFORMATION ONLY)	**M GAL.**	
			SURFACING (0.022 M GAL/TON)	46	
			EMBANKMENT (CIP) (0.04 M GAL / CY)	1	
			TOTAL	**47**	
			EMBANKMENT MATERIAL (CIP) (FOR INFORMATION ONLY)	**CU. YD.**	
			QUANTITY CALCULATED FROM CIVIL 3d		
			NORTH AVENUE FROM STA 59+50 TO STA 98+75	10	
			TOTAL	**10**	

INDEX Book	INDEX Page	INDEX Sheet	**ROADWAY QUANTITIES BALANCE (FOR INFORMATION ONLY)**	PROJECT TOTAL CU. YD.	PROJECT TOTAL *As Const.*
				CU. YD.	*As Const.*
			Total Unclassified Excavation	917	
			Total Embankment (net)	10	
			EMBANKMENT TIMES FACTOR 1.15	12	
			Excess Embankment (Material to be Hauled by Contractor)	**906**	

NOTES:
TOP 4 INCHES OF ALL EMBANKMENT SHALL BE FREE OF DEBRIS AND ROCKS OR CLODS GREATER THAN 3 INCHES IN DIAMETER, AND SHALL BE SUITABLE AS NATIVE TOPSOIL.
ALL IMPORTED EMBANKMENT MATERIAL SHALL MEET A MINIMUM OF R-VALUE = 40.

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Unit Information: City of GJ Unit Leader Initials: DPJ

Sheet Revisions		
Date:	Comments	Init.

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SUMMARY OF EARTHWORK QUANTITIES

Designer: John Smith
Detailer: John Smith
Sheet Subset: SEQ
Structure Numbers
Subset Sheets: 1 of 1

Project No./Code
TCSP M555-029
19365
Sheet Number 21

SUMMARY OF EARTHWORK QUANTITIES ADD ALTERNATE 1

INDEX Book	INDEX Page	INDEX Sheet		PROJECT TOTAL CU. YD.	PROJECT TOTAL *As Const.*
			UNCLASSIFIED EXCAVATION (CIP) (203-00010)		
			ROADWAY (QUANTITY CALCULATED FROM CIVIL 3D)		
			NORTH AVENUE FROM STA 59+50 TO STA 98+75	272	
			removal of pavement pay items	-22	
			removal of concrete pay items	-185	
			TOTAL FOR PAY QUANTITIES	**65**	
			WETTING (FOR INFORMATION ONLY)	**M GAL.**	
			SURFACING (0.022 M GAL/TON)	3	
			EMBANKMENT (CIP) (0.04 M GAL / CY)	1	
			TOTAL	**4**	
			EMBANKMENT MATERIAL (CIP) (FOR INFORMATION ONLY)	**CU. YD.**	
			QUANTITY CALCULATED FROM CIVIL 3d		
			NORTH AVENUE FROM STA 59+50 TO STA 98+75	21	
			TOTAL	**21**	

INDEX Book	INDEX Page	INDEX Sheet	ROADWAY QUANTITIES BALANCE (FOR INFORMATION ONLY)	PROJECT TOTAL CU. YD.	PROJECT TOTAL *As Const.*
			Total Unclassified Excavation	65	
			Total Embankment (net)	21	
			EMBANKMENT TIMES FACTOR 1.15	24	
			Excess Embankment (Material to be Hauled by Contractor)	**41**	

NOTES:
TOP 4 INCHES OF ALL EMBANKMENT SHALL BE FREE OF DEBRIS AND ROCKS OR CLODS GREATER THAN 3 INCHES IN DIAMETER, AND SHALL BE SUITABLE AS NATIVE TOPSOIL.
ALL IMPORTED EMBANKMENT MATERIAL SHALL MEET A MINIMUM OF R-VALUE = 40.

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SUMMARY OF EARTHWORK QUANTITIES ADD ALT 1

Designer: John Smith
Detailer: John Smith
Sheet Subset: SEQ
Structure Numbers
Subset Sheets: 1 of 1

Project No./Code
TCSP M555-029
19365
Sheet Number 22

SUMMARY OF EARTHWORK QUANTITIES ADD ALTERNATE 2

INDEX Book	INDEX Page	INDEX Sheet		PROJECT TOTAL CU. YD.	PROJECT TOTAL *As Const.*
			UNCLASSIFIED EXCAVATION (CIP) (203-00010)		
			ROADWAY (QUANTITY CALCULATED FROM CIVIL 3D)		
			NORTH AVENUE FROM STA 59+50 TO STA 84+25 RIGHT	517	
			removal of concrete pay items	-86	
			TOTAL FOR PAY QUANTITIES	**431**	
			WETTING (FOR INFORMATION ONLY)	**M GAL.**	
			SURFACING (0.022 M GAL/TON)	8	
			EMBANKMENT (CIP) (0.04 M GAL / CY)	9	
			TOTAL	**17**	
			EMBANKMENT MATERIAL (CIP) (FOR INFORMATION ONLY)	**CU. YD.**	
			QUANTITY CALCULATED FROM CIVIL 3d		
			NORTH AVENUE FROM STA 59+50 TO STA 84+25 RIGHT	230	
			TOTAL	**230**	

INDEX Book	INDEX Page	INDEX Sheet	ROADWAY QUANTITIES BALANCE (FOR INFORMATION ONLY)	PROJECT TOTAL CU. YD.	PROJECT TOTAL *As Const.*
			Total Unclassified Excavation	431	
			Total Embankment (net)	230	
			EMBANKMENT TIMES FACTOR 1.15	265	
			Excess Embankment (Material to be Hauled by Contractor)	**167**	

NOTES:
TOP 4 INCHES OF ALL EMBANKMENT SHALL BE FREE OF DEBRIS AND ROCKS OR CLODS GREATER THAN 3 INCHES IN DIAMETER, AND SHALL BE SUITABLE AS NATIVE TOPSOIL.
ALL IMPORTED EMBANKMENT MATERIAL SHALL MEET A MINIMUM OF R-VALUE = 40.

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SUMMARY OF EARTHWORK QUANTITIES ADD ALT 2

Designer: John Smith
Detailer: John Smith
Sheet Subset: SEQ
Structure Numbers
Subset Sheets: 1 of 1

Project No./Code
TCSP M555-029
19365
Sheet Number 23

TABULATION OF REMOVALS - SECTION 1

	STATION	(202-00190) REMOVAL OF CONCRETE MEDIAN COVER MATERIAL		(202-00195) REMOVAL OF MEDIAN COVER		(202-00200) REMOVAL OF SIDEWALK		(202-00201) REMOVAL OF CURB		(202-00202) REMOVAL OF GUTTER		(202-00203) REMOVAL OF CURB AND GUTTER		(202-00206) REMOVAL OF CONCRETE CURB RAMP		(202-00210) REMOVAL OF CONCRETE PAVEMENT		(202-00220) REMOVAL OF ASPHALT MAT		COMMENTS
		SY		SY		SY		LF		LF		LF		SY		SY		SY		
	NORTH AVE	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	
	59+42 TO 59+70 LT											37								NE Corner 12th Ave
	59+50 TO 59+72 LT					26														NE Corner 12th Ave
	59+55 LT					9														NE Corner 12th Ave
Add Alternate 2	59+58 TO 59+68 RT											14								SE Corner 12th Ave
Add Alternate 2	59+65 RT													5						SE Corner 12th Ave
Add Alternate 2	59+67 TO 59+72 RT					5														SE Corner 12th Ave
Add Alternate 1	59+68 TO 67+32			474																Median
	61+88 TO 61+97 LT											84								McDonalds Driveway
	61+88 TO 62+72 LT															9				McDonalds / Papas Johns Driveway
	61+93 TO 61+97 LT							15												McDonalds Driveway
	62+26 TO 62+33 LT							9												Papa Johns Driveway
	62+26 TO 62+63 LT															23				Papa Johns Driveway
	62+48 TO 62+48 LT																	92		Papa Johns Driveway
	62+60 TO 62+67 LT					12														Papa Johns
	62+63 TO 62+92 LT					20														Papa Johns
	62+92 TO 63+55 LT																	90		The Optical Center
	63+26 TO 63+32 LT							5												The Optical Center
	63+27 TO 64+30 LT											103								The Optical Center / Aquatime
	63+28 TO 63+75 LT															24				The Optical Center
	63+56 TO 63+56 LT									10										The Optical Center
	63+57 TO 67+54 LT																	543		The Optical Center to Alley
	63+75 TO 64+59 LT					46														The Optical Center / Aquatime
	64+20 TO 64+40 LT							27												Aquatime Sign
	64+59 TO 64+64 LT							8												Aquatime Sign
	64+59 TO 64+94 LT															15				Aquatime Sign
	64+59 TO 64+94 LT											35								Aquatime Sign
	65+28 TO 65+94 LT									66										Tan Perfection
	65+43 TO 65+90 LT															20				Tan Perfection
	65+44 TO 65+50 LT							8												Tan Perfection
	65+85 TO 65+90' LT							7												Johnson's House of Flowers
	65+90 TO 67+43 LT					78														Johnson's House of Flowers
	66+07 TO 67+08 LT											101								Johnson's House of Flowers
Add Alternate 2	66+17 TO 84+25 RT					760														Park
	67+34 TO 67+50 LT	61																		Johnson's House of Flowers
	67+37 TO 67+48 LT											11								Johnson's House of Flowers
	67+42 TO 67+48 LT															3				Johnson's House of Flowers
Add Alternate 1	68+09 TO 69+89 LT							181												Median
Add Alternate 1	68+09 TO 69+89 LT																	133		Median
Add Alternate 1	68+09 TO 71+88 LT	243																		Median
	68+88 TO 69+42 LT																	97		Karate DoJo
	69+05 TO 69+44 LT											39								Karate DoJo
	69+13 TO 69+18 LT							7												Karate DoJo
	69+17 TO 69+45 LT															17				Karate DoJo
	70+48 TO 70+85 LT																	68		Pizza Hut
	70+72 TO 71+20 LT											48								Pizza Hut
	70+80 TO 71+15 LT															46				Pizza Hut
	71+10 TO 71+29 LT																	27		Pizza Hut
	71+28 TO 71+62 LT					53														15th and North Plaza
	71+52 TO 71+63 LT							19												15th and North Plaza
	71+53 TO 71+91 LT											38								15th and North Plaza
	71+57 TO 71+87 LT															17				15th and North Plaza
	71+75 TO 71+75 LT																	227		15th and North Plaza
	SUB TOTAL SHT 1	**61**		**0**		**244**		**105**		**76**		**496**		**0**		**174**		**1144**		**BASE BID**
Add Alternate 1	**SUB TOTAL SHT 1**	**243**		**474**		**0**		**181**		**0**		**0**		**0**		**0**		**133**		**ADD ALTERNATE 1**
Add Alternate 2	**SUB TOTAL SHT 1**	**0**		**0**		**765**		**0**		**0**		**14**		**5**		**0**		**0**		**ADD ALTERNATE 2**

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Region 3 RBB

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TABULATION OF REMOVALS

Designer: John Smith
Detailer: John Smith
Sheet Subset: Rem Tab
Structure Numbers
Subset Sheets: 1 of 6

Project No./Code
TCSP M555-029
19365
Sheet Number 24

TABULATION OF REMOVALS - SECTION 1

	STATION	(202-00190) REMOVAL OF CONCRETE MEDIAN COVER MATERIAL		(202-00195) REMOVAL OF MEDIAN COVER		(202-00200) REMOVAL OF SIDEWALK		(202-00201) REMOVAL OF CURB		(202-00202) REMOVAL OF GUTTER		(202-00203) REMOVAL OF CURB AND GUTTER		(202-00206) REMOVAL OF CONCRETE CURB RAMP		(202-00210) REMOVAL OF CONCRETE PAVEMENT		(202-00220) REMOVAL OF ASPHALT MAT		COMMENTS
		SY		SY		SY		LF		LF		LF		SY		SY		SY		
	NORTH AVE	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	
	71+85 TO 71+91 LT							18												15th and North Plaza
	71+85 TO 72+04 LT					16														15th and North Plaza
	72+02 TO 72+08 LT											25								15th and North Plaza
	72+05 LT													5						15th and North Plaza
	72+47 TO 72+47 LT											21								Old Far East
	72+49 LT													4						Old Far East
	72+51 TO 73+52 LT																	53		Old Far East
	72+51 TO 74+49 LT					172														Old Far East to Petes House of Spirits
	72+54 TO 72+56 LT							4												Old Far East
Add Alternate 1	72+55 TO 75+30	233																		Median
	72+60 TO 75+00 LT									240										Old Far East
	73+21 TO 73+63 LT															30				Old Far East
	73+29 TO 73+29 LT							5												Old Far East
	74+44 TO 74+44 LT									15										Petes House of Spirits
	74+49 TO 74+94 LT																	79		Petes House of Spirits
	74+54 TO 74+59 LT							8												Petes House of Spirits
	74+58 TO 74+95 LT															23				Petes House of Spirits
	74+94 TO 75+00 LT							9												Monument Inn
	74+94 TO 75+39 LT																	9		Monument Inn
	74+94 TO 75+33 LT					20														Monument Inn
Add Alternate 2	75+70 TO 76+25 RT											55								Park
	75+98 TO 76+18 LT					11														Monument Inn
Add Alternate 1	76+00 TO 78+42 LT			191																Median
	76+08 TO 76+66 LT											58								Monument Inn
	76+17 TO 76+63 LT															25				Monument Inn
	76+22 TO 76+22 LT							8												Monument Inn
	76+22 TO 78+72 LT																	324		Monument Inn
	76+57 TO 77+70 LT					49														Monument Inn
	77+58 TO 78+00 LT											42								Monument Inn
	77+64 TO 77+69 LT							7												Monument Inn
	77+68 TO 77+92' LT															12				Monument Inn
	77+90 TO 77+95 LT							7												Veterinary Emergency Center
	78+05 TO 78+55 LT							115												Landscape Planter
	78+58 TO 78+71 LT							18												Veterinary Emergency Center
	78+73 TO 78+73' LT															3				Veterinary Emergency Center
	78+93 TO 78+93 LT															4				Boost Mobile
	78+95 TO 78+98 LT							9												Boost Mobile
	78+96 TO 79+39 LT																	67		Boost Mobile
Add Alternate 1	79+08 TO 83+20			383																Median
	79+08 TO 80+32 LT											124								Boost Mobile to Grand Mesa Med Supply
Add Alternate 2	79+73 TO 83+33 RT											360								Park
	80+27 TO 80+32 LT															2				Grand Mesa Med Supply
Add Alternate 1	80+32 TO 80+90 LT	31																		Median
	80+54 TO 80+60 LT															2				Burger King
	80+54 TO 80+64 LT											10								Burger King
	81+80 TO 83+22 LT											142								Gas Station
	81+88 TO 82+25LT															39				Gas Station
	81+88 TO 83+36 LT					85														Gas Station
	81+88 TO 83+35 LT																	29		Gas Station
	82+79 TO 83+20 LT															37				Gas Station
	83+33 TO 83+36 LT							4												Gas Station
	83+38 LT													3						Gas Station
	SHEET SUB TOTAL	**0**		**0**		**353**		**212**		**255**		**422**		**12**		**177**		**561**		**BASE BID**
Add Alternate 1	**SHEET SUB TOTAL**	**264**		**574**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		**ADD ALTERNATE 1**
Add Alternate 2	**SHEET SUB TOTAL**	**0**		**0**		**0**		**0**		**0**		**415**		**0**		**0**		**0**		**ADD ALTERNATE 2**

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Sheet Revisions

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TABULATION OF REMOVALS

Designer: John Smith
Detailer: John Smith
Sheet Subset: Rem Tab
Structure Numbers
Subset Sheets: 2 of 6

Project No./Code
TCSP M555-029
19365
Sheet Number 25

TABULATION OF REMOVALS - SECTION 1

	STATION	(202-00190) REMOVAL OF CONCRETE MEDIAN COVER MATERIAL		(202-00195) REMOVAL OF MEDIAN COVER		(202-00200) REMOVAL OF SIDEWALK		(202-00201) REMOVAL OF CURB		(202-00202) REMOVAL OF GUTTER		(202-00203) REMOVAL OF CURB AND GUTTER		(202-00206) REMOVAL OF CONCRETE CURB RAMP		(202-00210) REMOVAL OF CONCRETE PAVEMENT		(202-00220) REMOVAL OF ASPHALT MAT		COMMENTS
		SY		SY		SY		LF		LF		LF		SY		SY		SY		
	NORTH AVE	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	
	83+38 TO 83+38 LT															4				Gas Station
	83+40 TO 83+42 LT							17												Gas Station
	83+74 TO 83+74 LT							15												Wrigley Field
	83+78 TO 83+78' LT															4				Wrigley Field
	83+78 TO 84+62 LT																	55		Wrigley Field
Add Alternate 1	83+86 TO 85+65 LT			136																Median
Add Alternate 2	84+05 TO 84+25 RT											20								Park
	84+25 TO 86+02 RT											190								Park
	84+25 TO 85+87 RT					110														Park
	84+56 TO 85+06 LT											50								Wrigley Field
	84+57 TO 84+64 LT							18												Wrigley Field
	84+61 TO 84+99 LT															22				Wrigley Field
	84+64 TO 84+79 LT																	19		Wrigley Field
	84+81 TO 84+81 LT									10										Wrigley Field
	84+82 TO 85+92 LT																	99		Timbers Motel
	84+97 TO 84+97 LT							5												Timbers Motel
	84+98 TO 85+02 LT							10												Timbers Motel
	85+52 TO 85+56 LT							11												Village Inn
	85+55 TO 86+02 LT											47								Village Inn
	85+62 TO 88+22 RT																	285		North Ave.
	85+65 TO 85+75 LT			4																Median
	85+65 TO 85+75 LT							25												Median
	85+68 TO 85+72 LT							11												Village Inn
	85+71 TO 85+93 LT															11				Village Inn
	85+75 TO 86+04 RT																	19		VA W. ENTRANCE
	85+92 TO 85+97 LT							7												Village Inn
	86+09 TO 86+45 LT					12														Village Inn
	86+51 TO 88+22			57																Median
Add Alternate 1	88+22 TO 89+03			27																Median
	86+54 TO 86+95 LT											41								Village Inn
	86+54 TO 88+22 LT							173												Village Inn
	86+59 TO 86+64 LT							7												Village Inn
	86+62 TO 86+85 LT											23								Village Inn
	86+64 TO 87+19 LT																	117		Village Inn
	86+84 TO 86+88 LT							7												Village Inn
	87+00 TO 87+02 LT									11										Village Inn
	87+19 TO 87+40 LT					33														Frontier Motor Lodge
	87+30 TO 87+75 LT											45								Frontier Motor Lodge
	87+34 TO 87+40 LT							7												Frontier Motor Lodge
	87+38 TO 87+71 LT															18				Frontier Motor Lodge
	87+40 TO 87+70 LT															35				Frontier Motor Lodge
	87+40 TO 89+51 LT																	299		Frontier Motor Lodge
	87+70 TO 87+75 LT							7												Frontier Motor Lodge
	87+90 TO 88+34 LT															24				Frontier Motor Lodge
	87+90 TO 88+39 LT											49								Frontier Motor Lodge
	87+97, TO 88+32 LT															22				Frontier Motor Lodge
	88+28 TO 88+28 LT																	33		Frontier Motor Lodge
	88+32 TO 88+39 LT							9												Frontier Motor Lodge
	89+11 TO 89+16 LT											5								Wendy's
	89+16 TO 89+28 LT							18												Wendy's
	89+16 TO 89+30 LT															9				Wendy's
	89+28 TO 89+51 LT									23										Wendy's
Add Alternate 1	89+68 TO 91+76	141																		Median
	90+06 TO 90+11 LT							8												Auto Mart
	90+06 TO 90+41 LT											35								Auto Mart
	90+11 TO 90+41 LT															43				Auto Mart
	90+36 TO 90+36 LT							10												Auto Mart
	SHEET SUB TOTAL	**0**		**61**		**155**		**365**		**44**		**505**		**0**		**192**		**926**		**BASE BID**
Add Alternate 1	**SHEET SUB TOTAL**	**141**		**163**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		**ADD ALTERNATE 1**
Add Alternate 2	**SHEET SUB TOTAL**	**0**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		**ADD ALTERNATE 2**

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TABULATION OF REMOVALS

Designer: John Smith
Detailer: John Smith
Sheet Subset: Rem Tab
Structure Numbers
Subset Sheets: 3 of 6

Project No./Code
TCSP M555-029
19365
Sheet Number 26

TABULATION OF REMOVALS - SECTION 1

	STATION	(202-00190) REMOVAL OF CONCRETE MEDIAN COVER MATERIAL		(202-00195) REMOVAL OF MEDIAN COVER		(202-00200) REMOVAL OF SIDEWALK		(202-00201) REMOVAL OF CURB		(202-00202) REMOVAL OF GUTTER		(202-00203) REMOVAL OF CURB AND GUTTER		(202-00206) REMOVAL OF CONCRETE CURB RAMP		(202-00210) REMOVAL OF CONCRETE PAVEMENT		(202-00220) REMOVAL OF ASPHALT MAT		COMMENTS
		SY		SY		SY		LF		LF		LF		SY		SY		SY		
	NORTH AVE	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	
	90+41 TO 90+50 LT					5														Auto Mart
	90+46 TO 90+98 LT											52								Auto Mart
	90+50 TO 90+97 LT															68				Auto Mart
	90+56 TO 90+56 LT							10												Auto Mart
	90+97 TO 91+31 LT					19														Auto Mart
	91+31 TO 91+76 LT											45								Auto Mart
	91+31 TO 91+76 LT															33				Auto Mart
	91+76 TO 91+92 LT					13														Auto Mart
	91+86 TO 92+44 LT																	91		Auto Mart
	91+93 TO 91+99 LT											24								Auto Mart
	91+95 LT													6						Auto Mart
	92+33 TO 92+38 LT											49								Auto Mart
	92+36 TO 92+36 LT					5														Auto Mart
	92+38, 50' LT													9						Auto Mart
	92+39 TO 92+50 LT					5														Auto Mart
	92+52 TO 93+22 LT					51														Auto Mart
Add Alternate 1	92+55 TO 94+90			78																Median
	92+62 TO 93+16 LT							59												Auto Mart
	92+62 TO 93+25 LT																	38		Auto Mart
	92+65 TO 93+85 LT											120								Auto Mart
	93+18 OT 93+25 LT																			Auto Mart
	93+22 TO 93+65 LT															24				Auto Mart
Add Alternate 1	93+25 TO 94+88							320												Median
Add Alternate 1	93+25 TO 97+49																	468		Median
	93+29 TO 93+31 LT							12												Auto Mart
	93+30 TO 93+59 LT																	31		Auto Mart
	93+59 TO 93+60 LT							12												Auto Mart
	93+63 TO 93+84 LT																	12		Auto Mart
	93+65 TO 95+21 LT					107														Auto Mart
	93+73 TO 93+85 LT							18												Auto Mart
	94+00 TO 95+12 LT							118												Auto Mart
	94+00 TO 95+18 LT																	71		Auto Mart
	94+50 TO 95+50 LT											100								Auto Mart
	95+10 TO 95+18 LT																			Auto Mart
	95+21 TO 95+21 LT							10												Auto Mart
	95+21 TO 95+50 LT																	25		Auto Mart
	95+21 TO 95+51 LT															18				Auto Mart
	95+50 TO 95+50 LT																			Auto Mart
	95+52 TO 95+75 LT					21														Auto Mart
Add Alternate 1	95+67 TO 98+40			89																Median
Add Alternate 1	95+70 TO 97+50							293												Median
	95+75 TO 96+25 LT															31				Auto Mart
	95+75 TO 96+31 LT											56								Auto Mart
	95+83 TO 97+16 LT																	133		Auto Mart
	96+24 TO 96+76 LT					34														Auto Mart
	96+70 TO 98+37 LT											167								Auto Mart
	96+76 TO 97+22 LT															29				Auto Mart
	97+16 TO 97+16' LT							8												Auto Mart
	97+20 TO 97+49 LT					22														Auto Mart
	97+41 TO 97+41 LT							7												Auto Mart
	97+49 TO 97+83 LT															22				Auto Mart
	97+54 TO 98+56 LT																	83		Auto Mart
	SHEET SUB TOTAL	**0**		**0**		**282**		**254**		**0**		**613**		**15**		**225**		**952**		**BASE BID**
Add Alternate 1	**SHEET SUB TOTAL**	**0**		**167**		**0**		**613**		**0**		**0**		**0**		**0**		**0**		**ADD ALTERNATE 1**
Add Alternate 2	**SHEET SUB TOTAL**	**0**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		**ADD ALTERNATE 2**

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TABULATION OF REMOVALS

Designer: John Smith
Detailer: John Smith
Sheet Subset: Rem Tab
Structure Numbers
Subset Sheets: 4 of 6

Project No./Code
TCSP M555-029
19365
Sheet Number 27

TABULATION OF REMOVALS - SECTION 1

	STATION	(202-00190) REMOVAL OF CONCRETE MEDIAN COVER MATERIAL		(202-00195) REMOVAL OF MEDIAN COVER		(202-00200) REMOVAL OF SIDEWALK		(202-00201) REMOVAL OF CURB		(202-00202) REMOVAL OF GUTTER		(202-00203) REMOVAL OF CURB AND GUTTER		(202-00206) REMOVAL OF CONCRETE CURB RAMP		(202-00210) REMOVAL OF CONCRETE PAVEMENT		(202-00220) REMOVAL OF ASPHALT MAT		COMMENTS
		SY		SY		SY		LF		LF		LF		SY		SY		SY		
	NORTH AVE	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	
	97+83 TO 98+00 LT					13														Auto Mart
	98+00 TO 98+37 LT															26				Auto Mart
	98+56 TO 98+56 LT															9				Auto Mart
	98+58 LT													6						Auto Mart
	98+59 TO 98+61 LT											32								Auto Mart
	59+40 TO 98+63					40		45				153		32		247		234		Needed for Conduit installation
	SUBTOTAL SHT 5	**0**		**0**		**53**		**45**		**0**		**185**		**38**		**282**		**234**		**BASE BID**
Add Alternate 1	**SUB TOTAL SHT 5**	**0**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		**ADD ALTERNATE 1**
Add Alternate 2	**SUB TOTAL SHT 5**	**0**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		**ADD ALTERNATE 2**
	SUB TOTAL SHT 1	**61**		**0**		**244**		**105**		**76**		**496**		**0**		**174**		**1144**		**BASE BID**
Add Alternate 1	**SUB TOTAL SHT 1**	**243**		**474**		**0**		**181**		**0**		**0**		**0**		**0**		**133**		**ADD ALTERNATE 1**
Add Alternate 2	**SUB TOTAL SHT 1**	**0**		**0**		**765**		**0**		**0**		**14**		**5**		**0**		**0**		**ADD ALTERNATE 2**
	SUBTOTAL SHT 2	**0**		**0**		**353**		**212**		**255**		**422**		**12**		**177**		**561**		**BASE BID**
Add Alternate 1	**SUBTOTAL SHT 2**	**264**		**574**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		**ADD ALTERNATE 1**
Add Alternate 2	**SUBTOTAL SHT 2**	**0**		**0**		**0**		**0**		**0**		**415**		**0**		**0**		**0**		**ADD ALTERNATE 2**
	SUB TOTAL SHT 3	**0**		**61**		**155**		**365**		**44**		**505**		**0**		**192**		**926**		**BASE BID**
Add Alternate 1	**SUB TOTAL SHT 3**	**141**		**163**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		**ADD ALTERNATE 1**
Add Alternate 2	**SUB TOTAL SHT 3**	**0**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		**ADD ALTERNATE 2**
	SUB TOTAL SHT 4	**0**		**0**		**282**		**254**		**0**		**613**		**15**		**225**		**952**		**BASE BID**
Add Alternate 1	**SUB TOTAL SHT 4**	**0**		**167**		**0**		**613**		**0**		**0**		**0**		**0**		**0**		**ADD ALTERNATE 1**
Add Alternate 2	**SUB TOTAL SHT 4**	**0**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		**ADD ALTERNATE 2**
	PROJECT TOTAL	**61**		**61**		**1087**		**981**		**375**		**2221**		**65**		**1050**		**3817**		**BASE BID**
Add Alternate 1	**PROJECT TOTAL**	**648**		**1378**		**0**		**794**		**0**		**0**		**0**		**0**		**133**		**ADD ALTERNATE 1**
Add Alternate 2	**PROJECT TOTAL**	**0**		**0**		**765**		**0**		**0**		**429**		**5**		**0**		**0**		**ADD ALTERNATE 2**

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Designer: John Smith
Detailer: John Smith
Sheet Subset: Rem Tab
Structure Numbers
Subset Sheets: 5 of 6

Project No./Code
TCSP M555-029
19365
Sheet Number 28

TABULATION OF REMOVALS - SECTION 2

STATION	(202-00001) REMOVAL OF STRUCTURE		(202-00155) REMOVAL OF WALL		(202-00250) REMOVAL OF PAVEMENT MARKING		(202-00815) REMOVAL OF SIGN (SPECIAL)		COMMENTS
	EA		LF		SF		EA		
NORTH AVE	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	
63+87 LT							1		Aquatime Sign
79+06 LT	1								Planter
83+80 TO 84+63 LT	1								Railroad Tie Planter
84+97 TO 84+97 LT	1								Railroad Tie Planter
85+95 TO 85+95 LT	1								Rock Planter
86+00 TO 86+30					130				VA CROSSWALK
86+61 TO 86+61 LT	1								Rock Planter
86+96 LT	1								Bollard
86+96 LT	1								Bollard
92+63 TO 92+65 LT	1								Dealer Ramp
93+18 OT 93+25 LT	1								Dealer Ramp
93+63 TO 93+70 LT	1								Dealer Ramp
94+01 TO 94+09 LT	1								Dealer Ramp
95+10 TO 95+18 LT	1								Dealer Ramp
95+50' LT	1								Bollard
95+50 TO 95+50 LT			7						Retaining wall
PROJECT TOTAL	**13**		**7**		**130**		**1**		**BASE BID**
Add Alternate 1 **PROJECT TOTAL**	**0**		**0**		**0**		**0**		**ADD ALTERNATE 1**
Add Alternate 2 **PROJECT TOTAL**	**0**		**0**		**0**		**0**		**ADD ALTERNATE 2**

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Print Date: AT LEFT
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Horiz. Scale: NA Vert. Scale: NA
Unit Information: City of GJ Unit Leader Initials: DPJ

Sheet Revisions

Date:	Comments	Init.

Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

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TABULATION OF REMOVALS

Designer: John Smith
Detailer: John Smith
Sheet Subset: Rem Tab
Structure Numbers
Subset Sheets: 6 of 6

Project No./Code
TCSP M555-029
19365
Sheet Number 29

TABULATION OF ADJUSTMENTS, MODIFICATIONS, AND RESETS

	STATION	OFFSET	SIDE	EACH														LINEAL FEET				COMMENTS
				(210-00050) RESET FIRE HYDRANT		(210-00065) RESET MONUMENT (TYPE 3A)		(210-00810) RESET GROUND SIGN		(210-00827) RESET PULL BOX		(210-04010) ADJUST MANHOLE		(210-04020) MODIFY INLET		(210-04050) ADJUST VALVE BOX		(210-04060) ADJUST WATER METER		(210-01000) RESET FENCE		(210-01000) RESET FENCE (SPECIAL) (SAFETY SCREEN)		
				Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	
	NORTH AVE																							
Add Alternate 1	60+46	3	RT							1														MEDIAN
	62+64	33	LT											1										PAPA JOHN
Add Alternate 1	63+93	0	LT							1														MEDIAN
	64+18	49	LT									1												OPTICAL CENTER
	64+93	40	LT	1																				TAN PERFECTION
	65+67	51	LT									1												TAN PERFECTION
	65+69	50	LT			1																		TAN PERFECTION
Add Alternate 2	66+24 TO 84+30	44	RT																	1786				CHAIN LINK AT PARK
Add Alternate 2	67+15 TO 68+87	47	RT																			172		GOLF COURSE SAFETY SCREEN
	84+10 TO 85+50	44	RT																	140				CHAIN LINK AT PARK
Add Alternate 1	67+31	5	LT							1														MEDIAN
Add Alternate 1	68+10	3	RT							1														MEDIAN
	69+12	33	LT											1										KARATE DOJO
	69+23	57	LT															1						KARATE DOJO
Add Alternate 1	69+33	2	RT													1								MEDIAN
Add Alternate 1	70+12	3	RT													1								MEDIAN
Add Alternate 1	70+19	3	RT			TT										1								MEDIAN
	71+00	40	LT									1												15th & NORTH AVE.
Add Alternate 2	72+32	66	RT									1												LINCOLN PARK
	72+54	47	LT	1																				15th & NORTH AVE.
	73+69	46	LT															1						OLD FAR EAST
	75+96	53	LT	1																				MONUMENT INN
	77+22	41	LT															1						MONUMENT INN
	79+05	47	LT															1						BOOST MOBILE
Add Alternate 2	79+05 TO 80+66	47	RT																			161		GOLF COURSE SAFETY SCREEN
Add Alternate 1	81+49	3	LT							1														MEDIAN
Add Alternate 2	81+77 TO 84+31	47	RT																			232		GOLF COURSE SAFETY SCREEN
Add Alternate 1	83+15	5	LT							1														MEDIAN
Add Alternate 1	83+88	5	LT							1														MEDIAN
Add Alternate 1	84+32	7	LT													1								MEDIAN
	84+09 TO 84+67	47	RT																			58		GOLF COURSE SAFETY SCREEN
	84+79	40	LT					1																LINCOLN PARK
	85+52 TO 85+52	60	RT																	10				CHAIN LINK AT PARK
	85+52 TO 85+90	56	RT																	45				SPLIT CEDAR FENCE AT VA
	85+65	31	RT											1										VA RT TURN LANE
Add Alternate 1	90+17	5	LT													1								MEDIAN
	90+23	44	LT															1						WENDY'S
	91+59	49	LT															1						AUTOMART
	91+88	49	LT	1																				AUTOMART
	91+92	51	LT					1																AUTOMART
	92+05	0	LT			1																		NORTH AVE.
	92+38 TO 93+28	51	LT																	107				CABLE FENCE AT CARVILLE'S
	93+61 TO 95+20	51	LT																	158				CABLE FENCE AT CARVILLE'S
	93+15	46	LT							1														CARVILLES
	93+66	46	LT							1														CARVILLES
	94+38	46	LT							1														CARVILLES
	95+12	46	LT							1														CARVILLES
	96+00	40	LT															1						IPWICH INN
	97+30	42	LT															1						IPWICH INN
	97+46	41	LT					1																IPWICH INN
Add Alternate 1	98+26	5	LT							1														MEDIAN
	98+39	44	LT	1																				GAS STATION
	98+47	46	LT							1														GAS STATION
	98+52	52	LT							1														GAS STATION
	PROJECT TOTAL			**5**		**2**		**3**		**6**		**3**		**3**		**0**		**8**		**460**		**58**		**BASE BID**
Add Alternate 1	**PROJECT TOTAL**			**0**		**0**		**0**		**8**		**0**		**0**		**5**		**0**		**0**		**0**		**ADD ALTERNATE 1**
Add Alternate 2	**PROJECT TOTAL**			**0**		**0**		**0**		**0**		**1**		**0**		**0**		**0**		**1786**		**565**		**ADD ALTERNATE 2**

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Region 3 RBB

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TABULATION OF ADJUSTMENTS, MODIFICATIONS, AND RESETS
Designer: John Smith
Detailer: John Smith
Sheet Subset: tab util
Structure Numbers
Subset Sheets: 1 of 1

Project No./Code
TCSP M555-029
19365
Sheet Number 30

SURFACING TABULATION

	STATION	SIDE	(304-06000) AGGREGATE BASE COURSE (CLASS 6)		(403-00720) HOT MIX ASPHALT (PATCHING) (ASPHALT)		(403-34841) HOT MIX ASPHALT (GRADING SX) (75) (PG 64-22)		(403-34871) HOT MIX ASPHALT (GRADING SX) (75) (PG 76-28)		(412-00600) CONCRETE PAVEMENT (6 INCH)		(412-00800) CONCRETE PAVEMENT (8 INCH)		COMMENTS
			TON								SY				
			Plan	As Const.	Plan	As Const.	Plan	As Const.	Plan	As Const.	Plan	As Const.	Plan	As Const.	
	NORTH AVE.														
	59+43 TO 59+73	LT	9												CURB RAMP/SIDEWALK 4" ABC
Add Alternate 2	59+59 TO 59+72	RT	4												CUMB RAMP/SIDEWALK 4" ABC
Add Alternate 1	59+70 TO 63+66	RT	38												MEDIAN COVER 6" ABC
	61+89 TO 61+97	LT	1										4		8" PCCP / 6" ABC
	61+89 TO 62+71	LT	7												CURB 6" ABC
	62+24 TO 62+71	LT	7										23		8" PCCP / 6" ABC
	62+27 TO 62+63	LT	8												SIDEWALK 6" ABC
	62+34 TO 62+59	LT	18				14								4" THICK ASPHALT / 6" ABC
	62+57 TO 62+66	LT	3												SIDEWALK 4" ABC
	62+63 TO 67+54	LT	97												CURB RAMP/SIDEWALK 4" & 6" ABC
	62+66 TO 62+92	LT	1												CURB 6" ABC
	63+27 TO 63+79	LT	10										35		8" PCCP / 6" ABC
	63+27 TO 64+29	LT	9												CURB 6" ABC
	64+21 TO 64+41	LT	1												CURB 6" ABC
	64+53 TO 64+94	LT	10										25		8" PCCP / 6" ABC
	64+64 TO 64+89	LT	10				8								4" THICK ASPHALT / 6" ABC
	65+29 TO 65+94	LT	6												CURB 6" ABC
	65+45 TO 65-94	LT	9										31		8" PCCP / 6" ABC
	65+50 TO 65+85	LT	13				10								4" THICK ASPHALT / 6" ABC
	66+07 TO 66+19	LT	1												CURB 6" ABC
	66+07 TO 67+07	LT	23										76		8" PCCP / 6" ABC
Add Alternate 2	66+18 TO 84+25	RT	323												SIDEWALK 4" ABC
	66+20 TO 66+95	LT	4												CURB 6" ABC
Add Alternate 1	66+42 TO 67+32	LT	9												MEDIAN COVER 6" ABC
	66+96 TO 67+07	LT	1												CURB 6" ABC
	67+37 TO 67+48	LT	3										6		8" PCCP / 6" ABC
Add Alternate 1	68+09 TO 69+83	LT&RT	3												CURB 6" ABC
	68+86 TO 69+44	LT	13												SIDEWALK 4" & 6" ABC
	69+05 TO 69+35	LT	7				5								4" THICK ASPHALT / 6" ABC
	69+05 TO 69+44	LT	11										26		8" PCCP / 6" ABC
	70+47 TO 72+07	LT	33												CURB RAMP/SIDEWALK 4" & 6" ABC
	70+73 TO 71+20	LT	13										30		8" PCCP / 6" ABC
Add Alternate 1	71+07 TO 71+89	LT	9												MEDIAN COVER 6" ABC
	71+53 TO 71+91	LT	3												CURB 6" ABC
	71+56 TO 72+04	LT	32				24								4" THICK ASPHALT / 6" ABC
	72+02 TO 72+08	LT	2												CURB 6" ABC
	72+48 TO 74+95	LT	52												SIDEWALK 4" ABC
	72+47 TO 72+48	LT	1												CURB 6" ABC
	72+61 TO 75+00	LT	20												CURB 6" ABC
	SHEET SUB TOTAL		**438**		**0**		**61**		**0**		**0**		**256**		**BASE BID**
Add Alternate 1	**SHEET SUB TOTAL**		**59**		**0**		**0**		**0**		**0**		**0**		**ADD ALTERNATE 1**
Add Alternate 2	**SHEET SUB TOTAL**		**327**		**0**		**0**		**0**		**0**		**0**		**ADD ALTERNATE 2**

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Colorado Department of Transportation
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Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

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TABULATION OF SURFACING

Designer: John Smith
Detailer: John Smith
Sheet Subset: tab o surf
Structure Numbers
Subset Sheets: 1 of 3

Project No./Code
TCSP M555-029
19365
Sheet Number 31

SURFACING TABULATION

	STATION	SIDE	(304-06000) AGGREGATE BASE COURSE (CLASS 6)		(403-00720) HOT MIX ASPHALT (PATCHING) (ASPHALT)		(403-34841) HOT MIX ASPHALT (GRADING SX) (75) (PG 64-22)		(403-34871) HOT MIX ASPHALT (GRADING SX) (75) (PG 76-28)		(412-00600) CONCRETE PAVEMENT (6 INCH)		(412-00800) CONCRETE PAVEMENT (8 INCH)		COMMENTS
			TON								SY				
			Plan	As Const.	Plan	As Const.	Plan	As Const.	Plan	As Const.	Plan	As Const.	Plan	As Const.	
	NORTH AVE.														
Add Alternate 1	74+50 TO 75+31	LT	8												MEDIAN COVER 6" ABC
Add Alternate 2	75+70 TO 76+25	RT	5												CURB 6" ABC
	75+94 TO 76+59	LT	1												CURB 6" ABC
	75+94 TO 78+73	LT	60												CURB RAMP/SIDEWALK 4" & 6" ABC
	76+08 TO 76+66	LT	5												CURB 6" ABC
	77+58 TO 78+00	LT	12										26		8" PCCP / 6" ABC
Add Alternate 1	77+60 TO 78+42	LT	8												MEDIAN COVER 6" ABC
	77+69 TO 77+90	LT	3				2								4" THICK ASPHALT / 6" ABC
	78+93 TO 79+39	LT	9												CURB RAMP/SIDEWALK 4" ABC
	79+08 TO 80+32	LT	10												CURB 6" ABC
Add Alternate 2	79+73 TO 83+33	RT	30												CURB 6" ABC
	80+19 TO 80+32	LT	2										7		8" PCCP / 6" ABC
	80+54 TO 80+64	LT	3										7		8" PCCP / 6" ABC
	81+81 TO 82+29	LT	9										30		8" PCCP / 6" ABC
	81+81 TO 83+22	LT	12												CURB 6" ABC
	81+88 TO 83+39	LT	31												CURB RAMP/SIDEWALK 4" & 6" ABC
Add Alternate 1	82+28 TO 83+20	LT	9												MEDIAN COVER 6" ABC
	83+22 TO 83+33	LT	1												CURB 6" ABC
	83+39 TO 83+40	LT	1												CURB 6" ABC
	83+73 TO 89+51	LT	121												CURB RAMP/SIDEWALK 4" & 6" ABC
	83+83 TO 84+61	LT	1												CURB 6" ABC
Add Alternate 2	84+05 TO 84+25	RT	2												CURB 6" ABC
	84+25 TO 84+46	RT	1												CURB 6" ABC
	84+25 TO 86+01	RT	34												SIDEWALK 4" ABC
	84+25 TO 86+03	RT	74										245		8" PCCP / 6" ABC
	84+47 TO 85+98	RT	8												CURB 6" ABC
	84+56 TO 85+06	LT	14										32		8" PCCP / 6" ABC
Add Alternate 1	85+07 TO 85+66	LT	6												MEDIAN COVER 6" ABC
	85+55 TO 85+96	LT	12										26		8" PCCP / 6" ABC
	85+63 TO 86+05	LT&RT							5						2" THICK ASPHALT
	85+64 TO 85+66	LT	1												CURB 6" ABC
	85+65 TO 86+05	LT&RT	16		7										3" THICK ASPHALT / 6" ABC
	85+87 TO 88+22	LT&RT	5												CURB 6" ABC
	85+98 TO 86+01	RT	1												CURB 6" ABC
	86+50 TO 86+63	LT	1												CURB 6" ABC
	86+54 TO 86+95	LT	11										26		8" PCCP / 6" ABC
	86+63 TO 86+85	LT	11				8								4" THICK ASPHALT / 6" ABC
	86+96 TO 87+06	LT	1												CURB 6" ABC
	87+30 TO 87+75	LT	13										30		8" PCCP / 6" ABC
	87+40 TO 87+70	LT	10								35				6" PCCP / 6" ABC
	87+91 TO 88+39	LT	4												CURB 6" ABC
	SHEET SUB TOTAL		**498**		**7**		**10**		**5**		**35**		**429**		**BASE BID**
Add Alternate 1	**SHEET SUB TOTAL**		**31**		**0**		**0**		**0**		**0**		**0**		**ADD ALTERNATE 1**
Add Alternate 2	**SHEET SUB TOTAL**		**37**		**0**		**0**		**0**		**0**		**0**		**ADD ALTERNATE 2**

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TABULATION OF SURFACING

Designer: John Smith
Detailer: John Smith
Sheet Subset: tab o surf
Structure Numbers
Subset Sheets: 2 of 3

Project No./Code
TCSP M555-029
19365
Sheet Number 32

SURFACING TABULATION

	STATION	SIDE	(304-06000) AGGREGATE BASE COURSE (CLASS 6)		(403-00720) HOT MIX ASPHALT (PATCHING) (ASPHALT)		(403-34841) HOT MIX ASPHALT (GRADING SX) (75) (PG 64-22)		(403-34871) HOT MIX ASPHALT (GRADING SX) (75) (PG 76-28)		(412-00600) CONCRETE PAVEMENT (6 INCH)		(412-00800) CONCRETE PAVEMENT (8 INCH)		COMMENTS
			TON								SY				
			Plan	As Const.	Plan	As Const.	Plan	As Const.	Plan	As Const.	Plan	As Const.	Plan	As Const.	
	NORTH AVE.														
	87+92 TO 88+35	LT	8										28		8" PCCP / 6" ABC
	87+97 TO 88+32	LT	6								21				6" PCCP / 6" ABC
	88+22 TO 88+34	LT							4						2" THICK ASPHALT
Add Alternate 1	88+22 TO 89+02	LT	8												MEDIAN COVER 6" ABC
	88+24 TO 88+32	LT	7		4										3" THICK ASPHALT / 6" ABC
	89+11 TO 89+51	LT	11										28		8" PCCP / 6" ABC
	90+06 TO 90+42	LT	9										22		8" PCCP / 6" ABC
	90+11 TO 91+37	LT	27												SIDEWALK 4" & 6" ABC
	90+36 TO 90+56	LT	1												CURB 6" ABC
	90+47 TO 90+98	LT	14										33		8" PCCP / 6" ABC
	90+92 TO 91+94	LT	2												CURB 6" ABC
Add Alternate 1	90+99 TO 91+76	LT	8												MEDIAN COVER 6" ABC
	91+31 TO 91+76	LT	4												CURB 6" ABC
	91+70 TO 91+98	LT	5												CURB RAMP/SIDEWALK 4" ABC
	91+85 TO 92+10	LT&RT							2						2" THICK ASPHALT
	91+87 TO 92+10	LT&RT	6		3										3" THICK ASPHALT / 6" ABC
	91+91 TO 92+40	LT&RT	2												CURB 6" ABC
	91+94 TO 91+99	LT	1												CURB 6" ABC
	92+21 TO 92+44	LT&RT	6		3										3" THICK ASPHALT / 6" ABC
	92+21 TO 92+46	LT&RT							2						2" THICK ASPHALT
	92+38 TO 98+53	LT	130												CURB RAMP/SIDEWALK 4" & 6" ABC
Add Alternate 1	92+52 TO 93+25	RT	7												MEDIAN COVER 6" ABC
	92+66 TO 93+85	LT	10												CURB 6" ABC
Add Alternate 1	93+25 TO 95+70	RT	4												CURB 6" ABC
	94+51 TO 94+62	LT	1												CURB 6" ABC
	94+51 TO 95+51	LT	22										73		8" PCCP / 6" ABC
	94+61 TO 95+39	LT	4												CURB 6" ABC
Add Alternate 1	94+89 TO 97+49	LT	4												CURB 6" ABC
	95+75 TO 96+31	LT	11										20		8" PCCP / 6" ABC
	95+39 TO 95+51	LT	1												CURB 6" ABC
	95+83 TO 97+16	LT	11				8								4" THICK ASPHALT / 6" ABC
	96+70 TO 97+28	LT	6										21		8" PCCP / 6" ABC
	96+70 TO 98+37	LT	14												CURB 6" ABC
	97+16 TO 97+28	LT	1												CURB 6" ABC
	97+45 TO 97+85	LT	4										14		8" PCCP / 6" ABC
Add Alternate 1	97+49 TO 98+40	LT	9												MEDIAN COVER 6" ABC
	97+63 TO 97+80	LT	5				3								4" THICK ASPHALT / 6" ABC
	98+56 TO 98+61	LT	3										3		8" PCCP / 6" ABC
	59+40 TO 98+63	LT	200				68		27		214		33		Needed for Conduit installation
	SUB TOTAL SHT 3		**532**		**10**		**79**		**35**		**235**		**275**		BASE BID
Add Alternate 1	**SUB TOTAL SHT 3**		**40**		**0**		**0**		**0**		**0**		**0**		ADD ALTERNATE 1
Add Alternate 2	**SUB TOTAL SHT 3**		**0**		**0**		**0**		**0**		**0**		**0**		ADD ALTERNATE 2
	SUB TOTAL SHT 1		**438**		**0**		**61**		**0**		**0**		**256**		BASE BID
Add Alternate 1	**SUB TOTAL SHT 1**		**59**		**0**		**0**		**0**		**0**		**0**		ADD ALTERNATE 1
Add Alternate 2	**SUB TOTAL SHT 1**		**327**		**0**		**0**		**0**		**0**		**0**		ADD ALTERNATE 2
	SUB TOTAL SHT 2		**498**		**7**		**10**		**5**		**35**		**429**		BASE BID
Add Alternate 1	**SUB TOTAL SHT 2**		**31**		**0**		**0**		**0**		**0**		**0**		ADD ALTERNATE 1
Add Alternate 2	**SUB TOTAL SHT 2**		**37**		**0**		**0**		**0**		**0**		**0**		ADD ALTERNATE 2
	PROJECT TOTAL		**1468**		**17**		**150**		**40**		**270**		**960**		BASE BID
Add Alternate 1	**PROJECT TOTAL**		**130**		**0**		**0**		**0**		**0**		**0**		ADD ALTERNATE 1
Add Alternate 2	**PROJECT TOTAL**		**364**		**0**		**0**		**0**		**0**		**0**		ADD ALTERNATE 2

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Unit Information: City of GJ Unit Leader Initials: DPJ

Sheet Revisions

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Colorado Department of Transportation
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TABULATION OF SURFACING

Designer: John Smith
Detailer: John Smith
Sheet Subset: tab o surf
Structure Numbers
Subset Sheets: 3 of 3

Project No./Code
TCSP M555-029
19365
Sheet Number 33

TABULATION OF SIDEWALK, CURB AND GUTTER, MEDIAN COVER MATERIAL,& HAND RAIL - SECTION 1

	STATION	SIDE	(601-03000) CONCRETE (CLASS D)		(514-00100) HAND RAIL		(609-20000) CURB TYPE 2 (SECTION B) (SPECIAL)		(609-20010) CURB TYPE 2 (SECTION B)		(609-21010) CURB AND GUTTER TYPE 2 (SECTION I-B)		(609-21020) CURB AND GUTTER TYPE 2 (SECTION II-B)		(609-21900) CURB AND GUTTER TYPE 2 (SECTION II-B) (SPECIAL)		COMMENTS
			CUBIC YARDS		LINEAR FEET												
			Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	
	NORTH AVE.																
	59+43 TO 59+70	LT													36		CURB 6" ABC
	59+50 TO 59+73	LT							32								CURB 6" ABC
Add Alternate 2	59+59 TO 59+69	RT											15				CURB 6" ABC
	61+89 TO 62+71	LT											83				CURB 6" ABC
	62+57 to 62+57	LT			32												HAND RAIL
	62+57 TO 62+66	LT	5														RETAINING WALL
	62+63 TO 62+71	LT							12								CURB 6" ABC
	62+66 TO 62+92	LT					26										CURB 6" ABC
	63+27 TO 64+29	LT											103				CURB 6" ABC
	64+21 TO 64+41	LT							20								CURB 6" ABC
	64+53 TO 64+94	LT											40				CURB 6" ABC
	65+29 TO 65+94	LT											66				CURB 6" ABC
	66+07 TO 66+19	LT							13								CURB 6" ABC
	66+20 TO 66+95	LT									77						CURB 6" ABC
	66+96 TO 67+07	LT							13								CURB 6" ABC
	67+33 TO 67+50	LT	1														RETAINING WALL
	67+37 TO 37+48	LT											11				CURB 6" ABC
Add Alternate 1	68+09 TO 69+83	LT&RT							187								CURB 6" ABC
	69+05 TO 69+44	LT											40				CURB 6" ABC
	70+73 TO 71+20	LT											47				CURB 6" ABC
	71+53 TO 71+91	LT											38				CURB 6" ABC
	71+63 TO 71+71	LT							32								CURB 6" ABC
	72+02 TO 72+08	LT													25		CURB 6" ABC
	72+47 TO 72+48	LT													21		CURB 6" ABC
	72+61 TO 75+00	LT											240				CURB 6" ABC
Add Alternate 2	75+70 TO 76+25	RT											55				CURB 6" ABC
	75+94 TO 76+59	LT							68								CURB 6" ABC
	76+08 TO 76+66	LT											58				CURB 6" ABC
	77+58 TO 78+00	LT											42				CURB 6" ABC
	79+08 TO 80+32	LT											124				CURB 6" ABC
Add Alternate 2	79+73 TO 83+33	RT											360				CURB 6" ABC
	80+54 TO 80+64	LT											10				CURB 6" ABC
	81+81 TO 83+22	LT											141				CURB 6" ABC
	83+22 TO 83+33	LT							11								CURB 6" ABC
	83+39 TO 83+40	LT													16		CURB 6" ABC
	83+73 TO 83+74	LT													15		CURB 6" ABC
	83+83 TO 84+61	LT							78								CURB 6" ABC
Add Alternate 2	84+05 TO 84+25	RT											20				CURB 6" ABC
	84+25 TO 84+46	RT							22								CURB 6" ABC
	84+47 TO 85+98	RT									158						CURB 6" ABC
	84+56 TO 85+06	LT											49				CURB 6" ABC
	85+55 TO 85+96	LT											42				CURB 6" ABC
	85+64 TO 85+66	LT							6								CURB 6" ABC
	85+87 TO 88+22	LT&RT							307								CURB 6" ABC
	85+98 TO 86+01	RT							14								CURB 6" ABC
	86+50 TO 86+63	LT					15										CURB 6" ABC
	86+54 TO 86+95	LT											41				CURB 6" ABC
	86+96 TO 87+06	LT					11										CURB 6" ABC
	87+30 TO 87+75	LT											45				CURB 6" ABC
	87+91 TO 88+39	LT											48				CURB 6" ABC
	89+11 TO 89+51	LT											40				CURB 6" ABC
	SUB TOTAL SHT 1		**6**		**32**		**52**		**628**		**235**		**1308**		**113**		**BASE BID**
Add Alternate 1	**SUB TOTAL SHT 1**		**0**		**0**		**0**		**187**		**0**		**0**		**0**		**ADD ALTERNATE 1**
Add Alternate 2	**SUB TOTAL SHT 1**		**0**		**0**		**0**		**0**		**0**		**450**		**0**		**ADD ALTERNATE 2**

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Date:	Comments	Init.

Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

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Void:

TABULATION OF SIDEWALK, CURB & GUTTER, MEDIAN COVER, & HAND RAIL

Designer: John Smith
Detailer: John Smith
Sheet Subset: t sw,cg,mc
Structure Numbers
Subset Sheets: 1 of 3

Project No./Code
TCSP M555-029
19365
Sheet Number 34

TABULATION OF SIDEWALK, CURB AND GUTTER AND MEDIAN COVER MATERIAL - SECTION 1

	STATION	SIDE	(601-03000) CONCRETE (CLASS D)		(514-00100) HAND RAIL		(609-20000) CURB TYPE 2 (SECTION B) (SPECIAL)		(609-20010) CURB TYPE 2 (SECTION B)		(609-21010) CURB AND GUTTER TYPE 2 (SECTION I-B)		(609-21020) CURB AND GUTTER TYPE 2 (SECTION II-B)		(609-21900) CURB AND GUTTER TYPE 2 (SECTION II-B) (SPECIAL)		COMMENTS
			CUBIC YARDS		LINEAR FEET												
			Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	
	NORTH AVE.																CURB 6" ABC
	90+06 TO 90+42	LT											35				CURB 6" ABC
	90+36 TO 90+56	LT							20								CURB 6" ABC
	90+47 TO 90+98	LT											51				CURB 6" ABC
	90+92 TO 91+94	LT							107								CURB 6" ABC
	91+31 TO 91+76	LT											44				CURB 6" ABC
	91+91 TO 92+40	LT&RT							107								CURB 6" ABC
	91+94 TO 91+99	LT													18		CURB 6" ABC
	92+33 TO 92+38	LT													28		CURB 6" ABC
	92+38 TO 95+50	LT							316								CURB 6" ABC
	92+66 TO 93+85	LT											119				CURB 6" ABC
Add Alternate 1	93+25 TO 95+70	RT							245								CURB 6" ABC
	94+51 TO 94+62	LT							12								CURB 6" ABC
	94+61 TO 95+39	LT									78						CURB 6" ABC
Add Alternate 1	94+89 TO 97+49	LT							260								CURB 6" ABC
	95+39 TO 95+51	LT							12								CURB 6" ABC
	95+75 TO 96+31	LT											55				CURB 6" ABC
	96+70 TO 98+37	LT											166				CURB 6" ABC
	97+16 TO 97+28	LT							12								CURB 6" ABC
	98+58 TO 98+61	LT													26		CURB 6" ABC
	59+40 to 98+63								44		27		132		5		NEEDED FOR CONDUIT
	SUB TOTAL SHT 2		**0**		**0**		**0**		**630**		**105**		**602**		**77**		BASE BID
Add Alternate 1	**SUB TOTAL SHT 2**		**0**		**0**		**0**		**505**		**0**		**0**		**0**		ADD ALTERNATE 1
Add Alternate 2	**SUB TOTAL SHT 2**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		ADD ALTERNATE 2
	SUBTOTAL SHT 1		**6**		**32**		**52**		**628**		**235**		**1308**		**113**		BASE BID
Add Alternate 1	**SUBTOTAL SHT 1**		**0**		**0**		**0**		**187**		**0**		**0**		**0**		ADD ALTERNATE 1
Add Alternate 2	**SUBTOTAL SHT 1**		**0**		**0**		**0**		**0**		**0**		**450**		**0**		ADD ALTERNATE 2
	PROJECT TOTAL		**6**		**32**		**52**		**1258**		**340**		**1910**		**190**		BASE BID
Add Alternate 1	**PROJECT TOTAL**		**0**		**0**		**0**		**692**		**0**		**0**		**0**		ADD ALTERNATE 1
Add Alternate 2	**PROJECT TOTAL**		**0**		**0**		**0**		**0**		**0**		**450**		**0**		ADD ALTERNATE 2

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606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

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TABULATION OF SIDEWALK, CURB & GUTTER, MEDIAN COVER, & HAND RAIL

Designer: John Smith
Detailer: John Smith
Sheet Subset: t sw,cg,mc
Structure Numbers
Subset Sheets: 2 of 3

Project No./Code
TCSP M555-029
19365
Sheet Number 35

TABULATION OF SIDEWALK, CURB AND GUTTER AND MEDIAN COVER MATERIAL - SECTION 2

	STATION	SIDE	(608-00006) CONCRETE SIDEWALK (6 INCH)		(608-00010) CONCRETE CURB RAMP		(610-00020) MEDIAN COVER MATERIAL (PATTERNED CONCRETE)		(621-00650) PEDESTRIAN STAIR STRUCTURE		COMMENTS
			SQUARE YARDS				SQUARE FEET		LUMP SUM		
			Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	
	NORTH AVE.										
	59+44 TO 59+72	LT	25								6" SIDEWALK
	59+47 to 59+60	LT			2						CURB RAMP
Add Alternate 2	59+60 TO 59+69	RT	1								6" SIDEWALK
Add Alternate 2	59+60 TO 59+72	RT			2						CURB RAMP
Add Alternate 2	59+70 TO 59+72	RT	1								6" SIDEWALK
Add Alternate 1	59+70 TO 63+66	RT					1144				MEDIAN COVER
	62+27 TO 62+63	LT	26								6" SIDEWALK
	62+57 TO 62+66	LT	18								6" SIDEWALK
	62+57 TO 62+66	LT									RETAINING WALL
	62+57 TO 62+63	LT							1		STAIRS TO PAPA JOHNS
	62+63 TO 62+74	LT			3						CURB RAMP
	62+74 TO 67+54	LT	421								6" SIDEWALK
Add Alternate 2	66+18 TO 84+25	RT	1635								6" SIDEWALK
Add Alternate 1	66+42 TO 67+32	LT					260				MEDIAN COVER
	67+33 TO 67+50	LT									RETAINING WALL
	68+86 TO 69+44	LT	50								6" SIDEWALK
	70+47 TO 71+99	LT	135								6" SIDEWALK
Add Alternate 1	71+07 TO 71+89	LT					232				MEDIAN COVER
	71+99 TO 72+07	LT			4						CURB RAMP
	72+48 TO 72+52	LT	1								6" SIDEWALK
	72+48 TO 72+56	LT			3						CURB RAMP
	72+56 TO 74+95	LT	250								6" SIDEWALK
Add Alternate 1	74+50 TO 75+31	LT					231				MEDIAN COVER
	75+94 TO 78+63	LT	245								6" SIDEWALK
Add Alternate 1	77+60 TO 78+42	LT					245				MEDIAN COVER
	78+63 TO 78+73	LT			3						CURB RAMP
	78+93 TO 79+05	LT			4						CURB RAMP
	79+05 TO 79+39	LT	30								6" SIDEWALK
	81+88 TO 83+38	LT	131								6" SIDEWALK
Add Alternate 1	82+28 TO 83+20	LT					273				MEDIAN COVER
	83+33 TO 83+39	LT			3						CURB RAMP
	83+74 TO 83+83	LT			5						CURB RAMP
	83+77 TO 89+51	LT	506								6" SIDEWALK
	84+25 TO 86+01	RT	162								6" SIDEWALK
Add Alternate 1	85+07 TO 85+66	LT					184				MEDIAN COVER
	85+84 TO 85+98	RT			3						CURB RAMP
Add Alternate 1	88+22 TO 89+02	LT					241				MEDIAN COVER
	90+11 TO 91+37	LT	110								6" SIDEWALK
Add Alternate 1	90+99 TO 91+76	LT					232				MEDIAN COVER
	91+70 TO 91+98	LT	21								6" SIDEWALK
	91+93 TO 91+98	LT			2						CURB RAMP
	92+34 TO 92+38	LT	3								6" SIDEWALK
	92+34 TO 92+39	LT			2						CURB RAMP
	92+38 TO 98+53	LT	539								6" SIDEWALK
Add Alternate 1	92+52 TO 93+25	RT					206				MEDIAN COVER
Add Alternate 1	97+49 TO 98+40	LT					263				MEDIAN COVER
	98+50 TO 98+60	LT			5						CURB RAMP
	59+40 TO 98+63		40								NEEDED FOR CONDUIT
	PROJECT TOTAL		**2713**		**39**		**0**		**1**		BASE BID
Add Alternate 1	**PROJECT TOTAL**		**0**		**0**		**3511**		**0**		ADD ALTERNATE 1
Add Alternate 2	**PROJECT TOTAL**		**1637**		**2**		**0**		**0**		ADD ALTERNATE 2

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Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

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TABULATION OF SIDEWALK, CURB & GUTTER, MEDIAN COVER, & HAND RAIL

Designer: John Smith
Detailer: John Smith
Sheet Subset: t sw,cg,mc
Structure Numbers
Subset Sheets: 3 of 3

Project No./Code
TCSP M555-029
19365
Sheet Number 36

TABULATION OF DRAINAGE REMOVALS

STATION	TO STATION	OFFSET	SIDE	(202-00019) REMOVAL OF INLET		(202-00033) REMOVAL OF PIPE		COMMENTS
				EA		LF		
				Plan	As Const	Plan	As Const	
NORTH AVE.								
85+24		40	LT	1				TIMBERS MOTEL
87+02		43	LT	1				FRONTIER MOTEL
88+28	88+43		LT			24		FRONTIER MOTEL
PROJECT TOTAL				2		24		

TABULATION OF DRAINAGE ITEMS

STATION	OFFSET	SIDE	STRUCTURE NUMBER		(603-00120)		(603-50008)		(604-00305)		(604-13006)		(604-30005)		COMMENTS
					12 INCH NON-REINFORCED CONCRETE PIPE		8 INCH PLASTIC PIPE		INLET TYPE C (5 FOOT)		INLET TYPE 13 (5 FOOT) (SPECIAL)		MANHOLE SLAB BASE (5 FOOT)		
			FROM	TO	LF		LF		EA		EA		EA		
					Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	Plan	As Const	
NORTH AVE.															
77+44.63	48.68	LT		A2							1				INLET A1
77+44.63			A1	A3			54								PIPE A2
76+91.13	48.63	LT	A2	A4							1				INLET A3
76+91.13			A3	A5			11								INLET A4
76+91.12	38.05	LT	A4	A6									1		MANHOLE A5
76+91.12			A5	E1-271-088	97										PIPE A6 (CONNECT TO EX. STRUCTURE)
84+95.65	39.85	LT		B2					1						INLET B1
84+95.65			B1	B3	29										B2
85+24.14	37.84	LT	B2						1						INLET B3 (CONNECT TO EX. 10" RCP)
87+00.54	51.97	LT		C2					1						INLET C1
87+00.54			C1	C3	12										PIPE C2
87+01.64	37.85	LT	C2						1						INLET C3 (CONNECT TO EX. 8" CMP)
88+28.19	54.44	LT		D2					1						INLET D1
88+22.19			D1	D3	20										PIPE D2
88+28.23	34.34	LT	D2	D4					1						INLET D3
88+28+23			D3	D5	20										PIPE D4
88+28.27	13.9	LT	D4										1		MANHOLE D5
PROJECT TOTAL					178		65		6		2		2		

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TABULATION OF DRAINAGE REMOVALS & DRAINAGE ITEMS

Designer: John Smith
Detailer: John Smith
Sheet Subset: tab o drn
Structure Numbers
Subset Sheets: 1 of 1

Project No./Code
TCSP M555-029
19365
Sheet Number 37

TABULATION OF FINAL SIGNING

	STATION	OFFSET	DIMENSIONS	SIGN CODE	LEGEND	(202-00821) REMOVAL OF SIGN PANEL		(210-00815) RESET SIGN PANEL		(614-01503) STEEL SIGN SUPPORT (2" ROUND) (POST & SOCKET)		NOTES
						EACH		EACH		EACH		
	SUBSET SHT 1					Plan	As Const	Plan	As Const	Plan	As Const	
	SUBSET SHT 2											
	67+51	45' LEFT	30 X 30	R1-1	STOP			1		1		STOP SIGN RESET AT ALLEY
Add Alternate 2	67+65	36' RIGHT	48 X 24	W1-7	TWO-DIRECTION LARGE ARROW			1		1		FACING NORTH, SOUTH OF ALLEY
	SUBSET SHT 3											
Add Alternate 2	75+68	37' RIGHT	48 X 24	W1-7	TWO-DIRECTION LARGE ARROW			1		1		FACING NORTH, SOUTH OF 16TH STREET
	SUBSET SHT 4											
	83+36	53' LEFT	48 X 12	D3-1	STREET NAME (18TH ST)			1		1		AT 18TH STREET
	83+36	53' LEFT	48 X 12	D3-1	STREET NAME (NORTH AVE)			1				AT 18TH STREET
	83+36	53' LEFT	30 X 30	R1-1	STOP			1				AT 18TH STREET
Add Alternate 2	83+58	38' RIGHT	48 X 24	W1-7	TWO-DIRECTION LARGE ARROW			1		1		FACING NORTH, SOUTH OF 18TH STREET
	86+59	3' RIGHT	24 X 24	R3-4	MOVEMENT PROHIBITION - NO U TURN	1						AT BULLNOSE OF MEDIAN VA WESTERLY ENTRANCE
	86+75	40' RIGHT	36 X 48	R2-1	SPEED LIMIT (35 MPH)			1		1		EASTBOUND SPEED LIMIT SIGN EAST OF 18TH
	SUBSET SHT 5											
	91+54	6' LEFT	24 X 24	R3-4	MOVEMENT PROHIBITION - NO U TURN			1		1		RESET TO NEW POST AT 92+25
	91+92	51' LEFT	48 X 12	D3-1	STREET NAME (21ST ST)			1		1		AT 21ST STREET
	91+92	51' LEFT	48 X 12	D3-1	STREET NAME (NORTH AVE)			1				AT 21ST STREET
	91+92	51' LEFT	30 X 30	R1-1	STOP			1				AT 21ST STREET
	SUBSET SHT 6											
	97+46	41' LEFT	36 X 48	R2-1	SPEED LIMIT (35 MPH)			1		1		WESTBOUND WEST OF 23RD NORTH SIDE OF NORTH AVE
	PROJECT TOTAL					**1**		**10**		**6**		BASE BID
Add Alternate 1	**PROJECT TOTAL**							**0**		**0**		ADD ALTERNATE 1
Add Alternate 2	**PROJECT TOTAL**							**3**		**3**		ADD ALTERNATE 2

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Tabulation of Final Signing
Designer: John Smith
Detailer: John Smith
Sheet Subset: Tab Sign
Structure Numbers
Subset Sheets: 1 of 1

Project No./Code
TCSP M555-029
19365
Sheet Number 38

TABULATION OF PAVEMENT MARKING

STATION	OFFSET	(627-00001) PAVEMENT MARKING PAINT		(627-30405) PREFORMED THERMOPLASTIC PAVEMENT MARKING (RIGHT TURN ARROW)		(627-30405) PREFORMED THERMOPLASTIC PAVEMENT MARKING (ACCESSIBILITY PARKING SPACE MARKING)	
		EDGE	LANE	SF	SF	SF	SF
		WHITE SOLID	WHITE SOLID				
		4 INCH	8 INCH	PLAN	As Constructed	PLAN	As Constructed
NORTH AVE.							
68+98, 54' LT	LT			16			
71+55 TO 72+05	LT	717					
71+69, 98' LT	LT					16	
71+69, 270' LT	LT					16	
71+80, 287' LT	LT					16	
75+93 TO 76+62	LT	773					
76+50, 57' LT	LT					16	
84+90, 37' RT	RT			16			
85+70, 37' RT	RT			16			
84+75 TO 85+75	RT		100				
TOTAL (LF)		1,490	100				
TOTAL (SF)		497	67	48		64	
TOTAL (GAL)		5.5	0.7				
		PROJECT TOTAL (GAL)		**PROJECT TOTAL (SF)**		**PROJECT TOTAL (SF)**	
		Plan	**As Constructed**	**Plan**	**As Constructed**	**Plan**	**As Constructed**
		6		**48**		**64**	

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TABULATION OF PAVEMENT MARKINGS

Designer: John Smith
Detailer: John Smith
Sheet Subset: tab mark
Structure Numbers
Subset Sheets: 1 of 1

Project No./Code
TCSP M555-029
19365
Sheet Number 39

TABULATION OF CONSTRUCTION TRAFFIC CONTROL DEVICES

SIGN CODE	SIGN PANEL SIZE			LEGEND	(630-80341) CONSTRUCTION TRAFFIC SIGN (PANEL SIZE A)		(630-80342) CONSTRUCTION TRAFFIC SIGN (PANEL SIZE B)	
					EACH		EACH	
	W"	x	H"		Plan	As Const	Plan	As Const
W20-7a	48	x	48	FLAGGER AHEAD (SYMBOL)			4	
R2-1 (20)	36	x	48	SPEED / LIMIT / 20	4			
W21-5	36	x	36	SHOULDER / WORK	4			
W9-1	36	x	36	RIGHT LAND ENDS	4			
G20-10	48	x	48	XYZ / CONSTRUCTION / THANKS / 555-555-5555			4	
R52-6a	36	x	48	BEGIN / FINES / DOUBLE / IN WORK / ZONE			4	
G20-5AP	24	x	18	WORK ZONE	4			
R52-6b	36	x	48	END / FINES / DOUBLE / IN WORK / ZONE			4	
W4-2	36	x	36	LANE ENDS (SYMBOL)	4			
R1-1	30	x	30	STOP	2			
				PROJECT TOTALS =	22		16	

ITEM NUMBER	ITEM DESCRIPTION	UNIT	PLAN QUANTITY	ADD ALT 1 PLAN QUANTITY	ADD ALT 2 PLAN QUANTITY	AS CONST.
630-00000	FLAGGING	HOUR	330	85	85	
630-00007	TRAFFIC CONTROL INSPECTION	DAY	34	10	10	
630-00012	TRAFFIC CONTROL MANAGEMENT	DAY	64	16	16	
630-80336	BARRICADE (TYPE 3 M-B)(TEMPORARY)	EACH	10	0	0	
630-80358	ADVANCED WARNING FLASHING ARROW PANEL (TYPE C)	DAY	150	50	50	
630-80359	PORTABLE MESSAGE SIGN PANEL	DAY	36	12	12	
630-80360	DRUM CHANNELIZING DEVICE	EACH	80	0	0	
630-80363	DRUM CHANNELIZING DEVICE (WITH LIGHT)(FLASHING)	EACH	80	0	0	
630-80380	TRAFFIC CONE	EACH	160	0	0	
630-80377	PORTABLE WATER FILLED BARRIER (TEMPORARY)	LF	50	0	0	

SCHEDULE OF CONSTRUCTION SIGN PANEL (SPECIAL) 630-80344

ITEM		EACH		QUANTITY	TOTAL SQ. FT.	AS CONST.
		DIMENSION	SQ. FT.	EACH		
18th ST / ROAD		42" x 18"		2	10.5	
21st ST / ROAD		42" x 18"		2	10.5	
	TOTAL				21	

N:\Cadd\John Smith\Projects\(NORTH AVE)\Quantities\Tabulation Sheets.dwg, 12/1/2015 12:59:53 PM

Print Date: @ LEFT
File Name: TABULATION OF CONSTRUCTION TRAFFIC
Horiz. Scale: AS SHOWN Vert. Scale: AS SHOWN
Unit Information: City of GJ Unit Leader Initials: DPJ

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Sheet Revisions

Date:	Comments	Init.

Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

As Constructed
No Revisions:
Revised:
Void:

Tabulation of Construction Traffic Control Devices
Designer:
Detailer:
Sheet Subset: tab sign
Structure Numbers
Subset Sheets: 1 of 1

Project No./Code
TCSP M555-029
19365
Sheet Number 40

TO ESTABLISH GEOMETRIC CONTROL FOR THE CONSTRUCTION OF THIS PROJECT, THE DEPARTMENT HAS PROVIDED THE FOLLOWING INFORMATION:

	Format *
■ Horizontal Control	Plan Sheet
■ Vertical Control	Plan Sheet
■ Roadway Alignment	Plan Sheet
■ Original Terrain Data	Plan Sheet
□ Other:	

* Specify the information format, ie., plan sheet, computer disk, computer printout, or other. The information marked is either contained on the plans or is available from the Engineer.

TYPE OF PROJECT

- □ Landscaping
- □ Signalization
- □ Safety Improvement
- □ Asphalt Overlay
- □ Concrete Overlay
- □ Minor Widening
- □ Major Reconstruction (Intersection Reconstruction)
- □ New Roadway Construction
- □ Bridge Replacement
- □ Bridge Widening
- □ New Bridge
- ■ Other: Sidewalk & Drive Reconstruction, Bus Pullout, Right Turn Lane, and Streetscaping

SURVEY WORK TO BE PERFORMED BY OTHERS: _____

WORK PERFORMED BY THE CONTRACTOR'S SURVEYOR UNDER SECTION 625:

- ___ ■ Establish and Maintain Project Centerline or Engineer Approved Offset Line(s)
- ___ ■ Verification and Maintenance of Horizontal and Vertical Control
- ___ ■ Verify or Determine existing grades and alignments
- ___ ■ Verify or Determine existing topography
- ___ □ GPS/RTS (Global Positioning System/Robotic Total Station) Construction Machine Control
- ___ ■ Clearing and Grubbing Limits (Section 201)
- ___ ■ Removal Limits (Section 202)
- ___ ■ Reset Items (Section 210)
- ___ ■ Excavation and Embankment (Section 203)
  - ___ ■ Excavation
    - ___ ■ Unclassified
    - ___ □ Stripping
    - ___ □ Muck
    - ___ □ Rock
    - ___ □ Borrow
    - ___ □ Other: _____
    - ___ □ Potholing
  - ___ ■ Embankment
  - ___ ■ Site Grading
  - ___ □ Erosion Control (Perm)
  - ___ □ Other: _____
  - ___ □ As Staked Earthwork Quantities

	Slope Staking (Y/N)	Grid (Y/N)	Grade (Y/N)	Special Interval
Excavation	Y	–	Y	25'
	–	–	–	–
	–	–	–	–
	–	–	–	–
	–	–	–	–
	–	–	–	–
Embankment	Y	–	Y	25'
	–	–	–	–
	–	–	–	–
	–	–	–	–

- ___ □ Landscaping
  - ___ □ Top Soil (Section 207)
  - ___ □ Seeding (Section 212)
  - ___ □ Mulching (Section 213)
  - ___ □ Planting (Section 214)
  - ___ □ Herbicide (Section 217)
  - ___ □ Other: _____
- ___ □ Erosion Control (Section 208)
  - ___ □ Seeding (Temp)
  - ___ □ Silt Fence
  - ___ □ Erosion Bales
  - ___ □ Erosion Logs
  - ___ □ Riprap (Temp)
  - ___ □ Other: _____
- ___ ■ Roadway Bases
  - ___ ■ Untreated Subgrade
  - ___ ■ Treated Subgrade
  - ___ ■ Aggregate Base Course (Section 304)
  - ___ ■ Reconditioning
  - ___ ■ PMBB – Plant Mix Bituminous Base
  - ___ □ Other: _____

	Grid (Y/N)	Grade (Y/N)	Special Interval	Special Offset
Roadway Bases	–	–	–	–
	–	–	–	–
	–	–	–	–
	–	–	–	–
	–	–	–	–
	–	–	–	–

- ___ ■ Pavements
  - ___ ■ HMA – Hot Mix Asphalt (Section 403)
  - ___ ■ Concrete (Section 412)
  - ___ □ Heating & Scarifying Treatment
  - ___ □ Prime Coat, Tack Coat & Rejuvenating Agent (Section 407)
  - ___ □ Seal Coat or Chip Seal (Section 409)
  - ___ □ Other: _____

	Grid (Y/N)	Special Interval	Special Offset
Pavements	–	–	–
	–	–	–
	–	–	–
	–	–	–
	–	–	–
	–	–	–

	Tangent Interval	Curve Interval	Special Offset
Curb & Gutter	–	–	–

	Left Interval	Center Interval	Right Interval
Stationing	–	–	–

- ___ ■ Roadway Elements
  - ___ ■ Curb and Gutter (Section 609)
  - ___ ■ Drop inlets – alignment and grades (Section 604)
  - ___ □ Retaining Walls
  - ___ □ Guard Rail (Section 606)
  - ___ ■ Sidewalk (Section 608)
  - ___ □ Overlay Stationing
  - ___ □ Other: _____
- ___ □ Riprap (Perm) (Section 506)
- ___ □ Slope and Ditch Paving (Section 507)
- ___ □ Minor Structures
  - ___ □ Structure Excavation limits (Section 206)
  - ___ □ Culverts (Section 603)
  - ___ □ Culverts w/ Headwalls and Wingwalls (Section 601)
  - ___ □ Concrete Box Culverts w/ Headwalls and Wingwalls
  - ___ □ Pipes (Section 603)
    - ___ □ Sanitary Sewer
    - ___ □ Storm Sewer
    - ___ □ Water
    - ___ □ Irrigation
    - ___ □ Miscellaneous
  - ___ □ Manholes (Section 604)
  - ___ □ Inlets (Section 604)
  - ___ □ Permanent Water Quality BMP (Section 208)
  - ___ □ Other: _____
- ___ □ Major Structures – Overhead Signs (Section 614), Concrete Box Culverts, Bridges – and all other structures assigned a structure number
  - ___ □ Structure Excavation limits (Section 206)
  - ___ □ Concrete Box Culverts (Section 603) w/ Headwalls and Wingwalls (Section 601)
  - ___ □ Piling locations and cut off elevations (Section 502)
  - ___ □ Caisson locations and elevations (Section 503)
  - ___ □ Footing locations, alignment, and elevations
  - ___ □ Abutment/Pier locations, alignment, and elevations
  - ___ □ Wingwall skew angles/offsets
  - ___ □ Structural concrete form locations
  - ___ □ Substructure As-constructed survey required for Bridges (Subsection 601 .12) and Overhead signs (S-614-50)
  - ___ □ Bridge expansion joint(s) alignment and grade (longitudinal and transverse)
  - ___ □ Deck grades at Girder 10th or "n" th point locations and elevations
  - ___ □ Slope and Ditch Paving (Section 507)
  - ___ □ Other: _____
- ___ ■ Fencing (Section 607)
  - ___ ■ Temporary
  - ___ ■ Permanent
  - ___ □ Sound Barrier
  - ___ □ Other: _____
- ___ ■ Delineators (Section 612)
  - ___ □ Temporary
  - ___ □ Permanent
- ___ ■ Lighting (Section 613) and Traffic Control Devices (Permanent) (Section 614)
  - ___ □ Signal pole locations and elevations
  - ___ ■ Light pole locations and elevations
  - ___ ■ Sign locations
  - ___ □ Field verify sign post locations, elevations, and lengths before fabrication.
  - ___ □ Other: _____
- ___ □ Pavement Marking (Section 627)
  - ___ □ Striping (Temp)
  - ___ □ Striping (Perm)
  - ___ □ Symbols
  - ___ □ Other: _____
- ___ □ Temporary Lighting and Construction Traffic Control Devices (Section 630)
  - ___ □ Signal pole locations and elevations (Temp)
  - ___ □ Light pole locations and elevations (Temp)
  - ___ □ Sign Locations (Temp)
  - ___ □ Other: _____
- ___ ■ All Easements (Temp Staking by P.L.S. Only)
- ___ ■ Right of Way (Temp Staking by P.L.S. Only)

WORK PERFORMED BY THE CONTRACTOR'S SURVEYOR UNDER SECTION 629:

- ___ □ Monumentation (Section 629)
  - ___ □ Control
  - ___ □ Right of Way
  - ___ □ Land corners, Aliquot corners
  - ___ □ Easements
  - ___ □ Reference the specified existing monuments: ** _____
  - ___ □ Replace the specified existing monuments: ** _____
  - ___ □ Locate monuments. It is estimated ___ hours are required.

NOTE: All 629 items shall include adequate research, calculations, and evaluations of evidence for monuments to be set.
** A Tabulation of Survey Monuments may be provided on the plans.

GENERAL NOTES:

1. Unless indicated otherwise on this Survey Tabulation Sheet, all survey work and staking intervals shall be done in accordance with the latest edition of the CDOT Survey Manual.
2. Adequate information for establishing lines, grades, and locations for all work items have been specified on the plans. Any additional information required to stake the item or element shall be generated by the Contractor's surveyor.
3. The Contractor's surveyor shall provide an estimate of the man-hours necessary to complete the work items indicated on this sheet. A copy of this sheet, with the estimated man-hours written on the blank line to the left of the specified items, shall be submitted with the Survey Schedule to the Engineer 14 days prior to the Pre-Construction Meeting.
4. Stakes and Monuments which are damaged or destroyed by the progress of construction shall be replaced by the Contractor at no additional cost to the Department.
5. Prior to beginning work on any subsequent operation, such as placing base course or paving, the Contractor shall certify in writing to the Engineer that the final grade is within specified tolerance.
6. The Contractor's surveyor shall perform all field surveying and calculations necessary to tie plan grades into field grades.
7. The Contractor shall coordinate construction staking on the project with any utility work.
8. Fieldbooks shall contain daily records of points set and or measurements observed. The information recorded shall contain: date, crew members' names, point no., description, staking information, and sketches. If the survey information is collected electronically, information recorded shall be provided to the Project Engineer in a hard copy format that is intuitive, clear and related to the supplemental information recorded in the field books. All linear surveys, such as slope stakes and blue tops, shall have the station and offset information related to the measured information. Non-linear surveys such as structures staking shall have sketches relating electronic information, such as point numbers, to the sketch.
9. The Contractor's surveyor shall submit the following fieldbooks to the Engineer:
   - ■ Horizontal Control (Primary & Secondary)
   - ■ Vertical Control (i.e. Benchmarks)
   - ■ Property Pin Ties
   - ■ Horizontal Alignment
   - ■ Grading
   - ■ Slope Staking
   - □ Minor Structures
   - □ Major Structures
   - □ One fieldbook for each work category shown on this sheet
   - □ Other Fieldbook(s): _____

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Print Date: AT LEFT	Sheet Revisions	Colorado Department of Transportation	As Constructed
File Name: SURVEY TABULATION	Date: / Comments / Init.	606 South 9th Street, Grand Junction, CO, 81501	No Revisions:
Horiz. Scale: AS SHOWN AS SHOWN		Phone: 970-683-6351 FAX: 970-683-6369	Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ		Region 3 RBB	Void:

SURVEY TABULATIONS			Project No./Code
Designer: John C Smith	Structure Numbers	–	TCSP M555-029
Detailer: John C Smith		–	19365
Sheet Subset: SURV TAB	Subset Sheets:	–	Sheet Number 41

REMOVE CURB RAMP STA 59+55, 57' LT

MUDDY INLET STA 62+64, 33' LT

REMOVE CURB STA 61+97, 42' LT TO STA 61+93, 49' LT TO STA 62+26, 39' LT TO STA 62+33, 45' LT TO STA 63+26, 35' LT TO STA 63+32, 40' LT TO STA 64+59, 35' LT TO STA 64+64, 40' LT TO STA 65+44, 35' LT TO STA 65+50, 40' LT TO STA 65+85, 35' LT TO STA 65+90, 35' LT TO STA 64+20, 50' LT TO STA 64+40, 50' LT

REMOVE CURB AND GUTTER STA 59+42, 67' LT TO STA 59+70, 45' LT TO STA 61+88, 42' LT TO STA 62+72, 33' LT TO STA 63+27, 33' LT TO STA 64+30, 33' LT TO STA 64+59, 33' LT TO STA 64+94, 33' LT TO STA 65+28, 33' LT TO STA 65+94, 33' LT

REMOVE GUTTER STA 63+56, 40' LT TO STA 63+56, 50' LT

REMOVE SIGN (AQUA TIME) STA 63+87, 45' LT

ADJUST MANHOLE STA 64+18, 49' LT STA 65+67, 51' LT

RESET MONUMENT (TYPE 3A) STA 65+69, 50' LT

REMOVE CONCRETE PAVEMENT STA 61+88, 46' LT TO STA 61+97, 43' LT TO STA 62+26, 40' LT TO STA 62+63, 38' LT TO STA 63+28, 36' LT TO STA 63+75, 36' LT TO STA 64+59, 36' LT TO STA 64+94, 36' LT TO STA 65+43, 36' LT TO STA 65+90, 36' LT

REMOVE SIDEWALK STA 59+50, 70' LT TO STA 59+72, 54' LT TO STA 62+60, 74' LT TO STA 62+67, 48' LT TO STA 62+63, 38' LT TO STA 62+92, 36' LT TO STA 63+75, 36' LT TO STA 64+59, 36' LT TO STA 65+90, 36' LT TO STA 67+43, 36' LT

REMOVE ASPHALT MAT (FULL DEPTH) (AS SHOWN) STA 62+48, 42' LT TO STA 62+48, 74' LT TO STA 62+92, 43' LT TO STA 63+55, 43' LT TO STA 63+57, 45' LT TO STA 67+54, 45' LT

RESET FIRE HYDRANT STA 64+93, 40' LT

MATCH LINE STA 66+00

12th Street

North Avenue

REMOVE ASPHALT MAT
REMOVE CONCRETE PAVEMENT
REMOVE SIDEWALK
REMOVE CURB
REMOVE CURB & GUTTER
MODIFY INLET
REMOVE GUTTER
REMOVE SIGN
ADJUST MANHOLE
LIMIT OF DISTURBANCE (TYPICAL)
PROPOSED TE
EXISTING ROW
RESET MONUMENT
RESET FIRE HYDRANT
REMOVE CONCRETE CURB RAMP
RESET PULL BOX
LIGHT & PULL BOX REMAIN IN PLACE
CURB REMAINS IN PLACE
LIGHT REMAINS IN PLACE
SIGN REMAINS IN PLACE
REMOVE MEDIAN COVER
LIMIT OF DISTURBANCE (TYPICAL)
LIGHT REMAINS IN PLACE
concrete parking lot
MONO C,G,&SW
MONO DRIVE
asphalt
landscape
WALK
Papa Johns
The Optical Center
Tan Perfection
Add Alternate 1
Add Alternate 2
piezometer
Lincoln Park Track
football field
GRAPHIC SCALE
25 0 12.5 25 50

REMOVE CURB RAMP STA 59+65, 46' RT

REMOVE CURB AND GUTTER STA 59+58, 48' RT TO STA 59+68, 38' RT

REMOVE SIDEWALK STA 59+67, 53' RT TO STA 59+72, 48' RT

Add Alternate 1

MEDIAN STA 59+68 TO STA 67+32 REMOVE MEDIAN COVER

MEDIAN STA 60+46, 3' RT, STA 63+93 @ CL RESET PULL BOX'S

Key Map

12th Street · 15th St · 16th St · 17th St · 18th St · 21st St · 23rd St

Print Date: AT LEFT	0000	Sheet Revisions	
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Unit Information: City of GJ Unit Leader Initials: DPJ			

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Revised:
Void:

Removal Plan

Designer: John Smith
Detailer: John Smith
Sheet Subset: Removal
Structure Numbers
Subset Sheets: 1 of 6

Project No./Code
TCSP M555-029
19365
Sheet Number 42

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REMOVE SIDEWALK
STA 65+90, 36' LT TO
STA 67+43, 36' LT
STA 71+28, 49' LT TO
STA 71+62, 49' LT TO
STA 71+85, 49' LT TO
STA 72+04, 61' LT
STA 72+51, 64' LT TO
STA 74+49, 45' LT

REMOVE CURB AND GUTTER
STA 66+07, 33' LT TO
STA 67+08, 33' LT TO
STA 67+37, 33' LT TO
STA 67+48, 33' LT TO
STA 69+05, 33' LT TO
STA 69+44, 33' LT
STA 70+72, 33' LT TO
STA 71+20, 33' LT TO
STA 71+53, 33' LT TO
STA 71+91, 33' LT TO
STA 72+02, 37' LT
STA 72+08, 61' LT TO
STA 72+47, 64' LT TO
STA 72+47, 43' LT TO
STA 72+60, 33' LT TO
STA 75+00, 33' LT

REMOVE ASPHALT MAT (FULL DEPTH) (AS SHOWN)
STA 63+57, 45' LT TO
STA 67+54, 45' LT TO
STA 68+88, 45' LT TO
STA 69+42, 43' LT
STA 70+48, 45' LT TO
STA 70+85, 45' LT
STA 71+10, 45' LT TO
STA 71+29, 45' LT TO
STA 71+75, 40' LT TO
STA 71+75, 110' LT
STA 72+51, 50' LT TO
STA 73+52, 50' LT

REMOVE WALL
STA 67+34, 50' LT
SOUTH AND EAST TO
STA 67+50, 50' LT

MODIFY INLET
STA 69+12, 33' LT

ADJUST WATER METER
STA 69+23, 57' LT

REMOVE CURB
STA 69+13, 35' LT TO
STA 69+18, 40' LT
STA 71+52, 35' LT TO
STA 71+63, 50' LT TO
STA 71+85, 50' LT TO
STA 71+91, 35' LT TO
STA 72+54, 50' LT TO
STA 72+56, 50' LT

REMOVE CONCRETE PAVEMENT
STA 67+42, 36' LT TO
STA 67+48, 36' LT TO
STA 69+17, 36' LT TO
STA 69+45, 36' LT TO
STA 70+80, 36' LT TO
STA 71+15, 36' LT TO
STA 71+57, 36' LT TO
STA 71+87, 36' LT

ADJUST MANHOLE
STA 71+00, 40' LT

RESET FIRE HYDRANT
STA 72+54, 47' LT

REMOVE CONCRETE CURB RAMP
STA 72+05, 45' LT
STA 72+49, 52' LT

25 0 12.5 25 50
GRAPHIC SCALE

CONSTRUCTION IN FRONT OF NEW TACO JOHN'S RESTAURANT BY OTHERS

STA 66+00

MATCH LINE STA 73+00

Alley

North Avenue

15th Street

LIMIT OF DISTURBANCE (TYPICAL)

REMOVE ASPHALT MAT

REMOVE SIDEWALK

REMOVE CONCRETE PAVEMENT

ADJUST WATER METER

EXISTING ROW

PROPOSED TE

REMOVE CURB

REMOVE CURB & GUTTER

REMOVE WALL

MODIFY INLET

LIGHT REMAINS IN PLACE

REMOVE MEDIAN COVER

RESET PULL BOX

REMOVE CONCRETE MEDIAN COVER

ADJUST VALVE BOX

CURB REMAINS IN PLACE

LIMIT OF DISTURBANCE (TYPICAL)

ADJUST MANHOLE

REMOVE CONCRETE CURB RAMP

6.5' OF ASPHALT NORTH AND EAST OF BUILDING SHALL REMAIN AS SHOWN

FULL WIDTH

CURB AT ROW REMAINS

RESET FIRE HYDRANT

TREE REMAINS IN PLACE

REMOVE TREE

RESET FENCE

CURB & GUTTER REMAIN IN PLACE

SPRINKLER SYSTEM WILL BE RESET AS NEEDED TO FACILITATE CONSTRUCTION BY CITY PARKS CREWS

RESET FENCE (SPECIAL) (SAFETY SCREEN)

EXISTING ROW

LIMIT OF DISTURBANCE (TYPICAL)

Add Alternate 1

Add Alternate 2

Add Alternate 1

MEDIAN
STA 59+68 TO STA 67+32
REMOVE MEDIAN COVER

RESET PULL BOX
STA 67+31

MEDIAN
STA 68+09 TO STA 71+88
REMOVE CONCRETE MEDIAN COVER

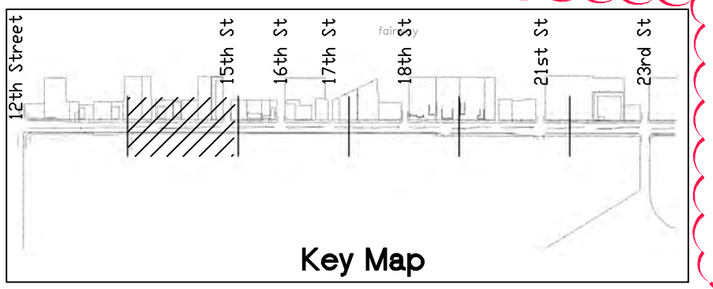
REMOVE ASPHALT MAT (FULL DEPTH) (AS SHOWN)
STA 68+09, 7.5' LT TO
STA 69+89, 7.5' LT

REMOVE CURB
STA 68+09, 3' RT TO
STA 69+89, 7.5' LT

RESET PULL BOX
STA 68+10 3' RT

ADJUST VALVE BOX
STA 69+33, 2' RT
STA 70+12, 3' RT
STA 70+19, 3' RT
STA

MEDIAN
STA 72+55 TO STA 75+30
REMOVE CONCRETE MEDIAN COVER



Key Map

REMOVE SIDEWALK
STA 66+17, 36' RT TO
STA 84+25, 36' RT

REMOVE TREE
STA 66+35, 46' RT
STA 69+70, 45' RT

RESET FENCE (SPECIAL) (SAFETY SCREEN)
STA 67+15, 40' RT
STA 68+87, 40' RT

RESET FENCE
STA 66+24, 38' RT TO
STA 84+30, 38' RT

ADJUST MANHOLE
STA 72+32, 66' RT

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Region 3 RBB

As Constructed
No Revisions:
Revised:
Void:

Removal Plan

Designer: John Smith
Detailer: John Smith
Sheet Subset: removal
Structure Numbers
Subset Sheets: 2 of 6

Project No./Code
TCSP M555-029
19365
Sheet Number 43

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REMOVE CURB AND GUTTER STA 72+60, 33' LT TO
STA 75+00, 33' LT TO
STA 76+08, 33' LT TO
STA 76+66, 33' LT TO
STA 77+58, 33' LT TO
STA 78+00, 33' LT TO
STA 79+08, 33' LT TO
STA 80+32, 33' LT

REMOVE SIDEWALK STA 72+51, 64' LT TO
STA 74+49, 45' LT TO
STA 74+94, 40' LT TO
STA 75+33, 39' LT TO
STA 75+98, 42' LT TO
STA 76+18, 38' LT TO
STA 76+57, 46' LT TO
STA 77+70, 46' LT

REMOVE CURB STA 73+29, 45' LT TO
STA 73+29, 50' LT TO
STA 74+54, 35' LT TO
STA 74+59, 40' LT TO
STA 74+94, 40' LT TO
STA 75+00, 35' LT TO
STA 76+22, 40' LT TO
STA 76+22, 48' LT TO
STA 77+64, 35' LT TO
STA 77+69, 40' LT TO
STA 77+90, 40' LT TO
STA 77+95, 35' LT
AROUND PERIMETER OF LANSCAPE PLANTER AT -
STA 78+05, 40' LT TO
STA 78+55, 40' LT TO
STA 78+58, 35' LT TO
STA 78+71, 46' LT TO
STA 78+95, 48' LT TO
STA 78+98, 40' LT

ADJUST WATER METER STA 73+69, 46' LT
STA 77+22, 41' LT
STA 79+05, 47' LT

REMOVE ASPHALT MAT (FULL DEPTH) (AS SHOWN) STA 72+51, 50' LT TO
STA 73+52, 50' LT TO
STA 74+49, 55' LT TO
STA 74+94, 40' LT TO
STA 75+39, 35' LT
STA 76+22, 49.5' LT TO
STA 78+72, 49.5' LT TO
STA 78+96, 49.5' LT TO
STA 79+39, 49.5' LT

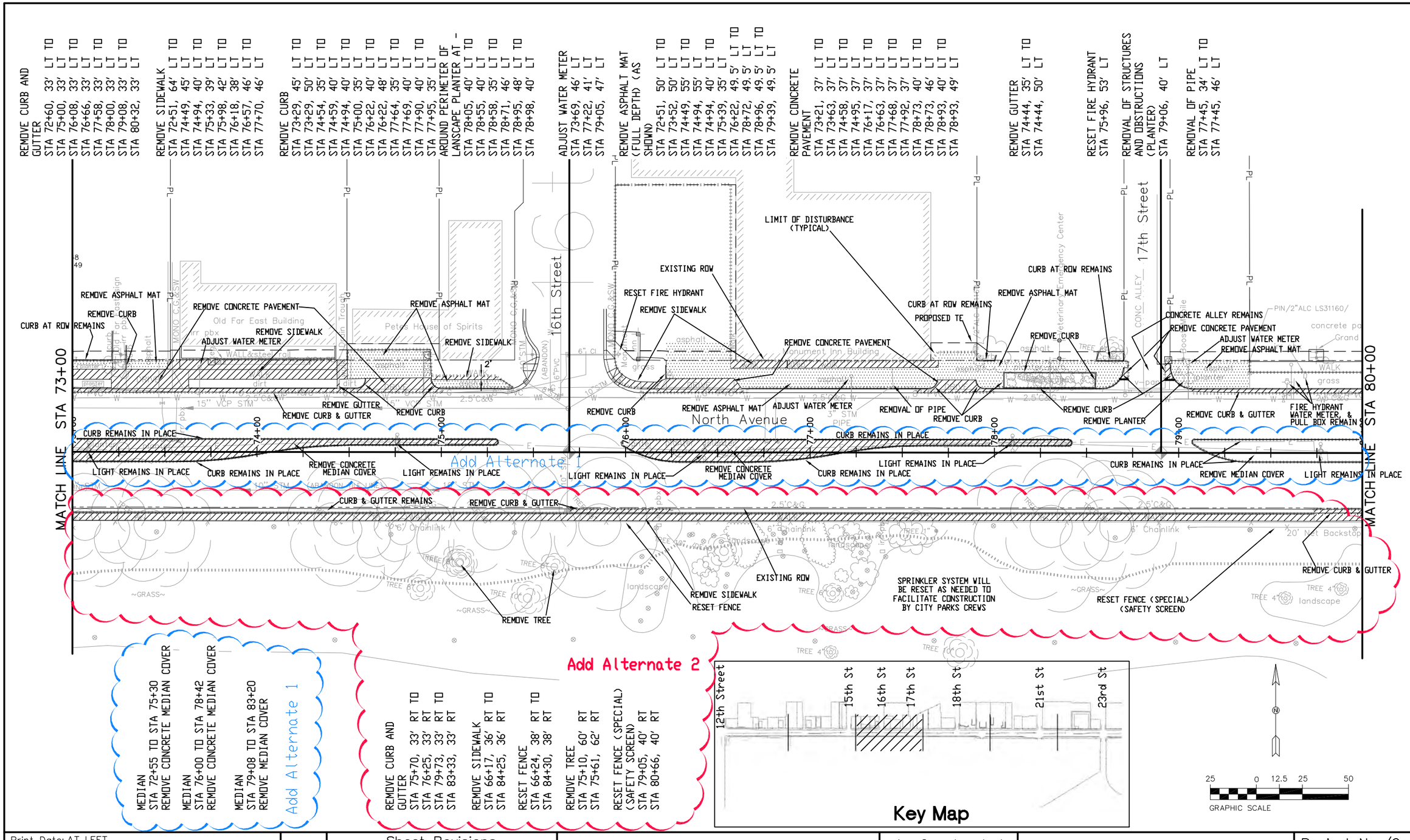
REMOVE CONCRETE PAVEMENT STA 73+21, 37' LT TO
STA 73+63, 37' LT TO
STA 74+58, 37' LT TO
STA 74+95, 37' LT TO
STA 76+17, 37' LT TO
STA 76+63, 37' LT TO
STA 77+68, 37' LT TO
STA 77+92, 37' LT TO
STA 78+73, 40' LT TO
STA 78+73, 46' LT TO
STA 78+93, 40' LT TO
STA 78+93, 49' LT

REMOVE GUTTER STA 74+44, 35' LT TO
STA 74+44, 50' LT

RESET FIRE HYDRANT STA 75+96, 53' LT

REMOVAL OF STRUCTURES AND OBSTRUCTIONS (PLANTER) STA 79+06, 40' LT

REMOVAL OF PIPE STA 77+45, 34' LT TO
STA 77+45, 46' LT



Add Alternate 1

MEDIAN
STA 72+55 TO STA 75+30
REMOVE CONCRETE MEDIAN COVER

MEDIAN
STA 76+00 TO STA 78+42
REMOVE CONCRETE MEDIAN COVER

MEDIAN
STA 79+08 TO STA 83+20
REMOVE MEDIAN COVER

Add Alternate 2

REMOVE CURB AND GUTTER STA 75+70, 33' RT TO
STA 76+25, 33' RT
STA 79+73, 33' RT TO
STA 83+33, 33' RT

REMOVE SIDEWALK STA 66+17, 36' RT TO
STA 84+25, 36' RT

RESET FENCE STA 66+24, 38' RT TO
STA 84+30, 38' RT

REMOVE TREE STA 75+10, 60' RT
STA 75+61, 62' RT

RESET FENCE (SPECIAL) (SAFETY SCREEN) STA 79+05, 40' RT
STA 80+66, 40' RT

Key Map

N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\roadway plans with city std dwy cuts.dwg, 11/17/2015 2:32:50 PM

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Date:	Comments	Init.

Colorado Department of Transportation
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Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

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Removal Plan

Designer: John Smith		Structure Numbers	
Detailer: John Smith			
Sheet Subset: removal		Subset Sheets:	3 of 6

Project No./Code	
TCSP M555-029	
19365	
Sheet Number	44

REMOVE CURB AND GUTTER STA 79+07, 33' LT TO STA 80+32, 33' LT TO STA 80+54, 33' LT TO STA 80+64, 33' LT TO STA 81+80, 33' LT TO STA 83+22, 33' LT TO STA 83+40, 44' LT TO STA 83+42, 61' LT TO STA 83+74, 60' LT TO STA 84+74, 44' LT TO STA 84+56, 35' LT TO STA 85+06, 35' LT TO STA 85+55, 35' LT TO STA 86+02, 35' LT TO STA 86+54, 35' LT TO STA 86+95, 35' LT

REMOVE CONCRETE PAVEMENT STA 80+27, 36' LT TO STA 80+32, 36' LT TO STA 80+54, 36' LT TO STA 80+60, 36' LT TO STA 81+88, 39' LT TO STA 82+25, 39' LT TO STA 82+79, 39' LT TO STA 83+20, 39' LT TO STA 83+38, 53' LT TO STA 83+38, 60' LT TO STA 83+78, 60' LT TO STA 83+78, 46' LT TO STA 84+61, 36' LT TO STA 84+99, 36' LT TO STA 85+71, 36' LT TO STA 85+93, 36' LT TO STA 86+62, 36' LT TO STA 86+85, 36' LT

REMOVE SIDEWALK STA 81+88, 48' LT TO STA 83+36, 48' LT TO STA 86+09, 50' LT TO STA 86+45, 50' LT

REMOVE CONCRETE CURB RAMP STA 83+38, 48' LT

REMOVE ASPHALT MAT (FULL DEPTH) (AS SHOWN) STA 81+88, 49' LT TO STA 83+35, 60' LT TO STA 83+78, 60' LT TO STA 84+62, 39' LT TO STA 84+64, 50' LT TO STA 84+79, 50' LT TO STA 84+82, 50' LT TO STA 85+92, 50' LT TO STA 86+64, 50' LT TO STA 87+19, 50' LT

REMOVAL OF STRUCTURES AND OBSTRUCTIONS (RAIL ROAD TIE PLANTERS) STA 83+80, 45' LT TO STA 84+63, 45' LT TO STA 84+97, 45' LT TO STA 85+52, 45' LT

REMOVE CURB STA 83+33, 56' LT TO STA 83+36, 54' LT TO STA 84+57, 35' LT TO STA 84+64, 50' LT TO STA 84+97, 44' LT TO STA 84+97, 51' LT TO STA 84+98, 40' LT TO STA 85+02, 35' LT TO STA 85+52, 41' LT TO STA 85+56, 50' LT TO STA 85+68, 35' LT TO STA 85+72, 40' LT TO STA 85+92, 40' LT TO STA 85+97, 35' LT TO STA 85+59, 35' LT TO STA 86+64, 40' LT TO STA 86+84, 40' LT TO STA 86+88, 35' LT

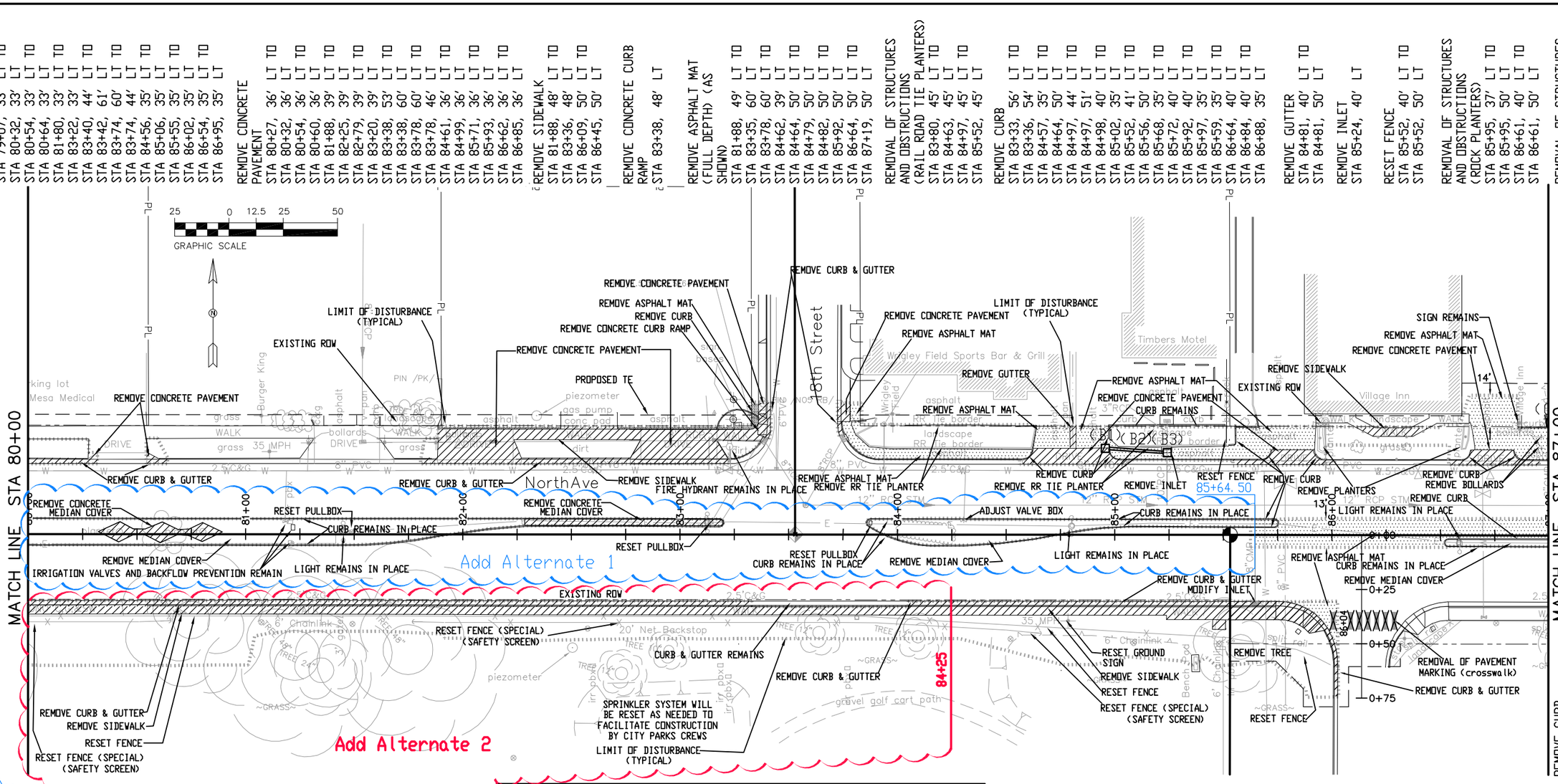
REMOVE GUTTER STA 84+81, 40' LT TO STA 84+81, 50' LT

REMOVE INLET STA 85+24, 40' LT

RESET FENCE STA 85+52, 40' LT TO STA 85+52, 50' LT

REMOVAL OF STRUCTURES AND OBSTRUCTIONS (ROCK PLANTERS) STA 85+95, 37' LT TO STA 85+95, 50' LT TO STA 86+61, 40' LT TO STA 86+61, 50' LT

REMOVAL OF STRUCTURES AND OBSTRUCTIONS (BOLLARDS) STA 86+96, 40' LT TO STA 86+96, 45' LT



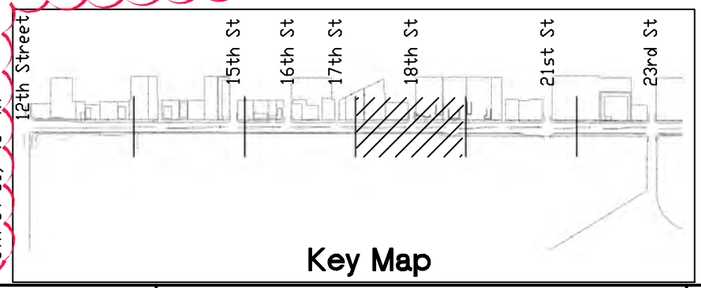
MEDIAN STA 79+08 TO STA 83+20
REMOVE MEDIAN COVER
REMOVE CONCRETE MEDIAN COVER STA 80+32 TO STA 80+90
RESET PULLBOX STA 81+49
STA 83+15
MEDIAN STA 83+86 TO 85+64.50
REMOVE MEDIAN COVER
RESET PULLBOX STA 83+88
ADJUST VALVE BOX STA 84+32

REMOVE CURB AND GUTTER STA 79+73, 33' RT TO STA 83+33, 33' RT TO STA 84+05, 33' RT TO STA 84+25, 33' RT

REMOVE SIDEWALK STA 66+17, 36' RT TO STA 84+25, 36' RT

RESET FENCE STA 66+24, 38' RT TO STA 84+30, 38' RT

RESET FENCE (SPECIAL) (SAFETY SCREEN) STA 79+05, 40' RT TO STA 80+66, 40' RT TO STA 81+77, 40' RT TO STA 84+31, 40' RT



Key Map

RESET FENCE (SPECIAL) (SAFETY SCREEN) STA 84+09, 40' RT TO STA 84+67, 45' RT

RESET FENCE STA 84+10, 38' RT TO STA 85+50, 60' RT

REMOVE CURB AND GUTTER STA 84+25, 33' RT TO STA 86+02, 74' RT

REMOVE SIDEWALK STA 84+25, 36' RT TO STA 85+87, 36' RT

RESET GROUND SIGN STA 84+79, 40' RT

RESET FENCE STA 85+50, 47' RT TO STA 86+00, 60' RT

REMOVE TREE STA 85+58, 51' RT

MODIFY INLET STA 85+65, 31' RT

REMOVE ASPHALT MAT (FULL DEPTH) (AS SHOWN) STA 85+75, 31' RT TO STA 86+04, 55' RT

MEDIAN STA 85+64.50 TO STA 85+75
REMOVE MEDIAN COVER
REMOVE ASPHALT MAT (FULL DEPTH) (AS SHOWN) STA 85+95, 5.5' RT TO STA 88+21.67, 7' LT

MEDIAN STA 86+51 TO STA 88+21.67
REMOVE MEDIAN COVER

REMOVE CURB STA 85+64.50 MEDIAN TO 85+75 At MEDIAN
STA 86+54, 5' RT TO STA 88+21.67, 7' LT

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Unit Information: City of GJ Unit Leader Initials: DPJ			

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No Revisions:
Revised:
Void:

Removal Plan

Designer: John Smith		Structure Numbers	
Detailer: John Smith			
Sheet Subset:		Subset Sheets:	4 of 6

Project No./Code
TCSP M555-029
19365
Sheet Number 45

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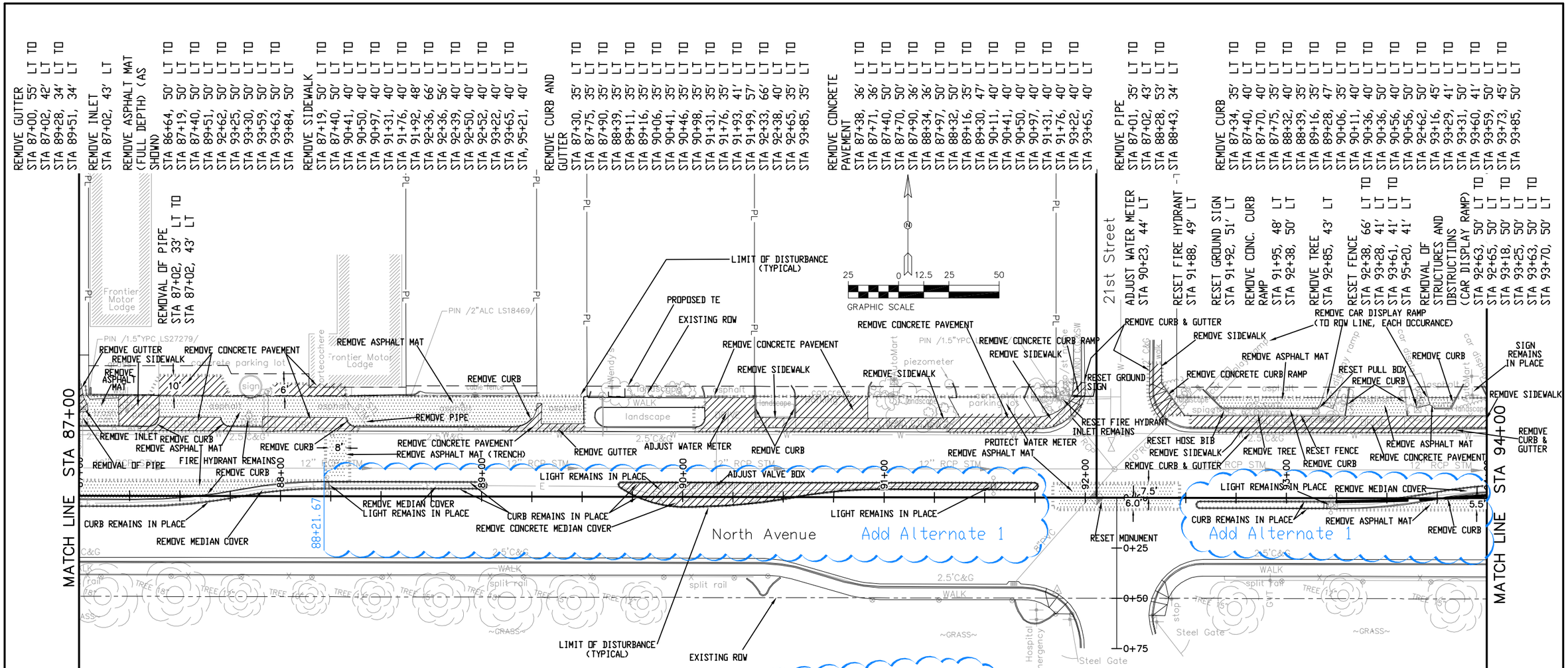
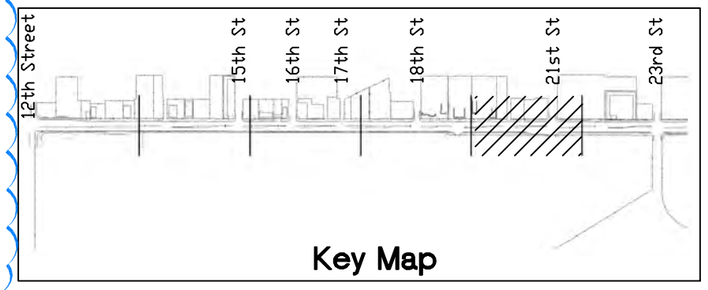


REMOVE ASPHALT MAT (FULL DEPTH) (AS SHOWN) STA 85+82, 5.5' TO STA 88+22, 7.5' LT
MEDIAN STA 86+51 TO STA 88+22 REMOVE MEDIAN COVER
REMOVE CURB STA 86+54, 5' RT TO STA 88+22, 7' LT
REMOVE ASPHALT MAT (FULL DEPTH) (AS SHOWN) STA 88+28, 31' LT TO STA 88+28, 7.5' LT
REMOVE ASPHALT MAT (FULL DEPTH) (AS SHOWN) STA 91+86.5 TO STA 92+44
RESET MONUMENT (TYPE 3A) STA 92+05.70

Add Alternate 1

MEDIAN STA 88+22 TO STA 89+03 REMOVE MEDIAN COVER
MEDIAN STA 89+68 TO STA 91+76 REMOVE CONCRETE MEDIAN COVER
ADJUST WATER VALVE STA 90+17, 5' LT
MEDIAN STA 92+55 TO STA 94+90 REMOVE MEDIAN COVER
REMOVE CURB STA 93+25, 5' RT TO STA 94+88, 7' LT
REMOVE ASPHALT MAT (FULL DEPTH) (AS SHOWN) STA 93+25, 5.5' RT TO STA 97+49, 7.5' LT



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File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street
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					Region 3 RBB

As Constructed	Removal Plan			Project No./Code
No Revisions:				TCSP M555-029
Revised:	Designer: John Smith	Structure Numbers		19365
Void:	Detailer: John Smith			Sheet Number 46
	Sheet Subset: removal	Subset Sheets:	5 of 6	

REMOVAL OF STRUCTURES AND OBSTRUCTIONS (CAR DISPLAY RAMP)
STA 94+01, 50' LT TO
STA 94+09, 50' LT TO
STA 95+10, 50' LT TO
STA 95+18, 50' LT

REMOVE TREE
STA 94+17, 42' LT
STA 94+57, 42' LT
STA 94+97, 42' LT

REMOVE ASPHALT MAT (FULL DEPTH) (AS SHOWN)
STA 94+00, 50' LT TO
STA 95+18, 50' LT TO
STA 95+21, 50' LT TO
STA 95+50, 47' LT TO
STA 95+83, 47' LT TO
STA 97+16, 47' LT TO
STA 97+54, 47' LT TO
STA 98+56, 63' LT

RESET FENCE
STA 93+61, 41' LT TO
STA 95+20, 41' LT

REMOVE CURB
STA 94+00, 50' LT TO
STA 95+12, 45' LT TO
STA 95+21, 40' LT TO
STA 95+21, 50' LT TO
STA 97+16, 40' LT TO
STA 97+16, 47' LT TO
STA 97+41, 40' LT TO
STA 97+41, 47' LT

REMOVE SIDEWALK
STA 93+65, 40' LT TO
STA 95+21, 40' LT TO
STA 95+52, 42' LT TO
STA 95+75, 42' LT TO
STA 96+24, 40' LT TO
STA 96+76, 40' LT TO
STA 97+20, 40' LT TO
STA 97+49, 40' LT TO
STA 97+83, 40' LT TO
STA 98+00, 40' LT

REMOVE CURB AND GUTTER
STA 94+50, 35' LT TO
STA 95+50, 35' LT TO
STA 95+75, 35' LT TO
STA 96+31, 35' LT TO
STA 96+70, 35' LT TO
STA 98+37, 35' LT TO
STA 98+59, 43' LT TO
STA 98+61, 74' LT

REMOVE CONCRETE PAVEMENT
STA 95+21, 41' LT TO
STA 95+51, 41' LT TO
STA 95+75, 42' LT TO
STA 96+25, 41' LT TO
STA 96+76, 41' LT TO
STA 97+22, 41' LT TO
STA 97+49, 41' LT TO
STA 97+83, 41' LT TO
STA 98+00, 41' LT TO
STA 98+37, 41' LT TO
STA 98+56, 54' LT TO
STA 98+56, 74' LT

REMOVE WALL
STA 95+50, 40' LT TO
STA 95+50, 47' LT

ADJUST WATER METER
STA 96+00, 40' LT
STA 97+30, 42' LT

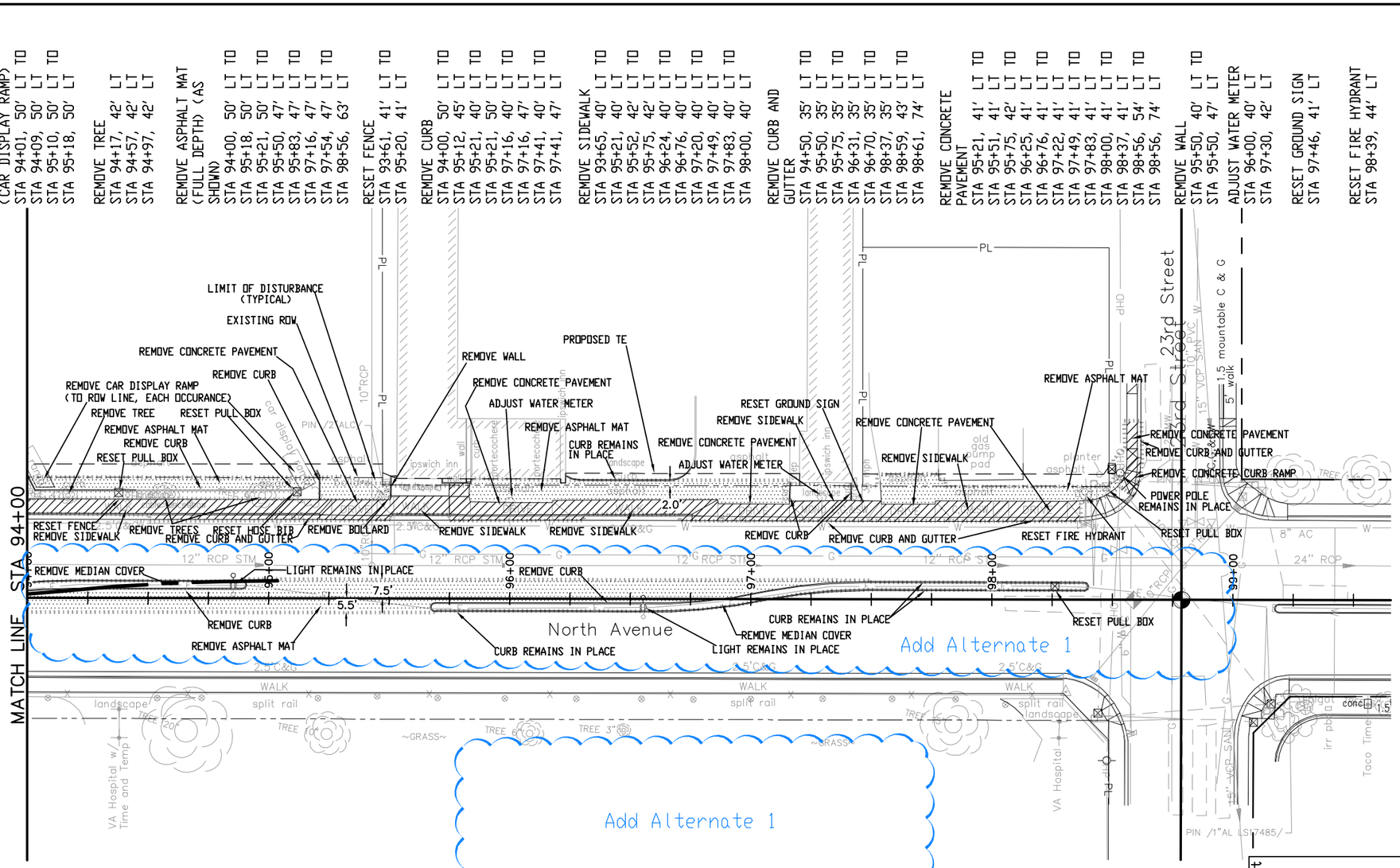
RESET GROUND SIGN
STA 97+46, 41' LT

RESET FIRE HYDRANT
STA 98+39, 44' LT

RESET PULL BOX
STA 98+47, 46' LT
STA 98+52, 52' LT

REMOVE CONCRETE CURB RAMP
STA 98+58, 51' LT

REMOVE STRUCTURES AND OBSTRUCTIONS (BOLLARDS)
STA 95+50, 42' LT



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Horiz. Scale: 1:50 Vert. Scale: NA					Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ					Void:

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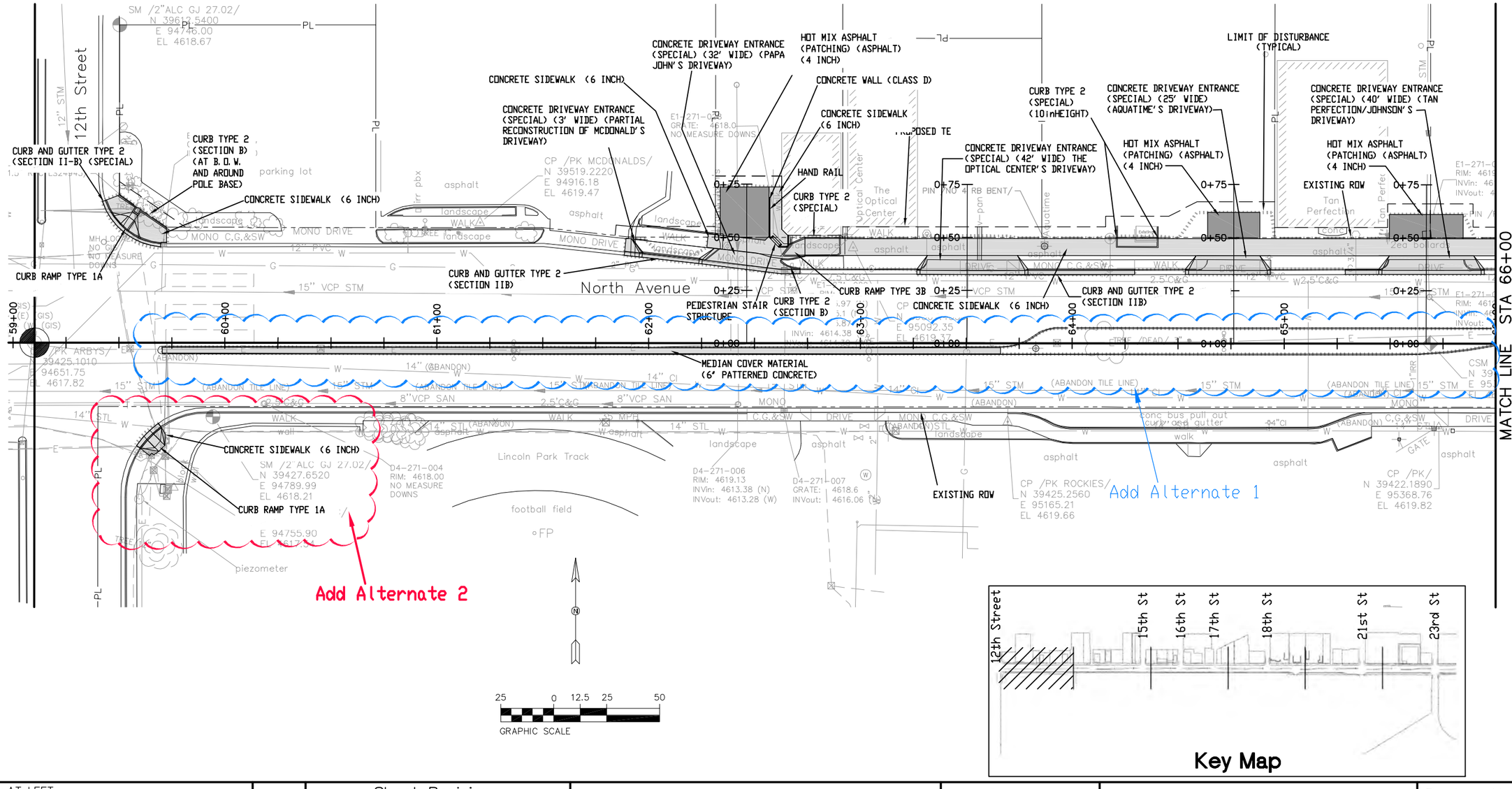
Region 3 RBB

Removal Plan

Designer: John Smith	Structure Numbers		Project No./Code
Detailer: John Smith			TCSP M555-029
Sheet Subset: removal	Subset Sheets:	6 of 6	19365
			Sheet Number 47

SEE STAKING PLAN FOR STAKING DATA AND ELEVATIONS



Key Map

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Unit Information: City of GJ Unit Leader Initials: DPJ					Void:

Roadway Plan			Project No./Code
Designer: John Smith	Structure Numbers		TCSP M555-029
Detailer: John Smith			19365
Sheet Subset: RD PLAN	Subset Sheets: 1 OF 6		Sheet Number 48

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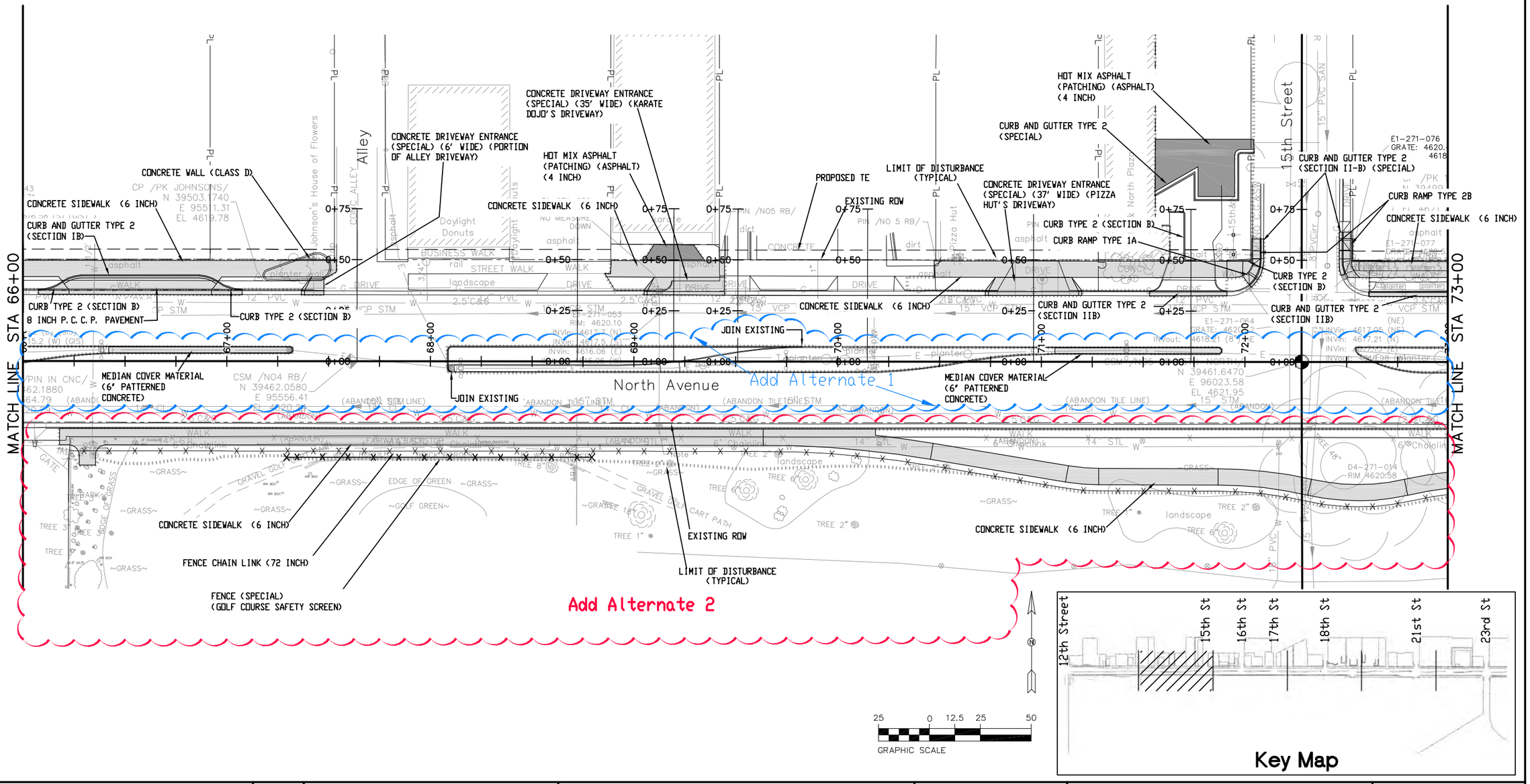
STAKING DATA AND ELEVATIONS



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Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369
					Region 3 RBB

As Constructed	Roadway Plan			Project No./Code
No Revisions:				TCSP M555-029
Revised:	Designer: John Smith	Structure Numbers		19365
Void:	Detailer: John Smith			Sheet Number 49
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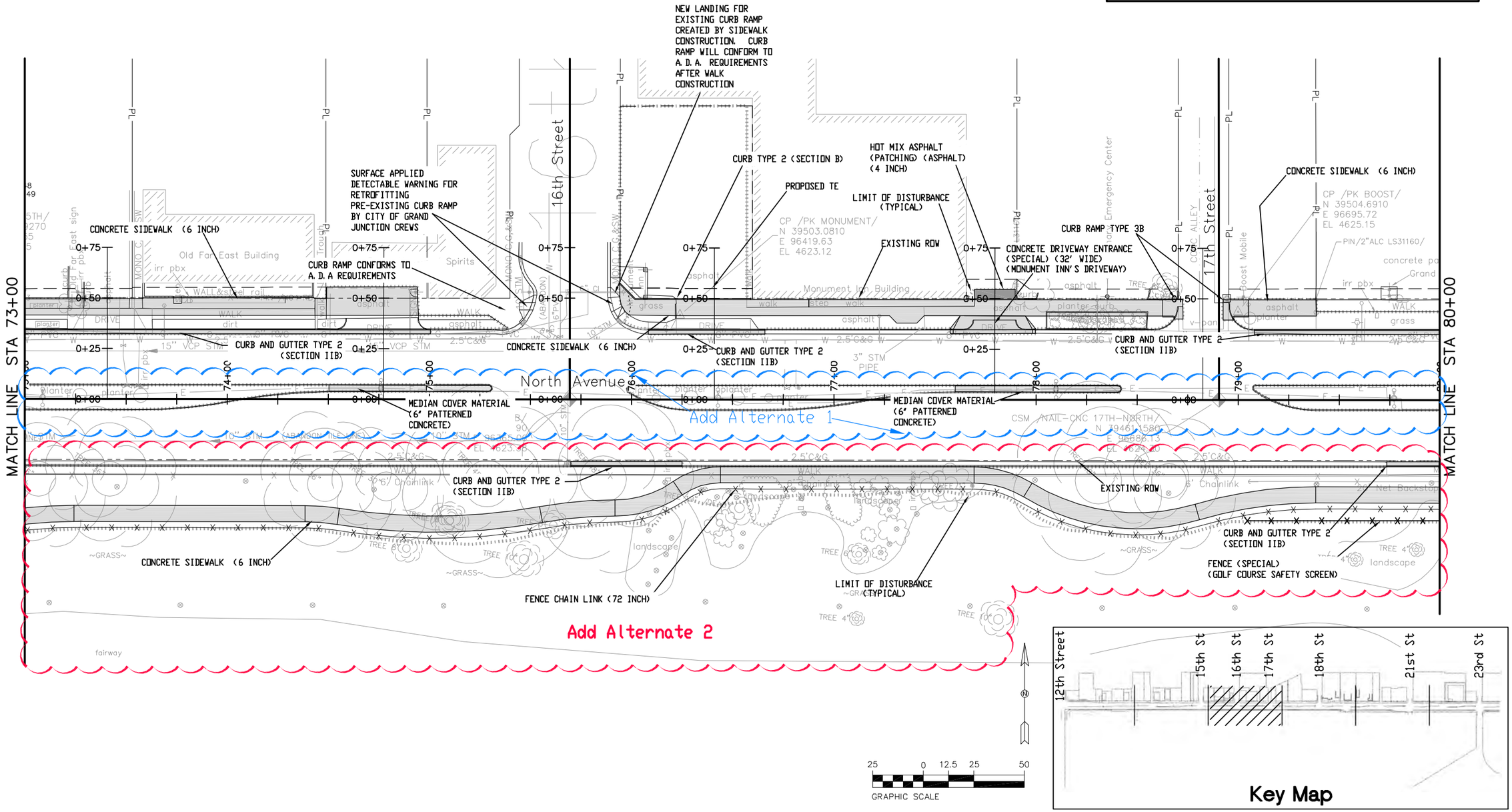
SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS



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File Name: AT LEFT		Date:	Comments	Init.	CDOT	No Revisions:		TCSP M555-029
Horiz. Scale: 1:50 Vert. Scale: NA					606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	Revised:	Designer: John Smith	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:	Detailer: John Smith Sheet Subset: RD PLAN	Structure Numbers Subset Sheets: 3 of 6
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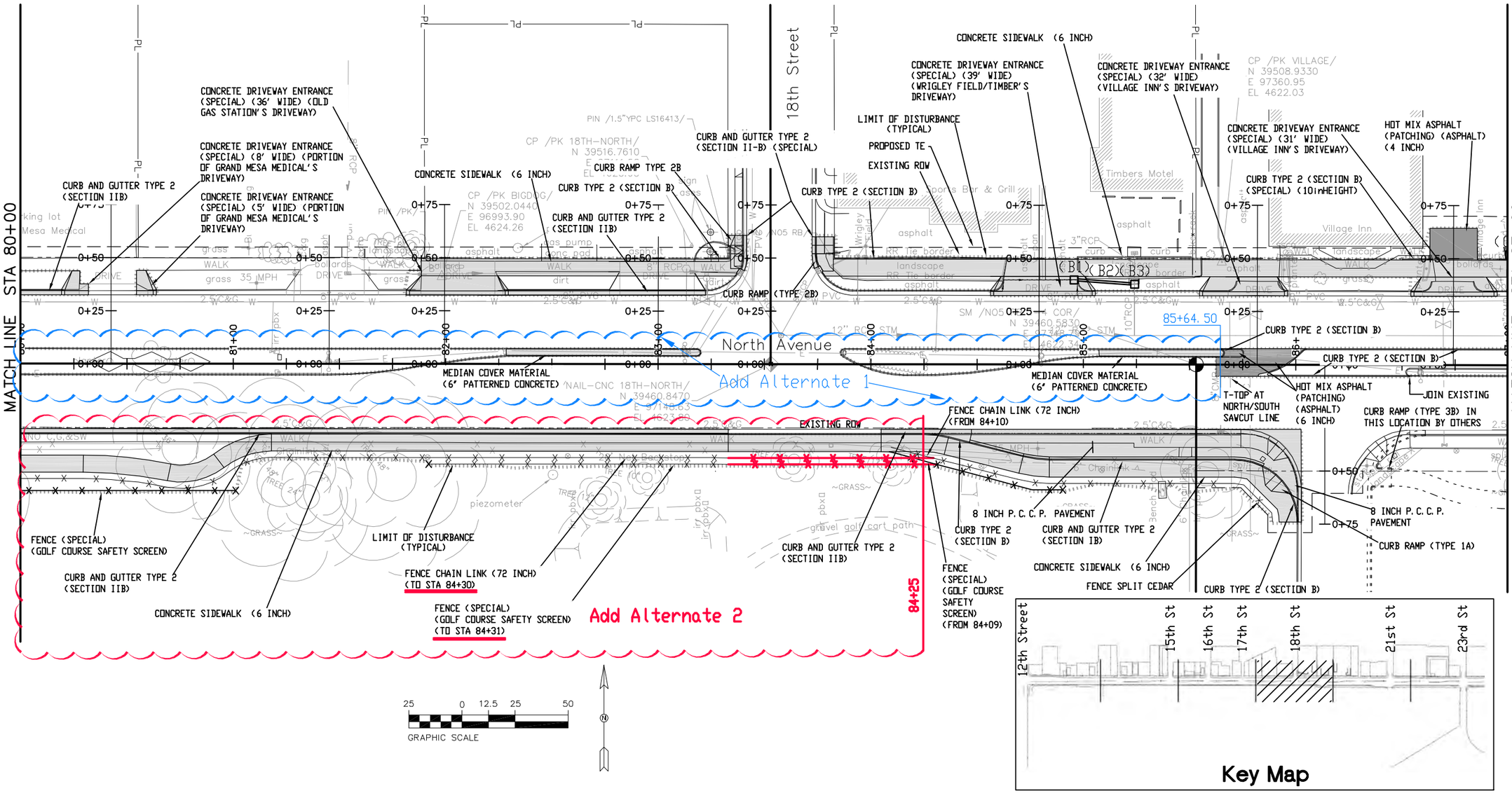

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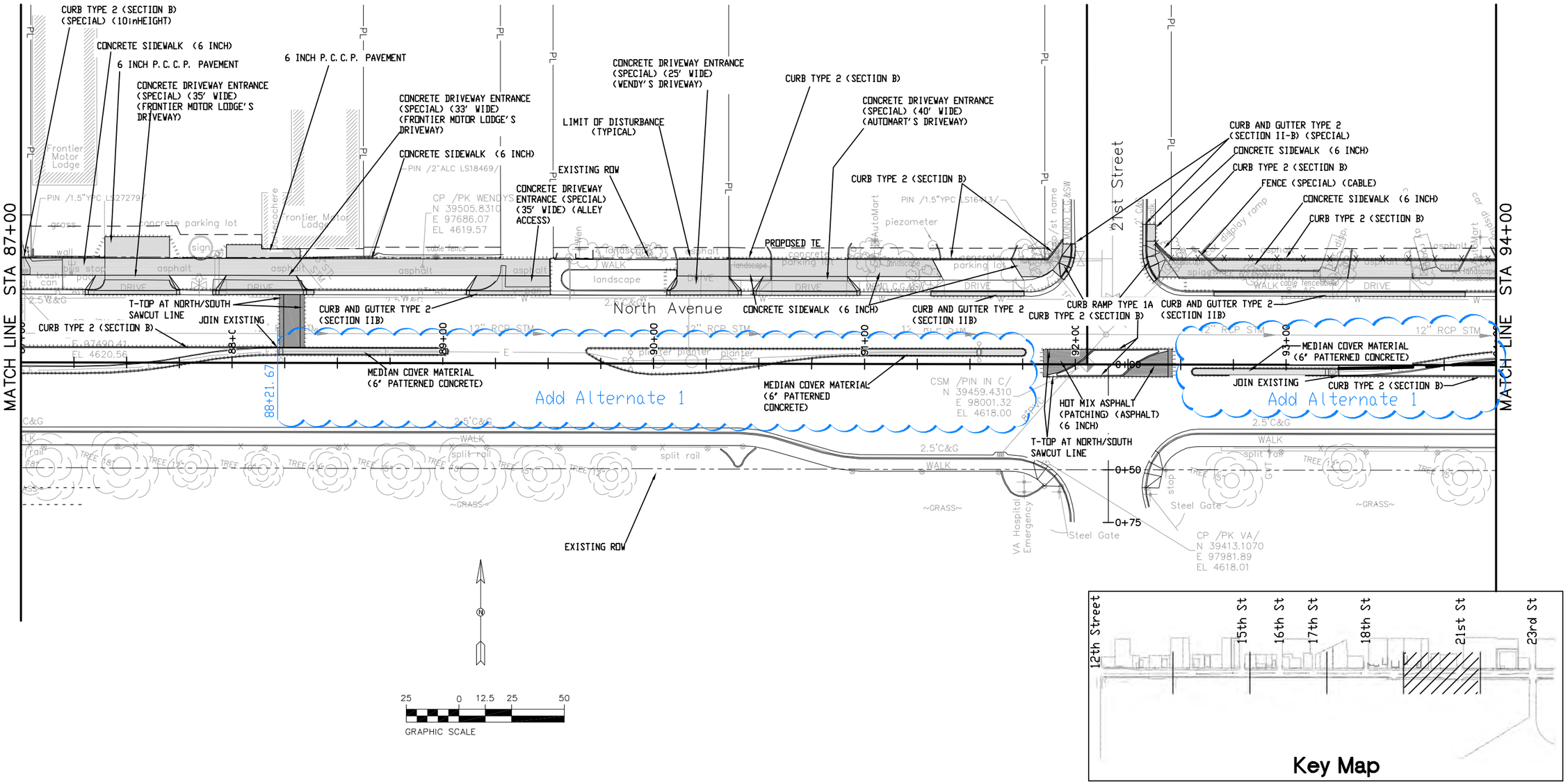
Unit Information: City of GJ Unit Leader Initials: DPJ		Region 3 RBB	Void:

Roadway Plan		Project No./Code	
Designer: John Smith	Structure Numbers	TCSP M555-029	
Detailer: John Smith		19365	
Sheet Subset: RD PLAN	Subset Sheets: 4 of 6	Sheet Number 51	

SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS



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Unit Information: City of GJ Unit Leader Initials: DPJ			

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Region 3 RBB

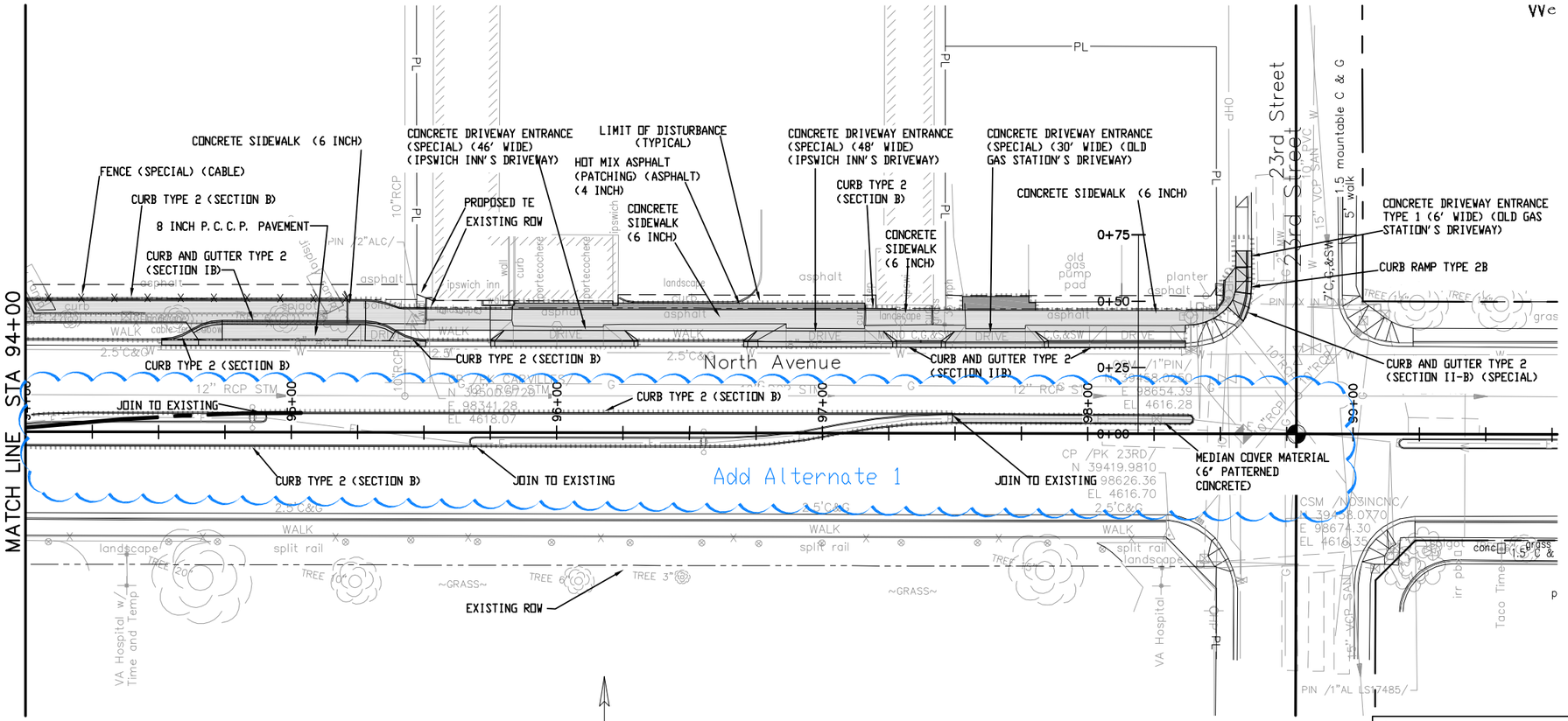
As Constructed
No Revisions:
Revised:
Void:

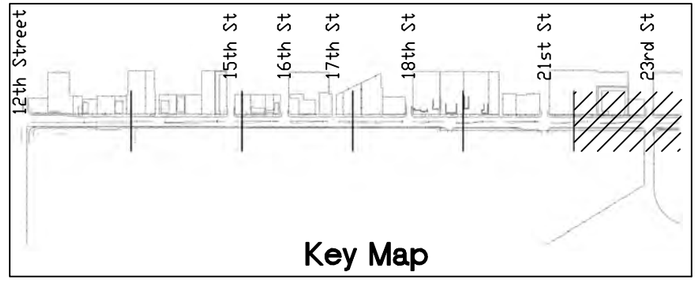
Roadway Plan

Designer: John Smith
Detailer: John Smith
Sheet Subset: RD PLAN
Structure Numbers
Subset Sheets: 5 of 6

Project No./Code
TCSP M555-029
19365
Sheet Number 52

SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS





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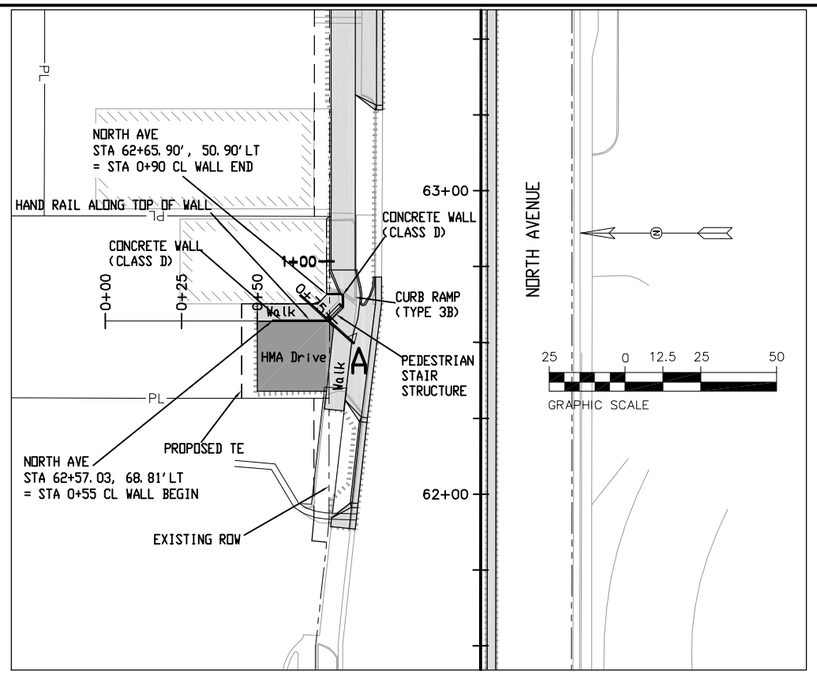
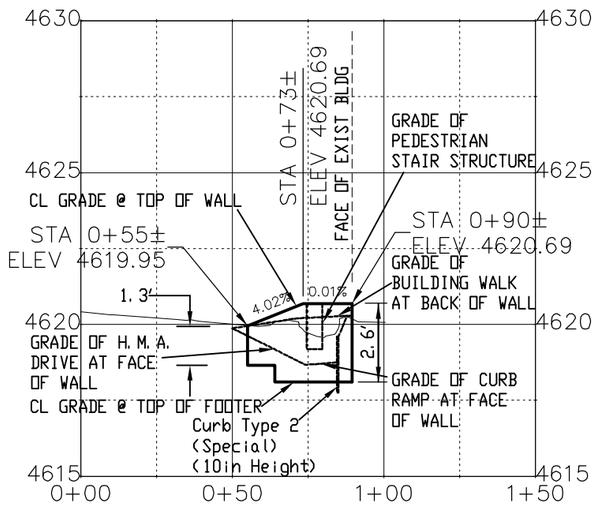
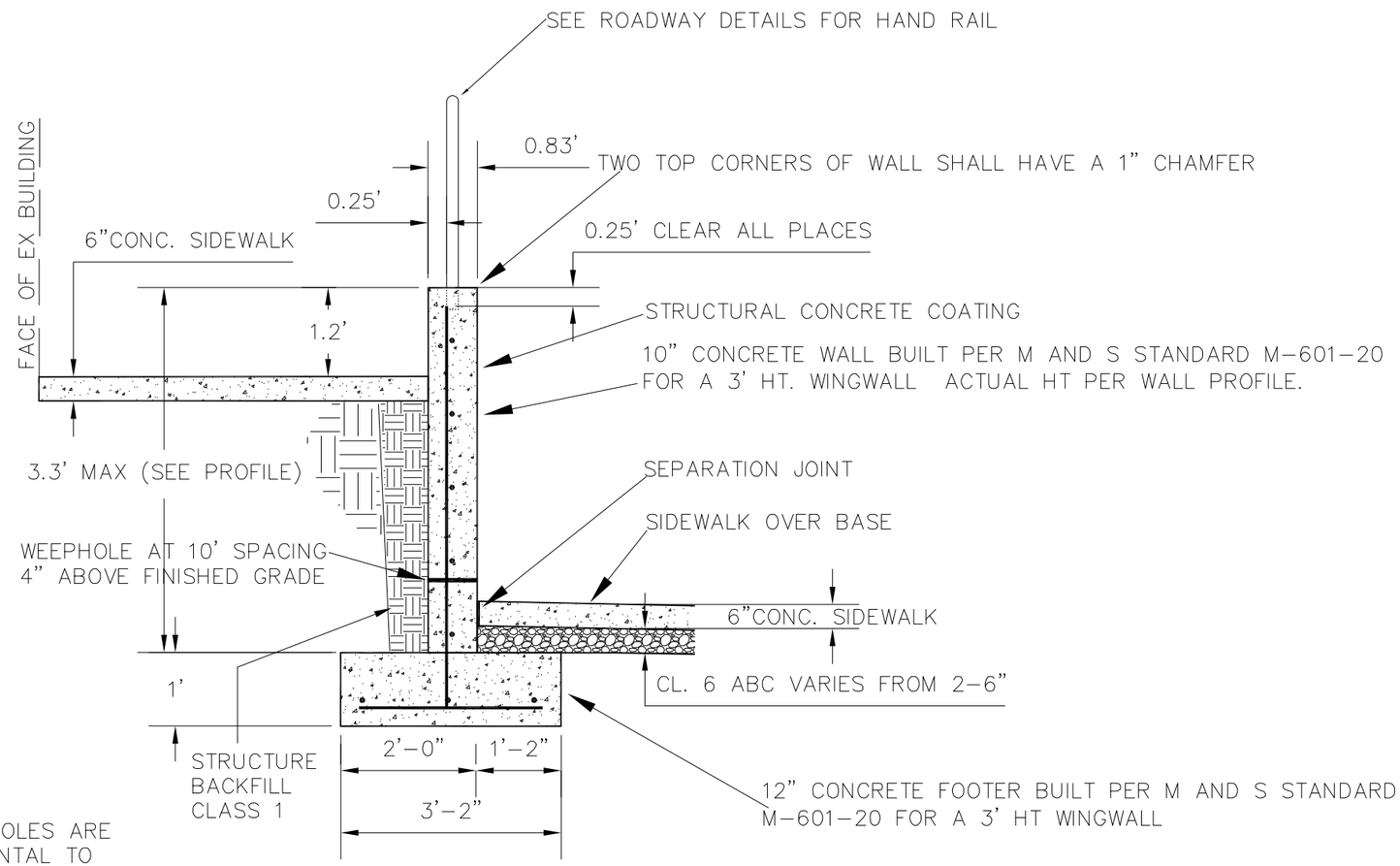
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:		TCSP M555-029
Horiz. Scale: 1:50 Vert. Scale: NA						Revised:	Designer: John Smith	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:	Detailer: John Smith Sheet Subset: RD PLAN	Structure Numbers Subset Sheets: 6 of 6
								Sheet Number 53



PLAN

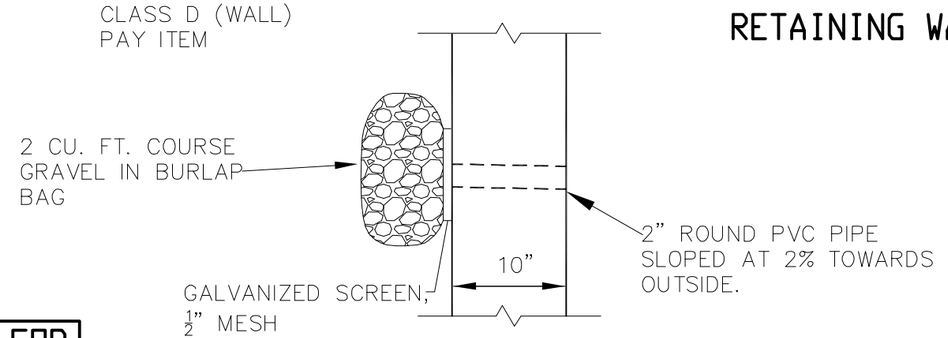


SEE INTERSECTION CORNER RAMP PLAN FOR STAKING DATA AND ELEVATIONS

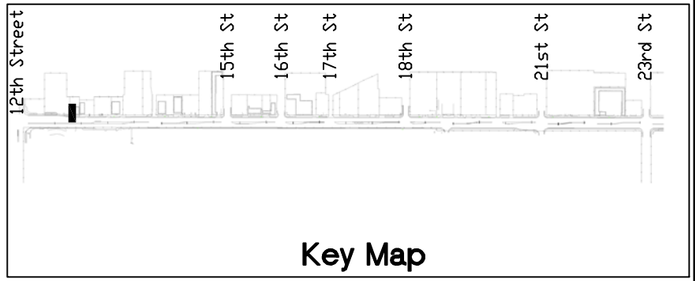


NOTE:
WEEPHOLES ARE INCIDENTAL TO THE CONCRETE CLASS D (WALL) PAY ITEM

RETAINING WALL (SECTION AA)



WEEPHOLE



Key Map

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File Name: AT LEFT	Date: / Comments / Init.	606 South 9th Street, Grand Junction, CO, 81501	No Revisions:
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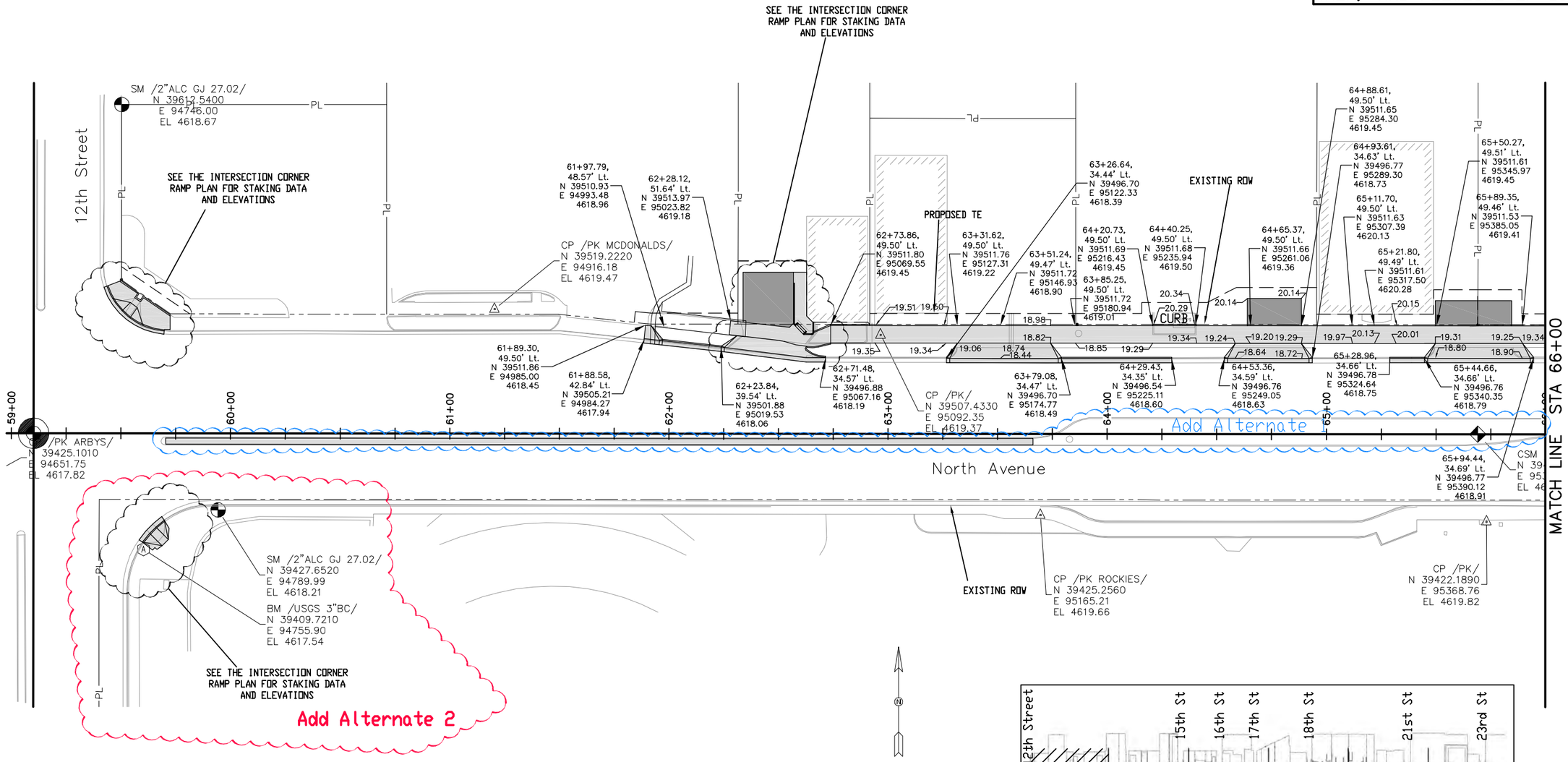
Unit Information: City of GJ Unit Leader Initials: DPJ		Region 3 RBB	Void:

Retaining Wall Plan and Profile			Project No./Code
Designer: John Smith	Structure Numbers		TCSP M555-029
Detailer: John Smith			19365
Sheet Subset: ret wall	Subset Sheets: 1 of 1		Sheet Number 54

N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\roadway plans with city std dwy cuts.dwg, 8/20/2015 12:17:17 PM

PROVIDED POINT DATA IS FOR EDGE OF PAVEMENT IN PARKING AREAS, BACK OF WALK, FACE OF WALK, AND FLOWLINE OF GUTTER



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Print Date: AT LEFT	Sheet Revisions	Colorado Department of Transportation	As Constructed
File Name: AT LEFT	Date: / Comments / Init.	606 South 9th Street, Grand Junction, CO, 81501	No Revisions:
Horiz. Scale: 1:50 Vert. Scale: NA		Phone: 970-683-6351 FAX: 970-683-6369	Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ		Region 3 RBB	Void:

Staking Plan			Project No./Code
Designer: John Smith	Structure Numbers		TCSP M555-029
Detailer: John Smith			19365
Sheet Subset: Staking	Subset Sheets: 1 OF 6		Sheet Number 55

PROVIDED POINT DATA IS FOR EDGE OF PAVEMENT IN PARKING AREAS, BACK OF WALK, FACE OF WALK, AND FLOWLINE OF GUTTER

GRAPHIC SCALE 25 0 12.5 25 50

SEE THE INTERSECTION CORNER RAMP PLAN FOR STAKING DATA AND ELEVATIONS

MATCH LINE STA 66+00

MATCH LINE STA 73+00

Alley

15th Street

EXISTING ROW

PROPOSED TE

PLACE CURB 6' NORTH AND EAST OF BUILDING AS SHOWN. TOP OF CURB SHALL BE SET 6" ABOVE REMAINING ASPHALT GRADE

1.5' R

66+01.19, 49.48' Lt. N 39511.54 E 95396.89 4619.50

66+86.42, 41.82' Lt. N 39503.82 E 95482.11 4619.13

66+19.43, 38.78' Lt. N 39500.83 E 95415.12 4618.99

66+28.44, 41.77' Lt. CP /PK JOHNSONS/ N 39503.1740 E 95511.31 EL 4619.78

67+32.79, 49.46' Lt. N 39511.43 E 95528.49 4619.82

67+50.48, 49.42' Lt. N 39511.38 E 95546.18 4619.86

67+36.65, 34.41' Lt. N 39496.38 E 95532.34 4619.19

67+53.82, 49.50' Lt. N 39511.45 E 95549.51 4619.80

68+88.69, 49.50' Lt. N 39511.36 E 95684.39 4620.62

69+44.43, 49.50' Lt. N 39511.32 E 95740.12 4620.66

70+47.36, 49.50' Lt. N 39511.24 E 95843.06 4620.99

71+55.95, 82.07' Lt. N 39543.73 E 95951.67 4621.80

71+96.39, 101.45' Lt. N 39563.08 E 95992.13 4621.30

71+97.89, 102.95' Lt. N 39564.58 E 95993.63 4621.29

72+04.22, 102.95' Lt. N 39564.58 E 95999.95 4621.25

71+75.38, 93.35' Lt. N 39555.00 E 95971.11 4621.66

71+91.15, 49.50' Lt. N 39511.14 E 95986.84 4621.18

71+96.22, 79.82' Lt. N 39541.46 E 95991.93 4621.44

71+75.44, 79.87' Lt. N 39541.51 E 95971.16 4621.58

72+67.43, 49.33' Lt. N 39510.91 E 96063.13 4621.90 CP /PK 1 N 39499. E 96062. EL 4621.2

72+60.81, 34.25' Lt. N 39495.83 E 96056.50 4620.73

66+07.42, 34.57' Lt. N 39496.63 E 95403.11 4618.93

66+95.39, 38.81' Lt. N 39500.81 E 95491.08 4619.13

67+07.34, 34.43' Lt. N 39496.42 E 95503.03 4619.12

67+47.65, 34.49' Lt. N 39496.45 E 95543.33 4619.23

68+08.31, 5.50' Lt. N 39467.42 E 95603.98 4620.47

68+10.31, 7.50' Lt. N 39469.42 E 95605.98 4620.40

69+04.83, 34.48' Lt. N 39496.32 E 95700.52 4619.72

69+44.44, 34.39' Lt. N 39496.20 E 95740.12 4619.95

69+82.52, 7.55' Lt. N 39469.33 E 95778.19 4621.30

70+72.57, 34.53' Lt. N 39496.25 E 95868.26 4620.38

71+19.77, 34.55' Lt. N 39496.24 E 95915.46 4620.54

71+53.24, 34.32' Lt. N 39495.98 E 95948.93 4620.68

71+91.15, 34.34' Lt. N 39495.98 E 95986.84 4620.83

CSM /NO4 RB/ N 39462.0580 E 95556.41 EL 4620.24

68+08.31, 3.37' Rt. N 39458.54 E 95603.97 4620.76

68+10.32, 5.41' Rt. N 39456.51 E 95605.98 4620.73

CSM /NO6 RB 15TH NORTH/ N 39461.6470 E 96023.58 EL 4621.95

Add Alternate 1

North Avenue

/PIN IN CNC/ 62.1880 64.1882 20.29

66+17.90, 41.10' Rt. N 39420.96 E 95413.53 4619.97

66+40.50, 41.10' Rt. N 39420.94 E 95436.13 4620.03

66+57.87, 41.10' Rt. N 39420.92 E 95453.50 4620.07

67+29.30, 47.10' Rt. N 39414.87 E 95524.93 4619.61

68+57.87, 41.11' Rt. N 39420.77 E 95653.50 4620.38

68+79.30, 47.11' Rt. N 39414.76 E 95674.93 4619.78

69+17.87, 41.11' Rt. N 39420.73 E 95713.50 4620.70

69+67.87, 41.21' Rt. N 39420.59 E 95763.50 4620.80

69+63.42, 41.11' Rt. N 39420.69 E 95759.05 4620.79

70+18.63, 36.18' Rt. N 39425.58 E 95814.27 4620.52

70+45.54, 47.90' Rt. N 39413.84 E 95841.16 4620.11

70+57.34, 49.87' Rt. N 39411.87 E 95852.97 4620.00

71+11.98, 58.97' Rt. N 39402.73 E 95907.60 4620.22

71+28.18, 60.33' Rt. N 39401.36 E 95923.80 4620.29

71+40.31, 60.35' Rt. N 39401.32 E 95935.92 4620.34

71+86.92, 60.46' Rt. N 39401.18 E 95982.54 4620.60

72+12.67, 62.15' Rt. N 39399.47 E 96008.29 4620.74

72+30.98, 65.41' Rt. N 39396.20 E 96026.59 4620.74

72+80.07, 65.44' Rt. N 39396.13 E 96075.68 4620.75

66+22.50, 41.10' Rt. N 39420.95 E 95418.13 4619.98

66+35.50, 46.10' Rt. N 39415.94 E 95431.12 4619.95

66+27.50, 46.09' Rt. N 39415.95 E 95423.12 4619.91

19.85

19.81

Add Alternate 2

EXISTING ROW

20.23 20.54 20.63 20.64 20.39 20.36 20.26 20.16 20.39 20.45 20.49 20.76 20.89 20.90 20.91 20.53

3"

Key Map

12th Street 15th St 16th St 17th St 18th St 21st St 23rd St

N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\roadway plans with city std dwy curbs.dwg, 11/19/2015 8:53:22 AM

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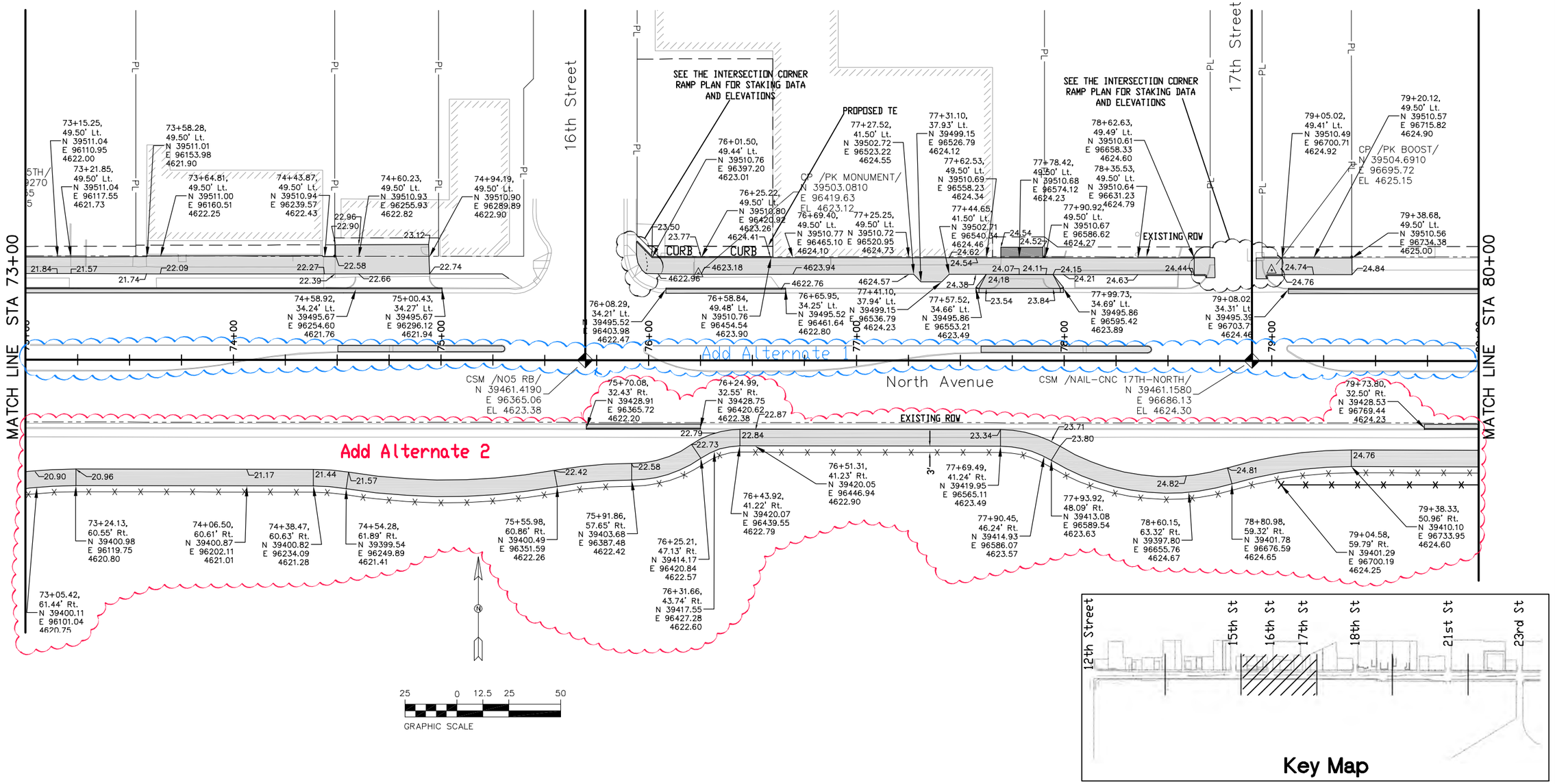
Horiz. Scale: 1:50 Vert. Scale: NA					606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	Revised:	Designer: John Smith / Detailer: John Smith / Sheet Subset: Staking	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:	Structure Numbers / Subset Sheets: 2 of 6	Sheet Number 56

PROVIDED POINT DATA IS FOR EDGE OF PAVEMENT IN PARKING AREAS, BACK OF WALK, FACE OF WALK, AND FLOWLINE OF GUTTER



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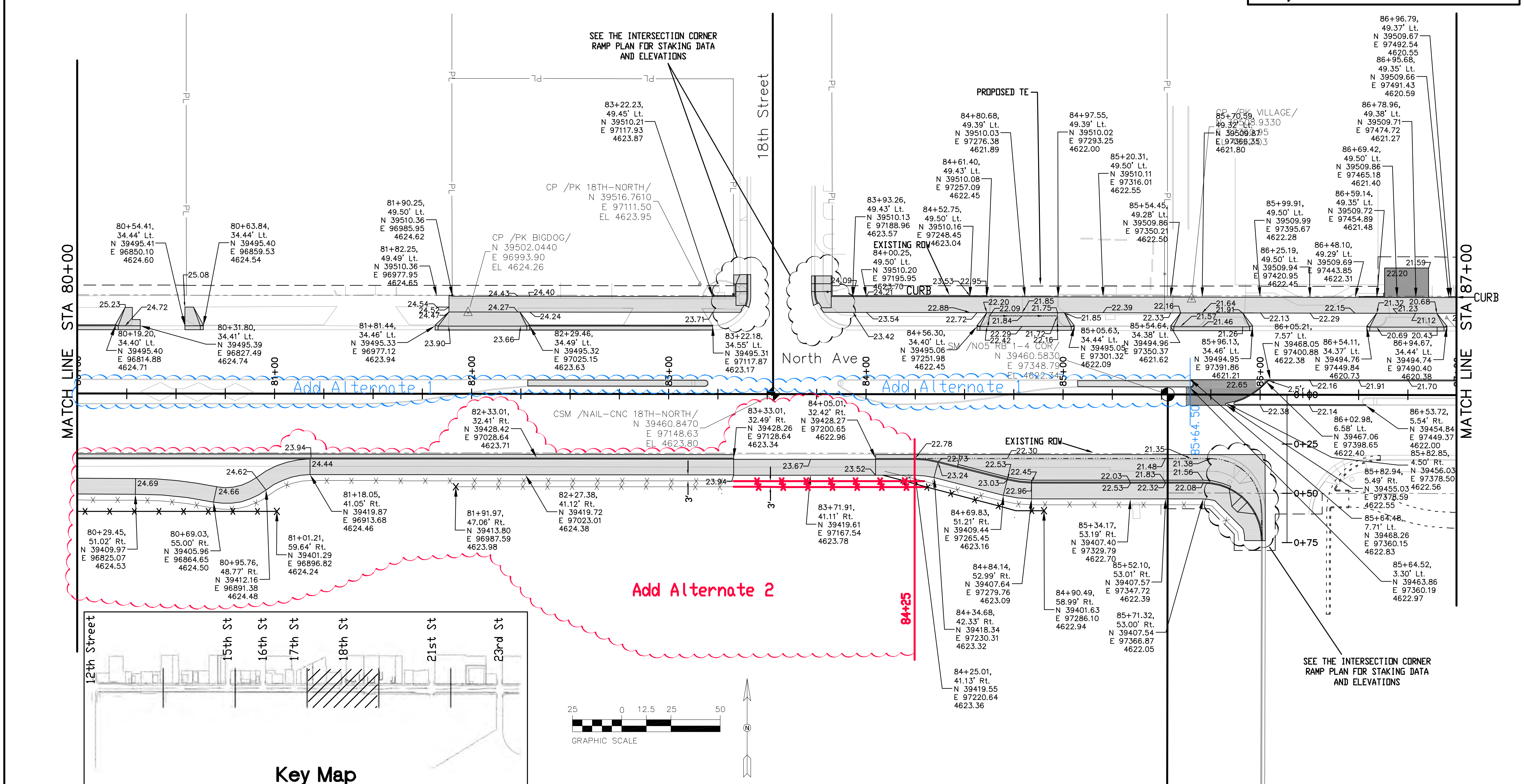
Horiz. Scale: 1:50 Vert. Scale: NA		Grand Junction, CO, 81501	Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ		Phone: 970-683-6351 FAX: 970-683-6369	Void:
		Region 3 RBB	

Staking Plan			Project No./Code
Designer: John Smith	Structure Numbers		TCSP M555-029
Detailer: John Smith			19365
Sheet Subset: Staking	Subset Sheets:	3 of 6	Sheet Number 57

PROVIDED POINT DATA IS FOR EDGE OF PAVEMENT IN PARKING AREAS, BACK OF WALK, FACE OF WALK, AND FLOWLINE OF GUTTER



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Horiz. Scale: 1:50 Vert. Scale: NA
Unit Information: City of GJ Unit Leader Initials: DPJ

Sheet Revisions		
Date:	Comments	Init.

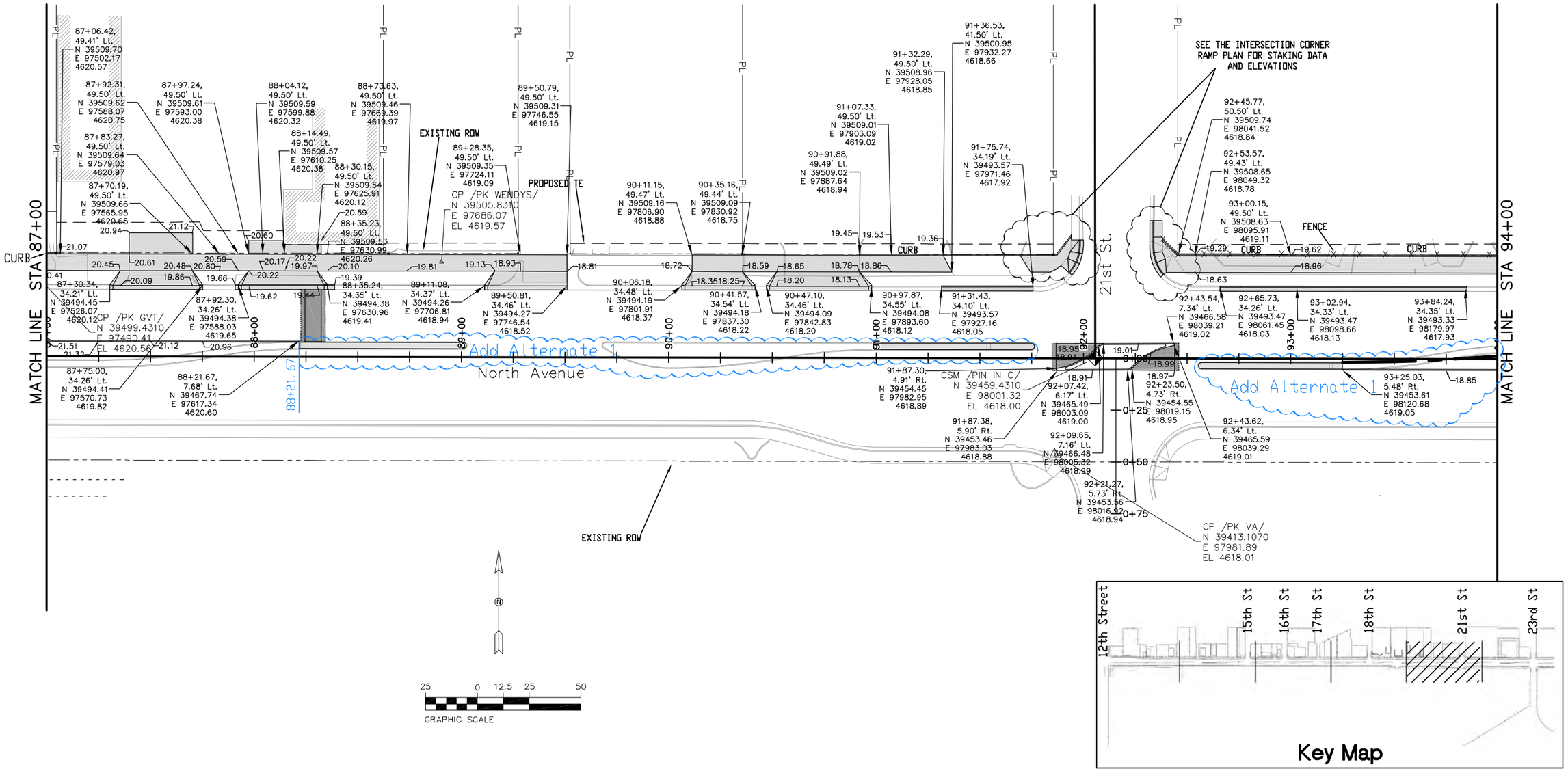
Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

As Constructed
No Revisions:
Revised:
Void:

Staking Plan
Designer: John Smith
Detailer: John Smith
Sheet Subset: Staking
Structure Numbers
Subset Sheets: 4 of 6

Project No./Code
TCSP M555-029
19365
Sheet Number 58

PROVIDED POINT DATA IS FOR EDGE OF PAVEMENT IN PARKING AREAS, BACK OF WALK, FACE OF WALK, AND FLOWLINE OF GUTTER



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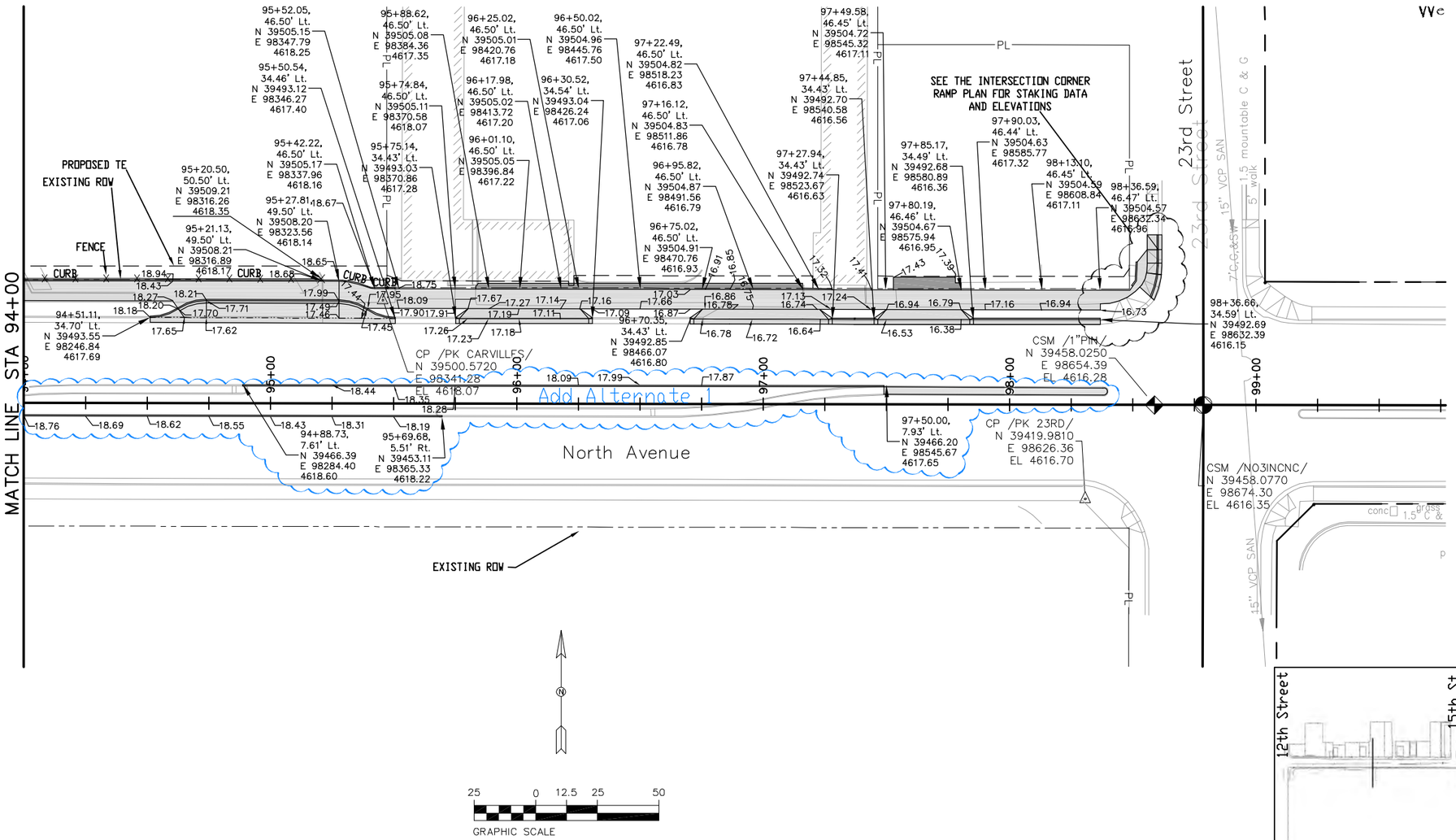
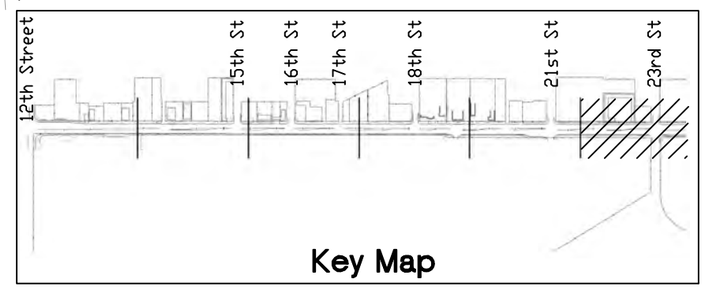
Unit Information: City of GJ Unit Leader Initials: DPJ		Phone: 970-683-6351 FAX: 970-683-6369	Void:
		Region 3 RBB	

Staking Plan		Project No./Code
Designer: John Smith	Structure Numbers	TCSP M555-029
Detailer: John Smith		19365
Sheet Subset: Staking	Subset Sheets: 5 of 6	Sheet Number 59

PROVIDED POINT DATA IS FOR EDGE OF PAVEMENT IN PARKING AREAS, BACK OF WALK, FACE OF WALK, AND FLOWLINE OF GUTTER





Key Map

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Unit Information: City of GJ	Unit Leader Initials: DPJ

Sheet Revisions

Date:	Comments	Init.

Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

As Constructed

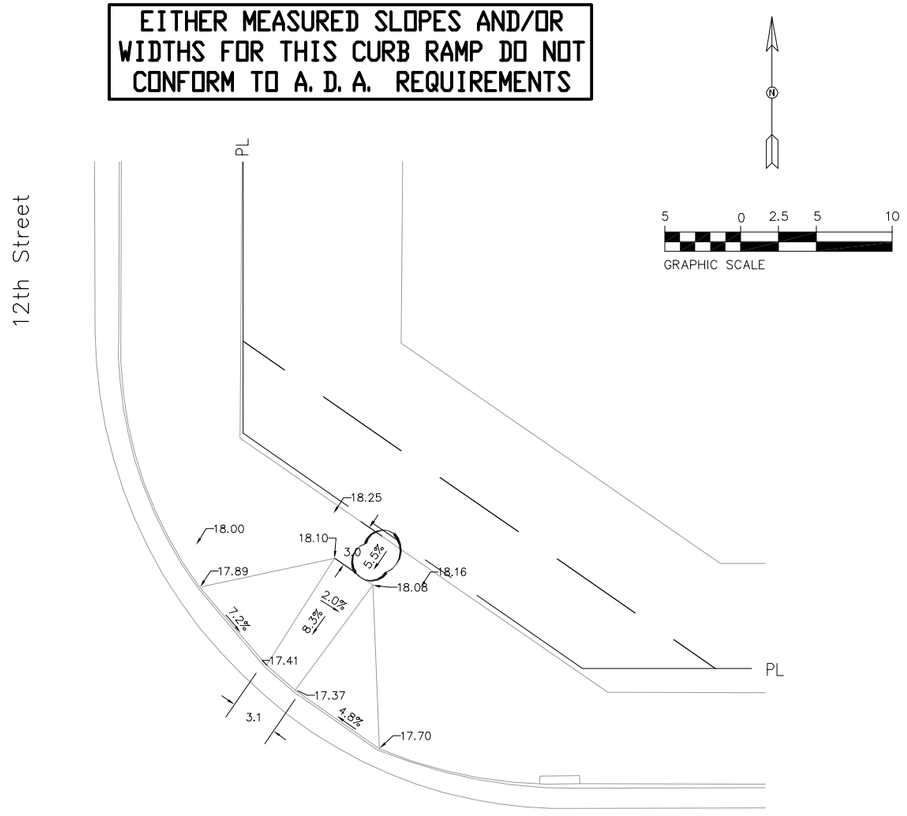
No Revisions:	
Revised:	
Void:	

Staking Plan

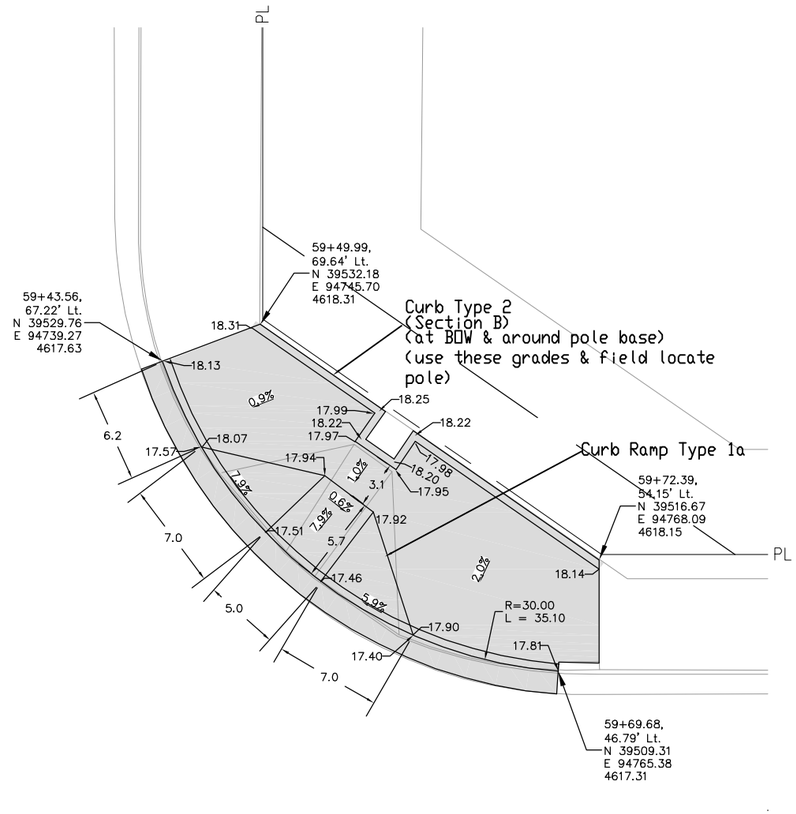
Designer: John Smith		Structure Numbers	
Detailer: John Smith			
Sheet Subset: Staking		Subset Sheets:	6 of 6

Project No./Code
TCSP M555-029
19365
Sheet Number 60

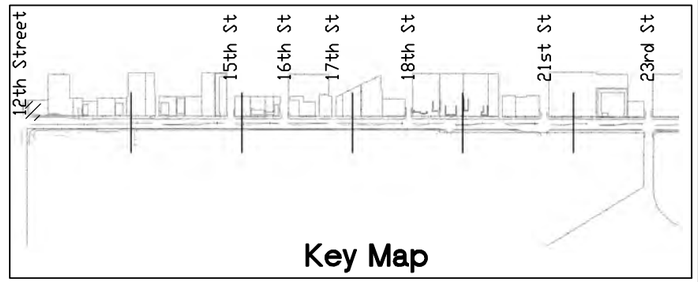
EITHER MEASURED SLOPES AND/OR WIDTHS FOR THIS CURB RAMP DO NOT CONFORM TO A. D. A. REQUIREMENTS



Existing Conditions



Proposed Ramp Improvements



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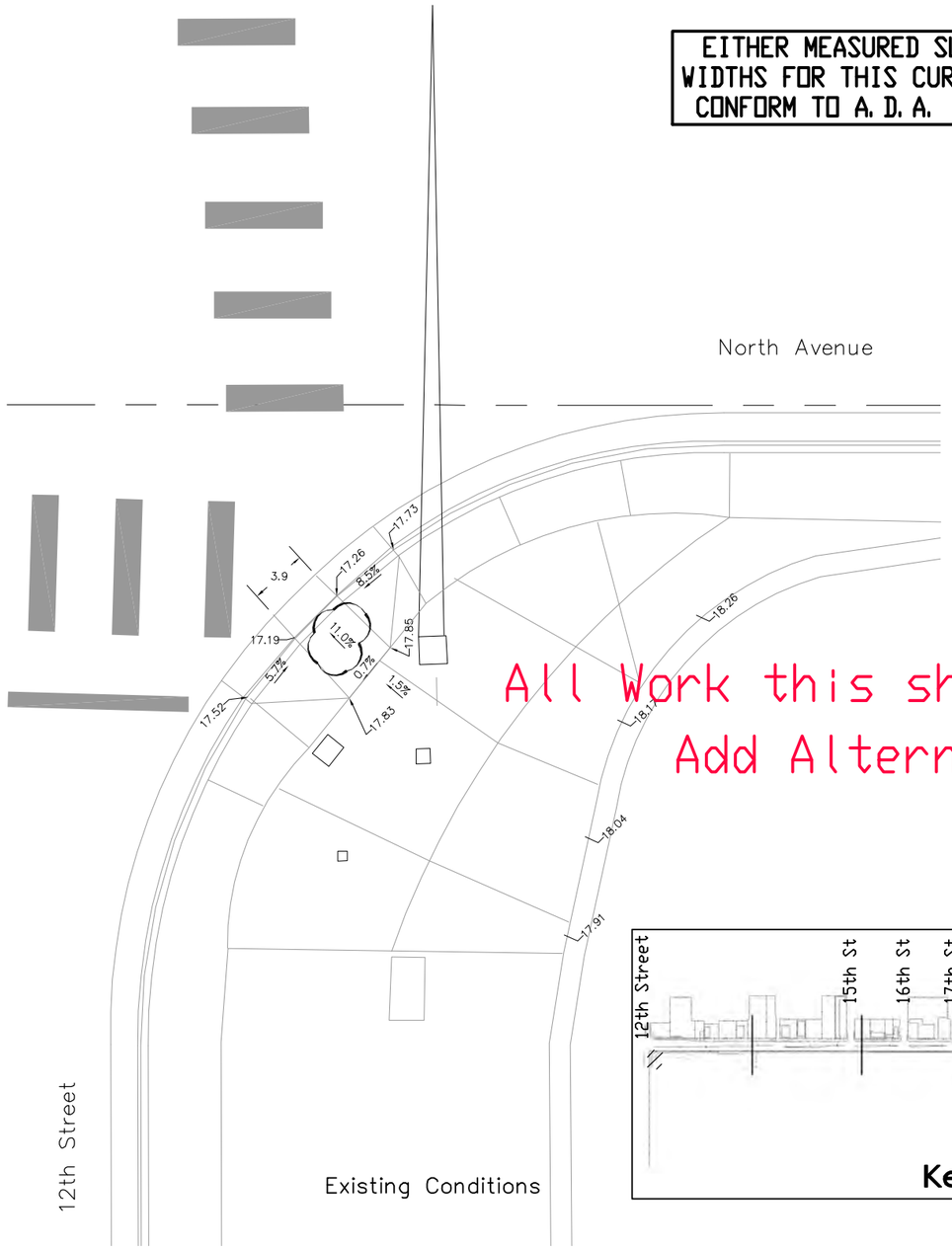
File Name: AT LEFT		Date:	Comments	Init.	CDOT CO	No Revisions:		TCSP M555-029
Horiz. Scale: 1:10 Vert. Scale: NA					606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	Revised:	Designer: John Smith / Detailer: John Smith / Sheet Subset: ICRP / Structure Numbers / Subset Sheets: 1 OF 15	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:		Sheet Number 61

EITHER MEASURED SLOPES AND/OR WIDTHS FOR THIS CURB RAMP DO NOT CONFORM TO A. D. A. REQUIREMENTS

All Work this sheet part of Add Alternate 2



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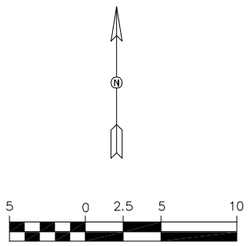
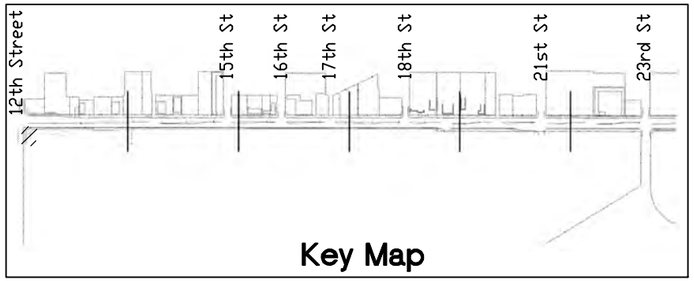
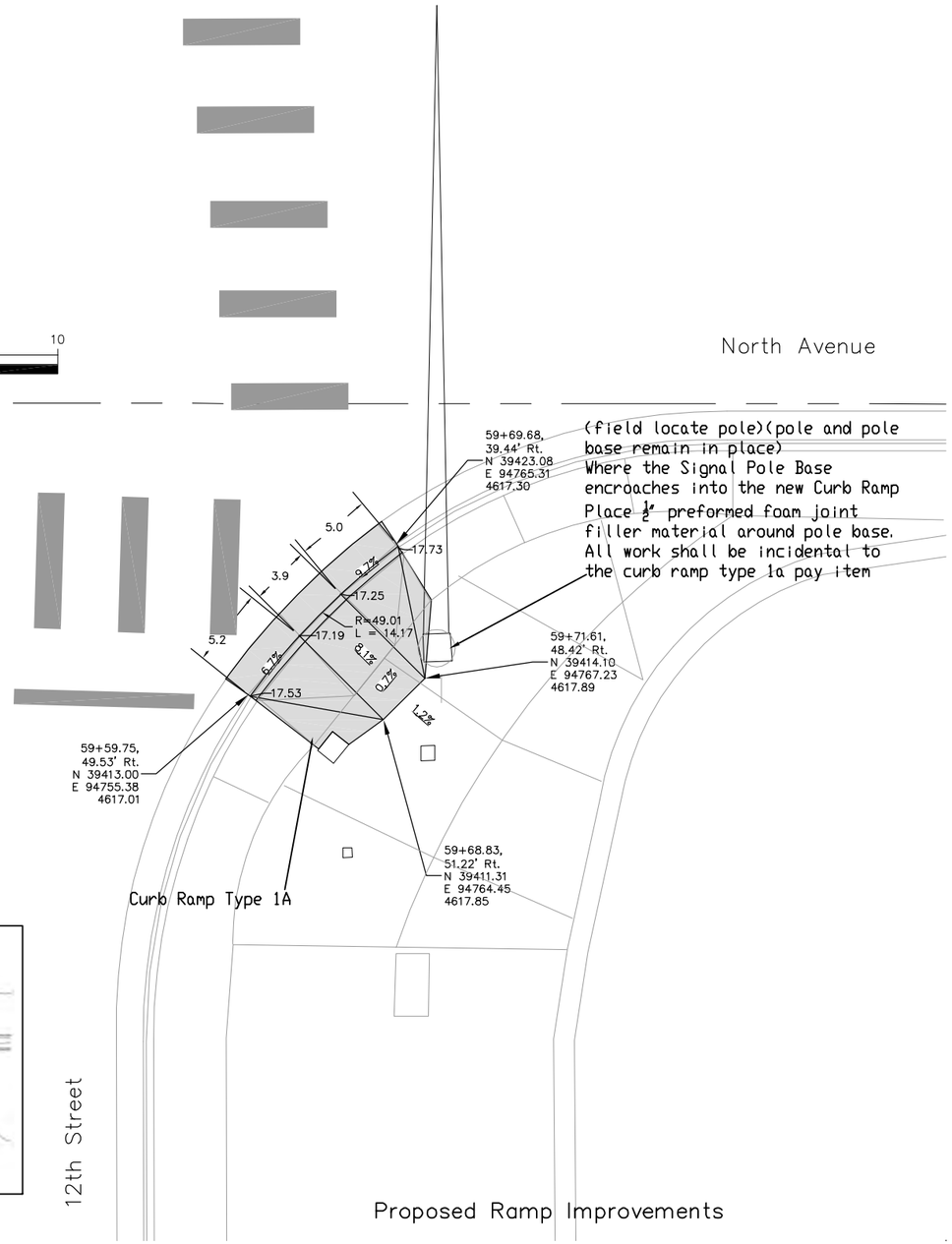




Key Map



Proposed Ramp Improvements

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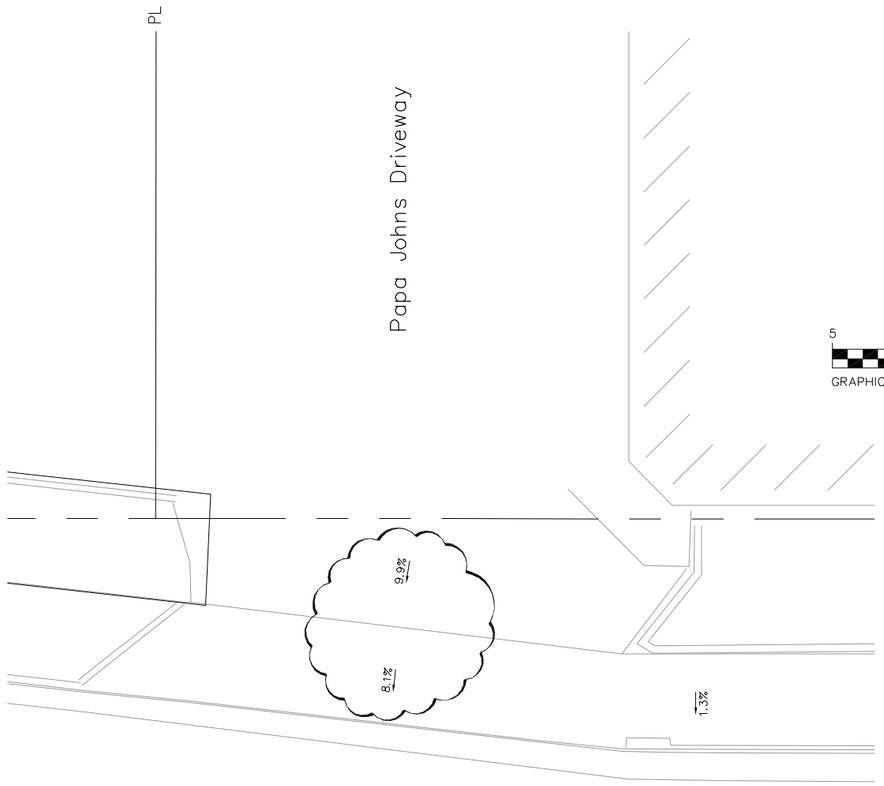
File Name: AT LEFT		Date:	Comments	Init.	
Horiz. Scale: 1:10 Vert. Scale: NA					
Unit Information: City of GJ Unit Leader Initials: DPJ					

Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

As Constructed	Intersection Corner Ramp Plan			Project No./Code
No Revisions:				TCSP M555-029
Revised:	Designer: John Smith	Structure Numbers		19365
Void:	Detailer: John Smith			
	Sheet Subset: ICRP	Subset Sheets:	2 OF 15	Sheet Number 62



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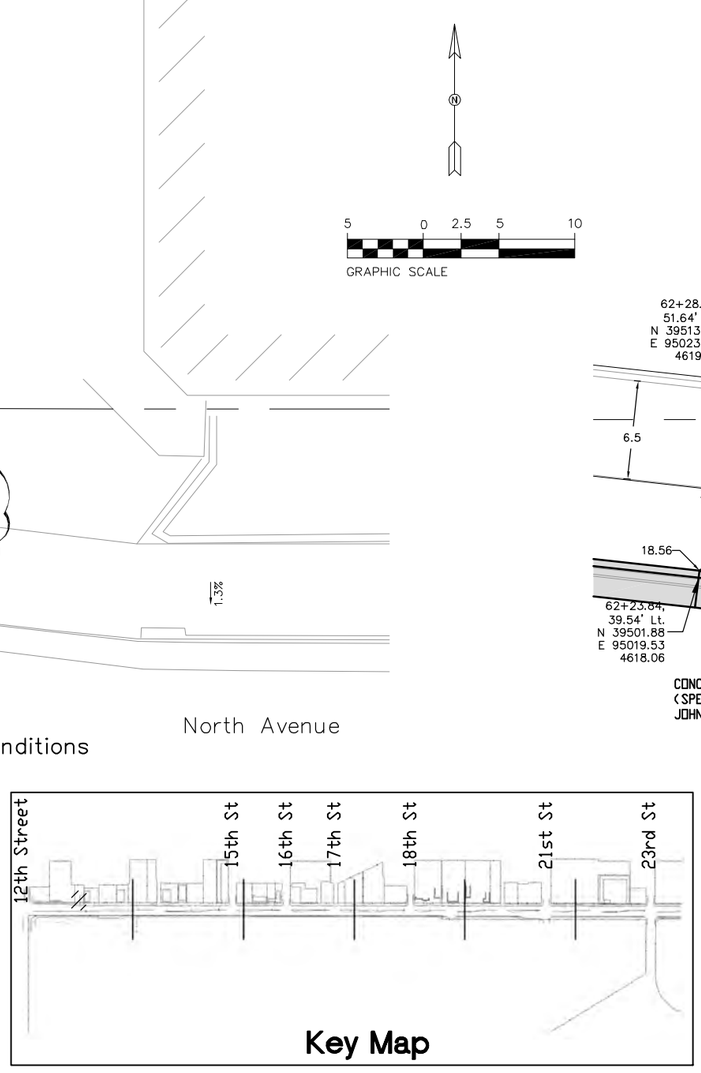

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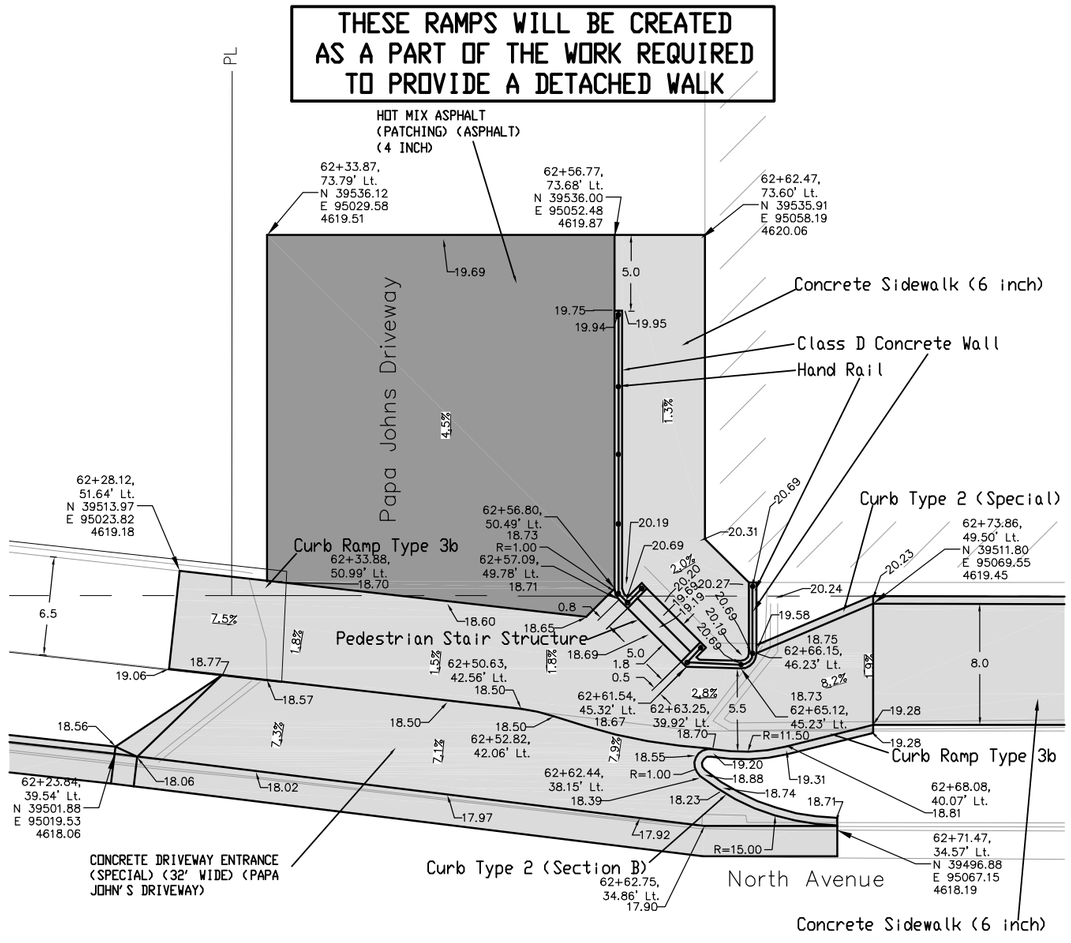

Proposed drive/Ramp Improvements

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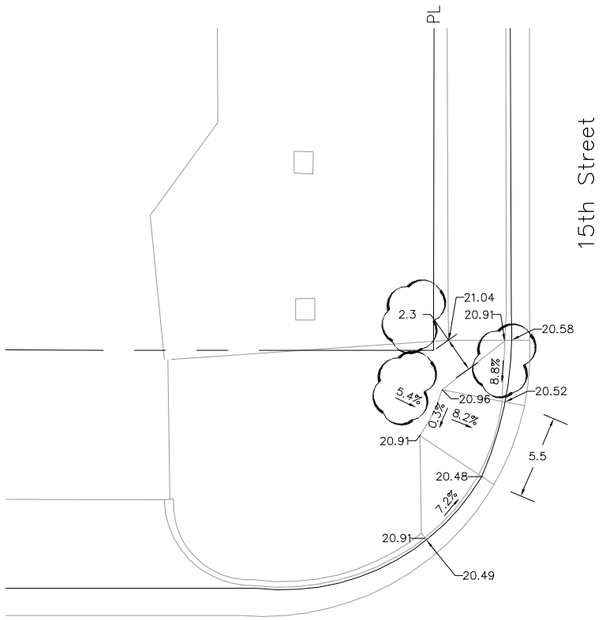
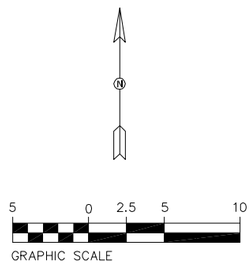
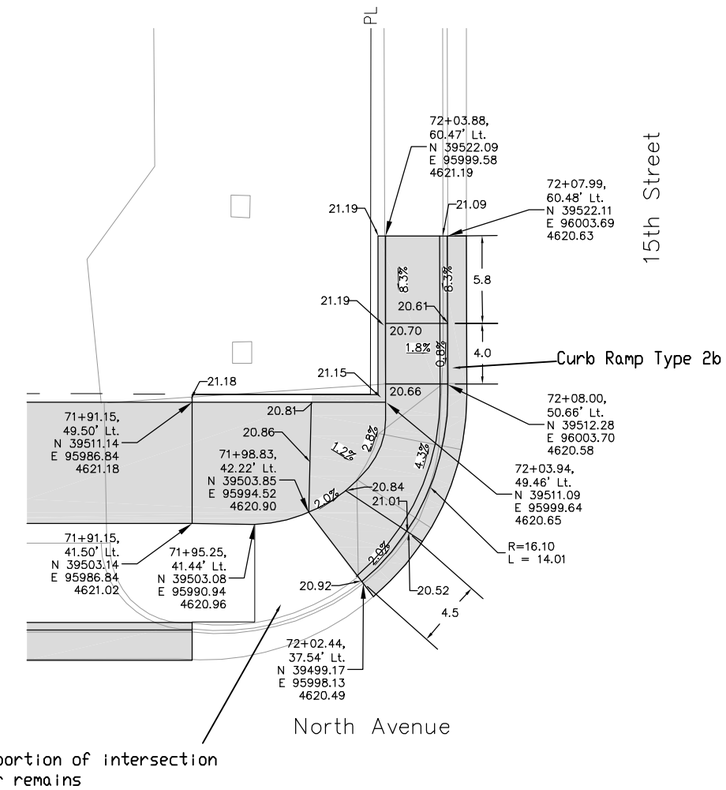
Horiz. Scale: 1:10 Vert. Scale: NA					Phone: 970-683-6351 FAX: 970-683-6369	Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:

Intersection Corner Ramp Plan			Project No./Code
Designer: John Smith	Structure Numbers		TCSP M555-029
Detailer: John Smith			19365
Sheet Subset: ICRP	Subset Sheets: 3 OF 15		Sheet Number 63

EITHER MEASURED SLOPES AND/OR WIDTHS FOR THIS CURB RAMP DO NOT CONFORM TO A. D. A. REQUIREMENTS

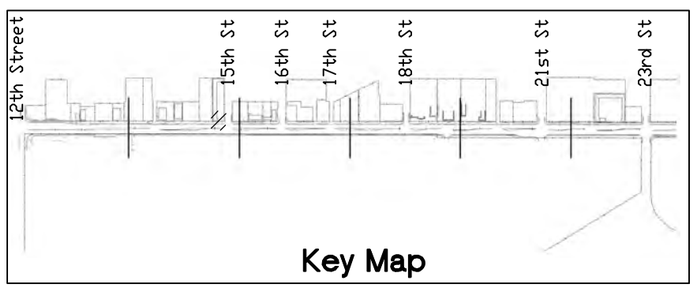






Existing Conditions

Proposed Ramp Improvements



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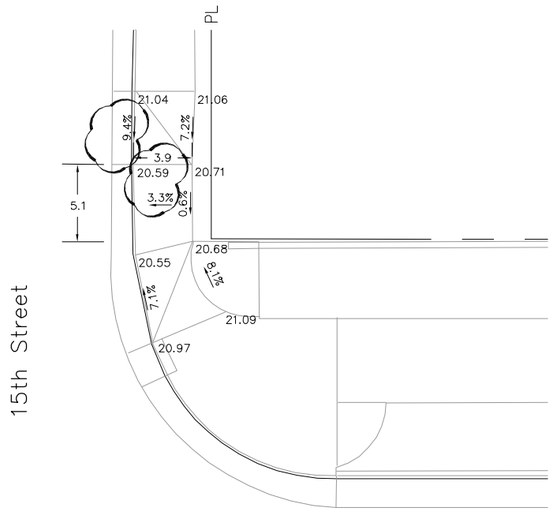
Horiz. Scale: 1:10 Vert. Scale: NA				Region 3 RBB	Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ					Void:

Intersection Corner Ramp Plan			
Designer: John Smith	Structure Numbers		Project No./Code: TCSP M555-029
Detailer: John Smith			19365
Sheet Subset: ICRP	Subset Sheets:	4 OF 15	Sheet Number 64

EITHER MEASURED SLOPES AND/OR WIDTHS FOR THIS CURB RAMP DO NOT CONFORM TO A. D. A. REQUIREMENTS



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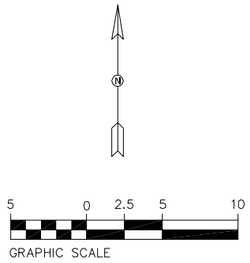
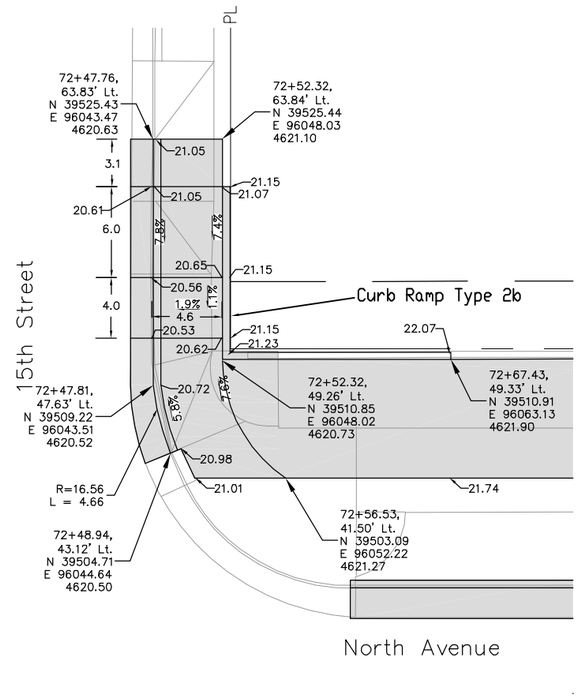
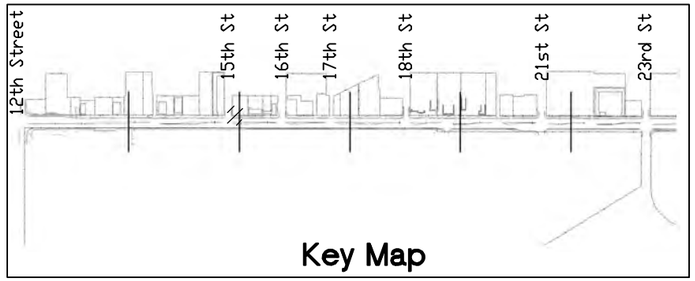




Proposed Ramp Improvements



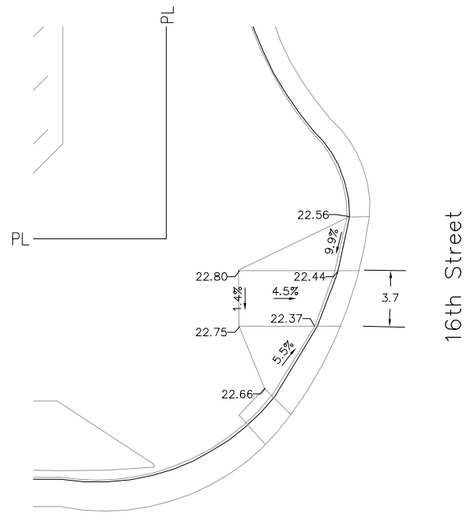
Key Map

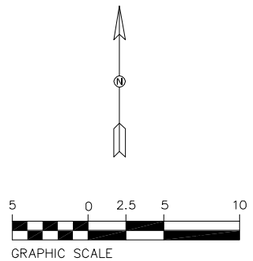
Print Date: AT LEFT		Sheet Revisions			Colorado Department of Transportation	As Constructed
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:
Horiz. Scale: 1:10 Vert. Scale: NA						Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:

Intersection Corner Ramp Plan			Project No./Code
Designer: John Smith	Structure Numbers		TCSP M555-029
Detailer: John Smith			19365
Sheet Subset: ICRP	Subset Sheets: 5 OF 15		Sheet Number 65

N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\roadway plans with city std dwy curts.dwg, 8/20/2015 12:39:32 PM

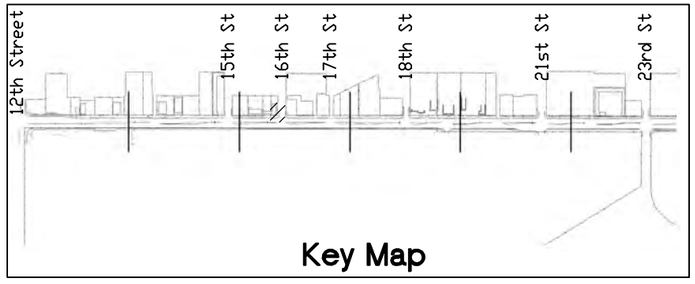
MEASURED SLOPES AND WIDTHS FOR THIS CURB RAMP CONFORM TO A. D. A. REQUIREMENTS





North Avenue

Existing Conditions

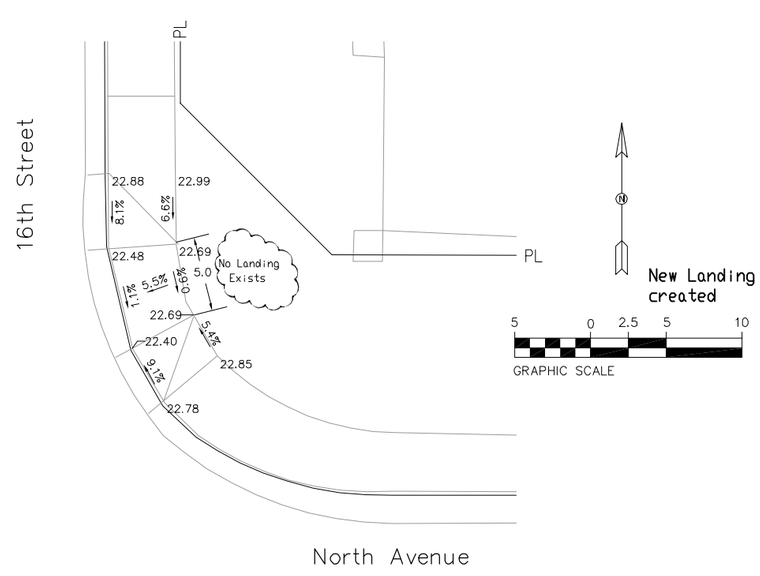


Key Map

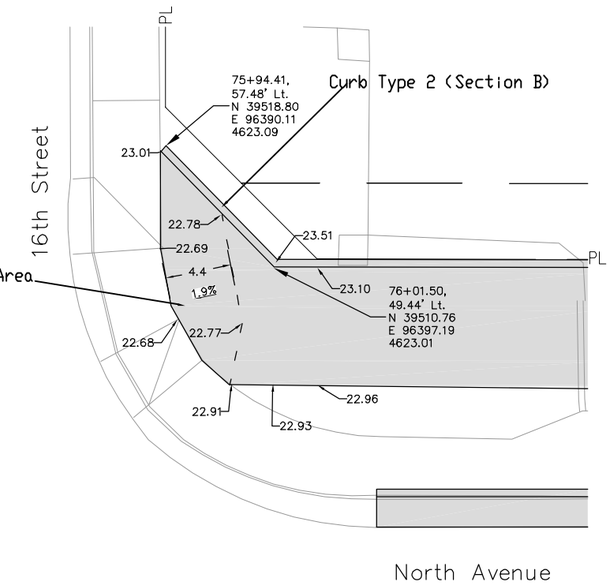
N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\roadway plans with city std dwy curts.dwg, 8/20/2015 12:40:52 PM

Print Date: AT LEFT		Sheet Revisions			Colorado Department of Transportation	As Constructed	Intersection Corner Ramp Plan	Project No./Code
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:		TCSP M555-029
Horiz. Scale: 1:10 Vert. Scale: NA						Revised:	Designer: John Smith / Detailer: John Smith / Sheet Subset: ICRP; Structure Numbers; Subset Sheets: 6 OF 15	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:		Sheet Number 66

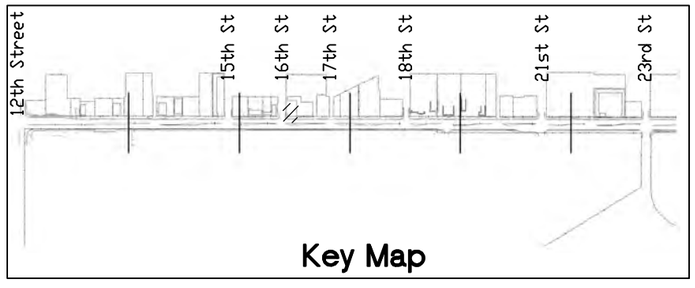
EITHER MEASURED SLOPES AND/OR WIDTHS FOR THIS CURB RAMP DO NOT CONFORM TO A. D. A. REQUIREMENTS



Existing Conditions



Proposed Ramp Improvements

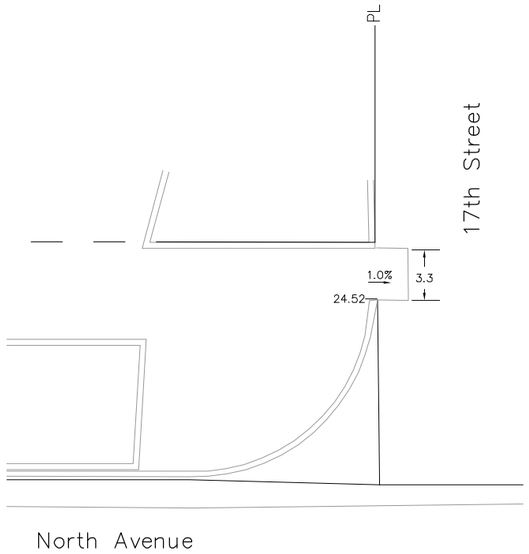


Key Map

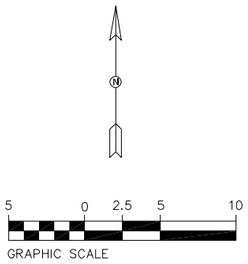
Print Date: AT LEFT		Sheet Revisions			Colorado Department of Transportation	As Constructed	Intersection Corner Ramp Plan	Project No./Code
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:		TCSP M555-029
Horiz. Scale: 1:10 Vert. Scale: NA						Revised:	Designer: John Smith / Detailer: John Smith / Sheet Subset: ICRP / Structure Numbers / Subset Sheets: 7 OF 15	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:		Sheet Number 67

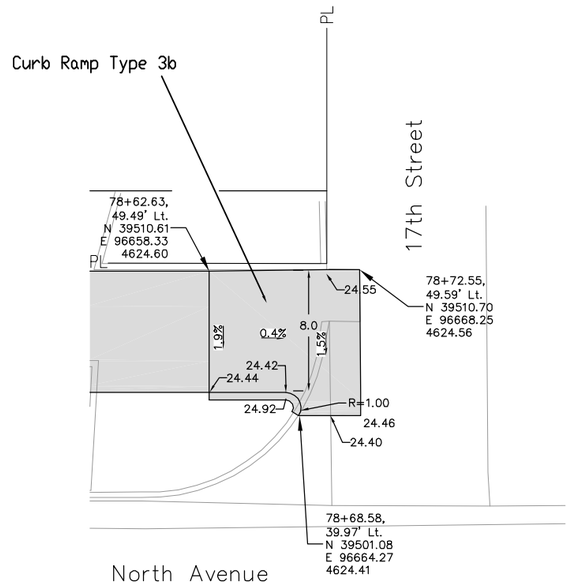
N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\roadway plans with city std dwy cuts.dwg, 8/20/2015 12:41:43 PM

THIS RAMP WILL BE REPLACED
AS A PART OF THE WORK REQUIRED
TO PROVIDE A DETACHED WALK

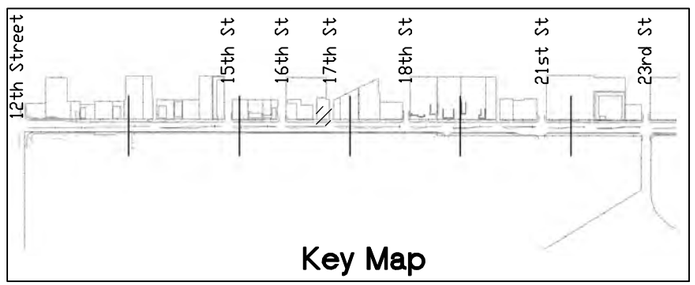


Existing Conditions





Proposed Ramp Improvements

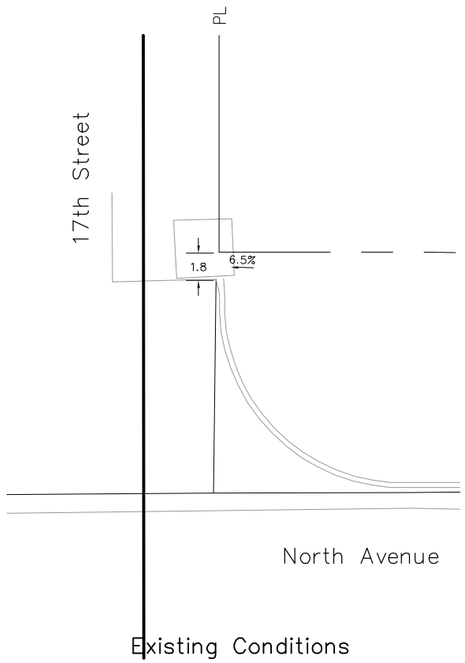


Key Map

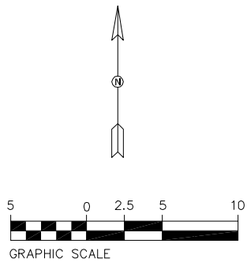
Print Date: AT LEFT		Sheet Revisions			Colorado Department of Transportation	As Constructed	Intersection Corner Ramp Plan	Project No./Code
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:		TCSP M555-029
Horiz. Scale: 1:10 Vert. Scale: NA						Revised:	Designer: John Smith / Structure Numbers	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:	Detailer: John Smith / Sheet Subset: ICRP / Subset Sheets: 8 OF 15	Sheet Number 68

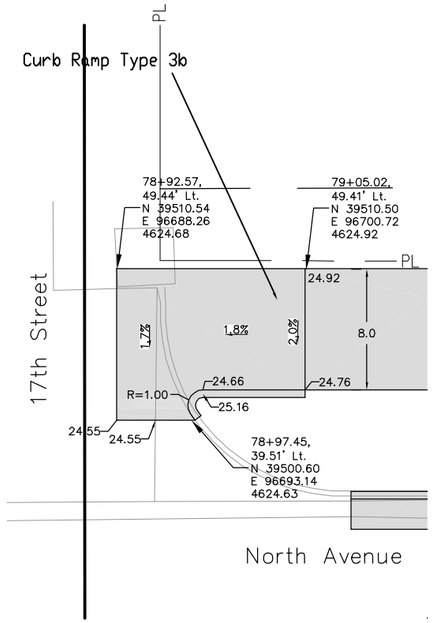
N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\roadway plans with city std dwy cuts.dwg, 8/20/2015 12:42:52 PM

THIS RAMP WILL BE REPLACED
AS A PART OF THE WORK REQUIRED
TO PROVIDE A DETACHED WALK

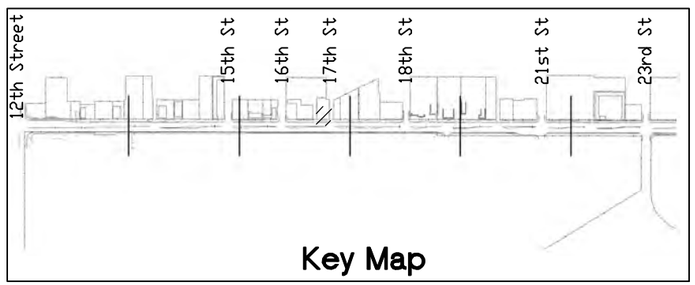


Existing Conditions





Proposed Ramp Improvements



Key Map

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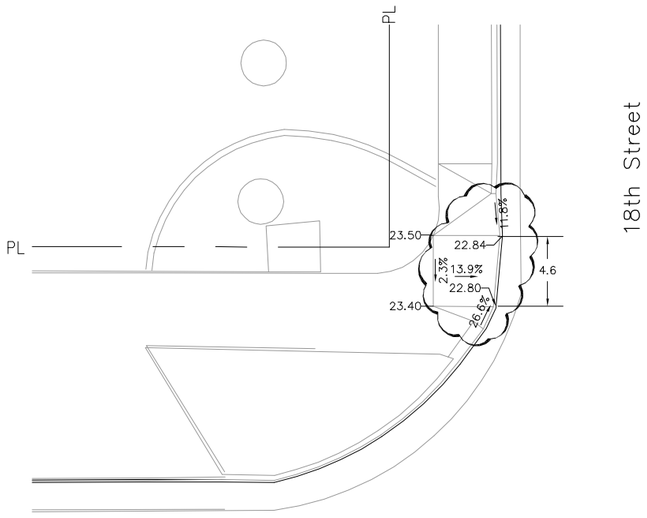
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:		TCSP M555-029
Horiz. Scale: 1:10 Vert. Scale: NA						Revised:	Designer: John Smith / Detailer: John Smith / Sheet Subset: ICRP / Structure Numbers / Subset Sheets: 9 OF 15	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:		Sheet Number 69

EITHER MEASURED SLOPES AND/OR WIDTHS FOR THIS CURB RAMP DO NOT CONFORM TO A. D. A. REQUIREMENTS



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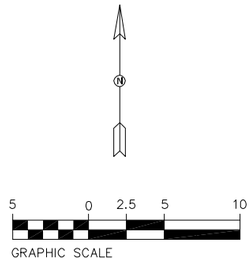
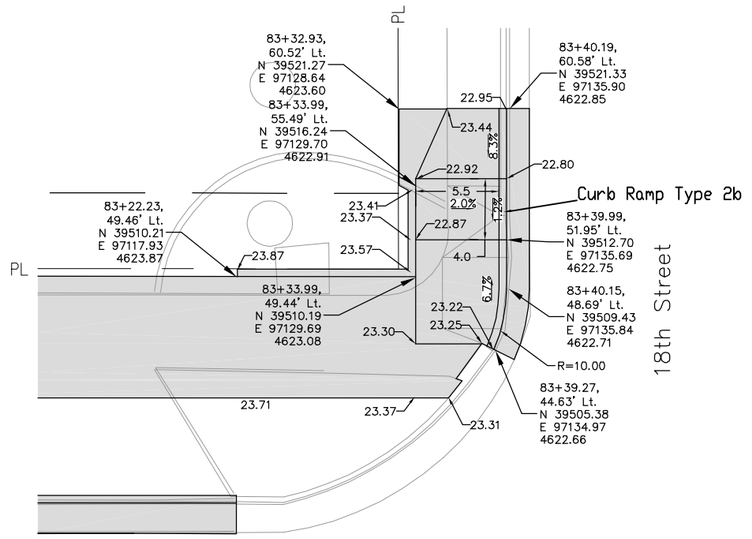
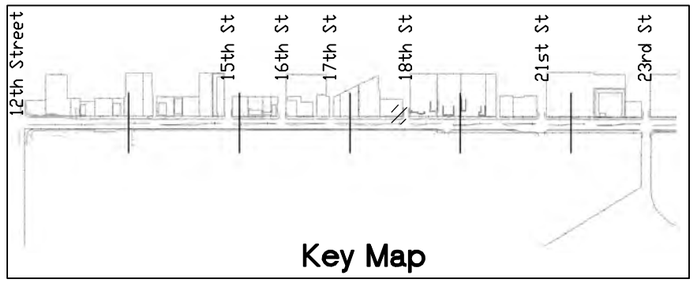




Proposed Ramp Improvements



Key Map

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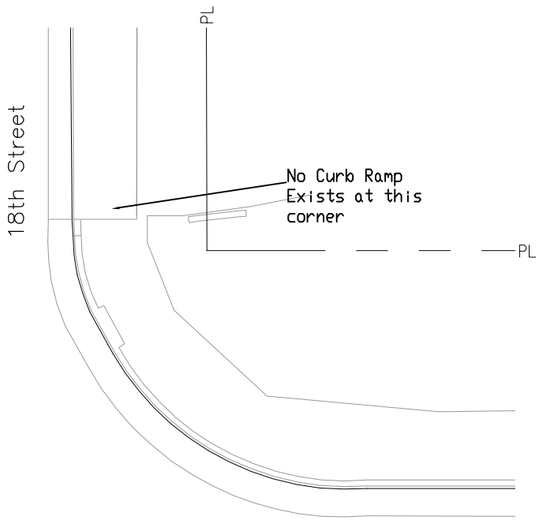
Print Date: AT LEFT		Sheet Revisions			Colorado Department of Transportation	As Constructed	Intersection Corner Ramp Plan	Project No./Code
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:		TCSP M555-029
Horiz. Scale: 1:10 Vert. Scale: NA						Revised:	Designer: John Smith / Detailer: John Smith	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:	Sheet Subset: ICRP / Structure Numbers / Subset Sheets: 10 OF 15	Sheet Number 70

EITHER MEASURED SLOPES AND/OR WIDTHS FOR THIS CURB RAMP DO NOT CONFORM TO A. D. A. REQUIREMENTS



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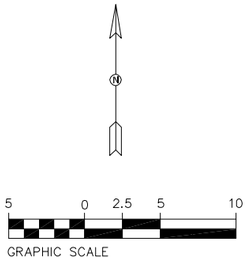
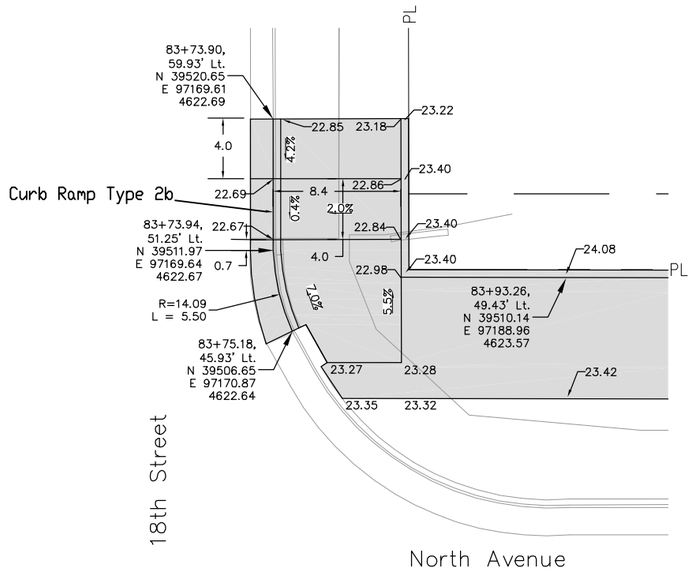
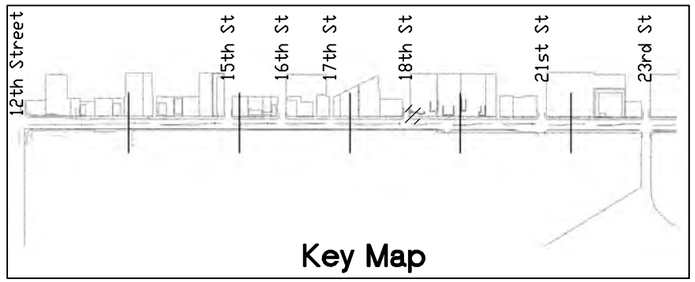




Proposed Ramp Improvements

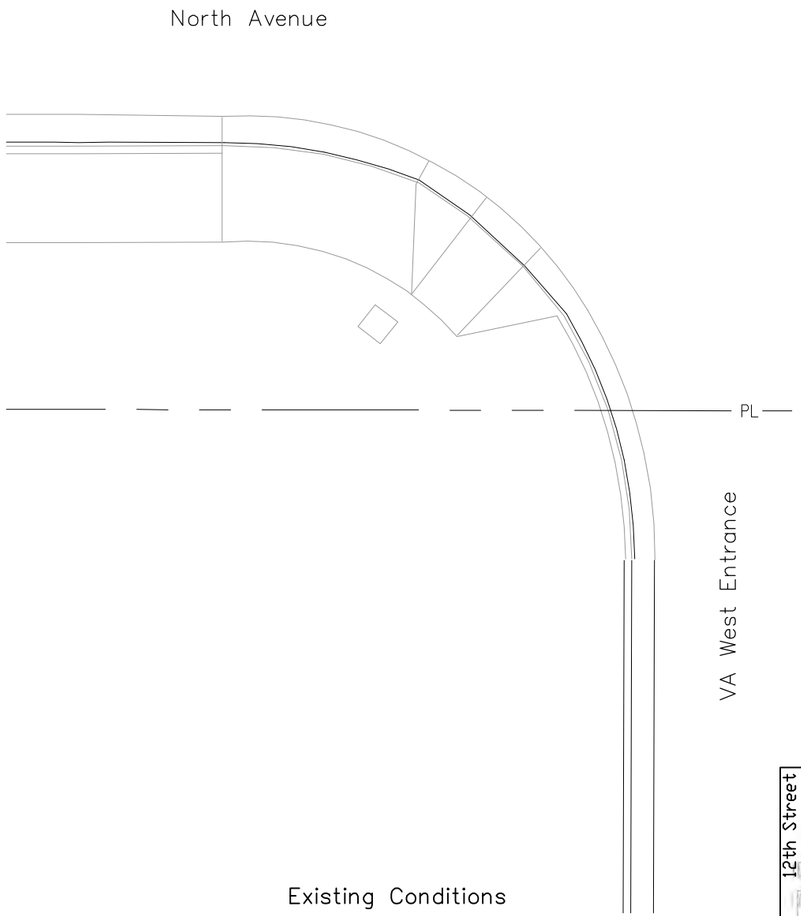


Key Map

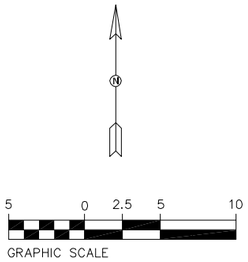
Print Date: AT LEFT		Sheet Revisions			Colorado Department of Transportation	As Constructed	Intersection Corner Ramp Plan	Project No./Code
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:		TCSP M555-029
Horiz. Scale: 1:10 Vert. Scale: NA						Revised:	Designer: John Smith / Detailer: John Smith / Sheet Subset: ICRP / Structure Numbers / Subset Sheets: 11 OF 15	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:		Sheet Number 71

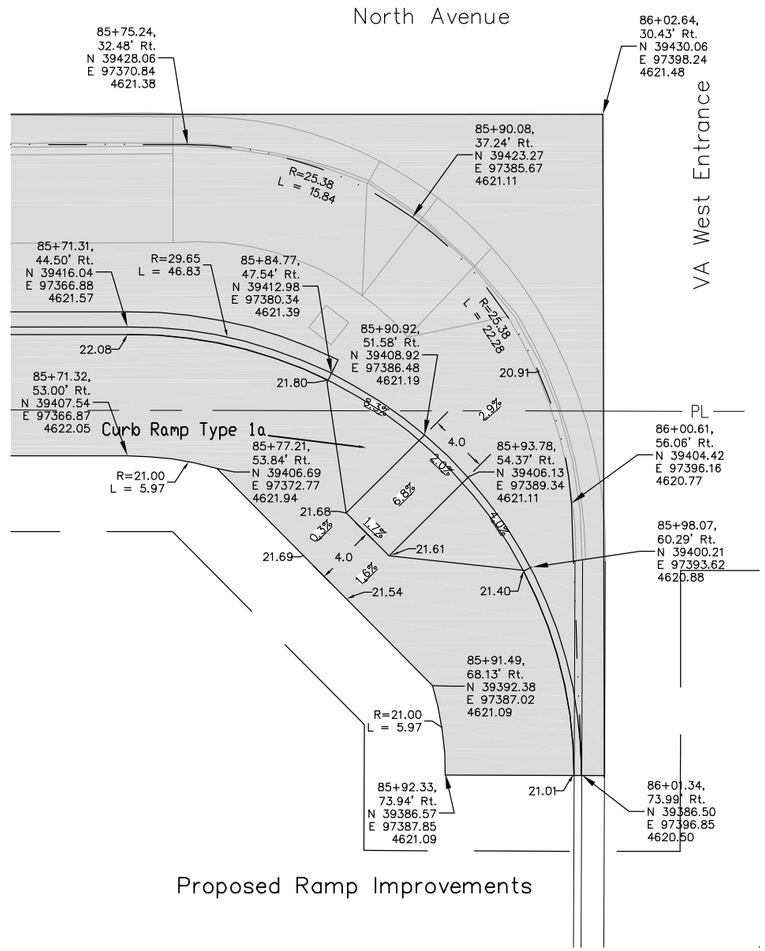
N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\roadway plans with city std dwy cuts.dwg, 8/20/2015 12:45:56 PM

THIS RAMP WILL BE REPLACED AS A PART OF THE WORK REQUIRED TO PROVIDE A RIGHT TURN LANE

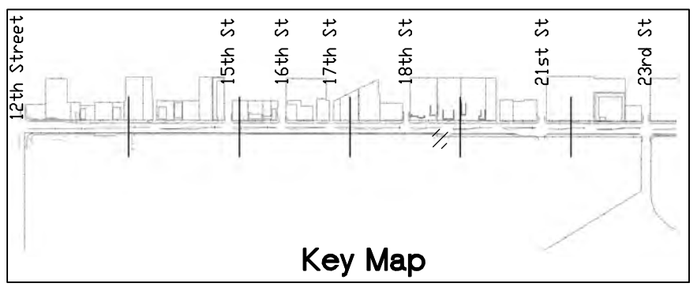


Existing Conditions





Proposed Ramp Improvements



Key Map

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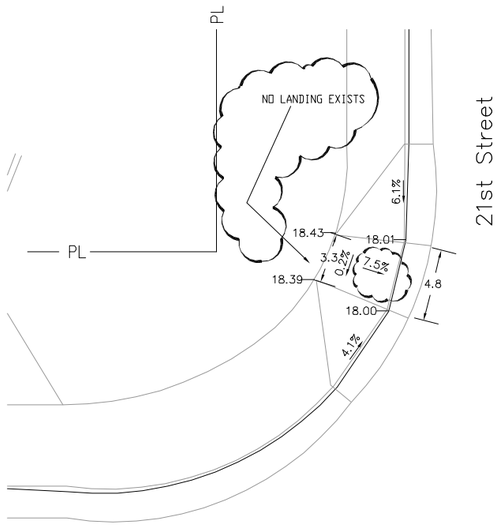
Print Date: AT LEFT		Sheet Revisions			Colorado Department of Transportation	As Constructed	Intersection Corner Ramp Plan	Project No./Code
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:		TCSP M555-029
Horiz. Scale: 1:10 Vert. Scale: NA						Revised:	Designer: John Smith / Detailer: John Smith / Sheet Subset: ICRP / Structure Numbers / Subset Sheets: 12 OF 15	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:		Sheet Number 72

EITHER MEASURED SLOPES AND/OR WIDTHS FOR THIS CURB RAMP DO NOT CONFORM TO A. D. A. REQUIREMENTS



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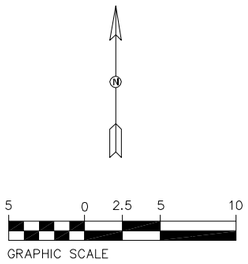
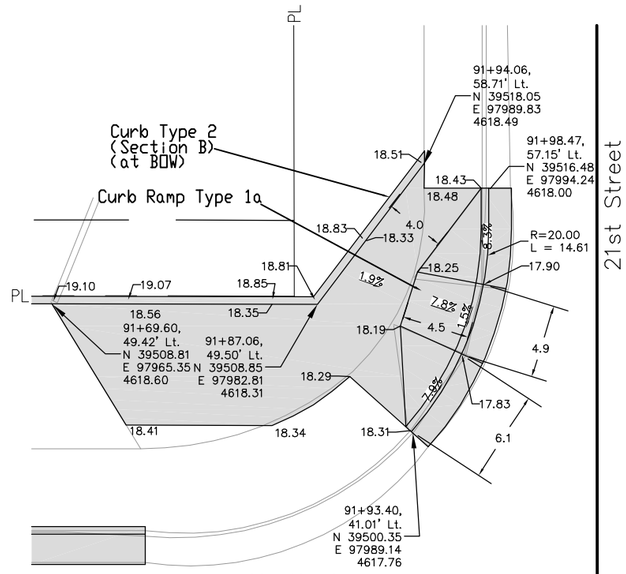
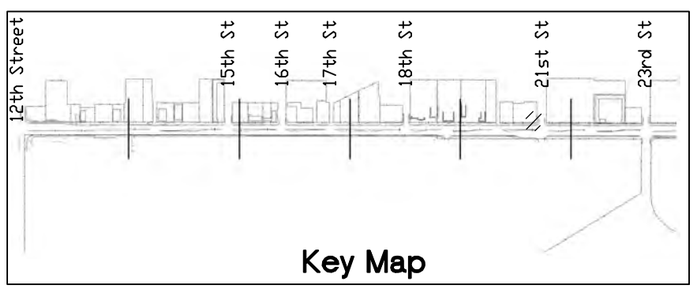




Proposed Ramp Improvements

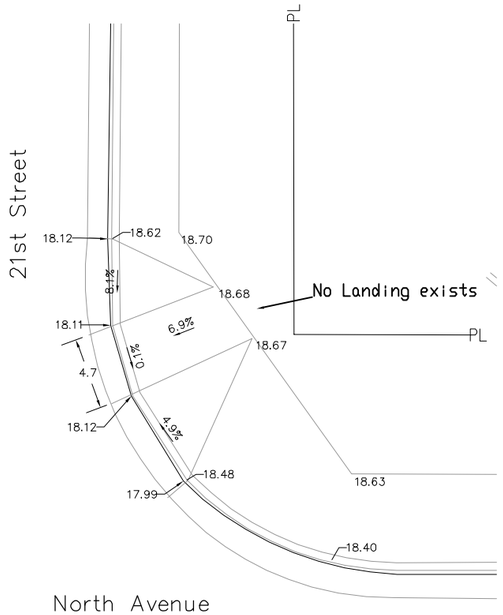


Key Map

Print Date: AT LEFT		Sheet Revisions			Colorado Department of Transportation	As Constructed	Intersection Corner Ramp Plan	Project No./Code
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:		TCSP M555-029
Horiz. Scale: 1:10 Vert. Scale: NA						Revised:	Designer: John Smith / Detailer: John Smith / Sheet Subset: ICRP / Structure Numbers / Subset Sheets: 13 OF 15	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:		Sheet Number 73

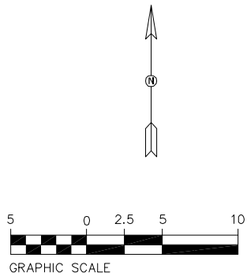
N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\roadway plans with city std dwy curts.dwg, 8/20/2015 12:48:10 PM

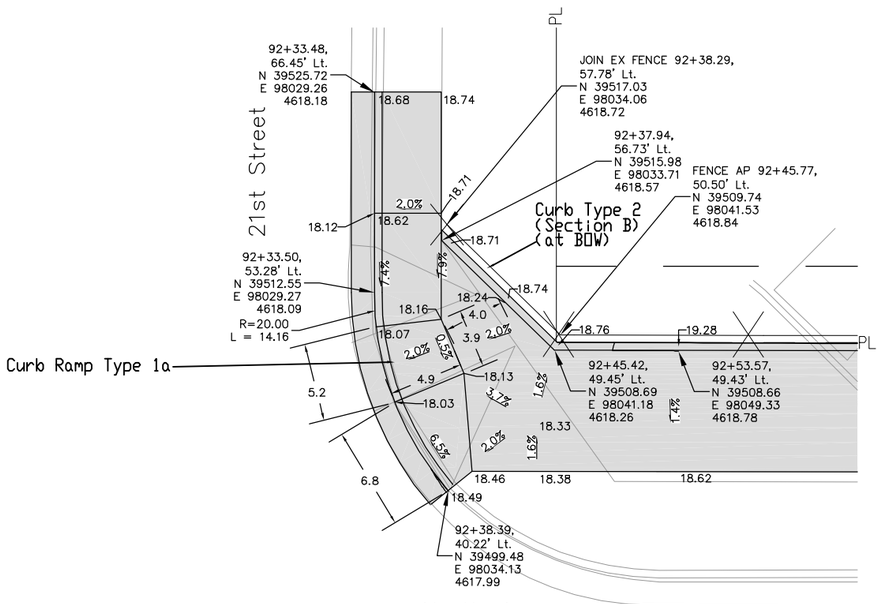
EITHER MEASURED SLOPES AND/OR WIDTHS FOR THIS CURB RAMP DO NOT CONFORM TO A. D. A. REQUIREMENTS



North Avenue

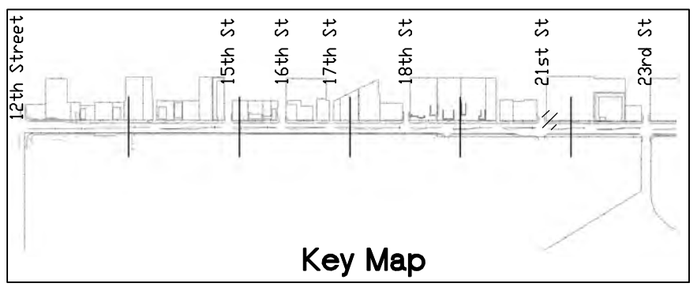
Existing Conditions





North Avenue

Proposed Ramp Improvements

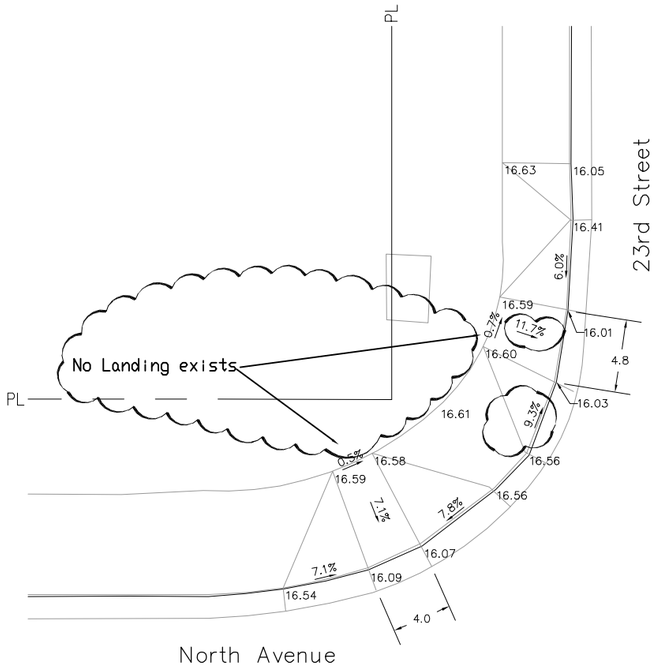


Key Map

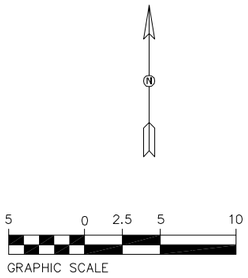
Print Date: AT LEFT		Sheet Revisions			Colorado Department of Transportation	As Constructed	Intersection Corner Ramp Plan	Project No./Code
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:		TCSP M555-029
Horiz. Scale: 1:10 Vert. Scale: NA						Revised:	Designer: John Smith / Detailer: John Smith / Sheet Subset: ICRP	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:	Structure Numbers / Subset Sheets: 14 OF 15	Sheet Number 74

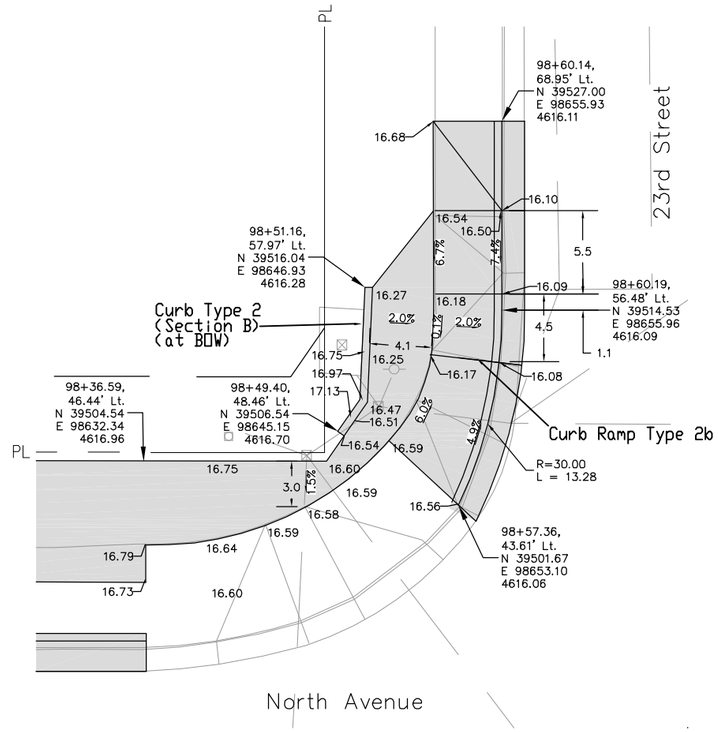
N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\roadway plans with city std dwy cuts.dwg, 8/20/2015 12:49:11 PM

EITHER MEASURED SLOPES AND/OR WIDTHS FOR THIS CURB RAMP DO NOT CONFORM TO A. D. A. REQUIREMENTS

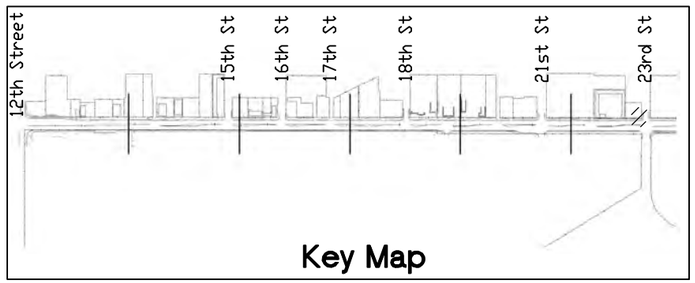


Existing Conditions





Proposed Ramp Improvements



Key Map

Print Date: AT LEFT		Sheet Revisions			Colorado Department of Transportation
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369
Horiz. Scale: 1:10 Vert. Scale: NA					Region 3 RBB
Unit Information: City of GJ Unit Leader Initials: DPJ					

As Constructed	Intersection Corner Ramp Plan			Project No./Code
No Revisions:				TCSP M555-029
Revised:	Designer: John Smith	Structure Numbers		19365
Void:	Detailer: John Smith			
	Sheet Subset: ICRP	Subset Sheets: 15 OF 15		Sheet Number 75

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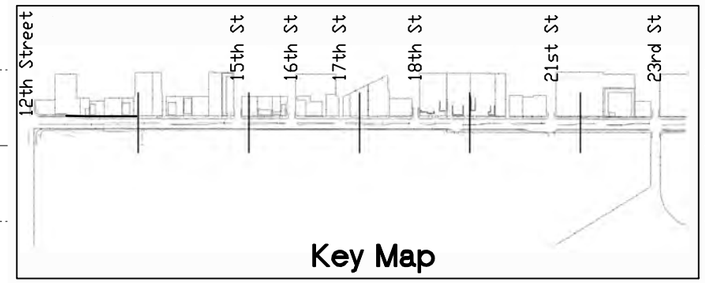


Key Map

"FOR INFORMATION ONLY"
SEE STAKING PLAN FOR
PROPOSED GRADES

PVI STA: 65+24±
PVI ELEV: 4620.50
AD: −7.00%
K: 3.57
LENGTH: 25.00
HP: 65+22±
HP EI: 4620.29

STA 62+52±
ELEV 4618.60

STA 62+35±
ELEV 4618.60

STA 62+25±
ELEV 4619.18

STA 62+63±
ELEV 4619.41

STA 62+94±
ELEV 4619.51

STA 63+26±
ELEV 4619.50

STA 63+50±
ELEV 4618.90

STA 63+85±
ELEV 4619.01

STA 64+20±
ELEV 4619.45

STA 64+41±
ELEV 4619.50

STA 64+65±
ELEV 4619.36

STA 64+88±
ELEV 4619.45

BVC STA 65+12±
ELEV 4620.13

EVC STA 65+37±
ELEV 4619.99

STA 65+89±
ELEV 4619.41

STA 65+50±
ELEV 4619.45

5.33%
0.00%
5.33%
0.32%
0.01%
2.53%
0.32%
1.24%
0.25%
0.59%
0.39%
2.95%
4.05%
0.11%
0.84%

4650
4645
4640
4635
4630
4625
4620
4615
4610

59+00
59+50
60+00
60+50
61+00
61+50
62+00
62+50
63+00
63+50
64+00
64+50
65+00
65+50
66+00

North Back of Walk Profile

N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\roadway plans with city std dwy cuts.dwg, 8/20/2015 12:51:10 PM

Print Date: AT LEFT			
File Name: AT LEFT			
Horiz. Scale: 1:50	Vert. Scale: NA		
Unit Information: City of GJ	Unit Leader Initials: DPJ		

0000

Sheet Revisions

Date:	Comments	Init.

Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

As Constructed
No Revisions:
Revised:
Void:

Roadway Profile

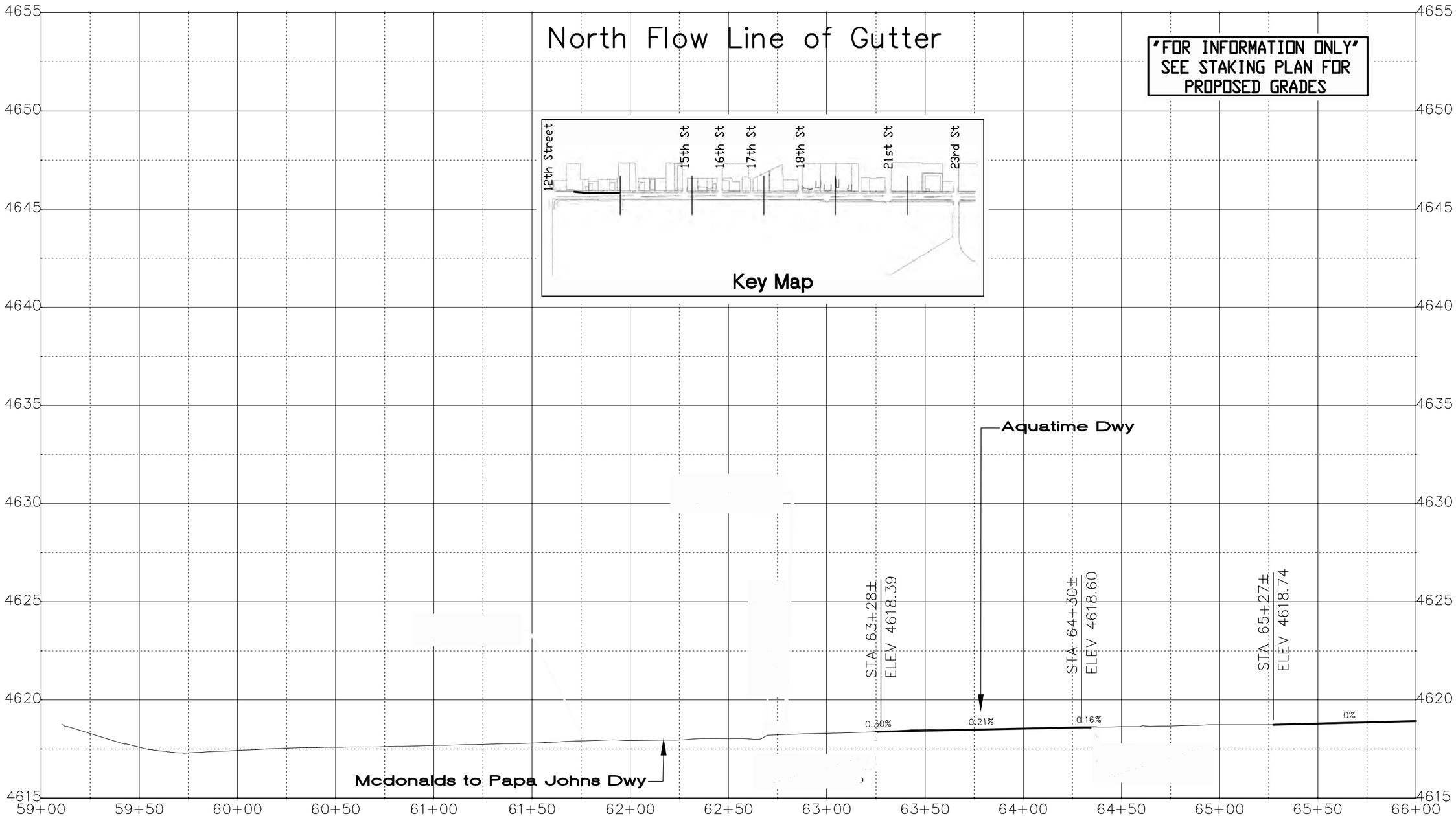
Designer: John Smith
Detailer: John Smith
Sheet Subset: RD PRO
Structure Numbers
Subset Sheets: 1 of 17

Project No./Code
TCSP M555-029
19365
Sheet Number 76

North Flow Line of Gutter

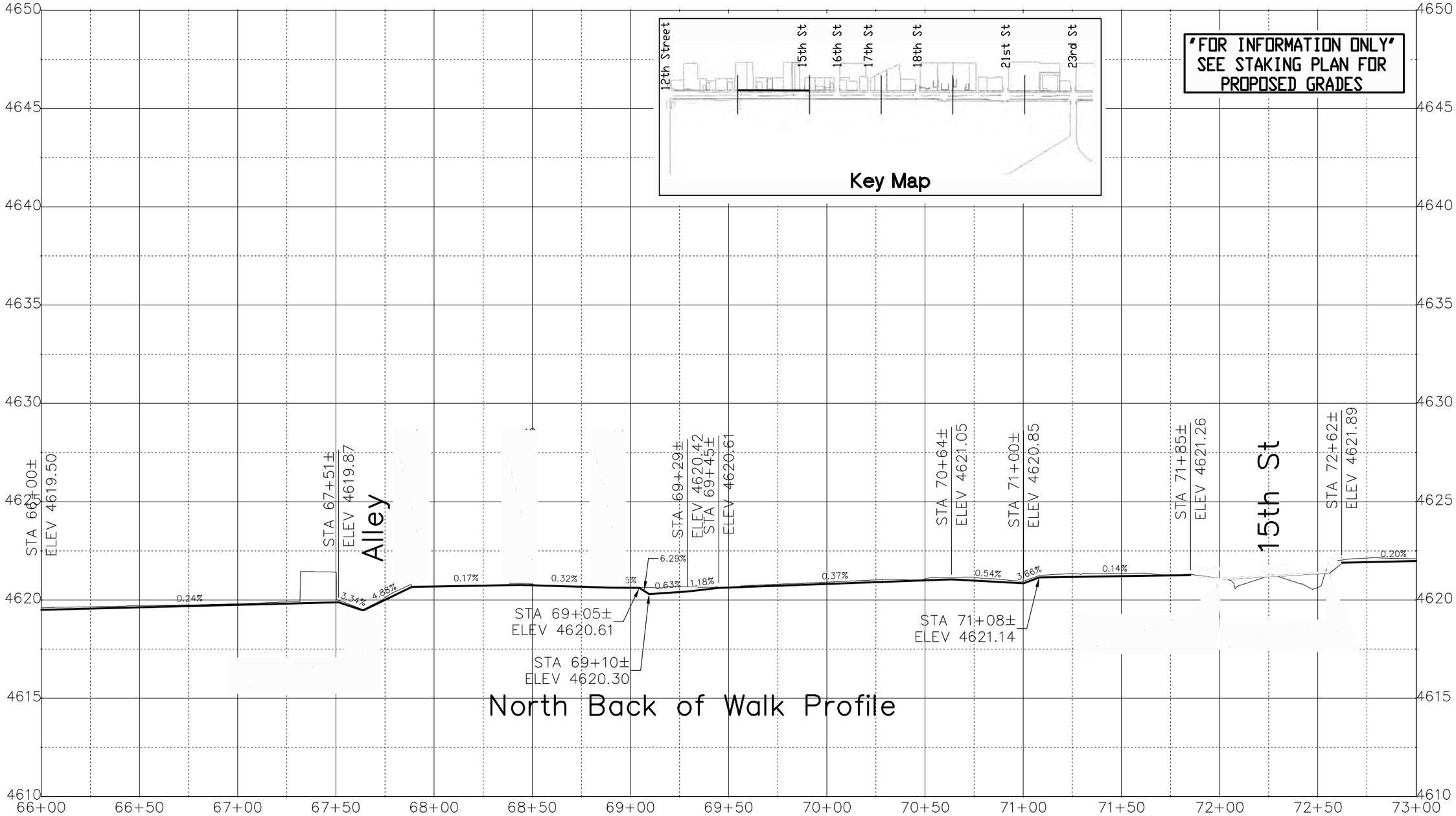
"FOR INFORMATION ONLY"
SEE STAKING PLAN FOR
PROPOSED GRADES

Key Map



N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\roadway plans with city std dwy curts.dwg, 8/20/2015 12:51:50 PM

Print Date: AT LEFT	0000	Sheet Revisions			Colorado Department of Transportation	As Constructed	Roadway Profile	Project No./Code
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:	Designer: John Smith	TCSP M555-029
Horiz. Scale: 1:50 Vert. Scale: NA						Revised:	Detailer: John Smith	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:	Sheet Subset: RD PRO	Structure Numbers
							Subset Sheets: 2 of 17	Sheet Number 77



N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\roadway plans with city std dwy curts.dwg, 8/28/2015 6:56:17 AM

Print Date: AT LEFT	0000	Sheet Revisions	Colorado Department of Transportation	As Constructed	Roadway Profile
File Name: AT LEFT		Date: / Comments / Init.	606 South 9th Street	No Revisions:	Designer: John Smith
Horiz. Scale: 1:50 Vert. Scale: NA			Grand Junction, CO, 81501	Revised:	Detailer: John Smith
Unit Information: City of GJ Unit Leader Initials: DPJ			Phone: 970-683-6351 FAX: 970-683-6369	Void:	Sheet Subset: RD PRO
			Region 3 RBB		Structure Numbers / Subset Sheets: 3 of 17

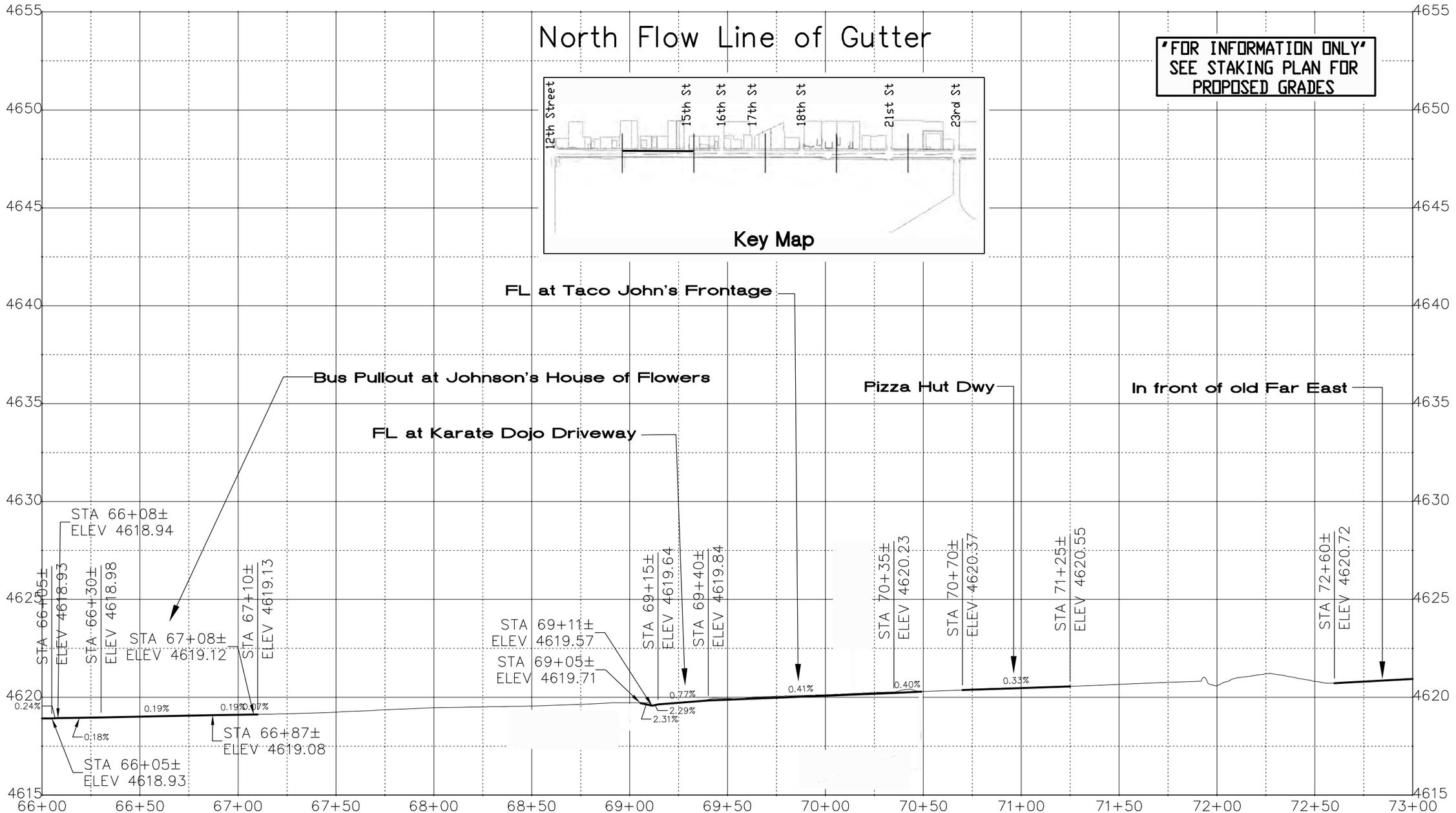
Project No./Code: TCSP M555-029 / 19365

Sheet Number 78

North Flow Line of Gutter

'FOR INFORMATION ONLY'
SEE STAKING PLAN FOR PROPOSED GRADES

Key Map



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Print Date: AT LEFT		Sheet Revisions	
File Name: AT LEFT		Date:	Comments	Init.
Horiz. Scale: 1:50 Vert. Scale: NA				
Unit Information: City of GJ Unit Leader Initials: DPJ				

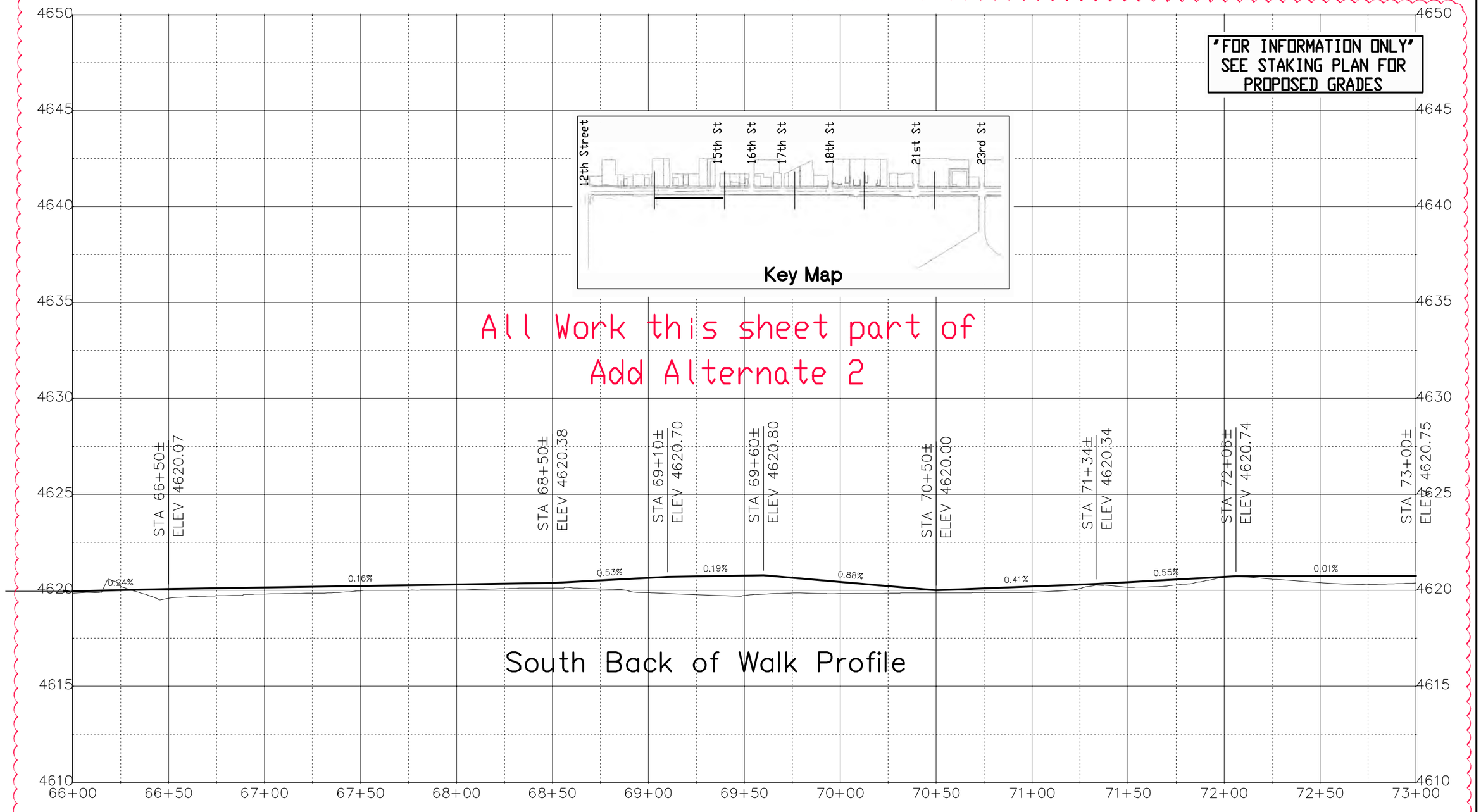
Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

As Constructed	Roadway Profile	Project No./Code
No Revisions:		TCSP M555-029
Revised:	Designer: John Smith / Structure Numbers	19365
Void:	Detailer: John Smith	Sheet Number 79
	Sheet Subset: RD PRO / Subset Sheets: 4 of 17	

'FOR INFORMATION ONLY'
SEE STAKING PLAN FOR
PROPOSED GRADES

Key Map

All Work this sheet part of
Add Alternate 2



South Back of Walk Profile

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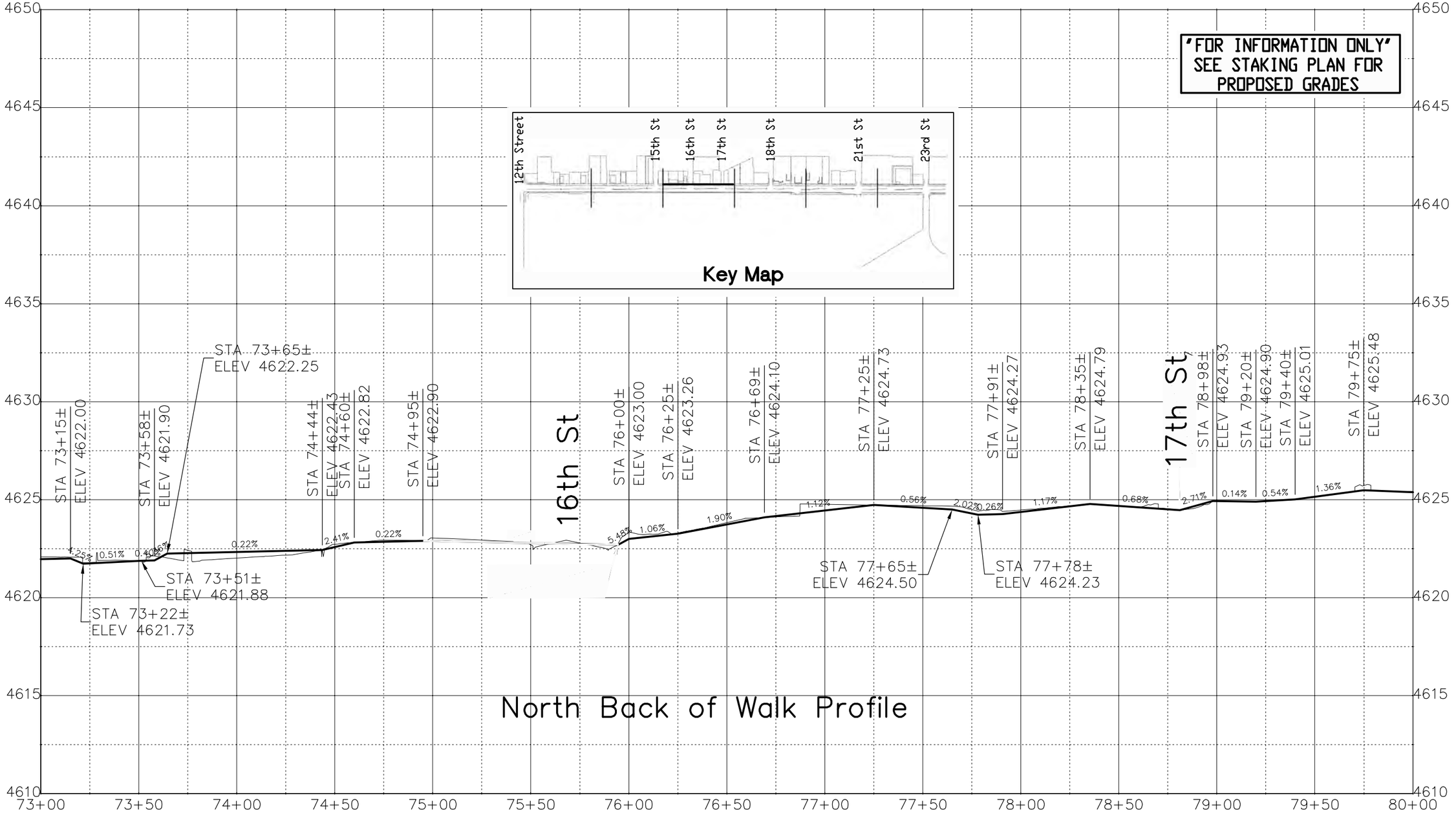
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street
Horiz. Scale: 1:50 Vert. Scale: NA					Grand Junction, CO, 81501
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369
					Region 3 RBB

As Constructed	Roadway Profile		Project No./Code
No Revisions:			TCSP M555-029
Revised:	Designer: John Smith	Structure Numbers	19365
Void:	Detailer: John Smith		Sheet Number 80
	Sheet Subset: RD PRO	Subset Sheets: 5 of 17	

"FOR INFORMATION ONLY"
SEE STAKING PLAN FOR
PROPOSED GRADES

Key Map



North Back of Walk Profile

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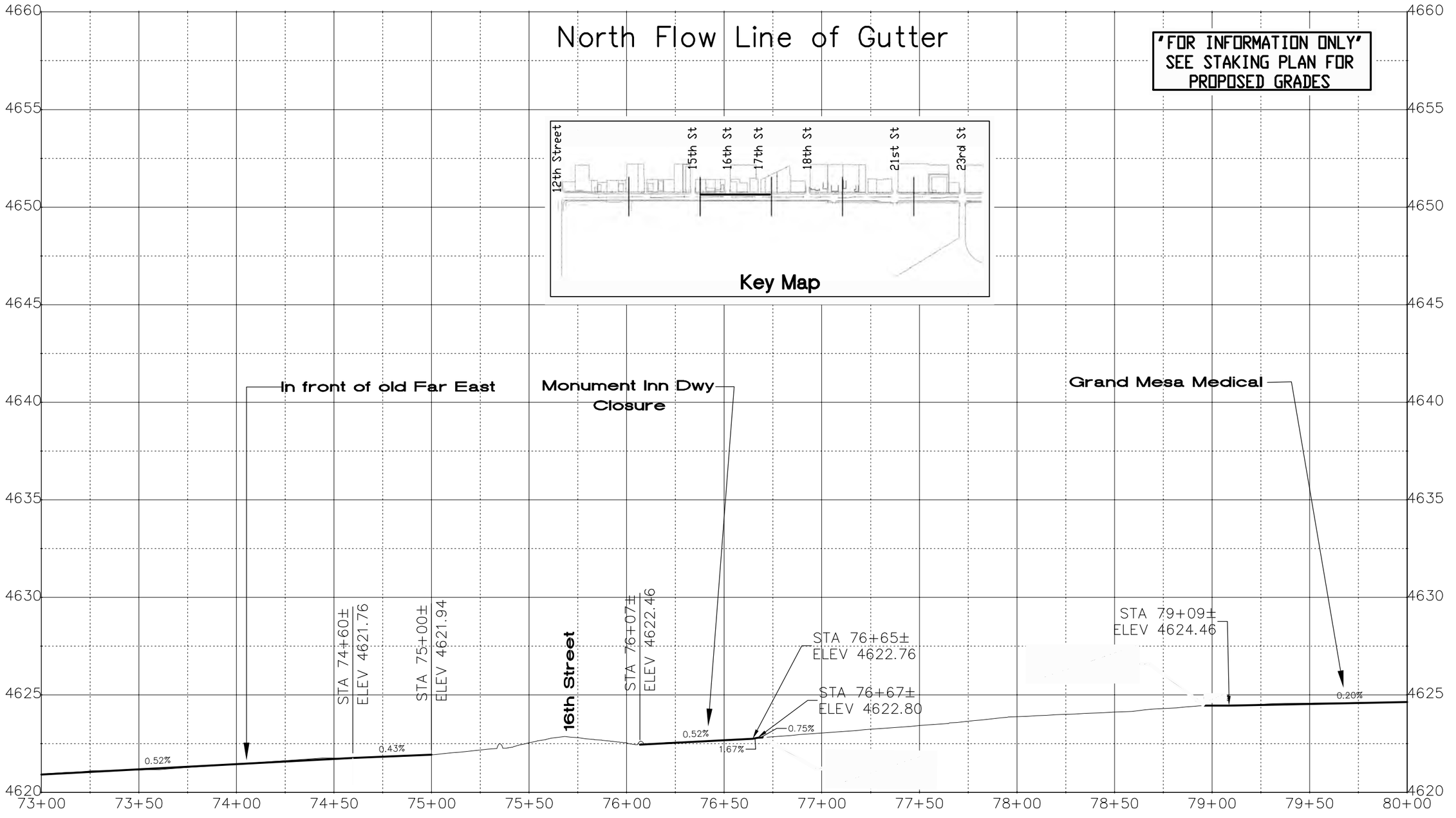
Horiz. Scale: 1:50 Vert. Scale: NA					Grand Junction, CO, 81501
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369
					Region 3 RBB

As Constructed	Roadway Profile			Project No./Code
No Revisions:				TCSP M555-029
Revised:	Designer: John Smith	Structure Numbers		19365
Void:	Detailer: John Smith			Sheet Number 81
	Sheet Subset:	Subset Sheets:	6 of 17	

North Flow Line of Gutter

'FOR INFORMATION ONLY'
SEE STAKING PLAN FOR
PROPOSED GRADES

Key Map



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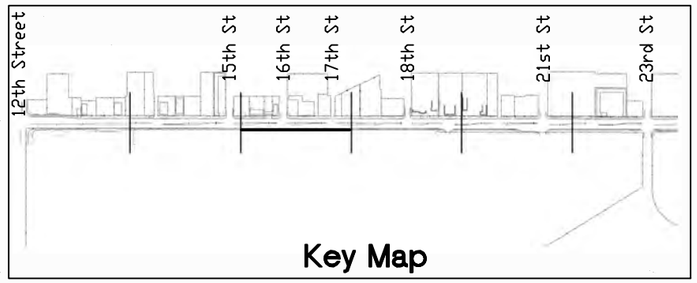
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street
Horiz. Scale: 1:50 Vert. Scale: NA					Grand Junction, CO, 81501
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369
					Region 3 RBB

As Constructed	Roadway Profile		Project No./Code
No Revisions:			TCSP M555-029
Revised:	Designer: John Smith	Structure Numbers	19365
Void:	Detailer: John Smith		Sheet Number 82
	Sheet Subset: RD PRO	Subset Sheets: 7 of 17	



Key Map

"FOR INFORMATION ONLY"
SEE STAKING PLAN FOR
PROPOSED GRADES

South Flow Line of Gutter

All Work this sheet part of
Add Alternate 2

"Bird Bath" fix at 80+50 and
Bus Pullout adjacent to Women's
Tee Box Hole 6 Lincoln Park

"Bird Bath" fix at 76+15
(across North Ave from 16th)

STA 75+70±
ELEV 4622.20

STA 76+25±
ELEV 4622.38

STA 79+74±
ELEV 4624.23

0.34%

0.26%

4655
4650
4645
4640
4635
4630
4625
4620
4615

73+00 73+50 74+00 74+50 75+00 75+50 76+00 76+50 77+00 77+50 78+00 78+50 79+00 79+50 80+00

N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\roadway plans with city std dwy cuts.dwg, 11/19/2015 11:02:11 AM

Print Date: AT LEFT
File Name: AT LEFT
Horiz. Scale: 1:50 Vert. Scale: NA
Unit Information: City of GJ Unit Leader Initials: DPJ

Sheet Revisions

Date:	Comments	Init.

Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

As Constructed
No Revisions:
Revised:
Void:

Roadway Profile

Designer: John Smith
Detailer: John Smith
Sheet Subset: RD PRO
Structure Numbers
Subset Sheets: 8 of 17

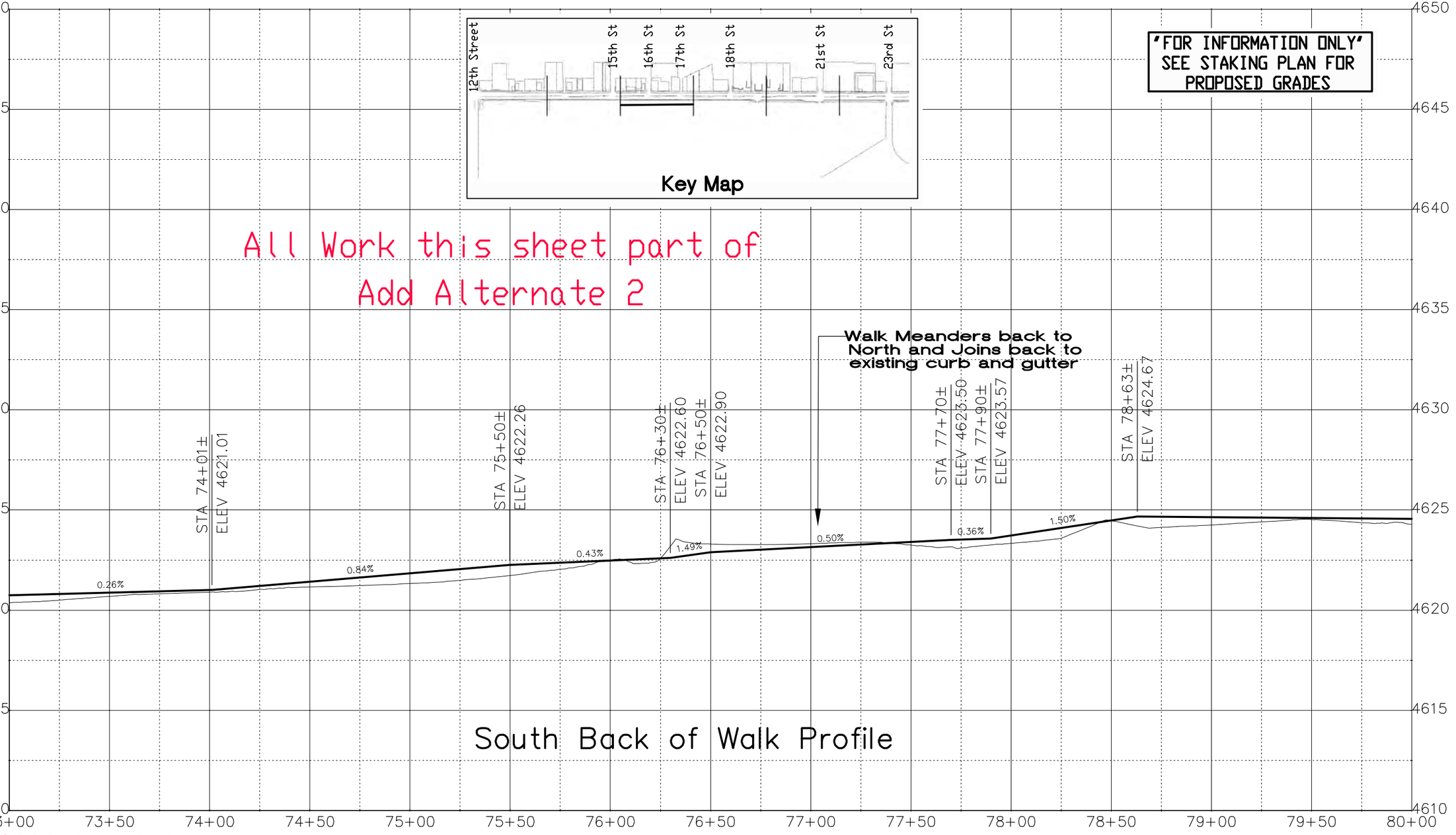
Project No./Code
TCSP M555-029
19365
Sheet Number 83

Key Map

'FOR INFORMATION ONLY'
SEE STAKING PLAN FOR
PROPOSED GRADES

All Work this sheet part of
Add Alternate 2

Walk Meanders back to
North and Joins back to
existing curb and gutter



South Back of Walk Profile

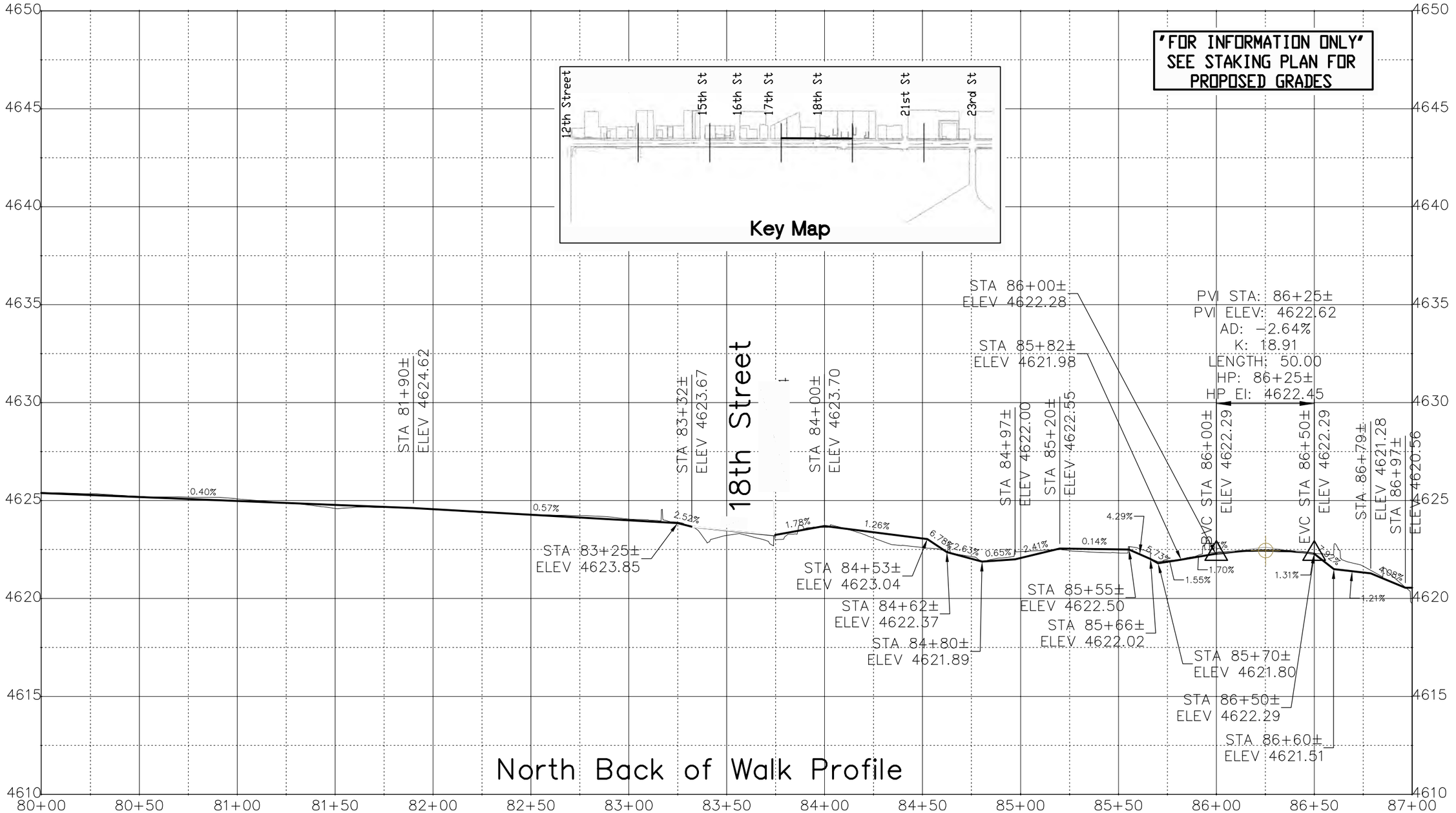
N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\roadway plans with city std dwy cuts.dwg, 11/19/2015 11:03:38 AM

Print Date: AT LEFT		Sheet Revisions			As Constructed	Roadway Profile	Project No./Code
File Name: AT LEFT		Date:	Comments	Init.	No Revisions:		TCSP M555-029
Horiz. Scale: 1:50 Vert. Scale: NA					Revised:	Designer: John Smith / Detailer: John Smith / Sheet Subset: RD PRO	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Void:	Structure Numbers / Subset Sheets: 9 of 17	Sheet Number 84

Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

'FOR INFORMATION ONLY'
SEE STAKING PLAN FOR
PROPOSED GRADES

Key Map



North Back of Walk Profile

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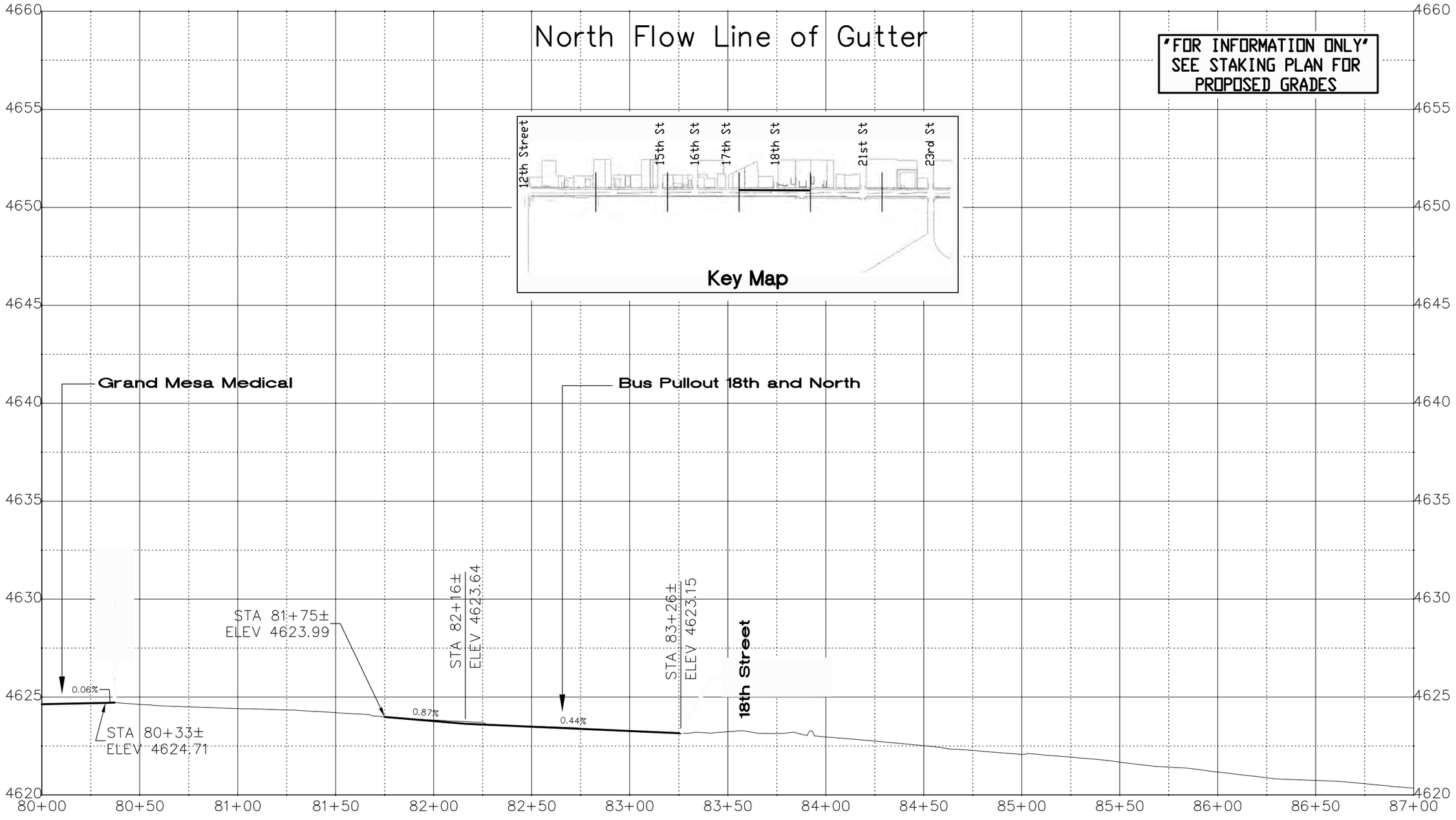
Print Date: AT LEFT File Name: AT LEFT Horiz. Scale: 1:50 Vert. Scale: NA Unit Information: City of GJ Unit Leader Initials: DPJ	0000	Sheet Revisions Date: / Comments / Init.	Colorado Department of Transportation 606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369 Region 3 RBB	As Constructed No Revisions: Revised: Void:	Roadway Profile Designer: John Smith Detailer: John Smith Sheet Subset: RD PRO Structure Numbers Subset Sheets: 10 of 17	Project No./Code TCSP M555-029 19365 Sheet Number 85

North Flow Line of Gutter

"FOR INFORMATION ONLY"
SEE STAKING PLAN FOR
PROPOSED GRADES

Key Map



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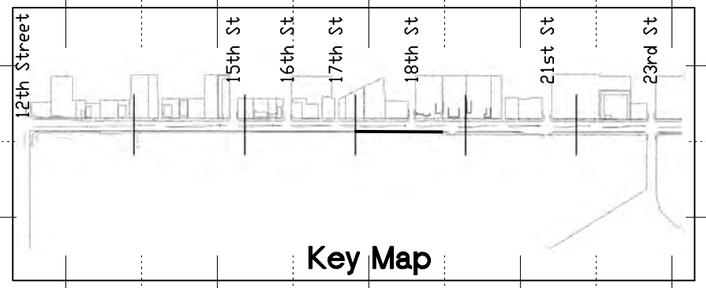
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street	No Revisions:		TCSP M555-029
Horiz. Scale: 1:50 Vert. Scale: NA					Grand Junction, CO, 81501	Revised:	Designer: John Smith	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369	Void:	Detailer: John Smith	Sheet Number 86
					Region 3 RBB		Sheet Subset: RD PRO	Subset Sheets: 11 of 17

"FOR INFORMATION ONLY"
SEE STAKING PLAN FOR
PROPOSED GRADES



Key Map

South Flow Line of Gutter

"Bird Bath" fix at 80+50 and
Bus Pullout adjacent to Women's
Tee Box Hole 6 Lincoln Park

VA Hospital Right Turn Lane

STA 82+33± ELEV 4623.71

STA 83+33± ELEV 4623.33

STA 84+23± ELEV 4622.80

STA 85+65± ELEV 4621.35

STA 85+91± ELEV 4621.13

STA 85+74± ELEV 4621.38

0.20%

0.38%

0.17%

1.02%

0.31%

1.49%

Add Alternate 2

4655 4650 4645 4640 4635 4630 4625 4620 4615

80+00 80+50 81+00 81+50 82+00 82+50 83+00 83+50 84+00 84+50 85+00 85+50 86+00 86+50 87+00

N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\roadway plans with city std dwy cuts.dwg, 11/19/2015 11:12:34 AM

Print Date: AT LEFT	Sheet Revisions		
File Name: AT LEFT	Date:	Comments	Init.
Horiz. Scale: 1:50 Vert. Scale: NA			
Unit Information: City of GJ Unit Leader Initials: DPJ			

Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

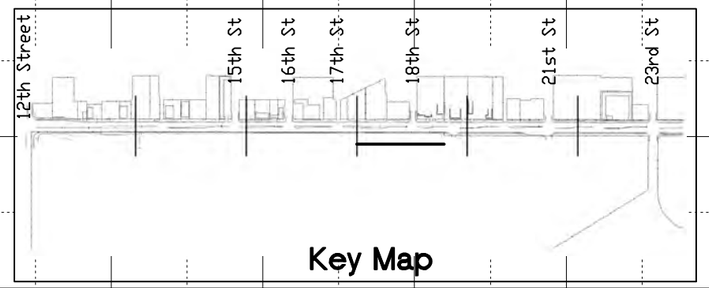
As Constructed
No Revisions:
Revised:
Void:

Roadway Profile

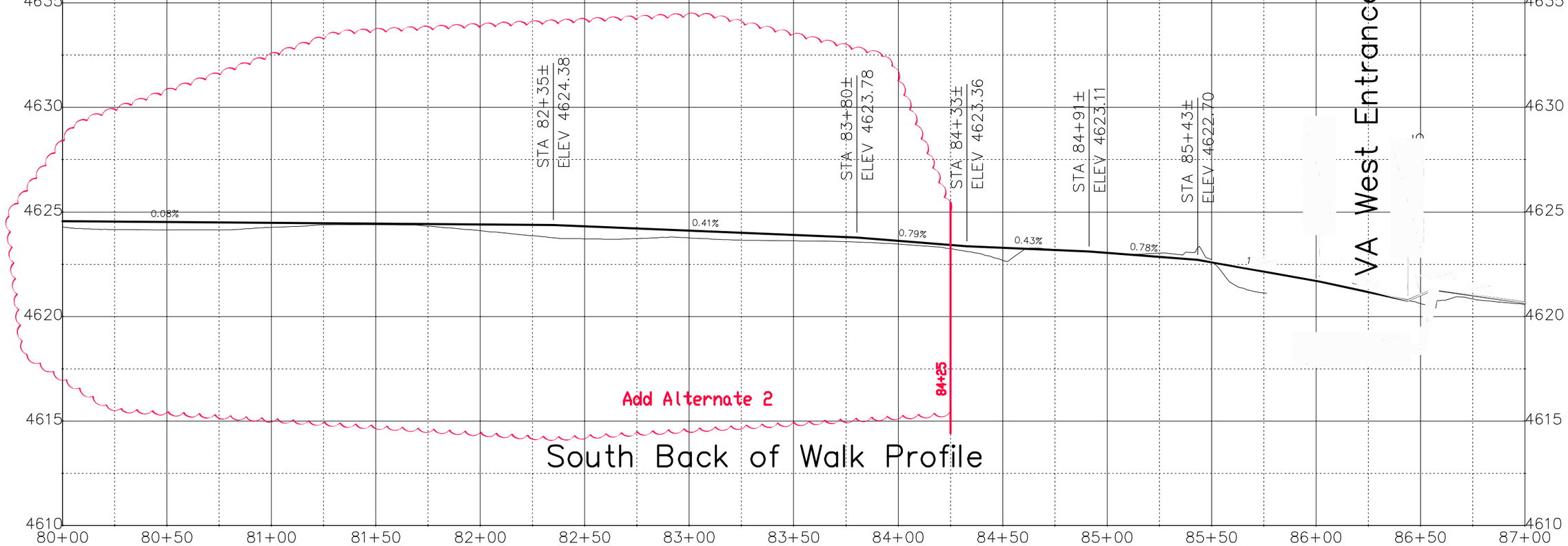
Designer: John Smith
Detailer: John Smith
Sheet Subset: RD PRO
Structure Numbers
Subset Sheets: 12 of 17

Project No./Code
TCSP M555-029
19365
Sheet Number 87

'FOR INFORMATION ONLY'
SEE STAKING PLAN FOR
PROPOSED GRADES



Key Map



South Back of Walk Profile

N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\roadway plans with city std dwy cuts\std dwy cuts.dwg, 11/19/2015 11:24:20 AM

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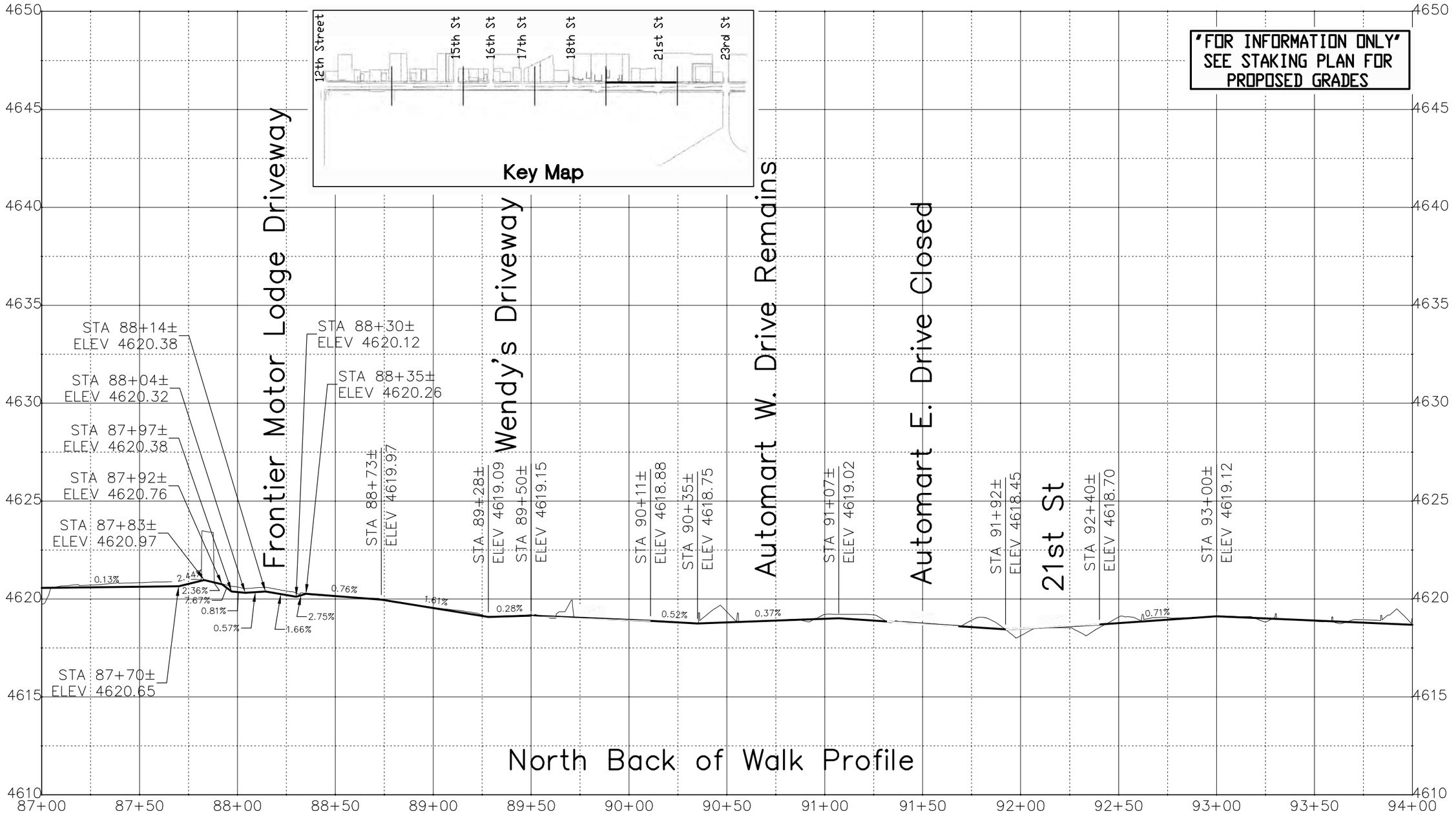
File Name: AT LEFT		Date:	Comments	Init.	CDOT	No Revisions:		TCSP M555-029
Horiz. Scale: 1:50 Vert. Scale: NA					606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	Revised:	Designer: John Smith / Structure Numbers	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:	Detailer: John Smith	Sheet Number 88
							Sheet Subset: RD PRO / Subset Sheets: 13 of 17	

Key Map

'FOR INFORMATION ONLY'
SEE STAKING PLAN FOR
PROPOSED GRADES



North Back of Walk Profile

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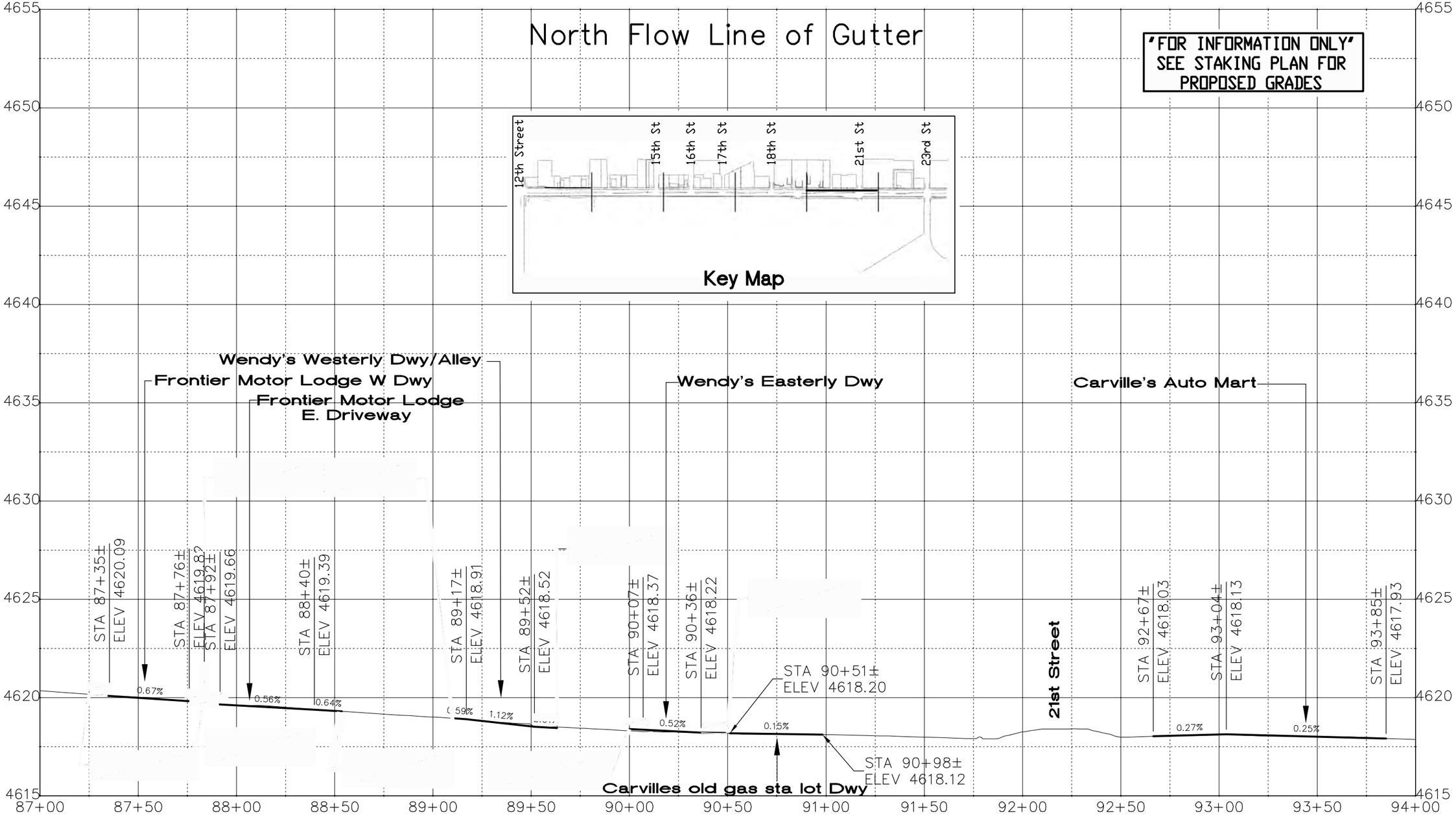
Print Date: AT LEFT	0000	Sheet Revisions			Colorado Department of Transportation
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street
Horiz. Scale: 1:50 Vert. Scale: NA					Grand Junction, CO, 81501
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369
					Region 3 RBB

As Constructed	Roadway Profile			Project No./Code
No Revisions:				TCSP M555-029
Revised:	Designer: John Smith	Structure Numbers		19365
Void:	Detailer: John Smith			Sheet Number 89
	Sheet Subset: RD PRO	Subset Sheets:	14 of 17	

North Flow Line of Gutter

"FOR INFORMATION ONLY"
SEE STAKING PLAN FOR
PROPOSED GRADES

Key Map



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File Name: AT LEFT		Date:	Comments	Init.	No Revisions:
Horiz. Scale: 1:50 Vert. Scale: NA					Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ					Void:

Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

Roadway Profile

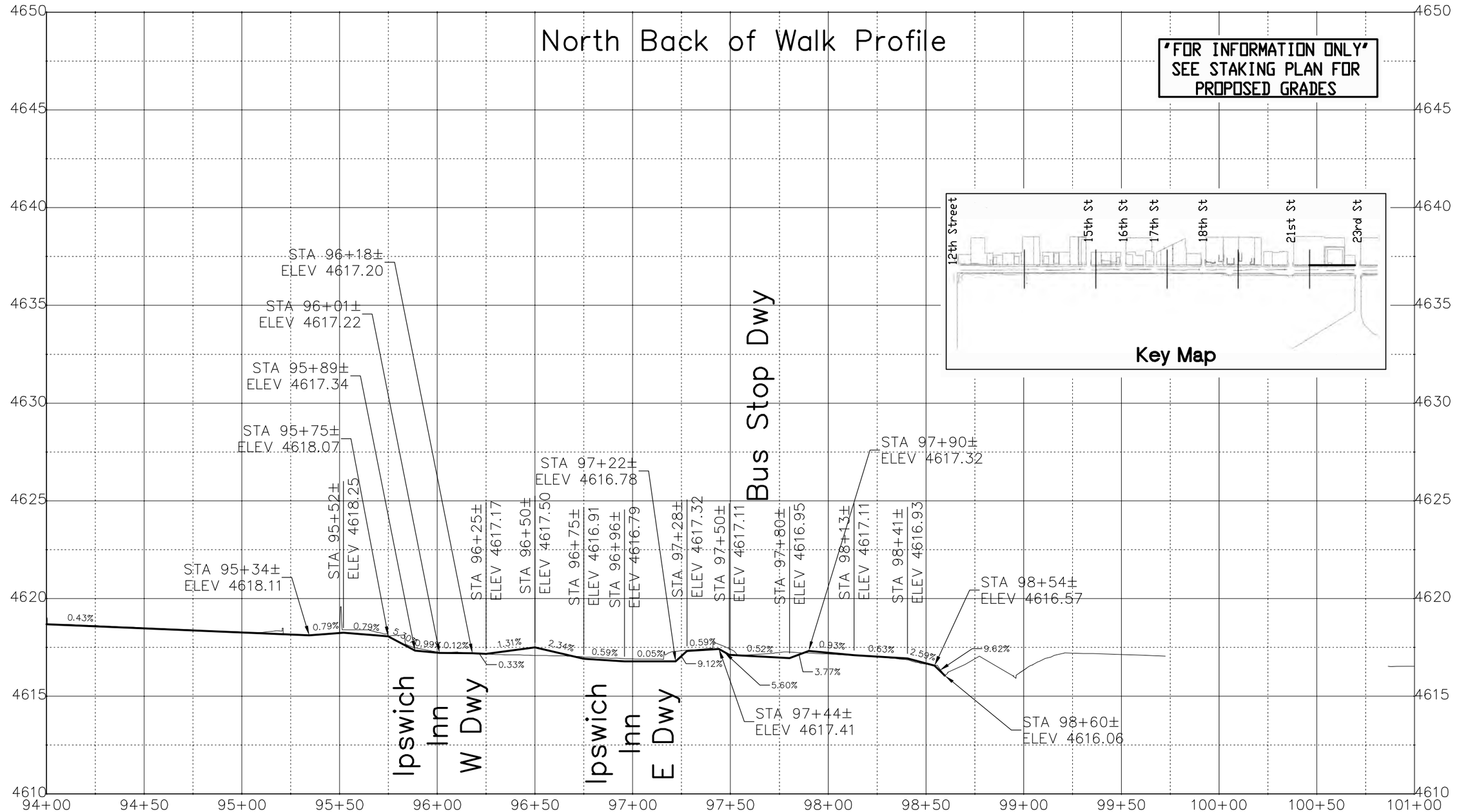
Designer: John Smith
Detailer: John Smith
Sheet Subset: RD PRO
Structure Numbers
Subset Sheets: 15 of 17

Project No./Code
TCSP M555-029
19365
Sheet Number 90

North Back of Walk Profile

'FOR INFORMATION ONLY'
SEE STAKING PLAN FOR
PROPOSED GRADES

Key Map



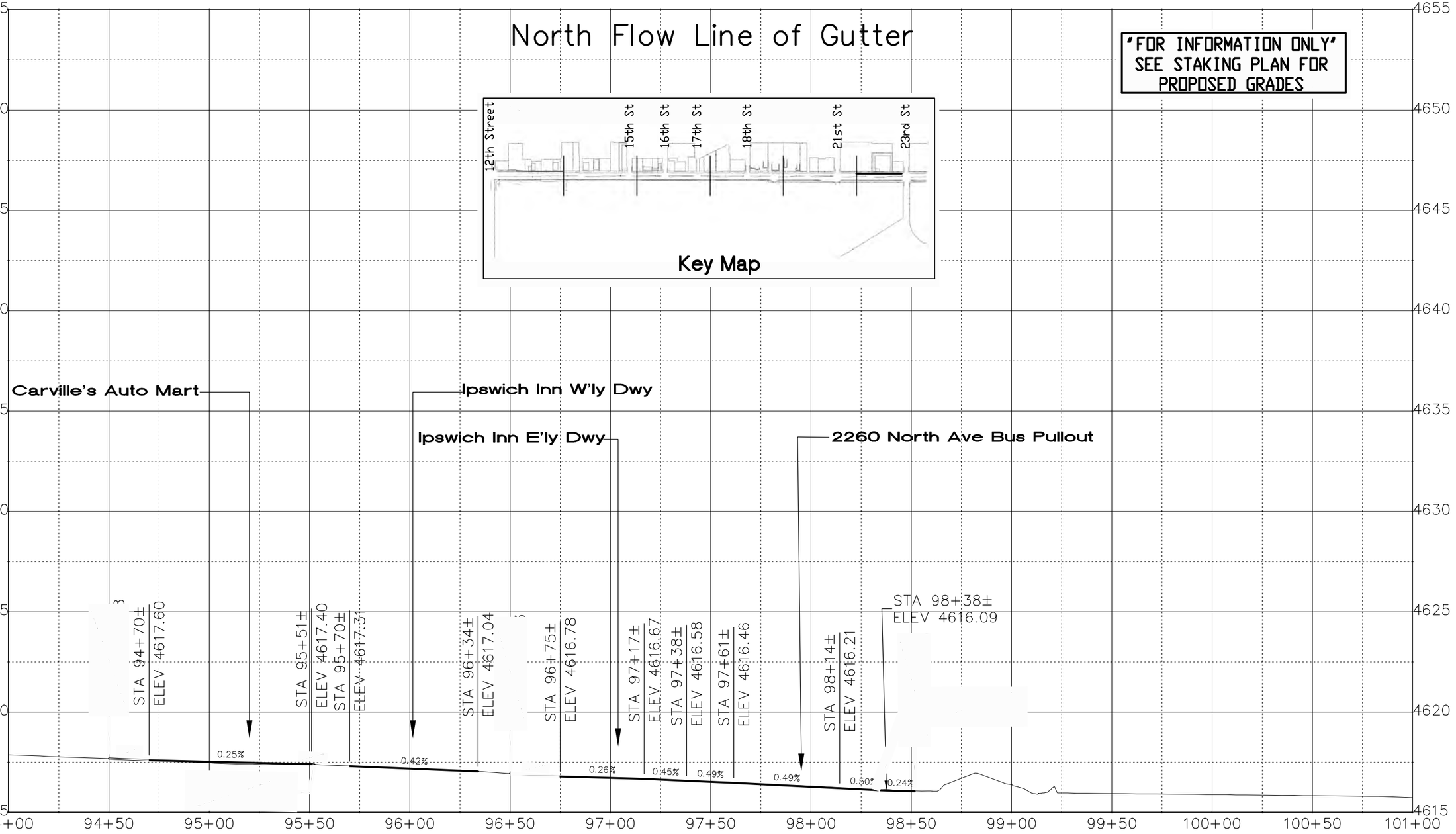
Print Date: AT LEFT	0000	Sheet Revisions			Colorado Department of Transportation	As Constructed	Roadway Profile	Project No./Code
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:		TCSP M555-029
Horiz. Scale: 1:50 Vert. Scale: NA						Revised:	Designer: John Smith	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:	Detailer: John Smith Sheet Subset: RD PRO	Structure Numbers Subset Sheets: 16 of 17	Sheet Number 91

N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\roadway plans with city std dwy curs.dwg, 8/20/2015 1:01:34 PM

North Flow Line of Gutter

"FOR INFORMATION ONLY"
SEE STAKING PLAN FOR
PROPOSED GRADES

Key Map



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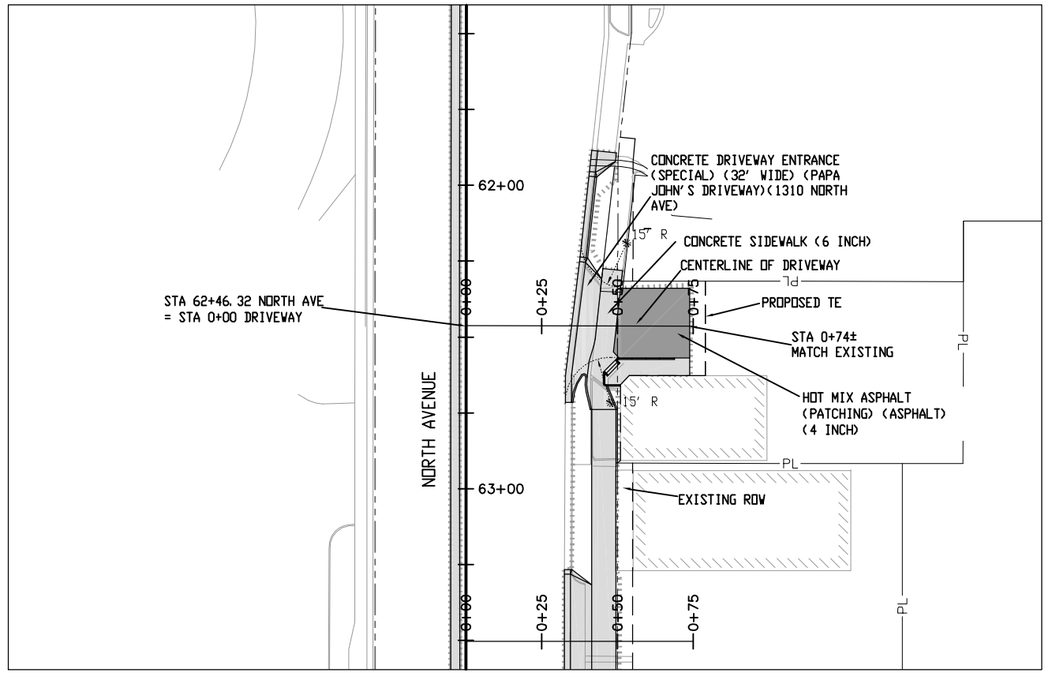
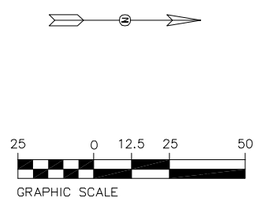
Print Date: AT LEFT	0000	Sheet Revisions	Colorado Department of Transportation	As Constructed	Roadway Profile
File Name: AT LEFT		Date / Comments / Init.	606 South 9th Street, Grand Junction, CO, 81501	No Revisions:	Designer: John Smith
Horiz. Scale: 1:50 Vert. Scale: NA			Phone: 970-683-6351 FAX: 970-683-6369	Revised:	Detailer: John Smith
Unit Information: City of GJ Unit Leader Initials: DPJ			Region 3 RBB	Void:	Sheet Subset: RD PRO
					Structure Numbers:
					Subset Sheets: 17 of 17

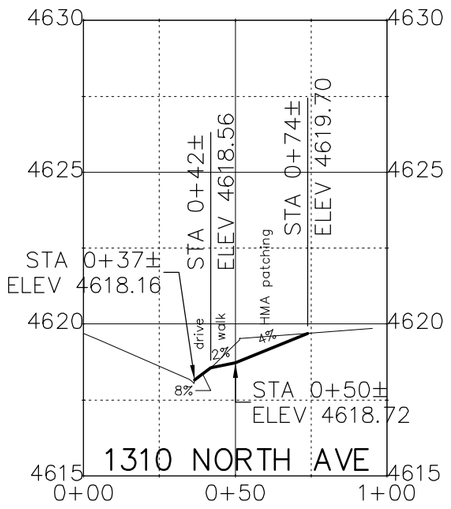
Project No./Code
TCSP M555-029
19365
Sheet Number 92

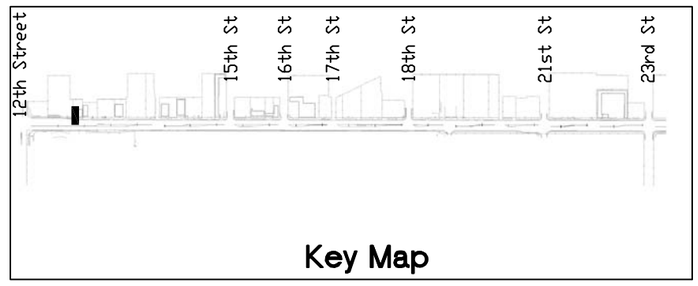


PLAN

SEE STAKING PLAN FOR STAKING DATA AND ELEVATIONS







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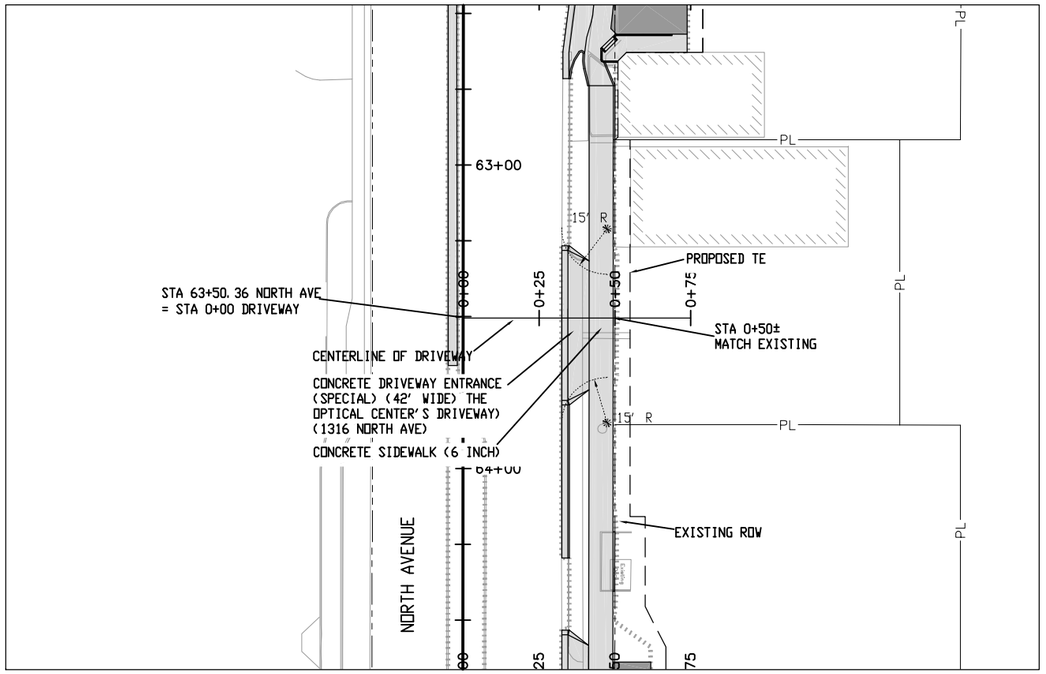
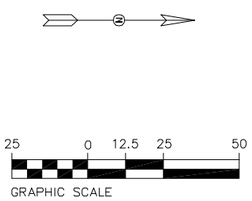
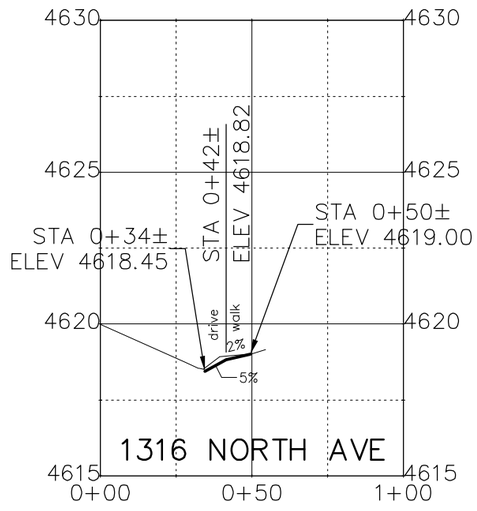
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:		TCSP M555-029
Horiz. Scale: 1:50 Vert. Scale: NA						Revised:	Designer: John Smith	Structure Numbers	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:	Detailer: John Smith		Sheet Number 93
							Sheet Subset: dr pln pro	Subset Sheets: 1 of 42	

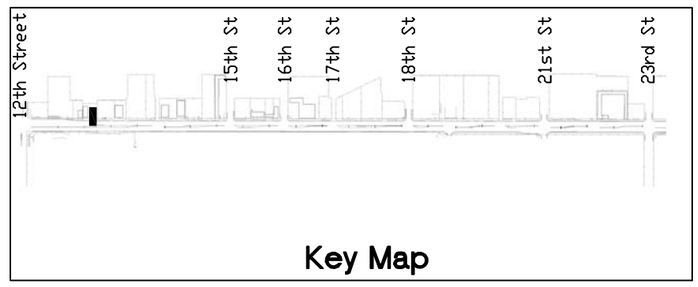


PLAN

SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS







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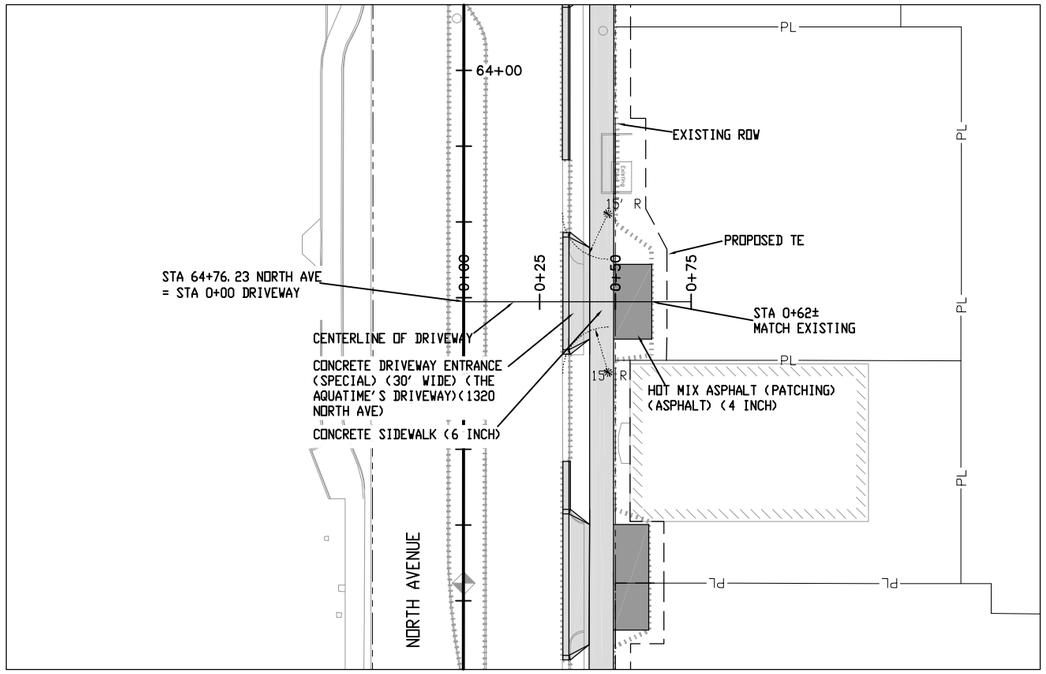
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street	No Revisions:		TCSP M555-029
Horiz. Scale: 1:50 Vert. Scale: NA					Grand Junction, CO, 81501	Revised:	Designer: John Smith	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369	Void:	Detailer: John Smith	Sheet Number 94
					Region 3 RBB		Sheet Subset: dr pln pro	Subset Sheets: 2 of 42



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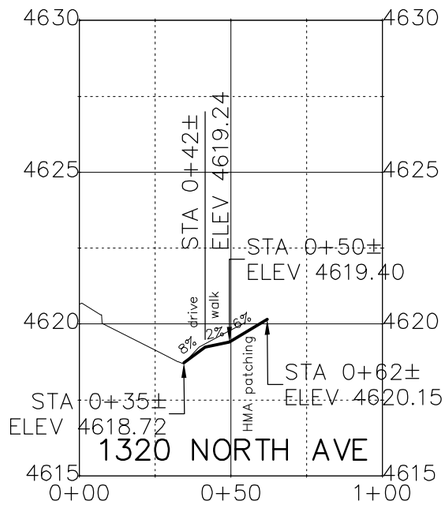
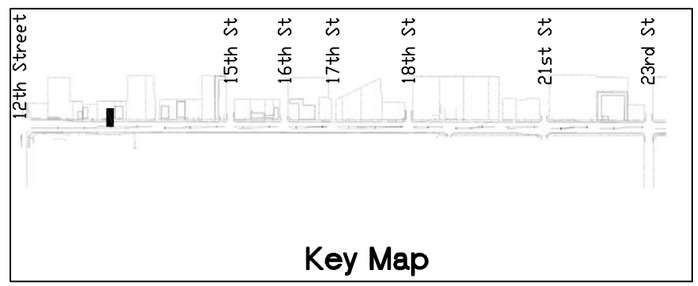


SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS

25 0 12.5 25 50
GRAPHIC SCALE



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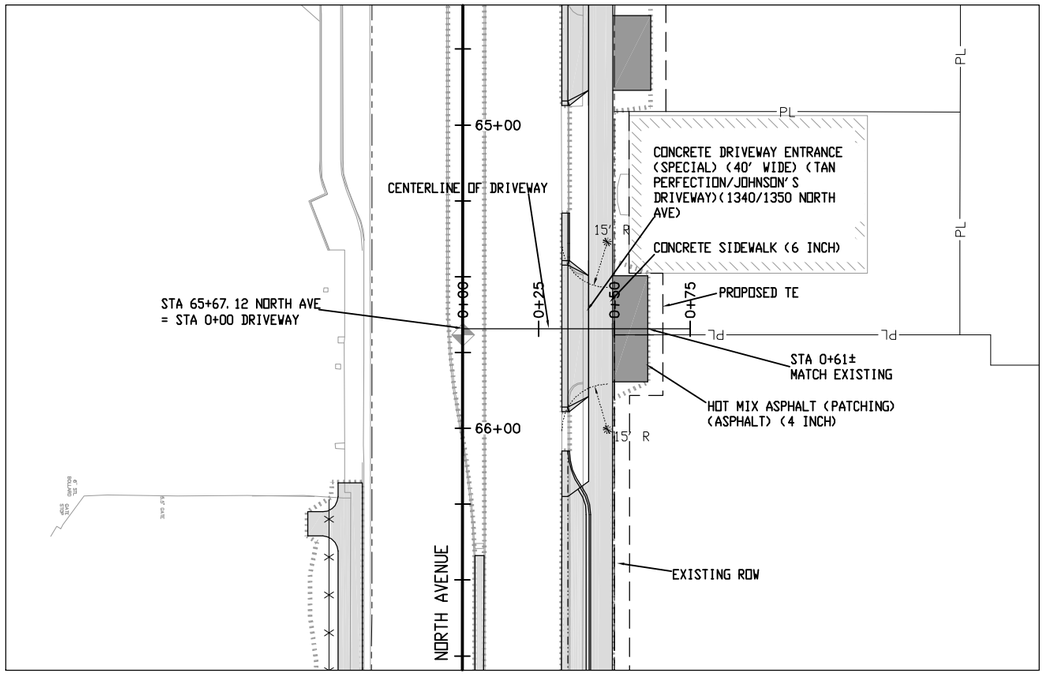
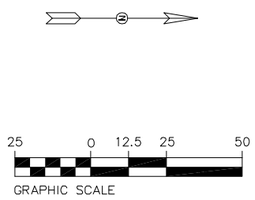
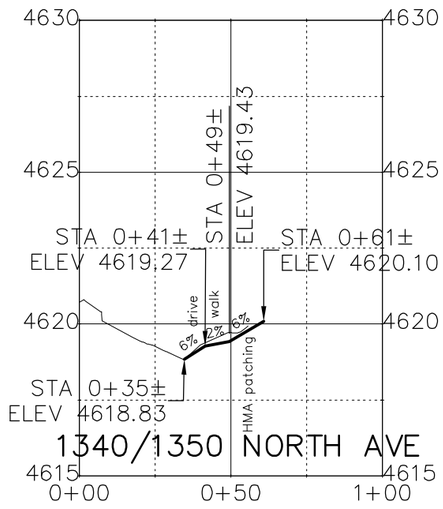
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street	No Revisions:		TCSP M555-029
Horiz. Scale: 1:50 Vert. Scale: NA					Grand Junction, CO, 81501	Revised:	Designer: John Smith	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369	Void:	Detailer: John Smith	Sheet Number 95
					Region 3 RBB		Sheet Subset: dr pln pro	Subset Sheets: 3 of 42

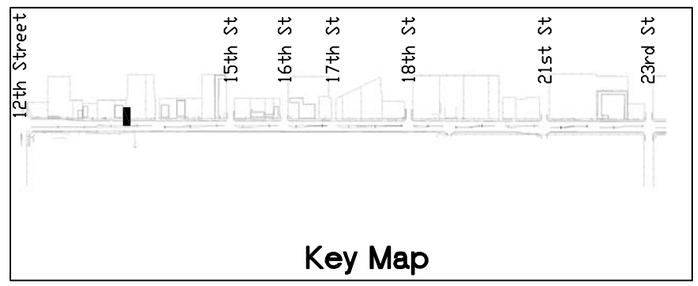


PLAN

SEE STAKING PLAN FOR STAKING DATA AND ELEVATIONS







Print Date: AT LEFT		Sheet Revisions			Colorado Department of Transportation	As Constructed	Driveway Plans and Profiles	Project No./Code
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:		TCSP M555-029
Horiz. Scale: 1:50 Vert. Scale: NA						Revised:	Designer: John Smith	Structure Numbers: 19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:	Detailer: John Smith	
							Sheet Subset: dr pln pro	Subset Sheets: 4 of 42
								Sheet Number 96

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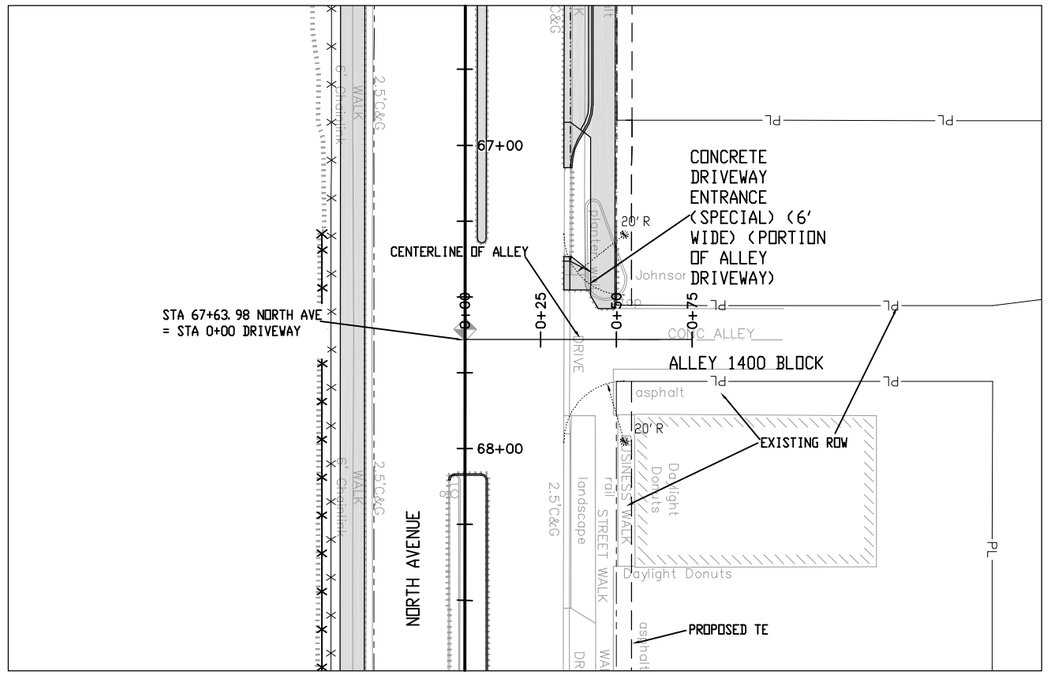

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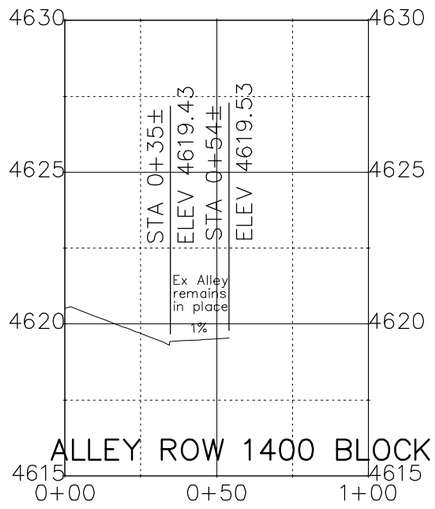
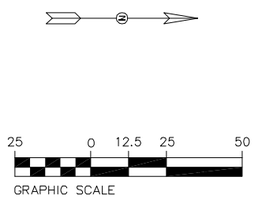
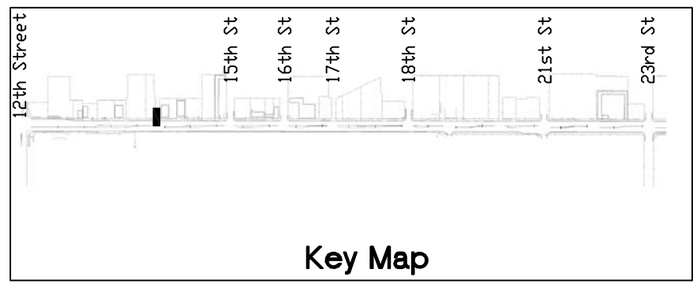


SEE STAKING PLAN FOR STAKING DATA AND ELEVATIONS





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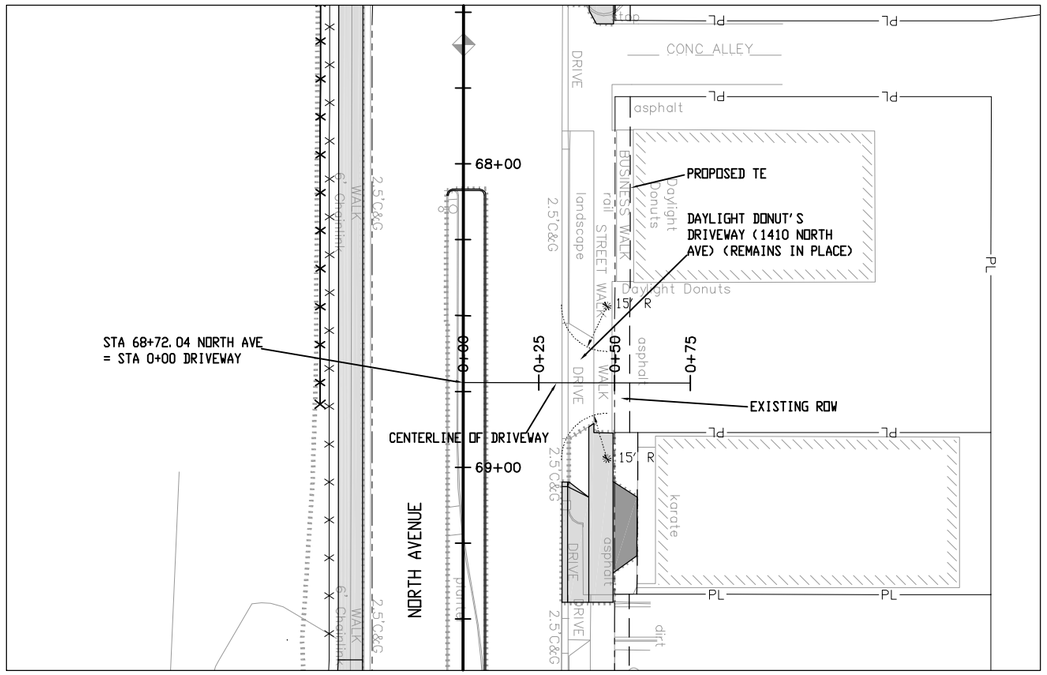

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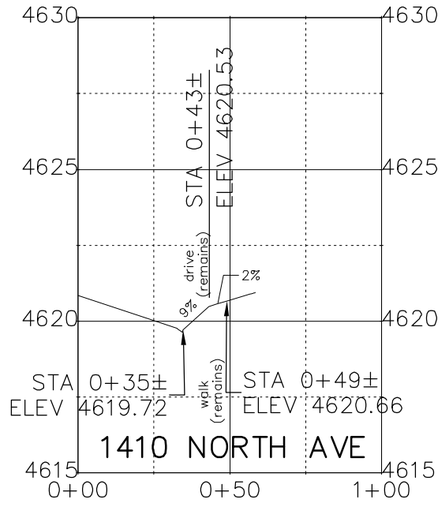
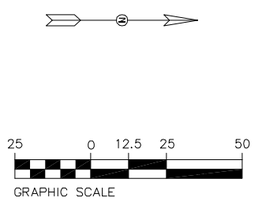
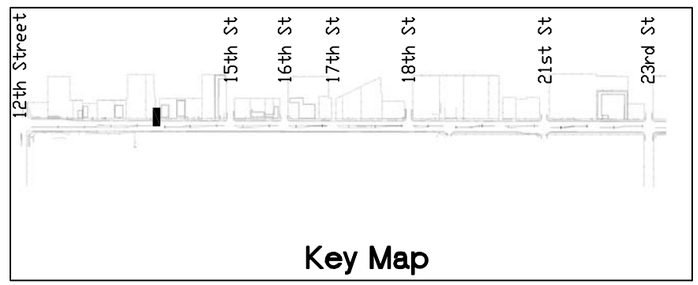


SEE STAKING PLAN FOR STAKING DATA AND ELEVATIONS





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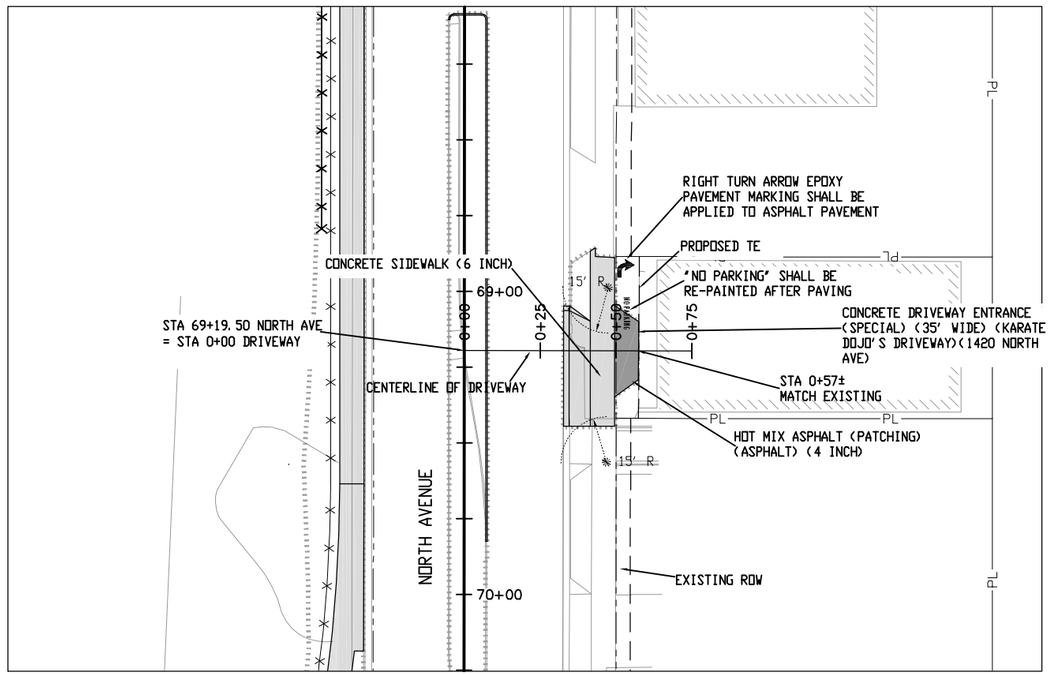

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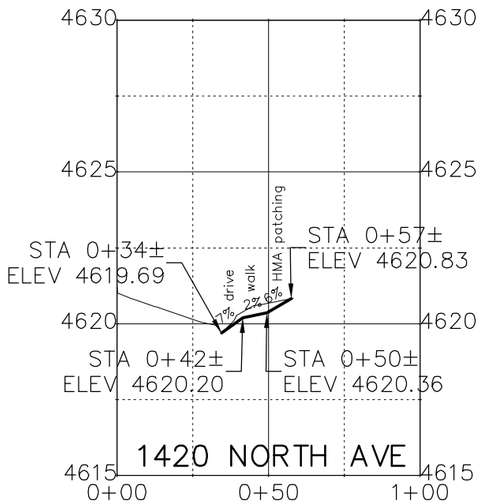

SEE STAKING PLAN FOR STAKING DATA AND ELEVATIONS

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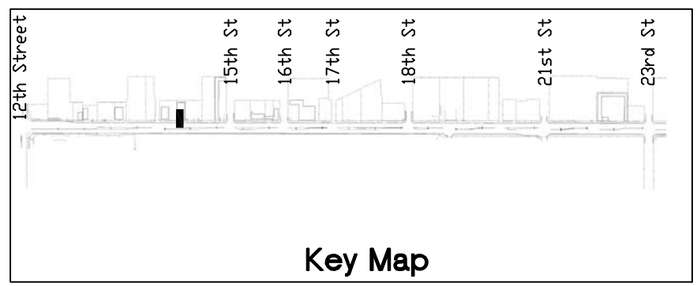
GRAPHIC SCALE



Key Map

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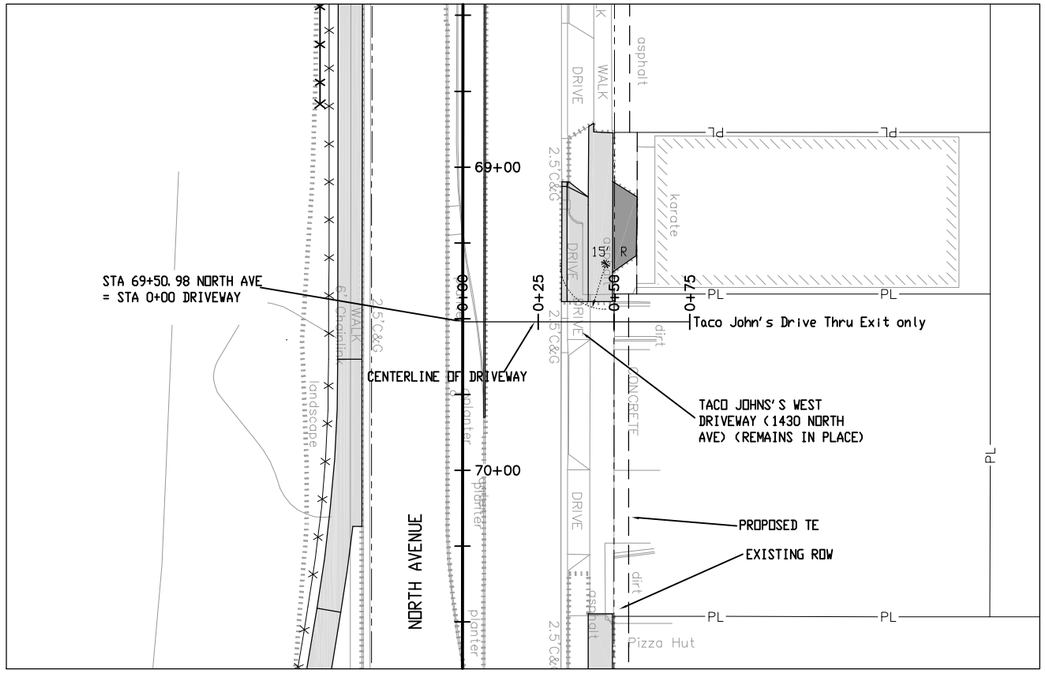
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:
Horiz. Scale: 1:50 Vert. Scale: NA						Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:

Driveway Plans and Profiles			Project No./Code
Designer: John Smith	Structure Numbers		TCSP M555-029
Detailer: John Smith			19365
Sheet Subset: dr pln pro	Subset Sheets:	7 of 42	Sheet Number 99



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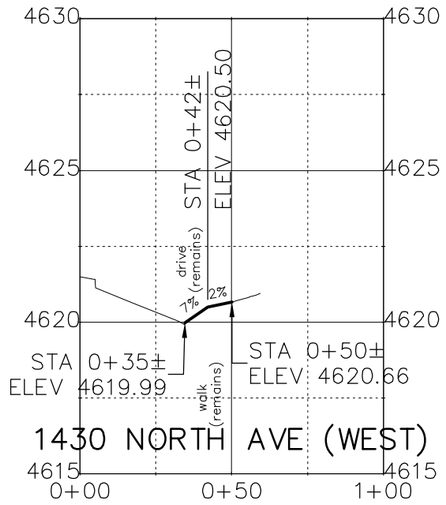
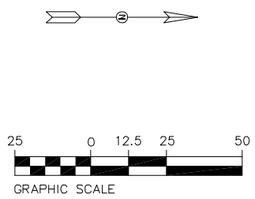
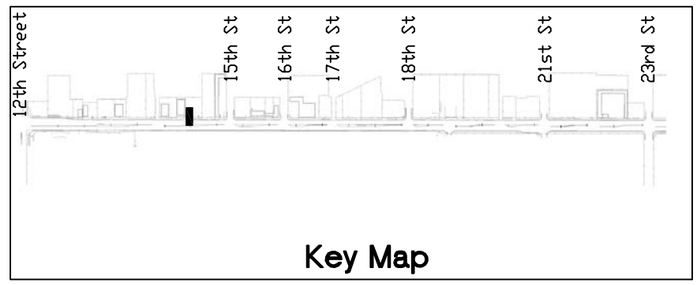


SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS





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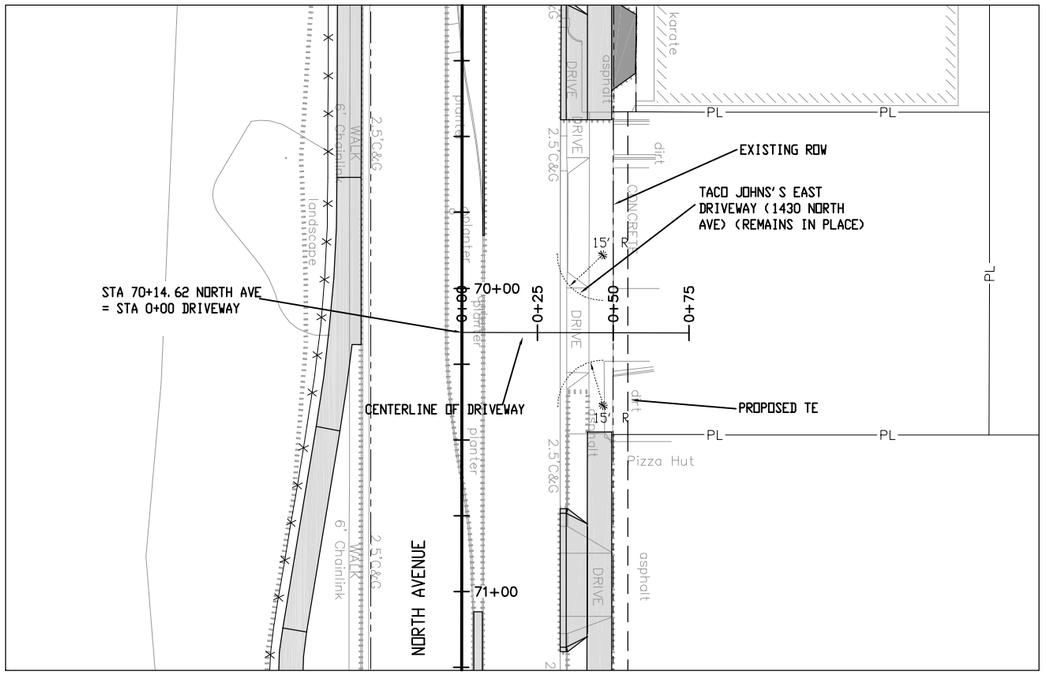
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street	No Revisions:
Horiz. Scale: 1:50 Vert. Scale: NA					Grand Junction, CO, 81501	Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369	Void:
					Region 3 RBB	

Driveway Plans and Profiles			Project No./Code
			TCSP M555-029
Designer: John Smith	Structure Numbers		19365
Detailer: John Smith			
Sheet Subset: dr pln pro	Subset Sheets:	8 of 42	Sheet Number 100



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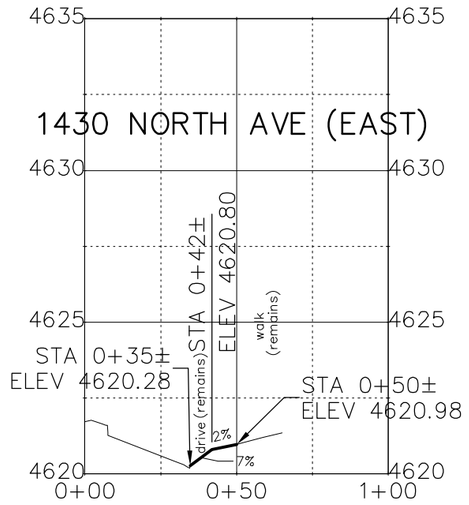

SEE STAKING PLAN FOR STAKING DATA AND ELEVATIONS

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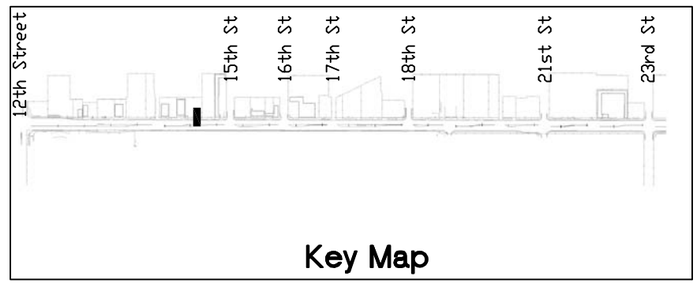
GRAPHIC SCALE



Key Map

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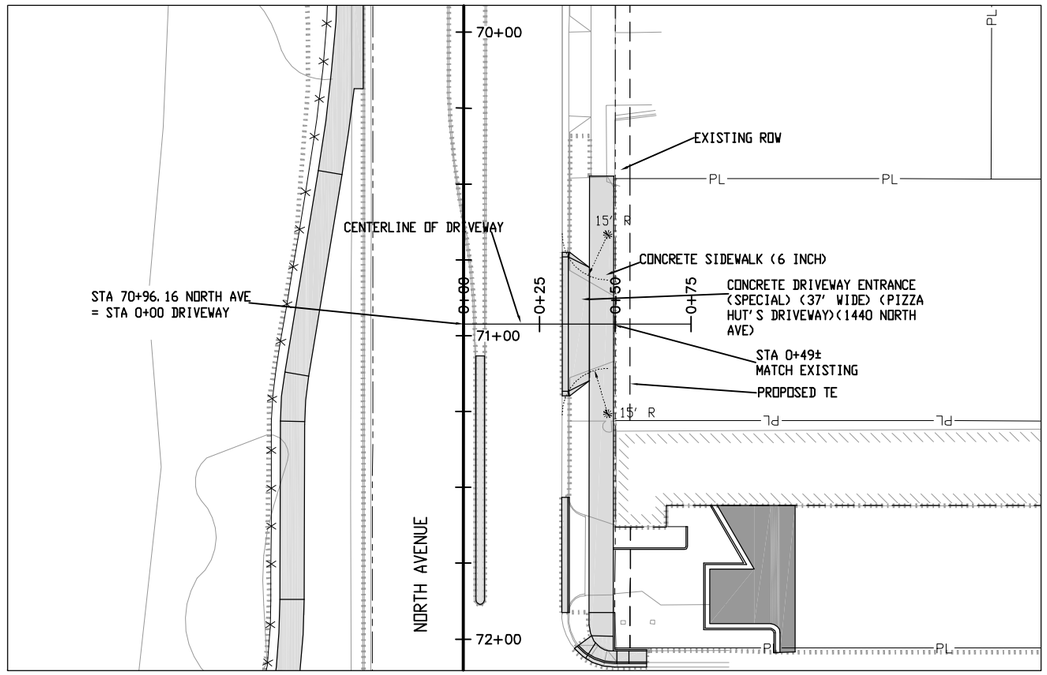
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:		TCSP M555-029
Horiz. Scale: 1:50 Vert. Scale: NA						Revised:	Designer: John Smith / Structure Numbers	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:	Detailer: John Smith / Sheet Subset: dr pln pro / Subset Sheets: 9 of 42	Sheet Number 101

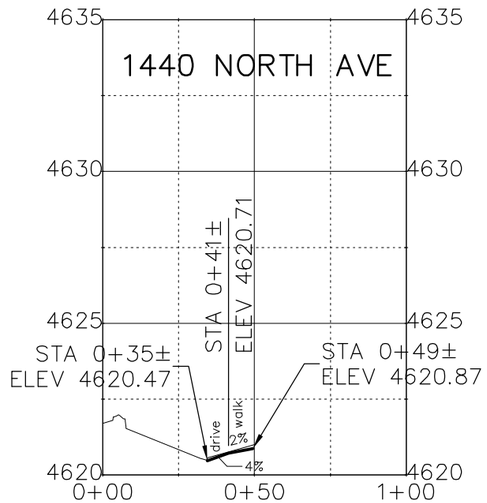


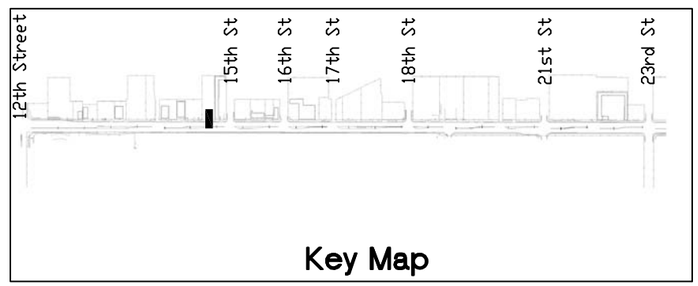
PLAN

SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS

25 0 12.5 25 50

GRAPHIC SCALE





Key Map

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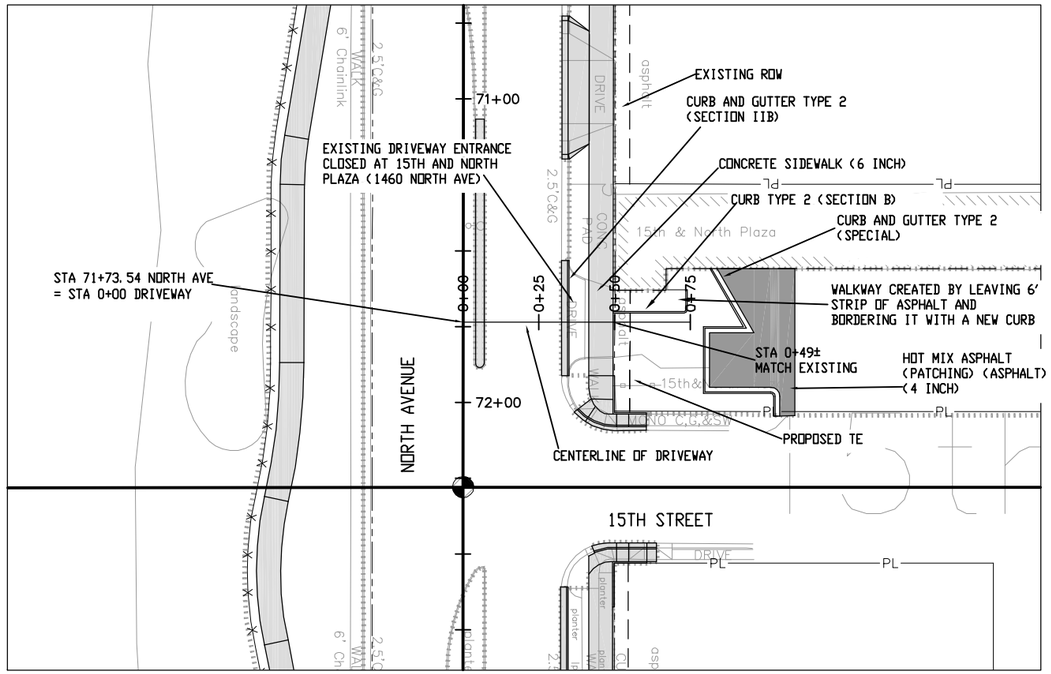
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street	No Revisions:
Horiz. Scale: 1:50 Vert. Scale: NA					Grand Junction, CO, 81501	Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369	Void:
					Region 3 RBB	

Driveway Plans and Profiles			Project No./Code
Designer: John Smith	Structure Numbers		TCSP M555-029
Detailer: John Smith			19365
Sheet Subset: dr pln pro	Subset Sheets: 10 of 42		Sheet Number 102



PLAN

SEE STAKING PLAN FOR STAKING DATA AND ELEVATIONS

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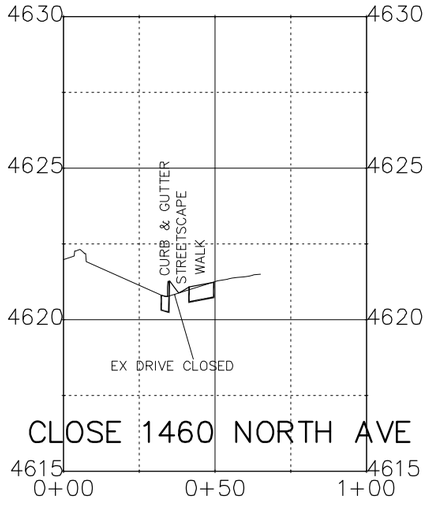
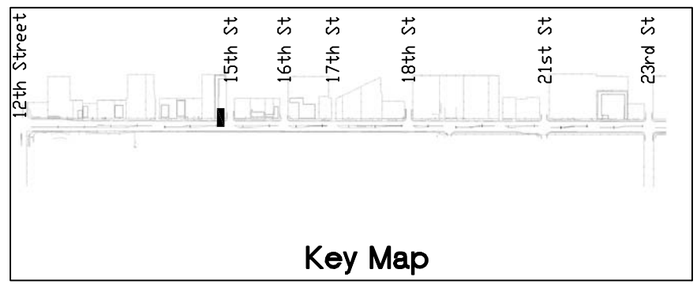
GRAPHIC SCALE



CLOSE 1460 NORTH AVE



Key Map

Print Date: AT LEFT		Sheet Revisions			Colorado Department of Transportation	As Constructed
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:
Horiz. Scale: 1:50 Vert. Scale: NA						Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:

Driveway Plans and Profiles			Project No./Code
Designer: John Smith	Structure Numbers		TCSP M555-029
Detailer: John Smith			19365
Sheet Subset: dr pln pro	Subset Sheets:	11 of 42	Sheet Number 103

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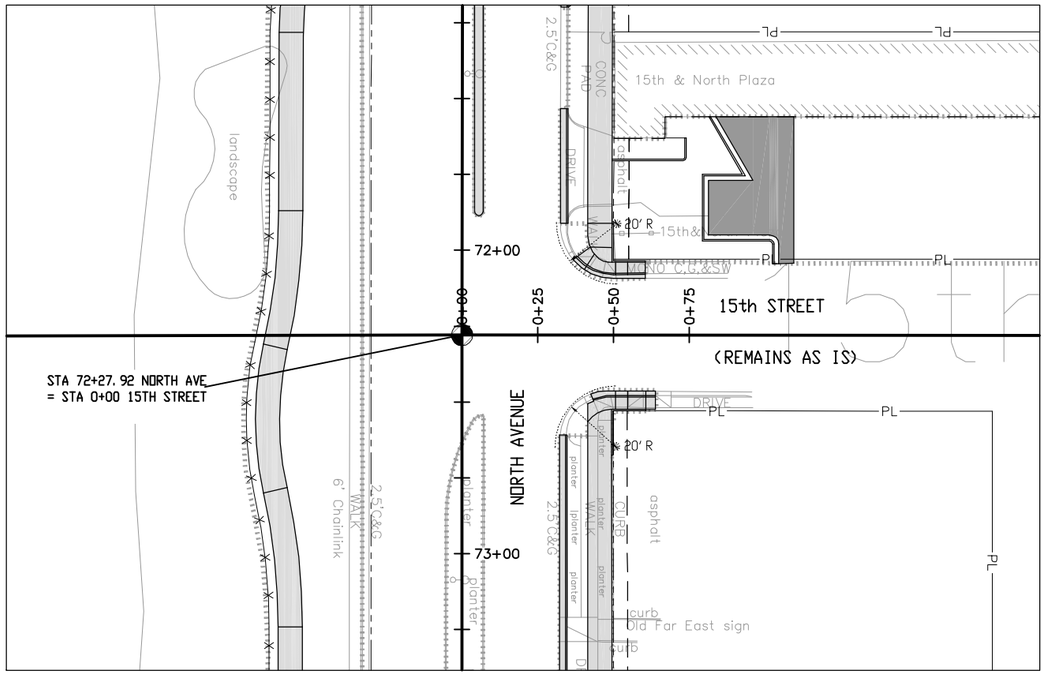

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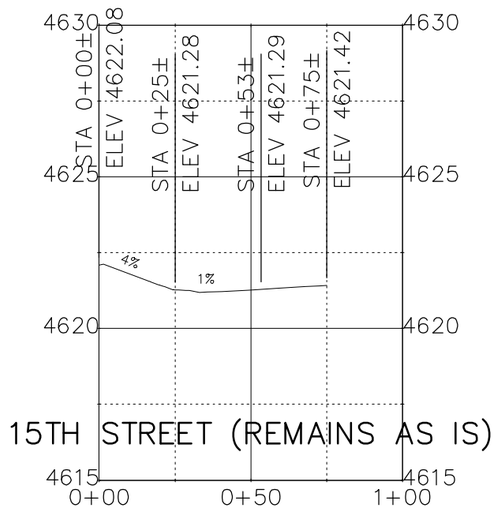
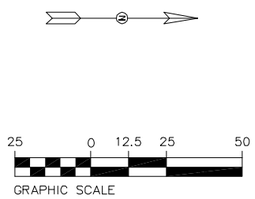
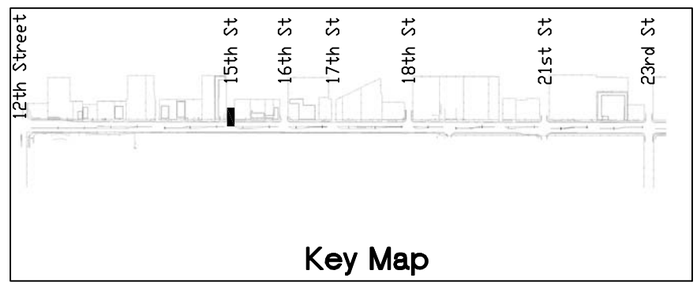


SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS





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Horiz. Scale: 1:50 Vert. Scale: NA						Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:

Driveway Plans and Profiles			Project No./Code
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Detailer: John Smith			19365
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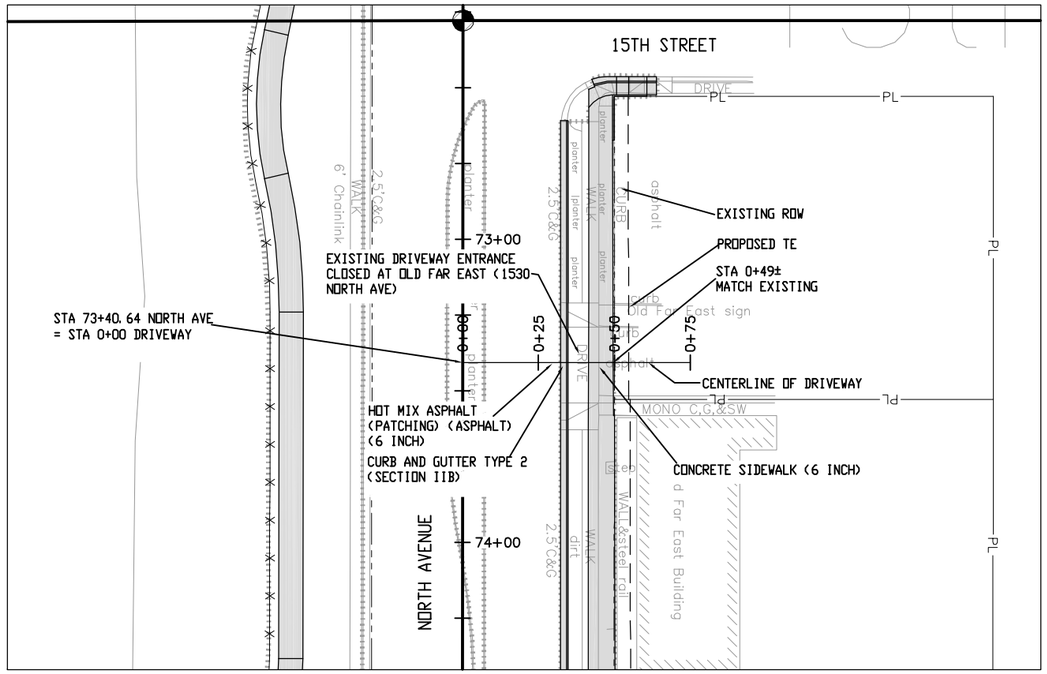

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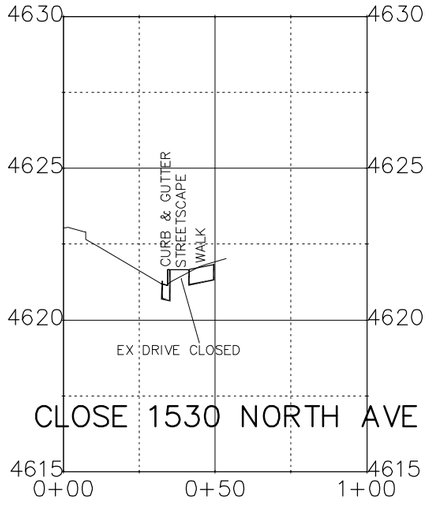
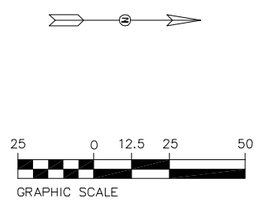
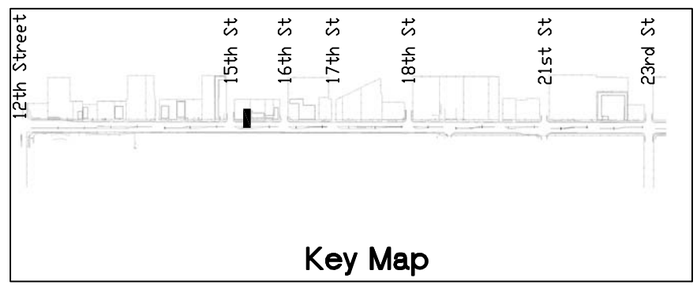


CLOSE 1530 NORTH AVE

SEE STAKING PLAN FOR STAKING DATA AND ELEVATIONS





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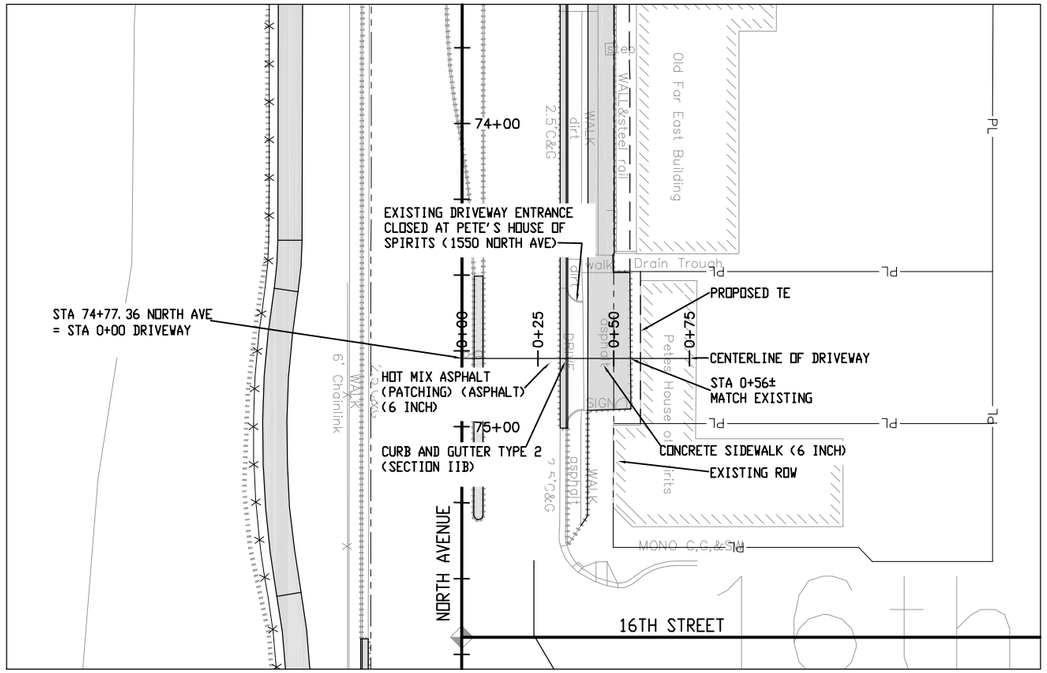

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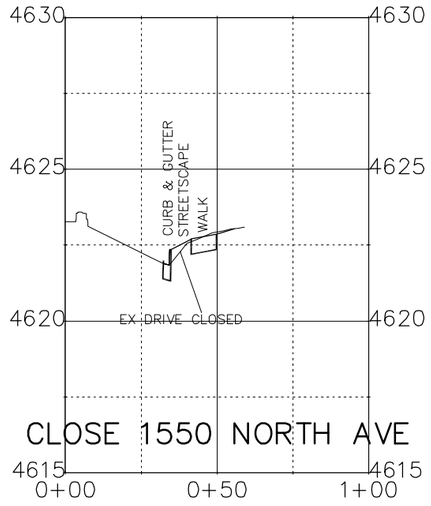

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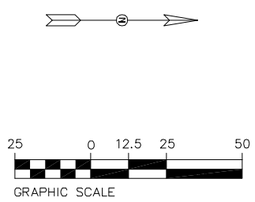

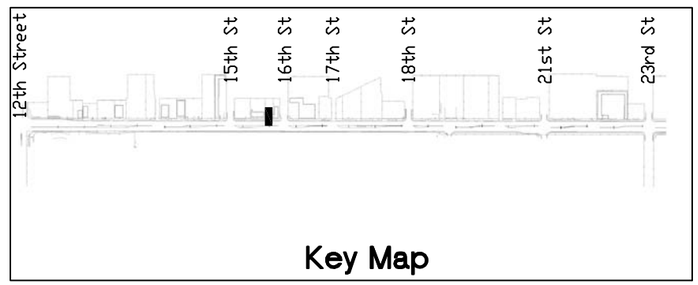

Key Map

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Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369
					Region 3 RBB

As Constructed	Driveway Plans and Profiles			Project No./Code
No Revisions:				TCSP M555-029
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Void:	Detailer: John Smith			Sheet Number 106
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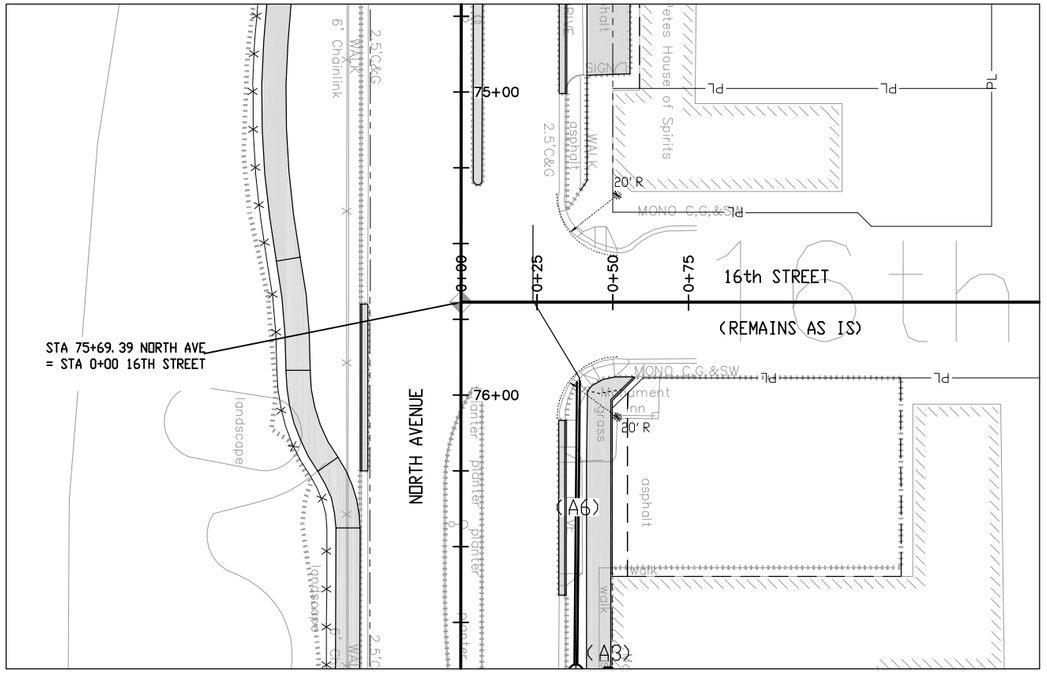

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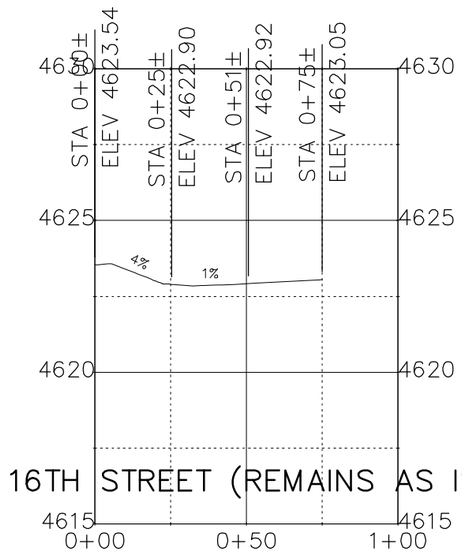
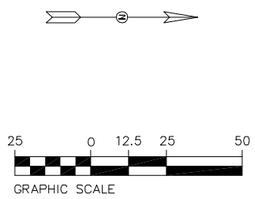
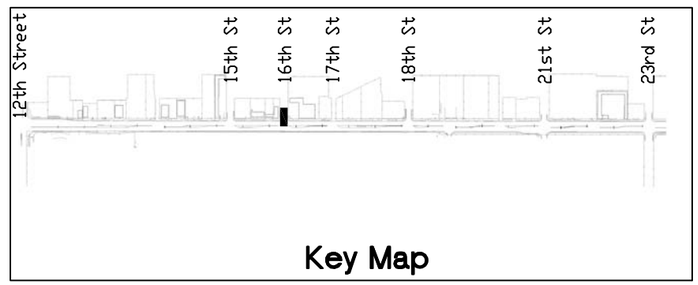


SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS





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Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369
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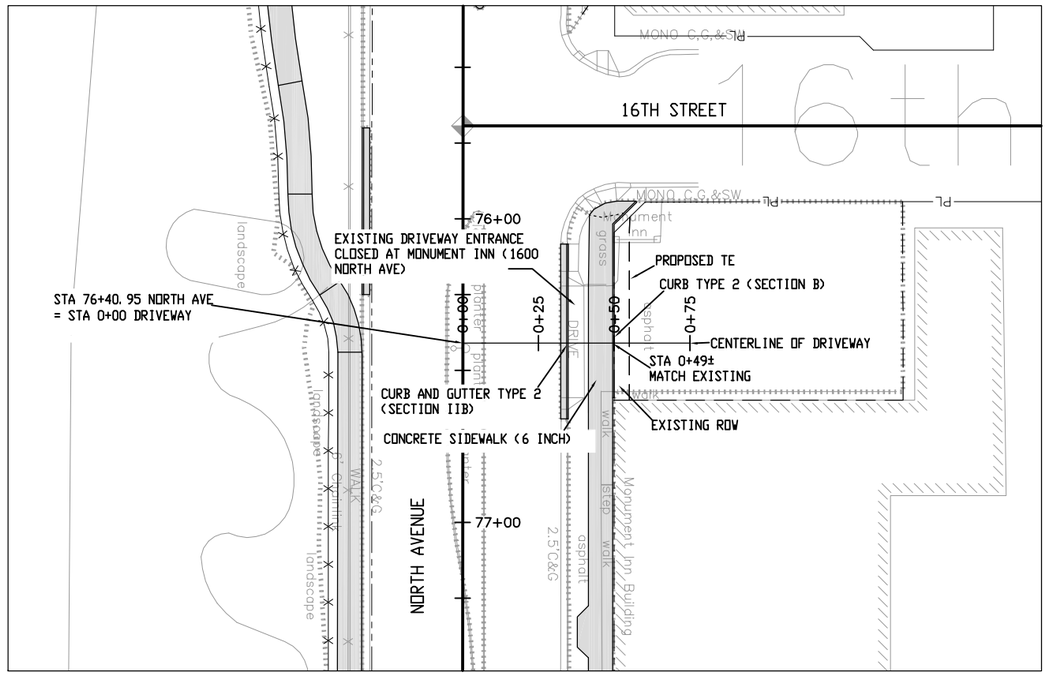

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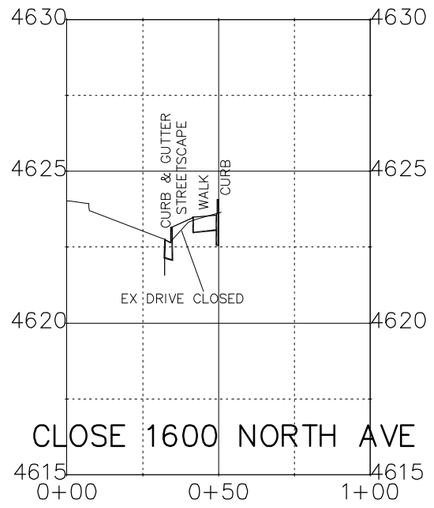
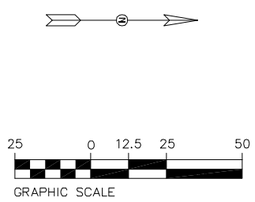
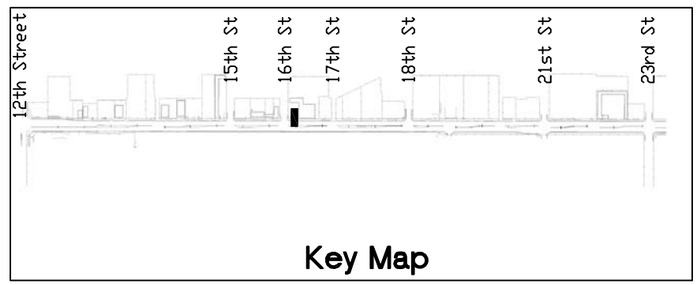


CLOSE 1600 NORTH AVE

SEE STAKING PLAN FOR STAKING DATA AND ELEVATIONS





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Horiz. Scale: 1:50 Vert. Scale: NA					Grand Junction, CO, 81501	Revised:	Designer: John Smith	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369	Void:	Detailer: John Smith	Sheet Number 108
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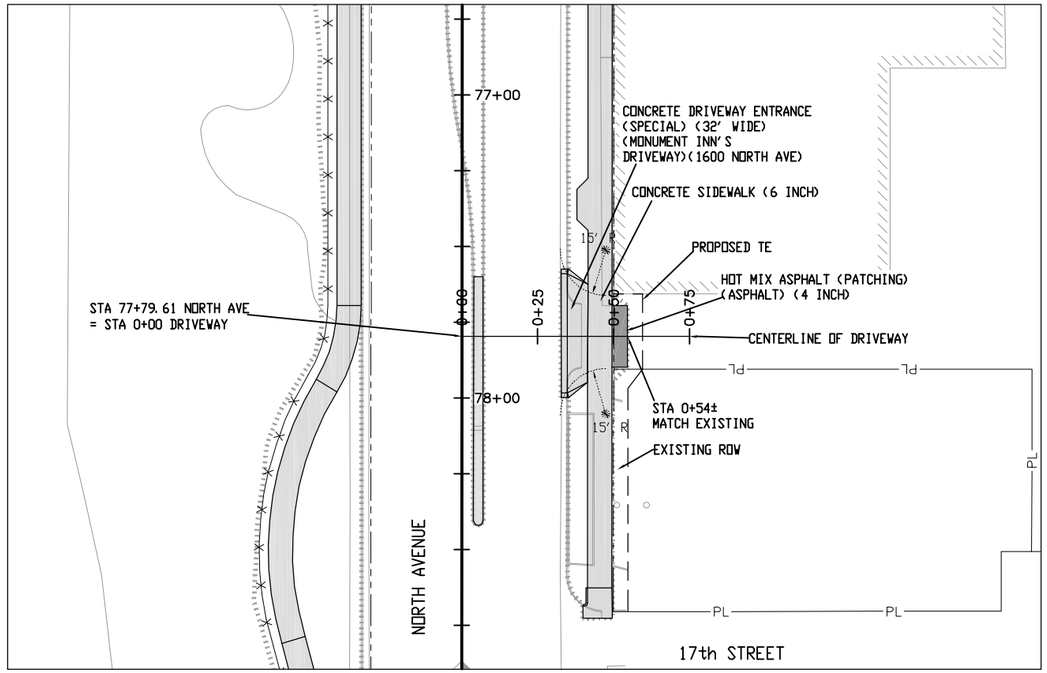
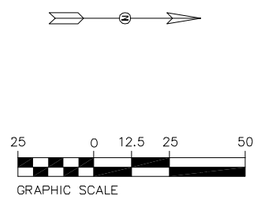
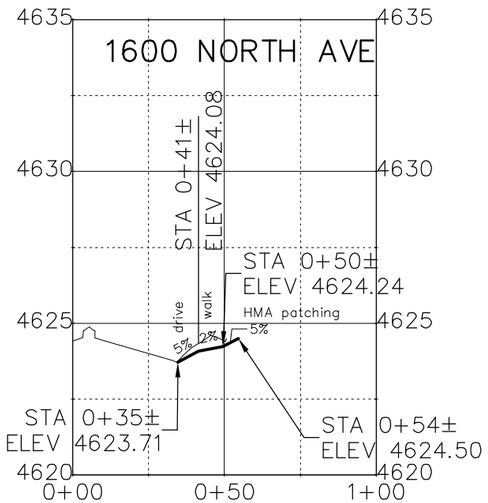
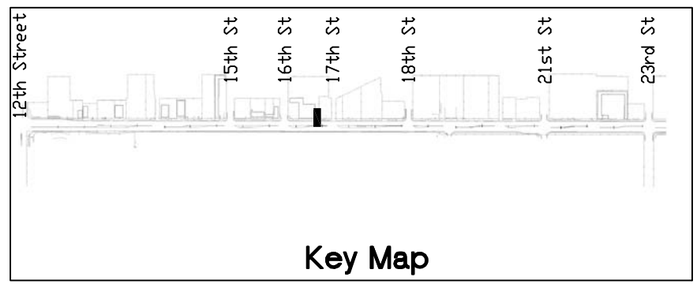


PLAN

SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS







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Horiz. Scale: 1:50 Vert. Scale: NA					Grand Junction, CO, 81501	Revised:	Designer: John Smith	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369	Void:	Detailer: John Smith	Sheet Number 109
					Region 3 RBB		Sheet Subset: dr pln pro	Subset Sheets: 17 of 42

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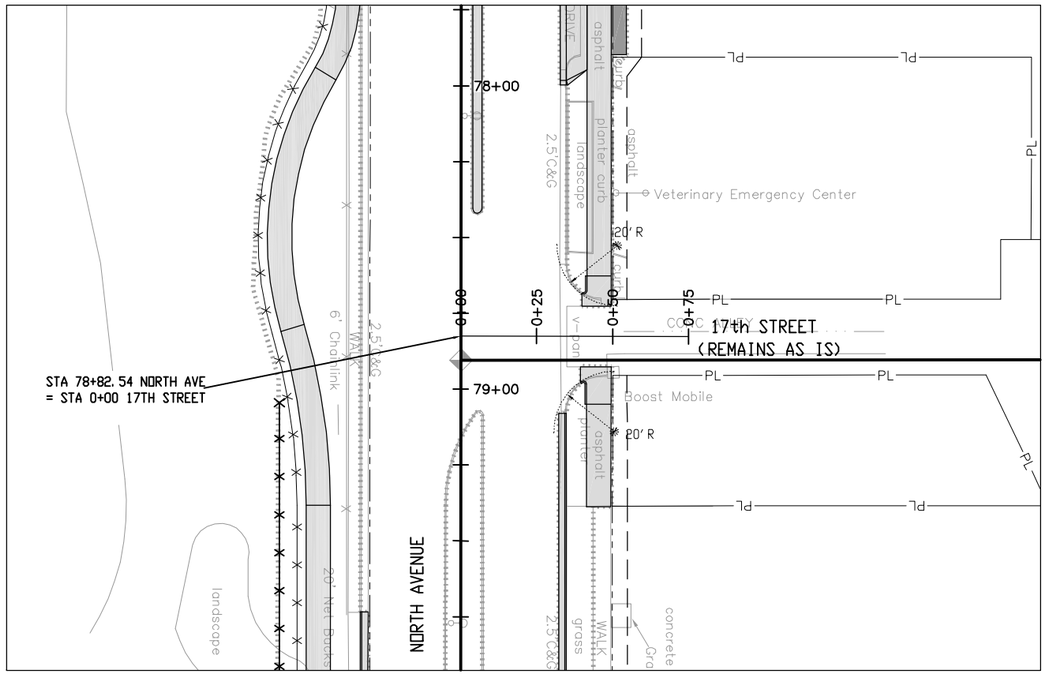

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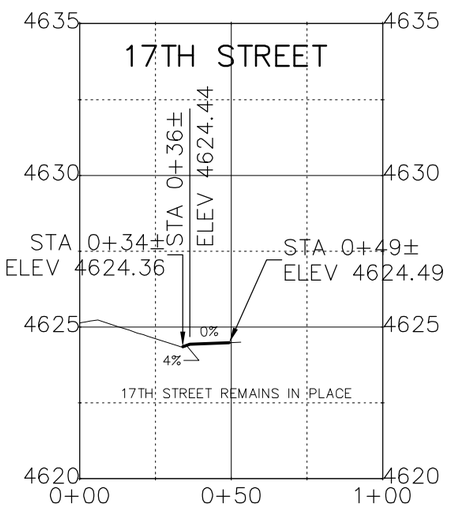

SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS

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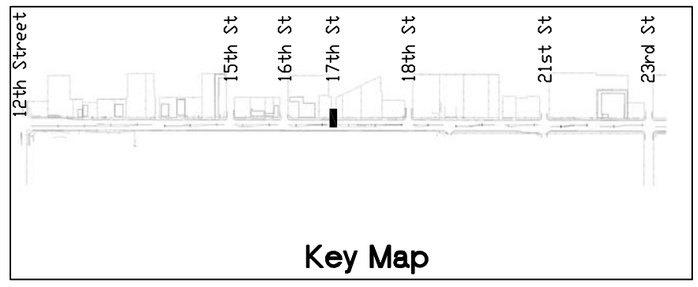

Key Map

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Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:

Driveway Plans and Profiles			Project No./Code
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Detailer: John Smith			19365
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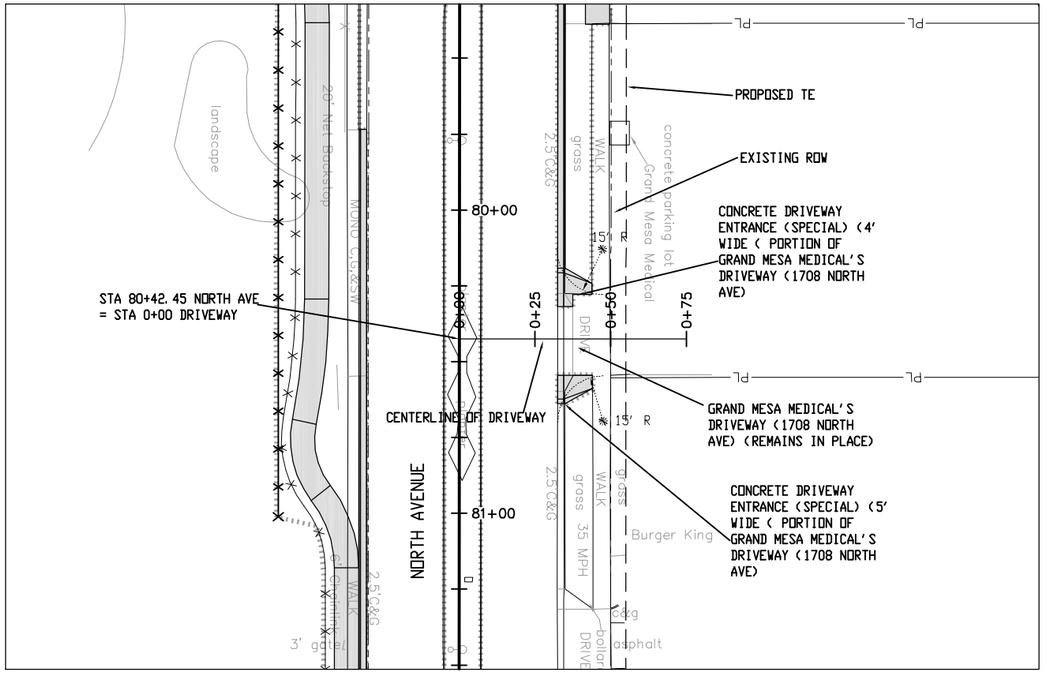

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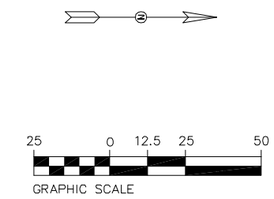

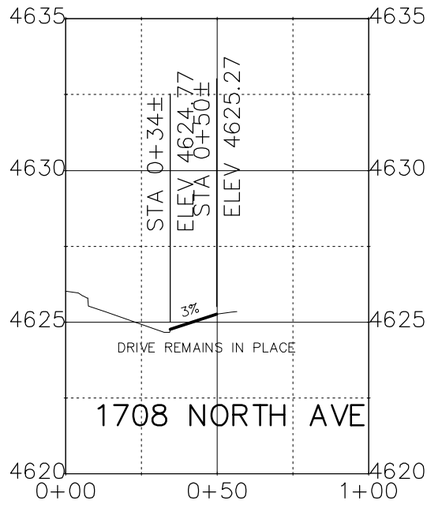

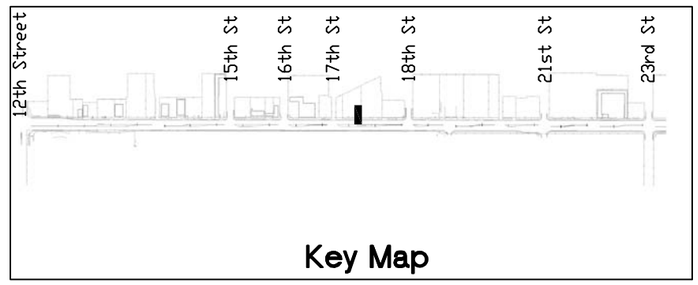

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Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369
					Region 3 RBB

As Constructed	Driveway Plans and Profiles			Project No./Code
No Revisions:				TCSP M555-029
Revised:	Designer: John Smith	Structure Numbers		19365
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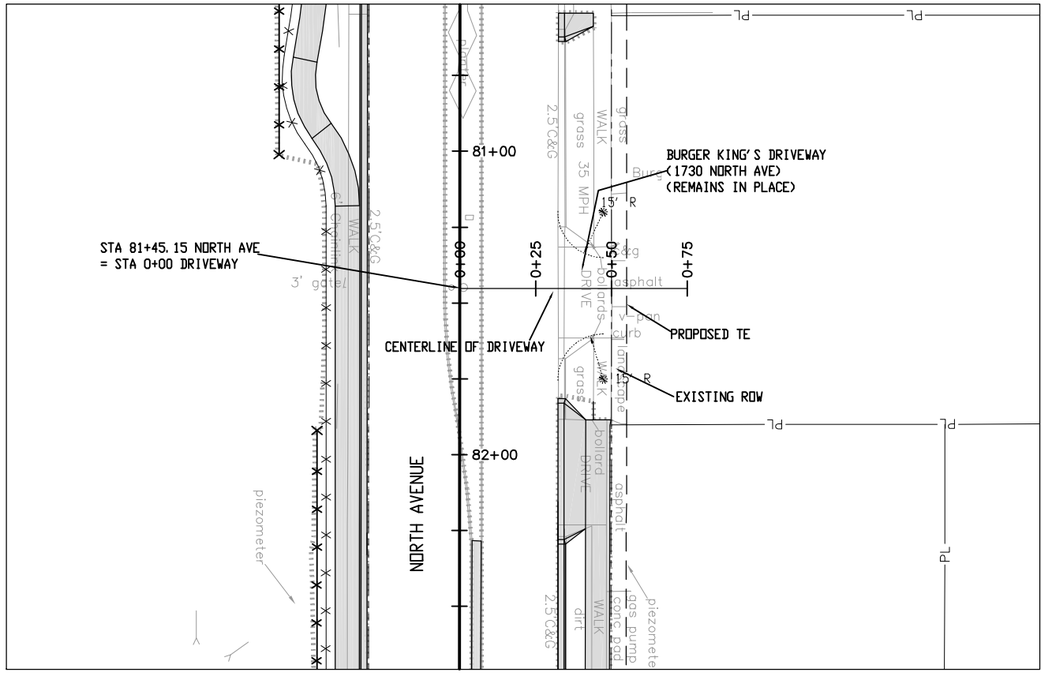

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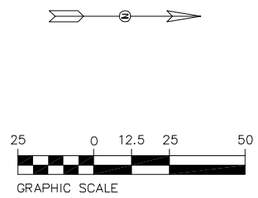
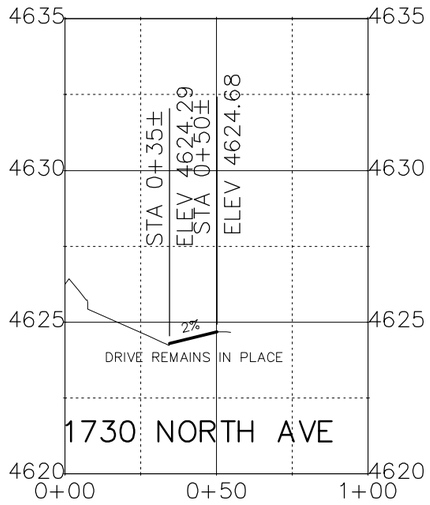
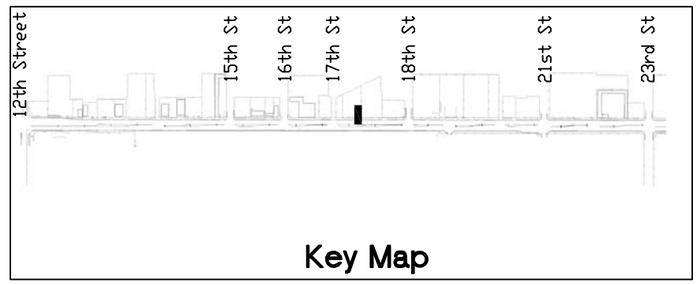
SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS







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Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369	Void:	Detailer: John Smith		Sheet Number 112
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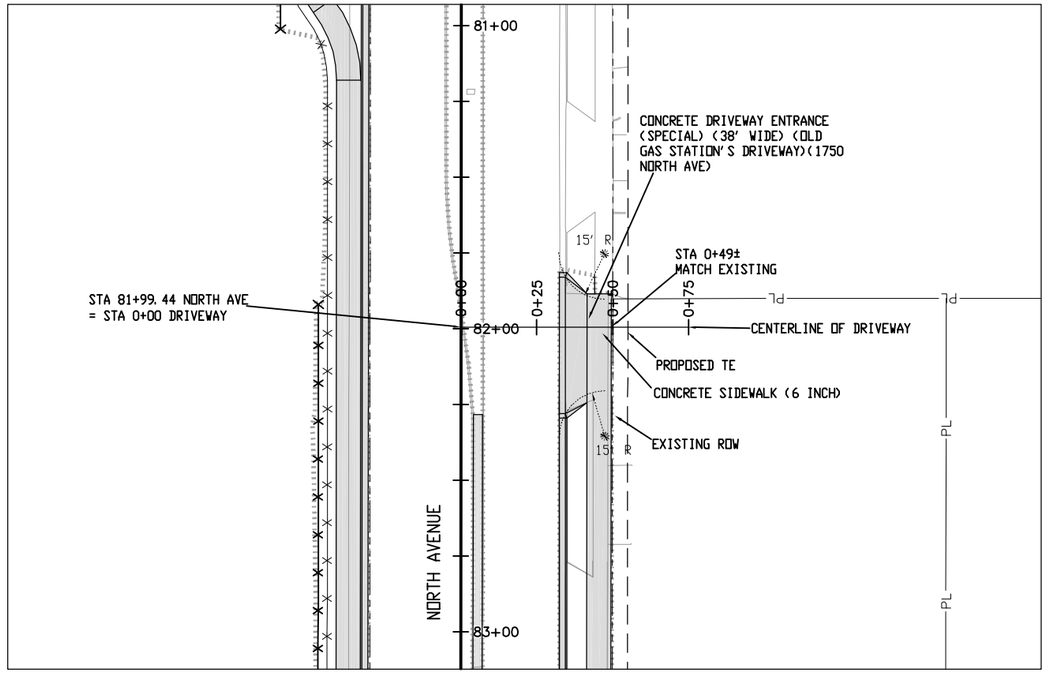

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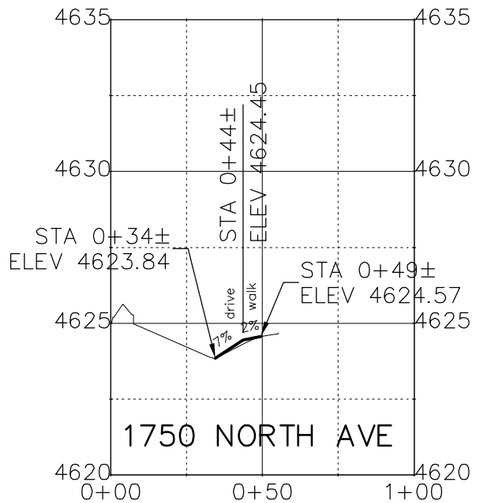
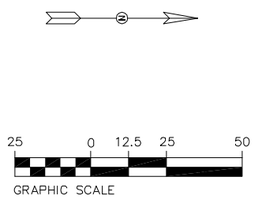
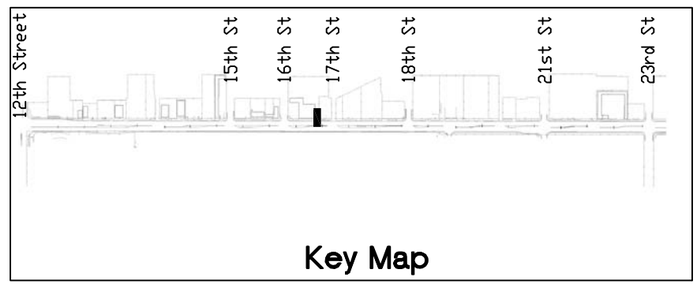


SEE STAKING PLAN FOR STAKING DATA AND ELEVATIONS





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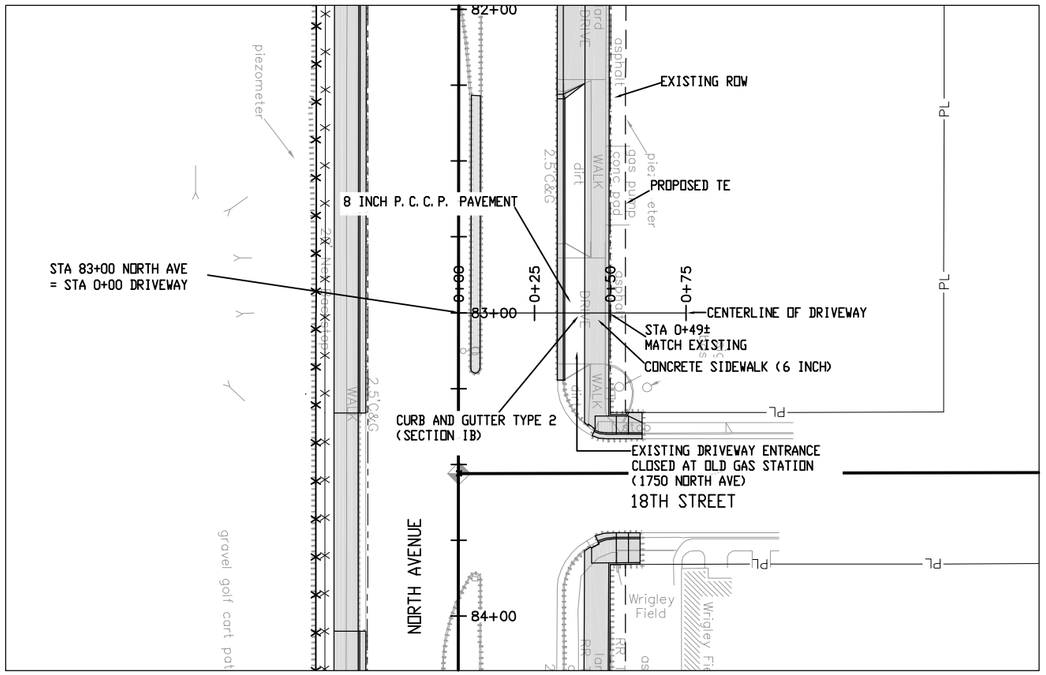

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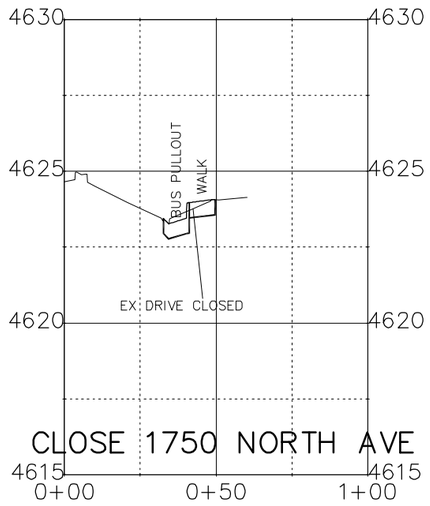
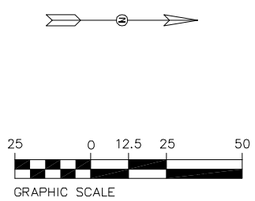
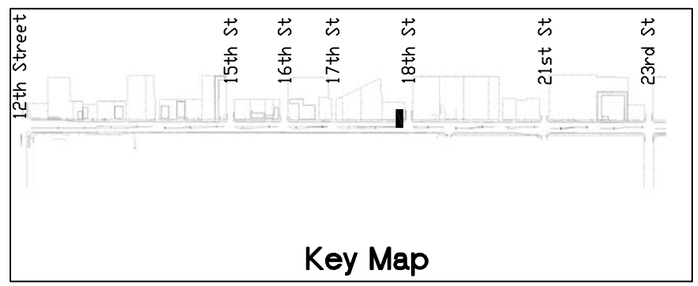


CLOSE 1750 NORTH AVE

SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS





Print Date: AT LEFT		Sheet Revisions			Colorado Department of Transportation	As Constructed	Driveway Plans and Profiles	Project No./Code
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:		TCSP M555-029
Horiz. Scale: 1:50 Vert. Scale: NA						Revised:	Designer: John Smith / Structure Numbers	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:	Detailer: John Smith / Sheet Subset: dr pln pro / Subset Sheets: 22 of 42	Sheet Number 114

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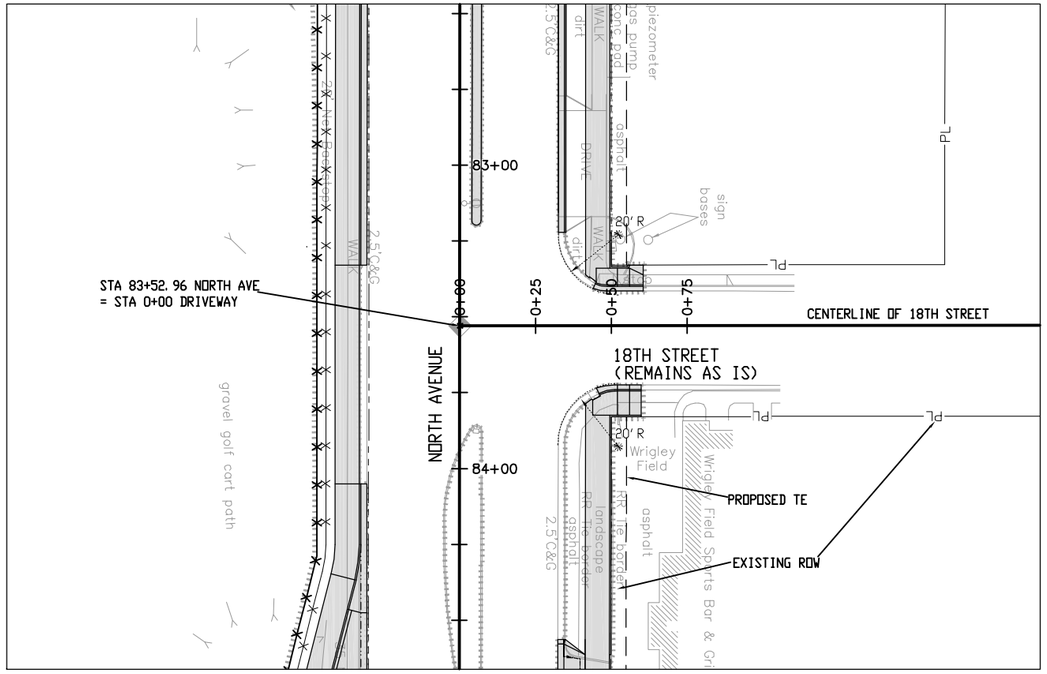

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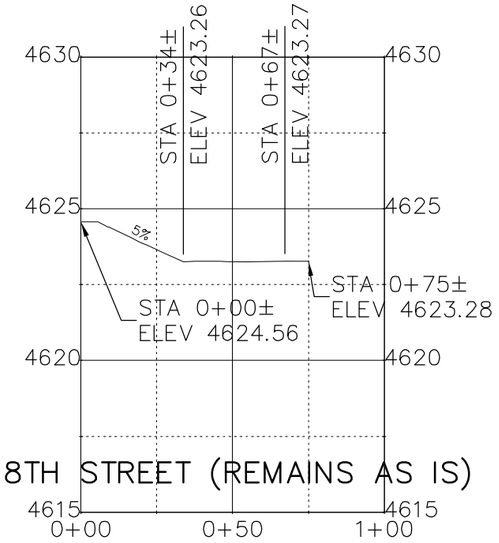
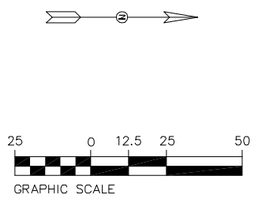
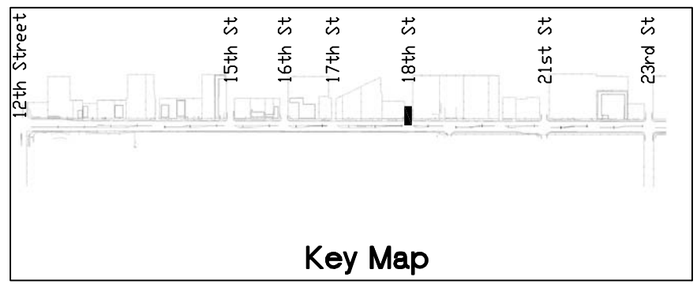


SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS





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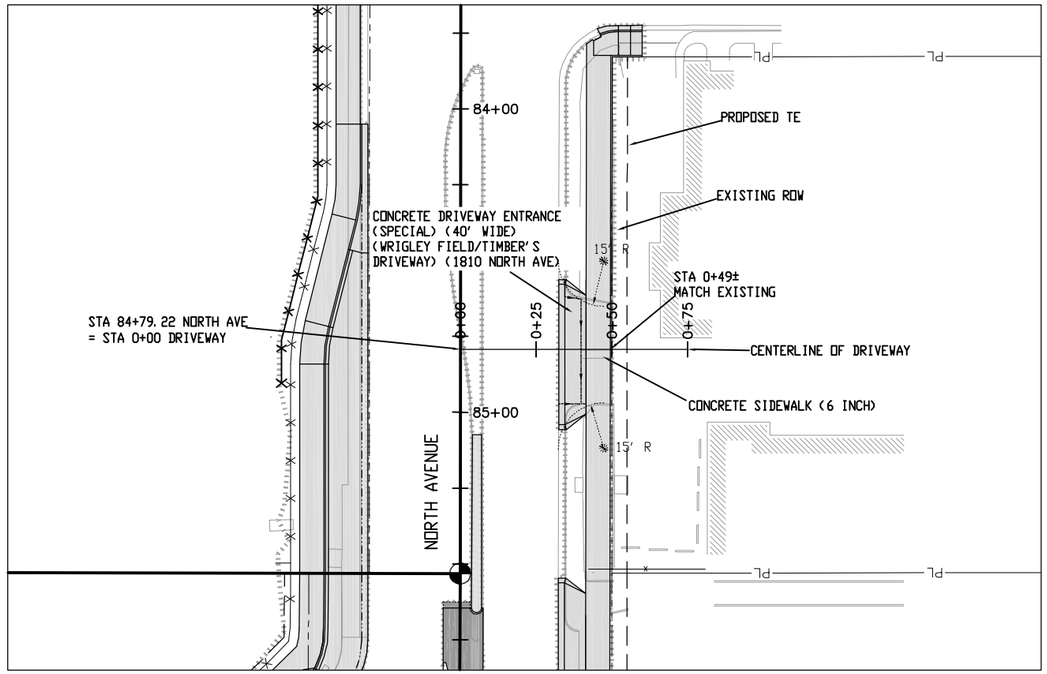
Horiz. Scale: 1:50 Vert. Scale: NA						Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:

Driveway Plans and Profiles			Project No./Code
			TCSP M555-029
Designer: John Smith	Structure Numbers		19365
Detailer: John Smith			
Sheet Subset: dr pln pro	Subset Sheets:	23 of 42	Sheet Number 115



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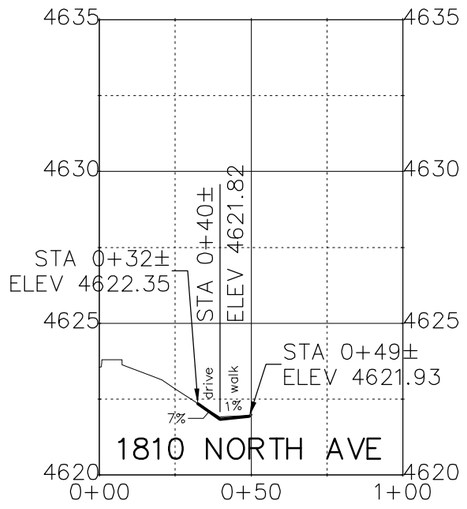
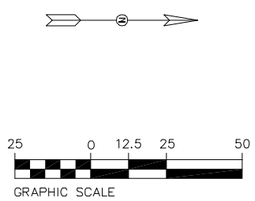
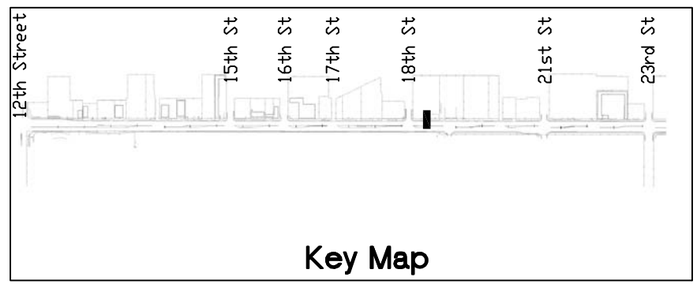


SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS





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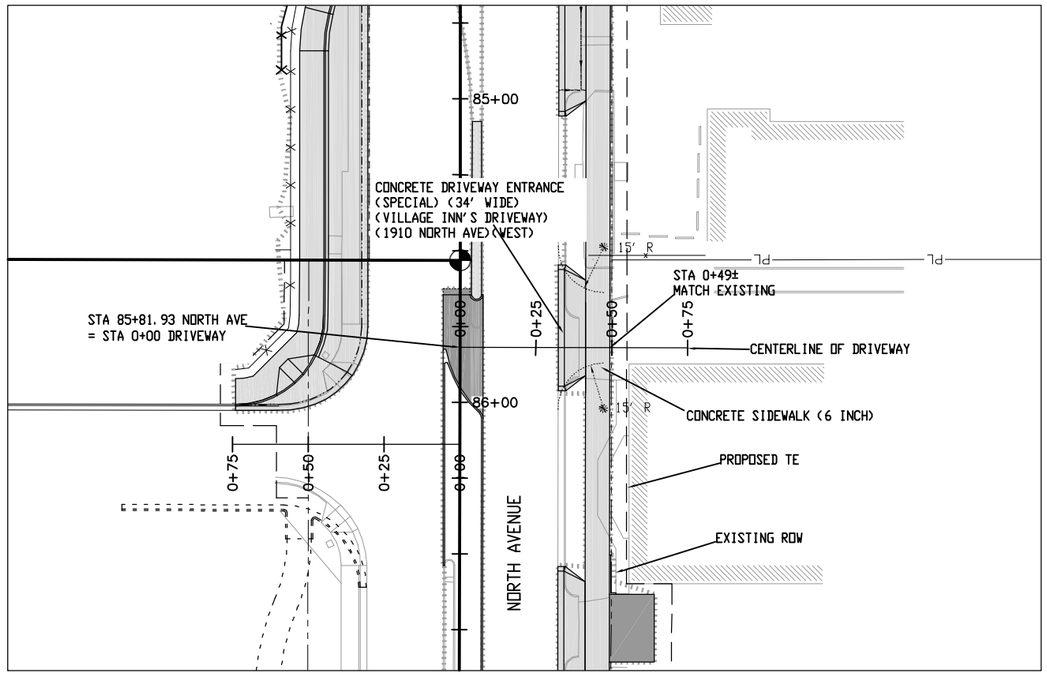

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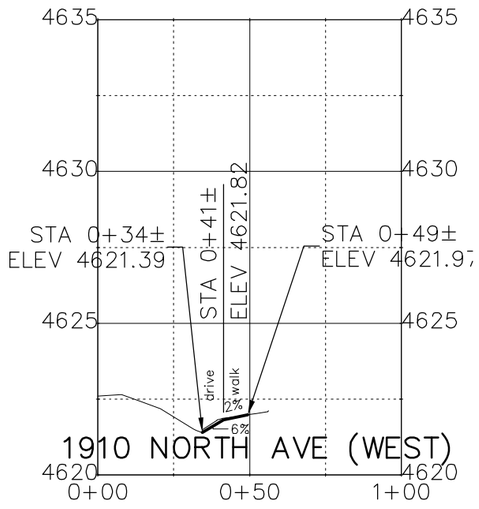
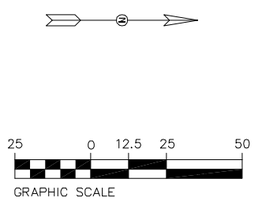
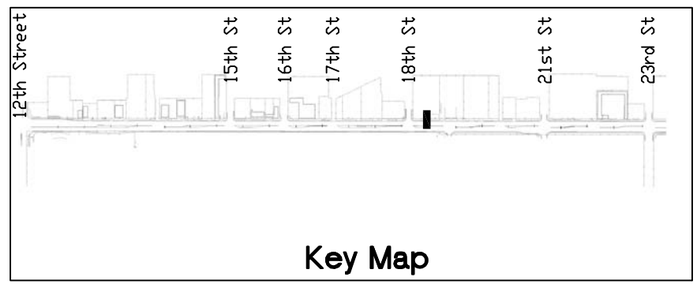


SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS





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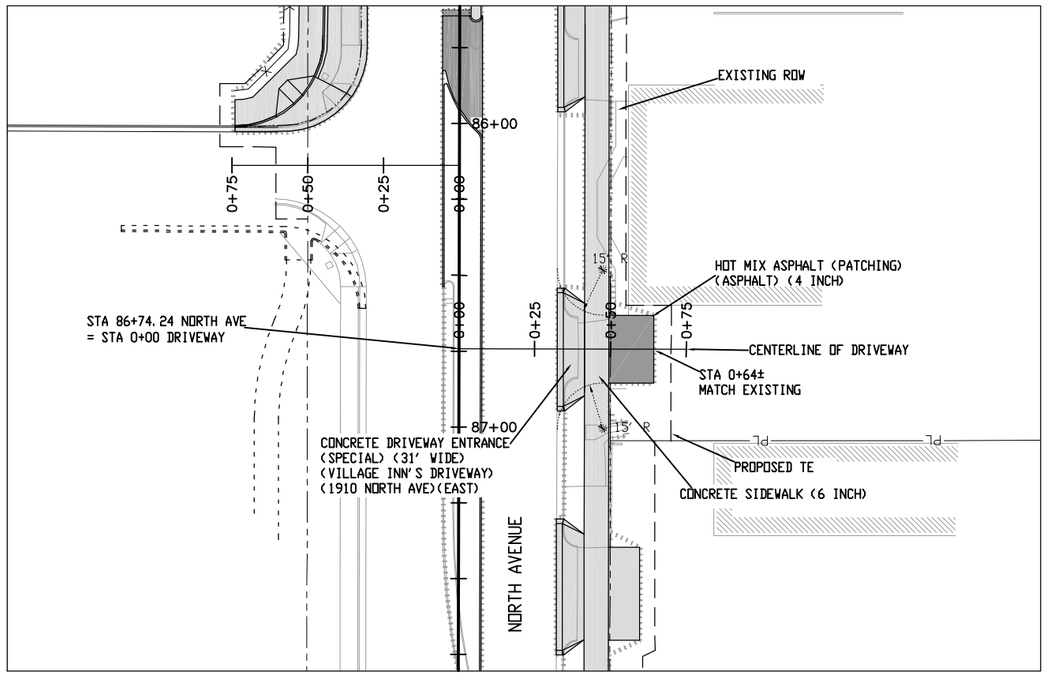
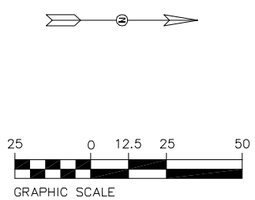
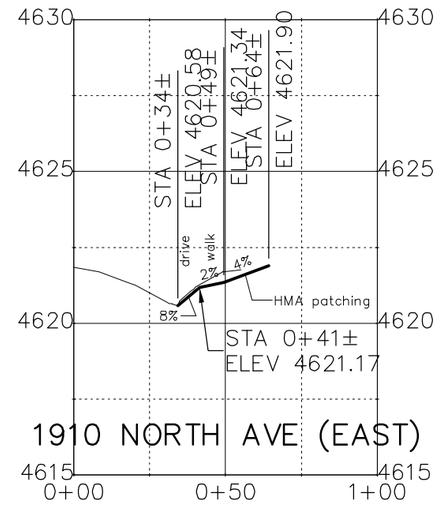
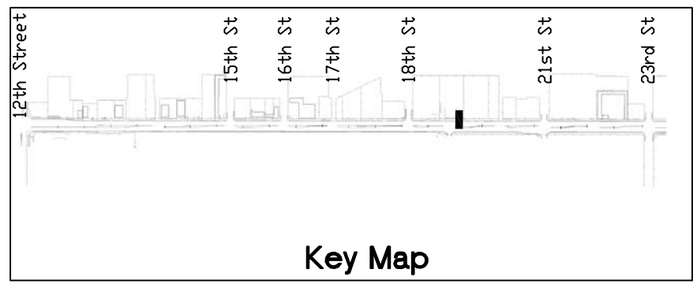


PLAN

SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS







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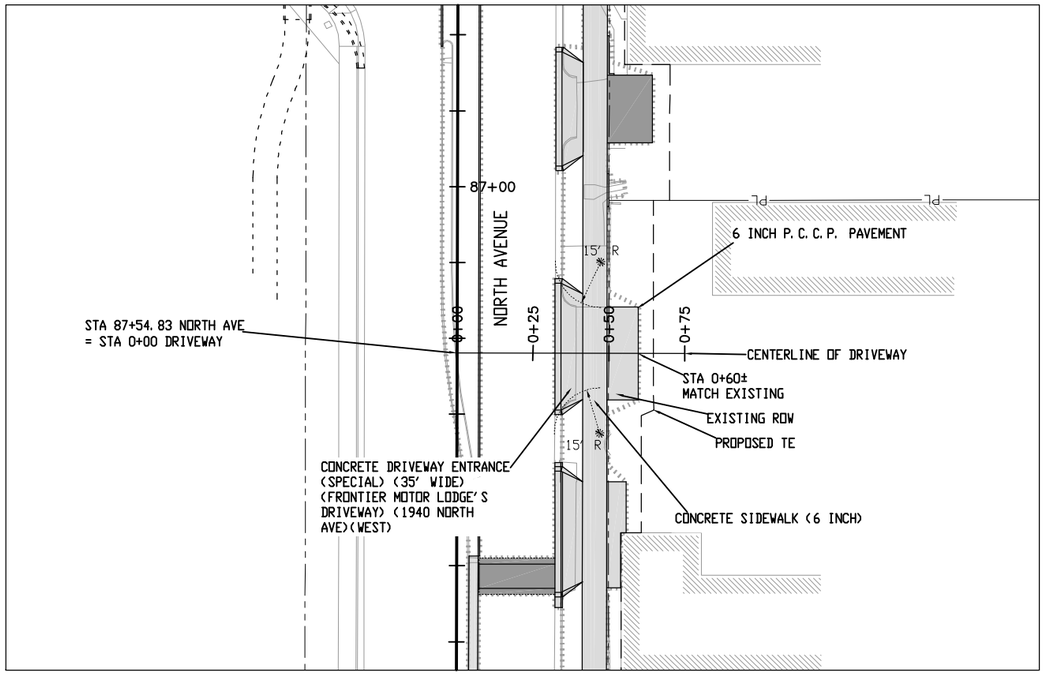
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street	No Revisions:		TCSP M555-029
Horiz. Scale: 1:50 Vert. Scale: NA					Grand Junction, CO, 81501	Revised:	Designer: John Smith	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369	Void:	Detailer: John Smith	Sheet Number 118
					Region 3 RBB		Sheet Subset: dr pln pro	Subset Sheets: 26 of 42



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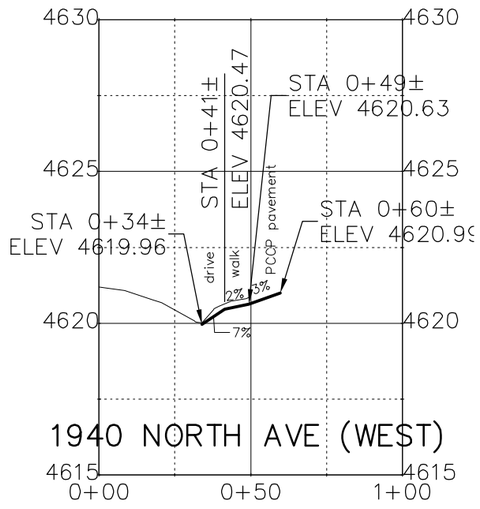
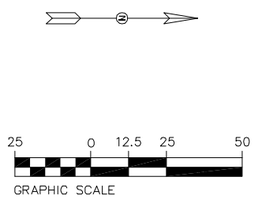
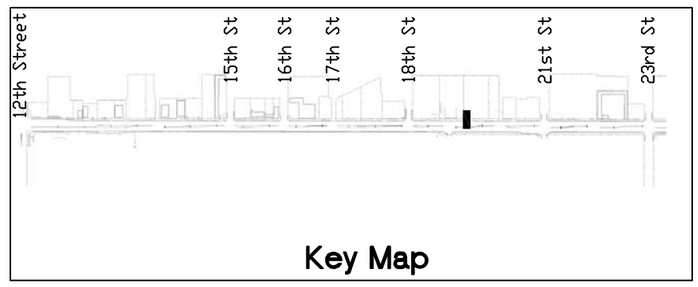




SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS



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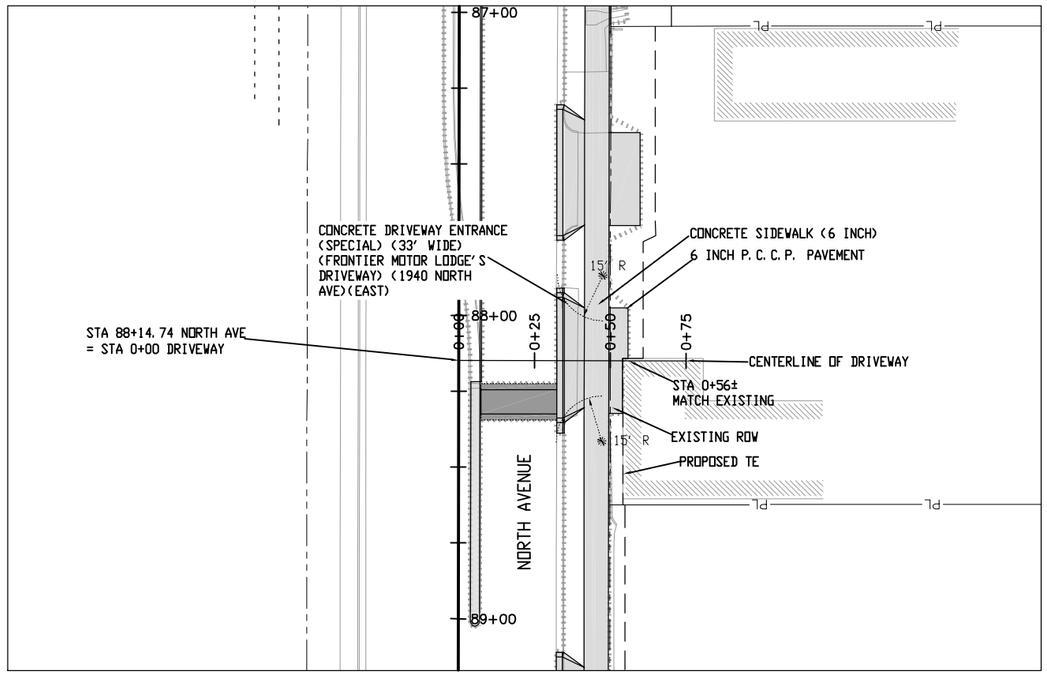
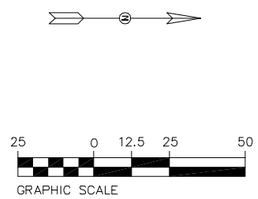
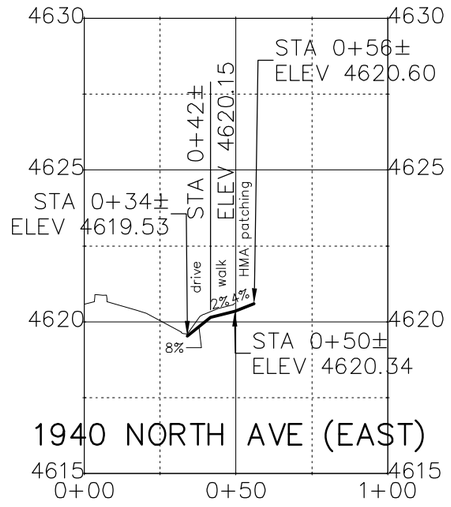
Horiz. Scale: 1:50 Vert. Scale: NA					Grand Junction, CO, 81501	Revised:	Designer: John Smith	Structure Numbers	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369	Void:	Detailer: John Smith		Sheet Number 119
					Region 3 RBB		Sheet Subset: dr pln pro	Subset Sheets: 27 of 42	

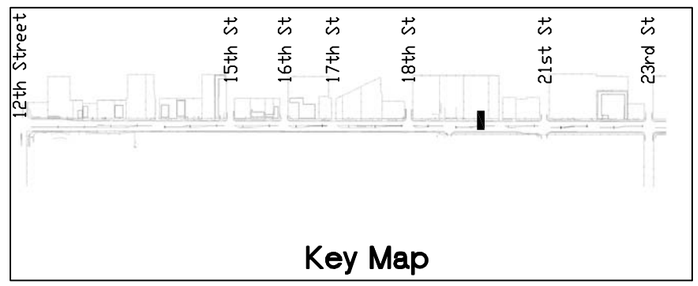


PLAN

SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS







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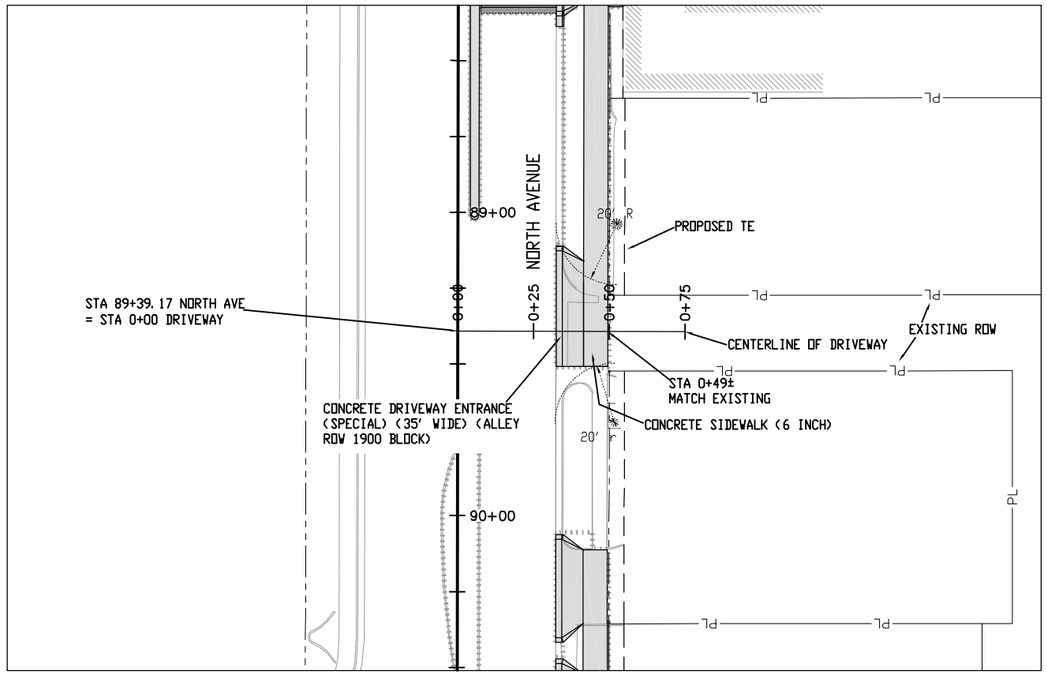
Horiz. Scale: 1:50 Vert. Scale: NA						Revised:	Designer: John Smith / Structure Numbers	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:	Detailer: John Smith / Sheet Subset: dr pln pro / Subset Sheets: 28 of 42	Sheet Number 120



PLAN

SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS

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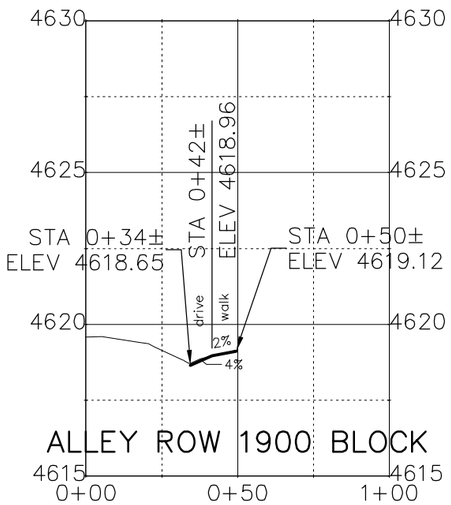
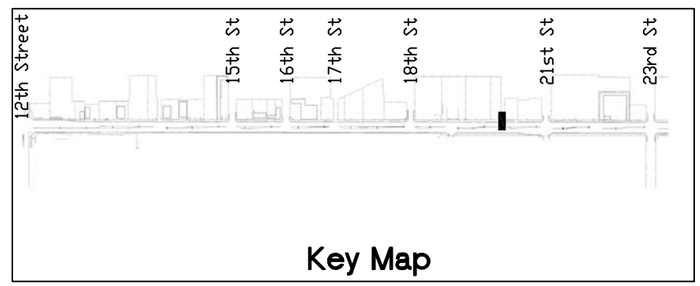
GRAPHIC SCALE





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Horiz. Scale: 1:50 Vert. Scale: NA					Grand Junction, CO, 81501	Revised:	Designer: John Smith	Structure Numbers	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369	Void:	Detailer: John Smith		Sheet Number 121
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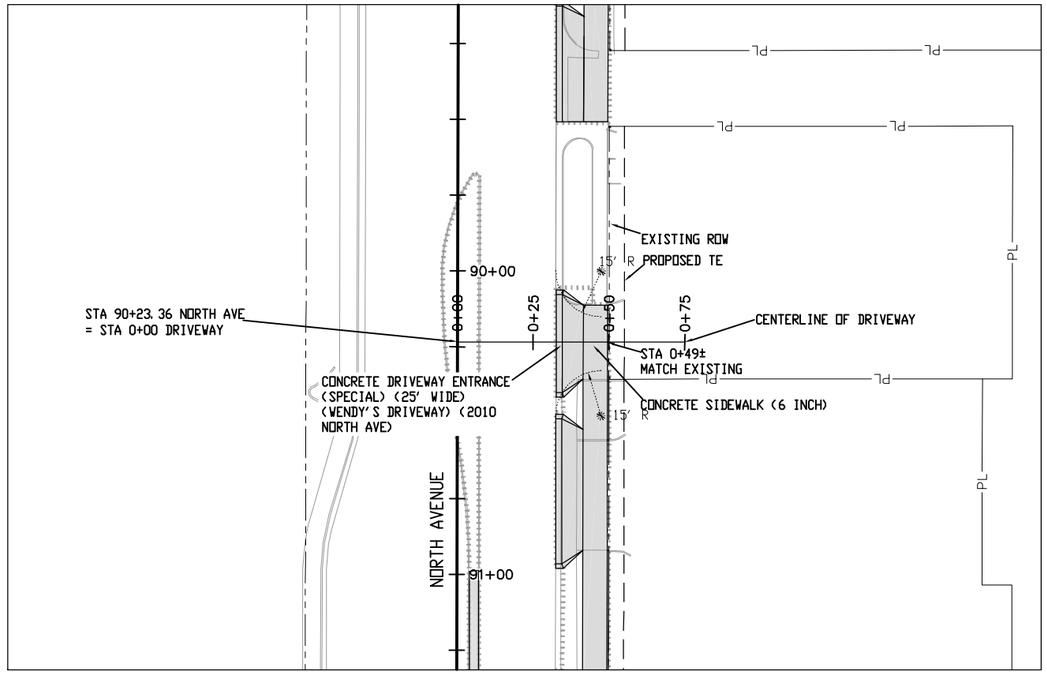
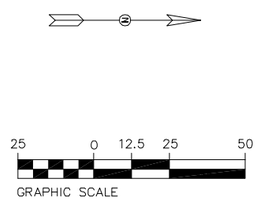
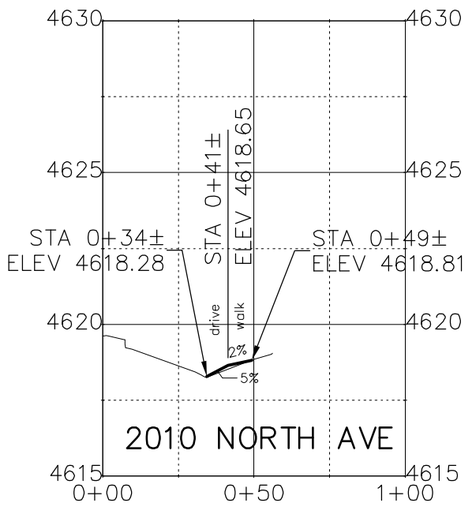
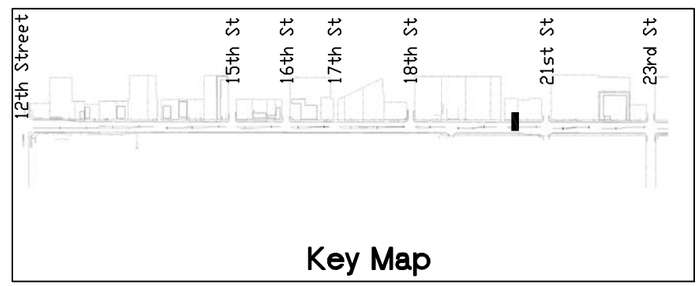


PLAN

SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS







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Horiz. Scale: 1:50 Vert. Scale: NA					Grand Junction, CO, 81501	Revised:	Designer: John Smith	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369	Void:	Detailer: John Smith	Sheet Number 122
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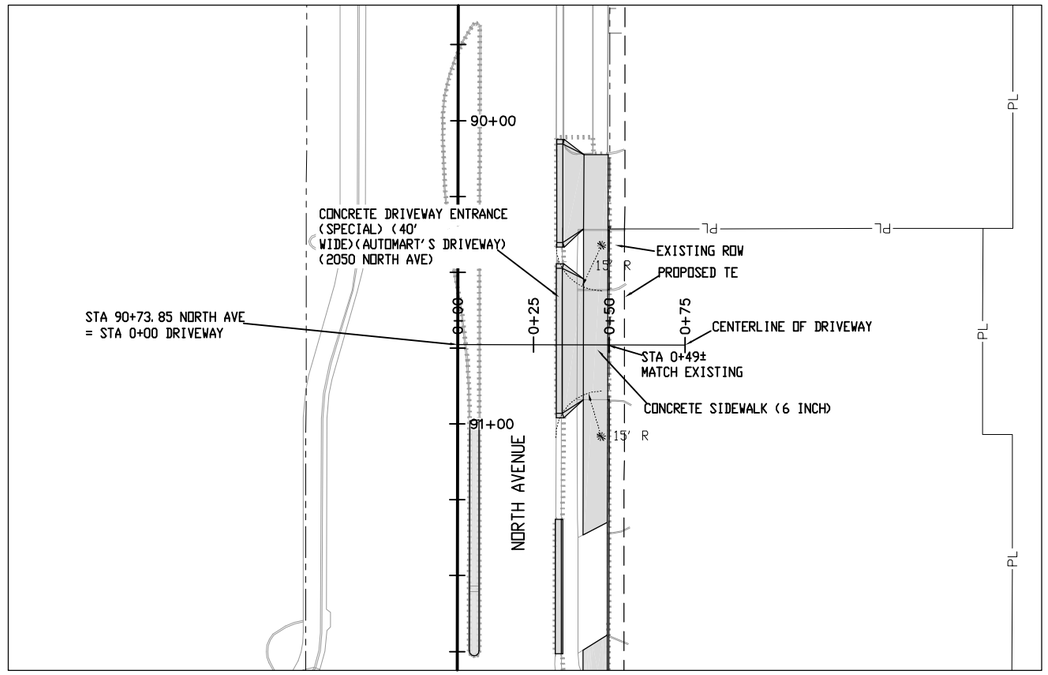

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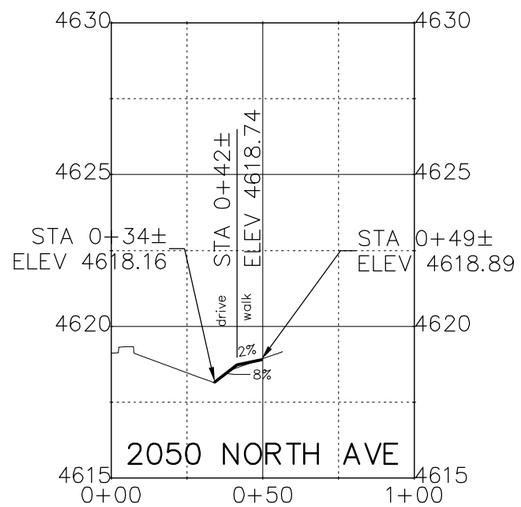
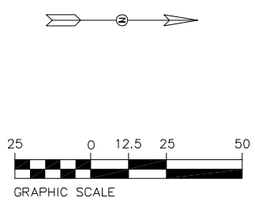
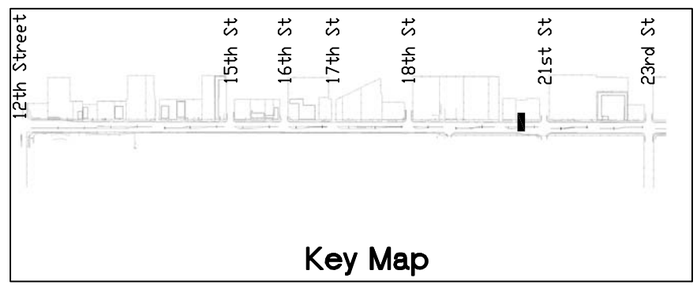


SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS





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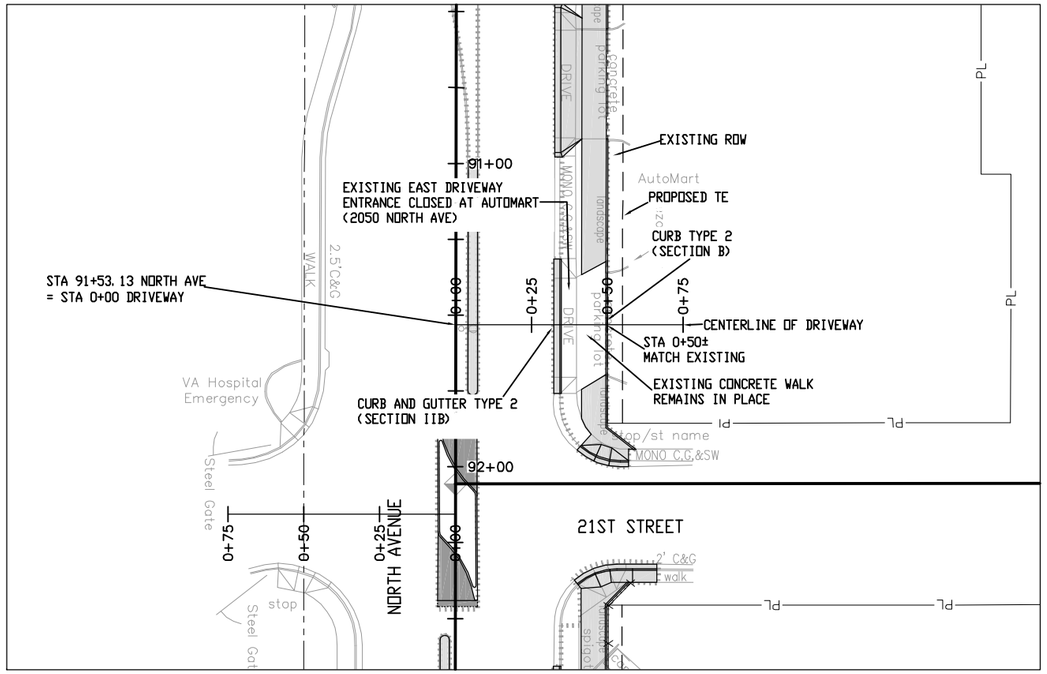
Unit Information: City of GJ Unit Leader Initials: DPJ			Phone: 970-683-6351 FAX: 970-683-6369	Void:	19365
			Region 3 RBB	Designer: John Smith / Detailer: John Smith / Sheet Subset: dr pln pro	Structure Numbers / Subset Sheets: 31 of 42
					Sheet Number 123



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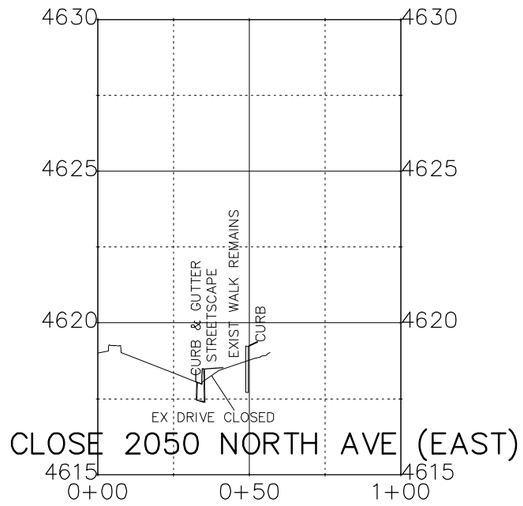
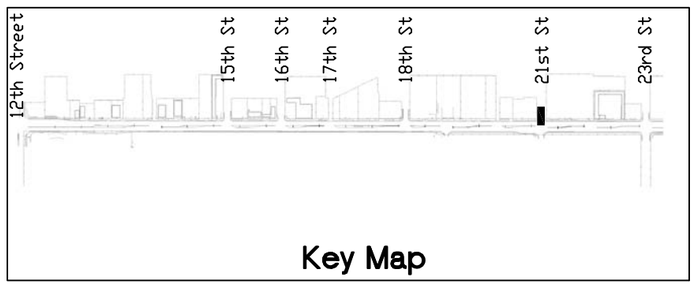


CLOSE 2050 NORTH AVE (EAST)

SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS

25 0 12.5 25 50

GRAPHIC SCALE



Key Map

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Horiz. Scale: 1:50 Vert. Scale: NA					Grand Junction, CO, 81501	Revised:	Designer: John Smith	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369	Void:	Detailer: John Smith	Sheet Number 124
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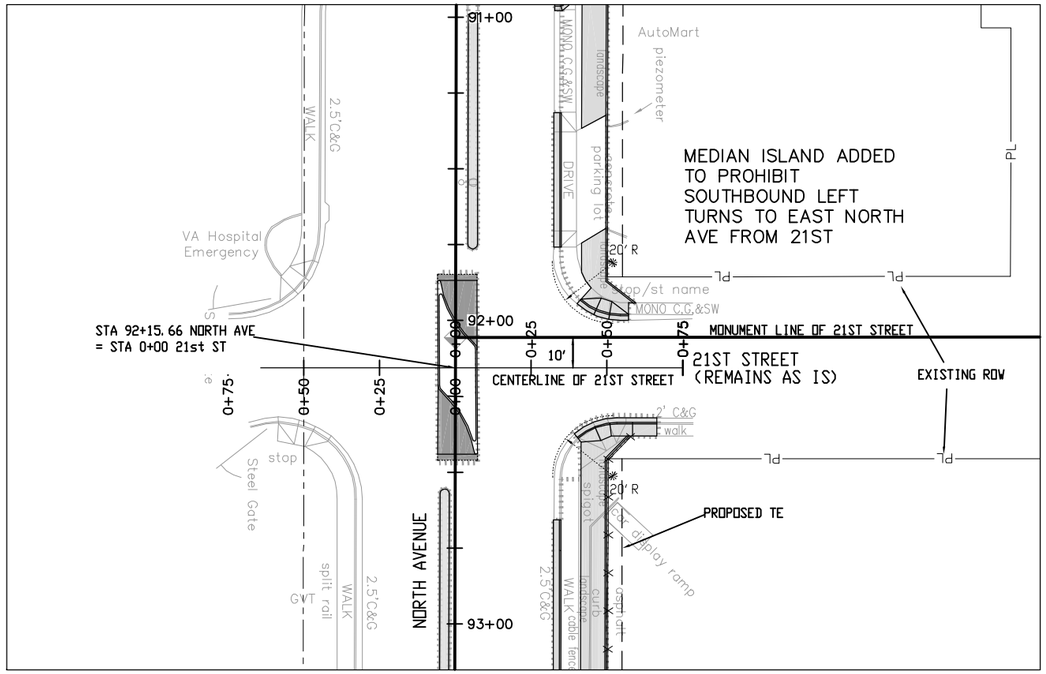
							Subset Sheets: 32 of 42	

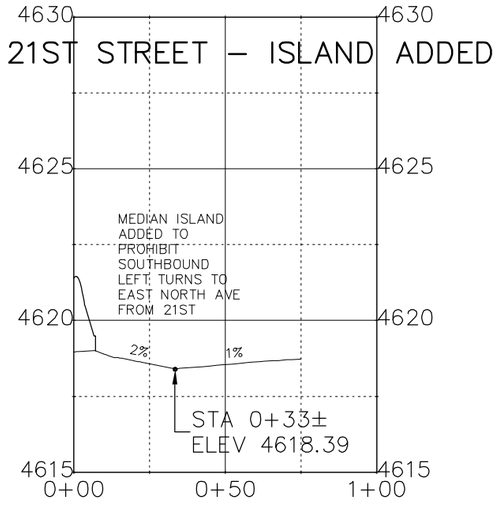


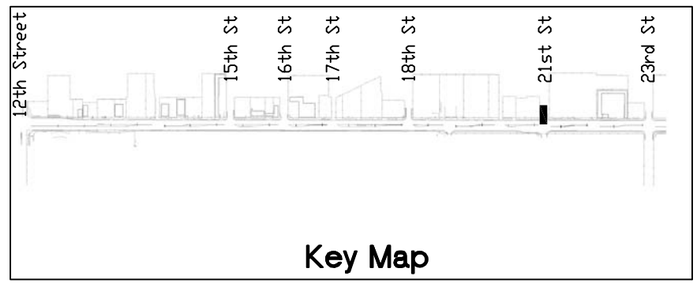
PLAN

SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS

25 0 12.5 25 50

GRAPHIC SCALE





Key Map

N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\roadway plans with city std dwy cuts.dwg, 8/20/2015 2:53:19 PM

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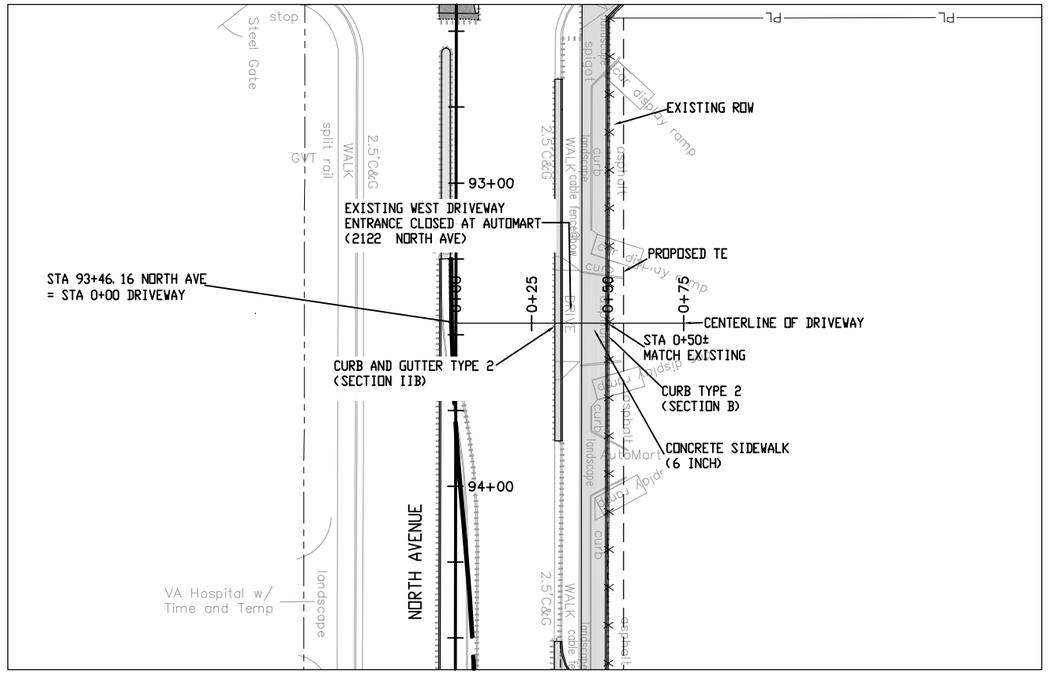
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street	No Revisions:
Horiz. Scale: 1:50 Vert. Scale: NA					Grand Junction, CO, 81501	Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369	Void:
					Region 3 RBB	

Driveway Plans and Profiles			Project No./Code
			TCSP M555-029
Designer: John Smith	Structure Numbers		19365
Detailer: John Smith			
Sheet Subset: dr pln pro	Subset Sheets: 33 of 42		Sheet Number 125



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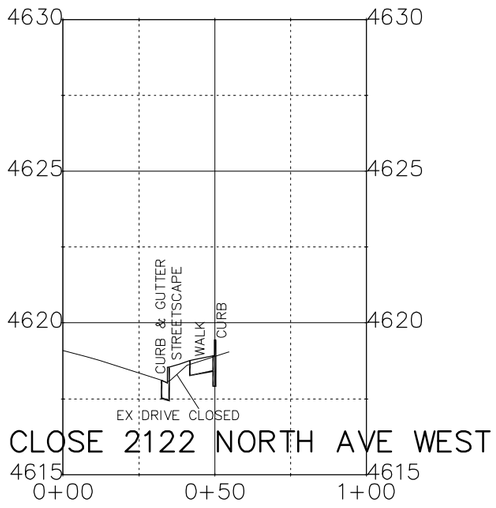

CLOSE 2122 NORTH AVE WEST

SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS

25 0 12.5 25 50

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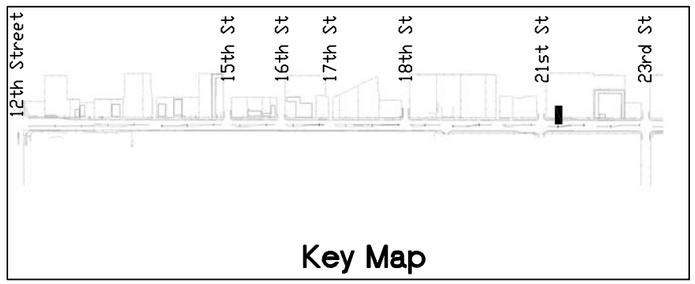

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Horiz. Scale: 1:50 Vert. Scale: NA					Grand Junction, CO, 81501
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369
					Region 3 RBB

As Constructed	Driveway Plans and Profiles			Project No./Code
No Revisions:				TCSP M555-029
Revised:	Designer: John Smith	Structure Numbers		19365
Void:	Detailer: John Smith			Sheet Number 126
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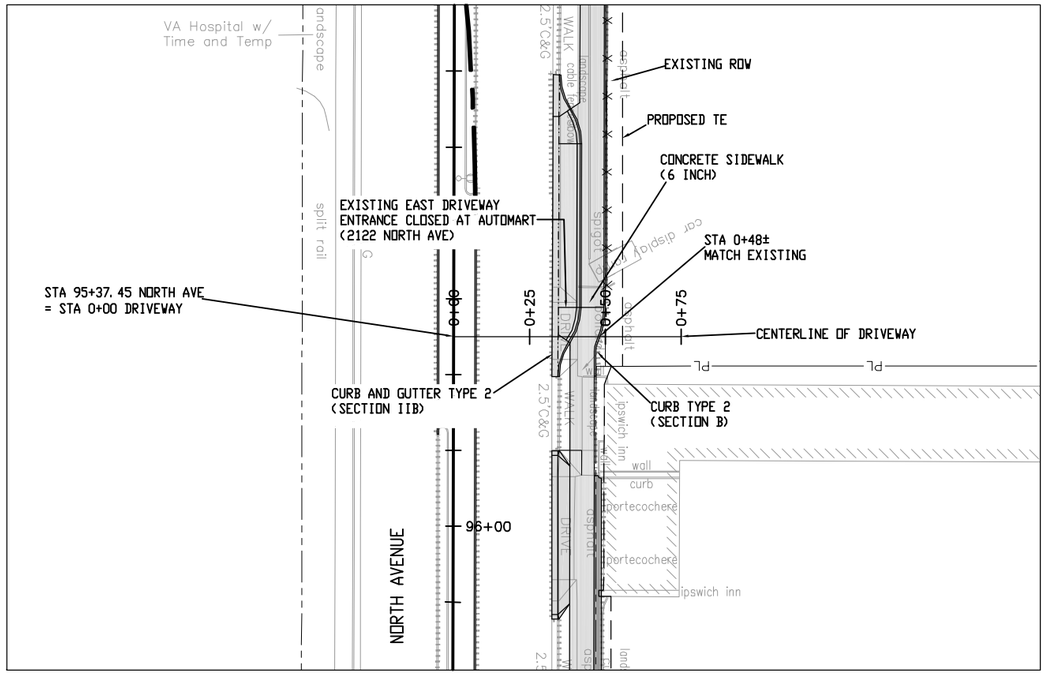

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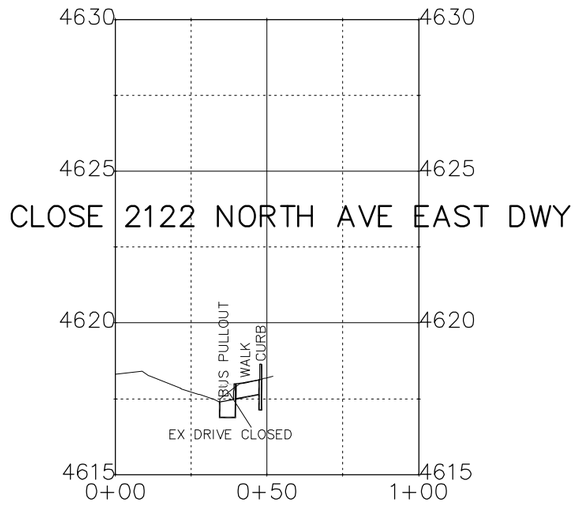
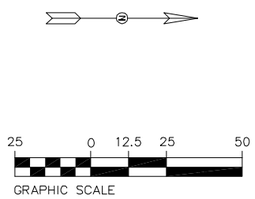
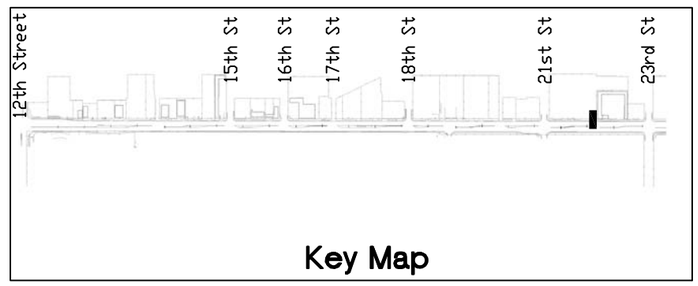


SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS





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File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street	No Revisions:		TCSP M555-029
Horiz. Scale: 1:50 Vert. Scale: NA					Grand Junction, CO, 81501	Revised:	Designer: John Smith	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369	Void:	Detailer: John Smith	Sheet Number 127
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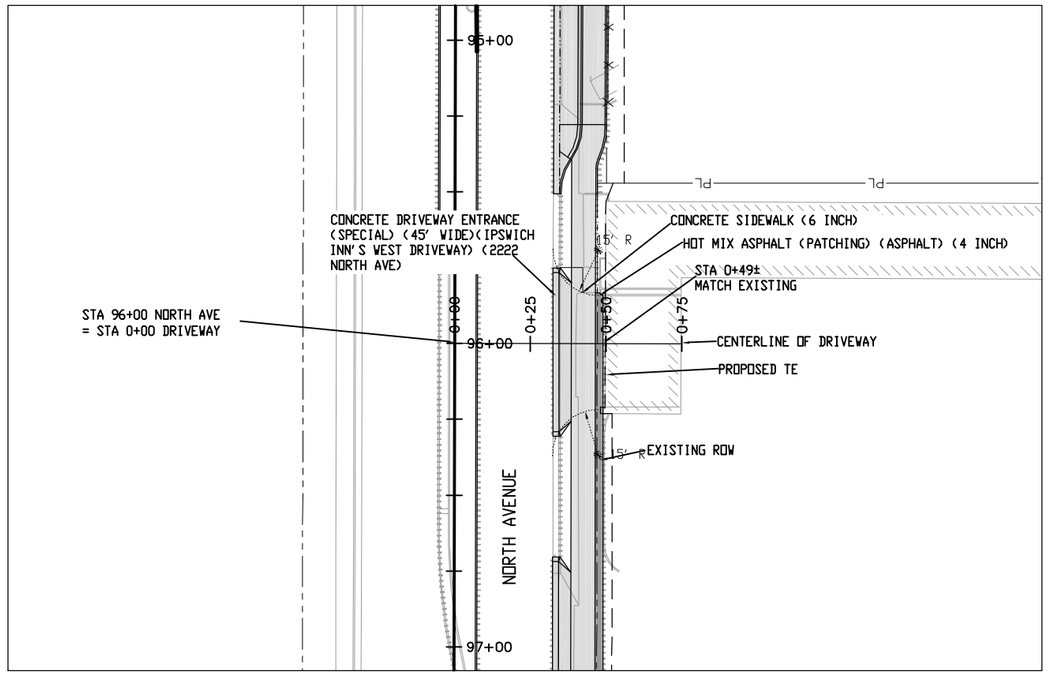

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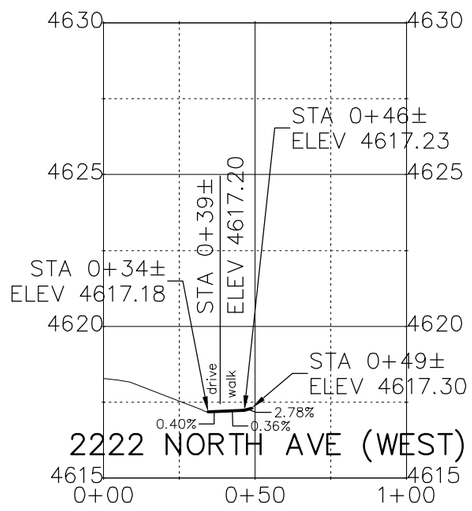
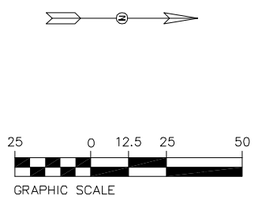
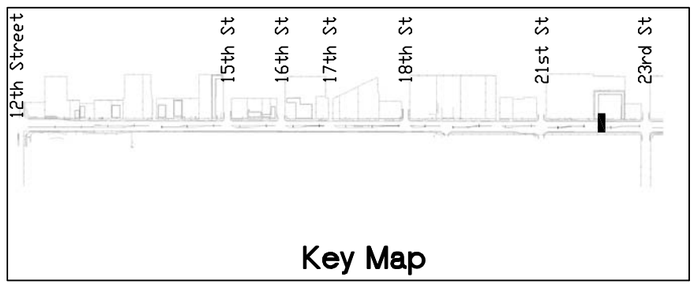


SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS





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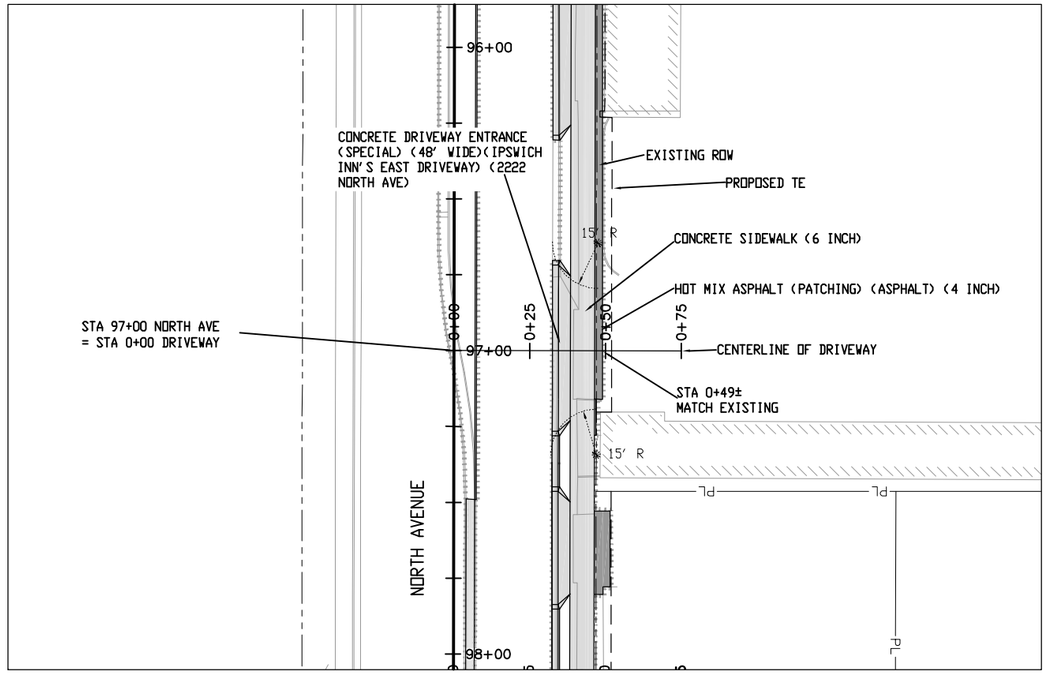
Horiz. Scale: 1:50 Vert. Scale: NA					Grand Junction, CO, 81501
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369
					Region 3 RBB

As Constructed	Driveway Plans and Profiles			Project No./Code
No Revisions:				TCSP M555-029
Revised:	Designer: John Smith	Structure Numbers		19365
Void:	Detailer: John Smith			Sheet Number 128
	Sheet Subset: dr pln pro	Subset Sheets:	36 of 42	



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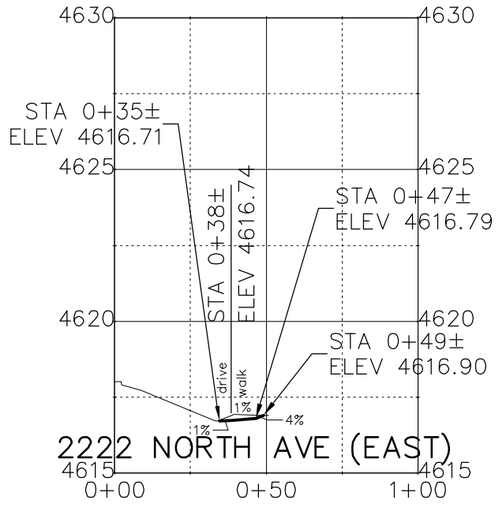
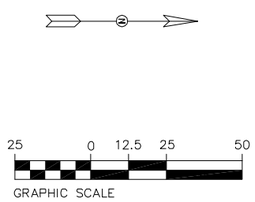
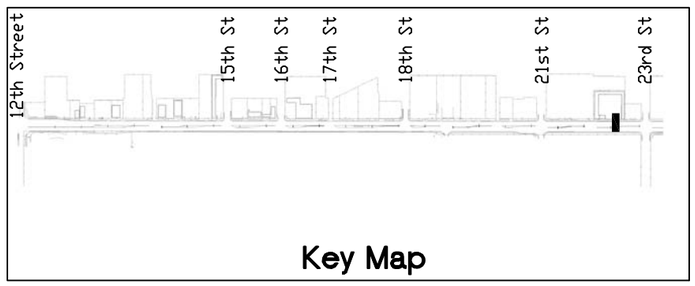


SEE STAKING PLAN FOR STAKING DATA AND ELEVATIONS





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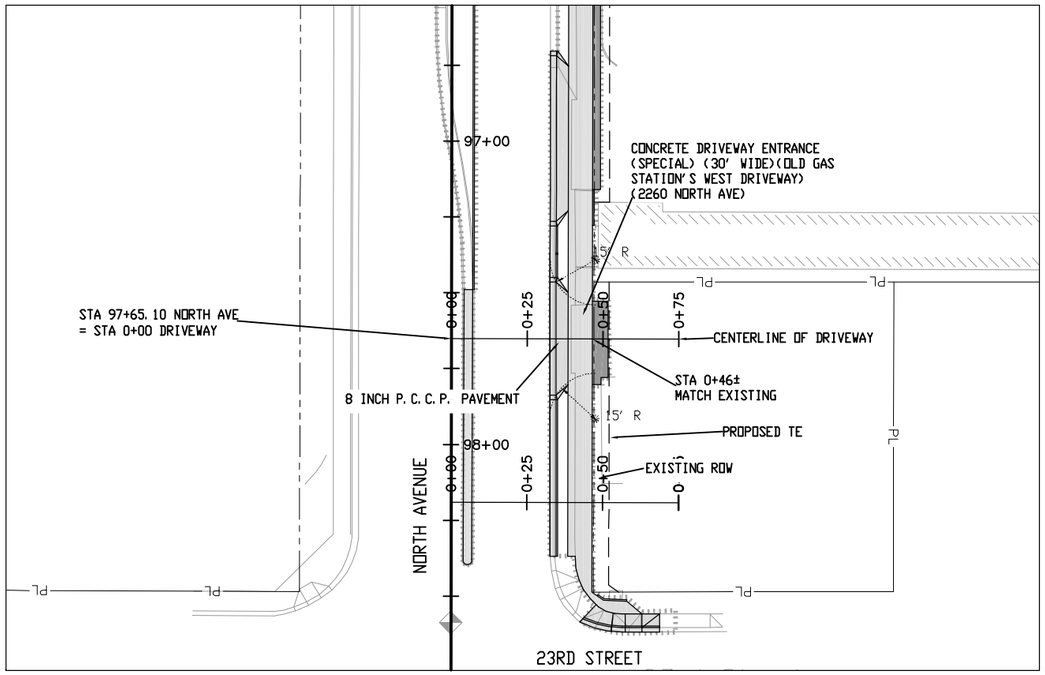
File Name: AT LEFT	Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:
Horiz. Scale: 1:50 Vert. Scale: NA				Region 3 RBB	Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ					Void:

Driveway Plans and Profiles			Project No./Code
Designer: John Smith	Structure Numbers		TCSP M555-029
Detailer: John Smith			19365
Sheet Subset: dr pln pro	Subset Sheets:	37 of 42	Sheet Number 129



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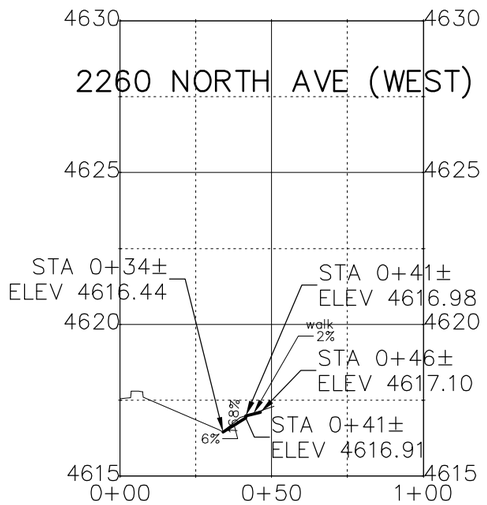
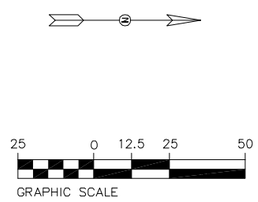
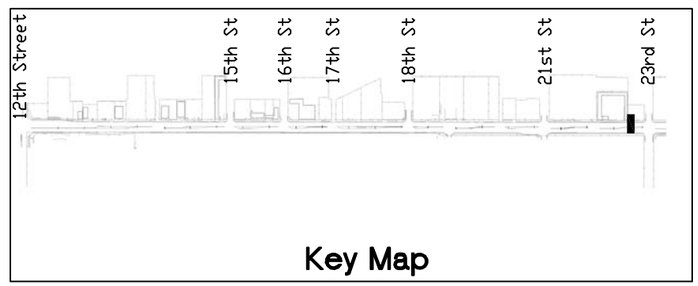


SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS





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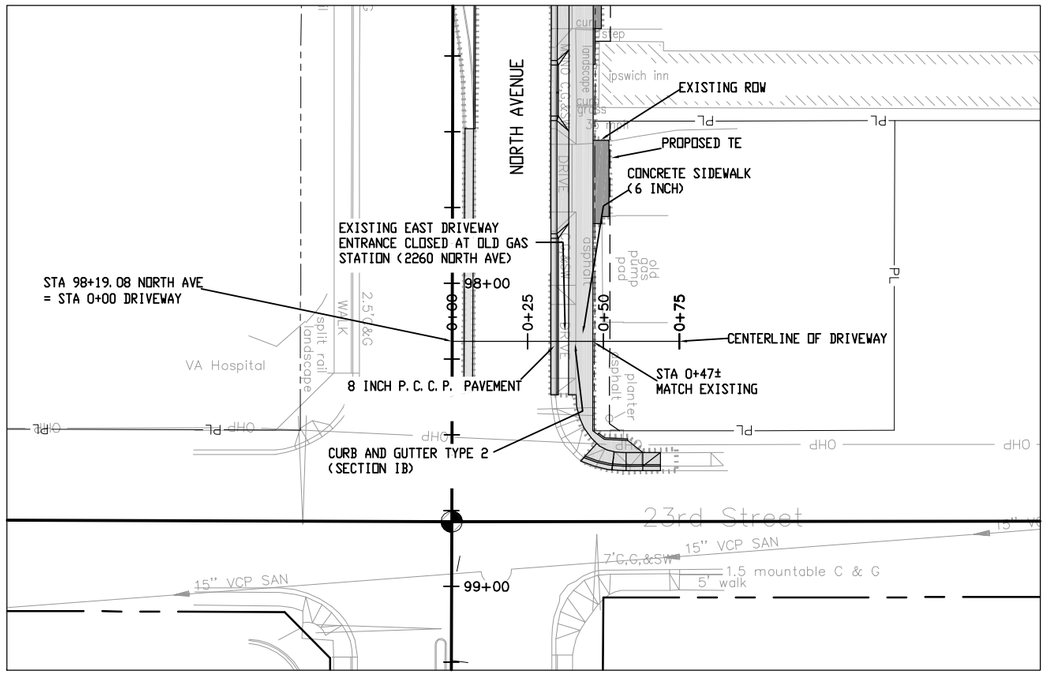
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369	Void:
					Region 3 RBB	

Driveway Plans and Profiles			Project No./Code
			TCSP M555-029
Designer: John Smith	Structure Numbers		19365
Detailer: John Smith			Sheet Number 130
Sheet Subset: dr pln pro	Subset Sheets:	38 of 42	



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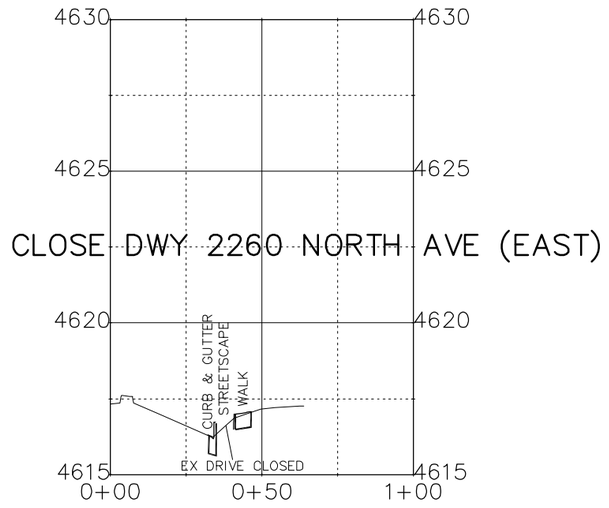
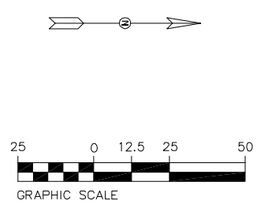
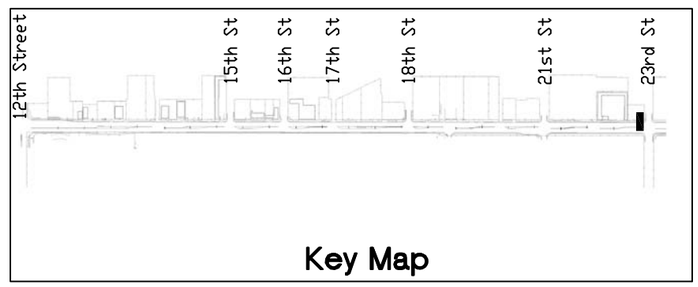


SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS





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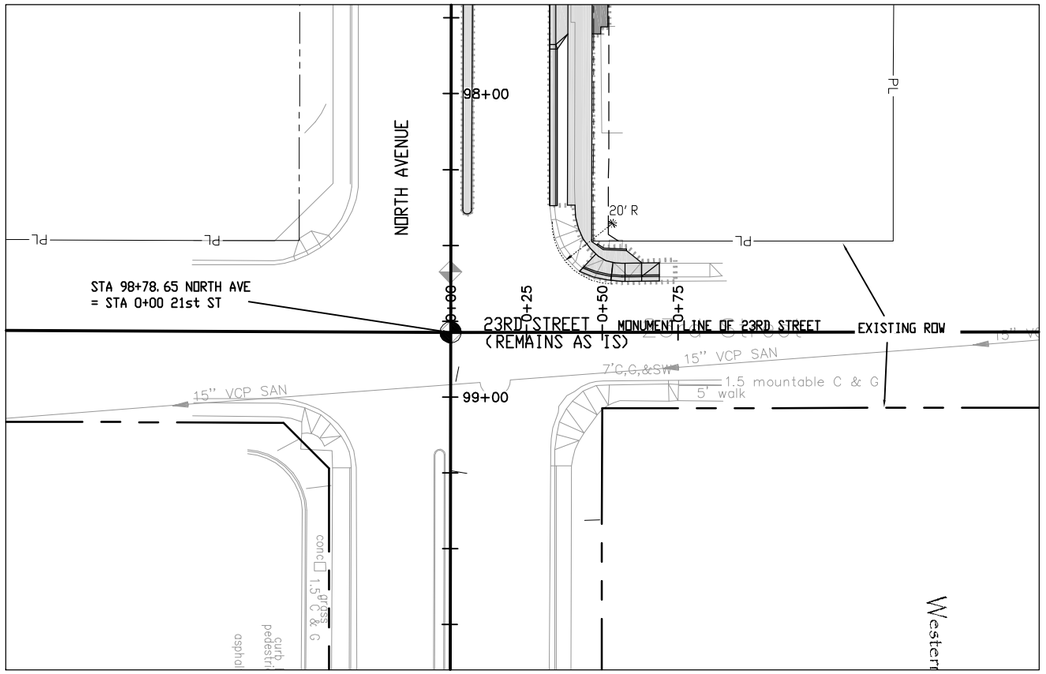
Horiz. Scale: 1:50 Vert. Scale: NA					Grand Junction, CO, 81501	Revised:	Designer: John Smith	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369	Void:	Detailer: John Smith	Sheet Number 131
					Region 3 RBB		Sheet Subset: dr pln pro	Subset Sheets: 39 of 42

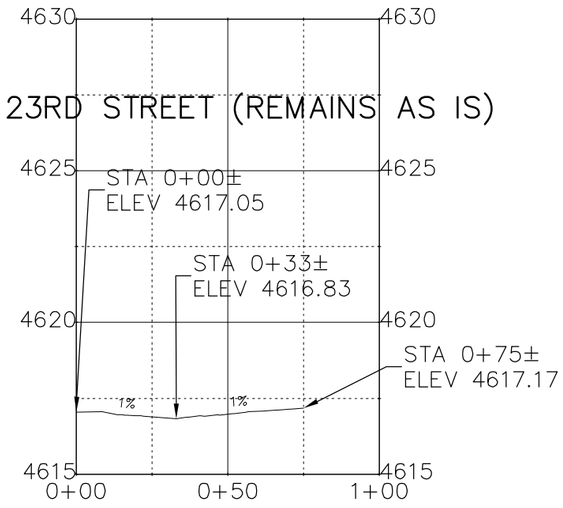


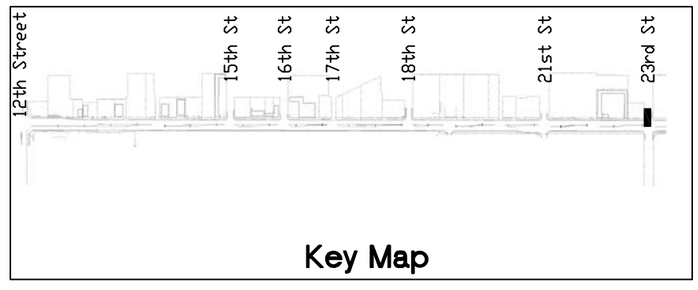
PLAN

SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS

25 0 12.5 25 50

GRAPHIC SCALE





Key Map

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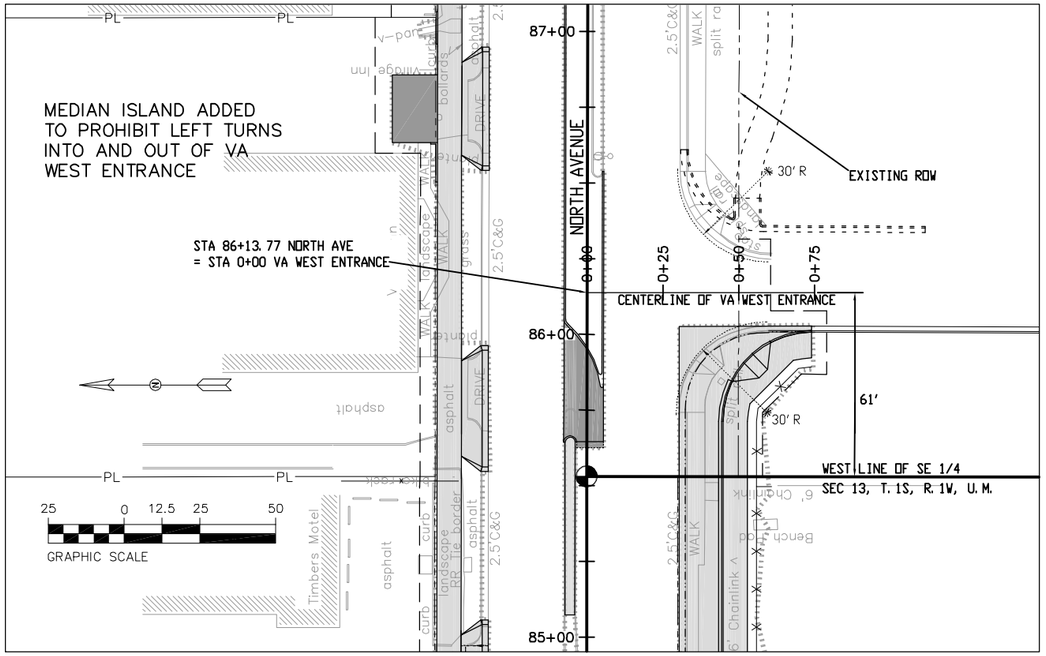
Horiz. Scale: 1:50 Vert. Scale: NA					Grand Junction, CO, 81501	Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369	Void:
					Region 3 RBB	

Driveway Plans and Profiles			Project No./Code
			TCSP M555-029
Designer: John Smith	Structure Numbers		19365
Detailer: John Smith			
Sheet Subset: dr pln pro	Subset Sheets:	40 of 42	Sheet Number 132



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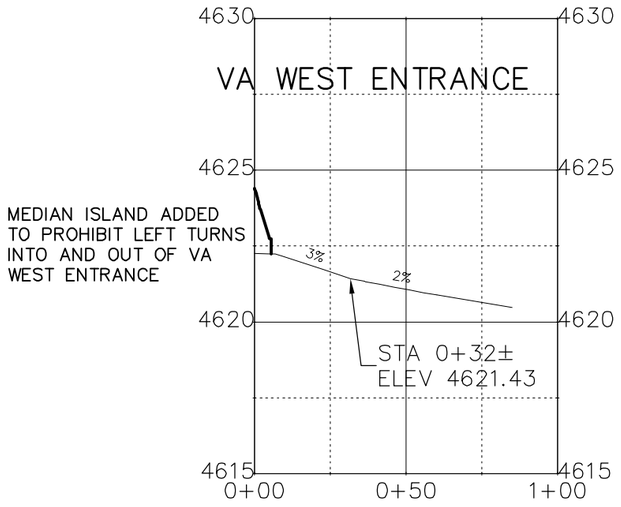
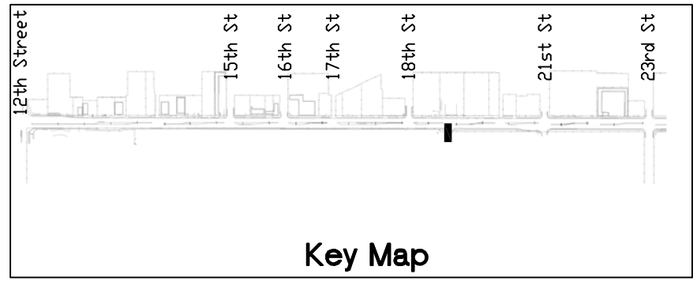


SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS



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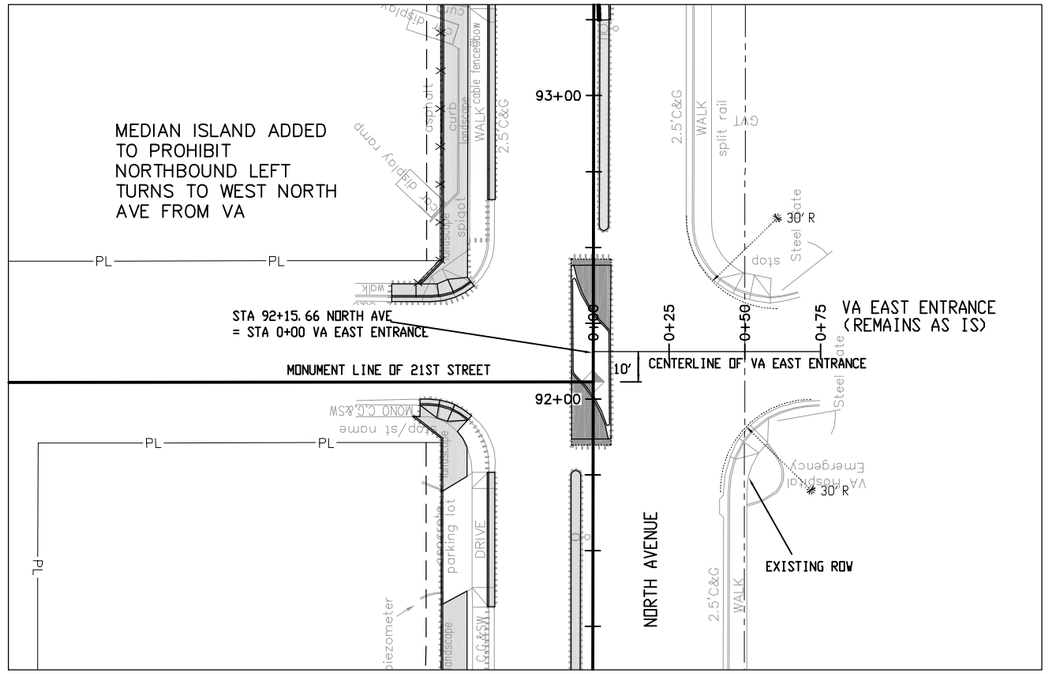
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:
Horiz. Scale: 1:50 Vert. Scale: NA						Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:

Driveway Plans and Profiles			Project No./Code
			TCSP M555-029
Designer: John Smith	Structure Numbers		19365
Detailer: John Smith			
Sheet Subset: dr pln pro	Subset Sheets:	41 of 42	Sheet Number 133



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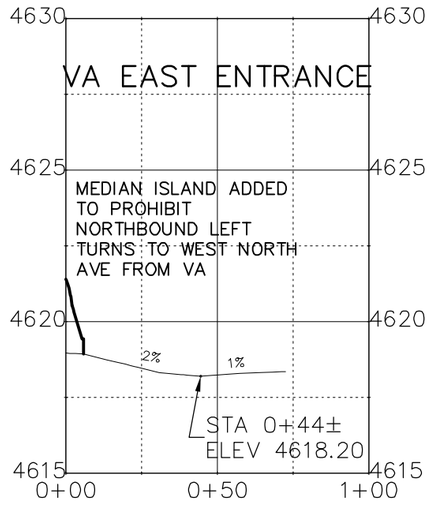
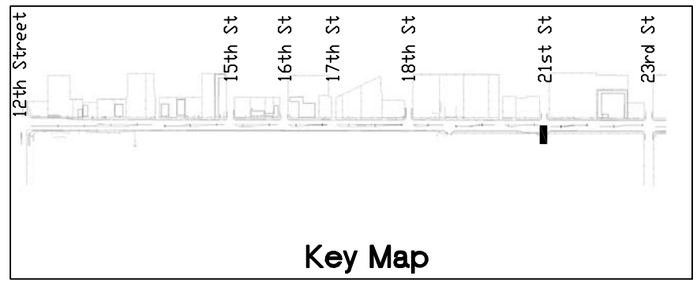


SEE STAKING PLAN FOR
STAKING DATA AND ELEVATIONS

25 0 12.5 25 50
GRAPHIC SCALE



Key Map

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Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369	Void:
					Region 3 RBB	

Driveway Plans and Profiles			Project No./Code
			TCSP M555-029
Designer: John Smith	Structure Numbers		19365
Detailer: John Smith			
Sheet Subset: dr pln pro	Subset Sheets:	42 of 42	Sheet Number 134

STA 75+93.75, 38.80 LT.
N 39500.13
E 96389.45
CONNECT TO EXISTING INLET

REQ'D - 97' X 12" Concrete Pipe (A6)
STA 75+93.75, 38.80' LT. TO
STA 76+91.12, 38.05' LT.

STA 76+91.12, 38.05 LT.
N 39499.30
E 96486.81
REQUIRED MANHOLE SLAB BASE (5 FOOT) (A5)

REQ'D - 11' X 8" PVC Pipe (A4)
STA 76+91.12, 38.05' LT. TO
STA 76+91.13, 48.63' LT.

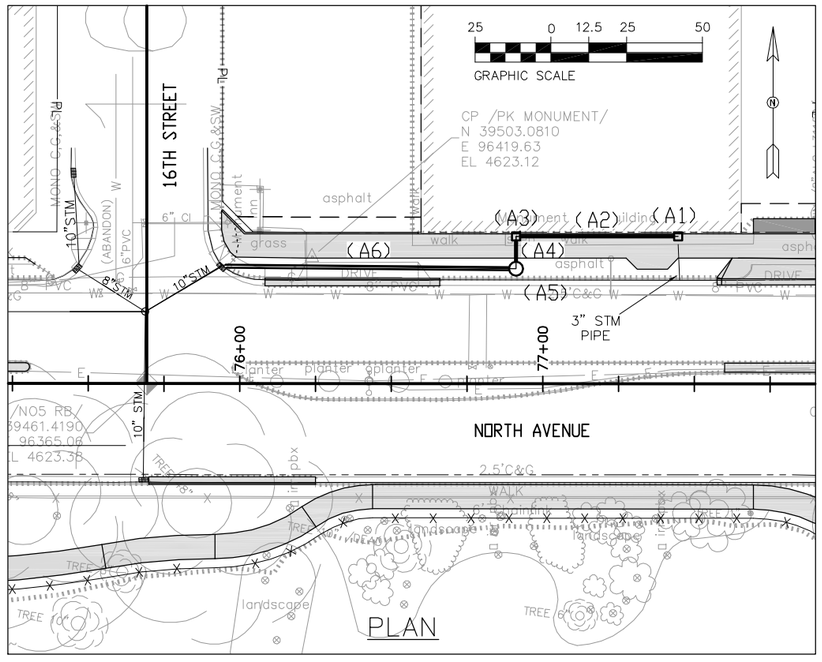
STA 76+91.13, 48.63 LT.
N 39509.88
E 96486.83
REQUIRED INLET TYPE 13
(5 FOOT) (SPECIAL) (A3)

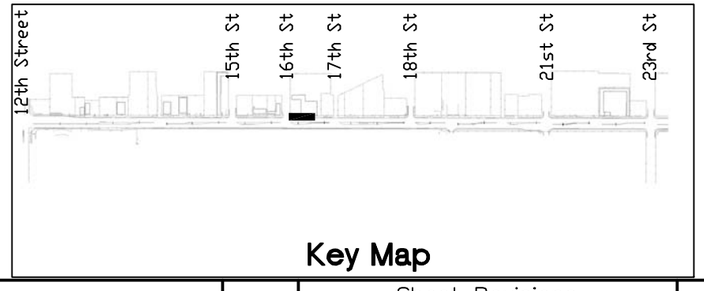
REQ'D - 54' X 8" PVC Pipe (A2)
STA 76+91.13, 48.63' LT. TO
STA 77+44.63, 48.68' LT.

STA 77+44.63, 48.68 LT.
N 39509.89
E 96540.33
REQUIRED INLET TYPE 13
(5 FOOT) (SPECIAL) (A1)

NOTE:
COORDINATES SHOWN ARE TO CENTER OF STRUCTURE

NOTE:
THE INFORMATION SHOWN ON THIS DRAWING CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING ALL DETERMINATIONS AS TO THE TYPE AND LOCATION OF UNDERGROUND AND OTHER UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO.





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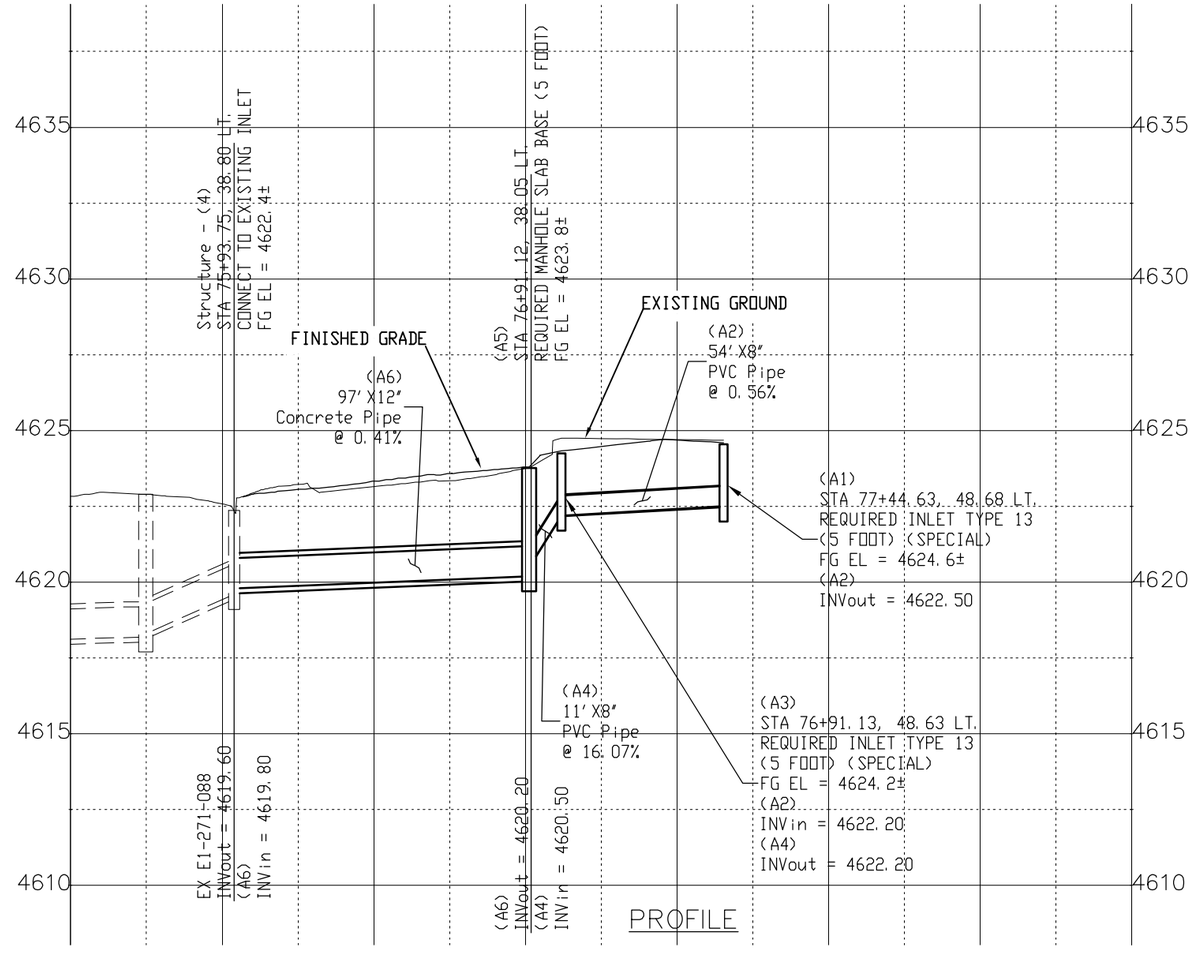

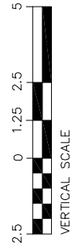

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Print Date: AT LEFT		Sheet Revisions			Colorado Department of Transportation	As Constructed	Storm Drain Plan and Profile	Project No./Code
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:		TCSP M555-029
Horiz. Scale: 1:50 Vert. Scale: NA						Revised:	Designer: John Smith / Structure Numbers	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:	Detailer: John Smith / Sheet Subset: dr pln pro / Subset Sheets: 1 of 4	Sheet Number 135

N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\roadway plans with city std dwy cuts.dwg, 8/20/2015 3:25:25 PM

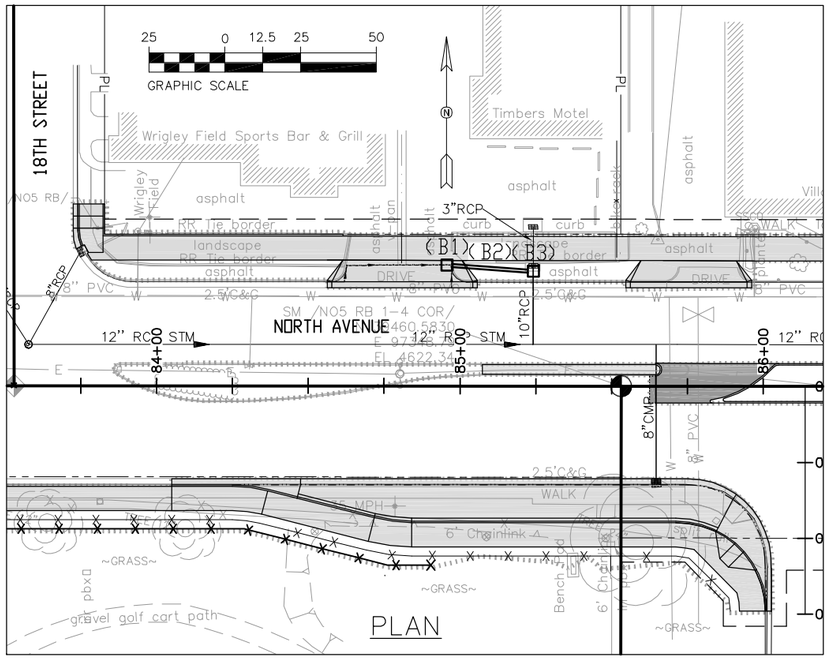
STA 84+95.65, 39.85 LT.
N 39500.47
E 97291.34
REQUIRED INLET TYPE C (5 FOOT) (B1)

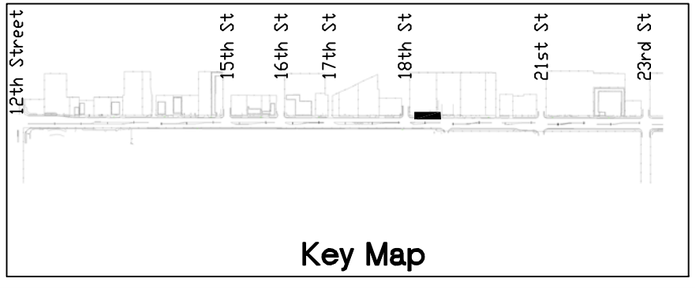
REQ'D - 29' X 12" Concrete Pipe (B2)
STA 84+95.65, 39.85' LT. TO
STA 85+24.14, 37.84' LT.

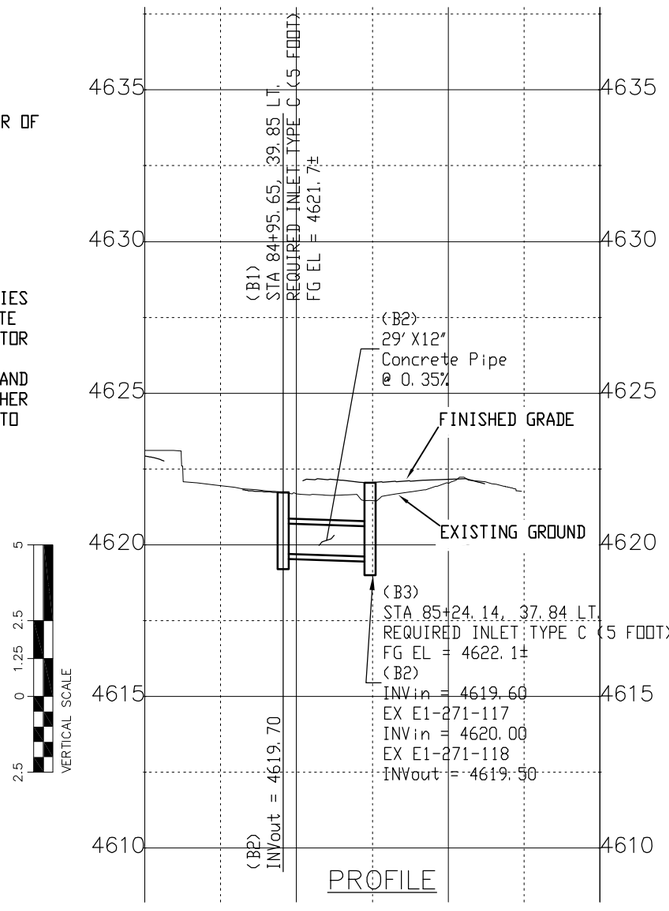
STA 85+24.14, 37.84 LT.
N 39498.44
E 97319.83
REQUIRED INLET TYPE C (5 FOOT) (B3)

NOTE:
COORDINATES SHOWN ARE TO CENTER OF STRUCTURE

NOTE:
THE INFORMATION SHOWN ON THIS DRAWING CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING ALL DETERMINATIONS AS TO THE TYPE AND LOCATION OF UNDERGROUND AND OTHER UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO.







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File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:		TCSP M555-029
Horiz. Scale: 1:50 Vert. Scale: NA						Revised:	Designer: John Smith / Structure Numbers	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:	Detailer: John Smith / Sheet Subset: dr pln pro / Subset Sheets: 2 of 4	Sheet Number 136

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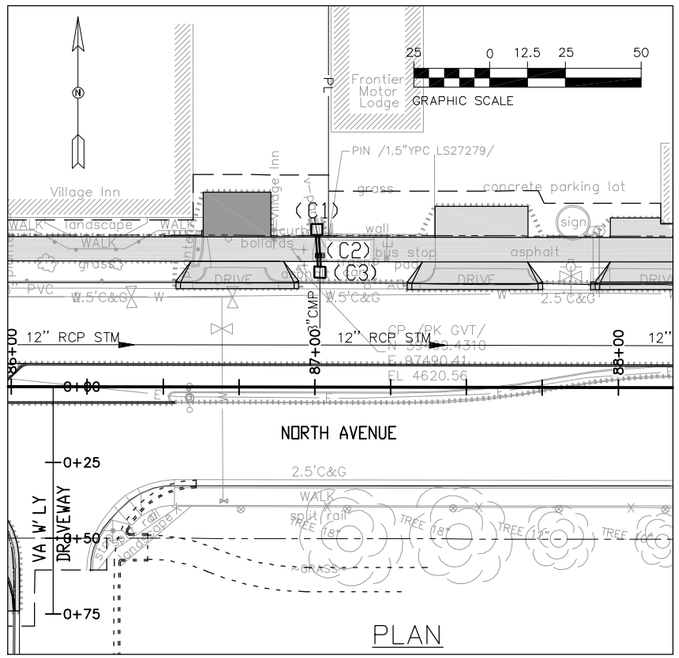
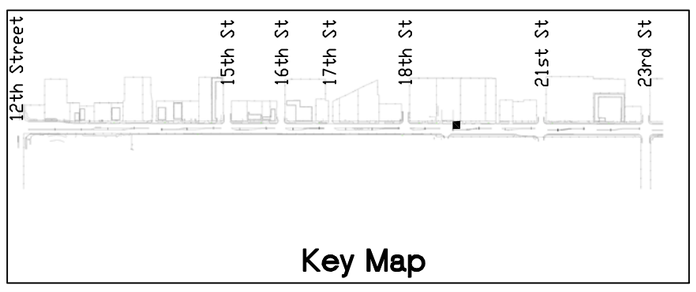
STA 87+00.54, 51.97 LT.
N 39512.27
E 97496.30
INLET TYPE C (5 FOOT) (C1)

REQ'D - 14' X 12" Concrete Pipe (C2)
STA 87+00.54, 51.97' LT. TO
STA 87+01.64, 37.85' LT.

STA 87+01.64, 37.85 LT.
N 39498.14
E 97497.37
INLET TYPE C (5 FOOT) (C3)





NOTE:
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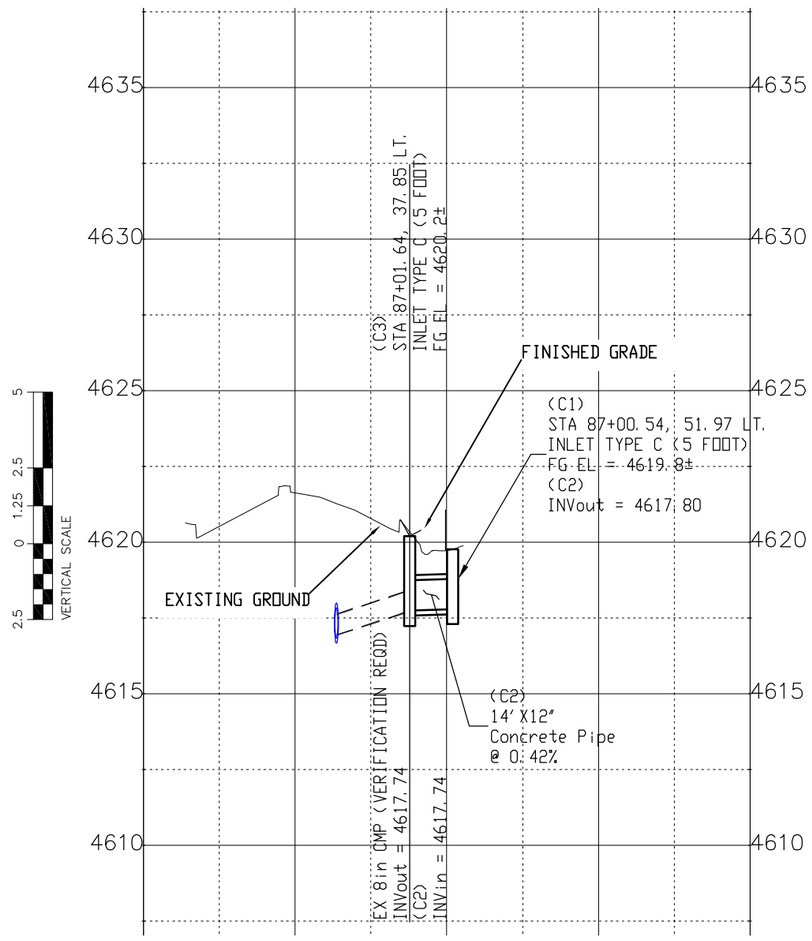

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Print Date: AT LEFT		Sheet Revisions			Colorado Department of Transportation	As Constructed	Storm Drain Plan and Profile	Project No./Code
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:		TCSP M555-029
Horiz. Scale: 1:50 Vert. Scale: NA						Revised:	Designer: John Smith / Detailer: John Smith / Structure Numbers	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:	Sheet Subset: dr pln pro / Subset Sheets: 3 of 4	Sheet Number 137

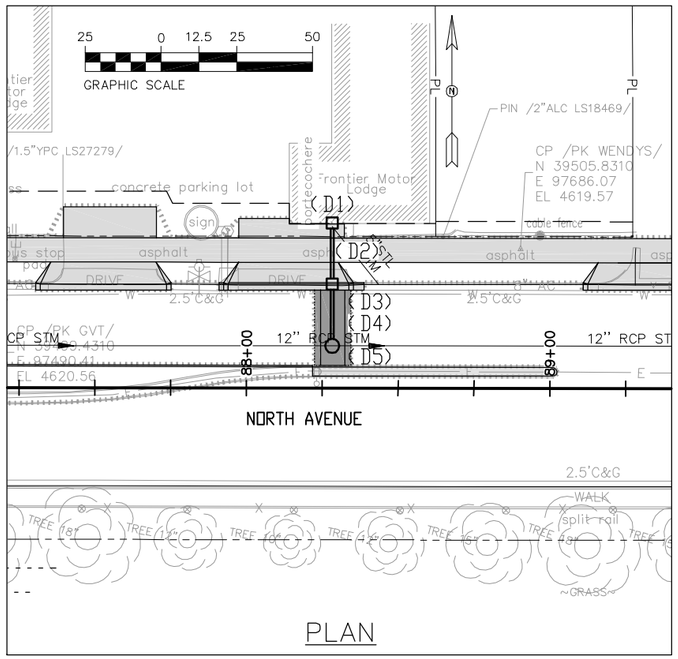
STA 88+28.19, 54.44 LT.
N 39514.48
E 97623.95
INLET TYPE C (5 FOOT) (D1)

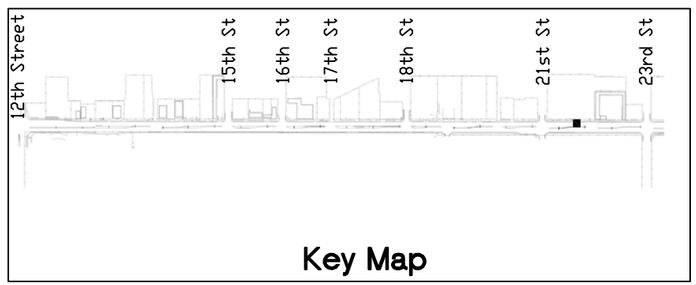
REQ'D - 20' X 12" Concrete Pipe (D2)
STA 88+28.19, 54.44' LT. TO
STA 88+28.23, 34.34' LT.

STA 88+28.23, 34.34 LT.
N 39494.39
E 97623.95
INLET TYPE C (5 FOOT) (D3)

REQ'D - 20' X 12" Concrete Pipe (D4)
STA 88+28.23, 34.34' LT. TO
STA 88+28.27, 13.90' LT.

STA 88+28.27, 13.90 LT.
N 39473.95
E 97623.95
MANHOLE SLAB BASE (5 FOOT) (D5)





NOTE:
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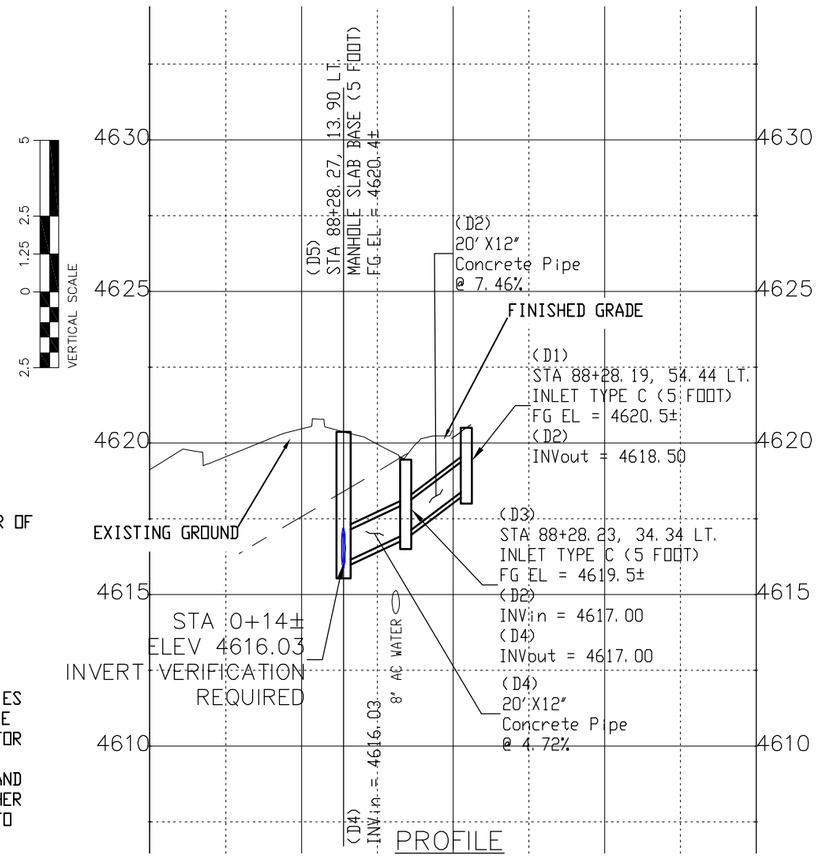

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Print Date: AT LEFT	0000	Sheet Revisions			Colorado Department of Transportation
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street
Horiz. Scale: 1:50 Vert. Scale: NA					Grand Junction, CO, 81501
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369
					Region 3 RBB

As Constructed	Storm Drain Plan and Profile		Project No./Code
No Revisions:			TCSP M555-029
Revised:	Designer: John Smith	Structure Numbers	19365
Void:	Detailer: John Smith		Sheet Number 138
	Sheet Subset: dr pln pro	Subset Sheets: 4 of 4	

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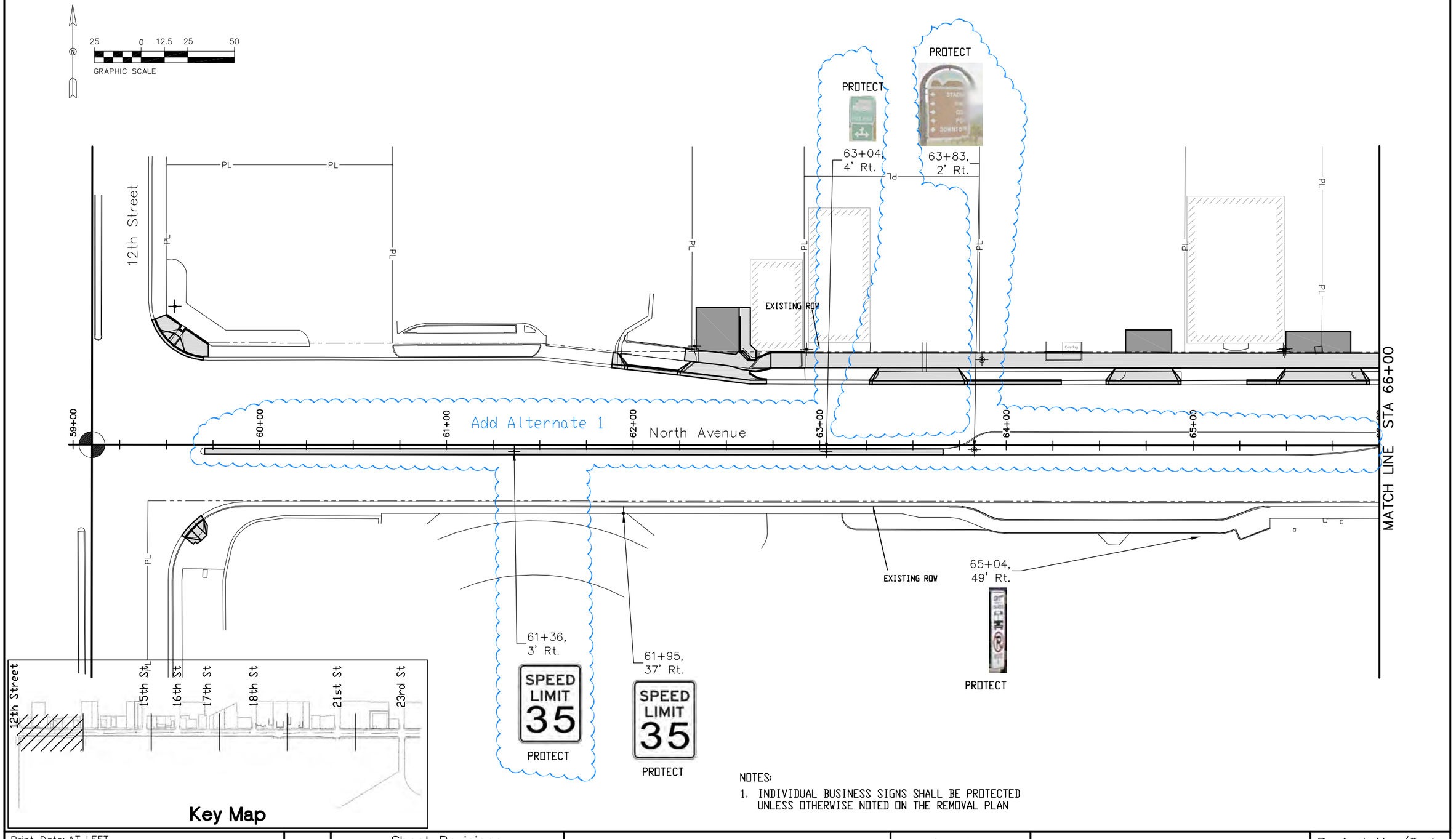


NOTES:

1. INDIVIDUAL BUSINESS SIGNS SHALL BE PROTECTED UNLESS OTHERWISE NOTED ON THE REMOVAL PLAN

N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\roadway plans with city std dwy cuts.dwg, 11/19/2015 11:46:06 AM

Print Date: AT LEFT	Sheet Revisions	Colorado Department of Transportation	As Constructed
File Name: AT LEFT	Date: / Comments / Init.	606 South 9th Street, Grand Junction, CO, 81501	No Revisions:
Horiz. Scale: 1:50 Vert. Scale: NA		Phone: 970-683-6351 FAX: 970-683-6369	Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ		Region 3 RBB	Void:

Signing Plan			Project No./Code
Designer: John Smith	Structure Numbers		TCSP M555-029
Detailer: John Smith			19365
Sheet Subset: Sign	Subset Sheets: 1 OF 6		Sheet Number 139

RESET
TO
NEW 2" ROUND
POST & SOCKET
R1-1

STOP

67+51,
45' Lt.

PROTECT POST
AND ALL ATTACHED
SIGNS

North AVE

STOP

72+03,
53' Lt.

Alley

15th Street

EXISTING ROW

MATCH LINE STA 66+00

MATCH LINE STA 73+00

66+00 67+00 68+00 69+00 70+00 71+00 72+00 73+00

68+15,
3' Rt.

PROTECT

North Avenue

Add Alternate 1

71+42,
6' Lt.

PROTECT

67+65,
36' Rt.

W1-7
RESET
TO
NEW 2" ROUND
POST & SOCKET

EXISTING ROW

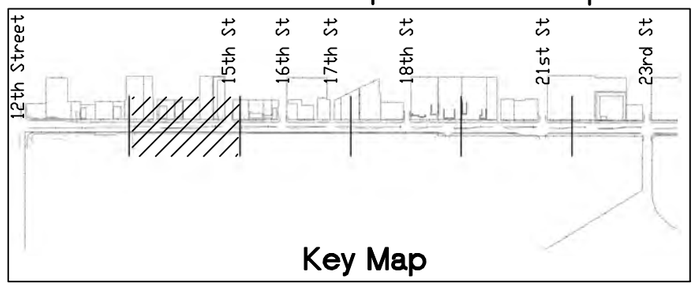
Add Alternate 2

25 0 12.5 25 50

GRAPHIC SCALE

NOTES:

1. INDIVIDUAL BUSINESS SIGNS SHALL BE PROTECTED UNLESS OTHERWISE NOTED ON THE REMOVAL PLAN



Key Map

N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\roadway plans with city std dwy cuts.dwg, 11/19/2015 11:52:34 AM

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File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street
Horiz. Scale: 1:50 Vert. Scale: NA					Grand Junction, CO, 81501
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369
					Region 3 RBB

As Constructed	Signing Plan		Project No./Code
No Revisions:	Designer: John Smith	Structure Numbers	TCSP M555-029
Revised:	Detailer: John Smith		19365
Void:	Sheet Subset: Sign	Subset Sheets: 2 of 6	Sheet Number 140

PROTECT POST AND ALL ATTACHED SIGNS

North AVE

STOP

NOTES:

1. INDIVIDUAL BUSINESS SIGNS SHALL BE PROTECTED UNLESS OTHERWISE NOTED ON THE REMOVAL PLAN

PROTECT

74+76, 5' Lt.

75+49, 53 Lt.

PROTECT

78+10, 5' Lt.

PROTECT

SPEED LIMIT 35

79+77, 1' Lt.

16th Street

17th Street

EXISTING ROW

MATCH LINE STA 73+00

MATCH LINE STA 80+00

North Avenue

73+09, 1' Lt.

PROTECT

PROTECT

76+43, 1' Lt.

Add Alternate 1

EXISTING ROW

W1-7 RESET TO NEW 2' ROUND POST & SOCKET

75+68, 37' Rt.

Add Alternate 2

25 0 12.5 25 50

GRAPHIC SCALE

12th Street 15th St 16th St 17th St 18th St 21st St 23rd St

Key Map

N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\roadway plans with city std dwy cuts.dwg, 11/19/2015 12:00:44 PM

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File Name: AT LEFT	Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:
Horiz. Scale: 1:50 Vert. Scale: NA				Region 3 RBB	Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ					Void:

Signing Plan			Project No./Code
Designer: John Smith	Structure Numbers		TCSP M555-029
Detailer: John Smith			19365
Sheet Subset: Sign	Subset Sheets:	3 of 6	Sheet Number 141

PROTECT
SPEED LIMIT 35
81+11, 38' Lt.

RESET TO NEW 2" ROUND POST & SOCKET
North AVE D3-1
STOP R1-1
83+36, 53' Lt.

MATCH LINE STA 80+00

80+00 81+00 82+00 83+00 North Avenue 84+00 85+00 86+00

PROTECT
83+12, 5' Lt.

Add Alternate 1

SPEED LIMIT 35
84+80, 4' Lt.

85+64.50

PROTECT

18th Street

EXISTING ROW

EXISTING ROW

MATCH LINE STA 87+00

0+00 0+25 0+50 0+75

Add Alternate 2

W1-7 RESET TO NEW 2" ROUND POST & SOCKET
83+58, 38' Rt.

84+25

84+79, 40' Rt.

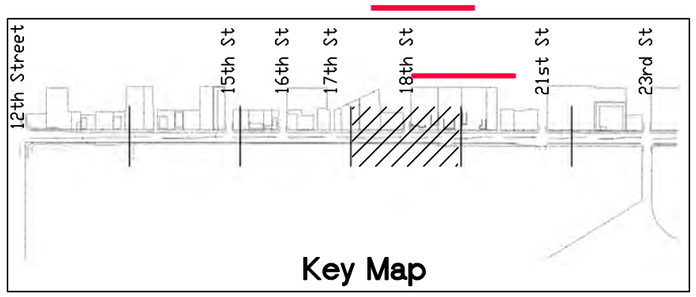
SPEED LIMIT 35
R2-1 RESET TO NEW 2" ROUND POST & SOCKET AT 86+75, 40' RT.

86+34, 47' Rt.
STOP
PROTECT

86+59, 3' Rt.
R3-4 REMOVE FROM LIGHT POST

N

25 0 12.5 25 50
GRAPHIC SCALE



Key Map

NOTES:
1. INDIVIDUAL BUSINESS SIGNS SHALL BE PROTECTED UNLESS OTHERWISE NOTED ON THE REMOVAL PLAN

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File Name: AT LEFT	Date:	Comments	Init.
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Unit Information: City of GJ Unit Leader Initials: DPJ			

Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

As Constructed
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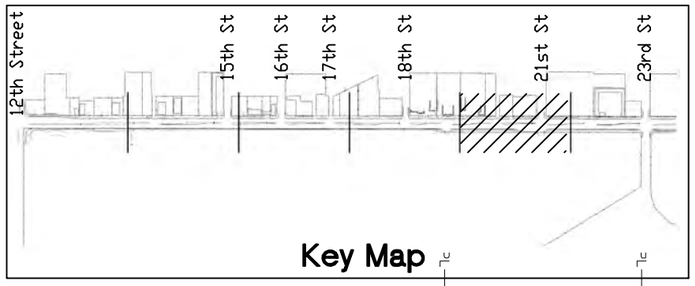
Void:

Signing Plan
Designer: John Smith
Detailer: John Smith
Sheet Subset: Signing
Structure Numbers
Subset Sheets: 4 of 6

Project No./Code
TCSP M555-029
19365
Sheet Number 142



R3-4
RESET
FROM LIGHT POST
TO
NEW 2' ROUND
POST & SOCKET
AT STA 92+25

this work is not a part of add alt 1

91+54,
6' Lt.

21ST ST D3-1

North AVE D3-1

STOP R1-1

RESET
ALL SIGNS ON POST
TO
NEW 2' ROUND
POST & SOCKET

91+92,
51' Lt.

EXISTING ROW

MATCH LINE STA 87+00

88+00 89+00 90+00 91+00 92+00

North Avenue

88+21.67

Add Alternate 1

89+89,
1' Lt.

R3-4
protect

21st Street

0+00 0+25 0+50 0+75

93+00

Add Alternate 1

MATCH LINE STA 94+00

EXISTING ROW

92+43,
50' Rt.

STOP

PROTECT

92+92,
41' Rt.

PROTECT

25 0 12.5 25 50
GRAPHIC SCALE

NOTES:
1. INDIVIDUAL BUSINESS SIGNS SHALL BE PROTECTED UNLESS OTHERWISE NOTED ON THE REMOVAL PLAN

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File Name: AT LEFT	Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:
Horiz. Scale: 1:50 Vert. Scale: NA					Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ				Region 3 RBB	Void:

Signing Plan			Project No./Code
			TCSP M555-029
Designer: John Smith	Structure Numbers		19365
Detailer: John Smith			Sheet Number 143
Sheet Subset: Sign	Subset Sheets:	5 of 6	

R2-1
RESET
TO
NEW 2" ROUND
POST & SOCKET

SPEED LIMIT 35

97+46,
41' Lt.

PL

EXISTING ROW

North Avenue

MATCH LINE STA 94+00

94+00 95+00 96+00 97+00 98+00 99+00

SPEED LIMIT 35

PROTECT

96+55,
4' Rt.

96+55,
4' Rt.

PROTECT

Add Alternate 1

EXISTING ROW

23rd Street

23rd Street

15" VCP SAN

7'C,G,&SW

1.5' mountable C & G

5' walk

conc

grass

1.5' C &

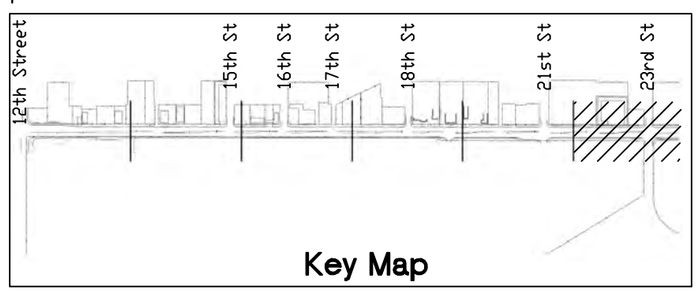
15" VCP SAN

25 0 12.5 25 50

GRAPHIC SCALE

NOTES:

1. INDIVIDUAL BUSINESS SIGNS SHALL BE PROTECTED UNLESS OTHERWISE NOTED ON THE REMOVAL PLAN



Key Map

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File Name: AT LEFT	Date: / Comments / Init.	606 South 9th Street	No Revisions:
Horiz. Scale: 1:50 Vert. Scale: NA		Grand Junction, CO, 81501	Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ		Phone: 970-683-6351 FAX: 970-683-6369	Void:
		Region 3 RBB	

Signing Plan			Project No./Code
Designer: John Smith	Structure Numbers		TCSP M555-029
Detailer: John Smith			19365
Sheet Subset: Sign	Subset Sheets:	6 of 6	Sheet Number 144

NORTH AVE

15TH AND NORTH PLAZA

N 39559.85
E 95951.58

N 39717.18
E 95951.81

N 39731.63
E 95951.81

N 39758.33
E 95969.30

N 39758.33
E 95979.73

12.50'

24.50'

8.50'

16 SPACES

12.50'

4" WHITE SOLID PARKING LINES
(TYPICAL)

9.00'

9.00'

N 39729.46
E 95972.99

N 39741.77
E 95969.30

N 39739.83
E 95979.73

N 39572.13
E 95972.76

N 39739.83
E 95997.73

N 39758.33
E 95997.73

PL

15TH STREET

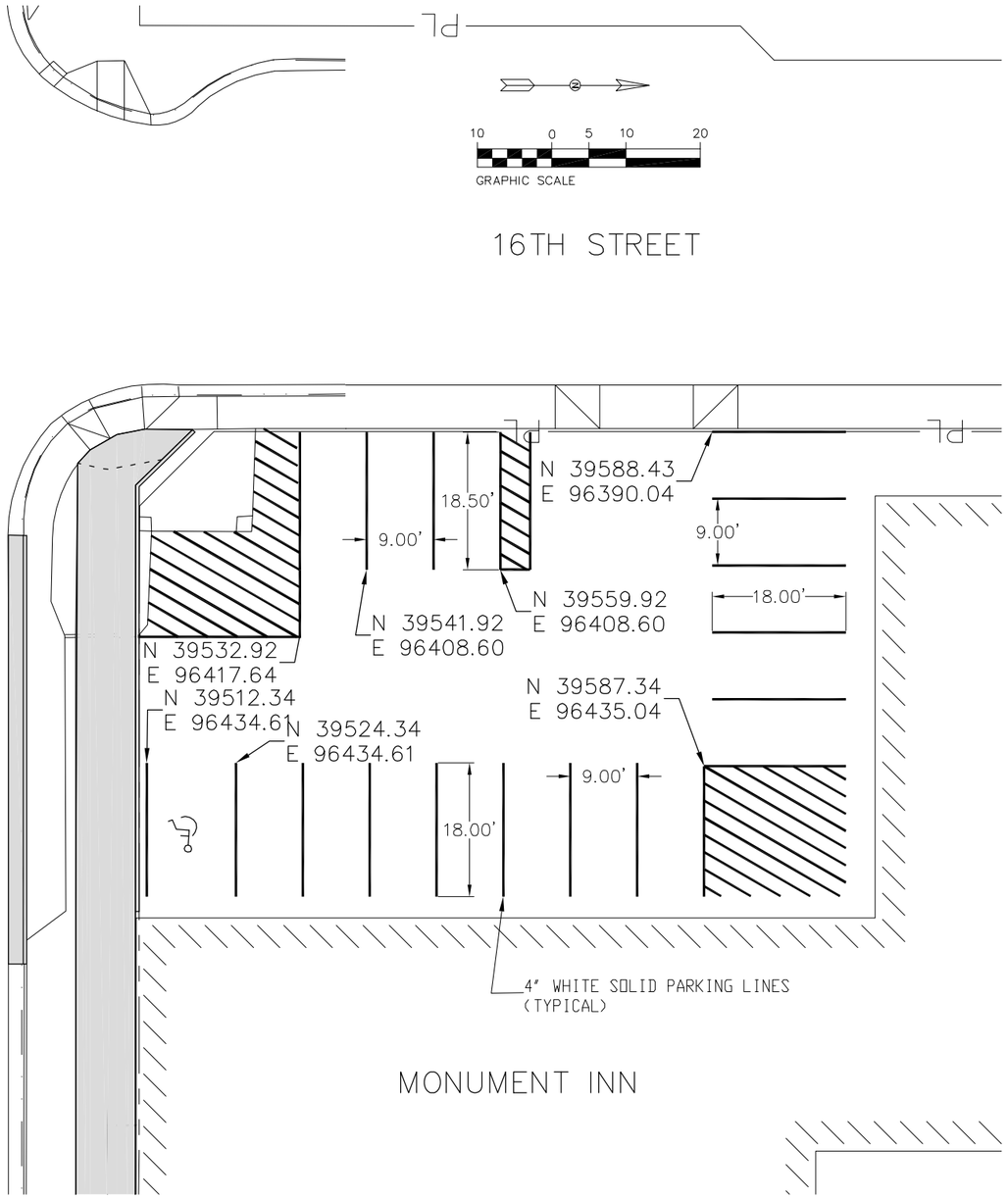
10 0 5 10 20
GRAPHIC SCALE

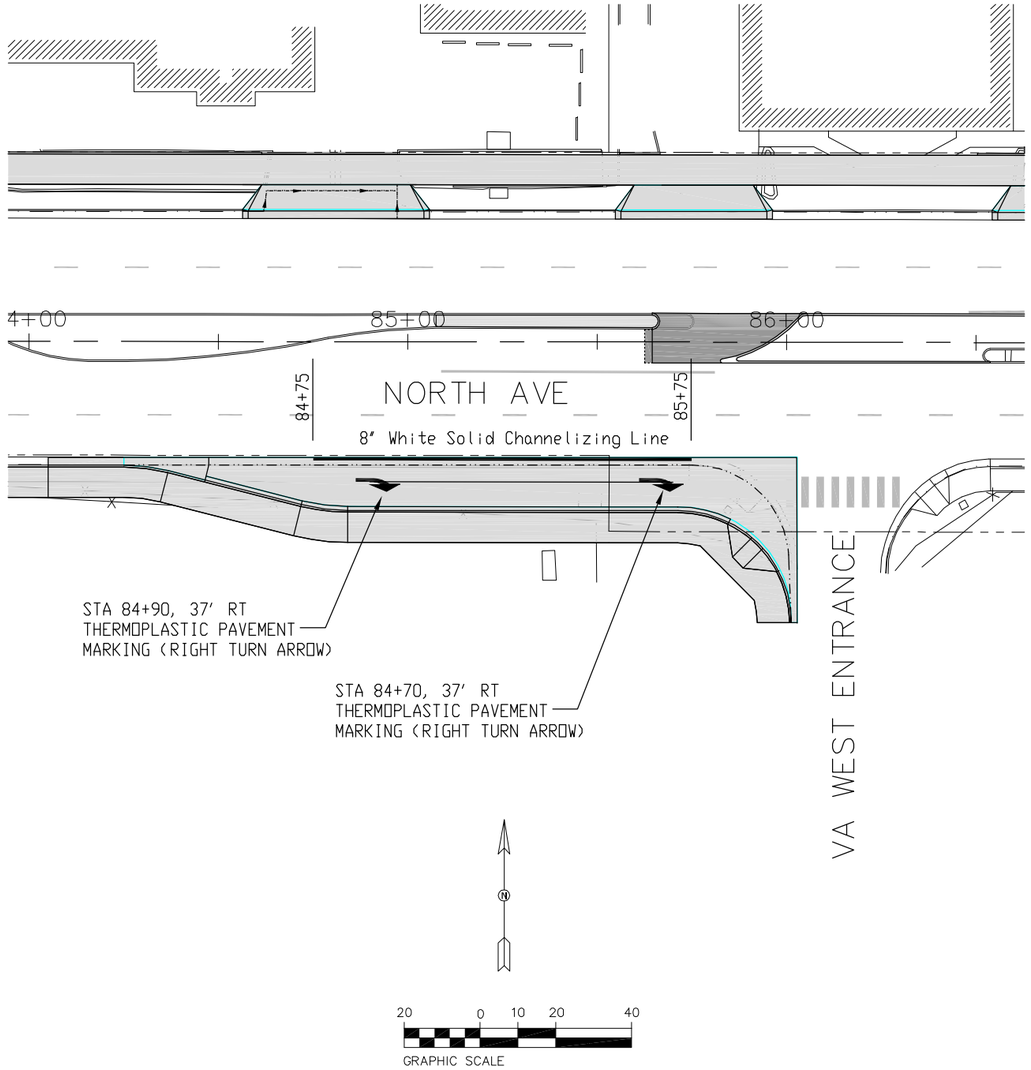
N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\striping.dwg, 8/20/2015 3:54:30 PM

Print Date: AT LEFT	Sheet Revisions		
File Name: striping	Date:	Comments	Init.
Horiz. Scale: AS SHOWN AS SHOWN			
Unit Information: City of GJ Unit Leader Initials: DPJ			

Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

As Constructed	STRIPING PLAN			Project No./Code
No Revisions:				TCSP M555-029
Revised:	Designer: John C Smith	Structure Numbers	–	19365
Void:	Detailer: John C Smith		–	
	Sheet Subset: striping	Subset Sheets:	1 OF 2	Sheet Number 145





N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\striping.dwg, 9/16/2015 3:16:01 PM

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Horiz. Scale: AS SHOWN	AS SHOWN
Unit Information: City of GJ	Unit Leader Initials: DPJ

Sheet Revisions		
Date:	Comments	Init.

Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

As Constructed	
No Revisions:	
Revised:	
Void:	

STRIPING PLAN

Designer: John C Smith	Structure Numbers	_	
Detailer: John C Smith		_	
Sheet Subset: striping	Subset Sheets:	2 OF 2	

Project No./Code
TCSP M555-029
19365
Sheet Number 146

1. SITE DESCRIPTION

To fulfill the CDPS-SCP (Colorado Discharge Permit System - Stormwater Construction Permit). The ECS shall update to reflect current project site conditions.

A. PROJECT SITE DESCRIPTION: Project will include activities such as removal and relocation of sidewalks, construction of bus pullouts, and landscaping to create establish North Avenue as a Complete Street. Project site is located in a fully developed section of Grand Junction with businesses adjacent to North Avenue. The businesses have established landscaping that the North Avenue Complete Streets project will modify to accommodate the realignment of sidewalks and create a more uniform appearance throughout the corridor. Grading activities will be minor. The proposed design has been created to match existing grades as closely as possible, while correcting existing drainage issues. Proposed new utilities include new storm piping and inlets which will be constructed within the construction boundaries. Very few water and dry utilities will require relocations as part of this project. This project will have both asphalt patches and concrete pavement installed. Excavation is limited to the construction of the new sidewalk sections, concrete pavement sections and appurtenances. Landscaping is provided on this project in the form of sod, seeding, trees, shrubs and inorganic mulch. Irrigation will be provided to all new trees, shrubs and perennials.

B. PROPOSED SEQUENCING FOR MAJOR CONSTRUCTION ACTIVITIES:

1. Installation of initial erosion control items
2. Clearing and Grubbing
3. Removal and Stockpile of topsoil
4. Utility installation and relocations (water, storm, dry utilities)
5. Asphalt and concrete removal
6. Excavation for medians, sidewalks and bus pullout construction
7. Grading and sub grade preparation
8. Installation of interim erosion control items
9. Hot mix asphalt and concrete construction of proposed medians, sidewalks and bus pullouts
10. Landscape and Irrigation installation
11. Signing and Striping
12. Installation of final erosion control items (revegetation)

C. ACRES OF DISTURBANCE:

1. Total area of construction site: 9 acres
2. Total area of disturbance: 3.32 acres
3. Acreage of seeding: 0 acres

D. EXISTING SOIL DATA: Sagers-Urban Land Complex, 0 to 2 percent slopes. Parent Material: alluvium derived from calcareous shale and sandstone Depth to water table: More than 80 inches. Hydrologic Soil Group: C.

E. EXISTING VEGETATION, INCLUDING PERCENT COVER:
Existing vegetation consists of maintained landscaping by both the City of Grand Junction and the local businesses adjacent to the project. Existing vegetation consists of sod, trees, shrubs, perennials, inorganic mulch and native grasses. The estimated percent of vegetative ground cover is 95% on south side of North Avenue and less than 50% in medians and on north side of North Avenue.

F. POTENTIAL POLLUTANTS SOURCES: See First Construction Activities under Potential Pollutant Sources. The ECS shall prepare a list of all potential pollutants and their locations in accordance with subsection 107.25.

G. RECEIVING WATER:
1. Outfall locations: The owner of the new storm pipes installed as part of this project that are underneath and crossing North Avenue will be owned and maintained by the City of Grand Junction. The existing 12" RCP pipe and 15" VCP pipe underneath North Avenue are owned and maintained by the City of Grand Junction. All storm drain piping that is part of this project conveys storm water to the aforementioned existing storm pipes. All flows that are carried west in the 15" VCP pipe outlet to the Ligrani Drainage. Storm flows carried east in the 12" RCP pipe outlet to Indian Wash. This project is located within MS4 boundaries. This project decreases the impervious area by 7%.
2. Names of receiving water(s) on site and the ultimate receiving water: West of the project, Ligrani Drainage and Colorado River as the ultimate receiving waters. East of the project, Indian Wash and Colorado River as the ultimate receiving waters.
3. Distance ultimate receiving water is from project: Flows to west: 2.2 miles. Flows to east: 2.0 miles.

H. ALLOWABLE NON-STORMWATER DISCHARGES: Concrete washout and saw cutting are anticipated on this project. The ECS shall prepare a list of allowable non-stormwater discharges

1. Groundwater and stormwater dewatering: Discharges to the ground of water from construction dewatering activities may be authorized provided that:
   a. the source is groundwater and/or groundwater combined with stormwater that does not contain pollutants
   b. the source and BMPs are identified in the SWMP
   c. discharges do not leave the site as surface runoff or to surface waters
   d. The contractor shall protect all work areas and facilities from water at all times. Areas and facilities subject to flooding, regardless of the source of water, shall be promptly dewatered and restored at no cost to the owner. This shall include removal of any debris caused by flooding. Any dewatering shall be done in accordance with Subsection 107.25
2. If discharges do not meet the above criteria a separate CDPS permit shall be obtained by the Contractor from the CDPHE. See standard special provision 250 Hazardous Waste and Contaminated Water.

I. ENVIRONMENTAL IMPACTS:
1. Wetland Impacts: YES NO
2. Stream Impacts: YES NO
3. Threatened and Endangered Species: N/A

2. SITE MAP COMPONENTS:

Pre-construction

A. PROJECT CONSTRUCTION POTENTIAL SITE BOUNDARIES – Shown on the Storm Water Management Site Plans as the shaded area. The outer perimeter of the shaded area is the proposed limits of construction and/or the toe of fills or top of cuts. The existing right-of-way and temporary and permanent easement lines are shown on the Storm Water Management Site Plans.

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B. ALL AREAS OF GROUND SURFACE DISTURBANCE – Shown on the Storm Water Management Site Plans. The shaded area represents all areas that are anticipated to have surface disturbance. This shaded area is what was used to calculate the acres of disturbance. Limits of disturbance are shown on the Storm Water Management Site Plans.

C. AREAS OF CUT AND FILL – Shown on the Roadway Plans, Grading and Drainage Plans and the Storm Water Management Site Plans. The areas of cut and fill are shown with their own specific line type.

D. LOCATION OF ALL STRUCTURAL BMPs IDENTIFIED IN THE SWMP – All proposed Structural BMP's are shown and labeled on the Storm Water Management Site Plans. The locations shown on the Storm Water Management Site Plans are approximate and can be changed by the Contractor and/or Project Engineer during construction to adapt with the construction phasing.

E. LOCATION OF NON-STRUCTURAL BMPs AS APPLICABLE IN THE SWMP – Location of the following to be located by the ECS: Material management, material usage, spill prevention and control, sanitary and septic waste management, liquid waste management, hazardous waste management, vehicle and equipment management, and concrete washout structure.

F. SPRINGS, STREAMS, WETLANDS AND OTHER SURFACE WATER – N/A

G. PROTECTION OF TREES, SHRUBS, CULTURAL RESOURCES AND MATURE VEGETATION – Protection of trees and shrubs are shown on the Landscape Plans and the Removal Plans.

H. AREAS USED FOR STORING AND STOCKPILING OF MATERIALS, STAGING AREAS (field trailer, fueling, etc.) and BATCH PLANTS

*ECS to revise site maps in accordance with 208.03

3. SWMP ADMINISTRATORS:

A. SWMP ADMINISTRATOR FOR DESIGN:
John Eklund
Project Engineer
City of Grand Junction
250 North 5th Street
Grand Junction, CO 81501
Phone: (970) 244-1558
Email: johne@gjcity.org

4. STORMWATER MANAGEMENT CONTROLS FIRST CONSTRUCTION ACTIVITIES

THE CONTRACTOR SHALL PERFORM THE FOLLOWING:

A. DESIGNATE A SWMP ADMINISTRATOR/EROSION CONTROL SUPERVISOR (To be filled out at time of construction; designate the individual(s) responsible for implementing, maintaining and revising SWMP, including the title and contact information. The activities and responsibilities of the administrator shall address all aspects of the projects SWMP.)

Name/Title:
Company:
Address:

Phone:
Email:

B. POTENTIAL POLLUTANT SOURCES
Evaluate, identify and describe all potential sources of pollutants at the site in accordance with subsection 107.25 and place in the SWMP notebook. All BMPs related to potential pollutants shall be shown on the SWMP site map by the contractor's ECS.

C. BEST MANAGEMENT PRACTICES (BMPs) FOR STORMWATER POLLUTION PREVENTION

PHASED BMP IMPLEMENTATION

During Design: "BMP as Designed" boxes are marked when used in the SWMP. During construction: the ECS shall update the "In use on site" boxes to match which BMPs are currently in use on site. Clearly describe the relationship between the phases of construction and the implementation of BMP controls.

STRUCTURAL BMPs that may be potentially used on the project for erosion and sediment control; practices may include, but are not limited to:

APPLICATION, BMP	NARRATIVE	BMP AS DESIGNED	IN USE ON SITE	BMP PHASING		
				FIRST/INITIAL CONSTRUCTION ACTIVITIES	INTERIM CONSTRUCTION ACTIVITIES	FINAL STABILIZATION
PROTECTION OF EXISTING WETLANDS Fence (plastic) and erosion logs	Fence (plastic) shall be placed in combination with erosion logs to prevent encroachment of construction traffic and sediment into state waters prior to start of construction disturbances. Fence (plastic) shall be placed adjacent to the wetlands; erosion logs shall be placed between the plastic fence and disturbance area. Logs shall be placed to direct flows away from or filter water running into wetlands from disturbance areas.			X	X	
PROTECTION OF EXISTING TREES/LANDSCAPING Fence (plastic)	Fence (plastic) shall be used in areas indicated in the plans to protect mature trees and/or existing landscaping prior to start of construction disturbances.	X		X	X	
CHECK DAM/DITCH CHECK Erosion log, silt berm, silt dike, rock check dam	Placed in ditches immediately upon completion of ditch grading to reduce velocity of runoff in ditch. For existing ditches, place prior to start of construction disturbances.			X	X	X
TYPE R AND TYPE 16 INLET PROTECTION	Placed prior to construction disturbances to protect existing inlets or immediately upon completion of new inlets to prevent sediment from entering the inlet throughout construction.	X		X	X	X

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Horiz. Scale: 1:50 Vert. Scale: NA						Revised:	Designer: John Smith	Structure Numbers	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:	Detailer: John Smith		Sheet Number 148
							Sheet Subset: SWMP	Subset Sheets: 2 of 5	

Storm drain inlet protection (type 1,2 and 3)						
CULVERT INLET/OUTLET PROTECTION Erosion logs, aggregate bags	Placed at mouth of culvert inlets and over top of culvert at inlet and outlet where disturbance may be occurring adjacent to pipe to prevent sediment laden water from entering pipe or drainage. Place prior to start of construction disturbances.			X	X	X
TYPE C, TYPE D AND TYPE 13 PROTECTION Erosion logs, aggregate bags, erosion bales	Placed around inlet grate or slope and ditch paving to prevent sediment from entering inlet. Place prior to start of construction disturbances.			X	X	X
STOCKPILE PROTECTION Temporary berm, erosion logs, aggregate bags*	Placed within specified distance from toe to contain sediment around stockpile. *Aggregate bags are easily moved and replaced for access during the work day. Place prior to start of stock pile, increase control as stock pile increases size.				X	
TOE OF FILL PROTECTION Erosion logs, temporary berm, silt fence, topsoil windrow*	Place prior to slope/embankment work to capture sediment and protect and delineate undisturbed areas. *Can be used to stockpile topsoil for salvage.			X	X	
PERIMETER CONTROL Erosion logs, silt fence, temporary berm, topsoil windrow*	Placed prior to construction commencing to address potential run-on water from off site, and to divert around disturbed area			X	X	
SEDIMENT CONTROL/ SLOPE CONTROL Silt fence, erosion logs	Placed on the contour on a slope to contain and slow down construction runoff. Place prior to start of construction disturbances.			X	X	
TEMPORARY SEDIMENT TRAP (ECS shall add locations to SWMP site maps)	Used to capture sediment laden runoff from disturbed areas < 5 acres during construction. Place prior to start of construction disturbances.			X	X	
PERMANENT SEDIMENT BASIN Extended detention basin	Constructed early in project, prior to storm sewer/ditches to capture storm flow as a temporary sediment trap. Outlet structure shall be modified for construction runoff.			X	X	
EMBANKMENT PROTECTION OR TEMPORARY SLOPE DRAIN	Placed as a conduit or chute to drain runoff down slope and to prevent erosion of slope.				X	X
OUTLET PROTECTION Riprap, or approved other	Material placed as energy dissipater to prevent erosion at outlet structure.				X	X
CONCRETE WASHOUT In-ground or fabricated	Construction control, used for waste management of concrete and concrete equipment cleaning. Place prior to start of concrete activities.	X		X	X	
VEHICLE TRACKING PAD	Source control, placed to prevent tracking of sediment from disturbed area to offsite surface. Place prior to start of construction disturbances.	X		X	X	
SWEEPING	Source control, used to remove sediment tracked onto paved surfaces and to prevent from entering drainage system. Sweep daily and at the end of the construction shift as needed. Kick brooms shall not be allowed.	X		X	X	
DEWATERING (Contractor is responsible for obtaining a permit from Colorado Department of Health and Environment.)	Shall be done in such a manner to prevent potential pollutants from entering state waters.			X	X	
TEMPORARY STREAM CROSSING	Constructed over stream or drainage to prevent discharge of pollutants from construction equipment into water			X	X	
CLEAN WATER DIVERSION	Placed to divert clean surface or ground water around disturbance area to prevent it from mixing with construction runoff			X	X	
OTHER						

NON-STRUCTURAL BMPs that may be potentially used on the project for erosion and sediment control; practices may include, but are not limited to:

APPLICATION, BMP	NARRATIVE	BMP AS DESIGNED	IN USE ON SITE	BMP PHASING		
				FIRST/INITIAL CONSTRUCTION ACTIVITIES	INTERIM CONSTRUCTION ACTIVITIES	FINAL STABILIZATION
VEGETATIVE BUFFER STRIP Fence (plastic)	Filter sediment laden runoff from disturbance area. Area to be identified for preservation prior to construction starting.			X	X	X
LANDFORM (ECS shall add locations to SWMP site maps)	Existing landforms may be used as a BMP if they prevent sediment from entering or leaving the disturbance area. If a landform directs flow of water to a concentrated outfall point, the outfall point shall be protected to prevent erosion.			X	X	
TOPSOIL MANAGEMENT STOCKPILE/SALVAGE Windrow or stockpile	Prior to embankment work commencing, existing topsoil shall be scraped to a depth of 4 inches, and placed in stockpiles or windrows. Upon completion of slope work/final grading (less 4 inches), topsoil shall be evenly distributed over embankment to a depth of 4 inches.	X		X	X	
SURFACE ROUGHENING / GRADING TECHNIQUES Blading, Backhoe, Dozing, Combination Loader	Temporary stabilization of disturbance and to minimize wind and erosion.				X	
SEEDING TEMPORARY	Temporary stabilization used for over wintering of disturbance or used to control erosion for areas scheduled for future construction.				X	
BONDED FIBER MATRIX/HYDRAULIC MULCH (Not to be used in areas of concentrated flows, i.e. ditch lines.)	To be used in combination with surface roughening for temporary stabilization of disturbed soils, when work is temporarily halted and as approved by the Engineer. May be used as surface cover for temporary topsoil stockpiles				X	
MULCH/MULCH TACKIFIER	Temporary or Final Stabilization placed as a surface cover for erosion control and or seeding establishment. To be installed as temporary surface cover when work is temporarily halted and as approved by the Engineer				X	X

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Unit Information: City of GJ Unit Leader Initials: DPJ				

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SPRAY-ON MULCH BLANKET (Not to be used in areas of concentrated flows, i.e. ditch lines.)	Temporary or Final Stabilization placed as a surface cover for erosion control and or seeding establishment. To be installed as temporary surface cover when work is temporarily halted and as approved by the Engineer				X	X
SEEDING PERMANENT	Final Stabilization of disturbance and to reduce runoff and control erosion on disturbed areas.					X
SOIL RETENTION BLANKET (SRB)	Final Stabilization of disturbance and to reduce runoff and control erosion on disturbed areas.				X	X
TURF REINFORCEMENT MAT (TRM)	Final Stabilization of disturbance and to reduce runoff and control erosion on disturbed areas. Placed in channels or on slopes for erosion control, channel liner and seeding establishment.				X	X
OTHER						

Erosion control devices are used to limit the amount of soil loss on site
Sediment control devices are designed to capture sediment on the project site.
Construction controls are BMPs related to construction access and staging.
BMP locations are indicated on the SWMP site map.

NARRATIVES

BMP details and narratives not covered by the SWMP or Standard Plan M-208-1 shall be added to the SWMP notebook by the ECS.

D. OFFSITE DRAINAGE (RUN ON WATER)
1. Describe and record BMPs on the SWMP site map that has been implemented to address off site run-on water in accordance with subsection 208.03.

E. VEHICLE TRACKING PAD/VEHICLE TRACKING CONTROL
1. BMPs shall be implemented in accordance with subsection 208.04.

F. PERIMETER CONTROL
1. Perimeter control shall be established as the first item on the SWMP to prevent the potential for pollutants leaving the construction site boundaries, entering the stormwater drainage system, or discharging to state waters.
2. Perimeter control may consist of vegetation buffers, berms, silt fence, erosion logs, existing landforms, or other BMPs as approved.
3. Perimeter control shall be in accordance with subsection 208.04.

5. DURING CONSTRUCTION

RESPONSIBILITIES OF THE SWMP ADMINISTRATOR/TRANSPORTATION EROSION CONTROL SUPERVISOR DURING CONSTRUCTION
The SWMP should be considered a "living document" that is continuously reviewed and modified.
During construction, the following items shall be added, updated, or amended as needed by the SWMP Administrator/Erosion Control Supervisor (ECS) in accordance with Section 208.
During construction, indicate how items that have not been addressed during design are being handled in construction. If items are covered in the template or other sections of the SWMP notebook indicate below what section the discussion takes place.

A. STOCKPILE MANAGEMENT - shall be done in accordance with subsection 107.25 and 208.07

B. CONCRETE WASHOUT - Concrete wash out water or waste from field laboratories and paving equipment shall be contained in accordance with subsection 208.05.

C. SAW CUTTING - shall be done in accordance with subsection 107.25, 208.04, 208.05

D. STREET CLEANING - shall be done in accordance with subsection 208.04

6. INSPECTIONS

A. Inspections shall be in accordance with subsection 208.03 (c).

7. BMP MAINTENANCE

A. Maintenance shall be in accordance with subsection 208.04 (f).

8. RECORD KEEPING

A. Records shall be kept in accordance with subsection 208.03 (c).

9. INTERIM AND FINAL STABILIZATON

A. SEEDING PLAN

Seeding along the City Park Golf Course will be required in accordance with the Landscape Plans. Soil preparation, soil conditioning and seeding (turfgrass) will be required for an estimated 0.57 acres of disturbed area along the City Park Golf Course. Contractor will coordinate with City of Grand Junction Parks and Recreation Department for final seeding.

The following types and rates shall be used:

COMMON NAME	BOTANICAL NAME	LBS. PLS PER ACRE
Kentucky Bluegrass	Poa Pratensis	0.57

B. SEEDING APPLICATION: For slope stabilization, drill seed 0.25 inch to 0.5 inch into the soil. In small areas not accessible to a drill, hand broadcast or hydroseed at double the rate and rake 0.25 inch to 0.5 inch into the soil. For see Landscape Plans for turfgrass seeding application.

C. MULCHING APPLICATION: Apply a minimum of 2 tons of certified weed free straw or 2 tons of certified weed free straw per acre and in accordance with Section 213, and mechanically crimp it into the soil in combination with an organic mulch tackifier.

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a. Prior to winter shutdown or the summer seeding window: Uncompleted slopes shall be mulched with 2 tons of mulching (weed free) per acre, mechanically crimped into the topsoil in combination with an organic mulch tackifier per section 213.

D. SPECIAL REQUIREMENTS:

1. Due to high failure rates, hydroseeding will not be allowed.

E. SOIL CONDITIONING AND FERTILIZER REQUIREMENTS: [Minimum requirements for all disturbances to receive seeding (native). Compost is optional within areas above 8000 ft in elevation]

Soil conditioner paid for as Item 212- Soil Conditioning (Acre)		
Biological nutrient organic based fertilizer (lbs/acre)*	Humate (lbs/acre)	Compost (cy/acre) (1/2 inch depth)
600	200	65

*Biological nutrient shall not exceed 8-8-8 (N-P-K). Humate based material and compost shall be in accordance to Section 212.

F. SOIL RETENTION COVERING: On slopes and ditches requiring a blanket or turf reinforcement mat (trm), the blanket/trm shall be placed in lieu of mulch and mulch tackifier. See SWMP for blanket locations.

G. RESEEDING OPERATIONS/CORRECTIVE STABILIZATION

Prior to final acceptance.

1. Seeded areas shall be reviewed during the 14 day inspections by the Erosion Control Supervisor for bare soils caused by surface or wind erosion. Bare areas caused by surface or gully erosion, blown away mulch, etc. shall be re-graded, seeded, and have the designated mulching applied as necessary, at no additional cost to the project.
2. The Contractor shall maintain seeding/mulch/tackifier, mow to control weeds or apply herbicide to control weeds in the seeded areas until Final Acceptance.

10. PRIOR TO FINAL ACCEPTANCE

A. Final Acceptance shall be in accordance with subsection 208.10 At the Partial Acceptance of the project, it shall be determined by the ECS and the Engineer which temporary BMP's shall remain until 70% reestablishment or which shall be removed.
B. At the end of the project, all ditch checks shall either consist of temporary erosion logs or permanent rip-rap.
C. All storm drains shall be cleaned prior to the end of the project. Work shall be included in 203 Clean Culvert.

11. TABULATION OF STORMWATER QUANTITIES

Pay Item	Description	Pay Unit	*Quantity
203-01622	Sweeping (With Pickup Broom)	Hour	20
207-00205	Topsoil	CY	8091
207-00210	Stockpile Topsoil	CY	1500
208-00035	Aggregate Bag	LF	10
208-00045	Concrete Washout Structure	Each	3
208-00052	Storm Drain Inlet Protection (Type2)	LF	130
208-00070	Vehicle Tracking Pad	Each	2
208-00103	Removal and Disposal of Sediment (Labor)	Hour	40
208-00105	Removal and Disposal of Sediment (Equipment)	Hour	40
208-00206	Erosion Control Supervisor	Day	120
212-00032	Soil Conditioning	Acre	0.57
700-70380	Erosion Control	FA	1

*It is anticipated that additional BMPs and BMP quantities not shown on the SWMP Site Maps shall be required on the project for unforeseen conditions and replacement of items that are beyond their useful service life, see subsection 208.03 and 208.04 (e). Quantities for all BMPs shown above are estimated, and have been increased for unforeseen Project conditions. Quantities shall be adjusted according to the conditions encountered in the field as directed and approved by the Engineer. Payment shall be for the actual work completed and material used.

A. BMP sediment removal and disposal shall be paid for as: 208 Removal and Disposal of Sediment (Equipment) and 208 Removal and Disposal of Sediment (Labor). All other BMP maintenance shall be included in the cost of the BMP Device.

B. It is estimated that 0 hours of labor, blading (X horsepower), dozing (X horsepower), combination loader (X horsepower) and/or backhoe (X horsepower) may be required for miscellaneous erosion control work as directed by the Engineer. Work shall be paid for as:

C. Maintenance of seeded areas shall be paid for as: included in the price of the work.

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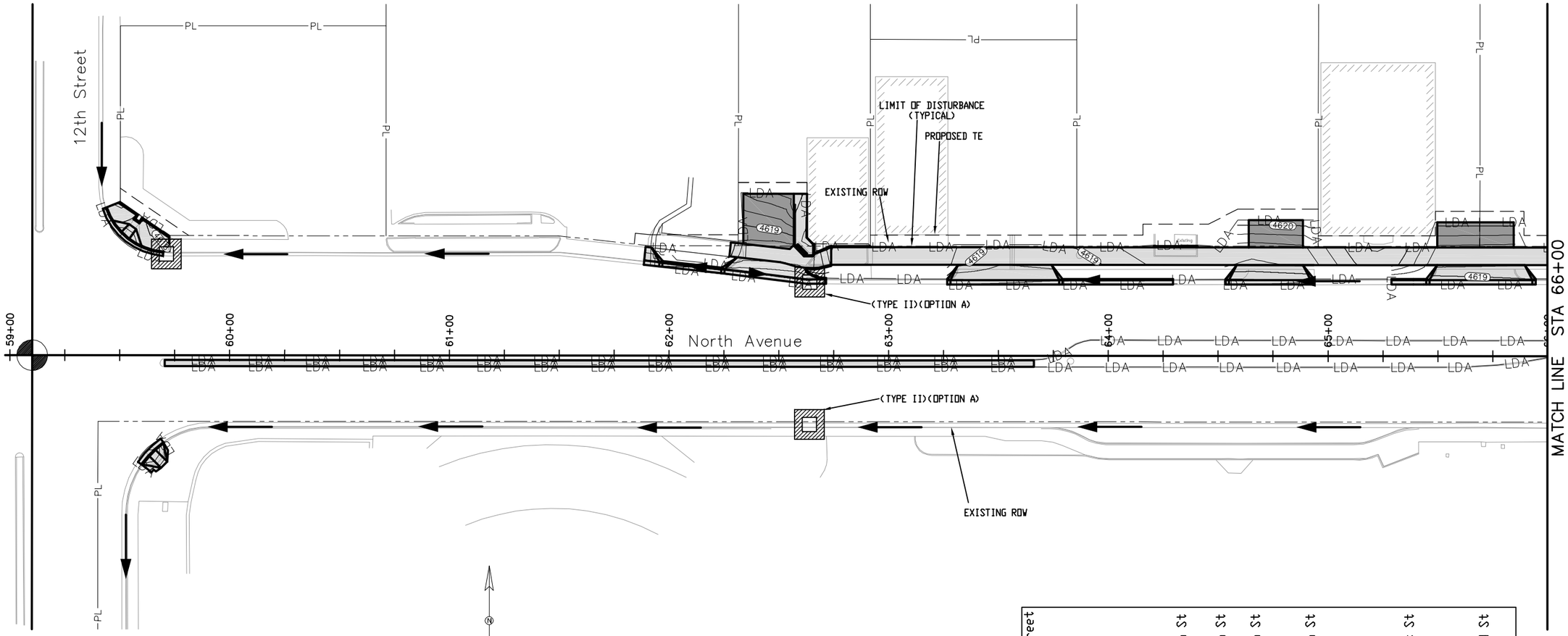
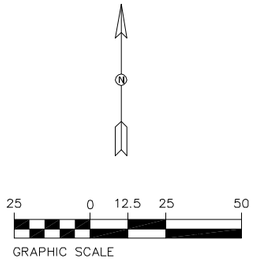
LEGEND

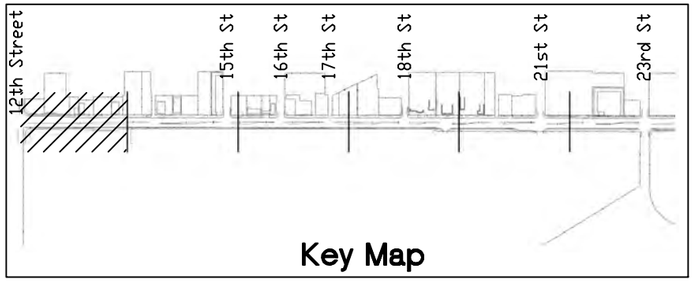
STORM DRAIN INLET PROTECTION (TYPE AS NOTED)





NOTES:

1. SEE LANDSCAPE PLANS FOR SEEDING, MULCHING, AND SOD REVEGETATION REQUIREMENTS.
2. BMPS NOT DRAWN TO SCALE
3. BMP PLACEMENT IS APPROXIMATE
4. SEE SWMP NARRATIVE FOR BMPS.
5. ECS TO UPDATE SWMP SITE MAPS DURING CONSTRUCTION.
6. ECS TO DETERMINE LOCATION FOR STABILIZED CONSTRUCTION ENTRANCE, CONCRETE WASHOUTS, AND STAGING AREAS.



Key Map

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Storm Water Management Plan Site Map			Project No./Code
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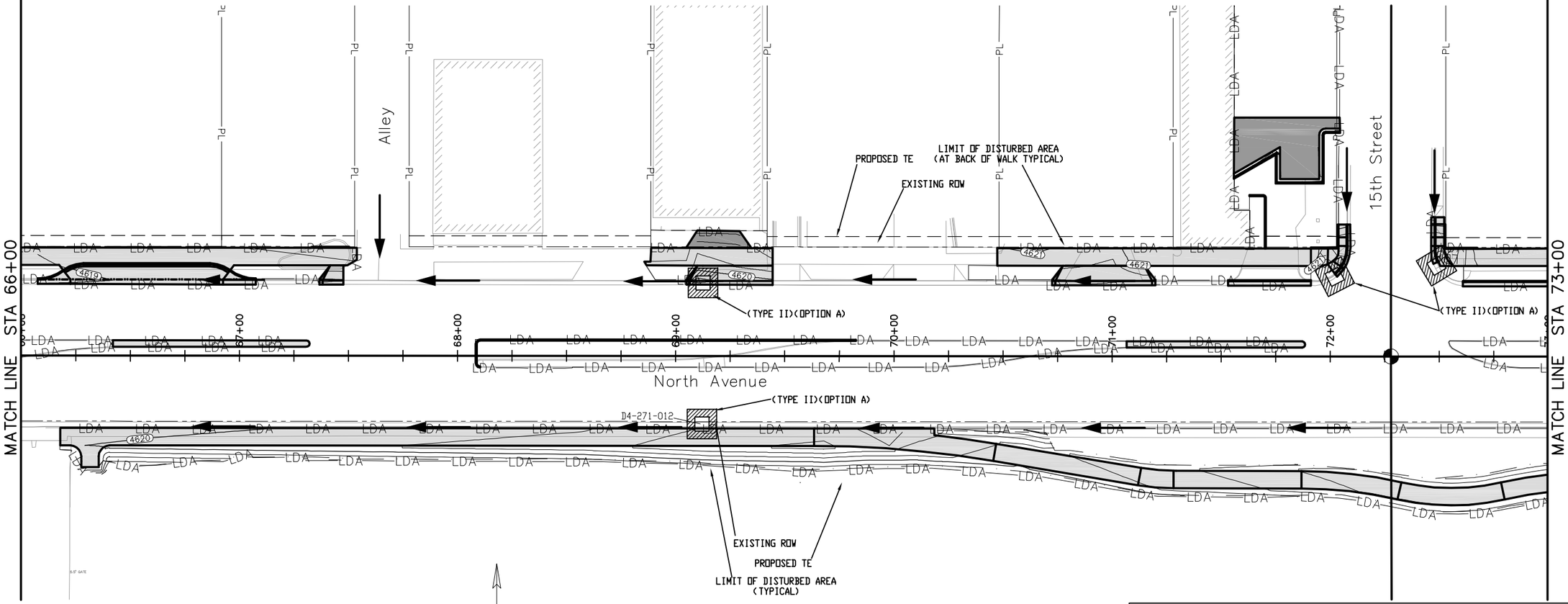
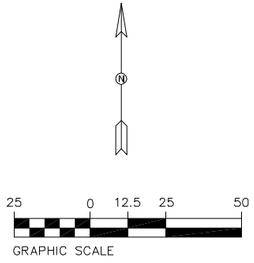
Detailer: John Smith			19365
Sheet Subset: SWMP-SM	Subset Sheets: 1 OF 6		Sheet Number 152

LEGEND

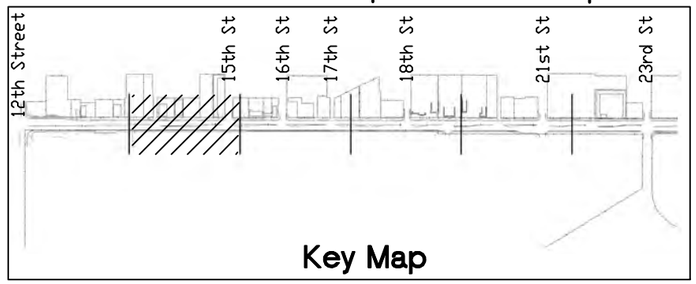
STORM DRAIN INLET PROTECTION
(TYPE AS NOTED)





NOTES:

1. SEE LANDSCAPE PLANS FOR SEEDING, MULCHING, AND SOD REVEGETATION REQUIREMENTS.
2. BMPS NOT DRAWN TO SCALE
3. BMP PLACEMENT IS APPROXIMATE
4. SEE SWMP NARRATIVE FOR BMPS.
5. ECS TO UPDATE SWMP SITE MAPS DURING CONSTRUCTION.
6. ECS TO DETERMINE LOCATION FOR STABILIZED CONSTRUCTION ENTRANCE, CONCRETE WASHOUTS, AND STAGING AREAS.



Key Map

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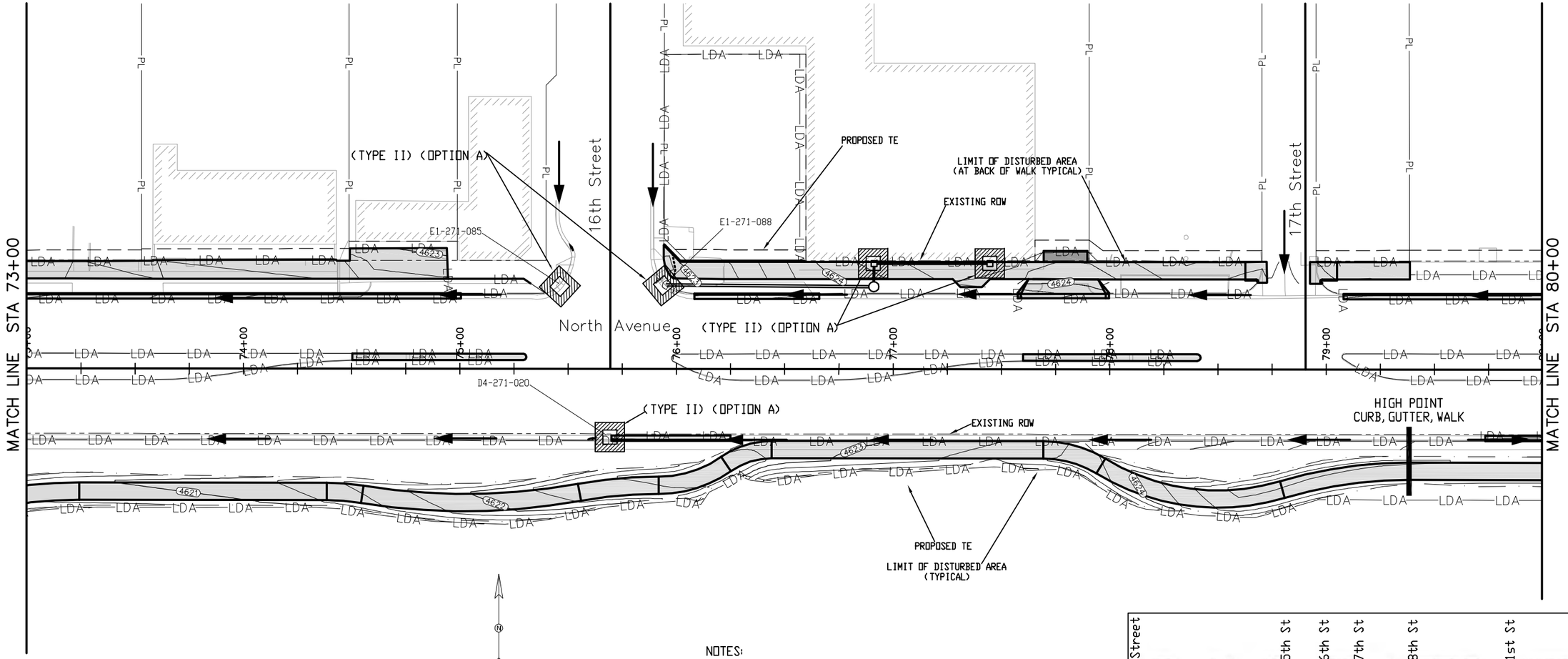
File Name: AT LEFT		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369
Horiz. Scale: 1:50 Vert. Scale: NA					Region 3 RBB
Unit Information: City of GJ Unit Leader Initials: DPJ					

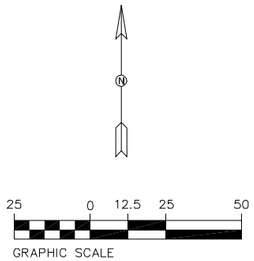
As Constructed	Storm Water Management Plan Site Map			Project No./Code
No Revisions:				TCSP M555-029
Revised:	Designer: John Smith	Structure Numbers		19365
Void:	Detailer: John Smith			Sheet Number 153
	Sheet Subset: SWMP-SM	Subset Sheets:	2 of 6	

N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\roadway plans with city std dwy cuts.dwg, 8/20/2015 4:05:31 PM

LEGEND

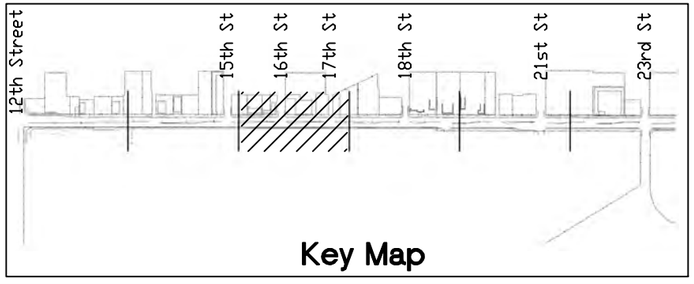
STORM DRAIN INLET PROTECTION
(TYPE AS NOTED)





NOTES:

1. SEE LANDSCAPE PLANS FOR SEEDING, MULCHING, AND SOD REVEGETATION REQUIREMENTS.
2. BMPS NOT DRAWN TO SCALE
3. BMP PLACEMENT IS APPROXIMATE
4. SEE SWMP NARRATIVE FOR BMPS.
5. ECS TO UPDATE SWMP SITE MAPS DURING CONSTRUCTION.
6. ECS TO DETERMINE LOCATION FOR STABILIZED CONSTRUCTION ENTRANCE, CONCRETE WASHOUTS, AND STAGING AREAS.



Key Map

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Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

As Constructed	
No Revisions:	
Revised:	
Void:	

Storm Water Management Plan
Site Map

Designer: John Smith		Structure Numbers	
Detailer: John Smith			
Sheet Subset: SWMP-SM		Subset Sheets:	3 of 6

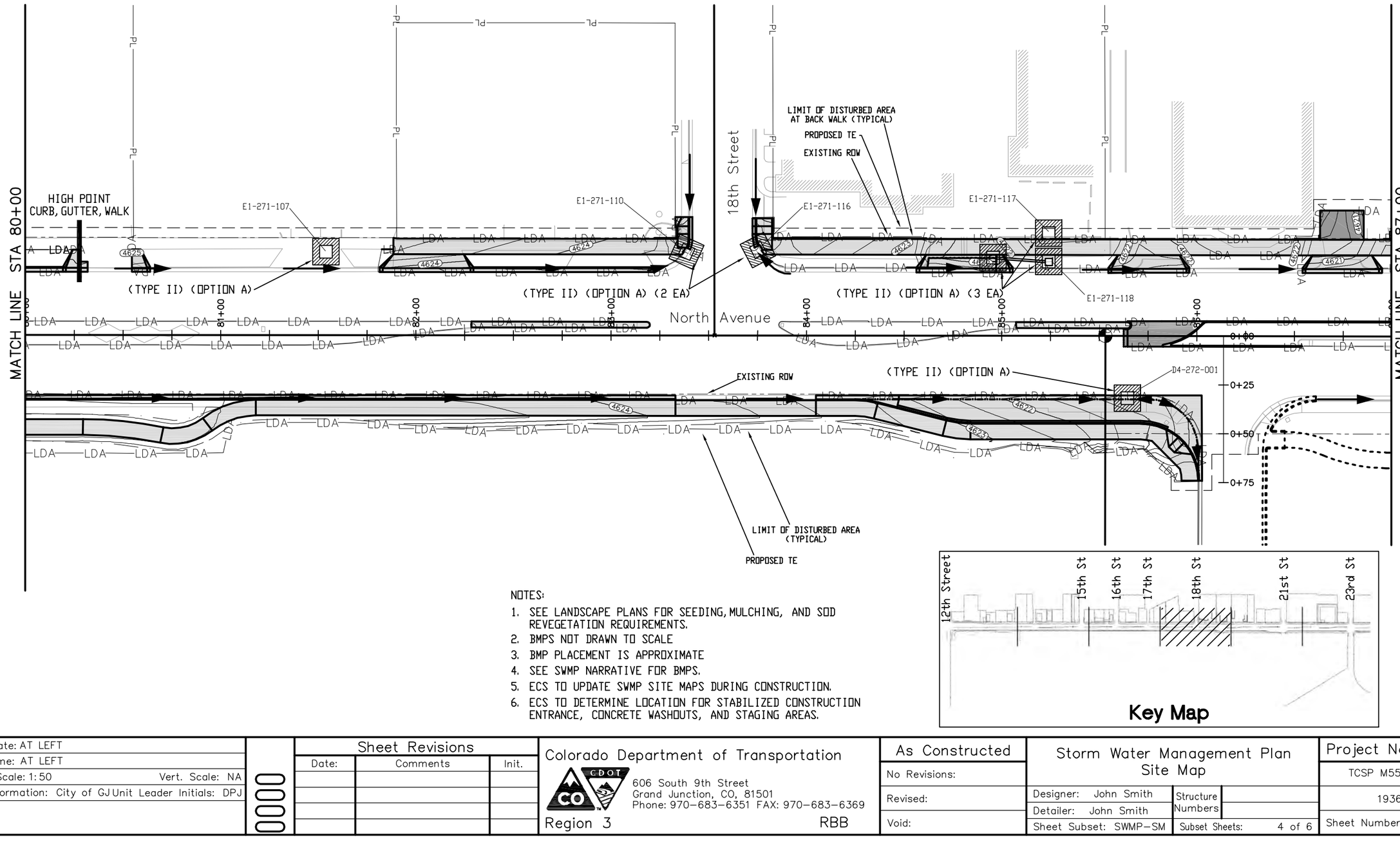
Project No./Code
TCSP M555-029
19365
Sheet Number 154

25 0 12.5 25 50

GRAPHIC SCALE

LEGEND

STORM DRAIN INLET PROTECTION (TYPE AS NOTED)



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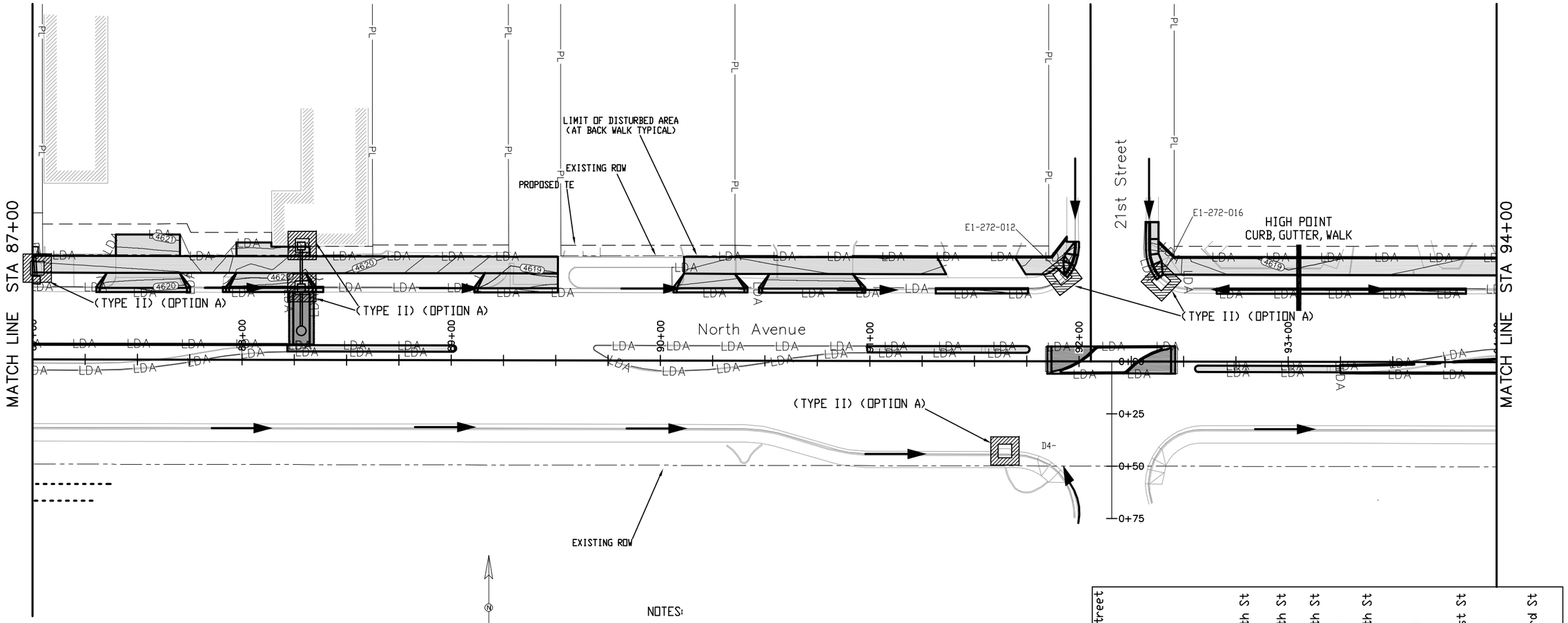
Unit Information: City of GJ Unit Leader Initials: DPJ					Void:

Storm Water Management Plan Site Map			Project No./Code
Designer: John Smith	Structure Numbers		TCSP M555-029
Detailer: John Smith			19365
Sheet Subset: SWMP-SM	Subset Sheets:	4 of 6	Sheet Number 155

LEGEND

STORM DRAIN INLET PROTECTION (TYPE AS NOTED)



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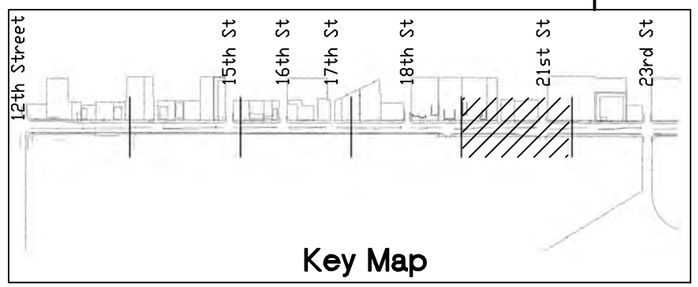

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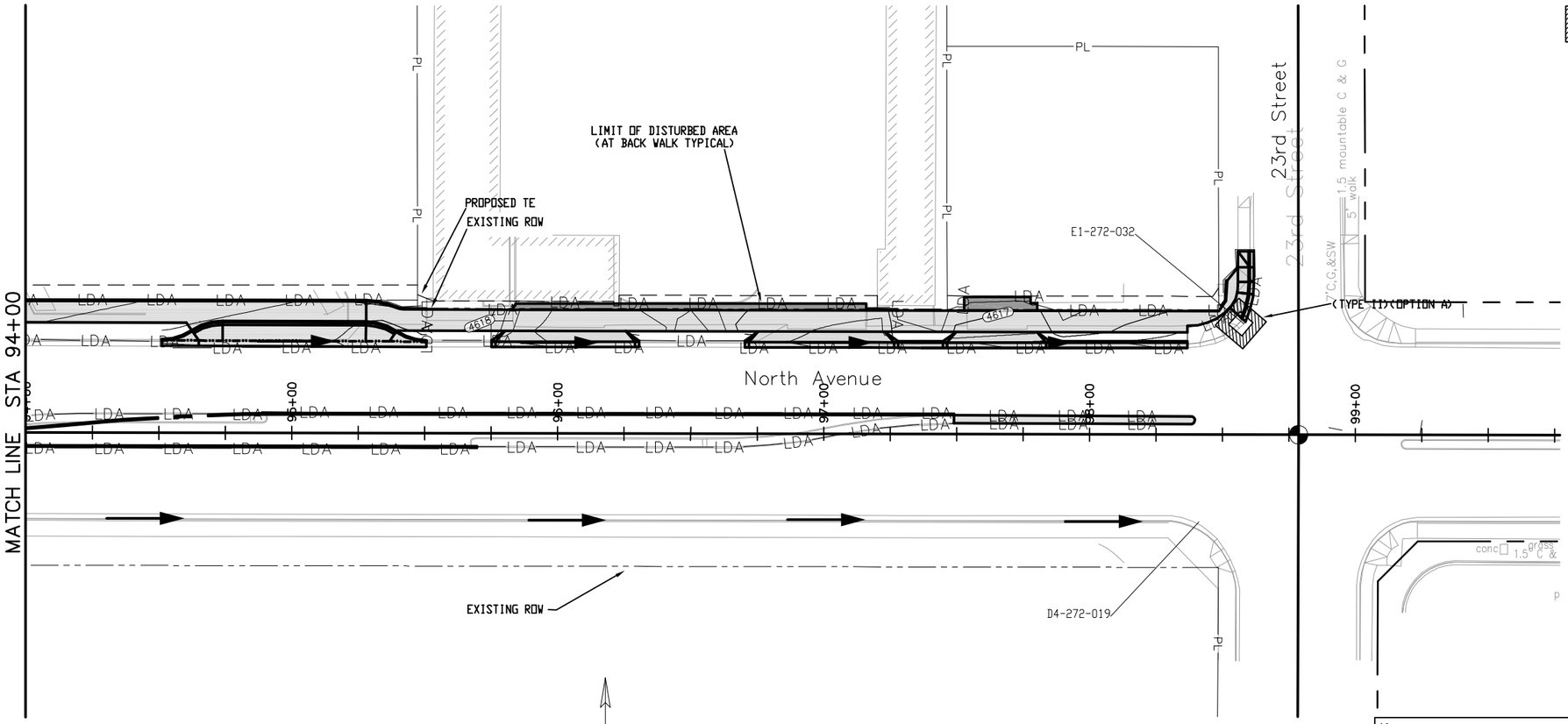
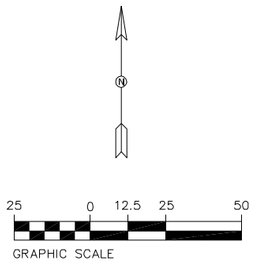
Horiz. Scale: 1:50 Vert. Scale: NA						Revised:	Designer: John Smith	Structure Numbers	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:	Detailer: John Smith		Sheet Number 156
							Sheet Subset: SWMP-SM	Subset Sheets: 5 of 6	

LEGEND

STORM DRAIN INLET PROTECTION (TYPE AS NOTED)





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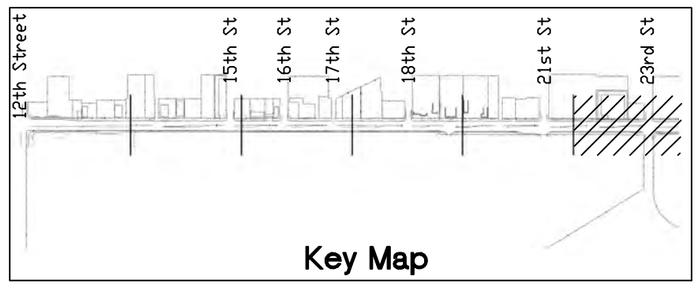

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As Constructed	Storm Water Management Plan Site Map			Project No./Code
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Revised:	Designer: John Smith	Structure Numbers		19365
Void:	Detailer: John Smith			Sheet Number 157
	Sheet Subset: SWMP-SM	Subset Sheets:	6 of 6	

LAYOUT NOTES

1. Layout and verify dimensions prior to construction. Bring discrepancies to the attention of the Landscape Architect.
2. Written dimensions take precedence over scale. Do not scale drawings.
3. This drawing includes the dimensional controls for lighting fixtures and site improvements.
4. Where dimensions are called as "equal," space referenced items equally, measured to their center lines.
5. Measurements are to fixed site improvements from the defined road station points. Dimensions to center lines is indicated.
6. Install intersecting elements at 90 degree angles to each other unless otherwise noted.
7. Provide expansion joints where concrete flatwork meets vertical structures such as walls, curbs, steps and building elements.
8. All lighting standards shall be set back 2'-0" clear from face of curb, and 1'-0" from edge of sidewalk. Lighting standards are approximately 100'-0" from each other, but default to drawings for final locations.
9. All street furnishings to be verified on site prior to installation. Install benches and trash receptacles minimum 1'-0" off of edge of sidewalk.

LANDSCAPE PLANTING NOTES

1. Source of base sheets is City of Grand Junction.
2. Refer to Civil Engineer's utility and precise grading plans for utility location and final grading. If actual site conditions vary from what is shown on the plans, contact the Landscape Architect for direction as to how to proceed.
3. Verify locations of pertinent site improvements installed under other sections. If any part of this plan cannot be followed due to site conditions, contact Landscape Architect for instructions prior to commencing work.
4. Exact locations of plant materials to be approved by the Landscape Architect in the field prior to installation. Landscape Architect reserves the right to adjust plants to exact location in field.
5. Verify plant counts and square footages: Quantities are provided as Owner information only. If quantities on plant list differ from graphic indications, then graphics shall prevail.
6. Contact the local underground utility services for utility location and identification.
7. Perform excavation in the vicinity of underground utilities with care and if necessary, by hand. The Contractor bears full responsibility for this work and disruption or damage to utilities shall be repaired immediately at no expense to the Owner.
8. Trees shall bear same relation to finished grade as it bore to existing.
9. Trees to be planted a minimum of 4 feet from face of building, or pavement, except as approved by Landscape Architect.
10. Provide matching forms and sizes for plant materials within each specie and size designated on the drawings.
11. Prune newly planted trees only as directed by Landscape Architect.
12. Align and equally space in all directions shrubs so designated per these notes and drawings.
13. Finish grades of shrub areas and lawns shall be 1 1/2 inches below adjacent paving or header. (Check mulch depth and if seeded or sodded lawns).
14. Provide specified edging as divider between planting beds and lawn areas.
15. Provide burlap wrapping to second branch with 50% overlap.
16. Cut and remove burlap from top 1/3 of ball.
17. Landscape Architect to review plant materials at source or by photographs prior to digging or shipping of plant materials.

TABLE OF ABBREVIATIONS

APPROX	APPROXIMATE	MH	MANHOLE
ARCH	ARCHITECT	MIN	MINIMUM
AVG	AVERAGE	MISC	MISCELLANEOUS
B&B	BALLED AND BURLAPPED	MTD	MOUNTED
BC	BOTTOM OF CURB	MTL	METAL
BF	BOTTOM OF FOOTING	N	NORTH
BLDG	BUILDING	NIC	NOT IN CONTRACT
BM	BENCHMARK	NO	NUMBER
BOC	BACK OF CURB	NOM	NOMINAL
BR	BOTTOM OF RAMP	NTS	NOT TO SCALE
BRG	BEARING	OC	ON CENTER
BS	BOTTOM OF STEP	OD	OUTSIDE DIAMETER
BW	BOTTOM OF WALL	OPP	OPPOSITE
CAL	CALIPER	PAR	PARALLEL
CAP	CAPACITY	PC	POINT OF CURVATURE
CF	CUBIC FEET	PE	POLYURETHANE
CHAM	CHAMFER	PERF	PERFORATED
CIP	CAST IN PLACE	PED	PEDESTRIAN
CJ	CONTROL JOINT	PI	POINT OF INTERSECTION
CL	CENTER LINE	PL	PROPERTY LINE
CLR	CLEARANCE	PT	POINT, POINT OF TANGENCY
CM	CENTIMETER	PVC	POLYVINYL CHLORIDE
CO	CLEAN OUT	PVMT	PAVEMENT
COMP	COMPACTED	PVR	PAVER
CONC	CONCRETE	QTY	QUANTITY
CONST	CONSTRUCTION	R	RADIUS
CONT	CONTINUOUS	RECEP	RECEPTACLE
CONTR	CONTRACTOR	REF	REFERENCE
CU	CUBIC	REINF	REINFORCE(D)
CY	CUBIC YARD	REM	REMOVE
DBL	DOUBLE	REQ'D	REQUIRED
DF	DIRECTION OF FLOW	REV	REVISION, REVISED
DEG	DEGREE	ROW	RIGHT OF WAY
DEMO	DEMOLISH, DEMOLITION	RT	RIGHT
DIA	DIAMETER	S	SOUTH
DIM	DIMENSION	SAN	SANITARY
DTL	DETAIL	SCH	SCHEDULE
DWG	DRAWING	SD	STORM DRAIN
E	EAST	SEC	SECTION
EA	EACH	SF	SQUARE FOOT (FEET)
EJ	EXPANSION JOINT	SHT	SHEET
EL	ELEVATION	SI	STORM INLET
ELEC	ELECTRICAL	SIM	SIMILAR
ENG	ENGINEER	SNT	SEALANT
EQ	EQUAL	SPECS	SPECIFICATIONS
EQUIP	EQUIPMENT	SQ	SQUARE
EST	ESTIMATE	ST	STORM SEWER
E.W.	EACH WAY	SY	SQUARE YARD
EXIST	EXISTING	STA	STATION
EXP	EXPANSION, EXPOSED	STD	STANDARD
FF	FINISHED FLOOR ELEVATION	STL	STEEL
FG	FINISHED GRADE	STRL	STRUCTURAL
FIN	FINISH	SYM	SYMMETRICAL
FL	FLOW LINE	T&B	TOP AND BOTTOM
FOC	FACE OF CURB	TBC	TOP OF BACK CURB
FT	FOOT (FEET)	TC	TOP OF CURB
FTG	FOOTING	TF	TOP OF FOOTING
GA	GAUGE	THK	THICK
GAL	GALVANIZED	TOC	TOP OF CONCRETE
GC	GENERAL CONTRACT(OR)	TOPO	TOPOGRAPHY
GEN	GENERAL	TSL	TOP OF SLAB
HORIZ	HORIZONTAL	TRAS	TRANSFORMER
HP	HIGH POINT	TR	TOP OF RAMP
HT	HEIGHT	TS	TOP OF STEP
ID	INSIDE DIAMETER	TW	TOP OF WALL
INV	INVERT ELEVATION	TYP	TYPICAL
IN	INCH(ES)	VAR	VARIES
INCL	INCLUDE(D)	VERT	VERTICAL
INL	INLET	VEH	VEHICLE
IRR	IRRIGATION	VOL	VOLUME
JT	JOINT	W	WITH
LIN	LINEAR	W/O	WITHOUT
LF	LINEAR FEET	WT	WEIGHT
LP	LOW POINT	WL	WEIR LEVEL
LT	LIGHT	WWF	WELDED WIRE FABRIC
MATL	MATERIAL	YD	YARD
MAX	MAXIMUM	@	AT
MEMB	MEMBRANE		

SHRUB/GROUNDCOVER PLANTING KEY

ABBR.	BOTANICAL NAME	COMMON NAME	SIZE	QTY
TREES				
GS	*Zelcova serrata 'Green Vase'*	Green Vase Zelkova	2.5"-3.5" CAL.	42
PA	*Populus x acerifolia*	London Planetree	2.5"-3.5" CAL.	17
PC	*Pistacia chinesis*	Chinese Pistache	2.5"-3.5" CAL.	18
UF	*Ulmus 'Frontier'*	Frontier Elm	2.5"-3.5" CAL.	35
DECIDUOUS & EVERGREEN SHRUBS				
PF	Potentilla fruticosa 'McKay's White'	McKay's White Potentilla	5 GAL.	68
JC	Juniperus communis Alpine Carpet	Alpine Carpet Juniper	5 GAL.	114
PB	Prunus besseyi Pawnee Buttes	Creeping Western Sand Cherry	5 GAL.	71
VO	Viburnum opulus 'Compactum'	Compact European Cranberrybush	5 GAL.	42
PERENNIALS AND GRASSES				
CA	*Calamagrostis arondinacea*	'Karl Foerster' Feather Reed Grass	1 GAL.	97
GRASSES, SEED MIXES, MULCHES AND EDGING				
	Turfgrass	Kentucky Bluegrass	Seed	24,380 SF
	Inorganic Mulch/ Rock Material (Assume 4" depth)		463 CY	

TREE PROTECTION LEGEND

EXISTING TREE TO REMAIN, DO NOT DISTURB. PROTECT IN PLACE.

EXISTING TREE TO BE REMOVED.

TREE PROTECTION FENCE.

SITE KEYNOTES:

DETAIL / SHEET — SPEC. SECTION

1.0 PAVEMENTS, RAMPS, CURBS

1.1 Text description — 0 / L0-01 — 000000

- KEYNOTE HEADING (PROPOSED IMPROVEMENT SYSTEM)
- KEYNOTE CALL-OUT
- KEYNOTE (SYSTEM) ITEM AND BRIEF DESCRIPTION
- DETAIL REFERENCE (NUMBER AND SHEET) NOTE: MULTIPLE DETAILS MAY BE REFERENCED
- SPECIFICATION REFERENCE (CSI SECTION NUMBER MASTER FORMAT 2004) NOTE: MULTIPLE SPECIFICATIONS MAY BE REFERENCED

PLANT KEYNOTES:

SDA(3) 9.3

- PLANT SPECIES
- QUANTITY
- SITE DETAIL KEY

SITE REFERENCE NOTES

1 Text description

2 Text description

- SUPPLEMENTAL NOTE (SUPPLEMENTAL INFORMATION TO KEYNOTES. TYPICALLY DESCRIBES ITEMS TO BE CONSIDERED DURING CONSTRUCTION. MAY BE REFERENCED TO A DETAIL AND/OR SPECIFICATION.
- NOTE CALL-OUT

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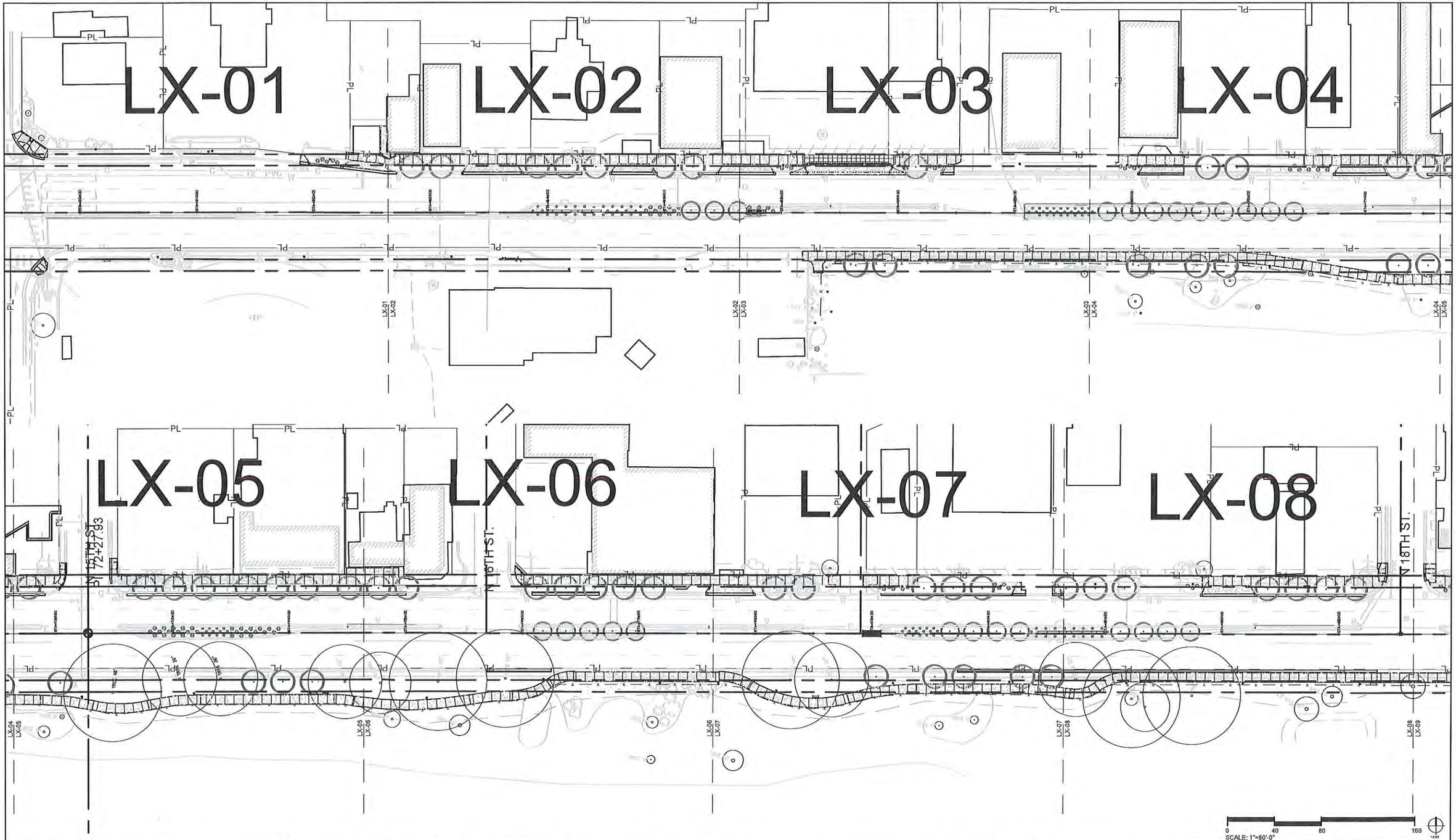
Region 3 RBB

As Constructed
No Revisions:
Revised:
Void:

Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: GENERAL INFORMATION
Structure Numbers
Subset Sheets: L0-00

Project No./Code
TCSP M555-029
19365
Sheet Number 158



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Void:	

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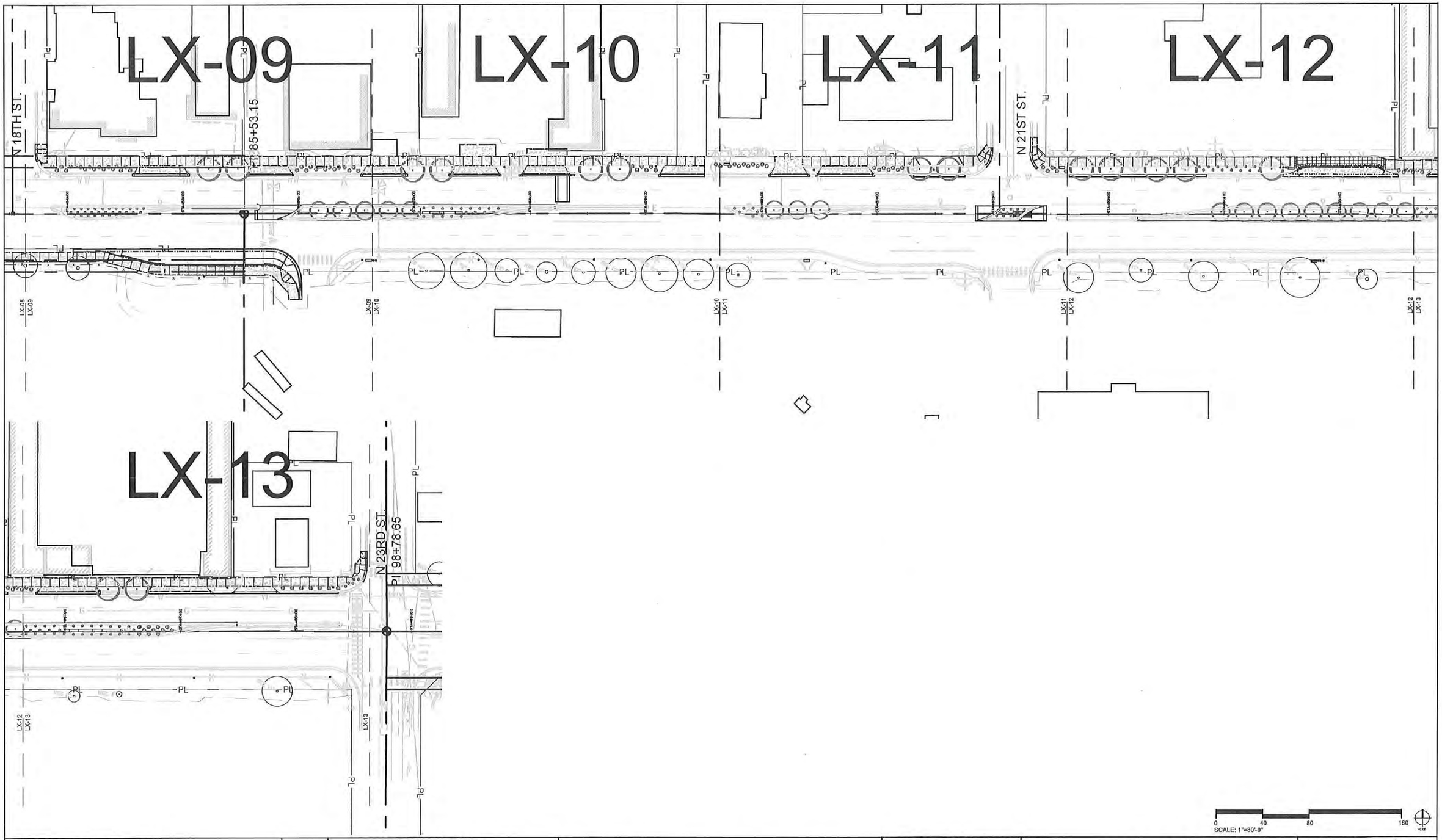
Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: KEY PLAN
Structure Numbers:
Subset Sheets: L0-01

Project No./Code	
TCSP M555-029	
19365	
Sheet Number	159



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Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: KEY PLAN
Structure Numbers
Subset Sheets: L0-02

Project No./Code
TCSP M555-029
19365
Sheet Number 160

TABULATION OF REMOVAL

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	AS CONST.
202-00010	REMOVAL OF TREE	EA	13	
202-00012	REMOVAL OF TREE STUMP	EA	13	

PLANT PROTECTION REFERENCE NOTES

1. Existing trees to be removed.
2. Existing trees to remain. Do Not disturb. Protect-in-place.
3. Improvements within tree dripline to be coordinated with City. Hand-digging and additional tree protection and/or mitigation in accordance with Tree Protection Plan.

SITE KEYNOTES:

		DETAIL / SHEET
9.0	**PLANTING AND LANDSCAPE**	
9.1	Tree Protection Fencing	1 / L9-01
9.2	Deciduous Tree Planting	1 / L9-02
9.3	Shrub Planting	2 / L9-02
9.4	Perennial Planting	3 / L9-02
9.5	Lawn Seeding	1 / L9-03

TREE PROTECTION LEGEND

EXISTING TREE TO REMAIN. DO NOT DISTURB. PROTECT IN PLACE.

EXISTING TREE TO BE REMOVED.

TREE PROTECTION FENCE.

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Void:

Landscape Plans
Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: TREE PROTECTION
Structure Numbers
Subset Sheets: L1-00

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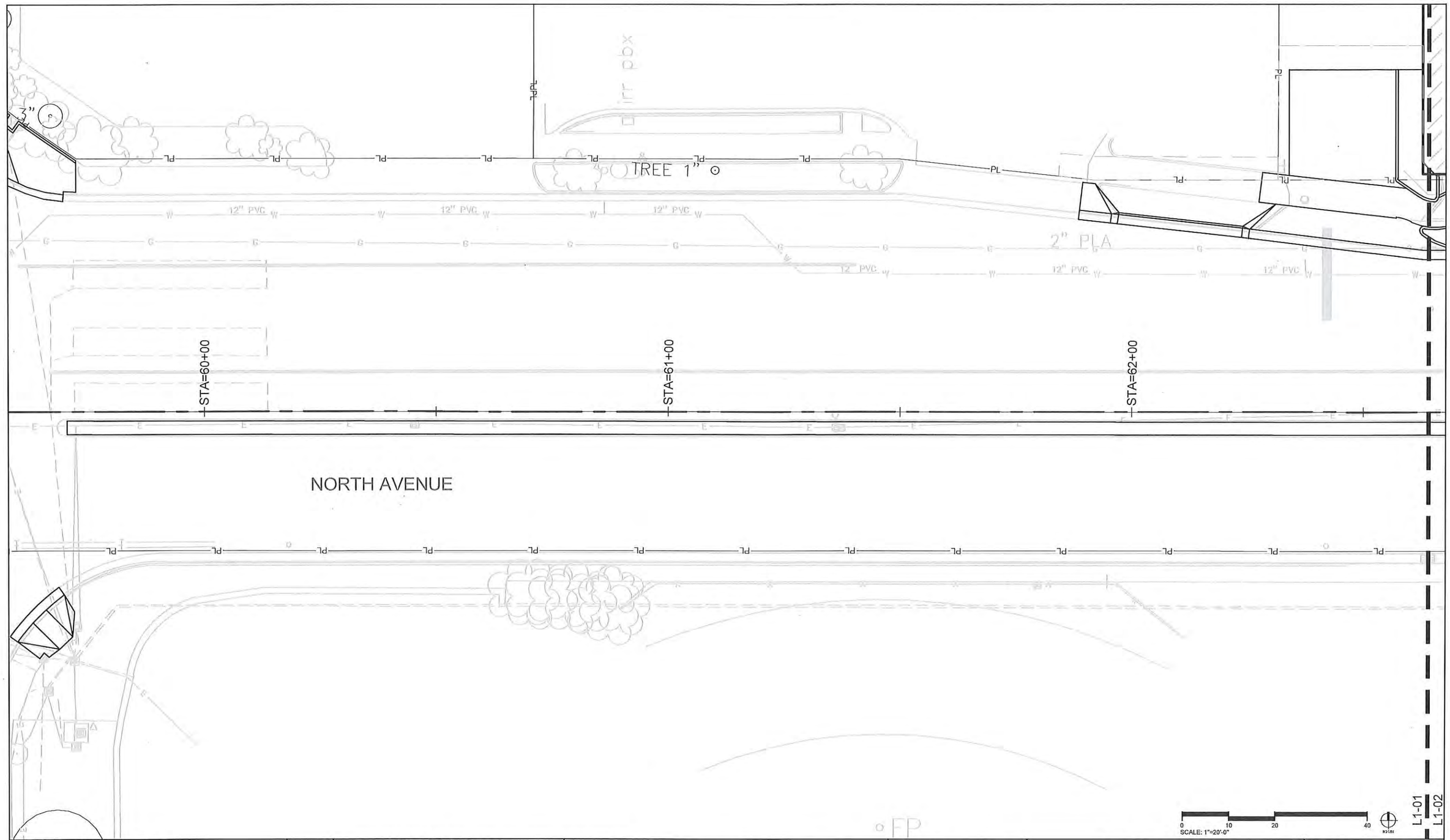
TCSP M555-029
19365
Sheet Number 161



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Designer: Mike Albert
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Sheet Subset: TREE PROTECTION
Structure Numbers
Subset Sheets: L1-01

Project No./Code
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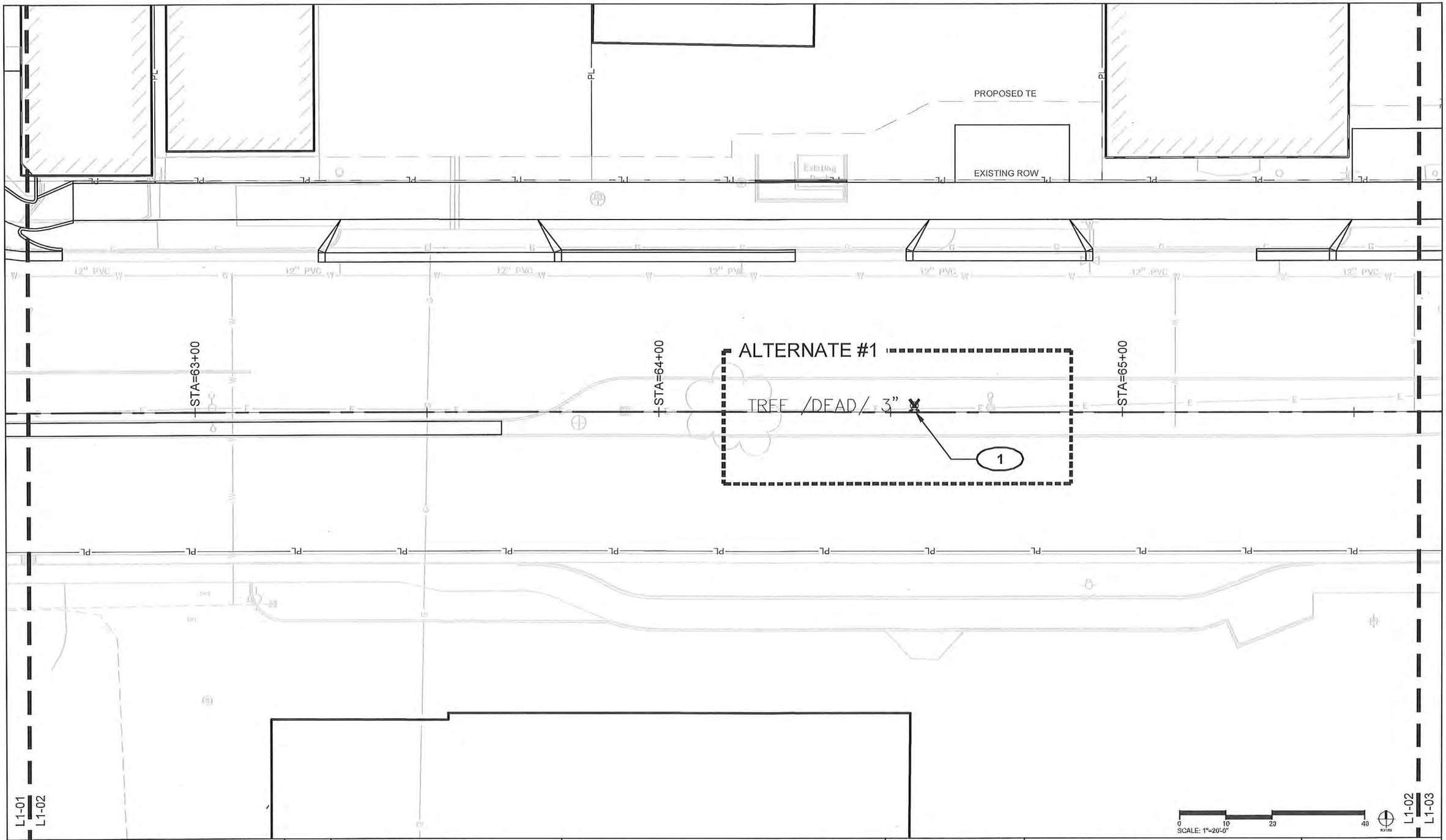
Sheet Number 162



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Sheet Subset: TREE PROTECTION

Structure Numbers

Subset Sheets: L1-02

Project No./Code

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19365

Sheet Number 163

PROPOSED TE

EXISTING ROW

ALLEY

STA=66+00

STA=67+00

STA=68+00

ALTERNATE #2

EXISTING ROW

TREE 6"

PROPOSED TE

1

TREE 3"

TREE 3"

TREE 3"

TREE 8"

L1-02

L1-03

L1-03

L1-04

SCALE: 1"=20'-0"

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Region 3 RBB

As Constructed

No Revisions:

Revised:

Void:

Landscape Plans

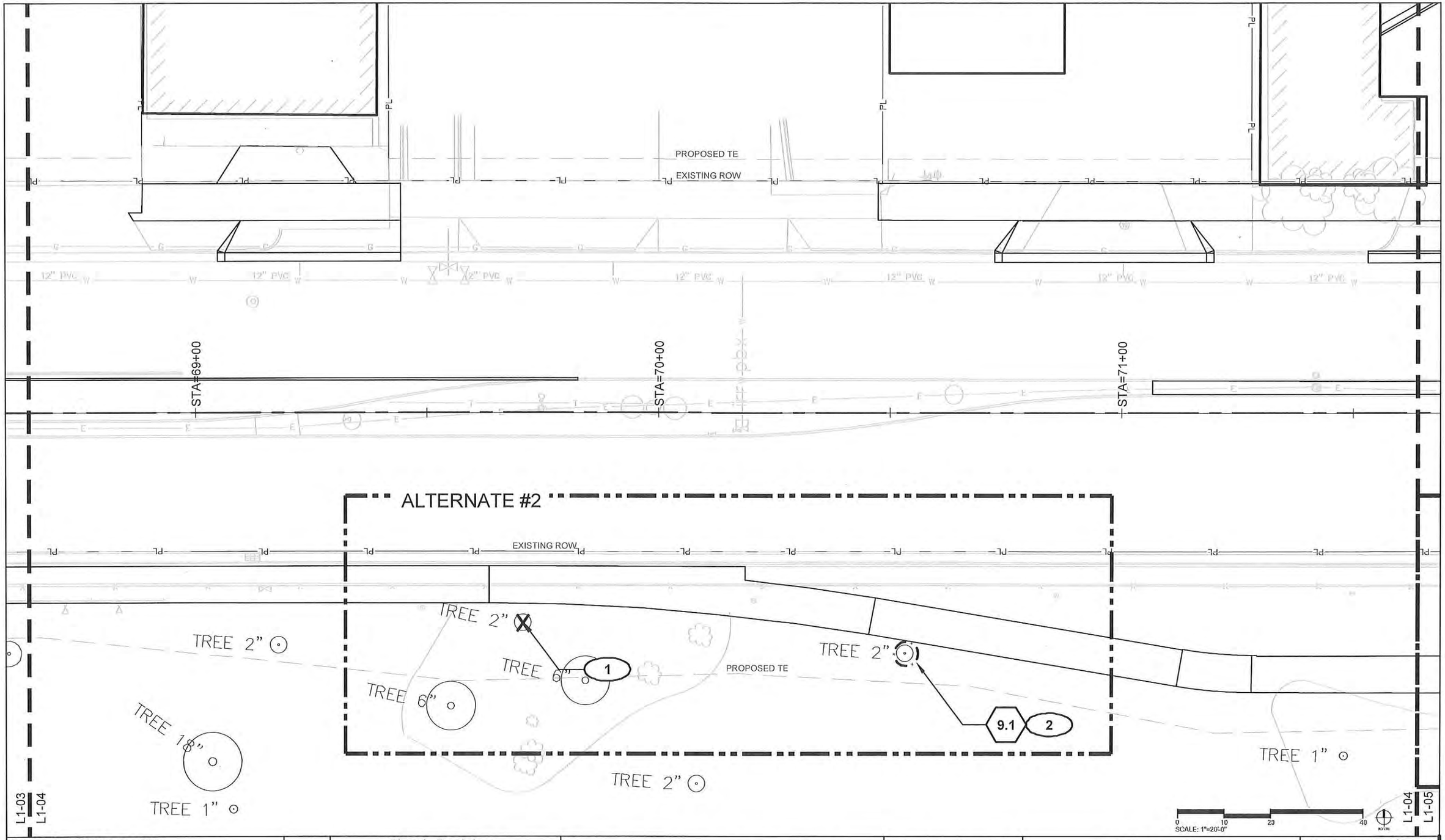
Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: TREE PROTECTION
Structure Numbers
Subset Sheets: L1-03

Project No./Code

TCSP M555-029

19365

Sheet Number 164



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Region 3
RBB

As Constructed

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Revised:

Void:

Landscape Plans

Designer: Mike Albert

Detailer: Ashley Allis

Sheet Subset: TREE PROTECTION

Structure Numbers

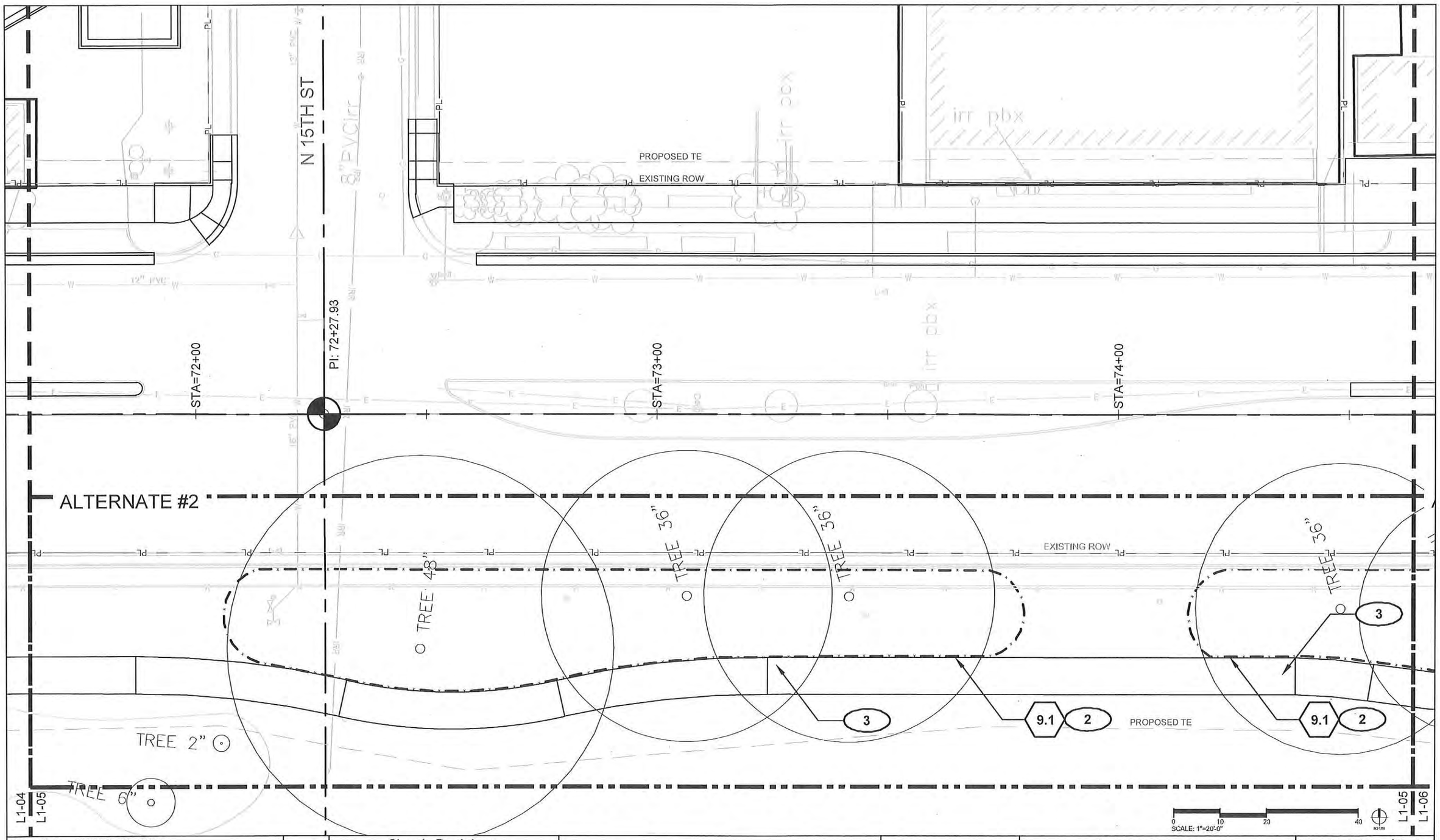
Subset Sheets: L1-04

Project No./Code

TCSP M555-029

19365

Sheet Number 165



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Urban Design • Tourism Planning			
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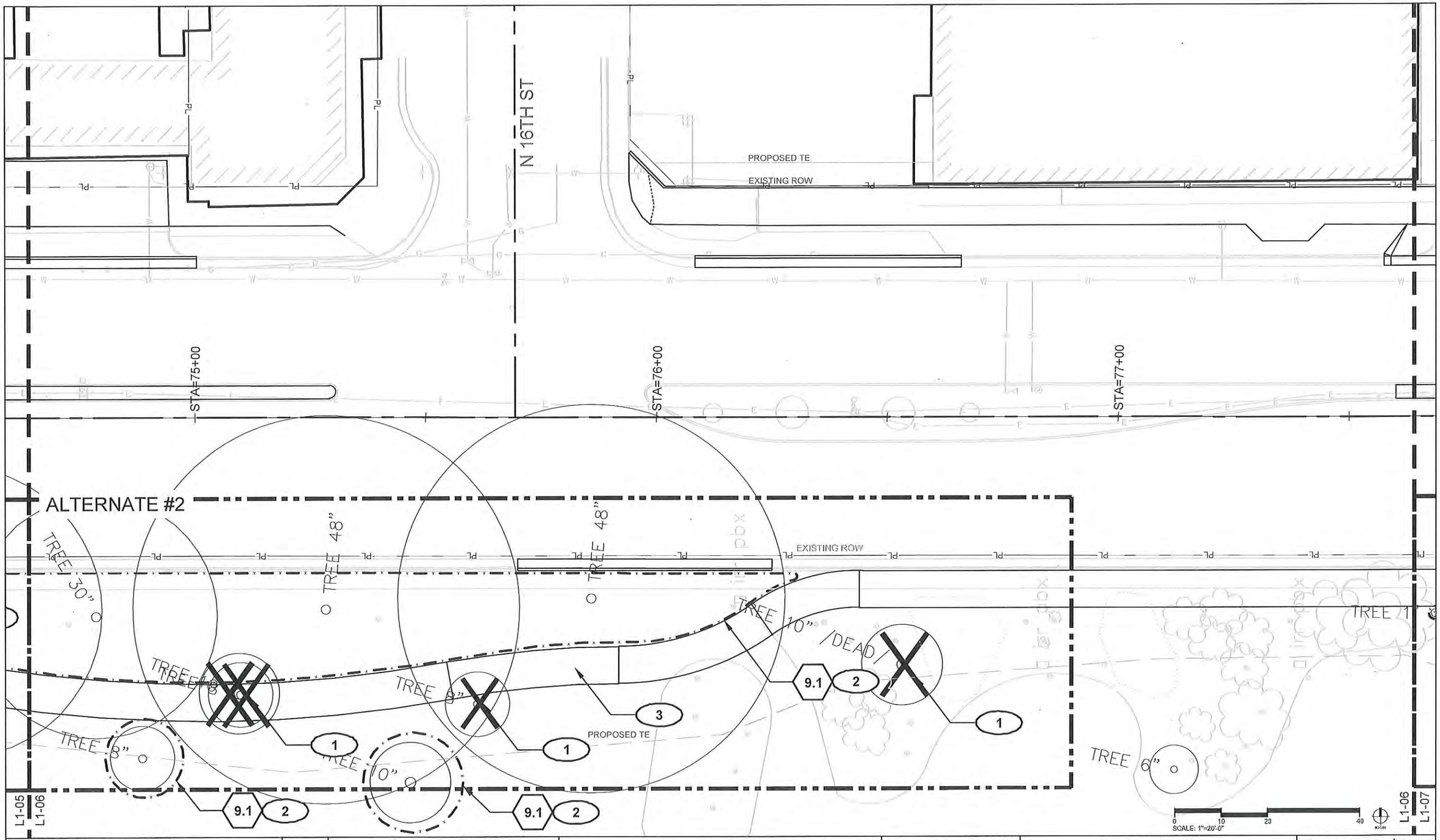
Landscape Plans			Project No./Code
Designer: Mike Albert	Structure Numbers		TCSP M555-029
Detailer: Ashley Allis			19365
Sheet Subset: TREE PROTECTION	Subset Sheets: L1-05		Sheet Number 166



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No Revisions:
Revised:
Void:

Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: TREE PROTECTION
Structure Numbers
Subset Sheets: L1-08

Project No./Code
TCSP M555-029
19365
Sheet Number 167

BASE BID

ALTERNATE #2

N 17TH ST

TREE 8"

TREE 8"

TREE 48"

TREE 36"

TREE 4"

TREE 4"

PROPOSED TE

EXISTING ROW

PROPOSED TE

EXISTING ROW

STA=78+00

STA=79+00

STA=80+00

9.1 2

1

9.1 2

3

9.1 2

9.1 2

L1-06

L1-07

L1-07

L1-08

SCALE: 1"=20'-0"

Print Date: AUGUST 21, 2015	Sheet Revisions	Colorado Department of Transportation	As Constructed
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Landscape Architecture • Land Planning Urban Design • Tourism Planning	120 East Main Street Aspen, Colorado 81611-1787 (970)-925-8354 WWW.DESIGNWORKSHOP.COM	Region 3 RBB	Void:

Landscape Plans			Project No./Code
			TCSP M555-029
Designer: Mike Albert	Structure Numbers		19365
Detailer: Ashley Allis			Sheet Number 168
Sheet Subset: TREE PROTECTION	Subset Sheets: L1-07		

BASE BID

ALTERNATE #2

9.1 2

TREE 8"

TREE 36"

TREE 48"

TREE 48"

TREE 12"

TREE 10"

TREE 12"

PROPOSED TE

EXISTING ROW

N 18TH ST

STA=81+00

STA=82+00

STA=83+00

L1-07

L1-08

L1-08

L1-09

SCALE: 1"=20'-0"

Print Date: AUGUST 21, 2015

File Name:

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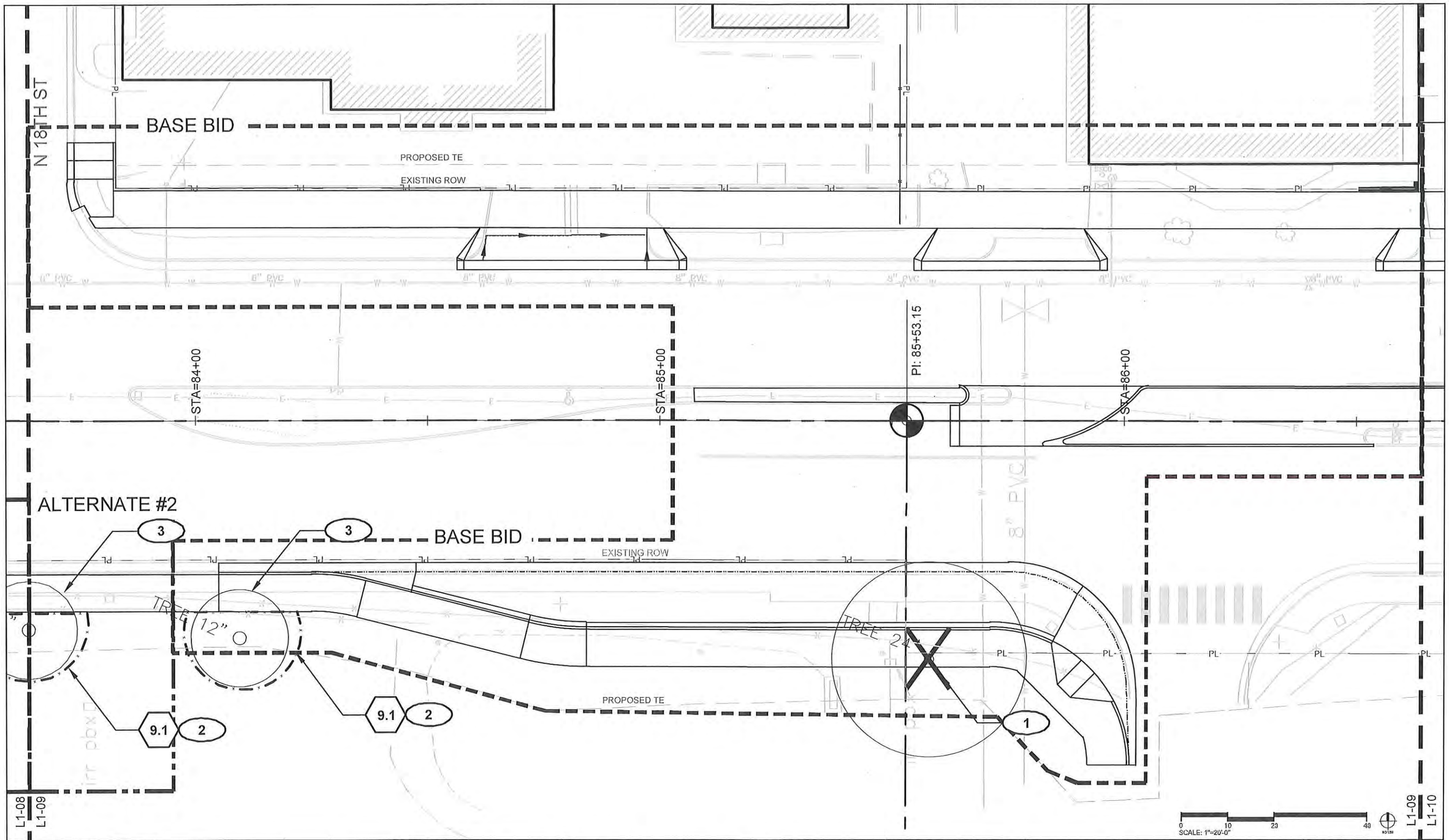
Void:

Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: TREE PROTECTION
Structure Numbers
Subset Sheets: L1-08

Project No./Code
TCSP M555-029
19365
Sheet Number 169



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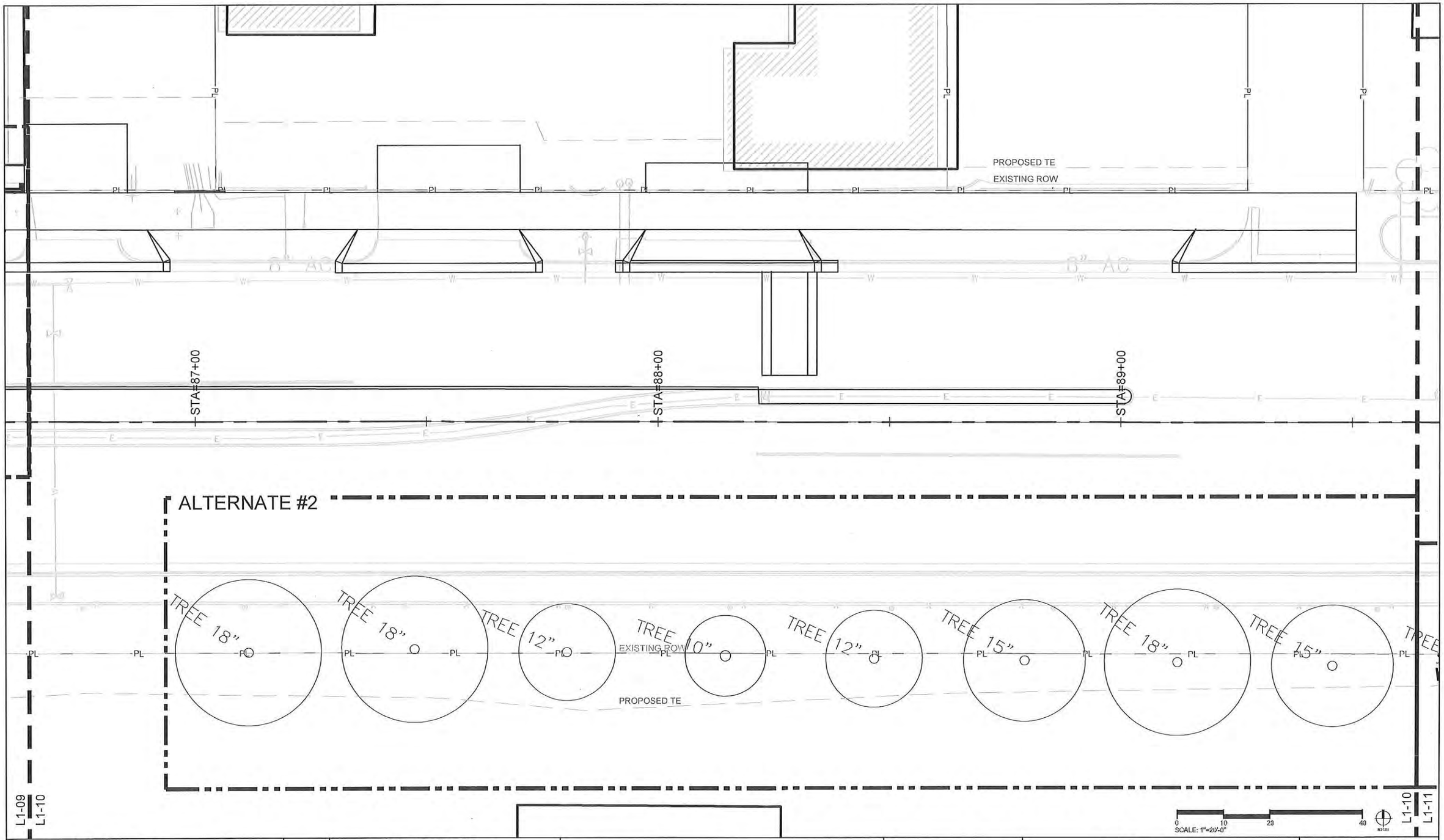
Revised:
Void:

Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: TREE PROTECTION
Structure Numbers
Subset Sheets: L1-09

Project No./Code
TCSP M555-029
19365
Sheet Number 170



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Void:

Landscape Plans

Designer: Mike Albert

Detailer: Ashley Allis

Sheet Subset: TREE PROTECTION

Structure Numbers

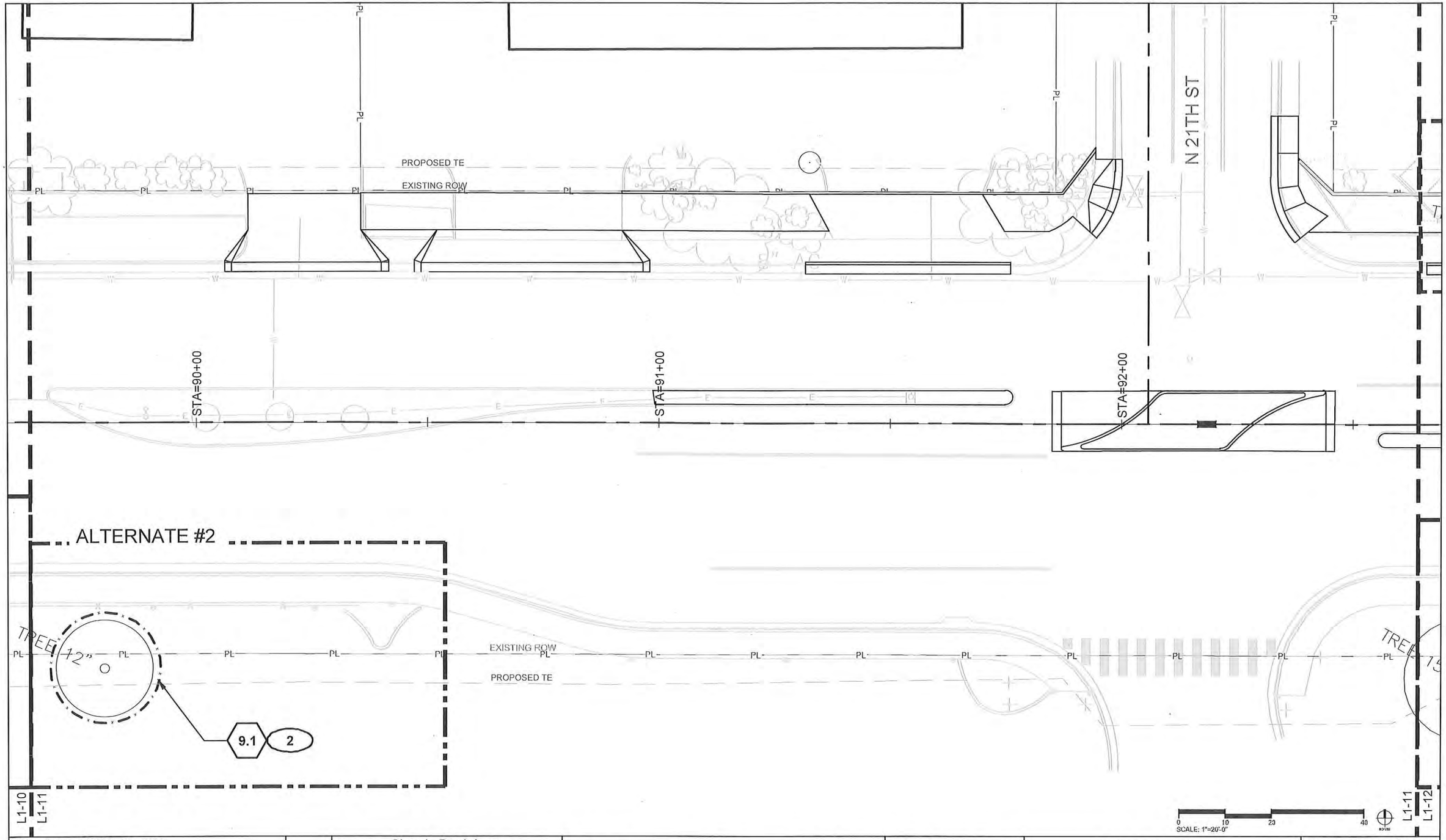
Subset Sheets: L1-10

Project No./Code

TCSP M555-029

19365

Sheet Number 171



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Landscape Plans			Project No./Code
Designer: Mike Albert	Structure Numbers		TCSP M555-029
Detailer: Ashley Allis			19365
Sheet Subset: TREE PROTECTION	Subset Sheets: L1-11		Sheet Number 172

BASE BID

PROPOSED TE

EXISTING ROW

TREE 6"

TREE 4"

TREE 6"

TREE 6"

1

1

1

1

PL

PL

STA=93+00

STA=94+00

STA=95+00

ALTERNATE #2

TREE 15"

TREE 12"

TREE 15"

EXISTING ROW

PROPOSED TE

TREE 20"

TREE 10"

9.1

2

L1-11

L1-12

L1-12

L1-13

SCALE: 1"=20'-0"

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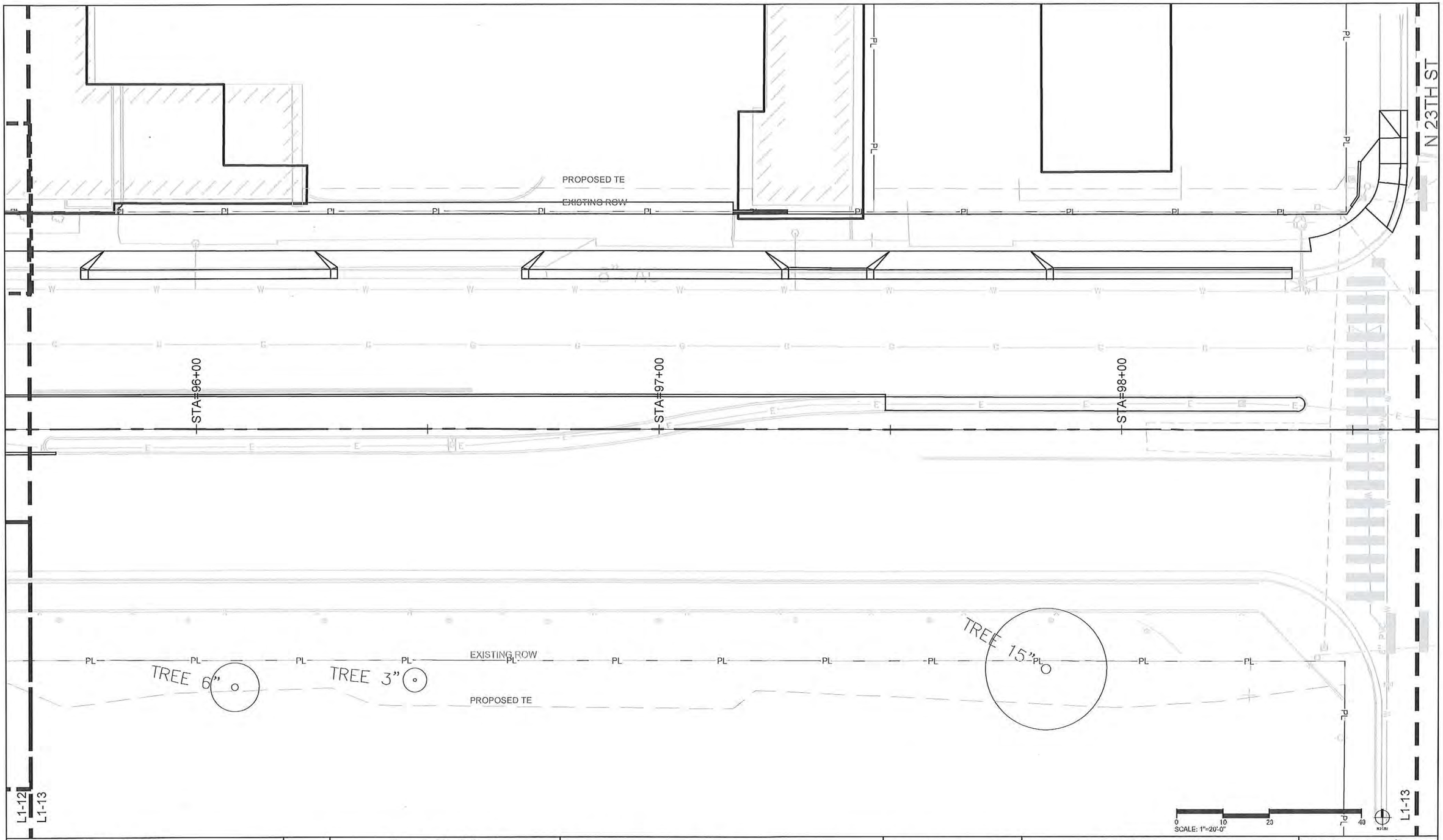
No Revisions:
Revised:
Void:

Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: TREE PROTECTION
Structure Numbers
Subset Sheets: L1-12

Project No./Code
TCSP M555-029
19365
Sheet Number 173



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Landscape Plans			Project No./Code
Designer: Mike Albert	Structure Numbers		TCSP M555-029
Detailer: Ashley Allis			19365
Sheet Subset: TREE PROTECTION	Subset Sheets: L1-13		Sheet Number 174

TABULATION OF URBAN DESIGN FEATURES

	ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	AS CONST.
	213-00705	LANDSCAPE BOULDER (SPECIAL)	EA	BY OTHERS	
	607-20000	SAFETY SCREEN	EA	590	
	607-53160	FENCE CHAIN LINK	LF	2021	
	622-00010	BICYCLE RACK	EA	6	
	622-00251	BENCH	EA	19	
	622-00350	TRASH RECEPTACLE	EA	18	

SITE KEYNOTES:

DETAIL / SHEET

1.0 PAVEMENTS, RAMPS, CURBS

1.1	Concrete Paving Type 1 (pedestrian)	See Civil Details
1.2	Concrete Paving Type 2 (pedestrian-enhanced)	See Civil Details
1.3	Concrete Paving Type 3 (vehicular access)	See Civil Details
1.4	Concrete Curb and Gutter	See Civil Details
1.5	ADA Ramp	See Civil Details
1.6	Not included at this time	
1.7	Concrete Slab	01/L7-03

2.0 JOINTING

Not Used at this Time

3.0 STEPS

Not Used at this Time

4.0 SITE WALLS/ EMBANKMENTS

Not Used at this Time

5.0 SITE FURNITURE

5.1	Bench	01/L7-01
5.2	Trash Receptacle	02/L7-01
5.3	Bike Rack	03/L7-01
5.4	Newspaper Box	01/L7-02
5.5	Recycling Receptacle	02/L7-02

6.0 RAILINGS, BARRIERS, FENCING

6.1	Chain Link Fence	04/L7-01
6.2	Safety Screen (locations only)	By others

7.0 SITE LIGHTING

7.1	Pedestrian Lighting	By others
7.2	Pedestrian Lighting in Paving	By others

8.0 DRAINAGE

Not Used at this Time

9.0 PLANTING AND LANDSCAPE

Refer to Planting Plans

10.0 MISCELLANEOUS ELEMENTS

10.1	Art Piece - Typical	1/L7-04
10.2	Bus Pullout - Typical	2/L7-03
10.3	Art Piece - 1	1/L7-05
10.4	Art Piece - 2	2/L7-05
10.5	Art Piece - 3	1/L7-06
10.6	Art Piece - 4	2/L7-06

SITE MATERIAL REFERENCE NOTES:

PA Planting Area

1 Proposed concrete paving. See Civil Drawings.

2 Proposed asphalt paving. See Civil Drawings.

3 Pedestrian lights by others.

4 Boulder art piece by others.

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Landscape Plans
Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: MATERIALS
Structure Numbers
Subset Sheets: L3-00

Project No./Code
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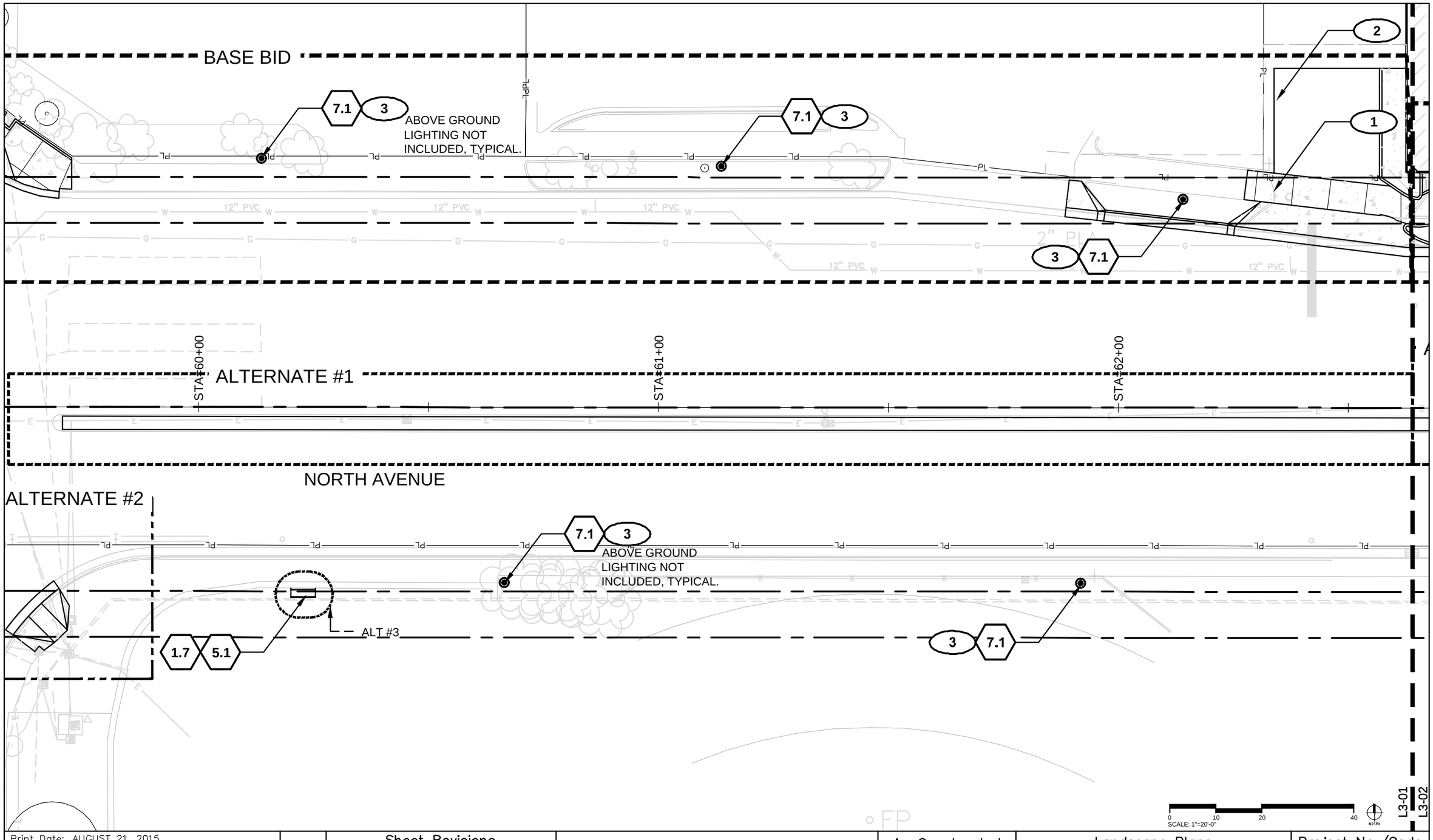
19365
Sheet Number 175



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Void:

Landscape Plans

Designer: Mike Albert

Detailer: Ashley Allis

Sheet Subset: MATERIALS

Structure Numbers

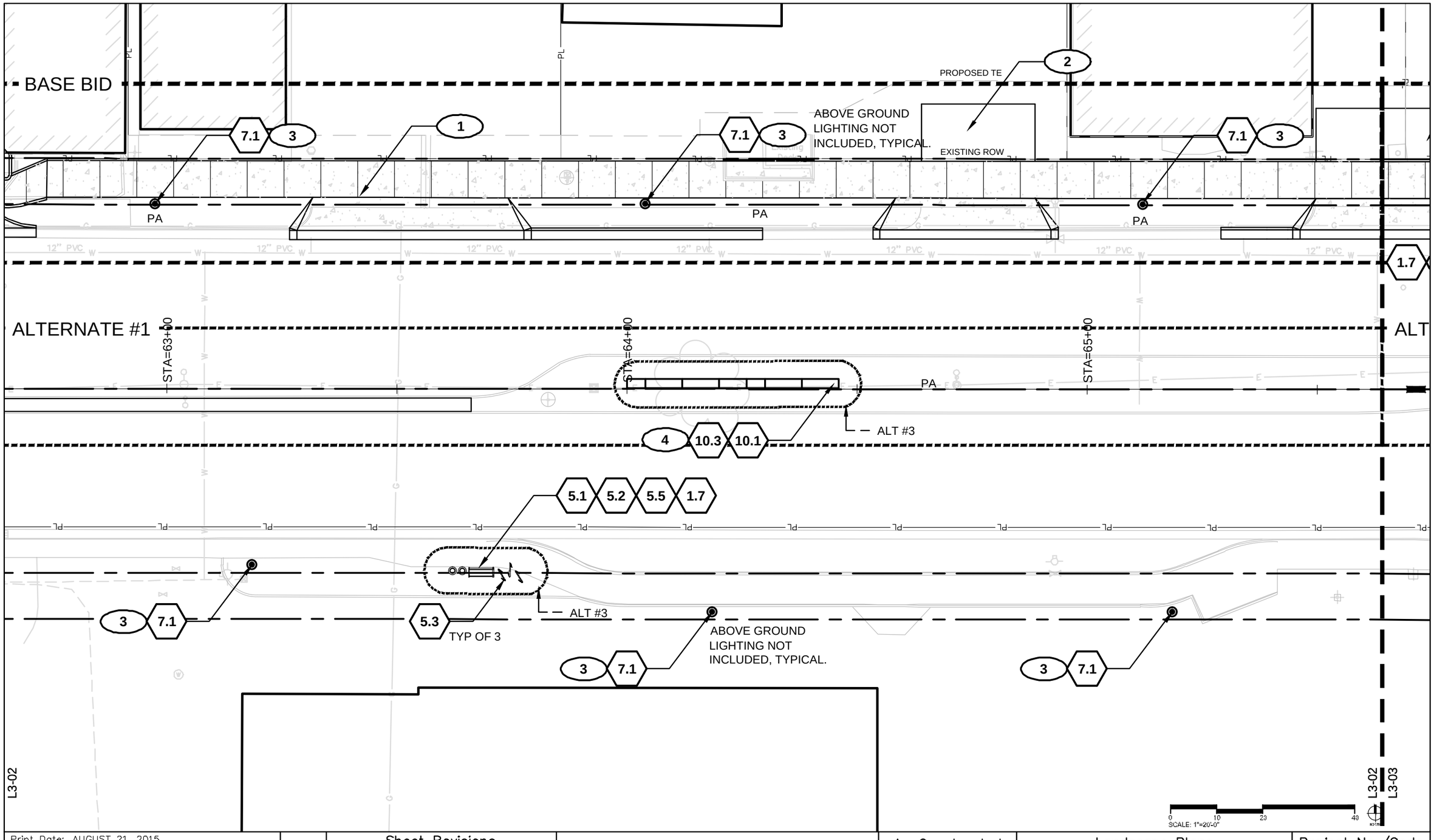
Subset Sheets: L3-01

Project No./Code

TCSP M555-029

19365

Sheet Number 176



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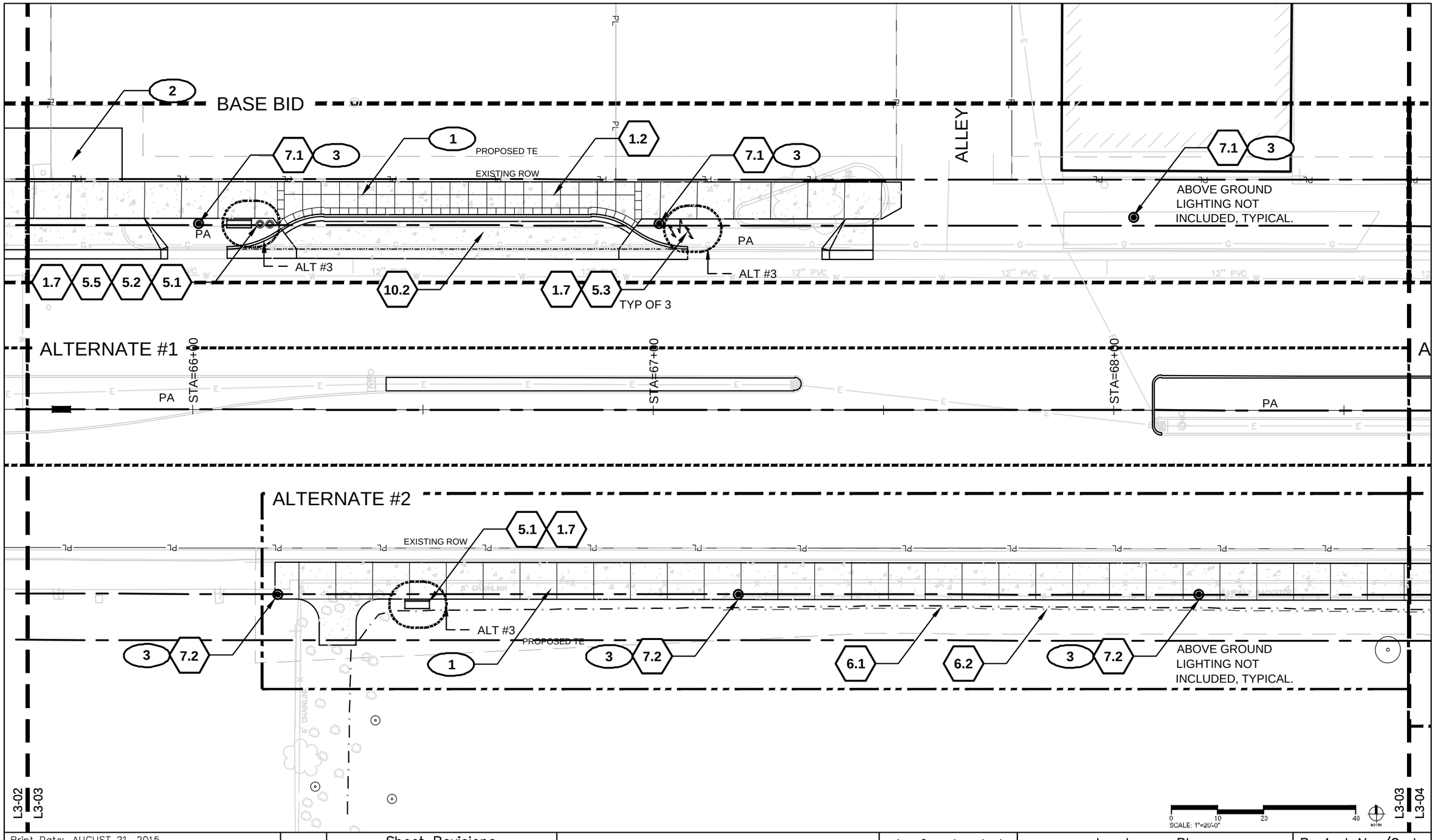

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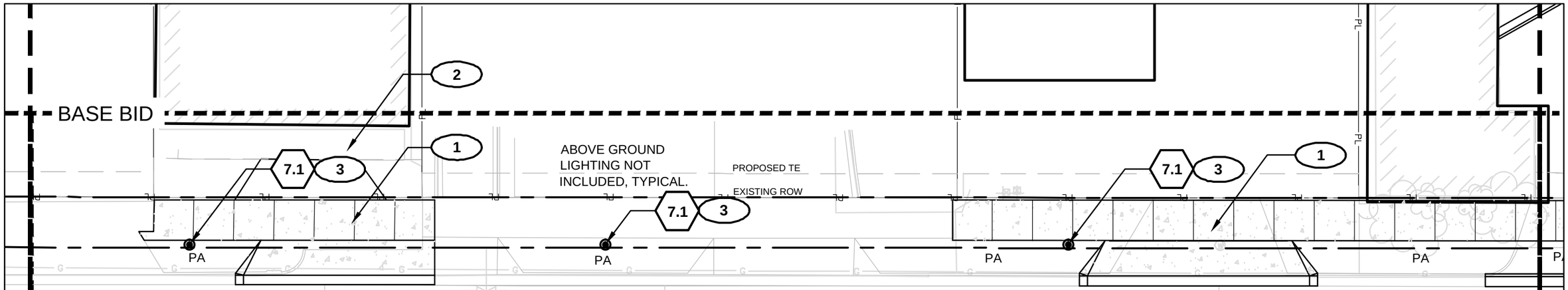
Revised:
Void:

Landscape Plans

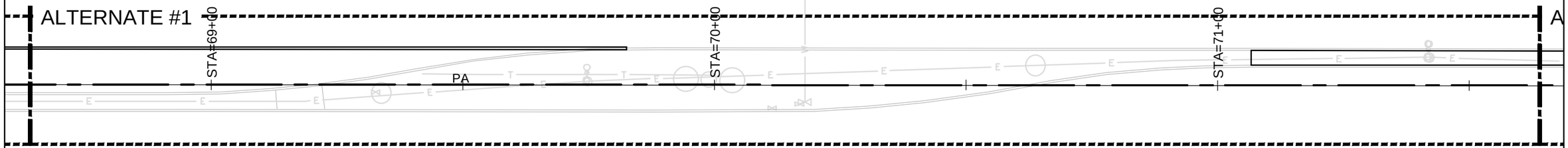
Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: MATERIALS
Structure Numbers
Subset Sheets: L3-03

Project No./Code
TCSP M555-029
19365
Sheet Number 178

BASE BID



ALTERNATE #1



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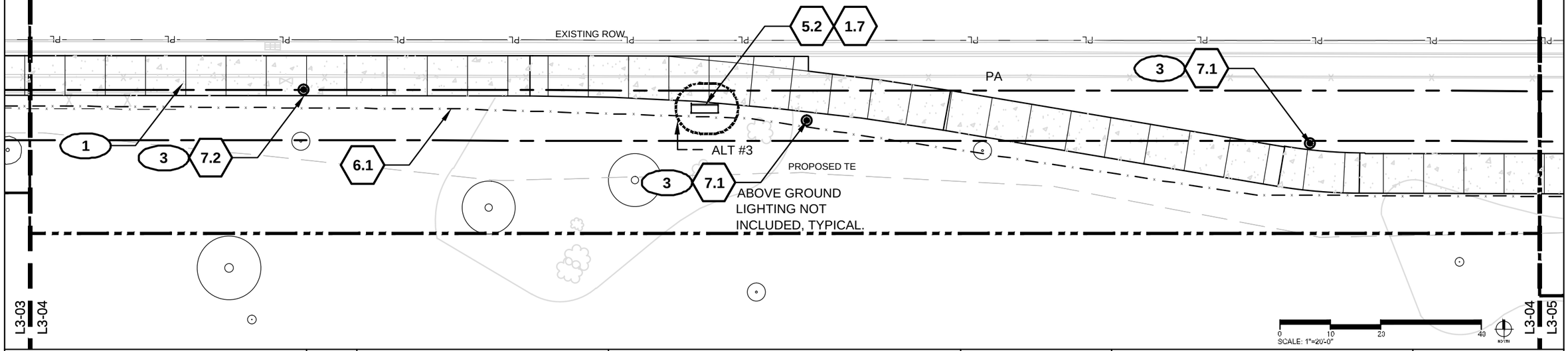

L3-03 L3-04 L3-04 L3-05

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Revised:
Void:

Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: MATERIALS
Structure Numbers
Subset Sheets: L3-04

Project No./Code
TCSP M555-029
19365
Sheet Number 179

BASE BID

ALTERNATE #1

ALTERNATE #2

N 15TH ST

PROPOSED TE

EXISTING ROW

ABOVE GROUND LIGHTING NOT INCLUDED, TYPICAL.

PA

ALT #3

PI: 72+27.93

STA=72+00

STA=73+00

STA=74+00

9 TREE 48"

6 TREE 36"

6 TREE 36"

SCALE: 1"=20'-0"

L3-04 L3-05 L3-05 L3-06

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Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: MATERIALS
Structure Numbers
Subset Sheets: L3-05

Project No./Code
TCSP M555-029
19365
Sheet Number 180

BASE BID

ALTERNATE #1

ALTERNATE #2

N 16TH ST

1

7.1 3

PROPOSED TE

EXISTING ROW

ALT #3

5.1 1.7

ABOVE GROUND LIGHTING NOT INCLUDED, TYPICAL.

PA

STA=75+00

STA=76+00

STA=77+00

6.1

L3-05

L3-06

L3-07

SCALE: 1"=20'-0"

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Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: MATERIALS
Structure Numbers
Subset Sheets: L3-06

Project No./Code
TCSP M555-029
19365
Sheet Number 181

BASE BID

ALTERNATE #1

ALTERNATE #2

N 17TH ST

PROPOSED TE

EXISTING ROW

PA

ALT #3

ABOVE GROUND LIGHTING NOT INCLUDED, TYPICAL.

STA=78+00

STA=79+00

STA=80+00

L3-06

L3-07

L3-07

L3-08

SCALE: 1"=20'-0"

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Void:

Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: MATERIALS

Structure Numbers

Subset Sheets: L3-07

Project No./Code

TCSP M555-029

19365

Sheet Number 182

BASE BID

ABOVE GROUND LIGHTING NOT INCLUDED, TYPICAL.

7.1 3

7.1 3

1

PROPOSED TE

EXISTING ROW

7.1

ALT #3

5.1 1.7

N 18TH ST

ALTERNATE #1

STA=81+00

STA=82+00

STA=83+00

ALT #3

PA

4 10.1

ALTERNATE #2

3 7.1

EXISTING ROW

PA

3 7.1

6.1

1

3 7.1

ABOVE GROUND LIGHTING NOT INCLUDED, TYPICAL.

PROPOSED 6.1 6.2

1.7 5.1

ALT #3

L3-07 L3-08

L3-08 L3-09

SCALE: 1"=20'-0"

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Designer: Mike Albert

Detailer: Ashley Allis

Sheet Subset: MATERIALS

Structure Numbers

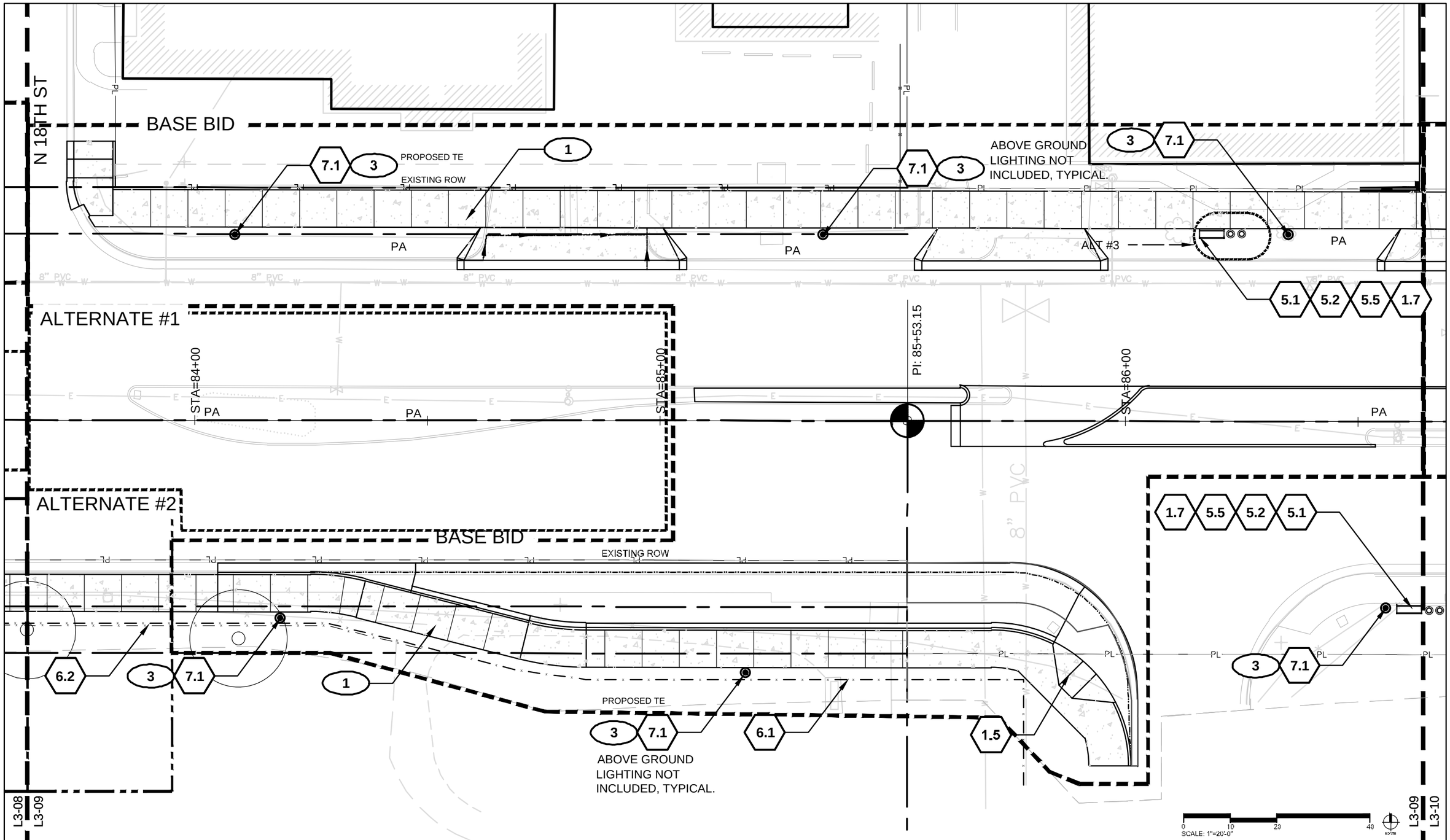
Subset Sheets: L3-08

Project No./Code

TCSP M555-029

19365

Sheet Number 183



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Region 3 RBB

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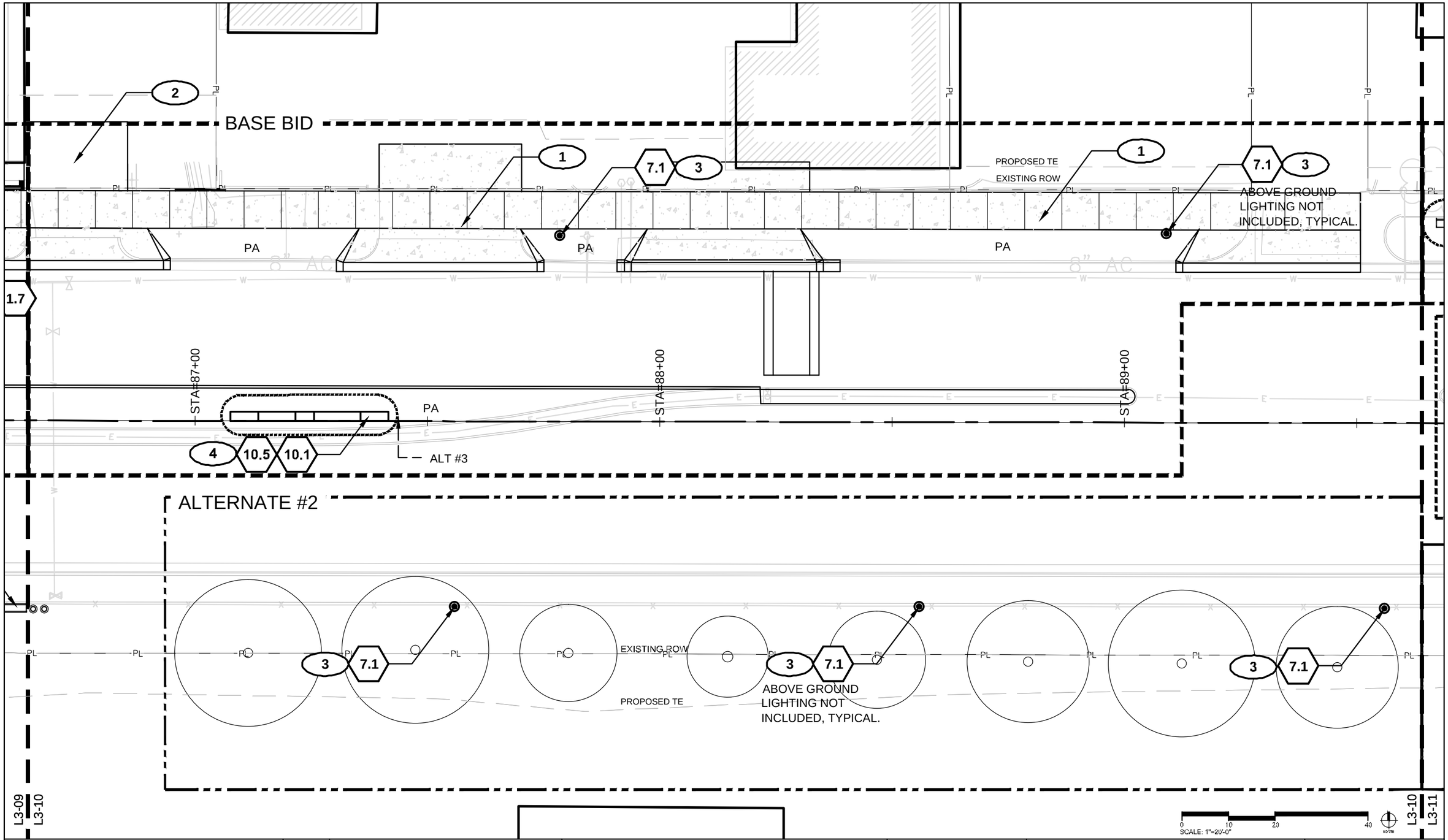
Revised:
Void:

Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: MATERIALS
Structure Numbers
Subset Sheets: L3-09

Project No./Code
TCSP M555-029
19365
Sheet Number 184



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Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: MATERIALS
Structure Numbers
Subset Sheets: L3-10

Project No./Code
TCSP M555-029
19365
Sheet Number 185

BASE BID

5.1 1.7

ALT #3

1

PROPOSED TE

EXISTING ROW

7.1 3

ABOVE GROUND LIGHTING NOT INCLUDED, TYPICAL.

7.1 3

PA

N 21TH ST

1.7 5.1

ALT #3

1.5 3 7.1

ALTERNATE #1

ALTERNATE #1

STA=90+00

PA

STA=91+00

STA=92+00

PA

2

BASE BID

ALTERNATE #2

5.1 1.7

ALT #3

EXISTING ROW

PROPOSED TE

3 7.1

ABOVE GROUND LIGHTING NOT INCLUDED, TYPICAL.

3 7.2

3 7.1

L3-10 L3-11

L3-11 L3-12

SCALE: 1"=20'-0"

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Void:

Landscape Plans

Designer: Mike Albert

Detailer: Ashley Allis

Sheet Subset: MATERIALS

Structure Numbers

Subset Sheets: L3-11

Project No./Code

TCSP M555-029

19365

Sheet Number 186

BASE BID

1

ABOVE GROUND LIGHTING NOT INCLUDED, TYPICAL.

7.1 3

PROPOSED TE

EXISTING ROW

PA

PA

8" AC

7.1 3

ALT #3

1.7 5.5 5.2 5.1

10.2

3 7.1

ALTERNATE #1

STA=93+00

STA=94+00

STA=95+00

PA

ALTERNATE #2

5.1 5.2 5.5 1.7

ALT #3

3 7.1

ABOVE GROUND LIGHTING NOT INCLUDED, TYPICAL.

EXISTING ROW

PROPOSED TE

3 7.1

L3-11 L3-12

L3-12 L3-13

SCALE: 1"=20'-0"

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Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: MATERIALS
Structure Numbers
Subset Sheets: L3-12

Project No./Code
TCSP M555-029
19365
Sheet Number 187

BASE BID

ALTERNATE #1

ALTERNATE #2

N 23TH ST

7.1 3

PROPOSED TE

EXISTING ROW

1

ABOVE GROUND LIGHTING NOT INCLUDED, TYPICAL

1.5

PA

3 1.7

STA 96+00

STA 97+00

STA 98+00

4 10.6 10.1

ALT #3

ABOVE GROUND LIGHTING NOT INCLUDED, TYPICAL.

L3-12

L3-13

SCALE: 1"=20'-0"

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Designer: Mike Albert

Detailer: Ashley Allis

Sheet Subset: MATERIALS

Structure Numbers

Subset Sheets: L3-13

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Sheet Number 188

LAYOUT REFERENCE NOTES

(1) Proposed street furniture. Final placement to be located in field by landscape architect

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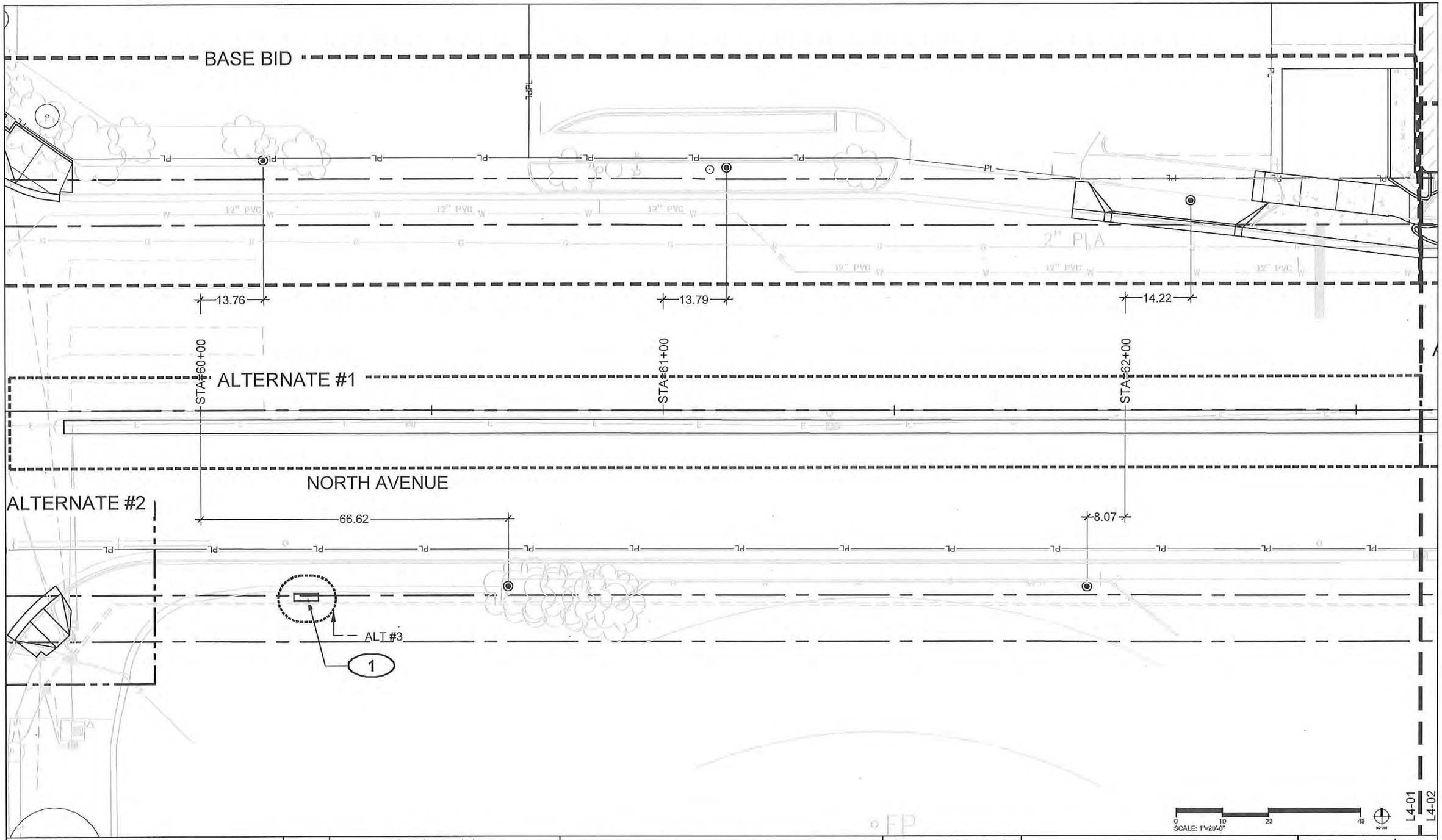
						Void:		Sheet Number 189



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Landscape Plans		
Designer: Mike Albert	Structure Numbers	
Detailer: Ashley Allis		
Sheet Subset: LAYOUT	Subset Sheets: L4-01	

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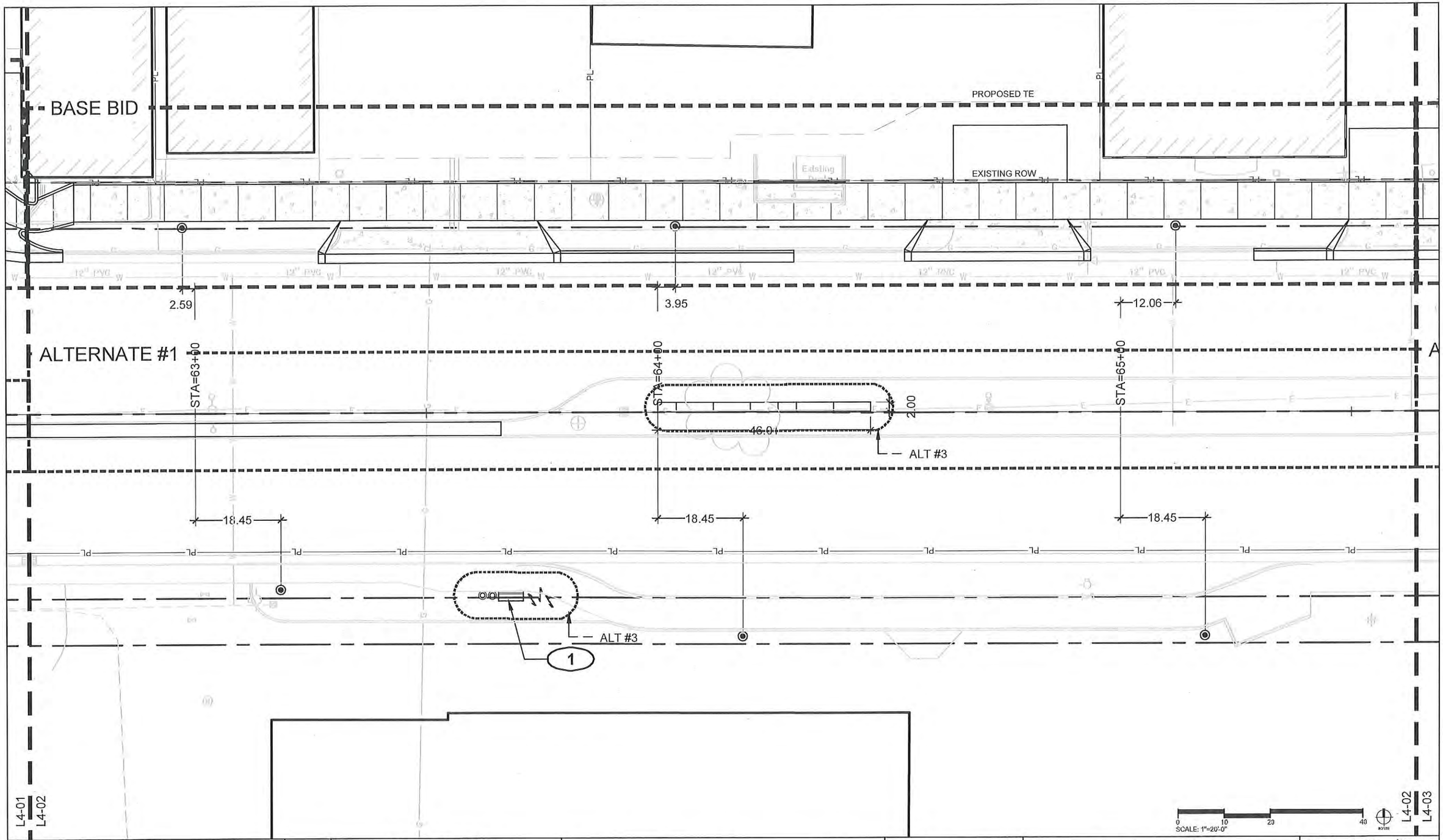
19365
Sheet Number 190



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Designer: Mike Albert		Structure Numbers	
Detailer: Ashley Allis			
Sheet Subset: LAYOUT		Subset Sheets: L4-02	

Project No./Code	
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19365	
Sheet Number	191

BASE BID 1

PROPOSED TE

EXISTING ROW

ALLEY

ALT #3

ALT #3

1.27

1.30

4.46

ALTERNATE #1

STA=66+00

STA=67+00

STA=68+00

18.45

18.45

18.45

ALTERNATE #2

EXISTING ROW

ALT #3

PROPOSED TE

1

L4-02

L4-03

L4-03

L4-04

SCALE: 1"=20'-0"

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Landscape Plans

Designer: Mike Albert

Detailer: Ashley Allis

Sheet Subset: LAYOUT

Structure Numbers

Subset Sheets: L4-03

Project No./Code

TCSP M555-029

19365

Sheet Number 192

BASE BID

PROPOSED TE

EXISTING ROW

4.26

21.49

29.61

ALTERNATE #1

STA=69+00

STA=70+00

STA=71+00

ALTERNATE #2

18.45

18.45

18.45

EXISTING ROW

ALT #3

PROPOSED TE

1

L4-03

L4-04

L4-04

L4-05

SCALE: 1"=20'-0"

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Void:

Landscape Plans

Designer: Mike Albert

Detailer: Ashley Allis

Sheet Subset: LAYOUT

Structure Numbers

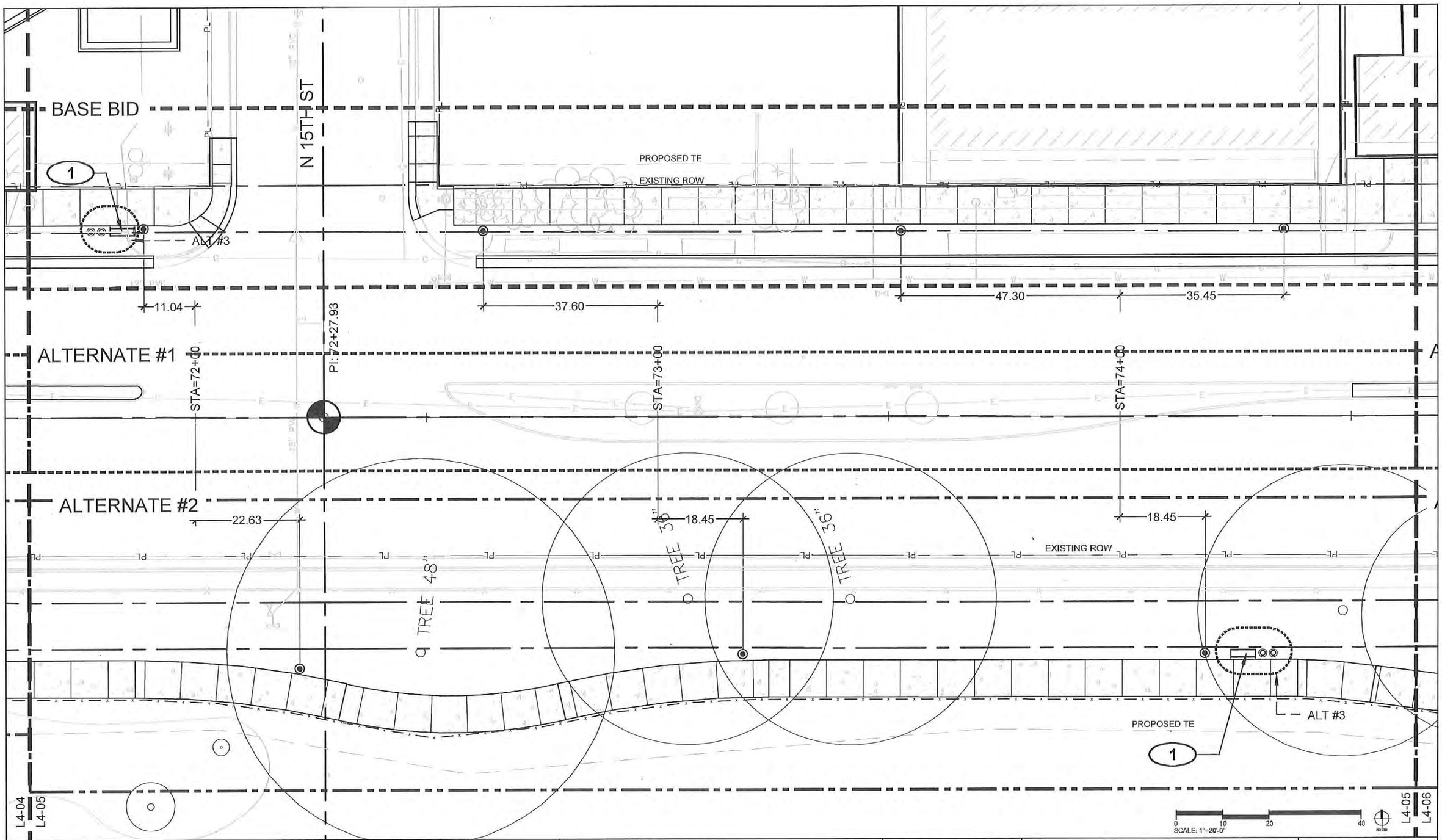
Subset Sheets: L4-04

Project No./Code

TCSP M555-029

19365

Sheet Number 193



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Revised:
Void:

Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: LAYOUT
Structure Numbers
Subset Sheets: L4-05

Project No./Code
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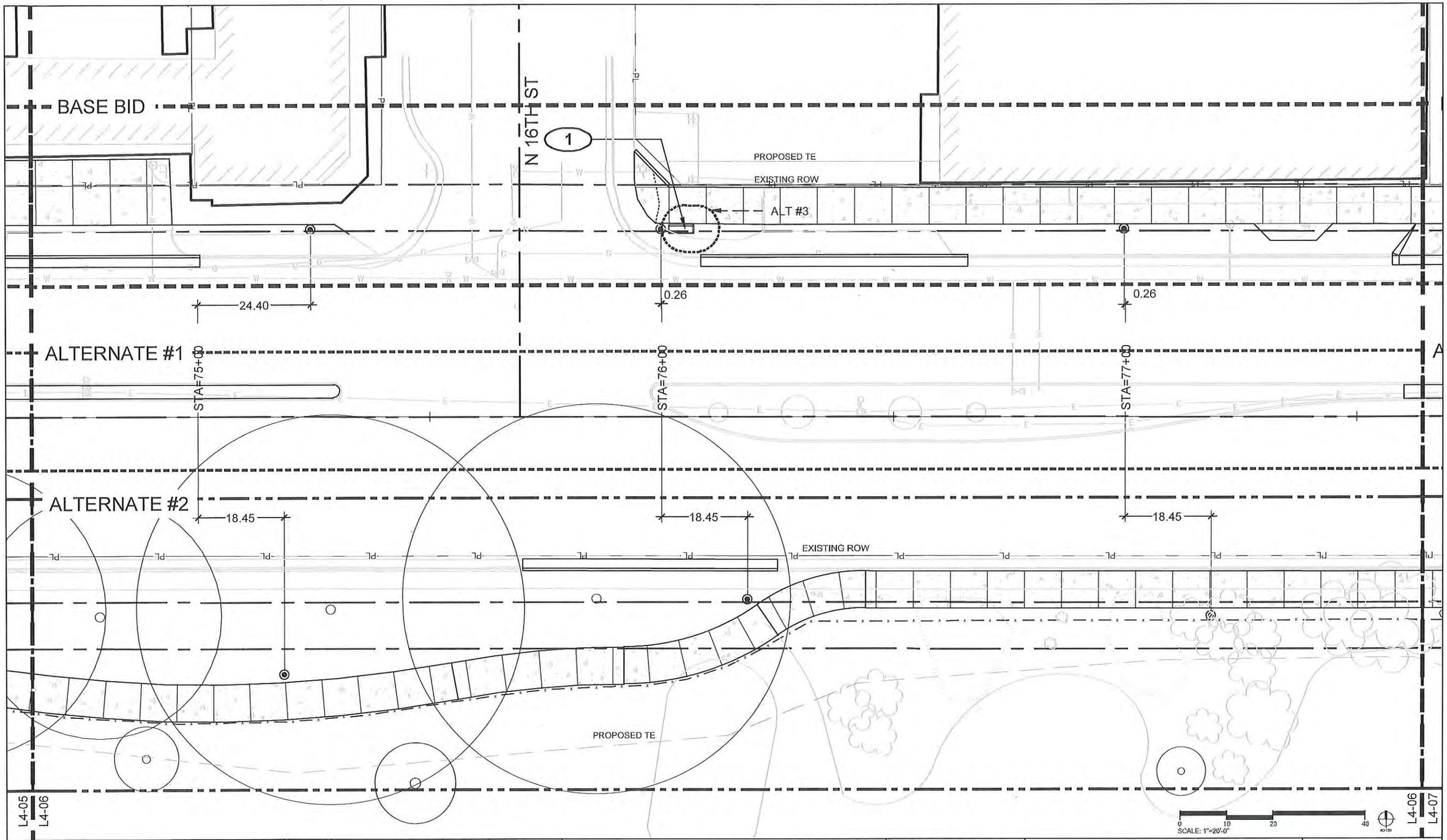
19365
Sheet Number 194



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No Revisions:

Revised:

Void:

Landscape Plans

Designer: Mike Albert

Detailer: Ashley Allis

Sheet Subset: LAYOUT

Structure Numbers

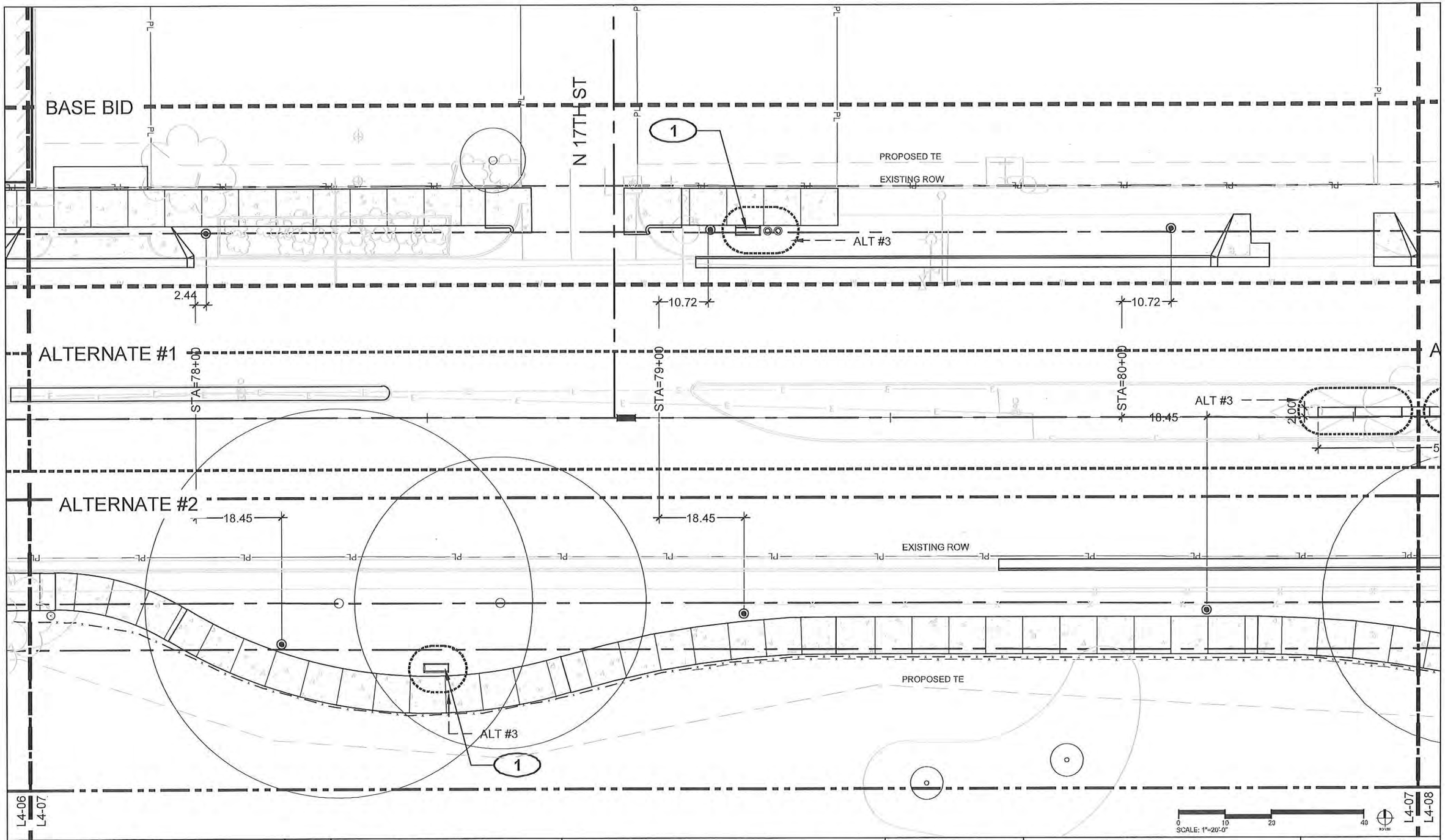
Subset Sheets: L4-06

Project No./Code

TCSP M555-029

19365

Sheet Number 195



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Region 3 RBB

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No Revisions:

Revised:

Void:

Landscape Plans

Designer: Mike Albert

Detailer: Ashley Allis

Sheet Subset: LAYOUT

Structure Numbers

Subset Sheets: L4-07

Project No./Code

TCSP M555-029

19365

Sheet Number 196

BASE BID

ALTERNATE #1

ALTERNATE #2

1

PROPOSED TE

EXISTING ROW

ALT #3

8.57

24.95

29.02

STA=81+00

STA=82+00

STA=83+00

56.00

1.56

18.45

18.45

18.45

N 18TH ST

L4-07

L4-08

L4-08

L4-09

SCALE: 1"=20'-0"

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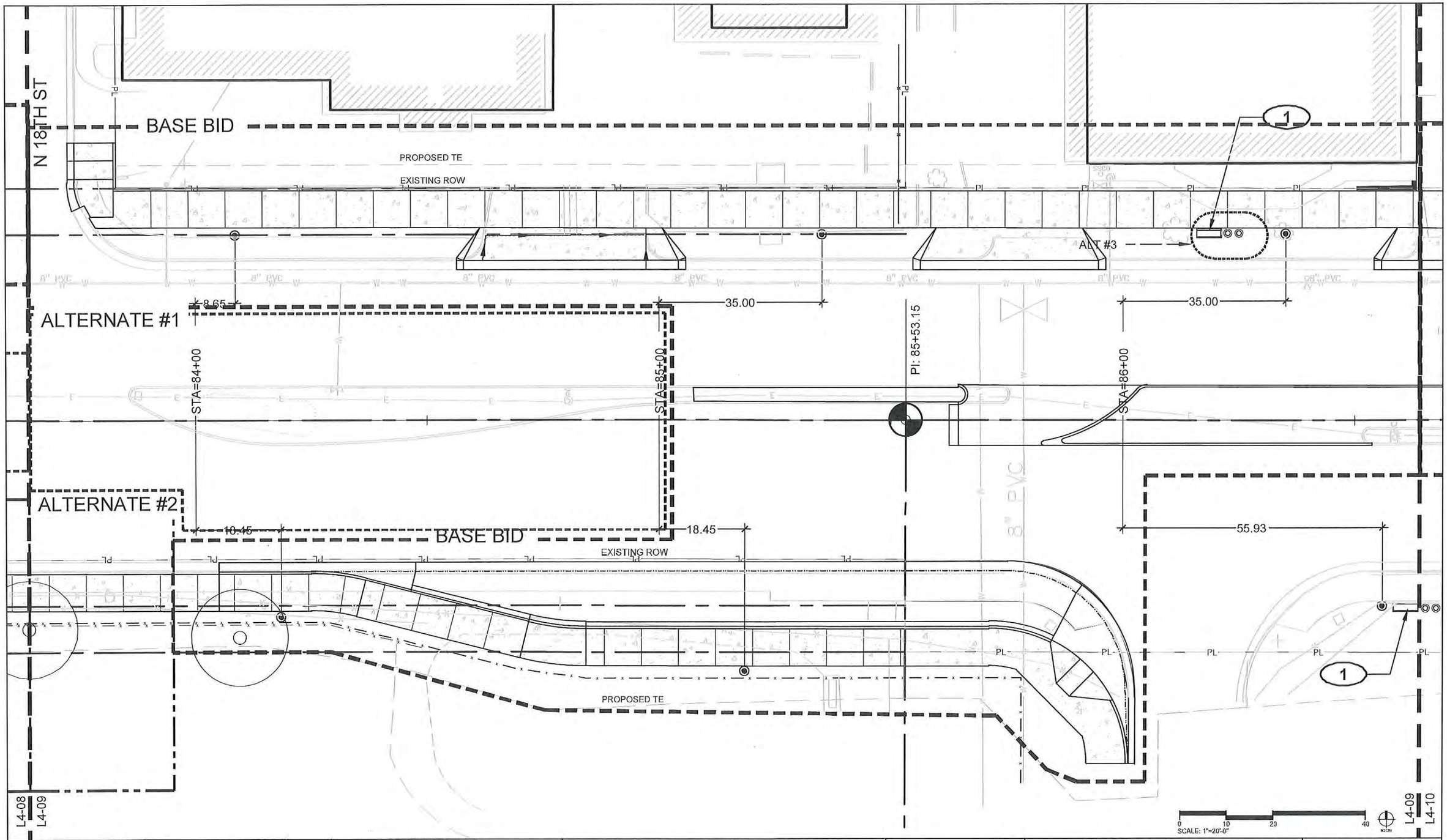
No Revisions:				TCSP M555-029
Revised:	Designer: Mike Albert	Structure Numbers		19365
Void:	Detailer: Ashley Allis			Sheet Number 197
	Sheet Subset: LAYOUT	Subset Sheets: L4-08		



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Region 3 RBB

As Constructed	
No Revisions:	
Revised:	
Void:	

Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: LAOYUT
Structure Numbers
Subset Sheets: L4-09

Project No./Code	
TCSP M555-029	
19365	
Sheet Number	198

BASE BID

PROPOSED TE

EXISTING ROW

21.34

9.15

STA 87+00

STA 88+00

STA 89+00

2.00

ALT #3

7.65

34.01

ALTERNATE #2

44.07

55.93

55.99

EXISTING ROW

PROPOSED TE

L4-09

L4-10

L4-10

L4-11

SCALE: 1"=20'-0"

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Revised:
Void:

Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: LAYOUT
Structure Numbers
Subset Sheets: L4-10

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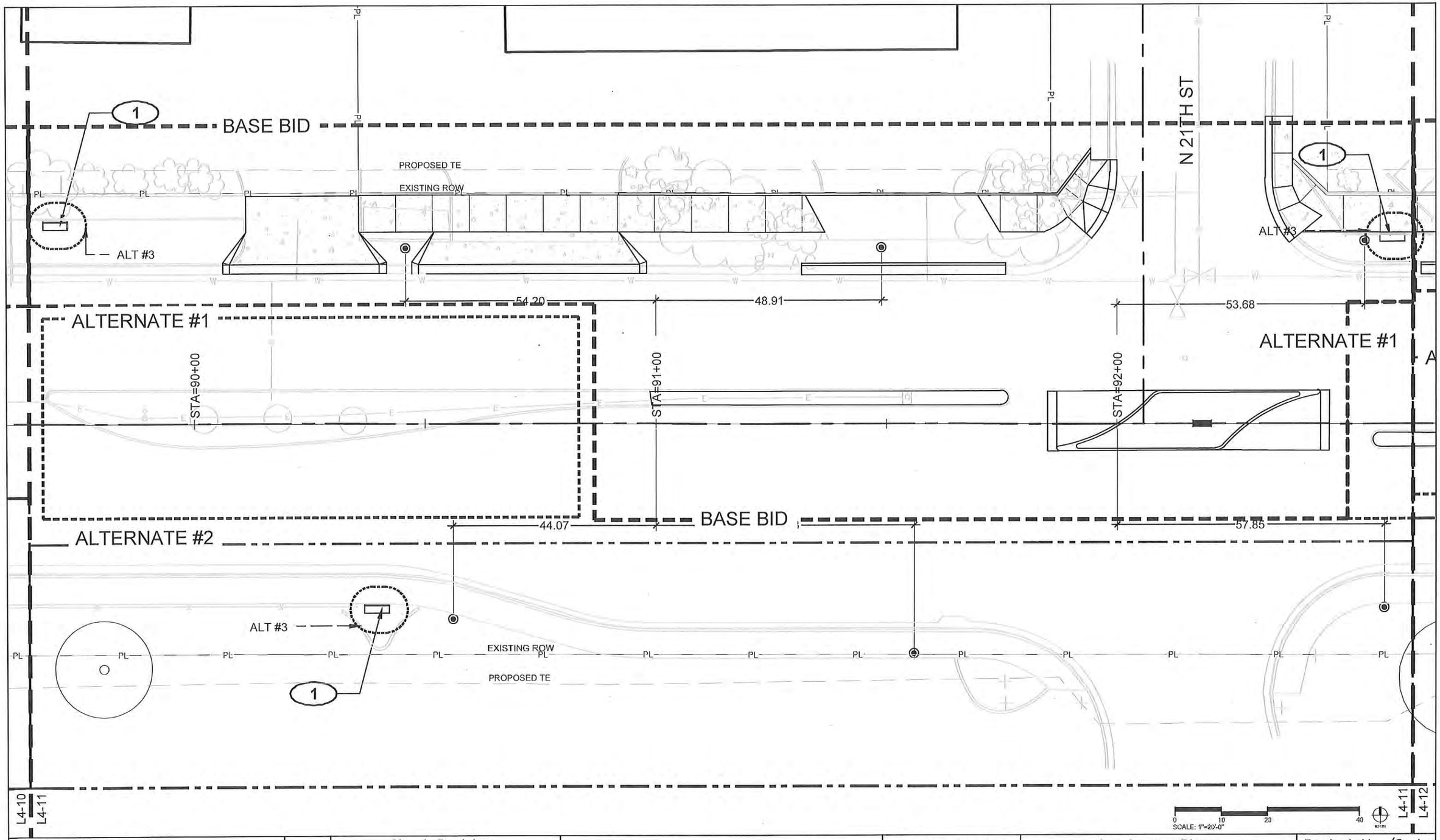
19365
Sheet Number 199



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Void:

Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: LAYOUT
Structure Numbers
Subset Sheets: L4-11

Project No./Code
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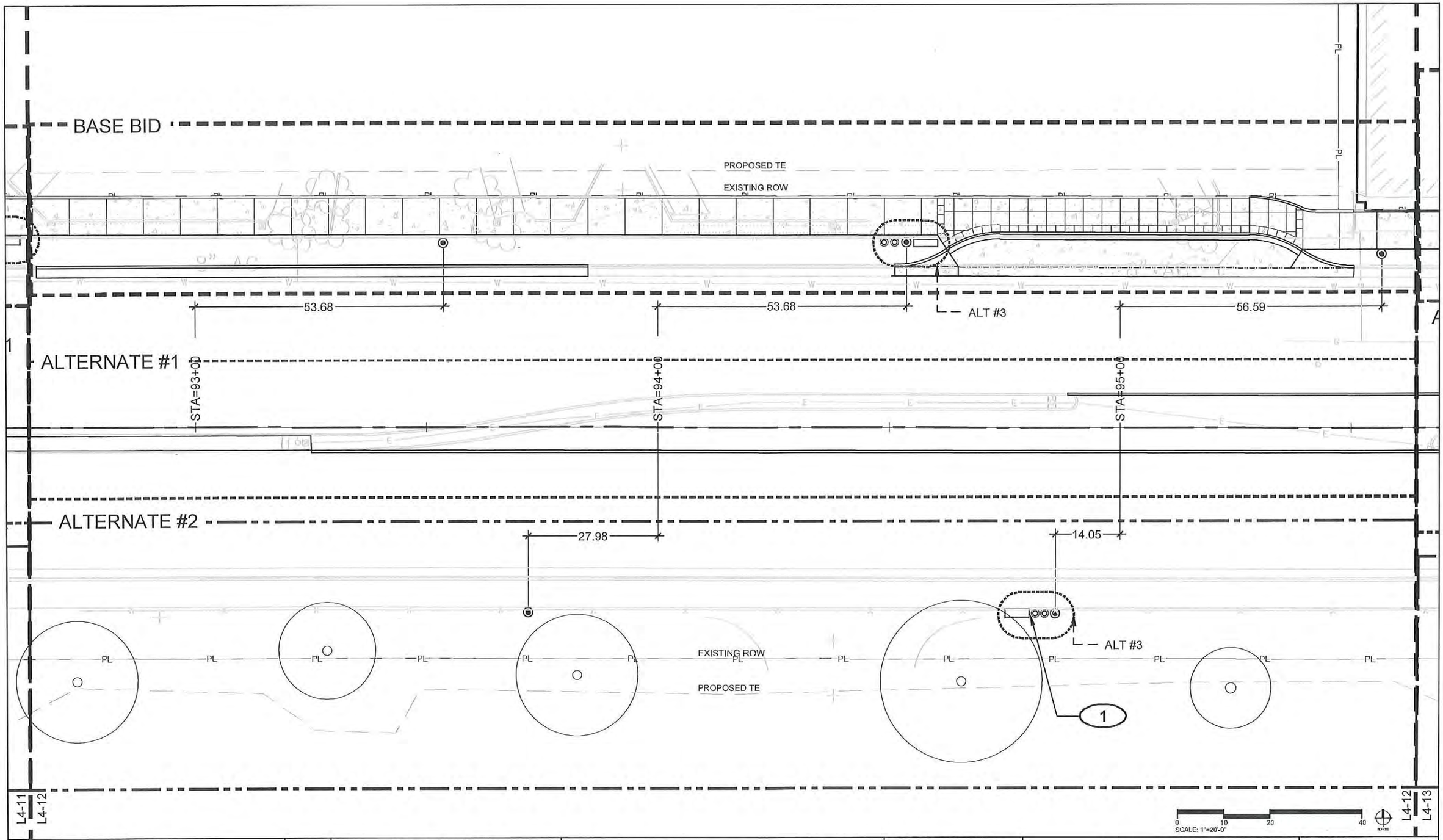
19365
Sheet Number 200



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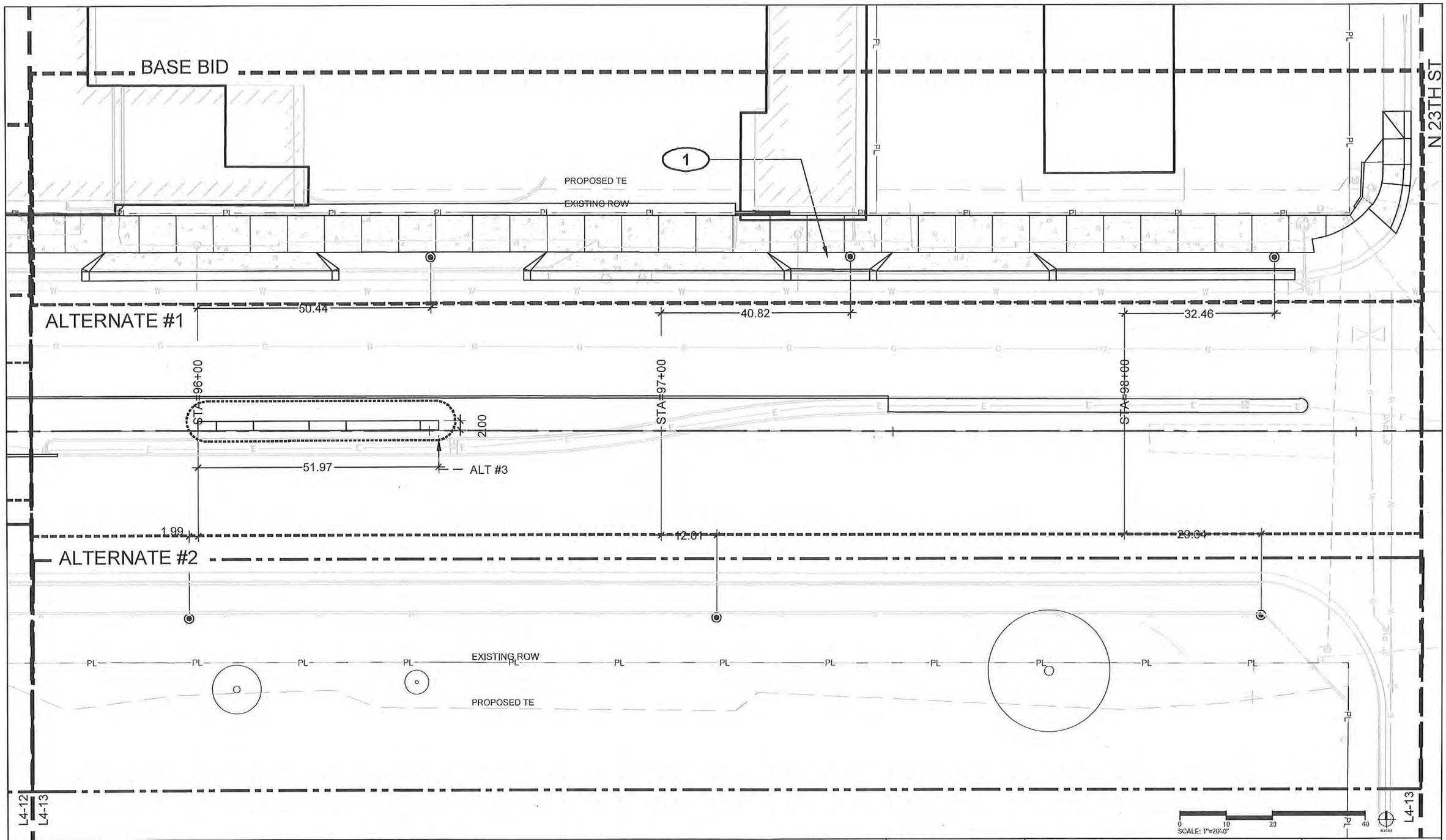
Landscape Plans			Project No./Code
Designer: Mike Albert	Structure Numbers		TCSP M555-029
Detailer: Ashley Allis			19365
Sheet Subset: LAYOUT	Subset Sheets: L4-12		Sheet Number 201



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Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: LAYOUT
Structure Numbers
Subset Sheets: L4-13

Project No./Code
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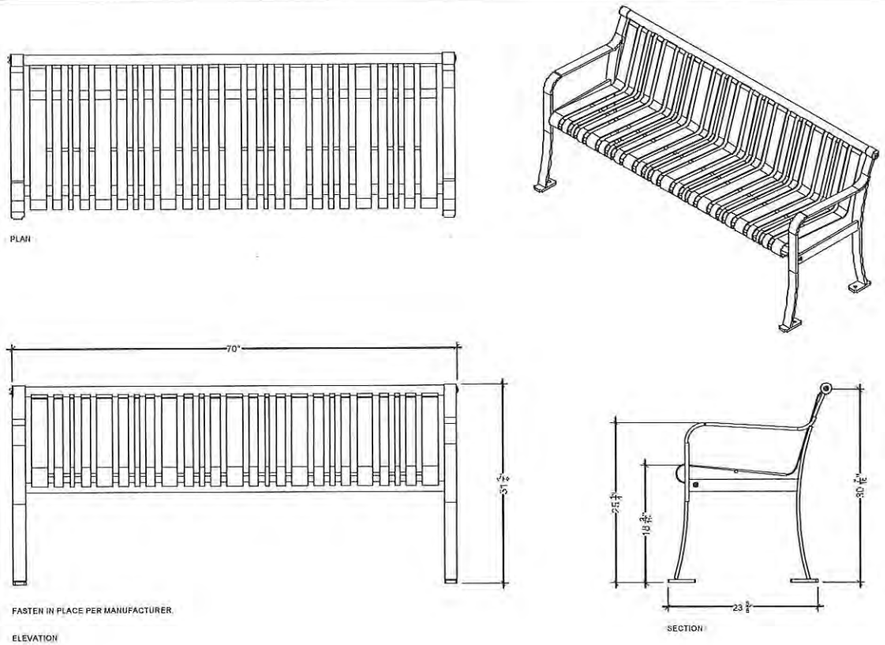
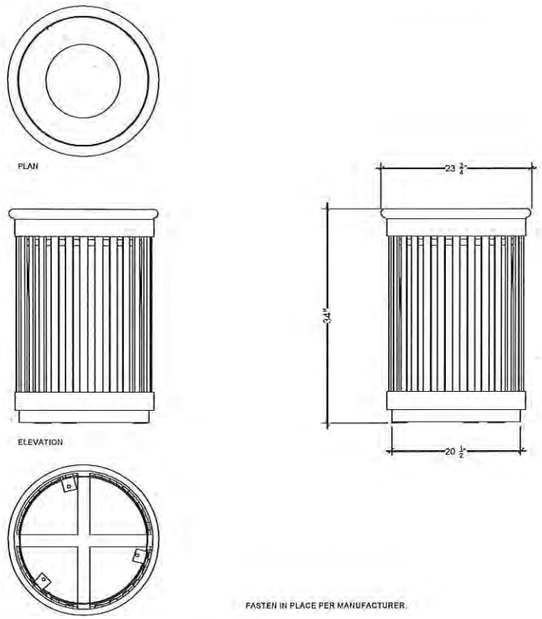
Sheet Number 202



1 BENCH

5.1

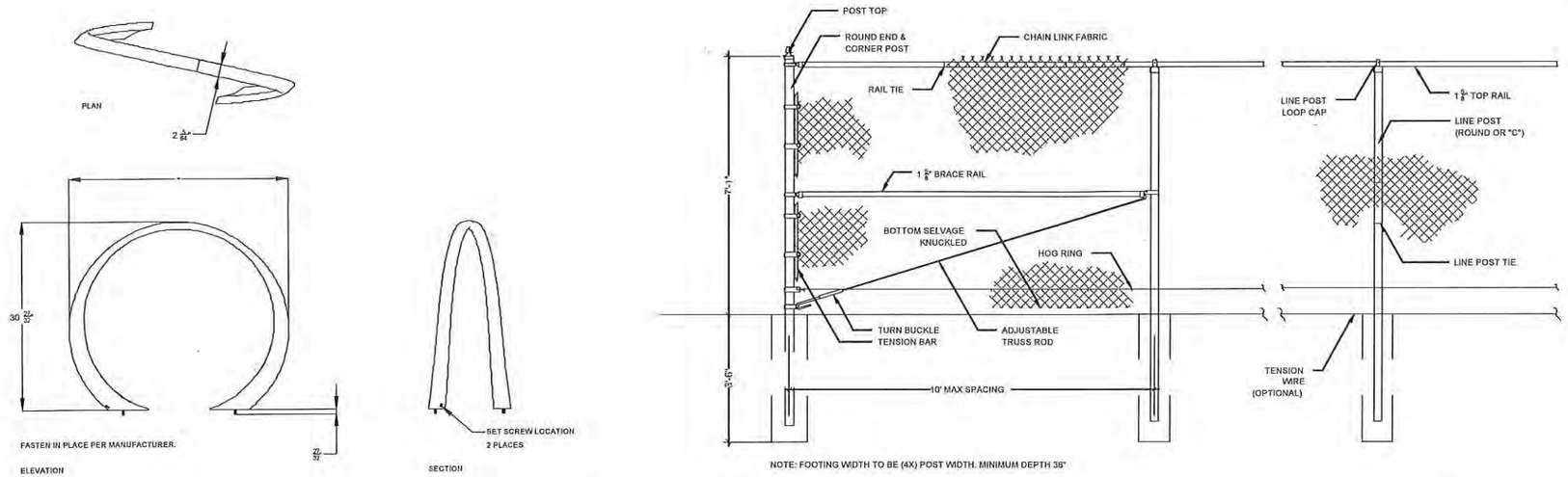
1/2"=1'-0"



2 TRASH RECEPTACLE

5.2

1/2" =1'-0"



3 BIKE RACK

5.3

1/2"=1'-0"

4 CHAIN LINK FENCE

6.1

1/4" = 1'-0"

SITE KEYNOTES:

DETAIL / SHEET

1.0 PAVEMENTS, RAMPS, CURBS

1.1	Concrete Paving Type 1 (pedestrian)	See Civil Details
1.2	Concrete Paving Type 2 (pedestrian-enhanced)	See Civil Details
1.3	Concrete Paving Type 3 (vehicular access)	See Civil Details
1.4	Concrete Curb and Gutter	See Civil Details
1.5	ADA Ramp	See Civil Details
1.6	Not included at this time	
1.7	Concrete Slab	01/L7-03

2.0 JOINTING

Not Used at this Time

3.0 STEPS

Not Used at this Time

4.0 SITE WALLS/ EMBANKMENTS

Not Used at this Time

5.0 SITE FURNITURE

5.1	Bench	01/L7-01
5.2	Trash Receptacle	02/L7-01
5.3	Bike Rack	03/L7-01
5.4	Newspaper Box	01/L7-02
5.5	Recycling Receptacle	02/L7-02

6.0 RAILINGS, BARRIERS, FENCING

6.1	Chain Link Fence	04/L7-01
6.2	Safety Screen (locations only)	By others

7.0 SITE LIGHTING

7.1	Pedestrian Lighting	By others
7.2	Pedestrian Lighting in Paving	By others

8.0 DRAINAGE

Not Used at this Time

9.0 PLANTING AND LANDSCAPE

Refer to Planting Plans

10.0 MISCELLANEOUS ELEMENTS

10.1	Art Piece - Typical	1/L7-04
10.2	Bus Pullout - Typical	2/L7-03
10.3	Art Piece - 1	1/L7-05
10.4	Art Piece - 2	2/L7-05
10.5	Art Piece - 3	1/L7-06
10.6	Art Piece - 4	2/L7-06

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Region 3 RBB

As Constructed

No Revisions:

Revised:

Void:

Landscape Plans

Designer: Mike Albert

Detailer: Ashley Allis

Sheet Subset: SITE DETAILS

Structure Numbers

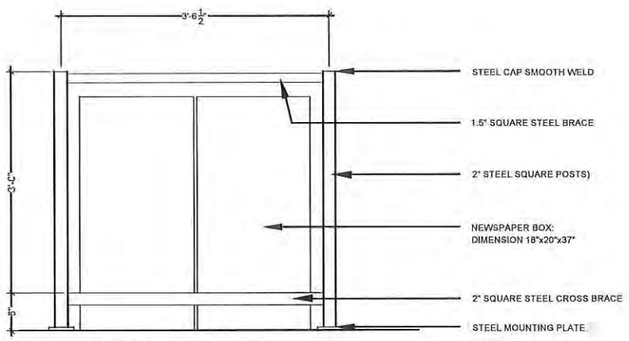
Subset Sheets: L7-01

Project No./Code

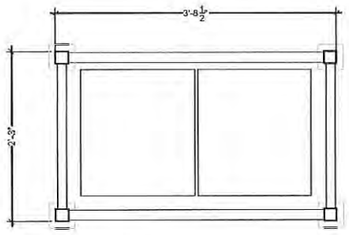
TCSP M555-029

19365

Sheet Number 203

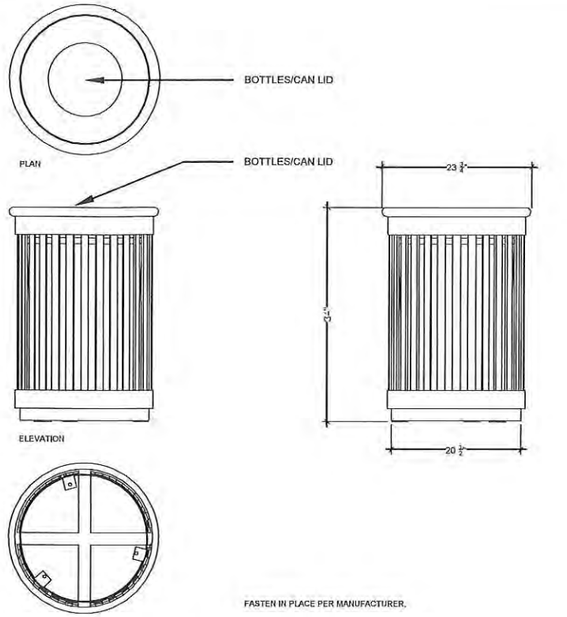


FRONT VIEW



TOP VIEW

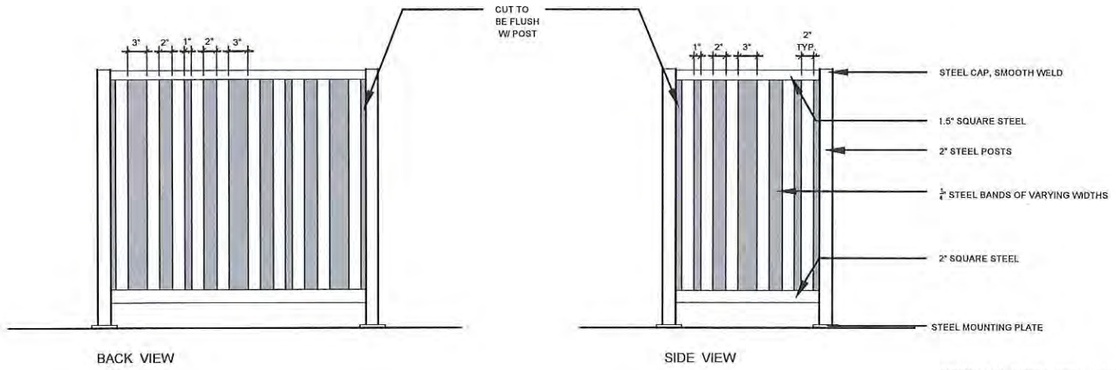
CONTRACTOR TO PROVIDE SHOP DRAWINGS PRIOR TO CONSTRUCTION



2 RECYCING RECEPTACLE

1/2" =1'-0"

5.5



BACK VIEW

SIDE VIEW

NOTE: ALL STEEL WILL HAVE SMOOTH EDGES AND POWDER COAT FINISH

1 NEWSPAPER BOX

1/2" = 1'-0"

5.4

SITE KEYNOTES:

			DETAIL / SHEET
1.0	**PAVEMENTS, RAMPS, CURBS**		
	1.1	Concrete Paving Type 1 (pedestrian)	See Civil Details
	1.2	Concrete Paving Type 2 (pedestrian-enhanced)	See Civil Details
	1.3	Concrete Paving Type 3 (vehicular access)	See Civil Details
	1.4	Concrete Curb and Gutter	See Civil Details
	1.5	ADA Ramp	See Civil Details
	1.6	Not included at this time	
	1.7	Concrete Slab	01/L7-03
2.0	**JOINTING**		
	Not Used at this Time		
3.0	**STEPS**		
	Not Used at this Time		
4.0	**SITE WALLS/ EMBANKMENTS**		
	Not Used at this Time		
5.0	**SITE FURNITURE**		
	5.1	Bench	01/L7-01
	5.2	Trash Receptacle	02/L7-01
	5.3	Bike Rack	03/L7-01
	5.4	Newspaper Box	01/L7-02
	5.5	Recycling Receptacle	02/L7-02
6.0	**RAILINGS, BARRIERS, FENCING**		
	6.1	Chain Link Fence	04/L7-01
	6.2	Safety Screen (locations only)	By others
7.0	**SITE LIGHTING**		
	7.1	Pedestrian Lighting	By others
	7.2	Pedestrian Lighting in Paving	By others
8.0	**DRAINAGE**		
	Not Used at this Time		
9.0	**PLANTING AND LANDSCAPE**		
	Refer to Planting Plans		
10.0	**MISCELLANEOUS ELEMENTS**		
	10.1	Art Piece - Typical	1/L7-04
	10.2	Bus Pullout - Typical	2/L7-03
	10.3	Art Piece - 1	1/L7-05
	10.4	Art Piece - 2	2/L7-05
	10.5	Art Piece - 3	1/L7-06
	10.6	Art Piece - 4	2/L7-06

1

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Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: SITE DETAILS
Structure Numbers
Subset Sheets: L7-02

Project No./Code
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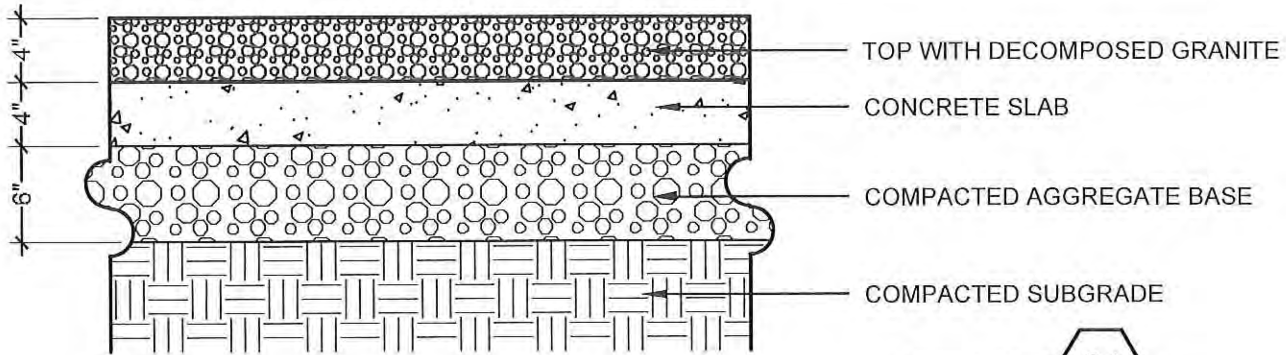
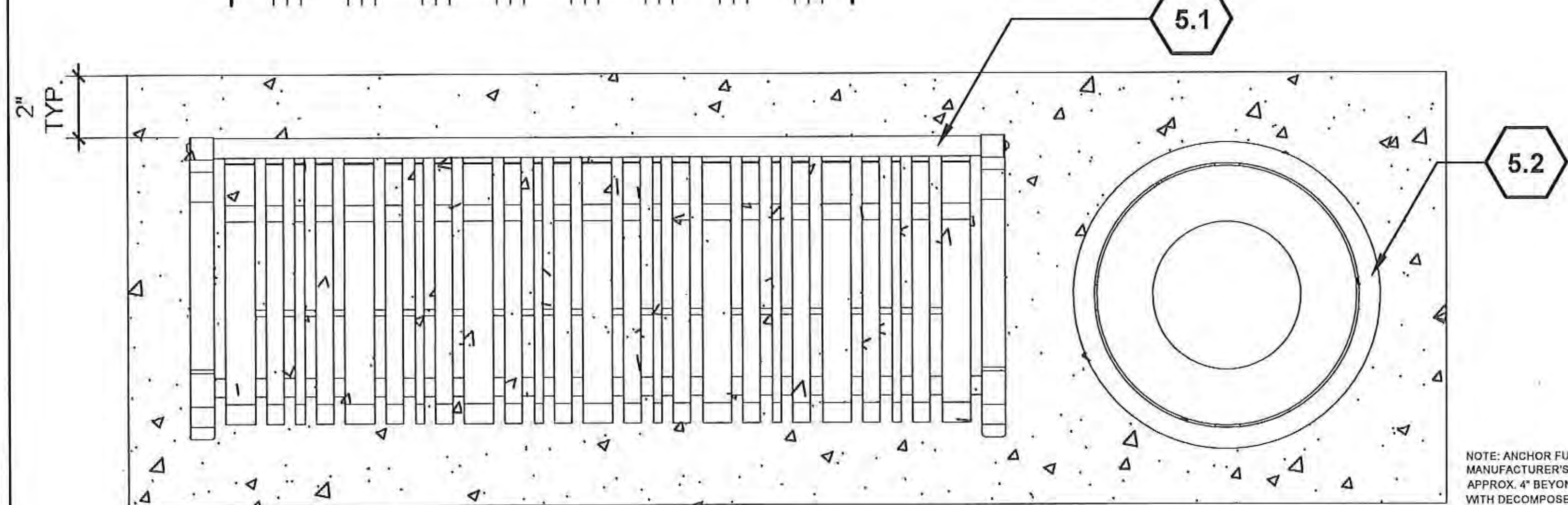
19365
Sheet Number 204





NOTE: ANCHOR FURNISHINGS INTO PLACE PER MANUFACTURER'S SPECIFICATIONS. EXTEND CONCRETE APPROX. 4" BEYOND FURNISHINGS. COVER CONCRETE PAD WITH DECOMPOSED GRANITE.

PLAN

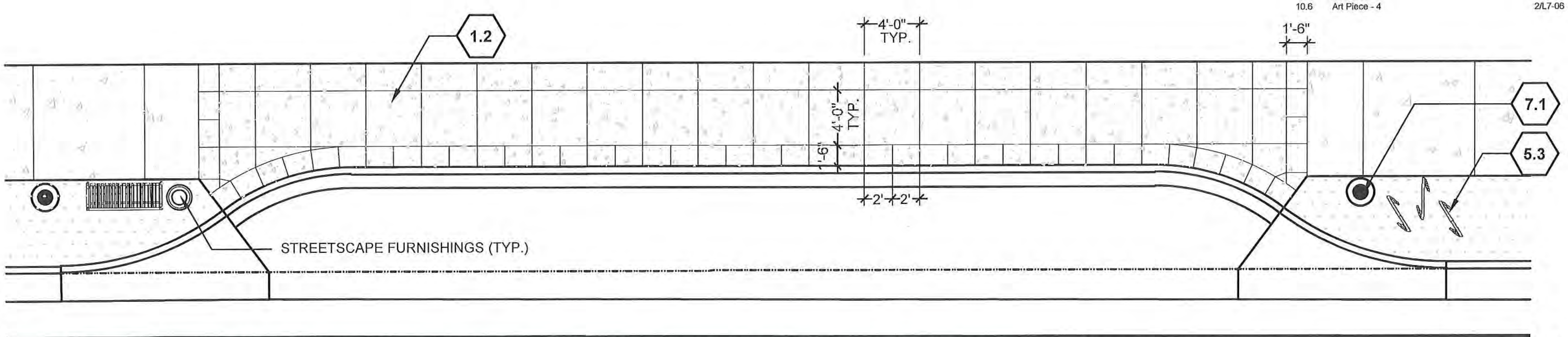
1 CONCRETE SLAB

1" = 1'-0"

1.7

SITE KEYNOTES:

		DETAIL / SHEET
1.0	**PAVEMENTS, RAMPS, CURBS**	
1.1	Concrete Paving Type 1 (pedestrian)	See Civil Details
1.2	Concrete Paving Type 2 (pedestrian-enhanced)	See Civil Details
1.3	Concrete Paving Type 3 (vehicular access)	See Civil Details
1.4	Concrete Curb and Gutter	See Civil Details
1.5	ADA Ramp	See Civil Details
1.6	Not included at this time	
1.7	Concrete Slab	01/L7-03
2.0	**JOINTING**	
	Not Used at this Time	
3.0	**STEPS**	
	Not Used at this Time	
4.0	**SITE WALLS/ EMBANKMENTS**	
	Not Used at this Time	
5.0	**SITE FURNITURE**	
5.1	Bench	01/L7-01
5.2	Trash Receptacle	02/L7-01
5.3	Bike Rack	03/L7-01
5.4	Newspaper Box	01/L7-02
5.5	Recycling Receptacle	02/L7-02
6.0	**RAILINGS, BARRIERS, FENCING**	
6.1	Chain Link Fence	04/L7-01
6.2	Safety Screen (locations only)	By others
7.0	**SITE LIGHTING**	
7.1	Pedestrian Lighting	By others
7.2	Pedestrian Lighting in Paving	By others
8.0	**DRAINAGE**	
	Not Used at this Time	
9.0	**PLANTING AND LANDSCAPE**	
	Refer to Planting Plans	
10.0	**MISCELLANEOUS ELEMENTS**	
10.1	Art Piece - Typical	1/L7-04
10.2	Bus Pullout - Typical	2/L7-03
10.3	Art Piece - 1	1/L7-05
10.4	Art Piece - 2	2/L7-05
10.5	Art Piece - 3	1/L7-06
10.6	Art Piece - 4	2/L7-06



10.2

2 BUS PULLOUT - TYPICAL

1/8" = 1'-0"

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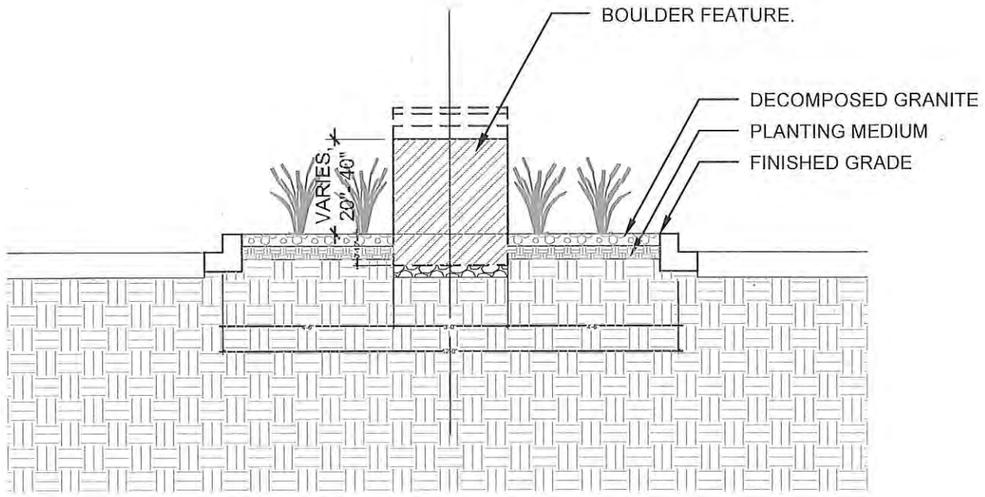
DESIGNWORKSHOP Landscape Architecture • Land Planning Urban Design • Tourism Planning 120 East Main Street Aspen, Colorado 81611-1787 (970)-925-8354 WWW.DESIGNWORKSHOP.COM				Project No./Code TCSP M555-029 19365 Sheet Number 205

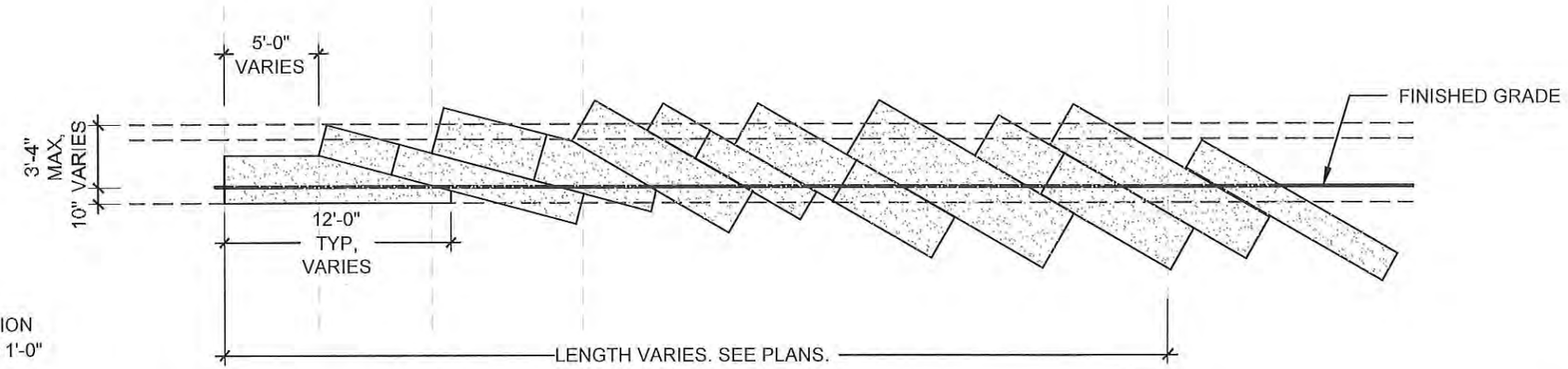


FRONT SECTION
SCALE: 1/4" = 1'-0"

NOTE: LANDSCAPE ARCHITECT TO WORK WITH CONTRACTOR TO SELECT MEDIAN BOULDERS.

SITE KEYNOTES:

		DETAIL / SHEET
1.0	**PAVEMENTS, RAMPS, CURBS**	
1.1	Concrete Paving Type 1 (pedestrian)	See Civil Details
1.2	Concrete Paving Type 2 (pedestrian-enhanced)	See Civil Details
1.3	Concrete Paving Type 3 (vehicular access)	See Civil Details
1.4	Concrete Curb and Gutter	See Civil Details
1.5	ADA Ramp	See Civil Details
1.6	Not included at this time	
1.7	Concrete Slab	01/L7-03
2.0	**JOINTING**	
	Not Used at this Time	
3.0	**STEPS**	
	Not Used at this Time	
4.0	**SITE WALLS/ EMBANKMENTS**	
	Not Used at this Time	
5.0	**SITE FURNITURE**	
5.1	Bench	01/L7-01
5.2	Trash Receptacle	02/L7-01
5.3	Bike Rack	03/L7-01
5.4	Newspaper Box	01/L7-02
5.5	Recycling Receptacle	02/L7-02
6.0	**RAILINGS, BARRIERS, FENCING**	
6.1	Chain Link Fence	04/L7-01
6.2	Safety Screen (locations only)	By others
7.0	**SITE LIGHTING**	
7.1	Pedestrian Lighting	By others
7.2	Pedestrian Lighting in Paving	By others
8.0	**DRAINAGE**	
	Not Used at this Time	
9.0	**PLANTING AND LANDSCAPE**	
	Refer to Planting Plans	
10.0	**MISCELLANEOUS ELEMENTS**	
10.1	Art Piece - Typical	1/L7-04
10.2	Bus Pullout - Typical	2/L7-03
10.3	Art Piece - 1	1/L7-05
10.4	Art Piece - 2	2/L7-05
10.5	Art Piece - 3	1/L7-06
10.6	Art Piece - 4	2/L7-06



SIDE ELEVATION
SCALE: 1/8" = 1'-0"

NOTE: CONTRACTOR TO SUBMIT SHOP DRAWINGS.

1 ART PIECE - TYPICAL NTS

10.1

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Void:

Landscape Plans
Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: SITE DETAILS
Structure Numbers
Subset Sheets: L7-04

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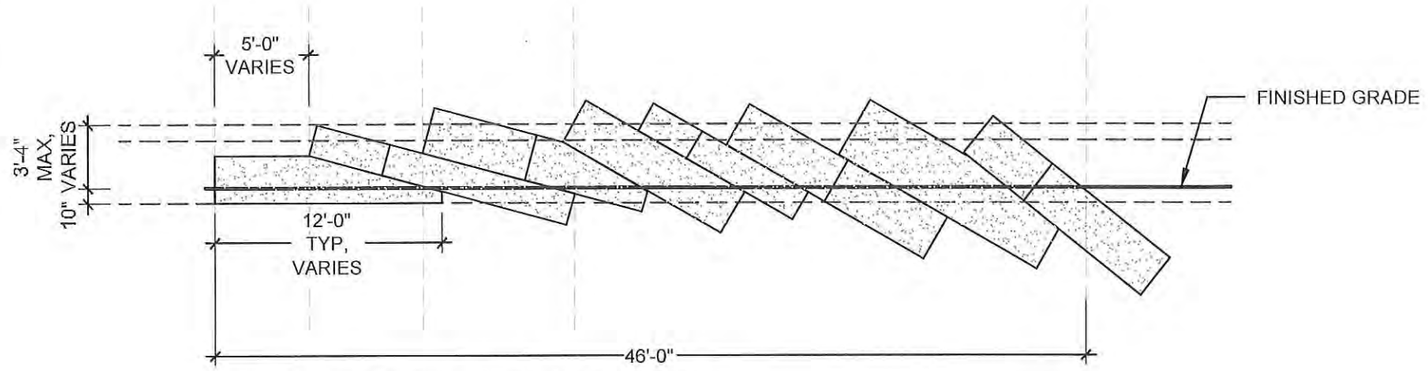
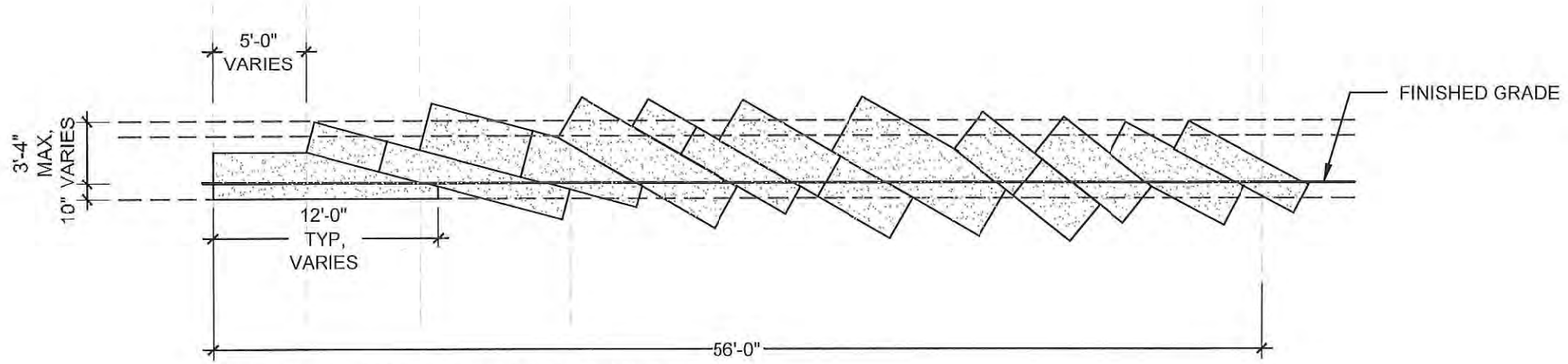
TCSP M555-029
19365
Sheet Number 206



NOTE: CONTRACTOR TO SUBMIT SHOP DRAWINGS.

1 ART PIECE - 1

1/8" = 1'-0"



NOTE: CONTRACTOR TO SUBMIT SHOP DRAWINGS.

2 ART PIECE - 2

1/8" = 1'-0"

SITE KEYNOTES:

			DETAIL / SHEET
1.0	**PAVEMENTS, RAMPS, CURBS**		
	1.1	Concrete Paving Type 1 (pedestrian)	See Civil Details
	1.2	Concrete Paving Type 2 (pedestrian-enhanced)	See Civil Details
	1.3	Concrete Paving Type 3 (vehicular access)	See Civil Details
	1.4	Concrete Curb and Gutter	See Civil Details
	1.5	ADA Ramp	See Civil Details
	1.6	Not included at this time	
	1.7	Concrete Slab	01/L7-03
2.0	**JOINTING**		
	Not Used at this Time		
3.0	**STEPS**		
	Not Used at this Time		
4.0	**SITE WALLS/ EMBANKMENTS**		
	Not Used at this Time		
5.0	**SITE FURNITURE**		
	5.1	Bench	01/L7-01
	5.2	Trash Receptacle	02/L7-01
	5.3	Bike Rack	03/L7-01
	5.4	Newspaper Box	01/L7-02
	5.5	Recycling Receptacle	02/L7-02
6.0	**RAILINGS, BARRIERS, FENCING**		
	6.1	Chain Link Fence	04/L7-01
	6.2	Safety Screen (locations only)	By others
7.0	**SITE LIGHTING**		
	7.1	Pedestrian Lighting	By others
	7.2	Pedestrian Lighting in Paving	By others
8.0	**DRAINAGE**		
	Not Used at this Time		
9.0	**PLANTING AND LANDSCAPE**		
	Refer to Planting Plans		
10.0	**MISCELLANEOUS ELEMENTS**		
	10.1	Art Piece - Typical	1/L7-04
	10.2	Bus Pullout - Typical	2/L7-03
	10.3	Art Piece - 1	1/L7-05
	10.4	Art Piece - 2	2/L7-05
	10.5	Art Piece - 3	1/L7-06
	10.6	Art Piece - 4	2/L7-06

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Landscape Plans
Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: SITE DETAILS
Structure Numbers
Subset Sheets: L7-05

Project No./Code
TCSP M555-029
19365
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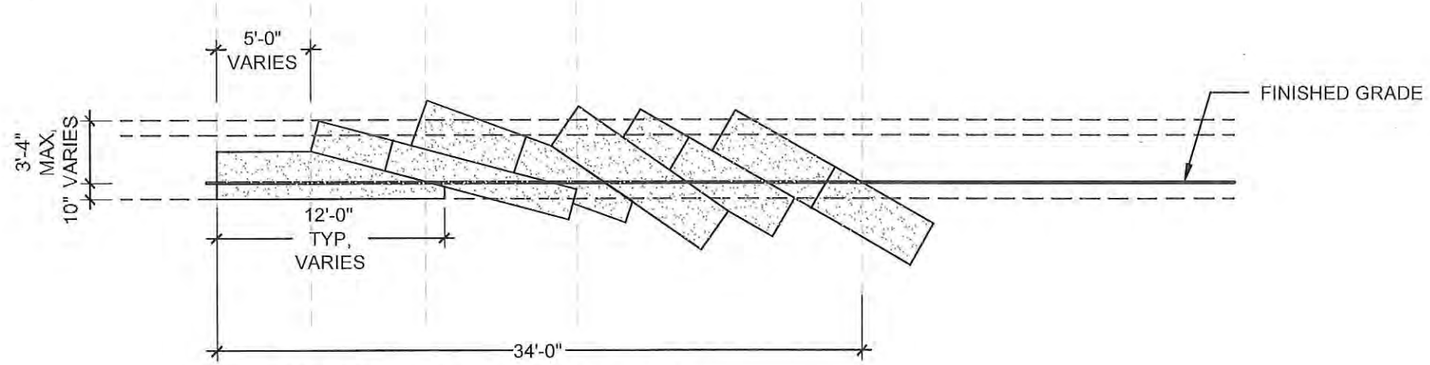
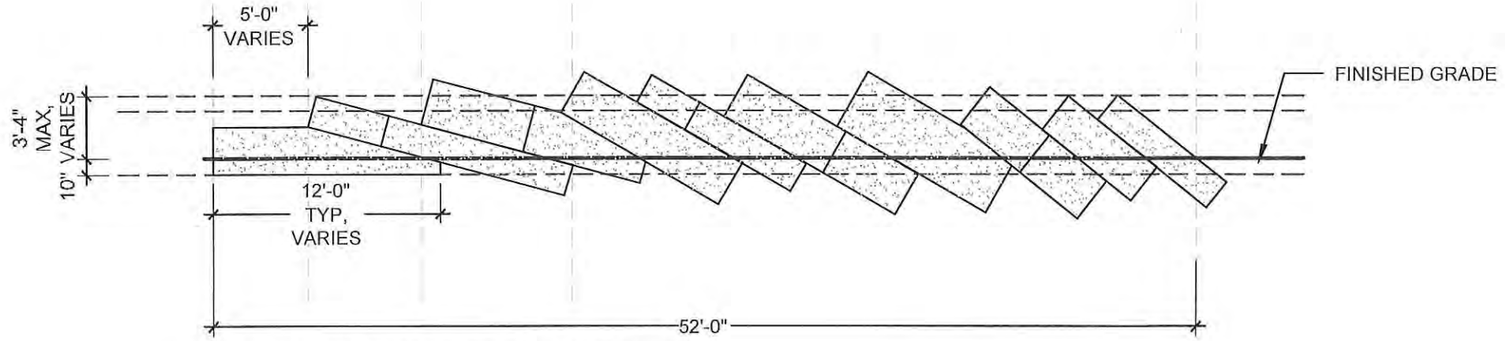


NOTE: CONTRACTOR TO SUBMIT SHOP DRAWINGS.

1 ART PIECE - 3

1/8" = 1'-0"



NOTE: CONTRACTOR TO SUBMIT SHOP DRAWINGS.

2 ART PIECE - 4

1/8" = 1'-0"

SITE KEYNOTES:

			DETAIL / SHEET
1.0	**PAVEMENTS, RAMPS, CURBS**		
	1.1	Concrete Paving Type 1 (pedestrian)	See Civil Details
	1.2	Concrete Paving Type 2 (pedestrian-enhanced)	See Civil Details
	1.3	Concrete Paving Type 3 (vehicular access)	See Civil Details
	1.4	Concrete Curb and Gutter	See Civil Details
	1.5	ADA Ramp	See Civil Details
	1.6	Not included at this time	
	1.7	Concrete Slab	01/L7-03
2.0	**JOINTING**		
	Not Used at this Time		
3.0	**STEPS**		
	Not Used at this Time		
4.0	**SITE WALLS/ EMBANKMENTS**		
	Not Used at this Time		
5.0	**SITE FURNITURE**		
	5.1	Bench	01/L7-01
	5.2	Trash Receptacle	02/L7-01
	5.3	Bike Rack	03/L7-01
	5.4	Newspaper Box	01/L7-02
	5.5	Recycling Receptacle	02/L7-02
6.0	**RAILINGS, BARRIERS, FENCING**		
	6.1	Chain Link Fence	04/L7-01
	6.2	Safety Screen (locations only)	By others
7.0	**SITE LIGHTING**		
	7.1	Pedestrian Lighting	By others
	7.2	Pedestrian Lighting in Paving	By others
8.0	**DRAINAGE**		
	Not Used at this Time		
9.0	**PLANTING AND LANDSCAPE**		
	Refer to Planting Plans		
10.0	**MISCELLANEOUS ELEMENTS**		
	10.1	Art Piece - Typical	1/L7-04
	10.2	Bus Pullout - Typical	2/L7-03
	10.3	Art Piece - 1	1/L7-05
	10.4	Art Piece - 2	2/L7-05
	10.5	Art Piece - 3	1/L7-06
	10.6	Art Piece - 4	2/L7-06

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Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: SITE DETAILS
Structure Numbers
Subset Sheets: L7-06

Project No./Code
TCSP M555-029
19365
Sheet Number 208

TABULATION OF LANDSCAPING

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	AS CONST.
212-00032	SOIL CONDITIONING	AC	0.885	
207-00205	TOPSOIL	CY	2919	
212-00011	SEEDING (LAWN)	AC	0.56	
212-00040	SOIL PREPARATION (LAWN)	AC	0.56	
213-00065	INORGANIC MULCH	CY	362	
214-00145	PLANT PROTECTION FENCE	LF	1980	
214-00230	DECIDOUOUS TREE (3 INCH CALIPER)	EA	109	
214-00350	DECIDUOUS SHRUB (5 GALLON CONTAINER)	EA	295	
214-00910	PERENNIALS (1 GALLON CONTAINER)	EA	97	

SHRUB/GROUNDCOVER PLANTING KEY

ABBR.	BOTANICAL NAME	COMMON NAME	SIZE	QTY
TREES				
GS	*Zelcova serrata 'Green Vase'*	Green Vase Zelkova	2.5"-3.5" CAL.	42
PA	*Populus x acerifolia*	London Planetree	2.5"-3.5" CAL.	17
PC	*Pistacia chinesis*	Chinese Pistache	2.5"-3.5" CAL.	18
UF	*Ulmus 'Froniter'*	Frontier Elm	2.5"-3.5" CAL.	35
DECIDUOUS & EVERGREEN SHRUBS				
PF	Potentilla fruticosa 'McKay's White'	McKay's White Potentilla	5 GAL.	68
JC	Juniperus communis Alpine Carpet	Alpine Carpet Juniper	5 GAL.	114
PB	Prunus besseyi Pawnee Buttes	Creeping Western Sand Cherry	5 GAL.	71
VO	Viburnum opulus 'Compactum'	Compact European Cranberrybush	5 GAL.	42
PERENNIALS AND GRASSES				
CA	*Calamagrostis arondinacea*	'Karl Foerster' Feather Reed Grass	1 GAL.	97
GRASSES, SEED MIXES, MULCHES AND EDGING				
	Turfgrass	Kentucky Bluegrass	Seed	24,380 SF
	Inorganic Mulch/ ¾" Rock Material (Assume 4" depth)		483 CY	

SITE KEYNOTES:

		DETAIL / SHEET
9.0	**PLANTING AND LANDSCAPE**	
9.1	Tree Protection Fencing	1 / L9-01
9.2	Deciduous Tree Planting	1 / L9-02
9.3	Shrub Planting	2 / L9-02
9.4	Perennial Planting	3 / L9-02
9.5	Lawn Seeding	1 / L9-03

NOTE: ALL TREES TO BE STAKED IN FIELD AND APPROVED BY LANDSCAPE ARCHITECT. SHRUBS AND PERENNIAL PLANTINGS TO BE SET OUT AND APPROVED BY LANDSCAPE ARCHITECT.

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Designer: Mike Albert
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Sheet Subset: PLANTING
Structure Numbers
Subset Sheets: L8-00

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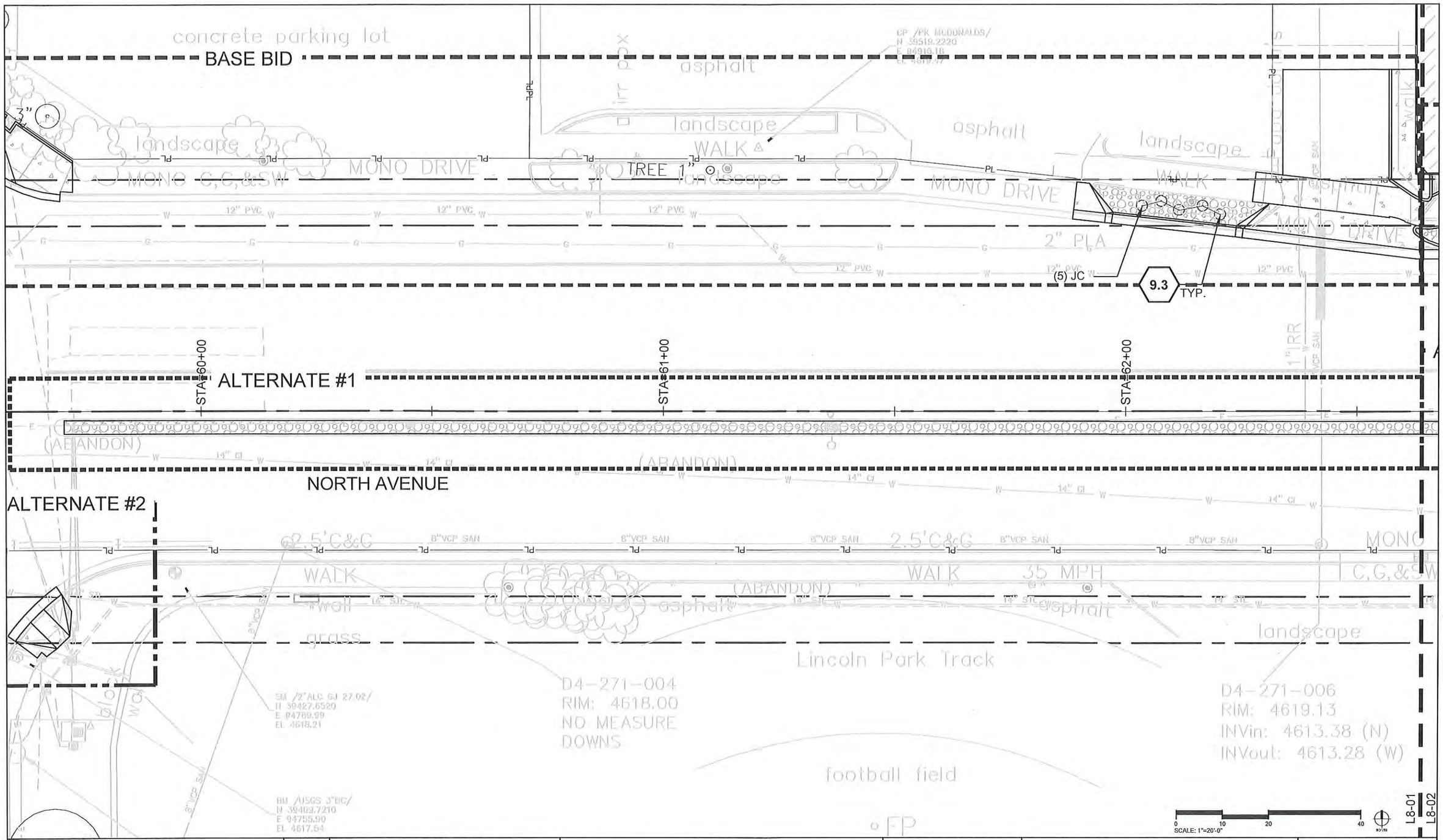
19365
Sheet Number 209



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Landscape Plans

Designer: Mike Albert
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Sheet Subset: PLANTING
Structure Numbers
Subset Sheets: L8-01

Project No./Code
TCSP M555-029
19365
Sheet Number 210

BASE BID

ALTERNATE #1

(2) PC

(3) UF

PROPOSED TE

EXISTING ROW

(2) UF

STA=63+00

(16) PB

STA=64+00

(14) PF

(12) JC

STA=65+00

(3) GS

9.3

L8-01

L8-02

L8-02

L8-03

SCALE: 1"=20'-0"

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File Name:	Date: Comments Init.	606 South 9th Street, Grand Junction, CO, 81501	No Revisions:
DESIGNWORKSHOP		Phone: 970-683-6351 FAX: 970-683-6369	Revised:
Landscape Architecture • Land Planning Urban Design • Tourism Planning	120 East Main Street Aspen, Colorado 81611-1787 (970)-925-8354 WWW.DESIGNWORKSHOP.COM	Region 3 RBB	Void:

Landscape Plans		Project No./Code
Designer: Mike Albert	Structure Numbers	TCSP M555-029
Detailer: Ashley Allis		19365
Sheet Subset: PLANTING	Subset Sheets: L8-02	Sheet Number 211

BASE BID

(3) VO

(1) PC

PROPOSED TE

EXISTING ROW

(4) PF

9.3

ALLEY

Daylight Donuts

BUSINESS WALK

STREET WALK

DRIVE

WALK

2.5' C&G

12" PVC

ALTERNATE #1

(8) JC

STA=66+00

STA=67+00

STA=68+00

(26) CA

TYP. 9.4

ALTERNATE #2

EXISTING ROW

(ABANDON)

FAIRWAY BACKTOP

8" WOOD BORDER

BRICK BORDER

TREE 8"

PROPOSED TE

(2) UF

9.5

TYP.

GRAVEL GOLF CART PATH

GRASS

EDGE OF GREEN

GOLF GREEN

TREE 3"

L8-02

L8-03

L8-04

SCALE: 1"=20'-0"

Print Date: AUGUST 21, 2015

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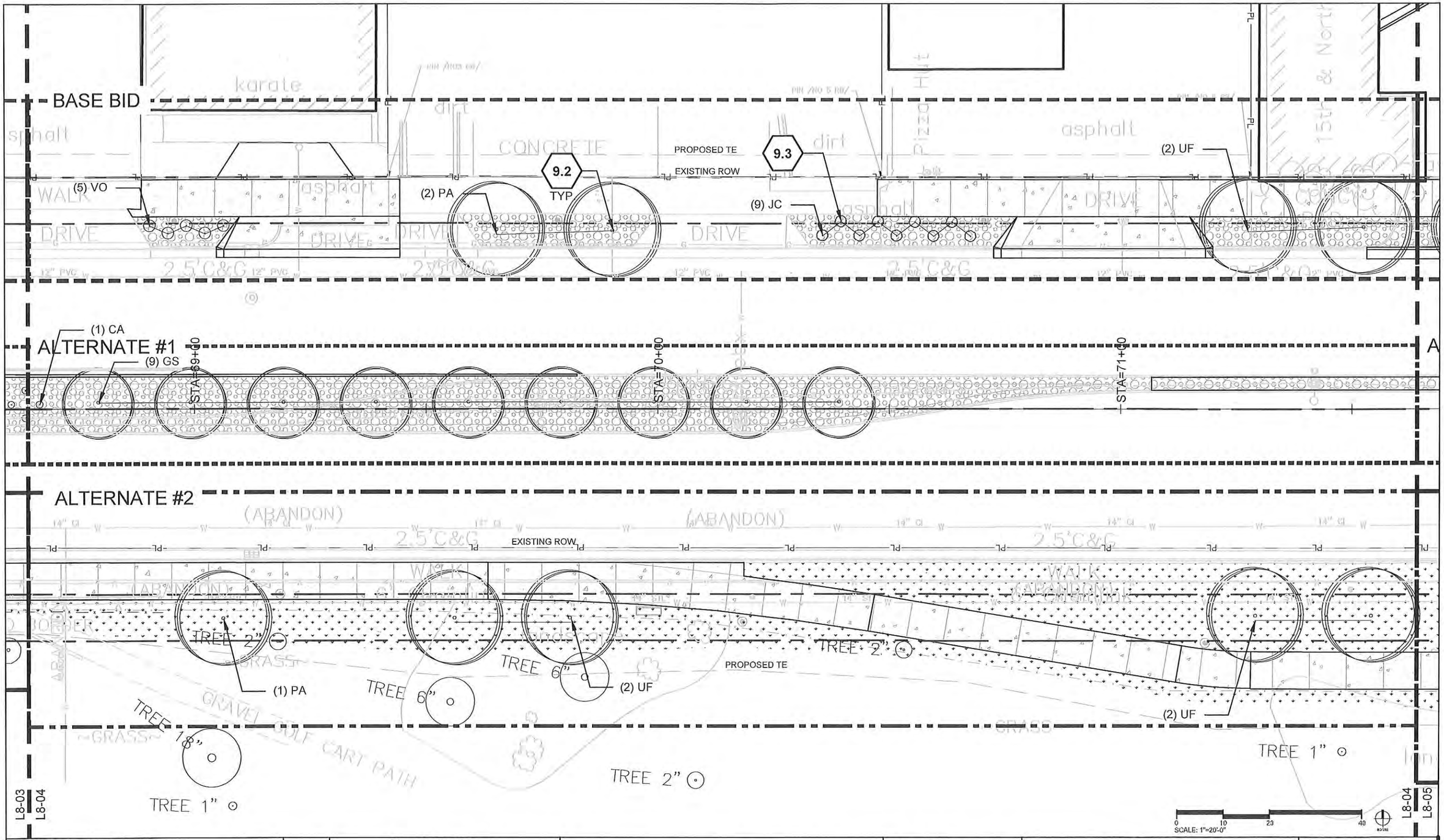
Revised:	
Void:	

Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: PLANTING
Structure Numbers
Subset Sheets: L8-03

Project No./Code	
TCSP M555-029	
19365	
Sheet Number	212



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Void:

Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: PLANTING
Structure Numbers
Subset Sheets: L8-04

Project No./Code
TCSP M555-029
19365
Sheet Number 213

BASE BID

ALTERNATE #1

ALTERNATE #2

9.2 TYP.

(1) UF

N 15TH ST

(3) UF

PROPOSED TE

EXISTING ROW

(3) PC

(1) PA

Old Far East Building

WALL&steel rail

STA=72+00

PI: 72+27.93

STA=73+00

STA=74+00

(16) JC

(12) CA

(14) JC

TYP. 9.3

TYP. 9.4

TREE 48"

TREE 36"

TREE 36"

TREE 36"

(1) UF

TREE 2"

TREE 6"

TYP. 9.5

(3) PC

PROPOSED TE

EXISTING ROW

GRASS

L8-04

L8-05

L8-05

L8-06

SCALE: 1"=20'-0"

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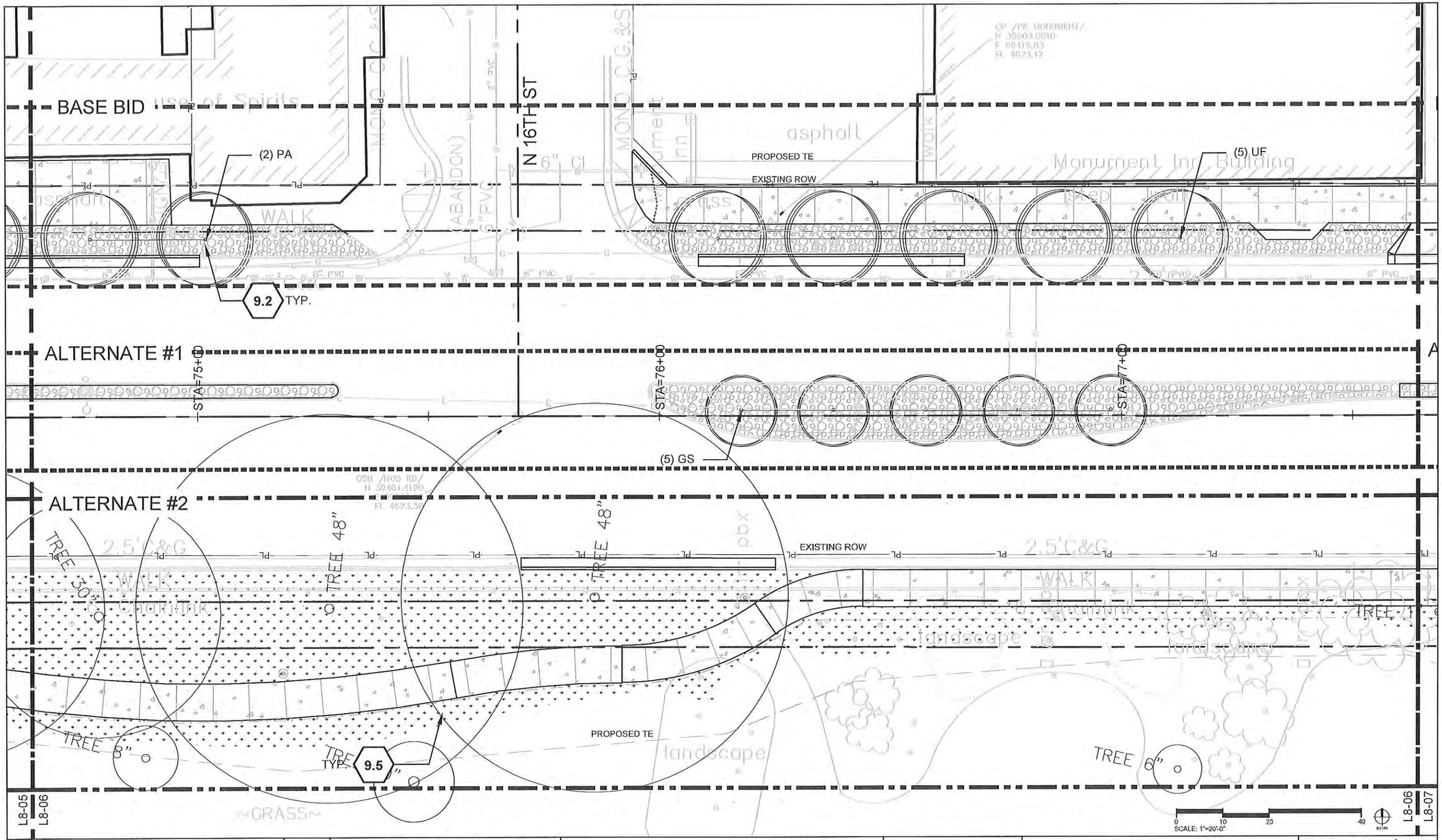
Revised:	
Void:	

Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: PLANTING
Structure Numbers
Subset Sheets: L8-05

Project No./Code	
TCSP M555-029	
19365	
Sheet Number	214



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Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: PLANTING
Structure Numbers
Subset Sheets: L8-06

Project No./Code
TCSP M555-029
19365
Sheet Number 215

BASE BID

(2) PA

TREE 8"

N 17TH ST

(6) VO

(3) PC

PROPOSED TE

EXISTING ROW

(4) JC

TYP. 9.2

TYP. 9.3

ALTERNATE #1

STA=78+00

STA=79+00

STA=80+00

(16) CA

(4) GS

(7) PB

TYP. 9.4

ALTERNATE #2

TREE 48"

TREE 36"

EXISTING ROW

PROPOSED TE

(2) PA

(3) UF

TYP. 9.5

TREE 4"

TREE 4"

L8-06

L8-07

L8-07

L8-08

SCALE: 1"=20'-0"

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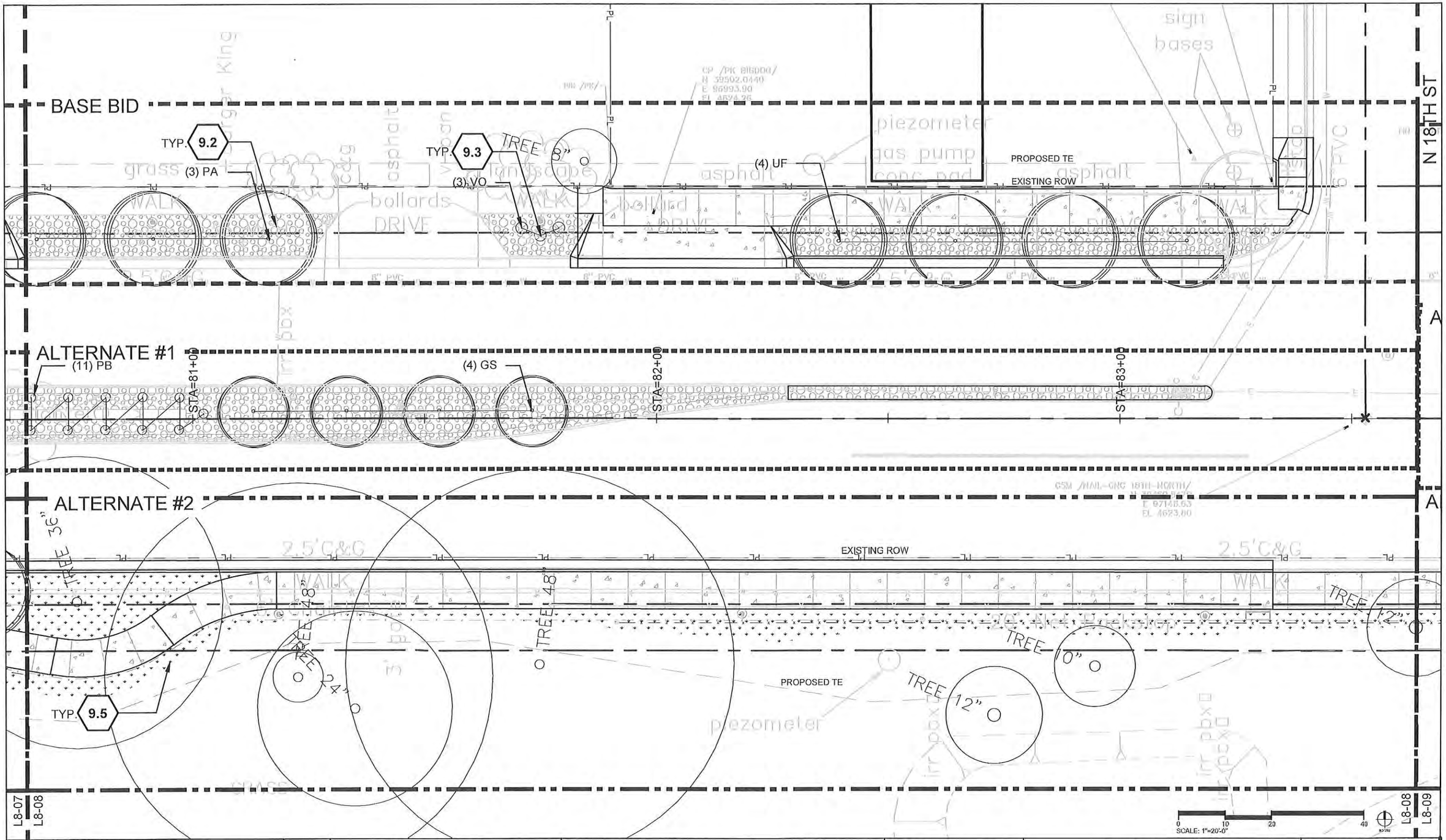
Landscape Plans			Project No./Code
			TCSP M555-029
Designer: Mike Albert	Structure Numbers		19365
Detailer: Ashley Allis			
Sheet Subset: PLANTING	Subset Sheets: L8-07		Sheet Number 216



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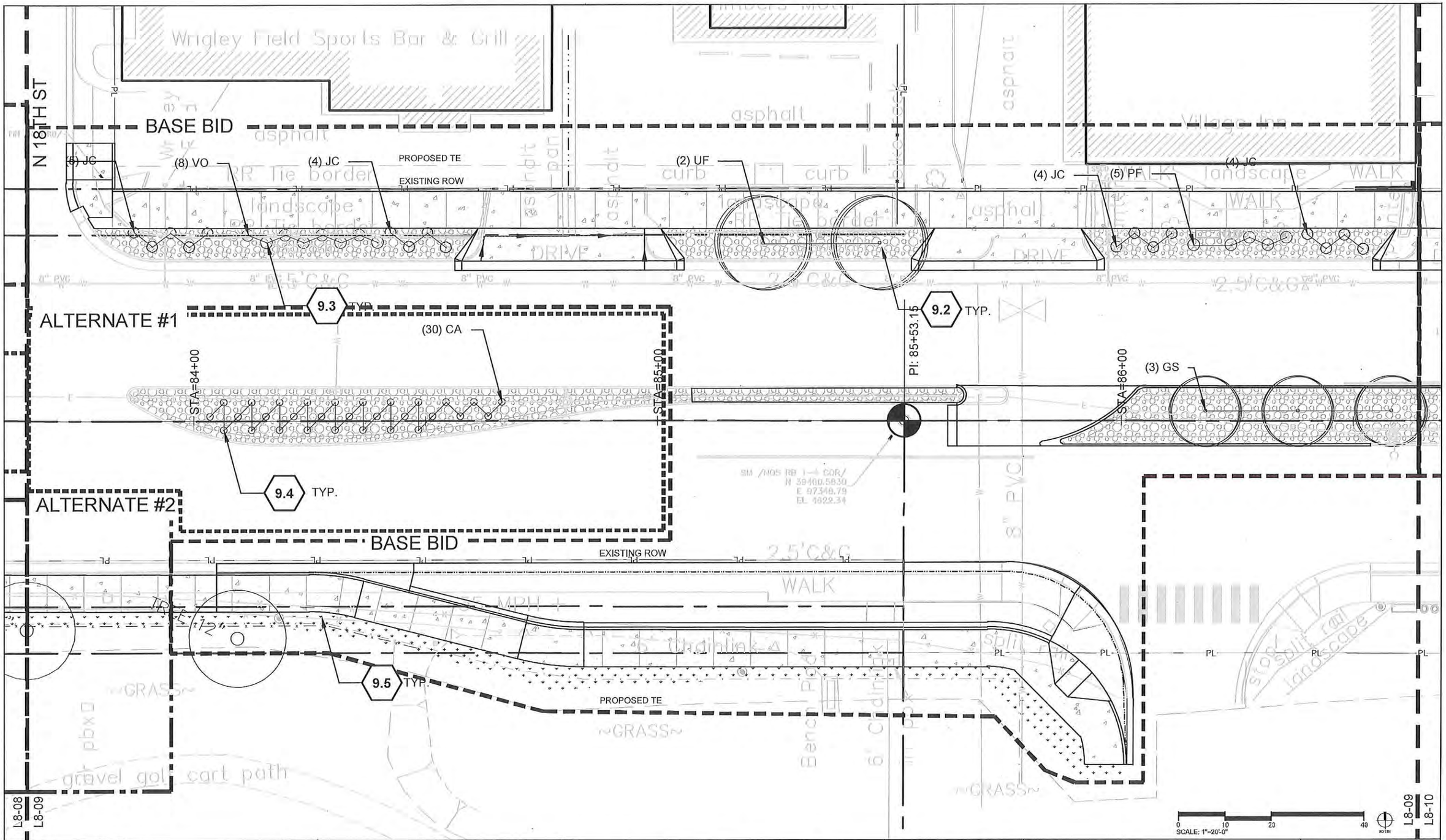
Void:

Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: PLANTING
Structure Numbers
Subset Sheets: L8-08

Project No./Code
TCSP M555-029
19365
Sheet Number 217



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Void:

Landscape Plans

Designer: Mike Albert

Detailer: Ashley Allis

Sheet Subset: PLANTING

Structure Numbers

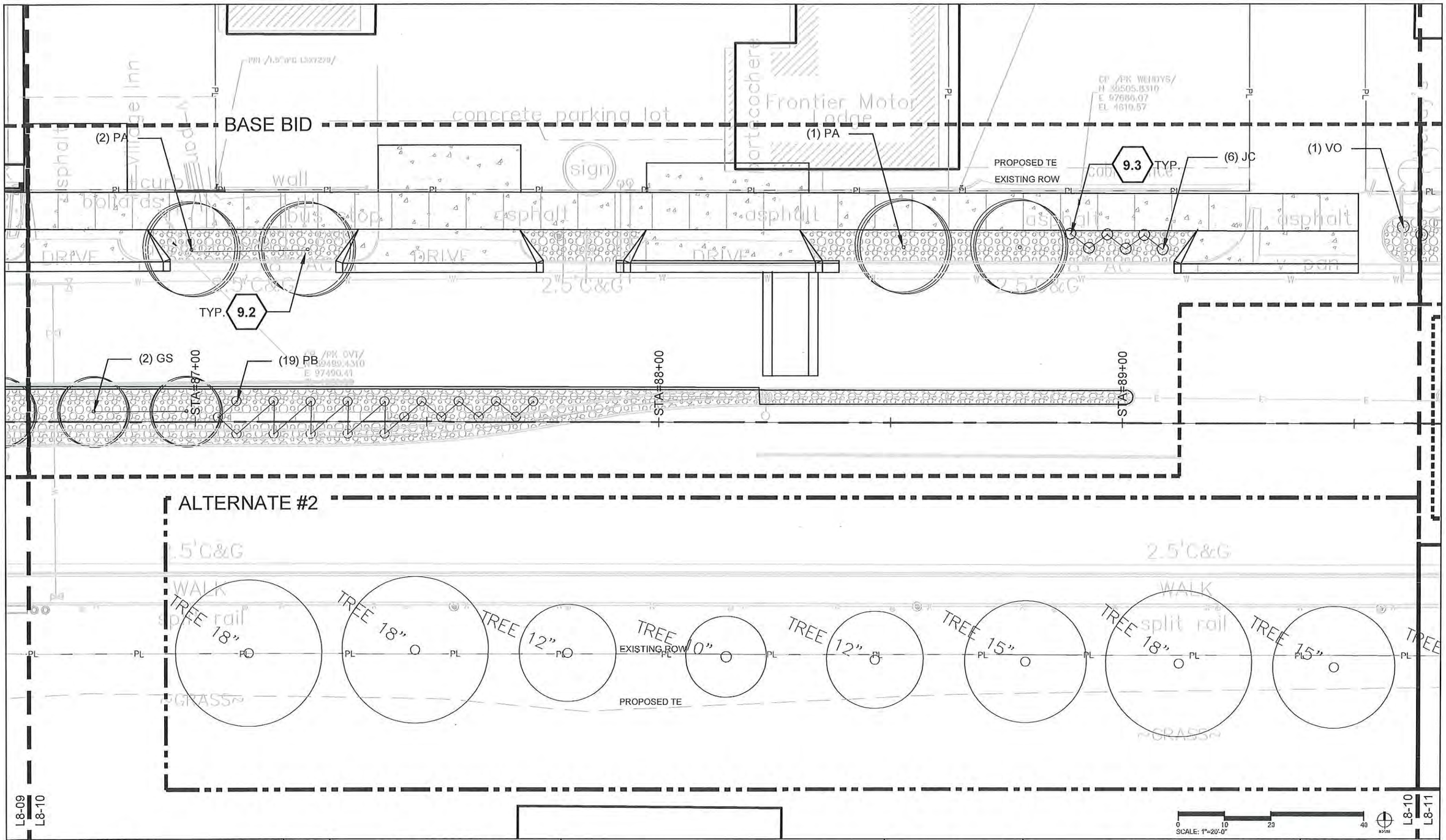
Subset Sheets: L8-09

Project No./Code

TCSP M555-029

19365

Sheet Number 218



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BASE BID

(10) RA

(2) PC

PROPOSED TE

EXISTING ROW

(10) VO

N 21TH ST

(5) JC

TYP. 9.3

TYP. 9.2

ALTERNATE #1

(5) CC

STA=90+00

STA=91+00

STA=92+00

(12) CA

ALTERNATE #1

CSM /PIN IN C/
N 39459.4310
E 98001.32
EL 4918.60

TYP. 9.4

BASE BID

ALTERNATE #2

TREE 12"

EXISTING ROW

PROPOSED TE

2.5'C&G

WALK

GRASS

Steel Gate

SCALE: 1"=20'-0"

L8-10 L8-11 L8-11 L8-12

Print Date: AUGUST 21, 2015

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Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: PLANTING
Structure Numbers
Subset Sheets: L8-11

Project No./Code
TCSP M555-029
19365
Sheet Number 220

BASE BID

(2) PC

(2) UF

(14) PF

PROPOSED TE

EXISTING ROW

(1) UF

(4) VO

9.2 TYP.

9.3 TYP.

ALTERNATE #1

STA=93+00

(9) GS

STA=94+00

STA=95+00

ALTERNATE #2

2.5'C&G

WALK

split rail

TREE 15"

TREE 12"

TREE 15"

EXISTING ROW

PROPOSED TE

TREE 20"

TREE 10"

GRASS

Hospital w/ Helipad Temp

L8-11

L8-12

L8-12

L8-13

SCALE: 1"=20'-0"

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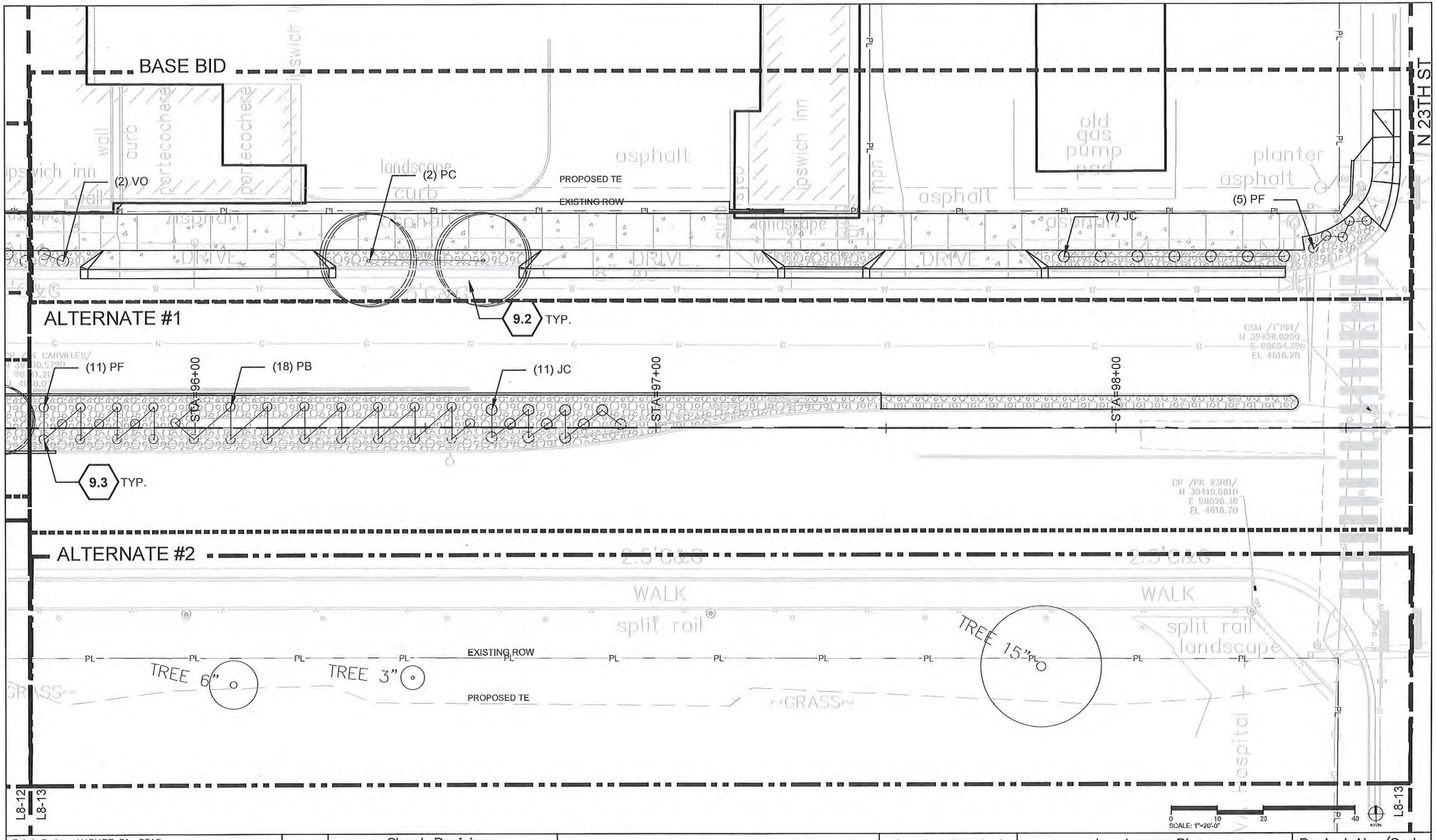
Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: PLANTING
Structure Numbers
Subset Sheets: L8-12

Project No./Code
TCSP M555-029
19365
Sheet Number 221



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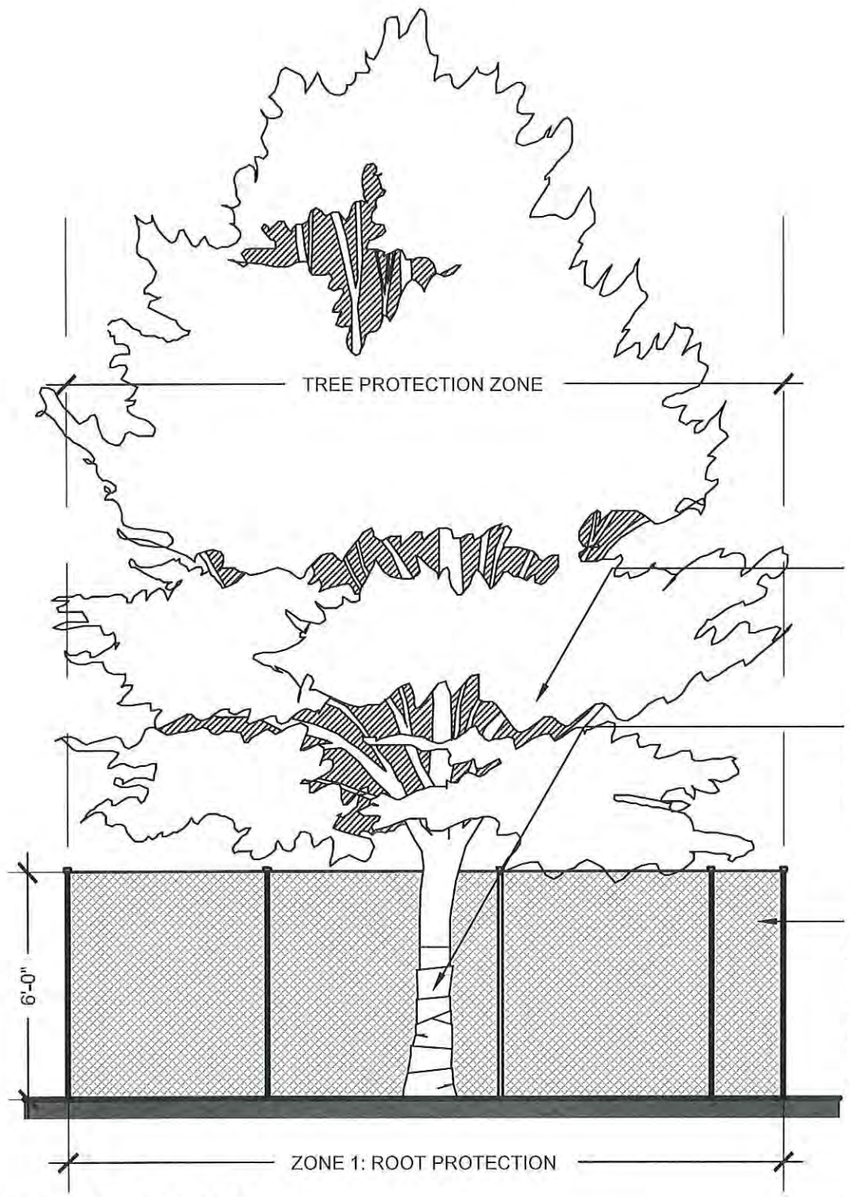
Void:

Landscape Plans

Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: PLANTING
Structure Numbers
Subset Sheets: L8-13

Project No./Code
TCSP M555-029
19365
Sheet Number 222



ZONE 2: LOWER CANOPY PROTECTION
Contact Landscape Architect if any pruning is needed prior to work if potential for damage exists.

ZONE 3: TRUNK PROTECTION
Required if construction equipment involved within ten feet or less (permitted inside the tree protection area only if equipment is operated exclusively on existing hardscape and no soil compaction takes place.)

Tree protection fence, 6' minimum height. Place at limits of tree protection zone. Remove at end of construction, obtain consent of Landscape Architect prior to removal. Signs stating: "NO ENTRY" must be posted on all fencing. Trees immediately adjacent to building construction or those greater than 30" must be fenced with semi-permanent, chain link fence.

NOTE: TREE PROTECTION ZONE IS DEFINED AS THE AREA WITHIN THE DRIP LINE OF THE CANOPY.

1 TREE PROTECTION FENCING

1/4"= 1'-0"

9.1

SITE KEYNOTES:

		DETAIL / SHEET
9.0	**PLANTING AND LANDSCAPE**	
9.1	Tree Protection Fencing	1 / L9-01
9.2	Deciduous Tree Planting	1 / L9-02
9.3	Shrub Planting	2 / L9-02
9.4	Perennial Planting	3 / L9-02
9.5	Lawn Seeding	1 / L9-03

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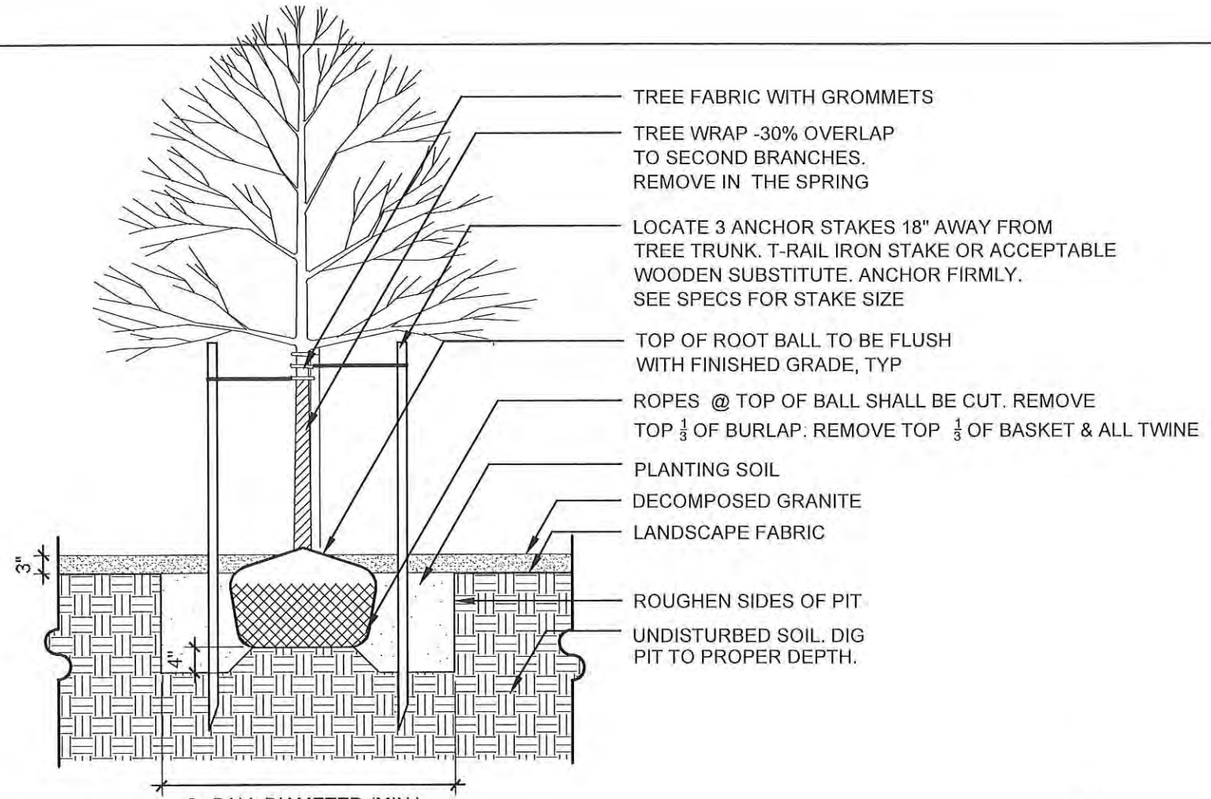
Landscape Plans
Designer: Mike Albert
Detailer: Ashley Allis
Sheet Subset: PLANTING DETAILS
Structure Numbers
Subset Sheets: L9-01

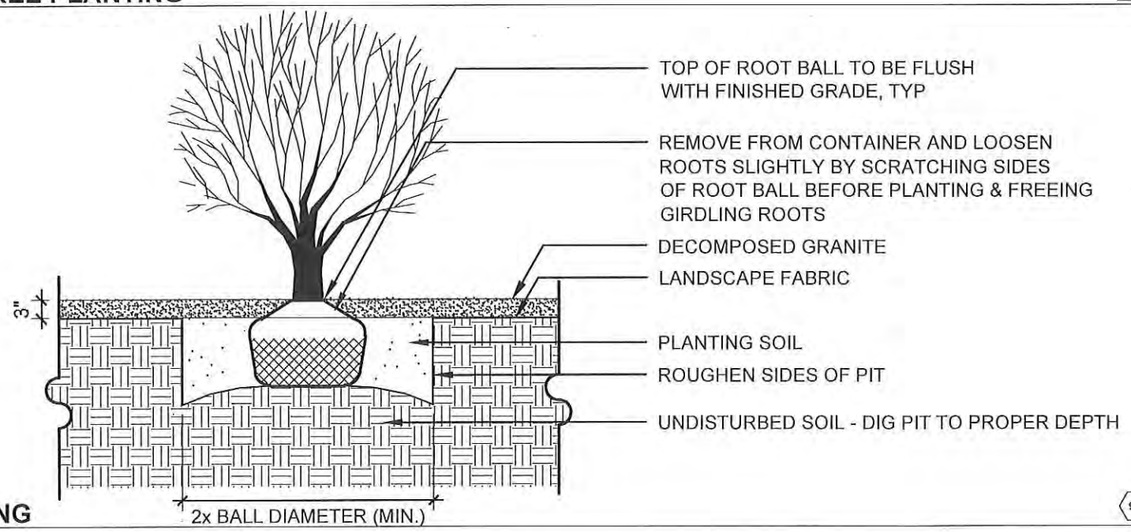
Project No./Code
TCSP M555-029
19365
Sheet Number 223



1 DECIDUOUS TREE PLANTING

1/2"= 1'-0"

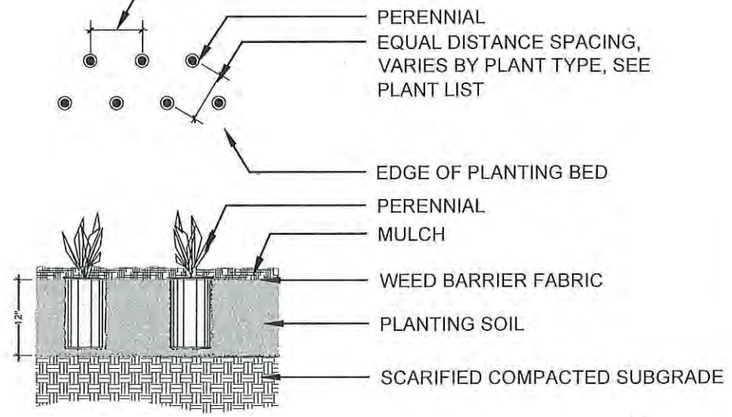
9.2



2 SHRUB PLANTING

1/2"= 1'-0"

9.3



3 PERENNIAL PLANTING

1/2"= 1'-0"

9.4

SITE KEYNOTES:

DETAIL / SHEET

9.0 PLANTING AND LANDSCAPE

9.1	Tree Protection Fencing	1 / L9-01
9.2	Deciduous Tree Planting	1 / L9-02
9.3	Shrub Planting	2 / L9-02
9.4	Perennial Planting	3 / L9-02
9.5	Lawn Seeding	1 / L9-03

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File Name:		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:			TCSP M555-029
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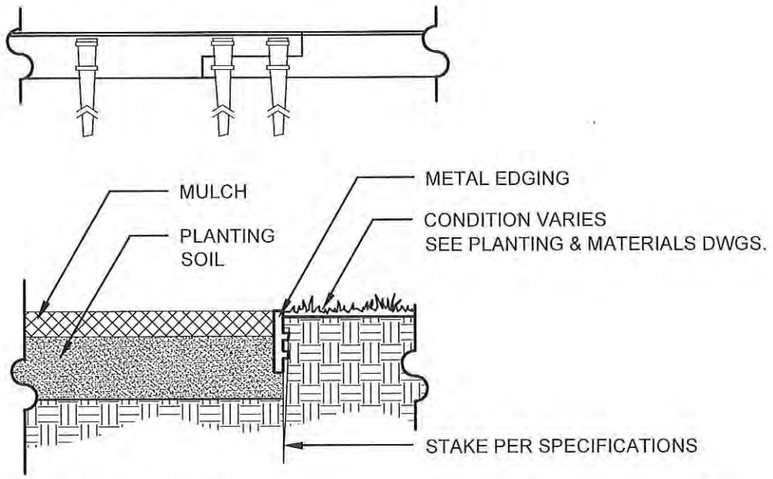
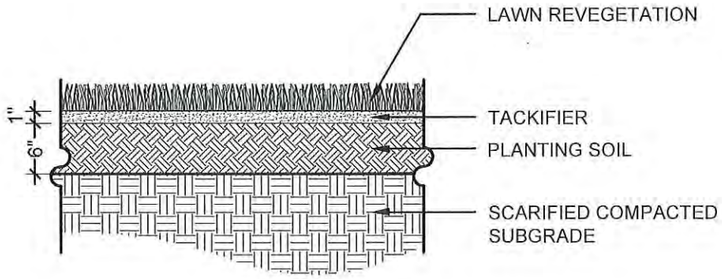
						Void:	Detailer: Ashley Allis		Sheet Number 224
							Sheet Subset: PLANTING DETAILS	Subset Sheets: L9-02	



1 METAL EDGING

1" = 1'-0"

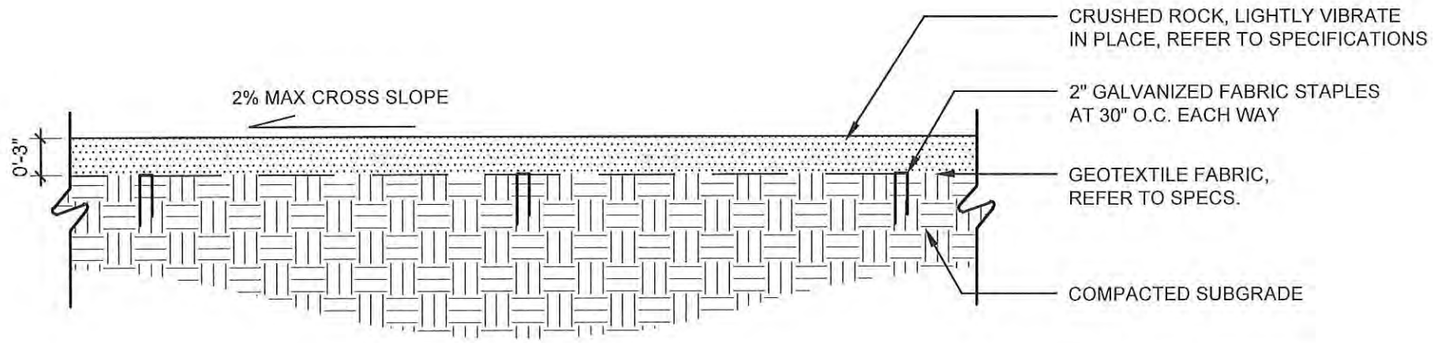
9.5



2 LAWN SEEDING

1" = 1'-0"

9.7



3 INORGANIC MULCH

1"= 1'-0"

9.6

SITE KEYNOTES:

DETAIL / SHEET

9.0 PLANTING AND LANDSCAPE

9.1	Tree Protection Fencing	1 / L9-01
9.2	Deciduous Tree Planting	1 / L9-02
9.3	Shrub Planting	2 / L9-02
9.4	Perennial Planting	3 / L9-02
9.5	Lawn Seeding	1 / L9-03

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Landscape Plans

Designer: Mike Albert

Detailer: Ashley Allis

Sheet Subset: PLANTING DETAILS

Structure Numbers

Subset Sheets: L9-03

Project No./Code

TCSP M555-029

19365

Sheet Number 225

IRRIGATION CONSTRUCTION NOTES

1. DRAWINGS AND BASE INFORMATION - ALL BASE AND PLANTING INFORMATION HAVE BEEN PROVIDED BY DESIGN WORKSHOP. THE CONTRACTOR IS RESPONSIBLE TO NOTIFY HYDROSYSTEMS*KDI OF ANY DISCREPANCIES BETWEEN THE UTILITY OR PLANTING PLANS AND THE IRRIGATION PLAN. IF CONTRACTOR FAILS TO NOTIFY HYDROSYSTEMS*KDI AND MAKES CHANGES TO THE IRRIGATION SYSTEM DESIGN, HE ASSUMES ALL COSTS AND LIABILITIES ASSOCIATED WITH THOSE FIELD CHANGES. REFER TO SPECIFICATIONS FOR ADDITIONAL PROJECT REQUIREMENTS.

2. SYSTEM PRESSURE - HYDROSYSTEMS*KDI HAS CONTACTED THE LOCAL WATER DISTRICT THAT SERVES THIS SITE AND THEY HAVE BEEN TOLD THAT THE STATIC WATER PRESSURE IN THIS AREA SHOULD BE 78 PSI. THE CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY PRESSURE PRIOR TO COMMENCING ANY CONSTRUCTION AND NOTIFY HYDROSYSTEMS*KDI OF ANY VARIANCE FROM THE STATED PRESSURE IMMEDIATELY. WRITTEN DOCUMENTATION OF PRESSURE TEST AND RESULTS SHALL BE PROVIDED TO HYDROSYSTEMS*KDI AT CONSTRUCTION ONSET. IF CONTRACTOR FAILS TO FIELD VERIFY PRESSURE AND/OR NOTIFY HYDROSYSTEMS*KDI OR ANY VARIATIONS FROM THIS PRESSURE, THEN HE ASSUMES ALL CONSTRUCTION AND ENGINEERING COSTS ASSOCIATED WITH SYSTEM MODIFICATIONS REQUIRED TO ACCOMMODATE ACTUAL SITE PRESSURE. THIS SYSTEM HAS BEEN DESIGNED FOR A REQUIRED STATIC PRESSURE OF 78 PSI MINIMUM.

3. IRRIGATION SYSTEM OPERATION INTENT - THIS IRRIGATION SYSTEM HAS BEEN DESIGNED TO IRRIGATE THE ESTABLISHED LANDSCAPE WITHIN A THREE NIGHT PER WEEK, EIGTH HOUR PER NIGHT WATERING WINDOW. ESTABLISHMENT WATERING WILL REQUIRE UP TO TWICE AS MUCH IRRIGATION FOR A FOUR TO SIX WEEK PERIOD. THE DESIGN IS BASED ON THE FOLLOWING PROJECTED WEEKLY APPLICATION RATES AFTER ESTABLISHMENT. THESE FIGURES ARE BASED ON A 30-YEAR AVERAGE WEATHER DATA AND WILL NEED TO BE ADJUSTED DUE TO SEASONAL CHANGES AND WEATHER CONDITIONS ABOVE AND BELOW THE AVERAGE VALUES UTILIZED.

BLUEGRASS TURF	2.40" PER WEEK PEAK SEASON
ORNAMENTAL PLANTINGS	0.87" PER WEEK PEAK SEASON

4. EQUIPMENT INSTALLATION - IT IS THE INTENT OF THIS DESIGN THAT ALL IRRIGATION EQUIPMENT BE INSTALLED WITHIN PROPERTY LIMITS AND WITHIN LANDSCAPED AREAS. ANY EQUIPMENT SHOWN OUTSIDE OF THESE LIMITS IS SHOWN IN THAT LOCATION FOR GRAPHICAL CLARITY ONLY. ALL VALVE BOXES SHALL BE INSTALLED A MINIMUM OF 2'-0" FROM EDGE OF ANY PAVED SURFACES. ALL VALVE BOXES SHALL BE PLACED A MINIMUM OF 3'-0" FROM THE CENTERLINE OF ANY DRAINAGE SWALE.

5. SLEEVING - ALL SLEEVING UNDER PAVED SURFACES SHOWN ON PLANS IS BY CONTRACTOR UNLESS OTHERWISE NOTED. SLEEVING SHALL BE INSTALLED IN THE SIZES AND QUANTITIES SHOWN ON PLANS OR BASED ON THE SCHEDULE BELOW. WHERE SLEEVES ARE SHOWN, BUT NOT LABELED, FOLLOW THE SCHEDULE BELOW. ALL MAINLINE, CONTROL WIRES AND DRIP LINES UNDER PAVED SURFACES ARE TO BE INSTALLED IN SLEEVING.

SLEEVED PIPE SIZE/WIRE QUANTITY	REQUIRED SLEEVE SIZE & (QUANTITY)
¾" - 1¼" PIPING	2" PVC (1)
1½" - 2" PIPING	4" PVC (1)
2½" - 3" PIPING	6" PVC (1)
1-50 CONTROL WIRES	2" PVC (1)

6. MANUAL DRAIN VALVES - CONTRACTOR TO INSTALL ONE MANUAL DRAIN VALVE ON PRESSURE SUPPLY LINE DIRECTLY DOWNSTREAM OF BACKFLOW PREVENTER AND AT ALL LOW POINTS AND DEAD ENDS OF PRESSURE SUPPLY PIPING TO INSURE COMPLETE DRAINAGE OF SYSTEM. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THESE LOCATIONS IN-FIELD AND INSTALLATION LOCATIONS SHALL BE NOTED ON AS-BUILTS.

7. POP-UP SPRAY NOZZLES - CONTRACTOR TO INSTALL PLASTIC NOZZLES ON ALL POP-UP SPRAY HEADS. INSTALL 15 SERIES NOZZLES ON ALL HEADS SPACED AT 12' TO 14'. INSTALL 12 SERIES NOZZLES ON ALL HEADS SPACED 10' TO 11'. INSTALL 10 SERIES NOZZLES ON ALL HEADS SPACED AT 8' TO 9'. INSTALL 8 SERIES NOZZLES ON ALL HEADS SPACED AT 6' TO 7'. INSTALL SIDE STRIP NOZZLES ON ALL HEADS WITH AN "S" DESIGNATION AND RIGHT AND LEFT CORNER STRIP NOZZLES ON ALL HEADS WITH AN "C" DESIGNATION. VARIABLE ARC NOZZLES SHOULD BE UTILIZED ADJACENT TO CURVILINEAR SHRUB BEDS OR FOR ANY ANGLES THAT ARE NOT A STANDARD NOZZLE ANGLE.

8. DRIP IRRIGATION - REFER TO IRRIGATION DETAIL SHEET FOR DRIP EMITTER QUANTITIES AND PLACEMENT.

9. SPARE CONTROL WIRES - CONTRACTOR SHALL EXTEND THREE SPARE WIRES (ONE COMMON AND 2 CONTROL WIRES) FROM EACH CONTROLLER TO THE END OF THE MAINLINE SERVING THAT CONTROLLER OR AS SHOWN ON THE PLANS. INSTALL SPARE WIRES IN 10" ROUND VALVE BOX WITH QUICK COUPLING VALVE. REFER TO SPECIFICATIONS FOR WIRE COLOR. SEE IRRIGATION SCHEDULE FOR ADDITIONAL INFORMATION.

10. ADJUSTMENT - CONTRACTOR SHALL FINE TUNE/ADJUST THE IRRIGATION SYSTEM TO REDUCE/AVOID OVERSPRAY ONTO HARD SURFACES BY ADJUSTING NOZZLE DIRECTION AND NOZZLE RADIUS.

11. EXISTING IRRIGATION DAMAGE - CONTRACTOR SHALL REPAIR OF REPLACE ANY EXISTING IRRIGATION SYSTEMS ON THE GOLF COURSE AND/OR RETAIL DAMAGED DURING NEW INSTALLATION. REPAIR OR REPLACEMENT SHALL BE DETERMINED BY OWNER OR OWNER'S REPRESENTATIVE AND PAID FOR BY THE LANDSCAPE CONTRACTOR.

12. EXISTING IRRIGATION COORDINATION - EXISTING IRRIGATION SYSTEM SHALL NOT BE TURNED OFF FOR MORE THAN 24 HOURS MAXIMUM. CONTRACTOR SHALL COORDINATE TURN OFF OF SYSTEM WITH OWNER OR MAINTENANCE STAFF 72 HOURS PRIOR TO ANY NEW CONSTRUCTION.

13. UNLABELED PIPING - ALL UNLABELED LATERAL PIPING SHALL BE 1" MINIMUM UNLESS OTHERWISE NOTED.

IRRIGATION KEYNOTES

1.0 EXISTING GOLF COURSE IRRIGATION
- 1.1 FIELD LOCATE ALL OF THE EXISTING RAIN BIRD EAGLE 750 SPRAY HEADS, RELOCATED TO INSIDE OF NEW FENCE, REPLACE IF DAMAGED AND FIELD ADJUST TO PREVENT SPRAY INTO THE NEW SIDEWALK.
- 1.2 FIELD LOCATE AND PROTECT EXISTING MAINLINE, CONTROL WIRES AND CONTROL VALVES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE EXISTING IRRIGATION EQUIPMENT.
- 1.3 COORDINATE ALL OF THE NEW IRRIGATION CONSTRUCTION AND/OR REPAIRS WITH THE GOLF COURSE STAFF.
- 1.4 CONTRACTOR SHALL REPLACE ANY LANDSCAPE MATERIAL DAMAGE DURING THE CONSTRUCTION.

2.0 EXISTING RETAIL IRRIGATION SYSTEMS
- 2.1 FIELD LOCATE ALL OF THE EXISTING SPRAY HEADS OR DRIP, RELOCATED IF NECESSARY, REPLACE IF DAMAGED AND FIELD ADJUST TO PREVENT SPRAY OR IRRIGATE INTO THE NEW OR EXISTING SIDEWALK.
- 2.2 FIELD LOCATE AND PROTECT EXISTING MAINLINE, CONTROL WIRES AND CONTROL VALVES. THE CONTRACTOR SHALL BE RESPONSIBLE TO ANY DAMAGE TO THE EXISTING IRRIGATION EQUIPMENT.
- 2.3 COORDINATE ALL OF THE NEW IRRIGATION CONSTRUCTION AND/OR REPAIRS WITH THE STAFF RESPONSIBLE FOR EACH OF THE EXISTING IRRIGATION SYSTEMS IN EACH RETAIL STORE AND/OR RESTAURANTS.
- 2.4 CONTRACTOR SHALL REPLACE ANY LANDSCAPE MATERIAL DAMAGE DURING THE CONSTRUCTION.

3.0 REGULAR SLEEVING INSTALLATION
- 3.1 INSTALL SLEEVING PER IRRIGATION PLANS, SIZE PER IRRIGATION PLANS AND TYPE PER IRRIGATION SCHEDULE. SEE DETAIL #12

4.0 BORE-IN SLEEVING INSTALLATION
- 4.1 INSTALL SLEEVING VIA DIRECTIONAL BORING PER IRRIGATION PLANS, SIZE PER IRRIGATION PLANS AND TYPE PER IRRIGATION SCHEDULE. SEE DETAIL #12
- 4.2 DAMAGE TO EXISTING SURFACES SHALL BE REPAIR BY THE CONTRACTOR AT NO COST TO THE OWNER.
- 4.3 SLEEVING IN BETWEEN MEDIANS WILL NEED TO BE CORE DRILLED THROUGH CONCRETE FOUNDATION WALLS AT DEPTHS SPECIFIED OR DETAIL #12 (DO NOT BORE UNDER FOUNDATION).

REFER TO SHEET

811 Know what's below. Call before you dig.
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303-980-5384 (fax)

Print Date: August 21, 2015.	Sheet Revisions			As Constructed	Irrigation Notes	Project No./Code
File Name: North Avenue	Date:	Comments	Init.	No Revisions:		TCSP M555-029
Horiz. Scale: Vert. Scale: NA				Revised:	Designer: Hugo Ochoa / Detailer: Ken DiPaolo / Structure Numbers	19365
Unit Information: City of GJ Unit Leader Initials: DPJ				Void:	Sheet Subset: / Subset Sheets: IR-01	Sheet Number 226

Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER	MODEL NO.	DESCRIPTION	DETAIL NO.
	RAIN BIRD	1806-SAM-PRS W/ MPR-SERIES NOZZLES	POPUP SPRAY HEAD	1
L R S	RAIN BIRD	1806-SAM-PRS W/ STRIP-SERIES NOZZLES	POPUP SPRAY HEAD	1
	RAIN BIRD	PEB SERIES	ELECTRIC CONTROL VALVE	2
	RAIN BIRD	44-LRC	QUICK COUPLING VALVE	3
A	RAIN BIRD	ESP-SAT	SATELLITE CONTROLLER	4
RFC	RAIN BIRD	WR2-RFC	RAIN SHUT-OFF DEVICE	5
	FEBCO	825YA	BACKFLOW PREVENTER	6
N/S	STRONG BOX	SBBC-30AL	BACKFLOW PREVENTER ENCLOSURE	7
N/S	MATCO	201X	MANUAL DRAIN VALVE	8
		LINE SIZE	GATE VALVE	9
	RAIN BIRD	1.5" - EFB-CP	MASTER CONTROL VALVE	10
		SCH 40 BE	PVC MAINLINE	11
		SCH 40 BE	PVC LATERAL	11
		SCH 40 BE	PVC SLEEVING	12
	TORO	BLUE STRIPE	POLY DRIP TUBING -3/4" MIN. WIDTH	13
	RAIN BIRD	XCZ-075-PRF W/ BALL VALVE	DRIP VALVE ASSEMBLY	14 & 15
			DRIP LINE BLOW-OUT STUB	16
N/S	RAIN BIRD	XERI-BUG	DRIP EMITTERS	13
B	RAIN BIRD	1402	BUBBLER	17
FS	RAIN BIRD	FS-150P	FLOW SENSOR	18
M			EXISTING WATER METER	N/S

3PM — CONTROLLER & STATION NO.
1" — CONTROL VALVE SIZE

3-A (controller) — NUMBER OF SPARE WIRES - 2 CONTROL AND 1 SPARE
WIRES TO WHICH CONTROLLER - SEE CONSTRUCTION NOTES

A - CONTROLLER LOCATION "A"

PEDESTAL MOUNT ONE 40 STATION RAIN BIRD ESP-SAT SATELLITE LINK CONTROLLER WITH RADIO MODEM KIT, FREQUENCY SPECIFIED, FLOW SENSING, STAINLESS STEEL PEDESTAL, ANTENNA 3002 AND PULSE TRANSPONDER, REMOTE READY, AT INDICATED LOCATION. 120 VOLT POWER IS AVAILABLE WITHIN 20 LF. OF CONTROLLER LOCATION FROM LIGHT POLE. ELECTRICAL METER, WIRE/CONDUIT, STEP-DOWN TRANSFORMER (IF REQUIRED) AND POWER CONNECTION TO CONTROLLER IS BY CONTRACTOR WITH WORK CONFORMING TO LOCAL CODES. EXTEND PE89 SHIELDED CABLE FROM THE FLOW SENSOR AND 4 #14 UFUL WIRES (TWO BLUE AND TWO ORANGE) FROM MASTER VALVE TO CONTROLLER "A". CONNECT WIRES TO THE APPROPRIATE SENSOR INPUT PORTS. FEES AND PERMITS ASSOCIATED WITH WORK ARE TO BE OBTAINED AND PAID BY CONTRACTOR. FINAL CONTROLLER LOCATION SHALL BE APPROVED BY OWNER PRIOR TO INSTALLATION. MOUNT ONE RAIN BIRD WR2-RFC RAIN-FREEZE DEVICE ON POLE WHERE THERE IS 20 FT. OF CLEARANCE FROM ANY OVERHANG OR OBSTRUCTING FEATURE. INSTALL RAIN SENSOR RECEIVER IN CONTROLLER ENCLOSURE. FINAL RAIN SENSOR LOCATION SHALL BE APPROVED BY OWNER PRIOR TO INSTALLATION. FINAL CONTROLLER LOCATION SHALL BE APPROVED, FOLLOWING COMMUNICATION VERIFICATION, BY CITY PRIOR TO INSTALLATION. CONTRACTOR TO COORDINATE CONTROLLER MODEL NUMBER AND FREQUENCY TEST WITH CITY AND MIKE HIGGINS AT GRAND JUNCTION PIPE, PRIOR TO ORDERING, 970-243-4604.

B - POINT OF CONNECTION #1718 North Ave. - 1.5"

PEAK FLOW REQUIREMENT: 25 GPM. REQUIRED STATIC PRESSURE: 75 PSI

CONTRACTOR SHALL LOCATE THE EXISTING 1½" TAP AND EXISTING 1½" PRESSURE VACUUM BREAKER LOCATION AT 1718 NORTH AVENUE. REMOVE PRESSURE VACUUM BREAKER AND RETURN TO OWNER. INSTALL ONE NEW 1½" STOP AND WASTE VALVE, ONE 1½" REDUCED PRESSURE BACKFLOW PREVENTER WITH PROTECTIVE ENCLOSURE, ONE MANUAL DRAIN VALVE, ONE QUICK COUPLING VALVE, ONE 1½" RAIN BIRD FS150P FLOW SENSOR, ONE 1½" RAIN BIRD EFB-CP VALVE AS A MASTER VALVE, AND ONE 2" GATE VALVE AND EXTEND 2" PVC MAINLINE AS SHOWN. EXTEND ONE PE89 SHIELDED CABLE FROM FLOW SENSOR TO DATA RETRIEVAL UNIT LOCATED IN CONTROLLER "A". EXTEND 4 UFUL14# WIRE (TWO ORANGE AND TWO BLUE) AND CONNECT 2 OF THE WIRES FROM THE MASTER VALVE TO THE DATA RETRIEVAL BOARD IN CONTROLLER "A". SEE DETAIL SHEET FOR REQUIRED PIPE LENGTHS UPSTREAM AND DOWNSTREAM OF FLOW SENSING UNIT. WORK SHALL CONFORM TO LOCAL CODE. FEES AND PERMITS ASSOCIATED WITH WORK ARE TO BE OBTAINED AND PAID FOR BY CONTRACTOR. FINAL BACKFLOW PREVENTER LOCATION SHALL BE REVIEWED AND APPROVED BY OWNER PRIOR TO INSTALLATION.

REFER TO SHEET

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303-980-5384 (fax)

Print Date: August 21, 2015.		Sheet Revisions			Colorado Department of Transportation	As Constructed	Irrigation Schedule		Project No./Code
File Name: North Avenue		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:			TCSP M555-029
Horiz. Scale: Vert. Scale: NA						Revised:	Designer: Hugo Ochoa	Structure Numbers	19365
Unit Information: City of GJ Unit Leader Initials: DPJ							Detailer: Ken DiPaolo		
					Region 3 RBB	Void:	Sheet Subset:	Subset Sheets: IR-02	Sheet Number 227

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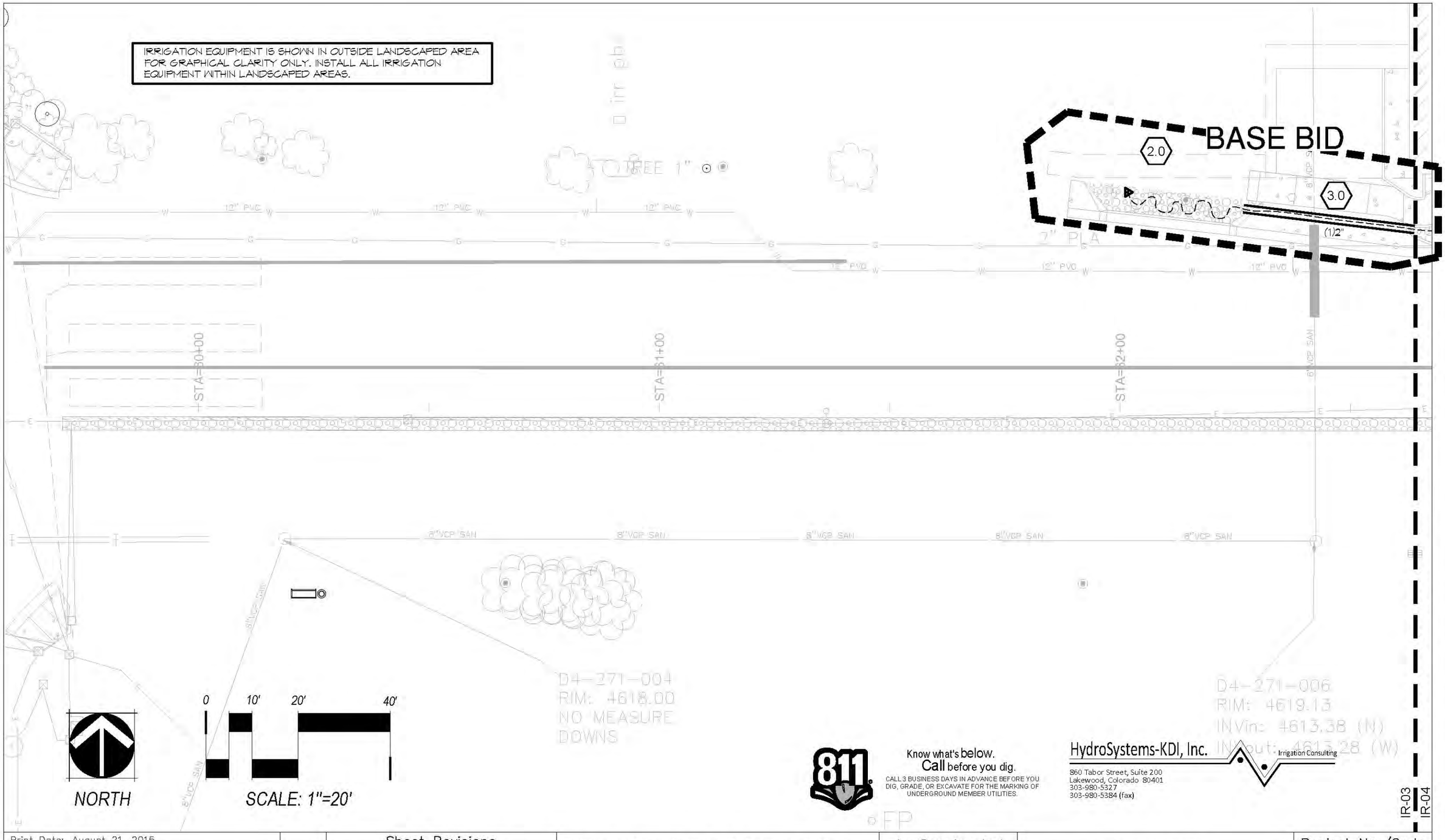

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IR-03
IR-04

Print Date: August 21, 2015.	Sheet Revisions			Colorado Department of Transportation	As Constructed	Irrigation Plans	Project No./Code
File Name: North Avenue	Date:	Comments	Init.	606 South 9th Street, Grand Junction, CO, 81501	No Revisions:		TCSP M555-029
Horiz. Scale: Vert. Scale: NA				Phone: 970-683-6351 FAX: 970-683-6369	Revised:	Designer: Hugo Ochoa / Structure Numbers	19365
Unit Information: City of GJ Unit Leader Initials: DPJ				Region 3 RBB	Void:	Detailer: Ken DiPaolo / Sheet Subset: / Subset Sheets: IR-03	Sheet Number 228

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BASE BID

ALTERNATE #1

A1 dr .75"

A2 16 1"

A27 6 1"

A28 dr .75"

3.0

4.0

(2)2"

(1)4"(3)2"

1"

STA=13+00

STA=14+00

0 10' 20' 40'

NORTH

SCALE: 1"=20'

IR-03 IR-04

IR-04 IR-05

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Irrigation Plans			Project No./Code
			TCSP M555-029
Designer: Hugo Ochoa	Structure Numbers		19365
Detailer: Ken DiPaolo			
Sheet Subset:	Subset Sheets: IR-04		Sheet Number 229

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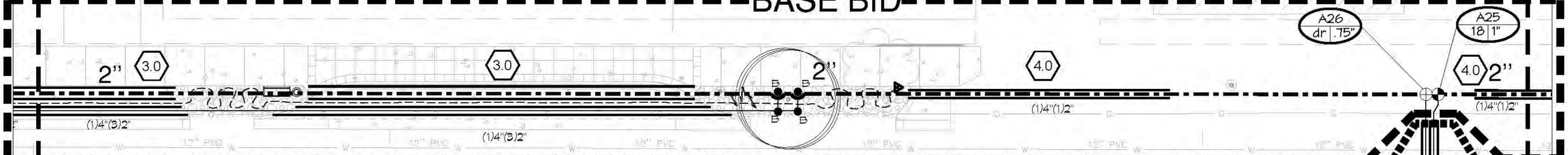
BASE BID



ALTERNATE #1

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- THE INSTALLATION OF POP-UP HEADS ALONG THE SIDEWALK EDGE TO SPRAY THE NEW TURF.
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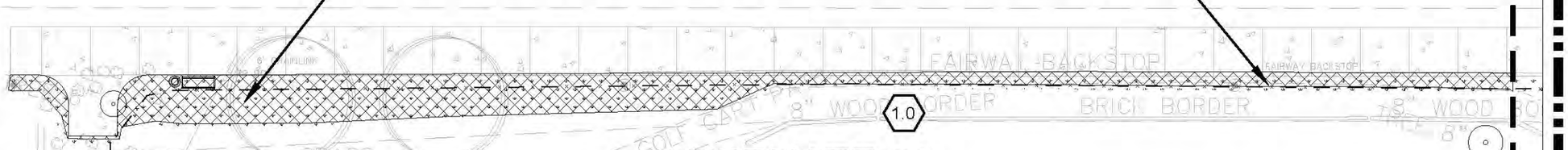
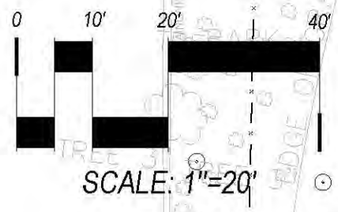


ALTERNATE #2



NORTH

SCALE: 1"=20'

IR-04 IR-05

IR-05 IR-06

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No Revisions:			TCSP M555-029
Revised:	Designer: Hugo Ochoa	Structure Numbers	19365
Void:	Detailer: Ken DiPaola		
	Sheet Subset:	Subset Sheets: IR-05	Sheet Number 230

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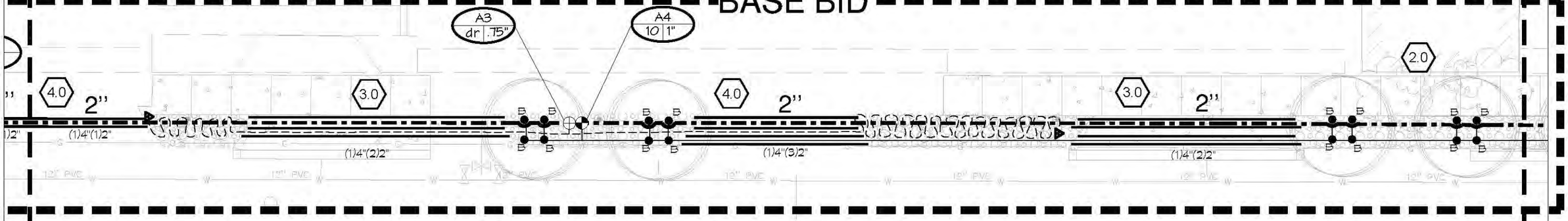
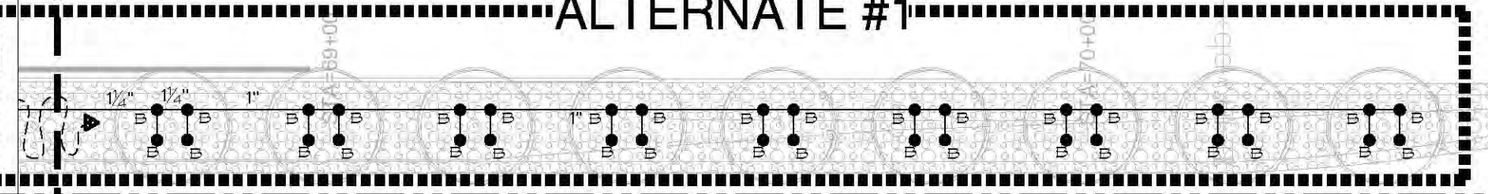
BASE BID



ALTERNATE #1



ALTERNATE #2

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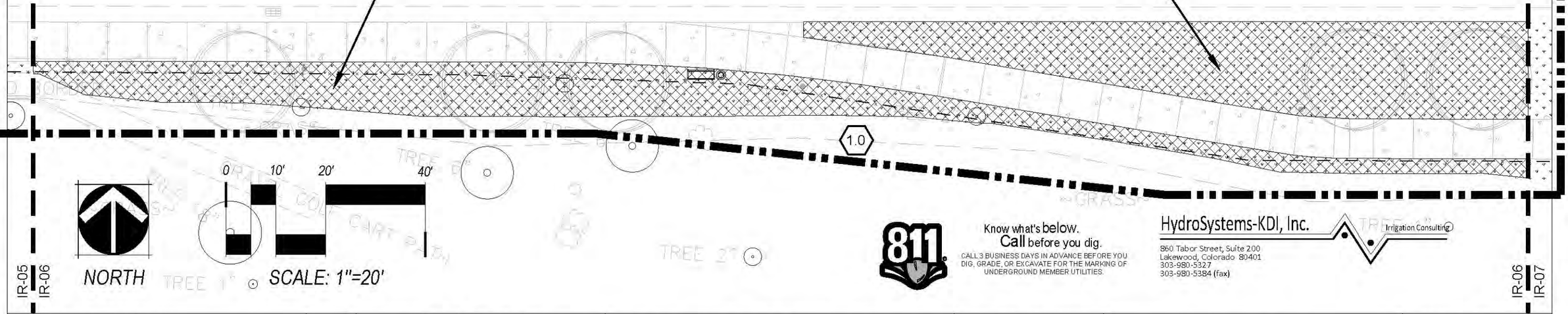

0 10' 20' 40'

NORTH SCALE: 1"=20'

IR-05 IR-06

IR-06 IR-07

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Irrigation Plans			Project No./Code
Designer: Hugo Ochoa	Structure Numbers		TCSP M555-029
Detailer: Ken DiPaolo			19365
Sheet Subset:	Subset Sheets: IR-06		Sheet Number 231

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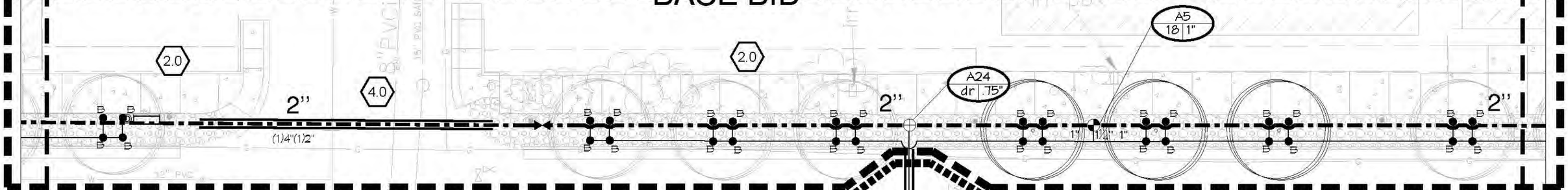

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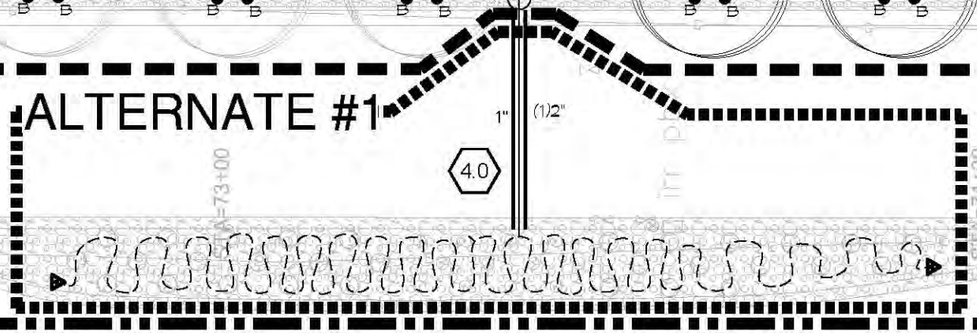

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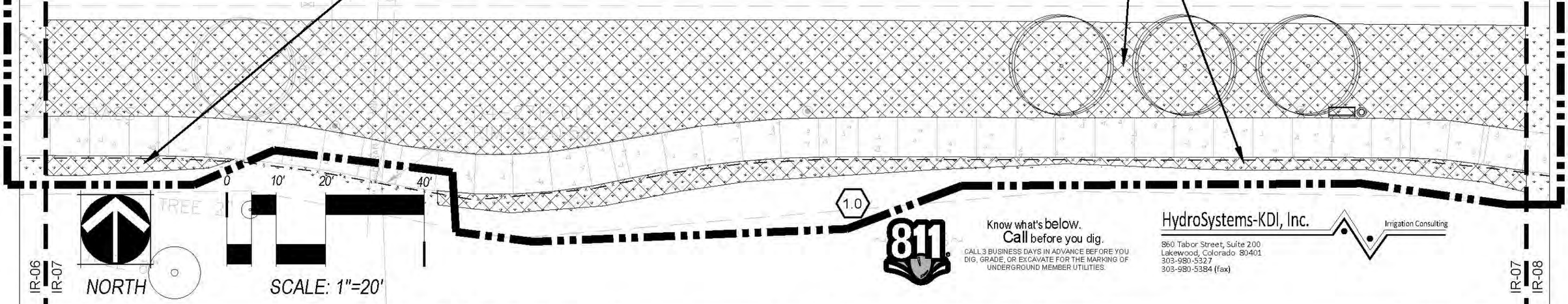

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Region 3 RBB

As Constructed
No Revisions:
Revised:
Void:

Irrigation Plans

Designer: Hugo Ochoa
Detailer: Ken DiPaolo
Sheet Subset:
Structure Numbers
Subset Sheets: IR-07

Project No./Code
TCSP M555-029
19365
Sheet Number 232

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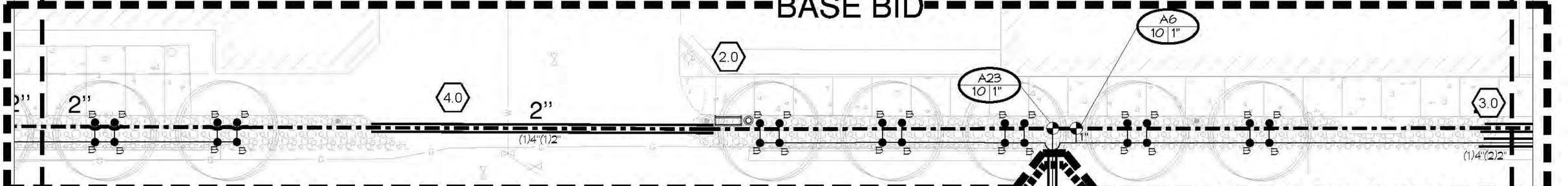
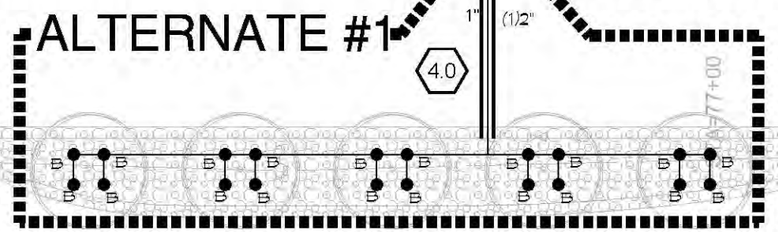


ALTERNATE #1



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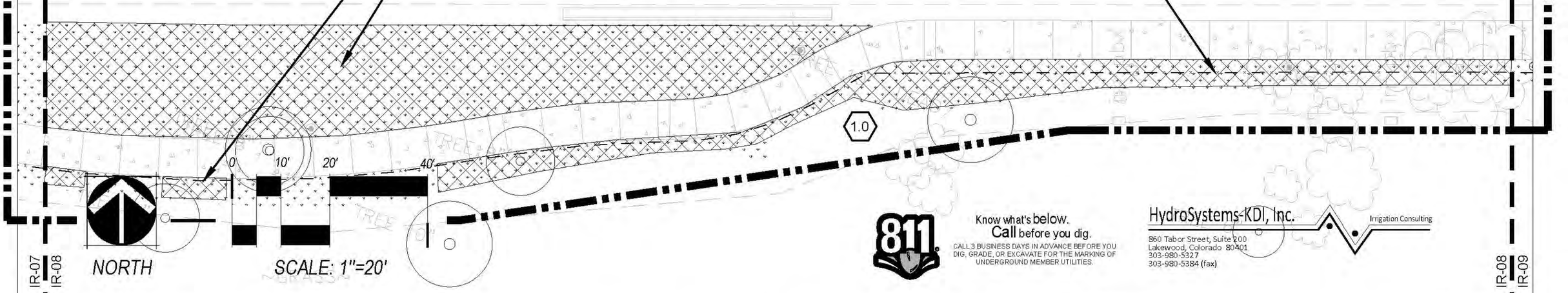

IR-07 IR-08

IR-08 IR-09

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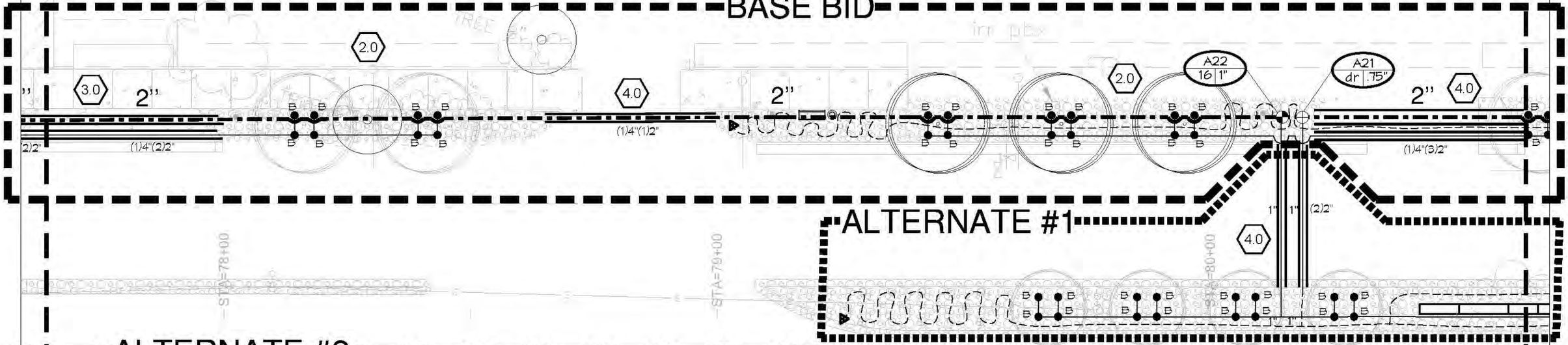
File Name: North Avenue	Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:		TCSP M555-029
Horiz. Scale: Vert. Scale: NA					Revised:	Designer: Hugo Ochoa Detailer: Ken DiPaolo	Structure Numbers	19365
Unit Information: City of GJ Unit Leader Initials: DPJ				Region 3 RBB	Void:	Sheet Subset:	Subset Sheets: IR-08	Sheet Number 233

IRRIGATION EQUIPMENT IS SHOWN IN OUTSIDE LANDSCAPED AREA FOR GRAPHICAL CLARITY ONLY. INSTALL ALL IRRIGATION EQUIPMENT WITHIN LANDSCAPED AREAS.

BASE BID

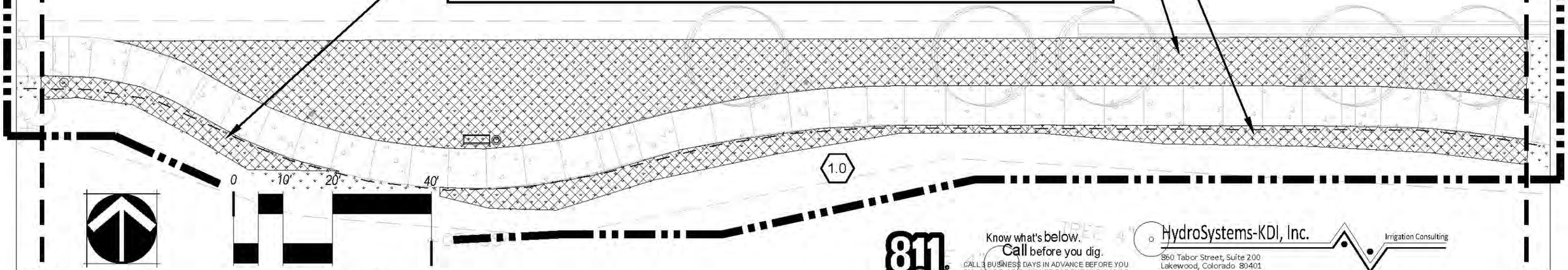


ALTERNATE #1

ALTERNATE #2

THE CONTRACTOR SHALL COORDINATE WITH THE LINCOLN PARK GOLF COURSE STAFF AND THE CITY OF GRAND JUNCTION PARKS DEPARTMENTS FOR THE FOLLOWING WORK:

- THE INSTALLATION OF POP-UP HEADS ALONG THE SIDEWALK EDGE TO SPRAY THE NEW TURF.
- ADJUST ALL OF THE EXISTING GOLF COURSE ROTOR HEADS SOUTH OF THE NEW FENCE TO SPRAY INTO THE NEW TURF AREAS.
- ALL NEW IRRIGATION ZONES SHALL BE INSTALL IN THE EXISTING LINCOLN PARK IRRIGATION SYSTEM.



811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

HydroSystems-KDI, Inc. Irrigation Consulting
860 Tabor Street, Suite 200
Lakewood, Colorado 80401
303-980-5327
303-980-5384 (fax)

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Horiz. Scale: Vert. Scale: NA				Phone: 970-683-6351 FAX: 970-683-6369	Revised:	Designer: Hugo Ochoa / Detailer: Ken DiPaolo / Structure Numbers	19365
Unit Information: City of GJ Unit Leader Initials: DPJ				Region 3 RBB	Void:	Sheet Subset: / Subset Sheets: IR-09	Sheet Number 234

BASE BID

A - SEE SHEET IR-02 - CONTROLLER NOTE

IRRIGATION EQUIPMENT IS SHOWN IN OUTSIDE LANDSCAPED AREA FOR GRAPHICAL CLARITY ONLY. INSTALL ALL IRRIGATION EQUIPMENT WITHIN LANDSCAPED AREAS.

B - SEE SHEET IR-02 - POINT OF CONNECTION NOTE

ALTERNATE #1

ALTERNATE #2

THE CONTRACTOR SHALL COORDINATE WITH THE LINCOLN PARK GOLF COURSE STAFF AND THE CITY OF GRAND JUNCTION PARKS DEPARTMENTS FOR THE FOLLOWING WORK:
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- ADJUST ALL OF THE EXISTING GOLF COURSE ROTOR HEADS SOUTH OF THE NEW FENCE TO SPRAY INTO THE NEW TURF AREAS.
- ALL NEW IRRIGATION ZONES SHALL BE INSTALL IN THE EXISTING LINCOLN PARK IRRIGATION SYSTEM.

NORTH

SCALE: 1"=20'

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IR-09 IR-10 IR-10 IR-11

Print Date: August 21, 2015.
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Unit Information: City of GJ Unit Leader Initials: DPJ

Sheet Revisions		
Date:	Comments	Init.

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Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

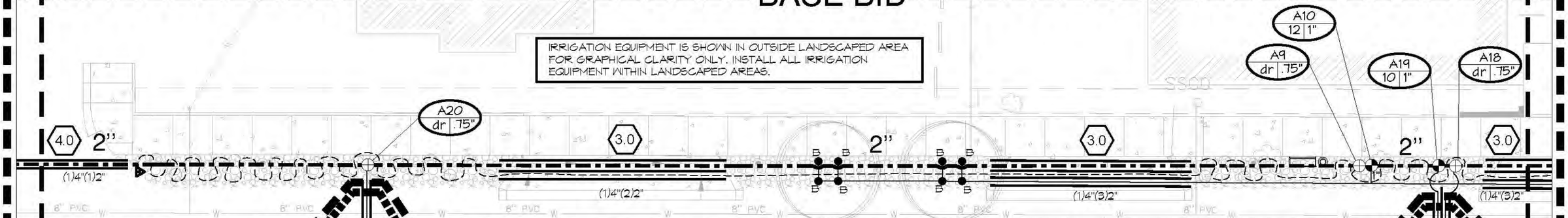
As Constructed
No Revisions:
Revised:
Void:

Irrigation Plans
Designer: Hugo Ochoa
Detailer: Ken DiPaolo
Sheet Subset:
Structure Numbers
Subset Sheets: IR-10

Project No./Code
TCSP M555-029
19365
Sheet Number 235

BASE BID

IRRIGATION EQUIPMENT IS SHOWN IN OUTSIDE LANDSCAPED AREA FOR GRAPHICAL CLARITY ONLY. INSTALL ALL IRRIGATION EQUIPMENT WITHIN LANDSCAPED AREAS.



ALTERNATE #1

ALTERNATE #1

ALTERNATE #2

THE CONTRACTOR SHALL COORDINATE WITH THE LINCOLN PARK GOLF COURSE STAFF AND THE CITY OF GRAND JUNCTION PARKS DEPARTMENTS FOR THE FOLLOWING WORK:

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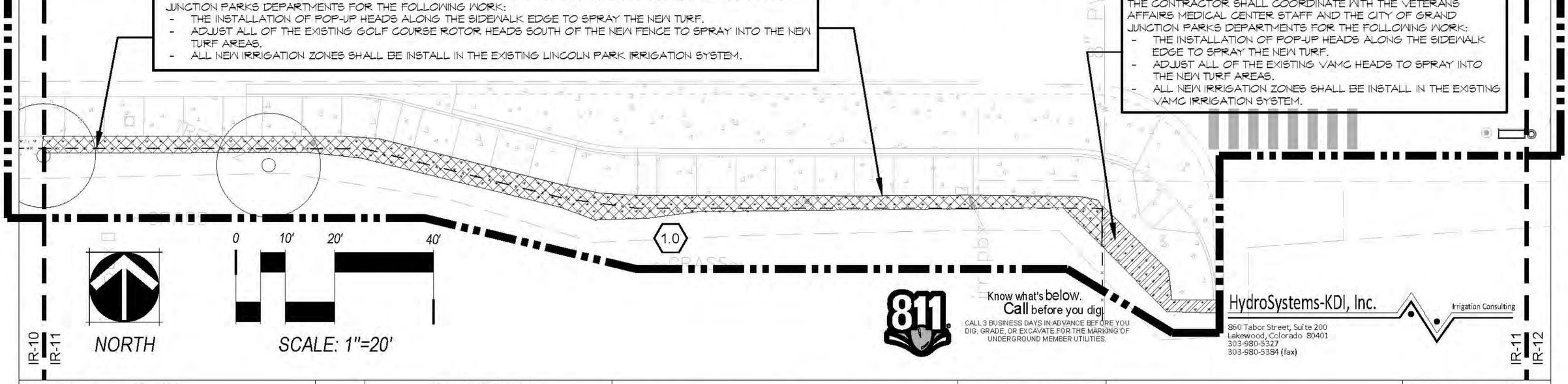
- ADJUST ALL OF THE EXISTING GOLF COURSE ROTOR HEADS SOUTH OF THE NEW FENCE TO SPRAY INTO THE NEW TURF AREAS.
- ALL NEW IRRIGATION ZONES SHALL BE INSTALL IN THE EXISTING LINCOLN PARK IRRIGATION SYSTEM.

THE CONTRACTOR SHALL COORDINATE WITH THE VETERANS AFFAIRS MEDICAL CENTER STAFF AND THE CITY OF GRAND JUNCTION PARKS DEPARTMENTS FOR THE FOLLOWING WORK:

- THE INSTALLATION OF POP-UP HEADS ALONG THE SIDEWALK EDGE TO SPRAY THE NEW TURF.
- ADJUST ALL OF THE EXISTING VAMC HEADS TO SPRAY INTO THE NEW TURF AREAS.
- ALL NEW IRRIGATION ZONES SHALL BE INSTALL IN THE EXISTING VAMC IRRIGATION SYSTEM.



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CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

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Irrigation Consulting
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303-980-5384 (fax)

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Horiz. Scale: Vert. Scale: NA					Revised:	Designer: Hugo Ochoa / Detailer: Ken DiPaolo / Structure Numbers	19365
Unit Information: City of GJ Unit Leader Initials: DPJ				Region 3 RBB	Void:	Sheet Subset: / Subset Sheets: IR-11	Sheet Number 236

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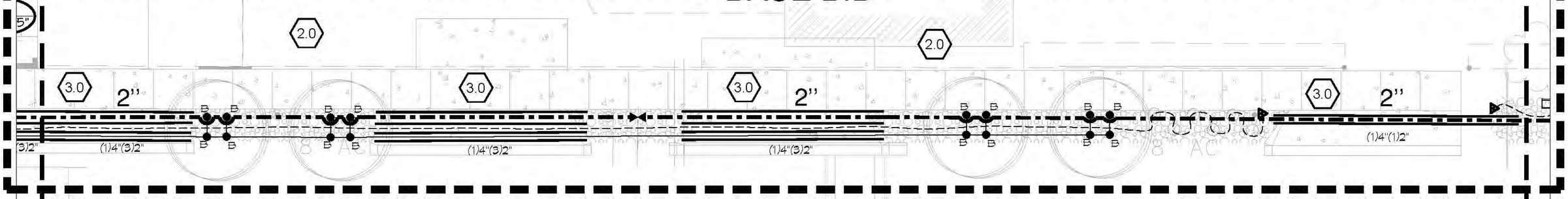
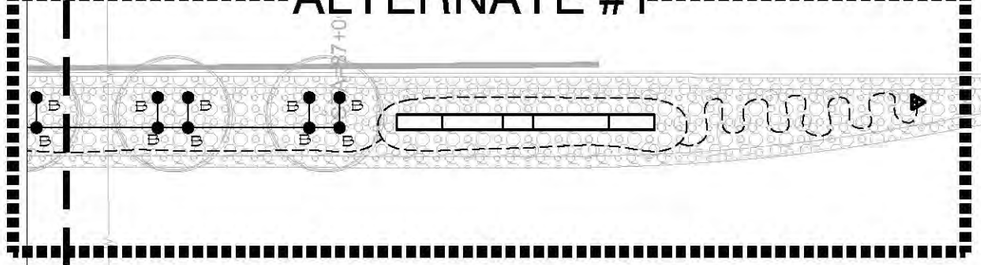
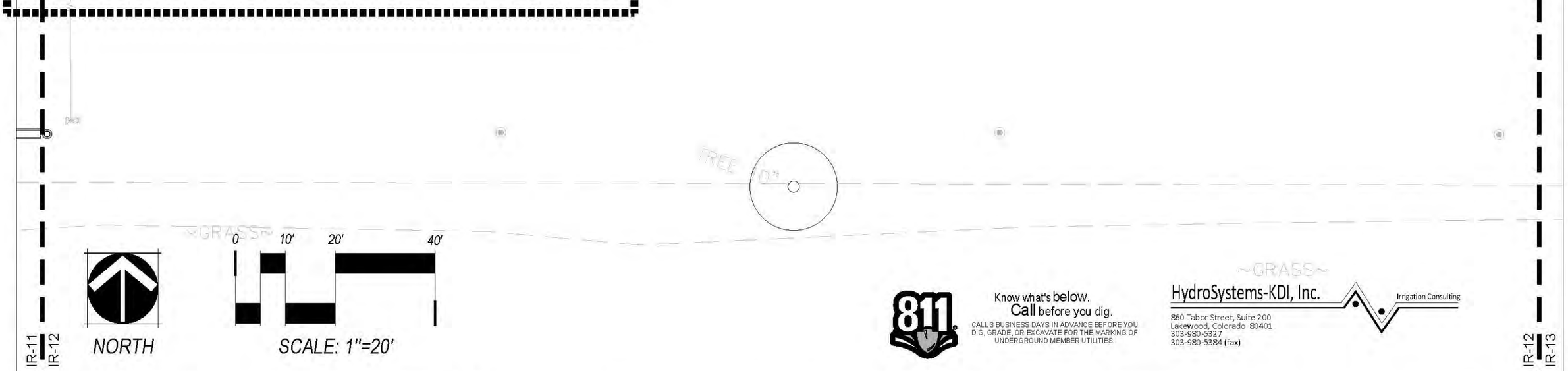
BASE BID



ALTERNATE #1





NORTH

0 10' 20' 40'

SCALE: 1"=20'

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IR-11 IR-12 IR-12 IR-13

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606 South 9th Street
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Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

As Constructed
No Revisions:
Revised:
Void:

Irrigation Plans

Designer: Hugo Ochoa
Detailer: Ken DiPaolo
Sheet Subset:
Structure Numbers
Subset Sheets: IR-12

Project No./Code
TCSP M555-029
19365
Sheet Number 237

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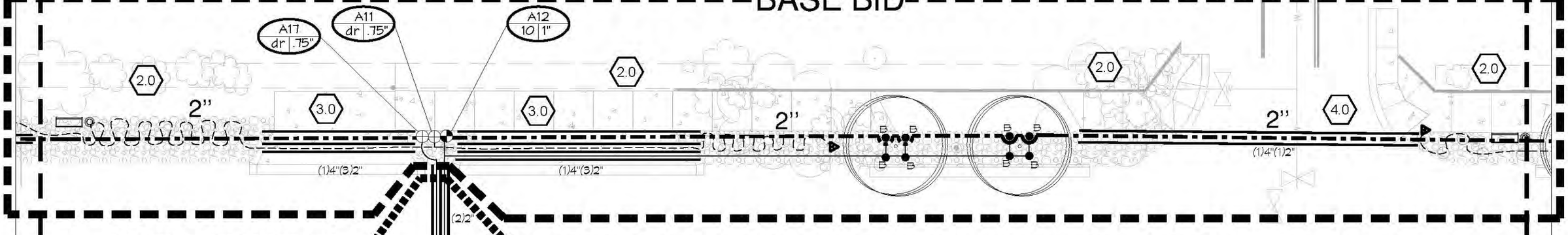
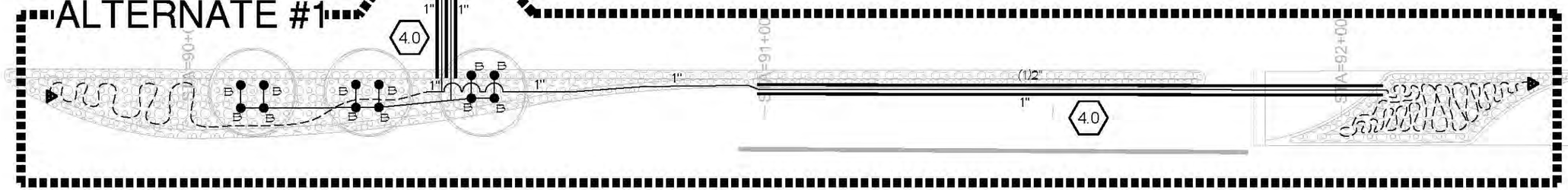
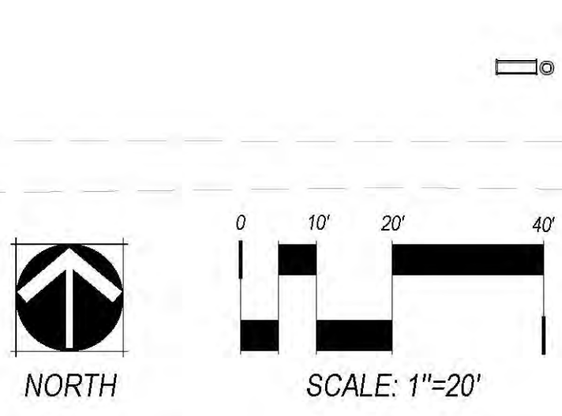
BASE BID



ALTERNATE #1





~GRASS~

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IR-12 IR-13

IR-13 IR-14

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Horiz. Scale: Vert. Scale: NA						Revised:	Designer: Hugo Ochoa	Structure Numbers	19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:	Detailer: Ken DiPaolo		
							Sheet Subset:	Subset Sheets: IR-13	Sheet Number 238

BASE BID

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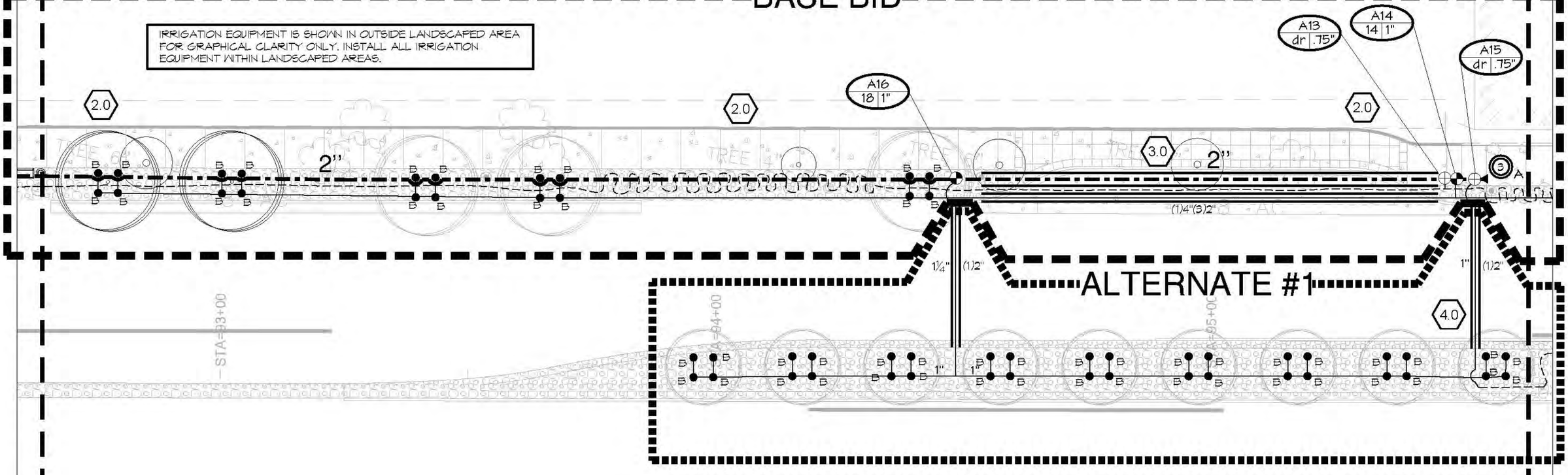

0 10' 20' 40'

NORTH

SCALE: 1"=20'

IR-13 IR-14

IR-14 IR-15

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No Revisions:
Revised:
Void:

Irrigation Plans
Designer: Hugo Ochoa
Detailer: Ken DiPaolo
Sheet Subset:
Structure Numbers
Subset Sheets: IR-14

Project No./Code
TCSP M555-029
19365
Sheet Number 239

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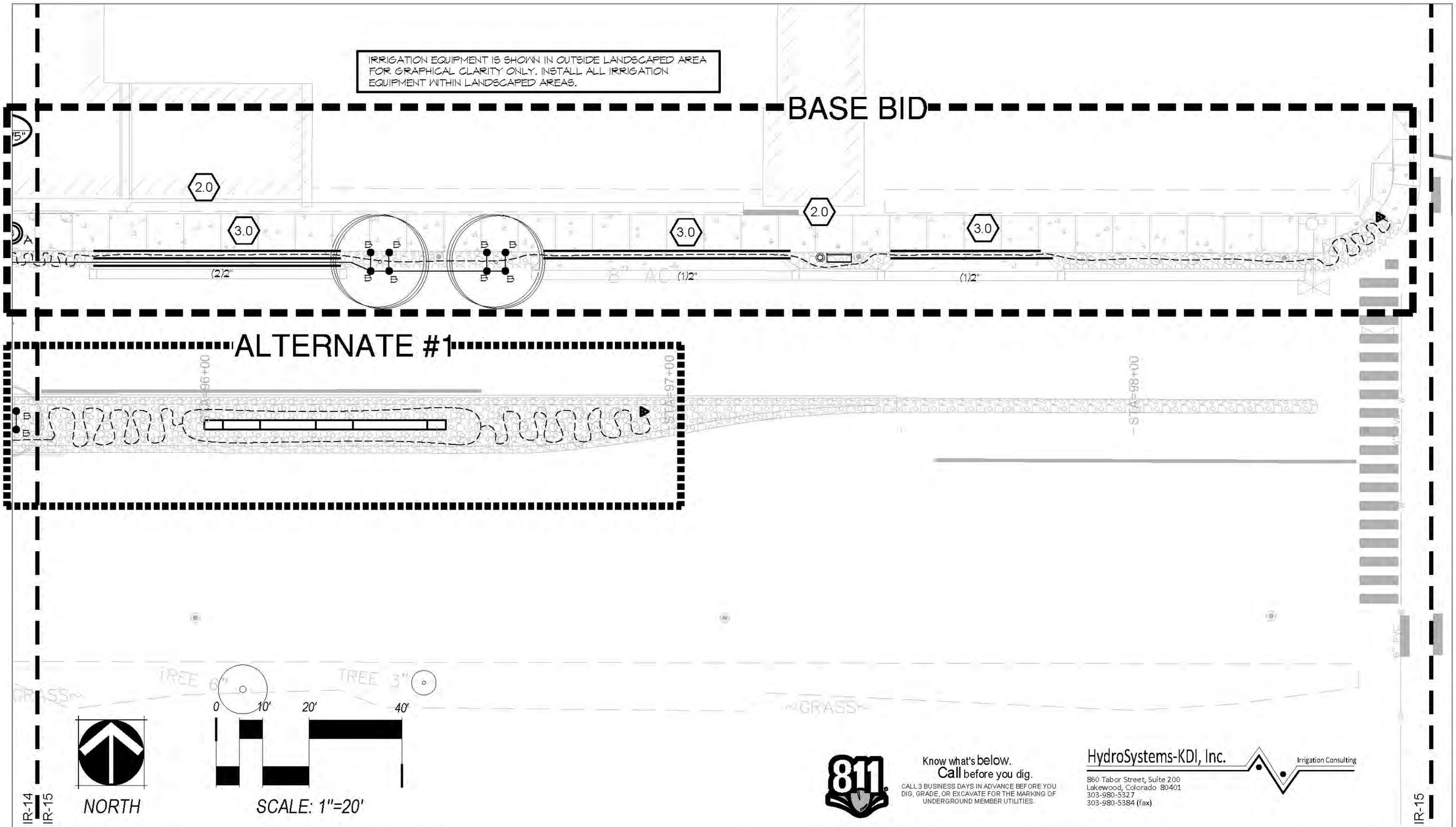
BASE BID

ALTERNATE #1



IR-14 IR-15

IR-15

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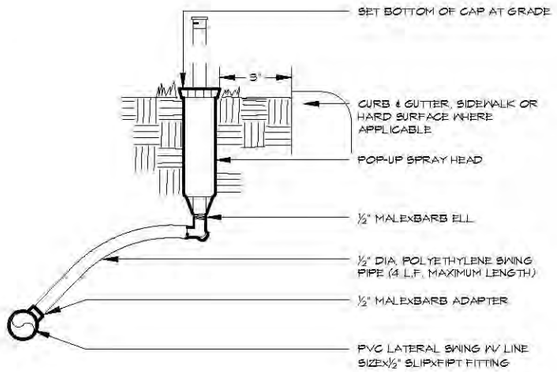
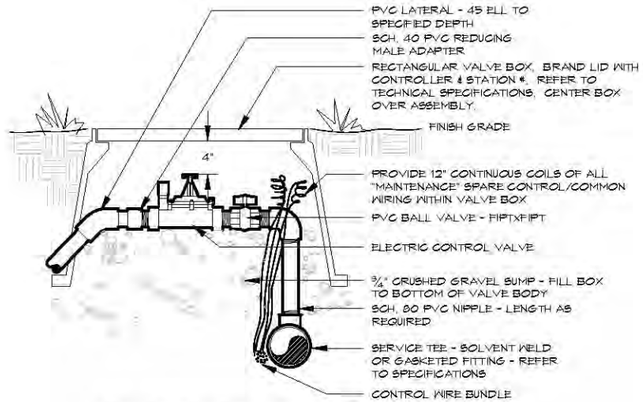
No Revisions:			TCSP M555-029
Revised:	Designer: Hugo Ochoa	Structure Numbers	19365
Void:	Detailer: Ken DiPaolo		Sheet Number 240
	Sheet Subset:	Subset Sheets: IR-15	



NOTE:
- SET HEAD PERPENDICULAR TO FINISH GRADE.
- APPLY TEFLON TAPE TO MALE PVC THREADED FITTINGS.
- DOUBLE CLAMP 1½" & 2" DIAMETER FITTINGS.

POP-UP SPRAY HEAD

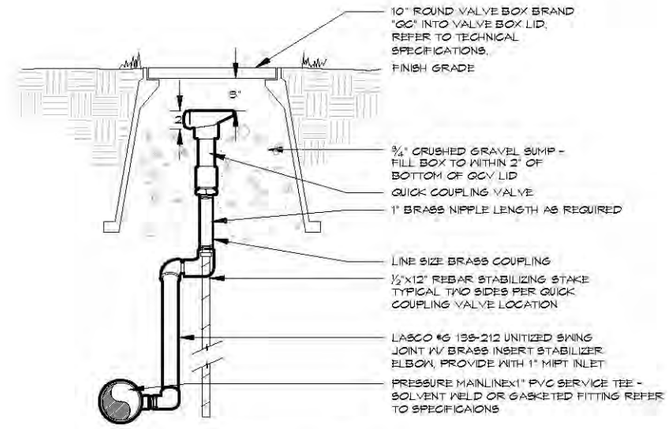
1



NOTE: DIAMETERS OF BALL VALVES, PVC FITTINGS AND NIPPLES SHALL EQUAL ELECTRIC CONTROL VALVE DIAMETER. VALVE BOXES SHALL BE INSTALLED PARALLEL OR PERPENDICULAR TO ADJACENT SIDEWALKS AND HARD SURFACES WHERE APPLICABLE. APPLY TEFLON TAPE TO ALL MALE THREADED FITTINGS AND THREADED NIPPLES.

ELECTRIC CONTROL VALVE

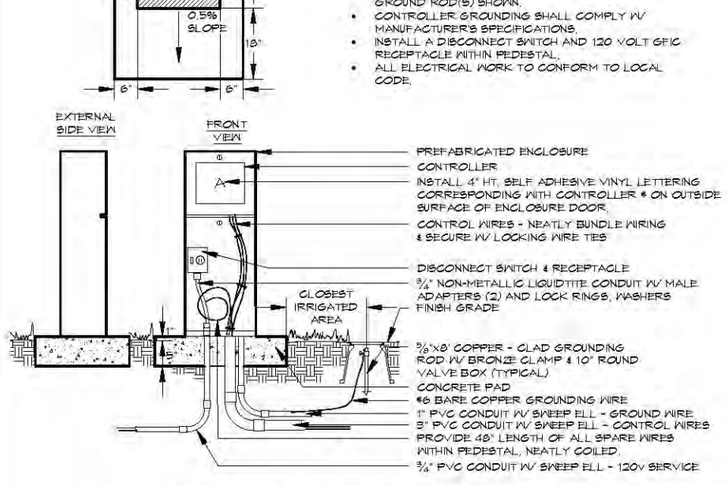
2



APPLY TEFLON TAPE TO ALL THREADED NIPPLES

QUICK COUPLING VALVE

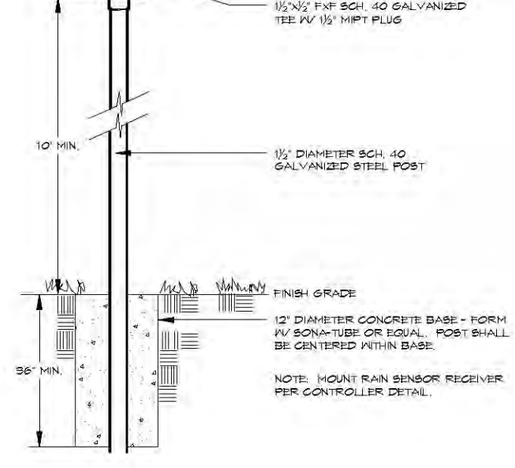
3



NOTES:
- CONTRACTOR TO GROUND AND PROVIDE SURGE PROTECTION FOR CONTROLLER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND GROUND ROD(S) SHOWN.
- CONTROLLER GROUNDING SHALL COMPLY W/ MANUFACTURER'S SPECIFICATIONS.
- INSTALL A DISCONNECT SWITCH AND 120 VOLT GFIC RECEPTACLE WITHIN PEDESTAL.
- ALL ELECTRICAL WORK TO CONFORM TO LOCAL CODE.

CONTROLLER - PEDESTAL

4



RAIN SENSOR

5

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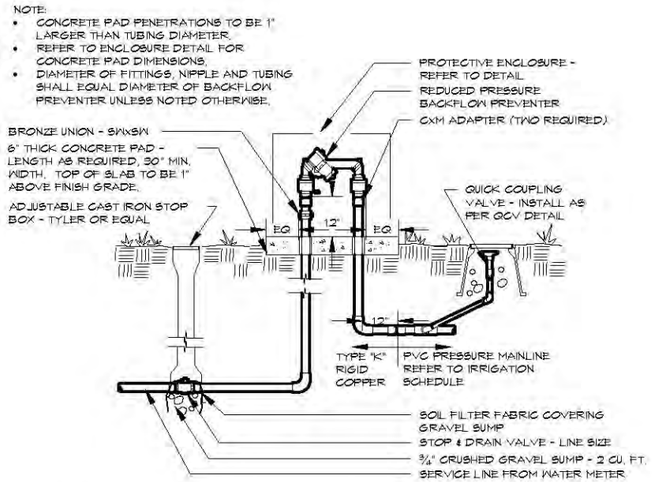
Unit Information: City of GJ Unit Leader Initials: DPJ		Region 3 RBB	Void:

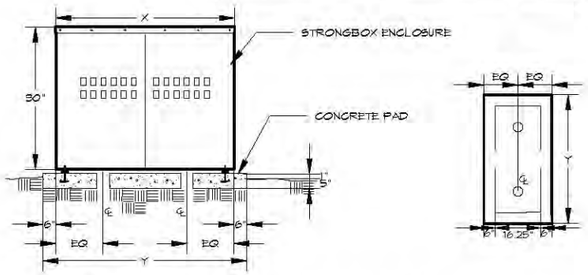
Irrigation Details		Project No./Code
Designer: Hugo Ochoa	Structure Numbers	TCSP M555-029
Detailer: Ken DiPaolo		19365
Sheet Subset:	Subset Sheets: IR-16	Sheet Number 241



BACKFLOW PREVENTER

6

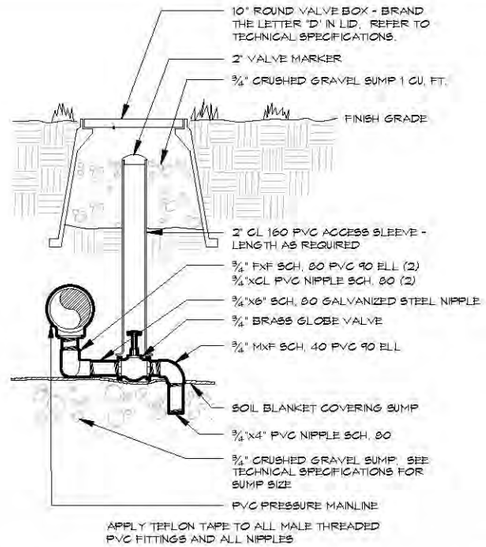
BFP MODEL/SIZE	ENCLOSURE MODEL	X	Y
FEBCO 825Y ¾" & 1"	SBBC-30AL	30"	42"
FEBCO 825Y 1½" & 2"	SBBC-45AL	45"	57"
FEBCO 825YA ¾" & 1"	SBBC-15AL	15"	27"
FEBCO 825YA 1½" & 2"	SBBC-30AL	30"	42"



NOTES:
- PAD PENETRATIONS FOR BACKFLOW PREVENTER RISERS TO BE 1" LARGER THAN RISER DIAMETER.
- TOP SURFACE OF CONCRETE PAD SHALL BE 1" ABOVE FINISH GRADE.
- INSTALL ENCLOSURE ANCHORS AS PER MANUFACTURER'S RECOMMENDATIONS.
- PROVIDE OWNER WITH KEYED PADLOCK FOR ENCLOSURE.

BACKFLOW ENCLOSURE

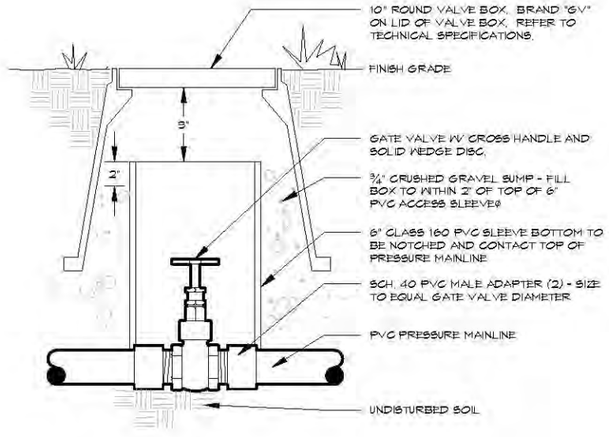
7



APPLY TEFLON TAPE TO ALL MALE THREADED PVC FITTINGS AND ALL NIPPLES

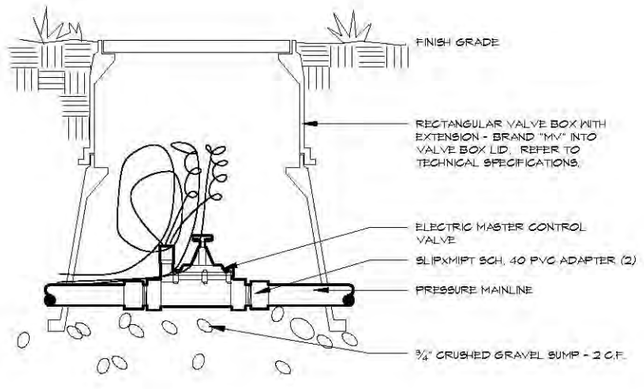
MANUAL DRAIN VALVE

8



GATE VALVE

9



MASTER VALVE

10

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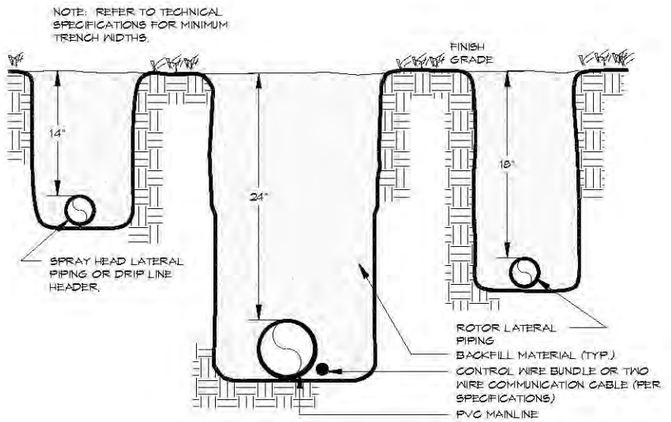
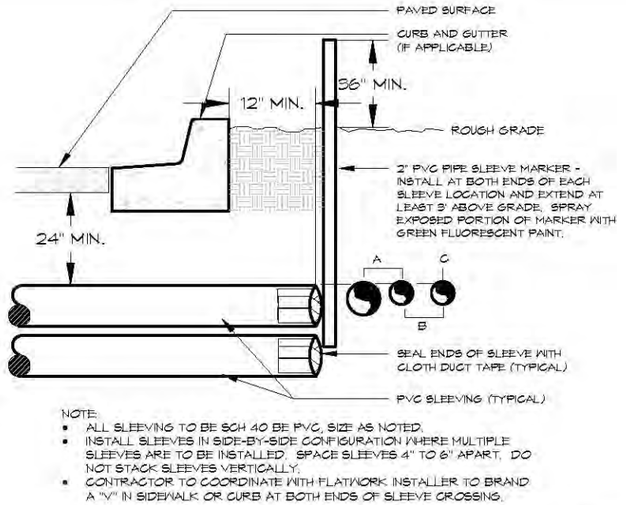
					Region 3 RBB	Void:	Sheet Subset:	Subset Sheets: IR-17	Sheet Number 242



TRENCH

11

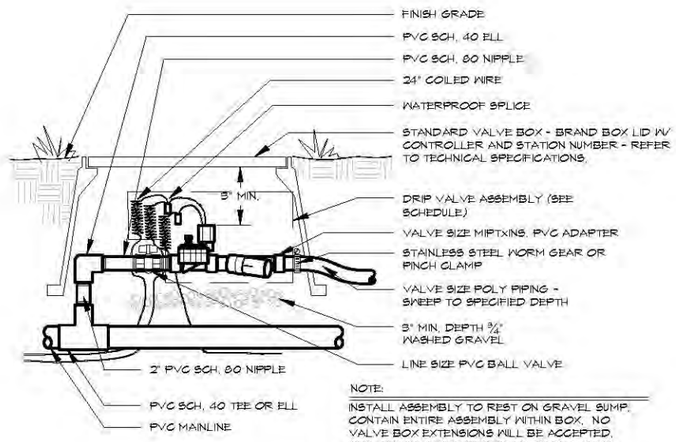


NOTE:

- ALL SLEEVING TO BE SCH 40 BE PVC, SIZE AS NOTED.
- INSTALL SLEEVES IN SIDE-BY-SIDE CONFIGURATION WHERE MULTIPLE SLEEVES ARE TO BE INSTALLED. SPACE SLEEVES 4" TO 6" APART. DO NOT STACK SLEEVES VERTICALLY.
- CONTRACTOR TO COORDINATE WITH FLATWORK INSTALLER TO BRAND A "V" IN SIDEWALK OR CURB AT BOTH ENDS OF SLEEVE CROSSING.

IRRIGATION SLEEVING

12

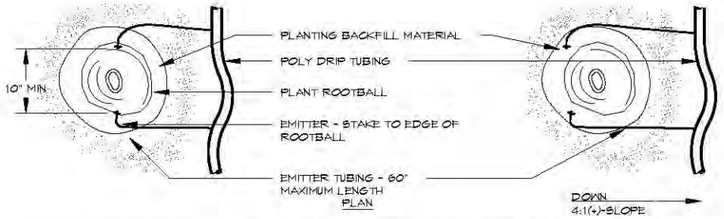


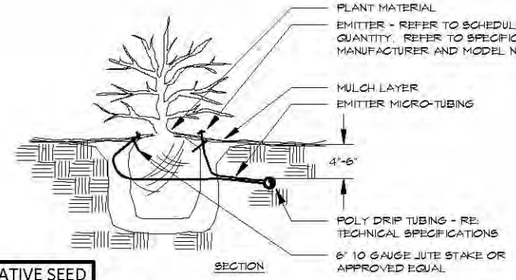
NOTE:

INSTALL ASSEMBLY TO REST ON GRAVEL SUMP. CONTAIN ENTIRE ASSEMBLY WITHIN BOX. NO VALVE BOX EXTENSIONS WILL BE ACCEPTED. PROVIDE 3"-4" CLEARANCE BETWEEN TOP OF CONTROL VALVE SOLENOID AND BOTTOM OF VALVE BOX LID. TOP OF VALVE BOX TO BE FLUSH WITH FINISH GRADE. VALVE BOX SHALL NOT REST ON DRIP TUBING.

DRIP VALVE

14





PLANT SIZE	EMITTER FLOW RATE	EMITTER QTY. AT MULCHED BED LOCATIONS	EMITTER QTY. AT NATIVE SEED LOCATIONS
1 - 2 GALLON MATERIAL	0.5 GPH	ONE EACH	ONE EACH
5 GALLON MATERIAL	0.5 GPH	TWO EACH	TWO EACH
1½" CALIPER TREE	1.0 GPH	THREE EACH	FOUR EACH
2" CALIPER TREE	1.0 GPH	FOUR EACH	SIX EACH
2½" CALIPER TREE	1.0 GPH	SIX EACH	EIGHT EACH
3" CALIPER TREE	1.0 GPH	EIGHT EACH	TEN EACH
3½" CALIPER TREE	1.0 GPH	NINE EACH	ELEVEN EACH
4" CALIPER TREE	1.0 GPH	TEN EACH	TWELVE EACH
6 FT. CONIFEROUS TREE	1.0 GPH	FOUR EACH	SIX EACH
8 FT. CONIFEROUS TREE	1.0 GPH	SIX EACH	NINE EACH
10 FT. CONIFEROUS TREE	1.0 GPH	EIGHT EACH	TWELVE EACH
12 FT. CONIFEROUS TREE	1.0 GPH	TEN EACH	FOURTEEN EACH

NOTES:

- INSTALL EMITTERS ON OPPOSING SIDES OF ROOTBALL. THREE OR MORE EMITTERS SHALL BE EQUALLY SPACED AROUND ROOT BALL.
- EMITTERS ARE TO BE INSTALLED TO CLEAR SURFACE BY A MINIMUM OF 1" AND A MAXIMUM OF 2".
- FLUSH ALL LINES THOROUGHLY, INCLUDING EMITTER MICRO-TUBING PRIOR TO EMITTER INSTALLATION.
- IF PLANTING ON A 4:1 SLOPE OR STEEPER, INSTALL BOTH EMITTERS ON UPHILL SIDE OF ROOT BALL.
- EMITTERS SHALL BE SELF-FLUSHING, PRESSURE COMPENSATING-TYPE UNLESS NOTED OTHERWISE WITHIN TECHNICAL SPECIFICATIONS.
- DRIP VALVE ZONES ARE DESIGNED TO ACCOUNT FOR DIFFERENCES IN PLANT REQUIREMENTS (HYDROZONES) AND SUN EXPOSURE.
- CONTRACTOR SHALL ENSURE HYDROZONES ARE VALVED SEPARATELY AS SHOWN ON PLAN.
- SITE CONDITIONS MAY DICTATE THAT MULTIPLE SUN EXPOSURES ARE VALVED TOGETHER. DURING THE DESIGN PROCESS, CONTRACTOR SHALL ADJUST EMITTER SCHEDULE AS FOLLOWS:
  - EMITTER QUANTITIES SHALL REMAIN THE SAME BUT EMITTER GALLONAGES SHALL BE DOUBLED FOR PLANTS WITH SOUTH AND WEST EXPOSURES.
  - EMITTER QUANTITIES AND GALLONAGE SHALL BE AS SHOWN IN SCHEDULE FOR PLANTS WITH NORTH AND EAST EXPOSURES.
  - PLANTINGS WITH NORTH AND EAST EXPOSURE SHALL DICTATE VALVE RUN-TIMES AND CONTRACTOR SHALL ADJUST SCHEDULING ACCORDINGLY.

DRIP EMITTER

BELOW GRADE

13

811 Know what's below. Call before you dig.
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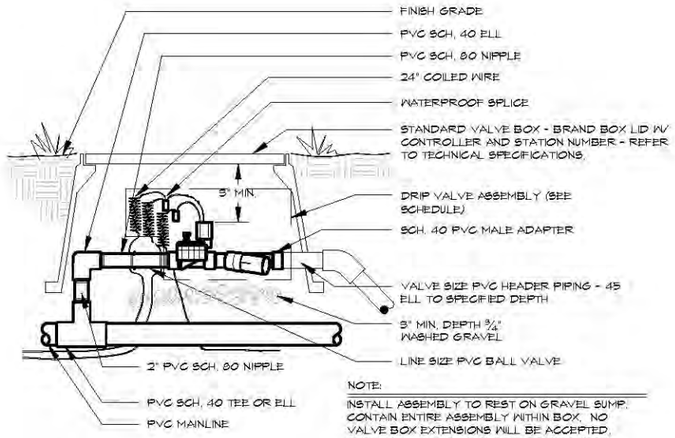
HydroSystems-KDI, Inc. Irrigation Consulting
860 Tabor Street, Suite 200
Lakewood, Colorado 80401
303-980-5327
303-980-5384 (fax)

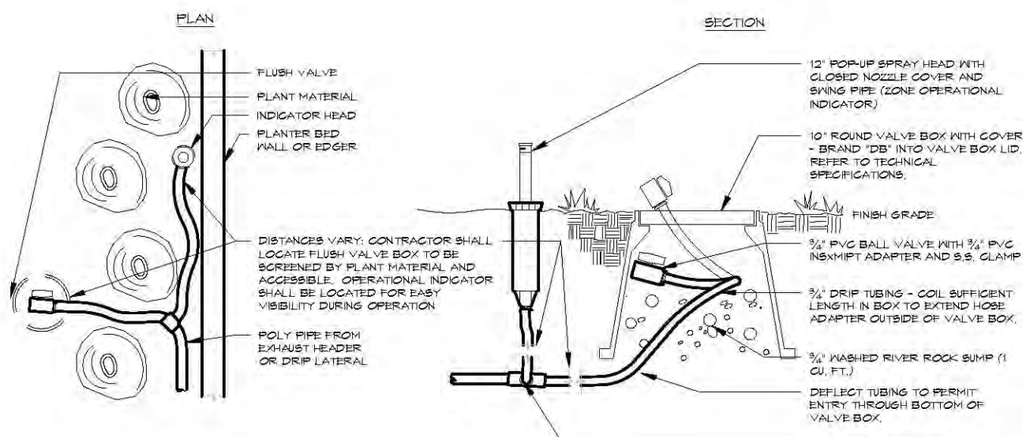
Print Date: August 21, 2015.		Sheet Revisions			Colorado Department of Transportation	As Constructed	Irrigation Details	Project No./Code
File Name: North Avenue		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:		TCSP M555-029
Horiz. Scale: Vert. Scale: NA						Revised:	Designer: Hugo Ochoa / Detailer: Ken DiPaolo	Structure Numbers: 19365
Unit Information: City of GJ Unit Leader Initials: DPJ					Region 3 RBB	Void:	Sheet Subset: / Subset Sheets: IR-18	Sheet Number 243



NOTE:
INSTALL ASSEMBLY TO REST ON GRAVEL SUMP. CONTAIN ENTIRE ASSEMBLY WITHIN BOX. NO VALVE BOX EXTENSIONS WILL BE ACCEPTED. PROVIDE 3"-4" CLEARANCE BETWEEN TOP OF CONTROL VALVE SOLENOID AND BOTTOM OF VALVE BOX LID. TOP OF VALVE BOX TO BE FLUSH WITH FINISH GRADE. VALVE BOX SHALL NOT REST ON DRIP TUBING.

DRIP VALVE

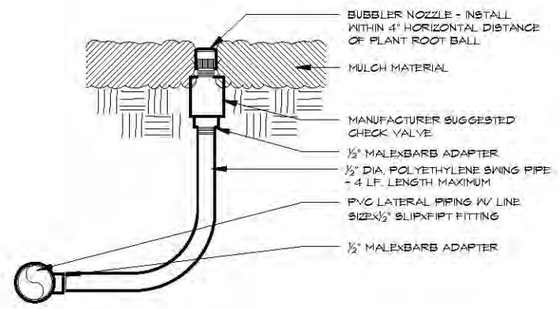
15



DRIP FLUSH VALVE

WITH OPERATIONAL INDICATOR

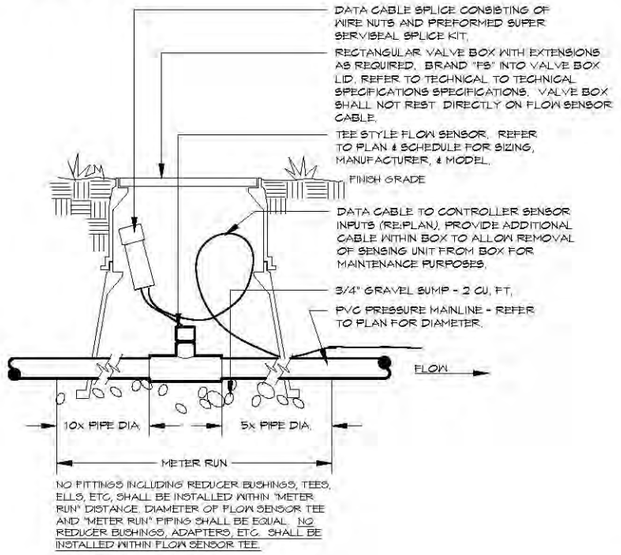
16



NOTE:
- SET BUBBLER(S) ON UPHILL SIDE OF ROOT BALL WHERE TREES PLANTED ON SLOPES EQUAL TO OR GREATER THAN 4 TO 1.
- APPLY TEFLON TAPE TO ALL MIPT FITTINGS

BUBBLER

17



NO FITTINGS INCLUDING REDUCER BUSHINGS, TEES, ELLS, ETC, SHALL BE INSTALLED WITHIN "METER RUN" DISTANCE. DIAMETER OF FLOW SENSOR TEE AND "METER RUN" PIPING SHALL BE EQUAL. NO REDUCER BUSHINGS, ADAPTERS, ETC. SHALL BE INSTALLED WITHIN FLOW SENSOR TEE.

FLOW SENSOR

18

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Horiz. Scale: Vert. Scale: NA					Revised:	Detailer: Ken DiPaolo / Structure Numbers	19365
Unit Information: City of GJ Unit Leader Initials: DPJ				Region 3 RBB	Void:	Sheet Subset: / Subset Sheets: IR-19	Sheet Number 244

IRRIGATION SCHEDULE - BASE BID

ITEM #	SYMBOL	DESCRIPTION	DETAIL #	MFG	UNIT	TOTAL	AS CONSTRUCTED
619-40120	———	1-1/2 INCH COPPER PIPE, TYPE "K"	6	CERRO	LF	40	
619-50080	———	1 INCH PLASTIC PIPE, SCH40 PVC LATERAL PIPE	11	EAGLE	LF	3,080	
619-50100	———	1-1/4 INCH PLASTIC PIPE, SCH40 PVC LATERAL PIPE	11	EAGLE	LF	10	
619-50160	—·—·—	2 INCH PLASTIC PIPE, SC40 PVC MAINLINE PIPE	11	EAGLE	LF	3,100	
619-50160	═══	2 INCH PLASTIC PIPE, SCH40 PVC SLEEVE	12	EAGLE	LF	2,560	
623-00156	●B	IRRIGATION BUBBLER (RAIN BIRD 1402 WITH SWING PIPE AND FITTINGS)	17	RAIN BIRD	EA	216	
623-00162	- - - - -	DRIP EMITTER TUBING, 3/4 INCH NSF80# POLY DRIP	13 & 16	EAGLE	LF	2,440	
623-00164	N/S	DRIP EMITTER	13	RAIN BIRD	EA	400	
623-00166	⊕	3/4 INCH EMITTER VALVE ASSEMBLY, XCZ-075-PRF W/ BALL VALVE	14 & 15	RAIN BIRD	EA	14	
623-00602	═══	2 INCH PLASTIC PIPE (IRRIGATION/SLEEVE), SCH40 "BORE-IN"	12	EAGLE	LF	830	
623-00604	═══	4 INCH PLASTIC PIPE (IRRIGATION/SLEEVE), SCH40 "BORE-IN"	12	EAGLE	LF	590	
623-01712	⧄⧄	1-1/2 INCH BACKFLOW PREVENTER, 825YA W/ SBBC-45AL ENCLOSURE	6 & 7	FEBCO / SRONGBOX	EA	1	
623-02006	N/S	3/4 INCH DRAIN VALVE	9	MATCO	EA	3	
623-03108	◕	1 INCH AUTOMATIC CONTROL VALVE, PEB SERIES	2	RAIN BIRD	EA	14	
623-03116	⊙	1-1/2 INCH AUTOMATIC CONTROL VALVE, MASTER CONTROL	10	RAIN BIRD	EA	1	
623-04000	N/S	CONTROL WIRE 24 VOLT, 14 GAUGE	11	PAIGE WIRE	LF	15,000	
623-04000	N/S	COMMON WIRE 24 VOLT, 12 GAUGE	11	PAIGE WIRE	LF	5,000	
623-04002	N/S	POWER SOURCE WIRE	N/S		LF	20	
623-04008	▼	1 INCH QUICK-COUPLER VALVE, 44LRC	3	RAIN BIRD	EA	3	
623-05016	⋈	2 INCH GATE VALVE	9	MATCO	EA	4	
623-06900	N/S	VALVE BOX STANDARD - 1419-12-4 CARSON W/ LID & LOCKING BOLTS	9	CARSON IND.	EA	16	
623-06900	N/S	VALVE BOX 10" ROUND - 910-10-4 CARSON W/ LID & LOCKING BOLTS	3, 4, 8, 9 & 16	CARSON IND.	EA	23	
623-06901	N/S	VALVE BOX (SPECIAL) JUMBO - 1730-15-3L CARSON W/ LID & LOCKING BOLTS	15	CARSON IND.	EA	14	
623-07510	◈R	RAIN/FREEZE SHUT-OFF DEVICE, WIRELESS SENSOR ON A POLE	5	RAIN BIRD	EA	1	
623-07600	(FS)	1-1/2 INCH FLOW SENSOR	18	RAIN BIRD	EA	1	
623-08432	⬡	40 STATION SATELLITE CONTROLLER W/ STAINLESS STEEL PEDESTAL PER GJ PIPE	4	RAIN BIRD	EA	1	
623-xxxxx	N/S	1/4" DISTRIBUTION PIPE (SPAGETTI)	13	EAGLE	LF	1,000	
623-xxxxx	▶	DRIP LINE BLOW-OUT AND OPERATIONAL INDICATOR - WITHOUT 10" BOX	16		EA	12	

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Horiz. Scale: Vert. Scale: NA
Unit Information: City of GJ Unit Leader Initials: DPJ

Sheet Revisions

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Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

As Constructed
No Revisions:
Revised:
Void:

Irrigation Tabulation - Base

Designer: Hugo Ochoa
Detailer: Ken DiPaolo
Sheet Subset:
Structure Numbers
Subset Sheets: IR-20

Project No./Code

Sheet Number 245

IRRIGATION SCHEDULE - ALTERNATE #1

ITEM #	SYMBOL	DESCRIPTION	DETAIL #	MFG	UNIT	TOTAL	AS CONSTRUCTED
619-40120		1-1/2 INCH COPPER PIPE, TYPE "K"	6	CERRO	LF	0	
619-50080		1 INCH PLASTIC PIPE, SCH40 PVC LATERAL PIPE	11	EAGLE	LF	2,000	
619-50100		1-1/4 INCH PLASTIC PIPE, SCH40 PVC LATERAL PIPE	11	EAGLE	LF	120	
619-50160		2 INCH PLASTIC PIPE, SCH40 PVC MAINLINE PIPE	11	EAGLE	LF	0	
619-50160		2 INCH PLASTIC PIPE, SCH40 PVC SLEEVE	12	EAGLE	LF	0	
623-00156	●B	IRRIGATION BUBBLER (RAIN BIRD 1402 WITH SWING PIPE AND FITTINGS)	17	RAIN BIRD	EA	168	
623-00162		DRIP EMITTER TUBING, 3/4 INCH NSF80# POLY DRIP	13 & 16	EAGLE	LF	1,420	
623-00164	N/S	DRIP EMITTER	13	RAIN BIRD	EA	300	
623-00166	⊕	3/4 INCH EMITTER VALVE ASSEMBLY, XCZ-075-PRF W/ BALL VALVE	14 & 15	RAIN BIRD	EA	0	
623-00602		2 INCH PLASTIC PIPE (IRRIGATION/SLEEVE), SCH40 "BORE-IN"	12	EAGLE	LF	1,220	
623-00604		4 INCH PLASTIC PIPE (IRRIGATION/SLEEVE), SCH40 "BORE-IN"	12	EAGLE	LF	580	
623-01712		1-1/2 INCH BACKFLOW PREVENTER, 825YA W/ SBBC-45AL ENCLOSURE	6 & 7	FEBCO / SRONGBOX	EA	0	
623-02006	N/S	3/4 INCH DRAIN VALVE	9	MATCO	EA	0	
623-03108		1 INCH AUTOMATIC CONTROL VALVE, PEB SERIES	2	RAIN BIRD	EA	0	
623-03116		1-1/2 INCH AUTOMATIC CONTROL VALVE, MASTER CONTROL	10	RAIN BIRD	EA	0	
623-04000	N/S	CONTROL WIRE 24 VOLT, 14 GAUGE	11	PAIGE WIRE	LF	0	
623-04000	N/S	COMMON WIRE 24 VOLT, 12 GAUGE	11	PAIGE WIRE	LF	0	
623-04002	N/S	POWER SOURCE WIRE	N/S		LF	0	
623-04008	▼	1 INCH QUICK-COUPLER VALVE, 44LRC	3	RAIN BIRD	EA	0	
623-05016		2 INCH GATE VALVE	9	MATCO	EA	0	
623-06900	N/S	VALVE BOX STANDARD - 1419-12-4 CARSON W/ LID & LOCKING BOLTS	9	CARSON IND.	EA	0	
623-06900	N/S	VALVE BOX 10" ROUND - 910-10-4 CARSON W/ LID & LOCKING BOLTS	3, 4, 8, 9 & 16	CARSON IND.	EA	11	
623-06901	N/S	VALVE BOX (SPECIAL) JUMBO - 1730-15-3L CARSON W/ LID & LOCKING BOLTS	15	CARSON IND.	EA	0	
623-07510	◈R	RAIN/FREEZE SHUT-OFF DEVICE, WIRELESS SENSOR ON A POLE	5	RAIN BIRD	EA	0	
623-07600	FS	1-1/2 INCH FLOW SENSOR	18	RAIN BIRD	EA	0	
623-08432	⬡	40 STATION SATELLITE CONTROLLER W/ STAINLESS STEEL PEDESTAL PER GJ PIPE	4	RAIN BIRD	EA	0	
623-xxxxx	N/S	1/4" DISTRIBUTION PIPE (SPAGETTI)	13	EAGLE	LF	500	
623-xxxxx	▶	DRIP LINE BLOW-OUT AND OPERATIONAL INDICATOR - WITHOUT 10" BOX	16		EA	14	

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Sheet Revisions

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Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

As Constructed
No Revisions:
Revised:
Void:

Irrigation Tabulation - Alt #1
Designer: Hugo Ochoa
Detailer: Ken DiPaolo
Sheet Subset:
Structure Numbers
Subset Sheets: IR-21

Project No./Code

Sheet Number 246

IRRIGATION SCHEDULE - ALTERNATE #2*

ITEM #	SYMBOL	DESCRIPTION	DETAIL #	MFG	UNIT	TOTAL	AS CONSTRUCTED
619-40120		1-1/2 INCH COPPER PIPE, TYPE "K"	6	CERRO	LF		
619-50080		1 INCH PLASTIC PIPE, SCH40 PVC LATERAL PIPE	11	EAGLE	LF		
619-50100		1-1/4 INCH PLASTIC PIPE, SCH40 PVC LATERAL PIPE	11	EAGLE	LF		
619-50160		2 INCH PLASTIC PIPE, SCH40 PVC MAINLINE PIPE	11	EAGLE	LF		
619-50160		2 INCH PLASTIC PIPE, SCH40 PVC SLEEVE	12	EAGLE	LF		
623-00156	●B	IRRIGATION BUBBLER (RAIN BIRD 1402 WITH SWING PIPE AND FITTINGS)	17	RAIN BIRD	EA		
623-00162		DRIP EMITTER TUBING, 3/4 INCH NSF80# POLY DRIP	13 & 16	EAGLE	LF		
623-00164	N/S	DRIP EMITTER	13	RAIN BIRD	EA		
623-00166	⊕	3/4 INCH EMITTER VALVE ASSEMBLY, XCZ-075-PRF W/ BALL VALVE	14 & 15	RAIN BIRD	EA		
623-00602		2 INCH PLASTIC PIPE (IRRIGATION/SLEEVE), SCH40 "BORE-IN"	12	EAGLE	LF		
623-00604		4 INCH PLASTIC PIPE (IRRIGATION/SLEEVE), SCH40 "BORE-IN"	12	EAGLE	LF		
623-01712		1-1/2 INCH BACKFLOW PREVENTER, 825YA W/ SBBC-45AL ENCLOSURE	6 & 7	FEBCO / SRONGBOX	EA		
623-02006	N/S	3/4 INCH DRAIN VALVE	9	MATCO	EA		
623-03108		1 INCH AUTOMATIC CONTROL VALVE, PEB SERIES	2	RAIN BIRD	EA		
623-03116		1-1/2 INCH AUTOMATIC CONTROL VALVE, MASTER CONTROL	10	RAIN BIRD	EA		
623-04000	N/S	CONTROL WIRE 24 VOLT, 14 GAUGE	11	PAIGE WIRE	LF		
623-04000	N/S	COMMON WIRE 24 VOLT, 12 GAUGE	11	PAIGE WIRE	LF		
623-04002	N/S	POWER SOURCE WIRE	N/S		LF		
623-04008	▼	1 INCH QUICK-COUPLER VALVE, 44LRC	3	RAIN BIRD	EA		
623-05016		2 INCH GATE VALVE	9	MATCO	EA		
623-06900	N/S	VALVE BOX STANDARD - 1419-12-4 CARSON W/ LID & LOCKING BOLTS	9	CARSON IND.	EA		
623-06900	N/S	VALVE BOX 10" ROUND - 910-10-4 CARSON W/ LID & LOCKING BOLTS	3, 4, 8, 9 & 16	CARSON IND.	EA		
623-06901	N/S	VALVE BOX (SPECIAL) JUMBO - 1730-15-3L CARSON W/ LID & LOCKING BOLTS	15	CARSON IND.	EA		
623-07510	⟨R⟩	RAIN/FREEZE SHUT-OFF DEVICE, WIRELESS SENSOR ON A POLE	5	RAIN BIRD	EA		
623-07600	(FS)	1-1/2 INCH FLOW SENSOR	18	RAIN BIRD	EA		
623-08432	⬡	40 STATION SATELLITE CONTROLLER W/ STAINLESS STEEL PEDESTAL PER GJ PIPE	4	RAIN BIRD	EA		
623-xxxxx	N/S	1/4" DISTRIBUTION PIPE (SPAGETTI)	13	EAGLE	LF		
623-xxxxx	▶	DRIP LINE BLOW-OUT AND OPERATIONAL INDICATOR - WITHOUT 10" BOX	16		EA		

*ALTERNATE #2 ARE ONLY FIELD ADJUSTMENTS TO THE GOLF, COURSE THEREFORE TOTALS ARE TO BE FILLED BY THE CONTRACTOR OR THE GOLF COURSE STAFF.

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Horiz. Scale: Vert. Scale: NA
Unit Information: City of GJ Unit Leader Initials: DPJ

Sheet Revisions

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Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

As Constructed
No Revisions:
Revised:
Void:

Irrigation Tabulation - Alt #2

Designer: Hugo Ochoa
Detailer: Ken DiPaolo
Sheet Subset:
Structure Numbers
Subset Sheets: IR-22

Project No./Code

Sheet Number 247

concrete parking lot

GRAPHIC SCALE 10 0 5 10 20

CP /PK MCDONALDS/
N 39519.2220
E 94916.18
EL 4619.47

EXISTING PEDESTRIAN LIGHT

PROPOSED PEDESTRIAN LIGHT

MH LOCATED
NO GIS
NO MEASURE
DOWNS

D4-271-004
RIM: 4618.00
NO MEASURE
DOWNS

SM /2"ALC GJ 27.02/
N 39427.6520
E 94789.99
EL 4618.21

BM /USGS 3"BC/
N 39409.7210
E 94755.90
EL 4617.54

CP /PK ARBYS/
N 39425.1810
E 94651.75
EL 4617.82

PIN /1.5" RPC LS24943/

landscape
asphalt
WALK
MONO DRIVE
MONO C,G,&SW
grass
wall
Lincoln Park Track
football field
(ABANDON)
(ABANDON TILE LINE)
2.5'C&G
35 MPH
2" PLA

12" PVC
18" RCP
15" VCP STM
15" STM
14" CI
14" STL
8"VCP SAN
12" STM

60+00
61+00
62

MATCH LINE STA 62+00

N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\conduit plan.dwg, 12/2/2015 8:07:50 AM

Print Date: AT LEFT	Sheet Revisions		
File Name: AT LEFT	Date:	Comments	Init.
Horiz. Scale: 1:20 Vert. Scale: NA			
Unit Information: City of GJ Unit Leader Initials: DPJ			

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Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

As Constructed
No Revisions:
Revised:
Void:

Conduit Plan

Designer: John Smith
Detailer: John Smith
Sheet Subset: Conduit
Structure Numbers
Subset Sheets: 1 of 14

Project No./Code
TCSP M555-029
19365
Sheet Number 248

1 EA - 2 Inch Electrical Conduit (Pedestrian Lighting) AND 2 EA - Conduit (4 inch) (Broadband Infrastructure)

PROPOSED PEDESTRIAN LIGHT (TYPICAL)

PULL BOX (BROADBAND INFRASTRUCTURE) (TYPICAL)

EDGE OF JOINT TRENCH (TYPICAL)

PULL BOX (PED LIGHT CIRCUIT) (TYPICAL)

1 EA - 2 Inch Electrical Conduit (Pedestrian Lighting), 2 EA - Conduit (2 inch) (Irrigation)

1 EA - 2 Inch Electrical Conduit (Pedestrian Lighting), 1 EA - Conduit (2 inch) (extra irrigation), 2 EA - Conduit (2 inch) (Irrigation), and 2 EA - Conduit (4 inch) (Broadband Infrastructure)

PROPOSED PEDESTRIAN LIGHT (TYPICAL)

Add Alternate 2

PULL BOX (TRAFFIC INFRASTRUCTURE) (TYPICAL)

PULL BOX (PED LIGHT CIRCUIT) (TYPICAL)

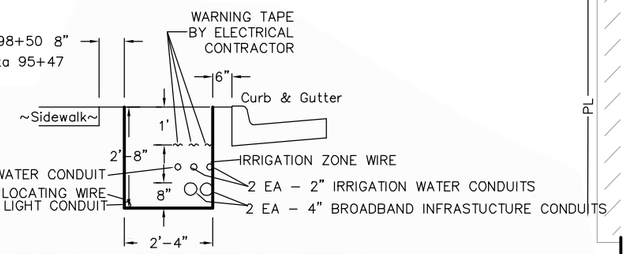
EDGE OF JOINT TRENCH (TYPICAL)

1 EA - 2 Inch Electrical Conduit (Pedestrian Lighting), 1 EA - Conduit (2 inch) (traffic Infrastructure)

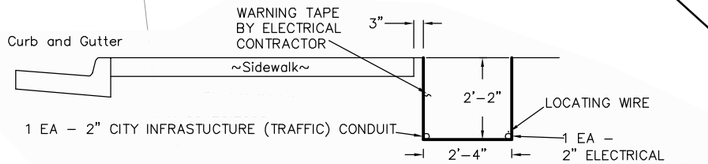
MATCH LINE STA 62+00

MATCH LINE STA 65+00

Sta 95+47 to Sta 98+50 8"
3'-8" Sta 62+00 to Sta 95+47



TYPICAL JOINT TRENCH DETAIL FOR THE NORTH SIDE OF NORTH AVE



TYPICAL JOINT TRENCH DETAIL FOR THE SOUTH SIDE OF NORTH AVE ADJACENT TO BACK OF WALK

GRAPHIC SCALE 10 0 5 10 20

N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\conduit plan.dwg, 12/2/2015 8:07:11 AM

Print Date: AT LEFT	Sheet Revisions			Colorado Department of Transportation	As Constructed
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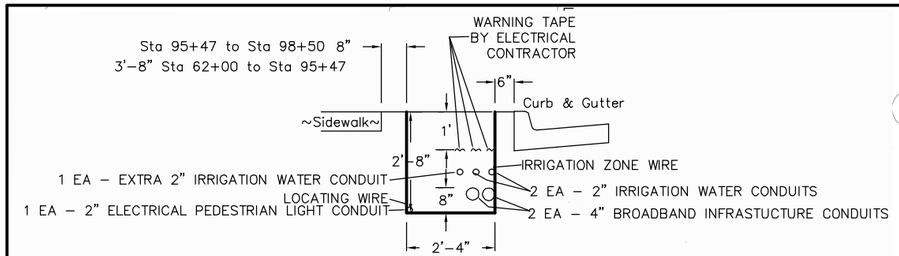
Horiz. Scale: 1:20 Vert. Scale: NA				Phone: 970-683-6351 FAX: 970-683-6369	Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ				Region 3 RBB	Void:

Conduit Plan			Project No./Code
Designer: John Smith	Structure Numbers		TCSP M555-029
Detailer: John Smith			19365
Sheet Subset: Conduit	Subset Sheets:	2 of 14	Sheet Number 249



TYPICAL JOINT TRENCH DETAIL FOR THE NORTH SIDE OF NORTH AVE

1 EA - 2 Inch Electrical Conduit (Pedestrian Lighting), 1 EA - Conduit (2 inch) (extra irrigation), 2 EA - Conduit (2 inch) (Irrigation), and 2 EA - Conduit (4 inch) (Broadband Infrastructure)

EDGE OF JOINT TRENCH (TYPICAL)

PROPOSED PEDESTRIAN LIGHT (TYPICAL)

PULL BOX (PED LIGHT CIRCUIT) (TYPICAL)

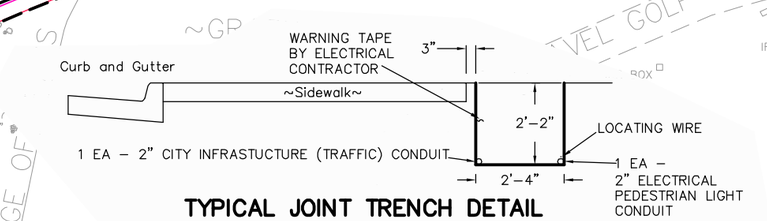
PULL BOX (BROADBAND INFRASTRUCTURE) (TYPICAL)

1 EA - 2 Inch Electrical Conduit (Pedestrian Lighting), 1 EA - Conduit (2 inch) (traffic Infrastructure)

PROPOSED PEDESTRIAN LIGHT (TYPICAL)

PULL BOX (PED LIGHT CIRCUIT) (TYPICAL)

EDGE OF JOINT TRENCH (TYPICAL)



TYPICAL JOINT TRENCH DETAIL FOR THE SOUTH SIDE OF NORTH AVE ADJACENT TO BACK OF WALK

GRAPHIC SCALE 10 0 5 10 20

MATCH LINE STA 65+00

MATCH LINE STA 68+00

CP /PK JOHNSONS/ N 39503.1740 E 95511.31 EL 4619.78

CSM /PIN IN CNC/ N 39462.1880 E 95364.79 EL 4620.29

CSM /NO4 RB/ N 39462.0580 E 95556.41 EL 4620.24

CP /PK/ N 39422.1890 E 95368.76 EL 4619.82

E1271044 RIM: 4619.36 INVin: 4615.2 (E) (GIS) INVout: 4615.2 (W) (GIS)

Add Alternate 2

N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\conduit plan.dwg, 12/2/2015 8:06:48 AM

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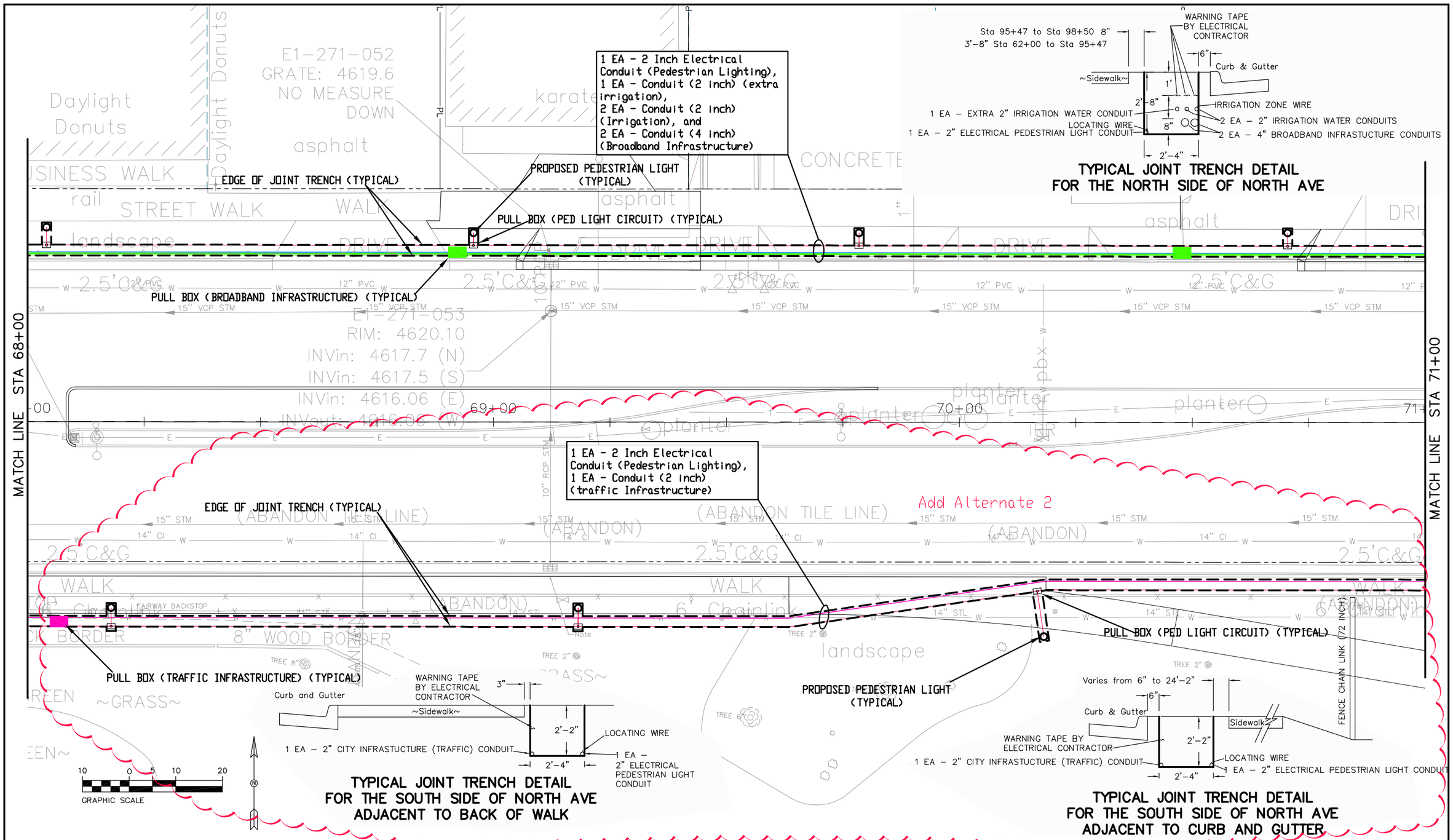
Horiz. Scale: 1:20 Vert. Scale: NA					Grand Junction, CO, 81501	Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369	Void:
					Region 3 RBB	

Conduit Plan		Project No./Code
Designer: John Smith	Structure Numbers	TCSP M555-029
Detailer: John Smith		19365
Sheet Subset: Conduit	Subset Sheets: 3 of 14	Sheet Number 250



TYPICAL JOINT TRENCH DETAIL FOR THE NORTH SIDE OF NORTH AVE

TYPICAL JOINT TRENCH DETAIL FOR THE SOUTH SIDE OF NORTH AVE ADJACENT TO BACK OF WALK

TYPICAL JOINT TRENCH DETAIL FOR THE SOUTH SIDE OF NORTH AVE ADJACENT TO CURB AND GUTTER

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Horiz. Scale: 1:20 Vert. Scale: NA					
Unit Information: City of GJ Unit Leader Initials: DPJ					

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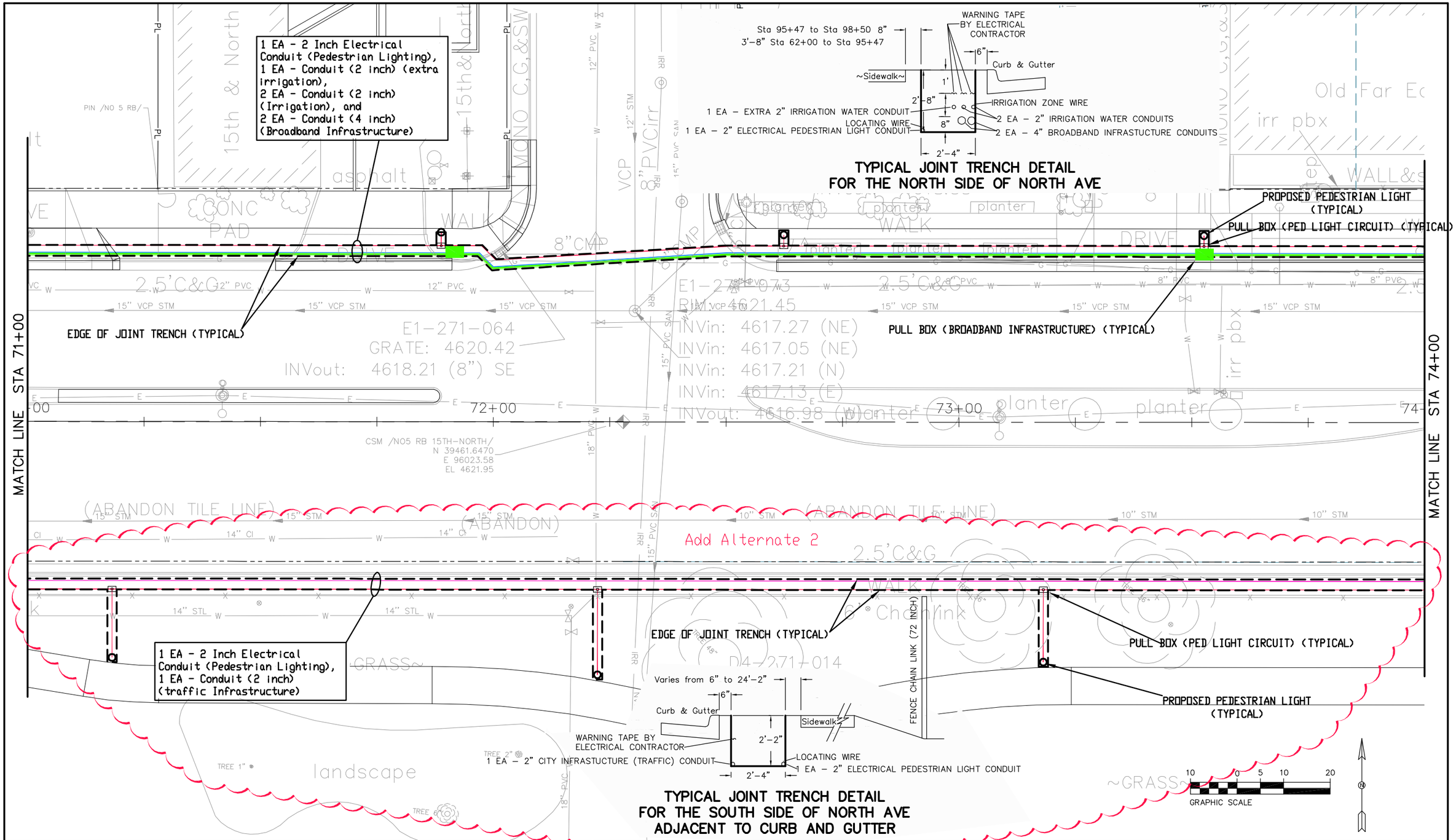
Region 3 RBB

As Constructed	Conduit Plan		Project No./Code
No Revisions:	Designer: John Smith	Structure Numbers	TCSP M555-029
Revised:	Detailer: John Smith		19365
Void:	Sheet Subset: Conduit	Subset Sheets: 4 of 14	Sheet Number 251



Sta 95+47 to Sta 98+50 8"
3'-8" Sta 62+00 to Sta 95+47

TYPICAL JOINT TRENCH DETAIL FOR THE NORTH SIDE OF NORTH AVE

TYPICAL JOINT TRENCH DETAIL FOR THE SOUTH SIDE OF NORTH AVE ADJACENT TO CURB AND GUTTER

Print Date: AT LEFT	Sheet Revisions		
File Name: AT LEFT	Date:	Comments	Init.
Horiz. Scale: 1:20 Vert. Scale: NA			
Unit Information: City of GJ Unit Leader Initials: DPJ			

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Region 3 RBB

As Constructed
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Revised:
Void:

Conduit Plan

Designer: John Smith
Detailer: John Smith
Sheet Subset: Conduit
Structure Numbers
Subset Sheets: 5 of 14

Project No./Code
TCSP M555-029
19365
Sheet Number 252

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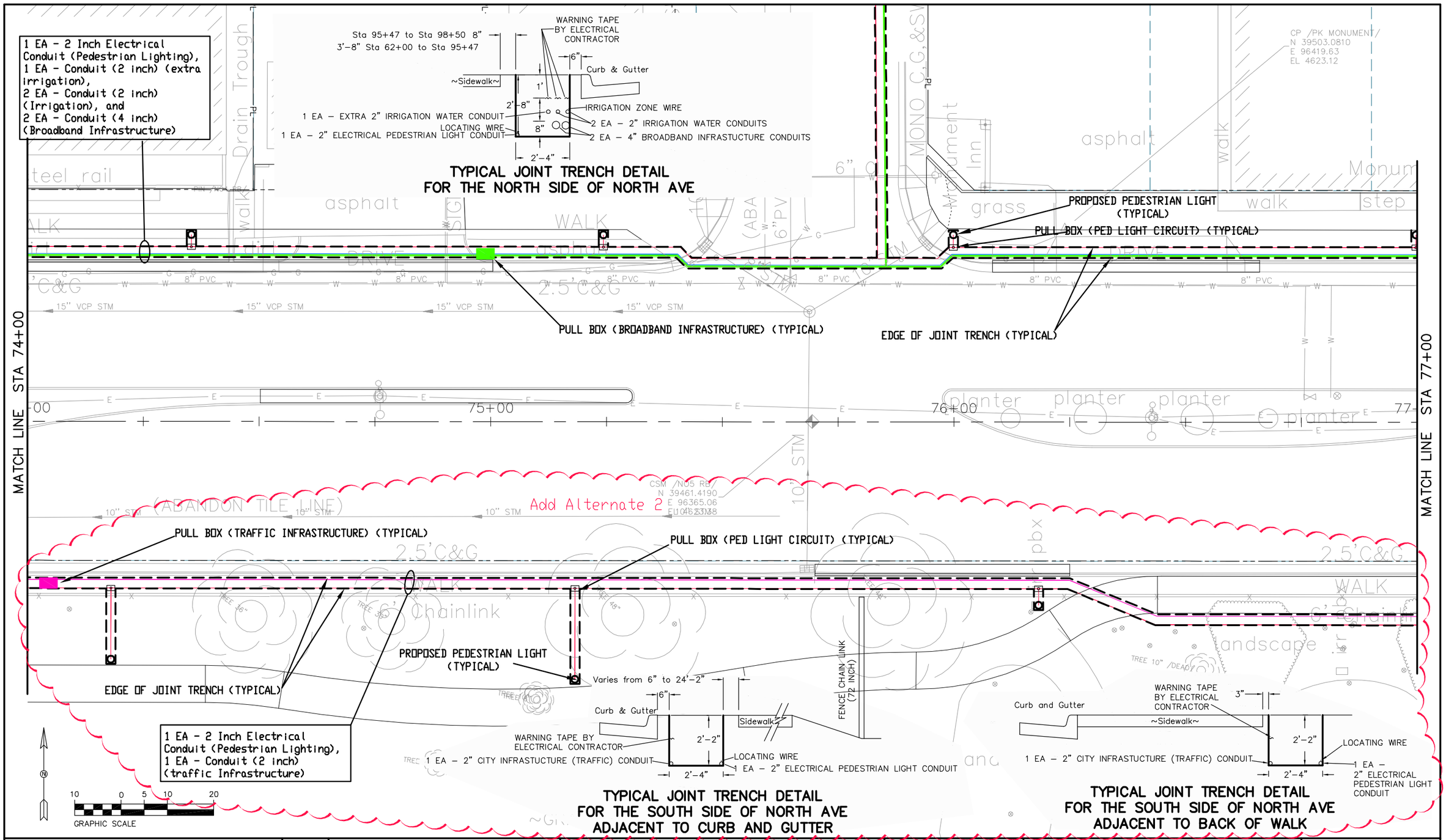
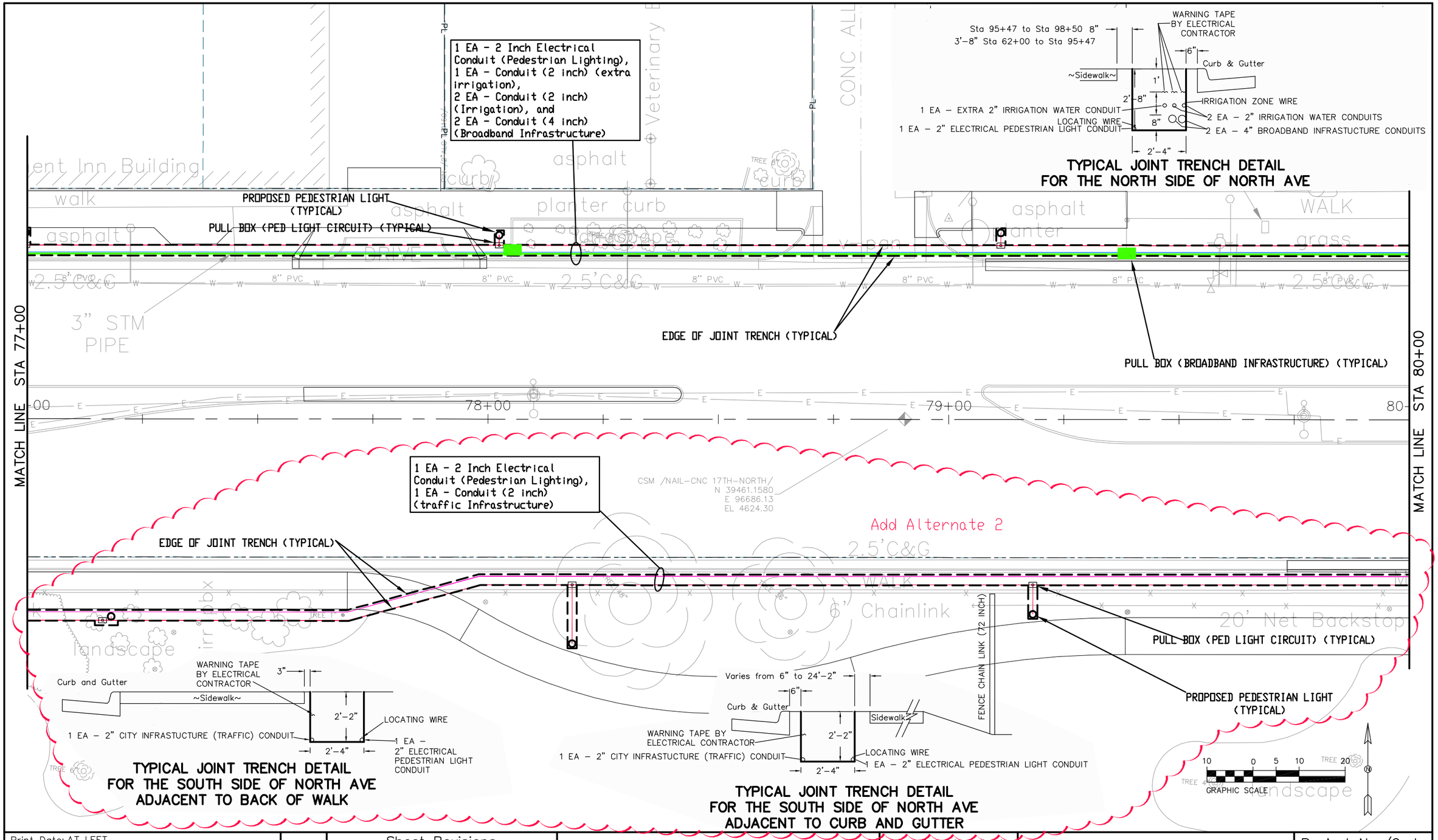


Print Date: AT LEFT	Sheet Revisions			Colorado Department of Transportation	As Constructed
File Name: AT LEFT	Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970–683–6351 FAX: 970–683–6369	No Revisions:
Horiz. Scale: 1:20 Vert. Scale: NA				Region 3 RBB	Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ					Void:

Conduit Plan		Project No./Code
Designer: John Smith	Structure Numbers	TCSP M555–029
Detailer: John Smith		19365
Sheet Subset: Conduit	Subset Sheets: 6 of 14	Sheet Number 253



Print Date: AT LEFT	Sheet Revisions			Colorado Department of Transportation	As Constructed
File Name: AT LEFT	Date:	Comments	Init.	606 South 9th Street	No Revisions:
Horiz. Scale: 1:20 Vert. Scale: NA				Grand Junction, CO, 81501	Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ				Phone: 970-683-6351 FAX: 970-683-6369	Void:
				Region 3 RBB	

Conduit Plan			Project No./Code
Designer: John Smith	Structure Numbers		TCSP M555-029
Detailer: John Smith			19365
Sheet Subset: Conduit	Subset Sheets:	7 of 14	Sheet Number 254

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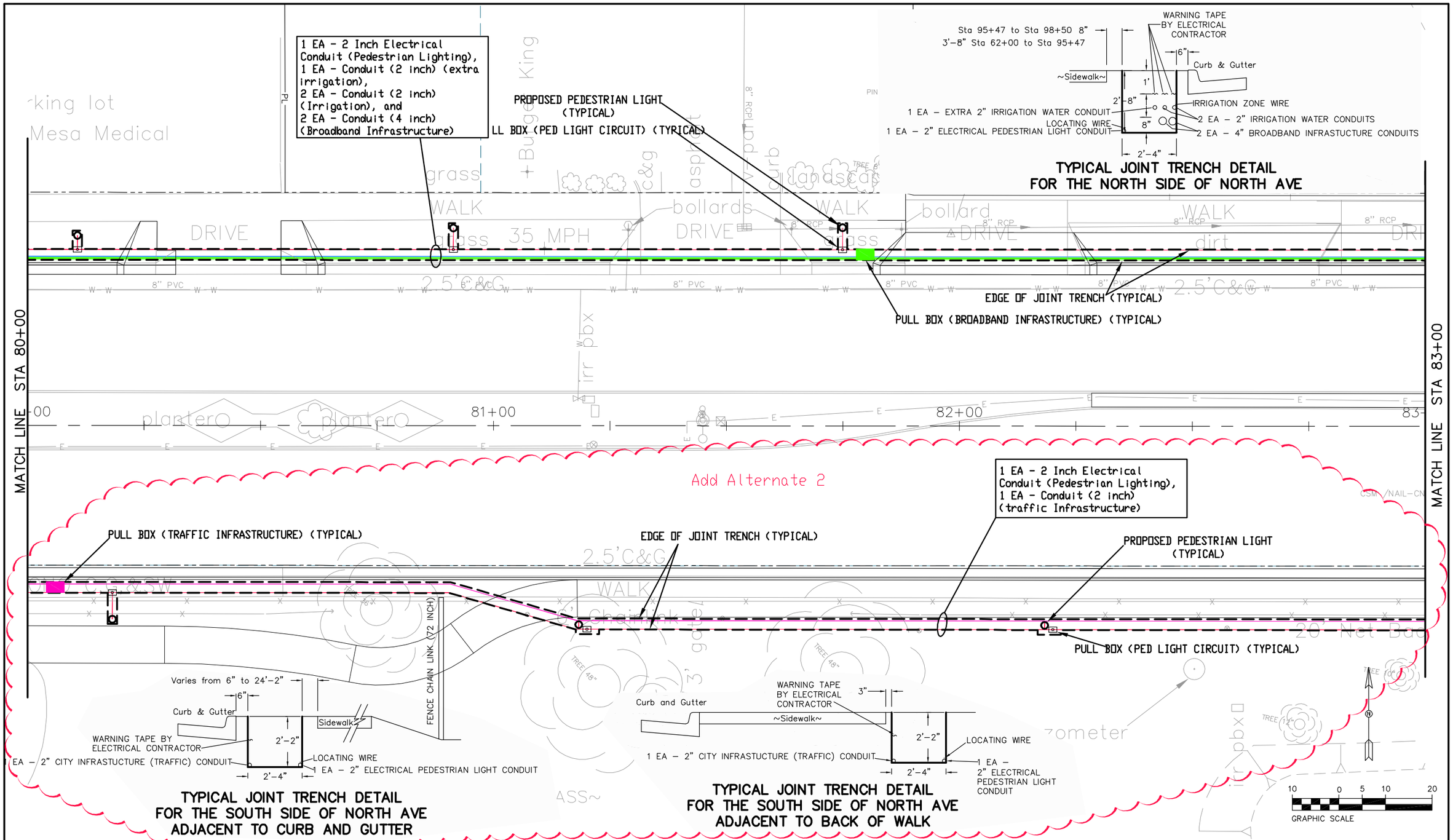

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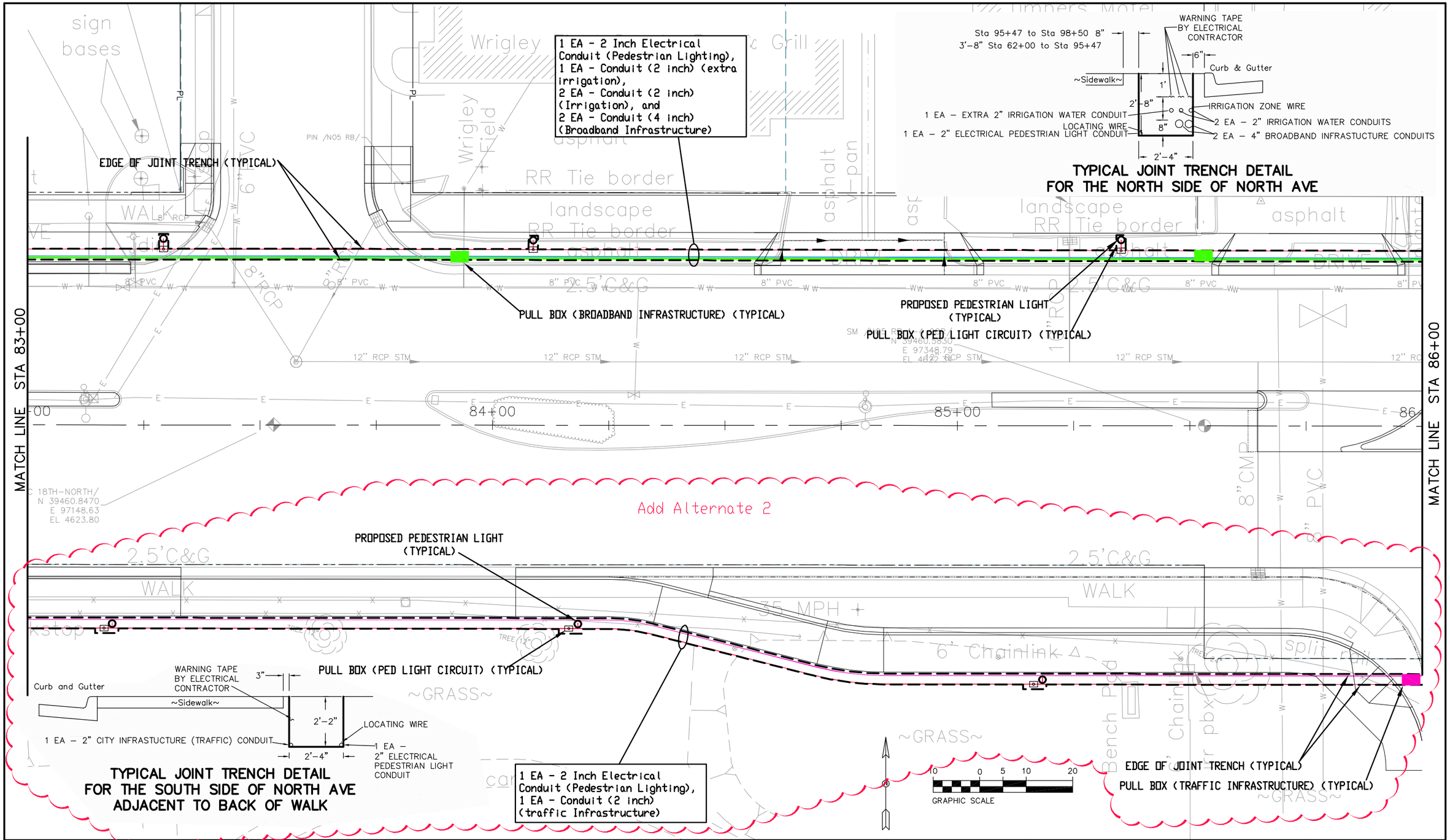
Unit Information: City of GJ Unit Leader Initials: DPJ		Phone: 970–683–6351 FAX: 970–683–6369	Void:
		Region 3 RBB	

Conduit Plan		Project No./Code	
Designer: John Smith	Structure Numbers	TCSP M555–029	
Detailer: John Smith		19365	
Sheet Subset: Conduit	Subset Sheets: 8 of 14	Sheet Number 255	



TYPICAL JOINT TRENCH DETAIL FOR THE NORTH SIDE OF NORTH AVE

TYPICAL JOINT TRENCH DETAIL FOR THE SOUTH SIDE OF NORTH AVE ADJACENT TO BACK OF WALK

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Horiz. Scale: 1:20 Vert. Scale: NA			
Unit Information: City of GJ Unit Leader Initials: DPJ			

Colorado Department of Transportation
606 South 9th Street
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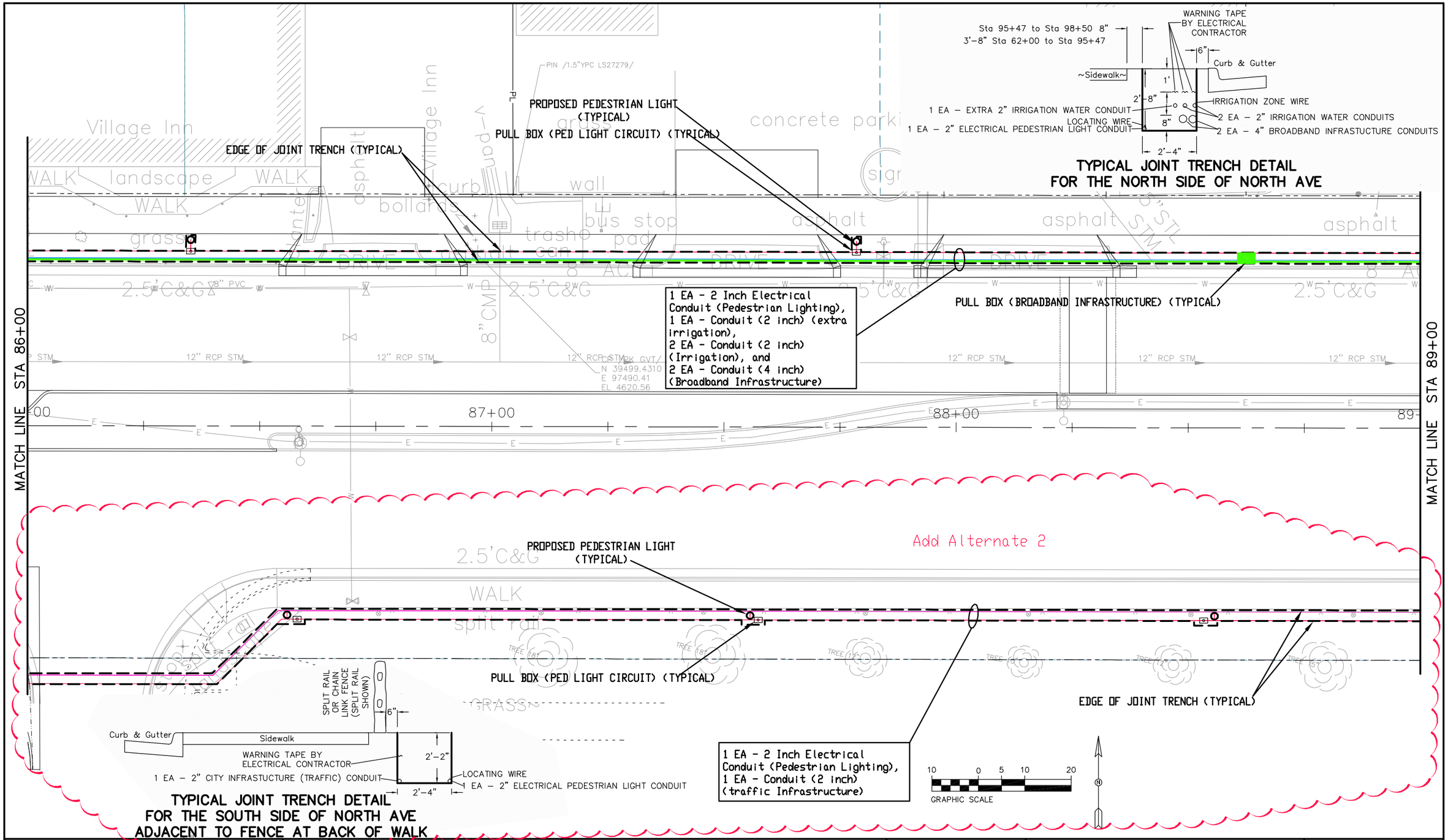
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

As Constructed
No Revisions:
Revised:
Void:

Conduit Plan

Designer: John Smith
Detailer: John Smith
Sheet Subset: Conduit
Structure Numbers
Subset Sheets: 9 of 14

Project No./Code
TCSP M555-029
19365
Sheet Number 256



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Unit Information: City of GJ Unit Leader Initials: DPJ			

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606 South 9th Street
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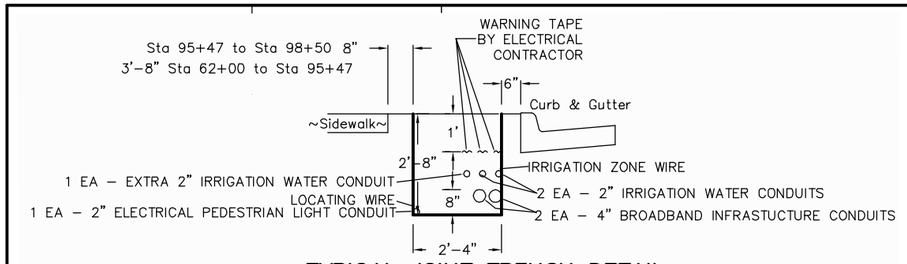
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

As Constructed
No Revisions:
Revised:
Void:

Conduit Plan

Designer: John Smith
Detailer: John Smith
Sheet Subset: Conduit
Structure Numbers
Subset Sheets: 10 of 14

Project No./Code
TCSP M555-029
19365
Sheet Number 257



TYPICAL JOINT TRENCH DETAIL FOR THE NORTH SIDE OF NORTH AVE

PROPOSED PEDESTRIAN LIGHT (TYPICAL)
PULL BOX (PED LIGHT CIRCUIT) (TYPICAL)

1 EA - 2 Inch Electrical Conduit (Pedestrian Lighting), 1 EA - Conduit (2 inch) (extra irrigation), 2 EA - Conduit (2 inch) (Irrigation), and 2 EA - Conduit (4 inch) (Broadband Infrastructure)

EDGE OF JOINT TRENCH (TYPICAL)
PULL BOX (BROADBAND INFRASTRUCTURE) (TYPICAL)

MATCH LINE STA 89+00

MATCH LINE STA 92+00

1 EA - 2 Inch Electrical Conduit (Pedestrian Lighting), 2 EA - Conduit (2 inch) (Irrigation)

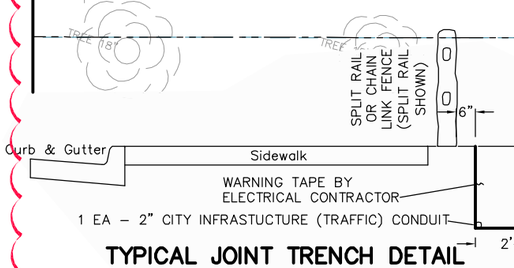
EDGE OF JOINT TRENCH (TYPICAL)

Add Alternate 2

PULL BOX (TRAFFIC INFRASTRUCTURE) (TYPICAL)

1 EA - 2 Inch Electrical Conduit (Pedestrian Lighting), 1 EA - Conduit (2 inch) (traffic Infrastructure)

PROPOSED PEDESTRIAN LIGHT (TYPICAL)
PULL BOX (PED LIGHT CIRCUIT) (TYPICAL)



TYPICAL JOINT TRENCH DETAIL FOR THE SOUTH SIDE OF NORTH AVE ADJACENT TO FENCE AT BACK OF WALK

GRAPHIC SCALE 10 0 5 10 20

N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\conduit plan.dwg, 12/2/2015 8:02:59 AM

Print Date: AT LEFT	
File Name: AT LEFT	
Horiz. Scale: 1:20	Vert. Scale: NA
Unit Information: City of GJ	Unit Leader Initials: DPJ

Sheet Revisions

Date:	Comments	Init.

Colorado Department of Transportation
606 South 9th Street
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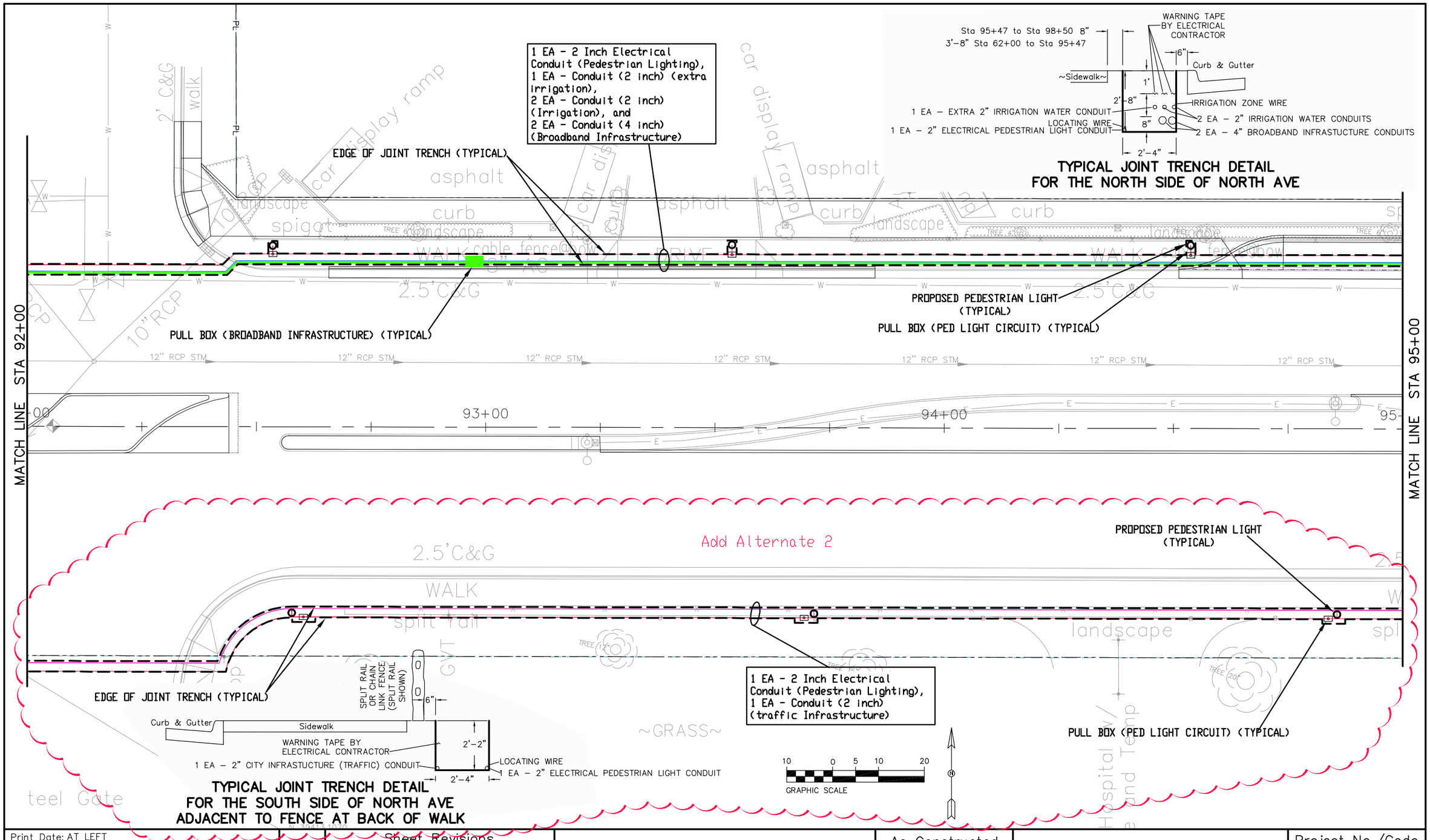
Region 3 RBB

As Constructed
No Revisions:
Revised:
Void:

Conduit Plan

Designer: John Smith		Structure Numbers	
Detailer: John Smith			
Sheet Subset: Conduit		Subset Sheets:	11 of 14

Project No./Code
TCSP M555-029
19365
Sheet Number 258



TYPICAL JOINT TRENCH DETAIL FOR THE NORTH SIDE OF NORTH AVE

TYPICAL JOINT TRENCH DETAIL FOR THE SOUTH SIDE OF NORTH AVE ADJACENT TO FENCE AT BACK OF WALK

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Print Date: AT LEFT	Sheet Revisions		
File Name: AT LEFT	Date:	Comments	Init.
Horiz. Scale: 1:20 Vert. Scale: NA			
Unit Information: City of GJ Unit Leader Initials: DPJ			

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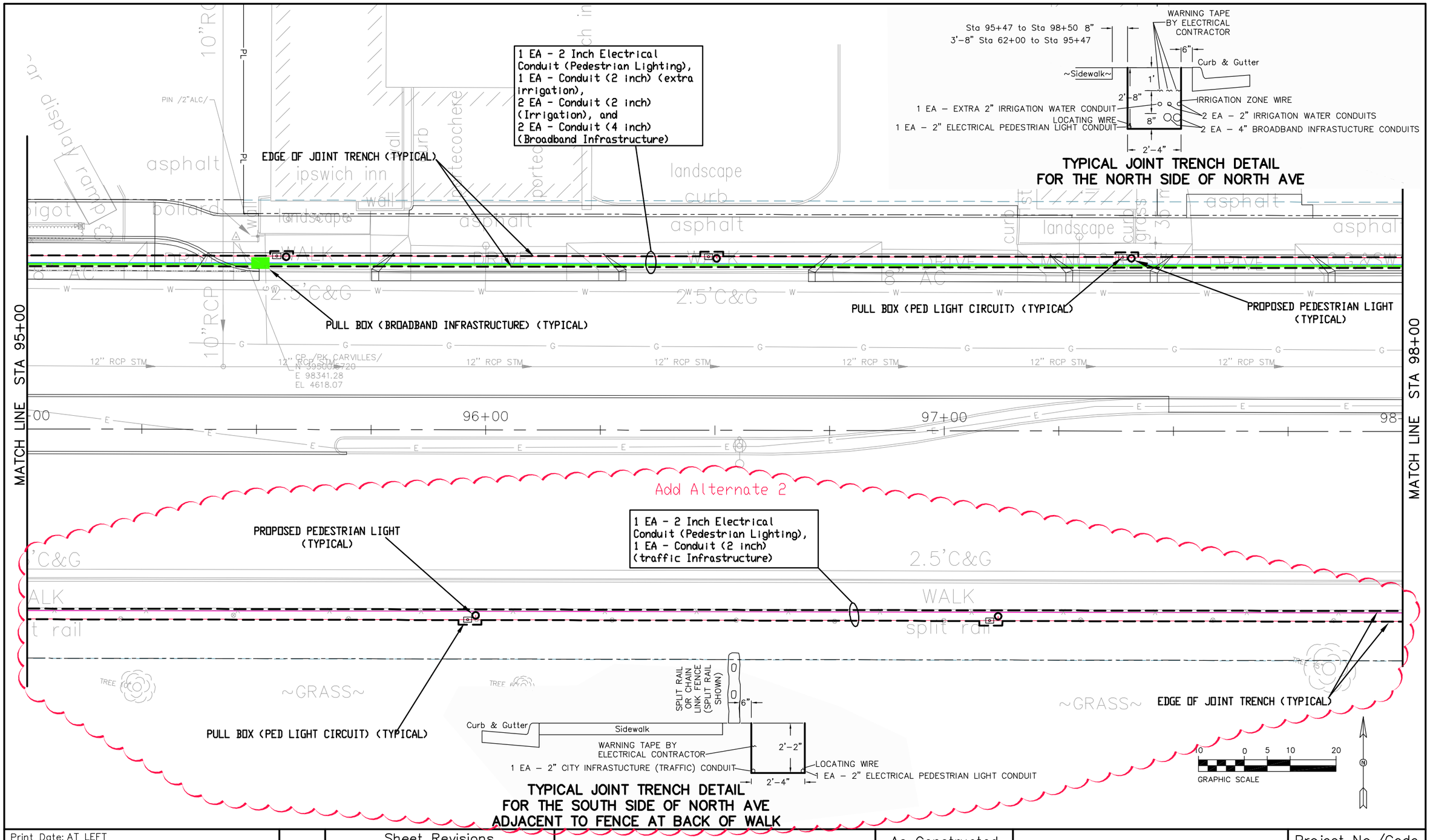
Region 3 RBB

As Constructed
No Revisions:
Revised:
Void:

Conduit Plan

Designer: John Smith
Detailer: John Smith
Sheet Subset: Conduit
Structure Numbers
Subset Sheets: 12 of 14

Project No./Code
TCSP M555-029
19365
Sheet Number 259



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Unit Information: City of GJ Unit Leader Initials: DPJ					Phone: 970-683-6351 FAX: 970-683-6369
					Region 3 RBB

As Constructed	Conduit Plan			Project No./Code
No Revisions:				TCSP M555-029
Revised:	Designer: John Smith	Structure Numbers		19365
Void:	Detailer: John Smith			
	Sheet Subset: Conduit	Subset Sheets:	13 of 14	Sheet Number 260

1 EA – 2 Inch Electrical Conduit (Pedestrian Lighting),
1 EA – Conduit (2 inch) (extra irrigation),
2 EA – Conduit (2 inch) (Irrigation), and
2 EA – Conduit (4 inch) (Broadband Infrastructure)

PROPOSED PEDESTRIAN LIGHT (TYPICAL)

EDGE OF JOINT TRENCH (TYPICAL)

PULL BOX (PED LIGHT CIRCUIT) (TYPICAL)

PULL BOX (BROADBAND INFRASTRUCTURE) (TYPICAL)

MATCH LINE STA 98+00

Sta 95+47 to Sta 98+50 8"
3'–8" Sta 62+00 to Sta 95+47

WARNING TAPE BY ELECTRICAL CONTRACTOR

6"

Curb & Gutter

~Sidewalk~

1'

2'–8"

8"

2'–4"

1 EA – EXTRA 2" IRRIGATION WATER CONDUIT

LOCATING WIRE

1 EA – 2" ELECTRICAL PEDESTRIAN LIGHT CONDUIT

IRRIGATION ZONE WIRE

2 EA – 2" IRRIGATION WATER CONDUITS

2 EA – 4" BROADBAND INFRASTUCTURE CONDUITS

TYPICAL JOINT TRENCH DETAIL FOR THE NORTH SIDE OF NORTH AVE

PROPOSED PEDESTRIAN LIGHT (TYPICAL)

PULL BOX (TRAFFIC INFRASTRUCTURE) (TYPICAL)

PULL BOX (PED LIGHT CIRCUIT) (TYPICAL)

EDGE OF JOINT TRENCH (TYPICAL)

1 EA – 2 Inch Electrical Conduit (Pedestrian Lighting),
1 EA – Conduit (2 inch) (traffic Infrastructure)

Add Alternate 2

10 0 5 10 20
GRAPHIC SCALE

SPLIT RAIL OR CHAIN LINK FENCE (SPLIT RAIL SHOWN)

6"

Curb & Gutter

Sidewalk

WARNING TAPE BY ELECTRICAL CONTRACTOR

1 EA – 2" CITY INFRASTUCTURE (TRAFFIC) CONDUIT

2'–2"

2'–4"

LOCATING WIRE

1 EA – 2" ELECTRICAL PEDESTRIAN LIGHT CONDUIT

Add Alternate 2

TYPICAL JOINT TRENCH DETAIL FOR THE SOUTH SIDE OF NORTH AVE ADJACENT TO FENCE AT BACK OF WALK

N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\conduit plan.dwg, 12/2/2015 8:01:39 AM

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File Name: AT LEFT	
Horiz. Scale: 1:20	Vert. Scale: NA
Unit Information: City of GJ	Unit Leader Initials: DPJ

Sheet Revisions

Date:	Comments	Init.

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Region 3 RBB

As Constructed

No Revisions:
Revised:
Void:

Conduit Plan

Designer: John Smith		Structure Numbers	
Detailer: John Smith			
Sheet Subset: Conduit		Subset Sheets:	14 of 14

Project No./Code
TCSP M555–029
19365
Sheet Number 261

STREET LIGHTING GENERAL NOTES:

1. THIS PROJECT WILL BE BID WITH A BASE AND 3 ADD ALTERNATIVES FOR THE INSTALLATION OF THE PEDESTRIAN LIGHTING. ALL PEDESTRIAN LIGHTING WILL BE INSTALLED BY OTHERS IN SEPARATE CONTRACTS.
   1.1. BASE PROJECT: COMPLETE THE NORTH SIDE OF NORTH AVENUE PEDESTRIAN LIGHTING. THIS INCLUDES VA ACCESSES.
   1.2. ADD ALT #1: COMPLETE WORK IN MEDIANS, DOES NOT INCLUDE PEDESTRIAN LIGHTING.
   1.3. ADD ALT #2: COMPLETE THE SOUTH SIDE OF NORTH AVENUE PEDESTRIAN LIGHTING INCLUDING CONNECTIONS TO EXISTING POWER PANEL. PROVIDE DIRECTIONAL BORING UNDER NORTH AVENUE FOR 2" PVC TO J-BOX FOR SOUTH PORTION OF LIGHTING.
   1.4. ADD ALT #3: COMPLETION OF FURNISHINGS INCLUDING BIKE RACKS, TRASH CANS, BENCHES
2. THIS PROJECT CONSISTS OF WORK TO INSTALL ALL WIRING, CONDUIT, PULL BOXES, AND POWER PANEL. REFERENCE SCHEDULE OF LIGHTING DEVICES AND SUMMARY OF QUANTITIES DRAWING LE3 FOR EACH ALTERNATIVE BID ON.

3. LIGHT STANDARD & LUMINAIRE (PEDESTRIAN), PAY ITEM 613-30005, SHALL INCLUDE THE FOLLOWING ITEMS FROM MH LIGHTING LOCATED AT 1044 SPEER BOULEVARD, DENVER, CO 80204-0222, 303.573.0222. THE ITEMS NUMBERS ARE AS FOLLOWS.
   - TYPE SA - 1A-1527LED-R-5V1-4ARC35T2-MDL03-EZ/OAPT/450P414/BK

3. ALL PEDESTRIAN LIGHTING LUMINARIES INSTALLED ON THE PROJECT WILL BE CONTROLLED WITH A ELECTRICAL CONTRACTOR SUPPLIED PHOTO CELL TO BE LOCATED IN NEW MILBANK POWER PEDESTAL #CP3B511OA225L1.

4. ELEVATIONS SHOWN IN THE SCHEDULE OF LIGHTING DEVICES ON THE PLANS SHEETS REPRESENT THE DESIGN FINISHED GRADE OR THE EXISTING GROUND FINISHED GRADE. THESE ELEVATIONS DO NOT INDICATE THE TOP ELEVATION OF THE LUMINAIRE (PEDESTRIAN) FOUNDATION. PEDESTRIAN LIGHTING FOUNDATIONS SHALL BE CONSTRUCTED PER THE MANUFACTURERS RECOMMENDATIONS.

5. PULL BOXES FOR LIGHT STANDARD (PEDESTRIAN) WILL BE TYPE 1 CDOT PULL BOXES 11"X18"X12".

6. PULL BOXES WILL BE INSTALLED IN GRADES WITHOUT CONCRETE WHERE POSSIBLE.

7. ALL ELECTRICAL CONDUIT SHALL BE SCHEDULE 80 PVC UNLESS NOTED OTHERWISE, TYPICAL.

8. UNLESS OTHERWISE NOTED, THE WORK DESCRIBED ON THE PLANS SHALL INCLUDE PROVIDING ALL LABOR AND MATERIALS NECESSARY FOR A COMPLETE AND OPERATIONAL ELECTRICAL SYSTEM. FURNISH ALL REQUIRED ITEMS WHETHER SUCH ARE SPECIFICALLY SHOWN OR NOT.

9. INFORMATION SHOWN ON DRAWINGS IS DIAGRAMMATIC ONLY AND SHALL NOT BE SCALED. OBTAIN VERIFY EXACT LOCATIONS, MEASUREMENTS, LEVELS, SPACE REQUIREMENTS, POTENTIAL CONFLICTS AMONG TRADES AND FOR ADJUSTING THE WORK REQUIRED BY THE ACTUAL CONDITIONS OF THE PROJECT. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDER GROUND OBSTRUCTIONS AND MAKING ALLOWANCES FOR FIELD ADJUSTMENT OF LOCATION OF LUMINARIES TO AVOID SHUT DOWN OF ANY SERVICES OR SYSTEMS THAT ARE TO REMAIN.

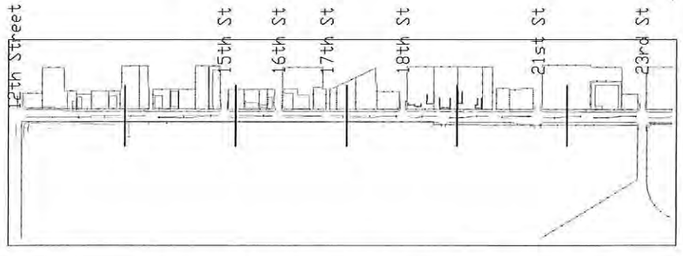
10. BEFORE SUBMITTING THE BID ELECTRICAL CONTRACTOR SHALL VISIT AND EXAMINE THE PREMISES AND/OR JOB SITE SO AS TO ASCERTAIN THE EXISTING CONDITIONS IN WHICH THE CONTRACTOR WILL BE OBLIGED TO OPERATE IN PERFORMING HIS PART OF THE CONTRACT TO ANTICIPATE ANY POSSIBLE SPACE RESTRICTIONS OR CONSTRAINTS THAT COULD AFFECT THE TIMELY COMPLETION OF THE ELECTRICAL WORK IN ACCORDANCE WITH THE INTENT OF THE SPECIFICATIONS AND DRAWINGS. THE ELECTRICAL CONTRACTOR SHALL REPORT TO THE THE PROJECT ENGINEER OR GENERAL CONTRACTOR ANY CONDITIONS THAT MIGHT PREVENT THE SPECIFIED ELECTRICAL WORK FROM BEING PERFORMED IN THE MANNER INTENDED. NO CONSIDERATION OR ALLOWANCE WILL BE GRANTED TO THE ELECTRICAL CONTRACTOR FOR FAILURE TO VISIT THE PROJECT SITE, OR FOR ANY ALLEGED MISUNDERSTANDING OF THE MATERIALS TO BE FURNISHED OR WORK TO BE DONE..

11. THE ELECTRICAL CONTRACTOR SHALL EXAMINE THE DRAWINGS OF ALL TRADES WHOSE WORK RELATES TO OR IS DEPENDENT ON ELECTRICAL WORK TO BECOME FULLY INFORMED OF THE EXTENT AND CHARACTER OF THEIR SPECIFIED WORK AND BE ABLE TO COORDINATE WITH OTHER TRADES WHILE AVOIDING POSSIBLE INTERFERENCE WITH THE ELECTRICAL WORK..

LIGHTING LEGEND

PP1-X	ELECTRICAL CIRCUIT NUMBER (REFER TO PANEL SCHEDULES)
UB□	HEAVY DUTY, TRAFFIC RATED, FLUSH-TO-GRADE POLYMER CONCRETE SPLICE BOX WITH HEAVY DUTY, TRAFFIC RATED, BOLTED COVER. 11"X18"X12" TYPE 1.
⌒	UNDER GROUND BURIED RACEWAY (2#4 THWN CU AND 1#6 GND) N 2" PVC CONDUIT (UNLESS NOTED OTHERWISE ON PLANS) IN 24" DEEP TRENCH, BURY AND COMPACTED BACKFILL TO PRE CONSTRUCTION CONDITION.
●—●	INSTALL SINGLE ARM PEDESTRIAN STANDARD.

811 Know what's **below.** **Call** before you dig.



LIGHTING PLAN KEY MAP

Print Date: 12-08-15		Sheet Revisions			Colorado Department of Transportation	AS CONSTRUCTED	LIGHTING GENERAL NOTES		Project No./Code
File Name:		Date:	Comments	Init.	CDOT 606 South 9th Street, Grand Junction, CO, 81501	No Revisions:			TCSP M555-029
Horiz. Scale: AS SHOWN Vert. Scale: 1					Phone: 970-683-6351 FAX: 970-683-6369	Revised:	Designer: AJM	Structure Numbers	19365
Unit Information: City of GJ Unit Leader Initials: JE					Region 3 RBB	Void:	Detailer: AJM		Sheet Number 262
ACM CONSULTING AND ENGINEERING PH: (970) 245-7292 EMAIL: JOELMRTINEZ@GMAIL.COM							Sheet Subset: LIGHTING	Subset Sheets: LE1 of 12	

Schedule of Lighting Devices

ITEM No.				613-30005		613-40012		See note 2		
LONG DESCRIPTION				LIGHT STANDARD AND LUMINAIRE (PEDESTRIAN)		LIGHT STANDARD FOUNDATION SPECIAL		LUMINAIRE LED (66 WATT)		NOTES
UNITS				EACH(BY OTHERS)		EACH		EACH		
				PLAN	AS CONST	PLAN	AS CONST	PLAN	AS CONST	
SHEET NO.	I.D. NO.	STATION	OFFSET							
LE-4	SA-1	60+66.65	R=38.12	1		1		1		1,2,4
LE-4	SA-2	61+51.96	R=38.16	1		1		1		1,2,4
LE-4	SA-3	63+18.48	R=38.23	1		1		1		1,2,4
LE-4	SA-4	64+18.48	R=48.39	1		1		1		1,2,4
LE-4	SA-5	65+18.49	R=48.33	1		1		1		1,2,4
LE-5	SA-6	66+18.48	R=40.20	1		1		1		1,2,4
LE-5	SA-7	67+18.48	R=40.13	1		1		1		1,2,4
LE-5	SA-8	68+18.48	R=40.06	1		1		1		1,2,4
LE-5	SA-9	69+18.48	R=39.99	1		1		1		1,2,4
LE-5	SA-10	70+18.48	R=45.98	1		1		1		1,2,4
LE-5	SA-11	71+18.48	R=50.52	1		1		1		1,2,4
LE-5	SA-12	72+22.67	R=54.42	1		1		1		1,2,4
LE-6	SA-13	73+18.49	R=51.37	1		1		1		1,2,4
LE-6	SA-14	74+18.49	R=51.29	1		1		1		1,2,4
LE-6	SA-15	75+18.49	R=55.58	1		1		1		1,2,4
LE-6	SA-16	76+18.48	R=39.48	1		1		1		1,2,4
LE-6	SA-17	77+18.48	R=42.90	1		1		1		1,2,4
LE-6	SA-18	86+35.00	R=40.04	1		1		1		1,2,4
LE-6	SA-19	79+18.48	R=42.44	1		1		1		1,2,4
LE-7	SA-20	80+18.48	R=41.70	1		1		1		1,2,4
LE-7	SA-21	81+18.48	R=42.27	1		1		1		1,2,4
LE-7	SA-22	82+18.48	R=42.19	1		1		1		1,2,4
LE-7	SA-23	83+42.64	R=42.64	1		1		1		1,2,4
LE-7	SA-24	84+18.48	R=42.57	1		1		1		1,2,4
LE-7	SA-25	85+18.49	R=54.22	1		1		1		1,2,4
LE-7	SA-26	86+56.01	R=40.10	1		1		1		1,2,4
LE-8	SA-27	87+56.01	R=39.91	1		1		1		1,2,4
LE-8	SA-28	88+56.01	R=39.72	1		1		1		1,2,4
LE-8	SA-29	89+56.07	R=39.96	1		1		1		1,2,4
LE-8	SA-30	90+56.01	R=42.46	1		1		1		1,2,4
LE-8	SA-31	91+56.03	R=49.84	1		1		1		1,2,4
LE-8	SA-32	92+58.02	R=39.89	1		1		1		1,2,4
LE-8	SA-33	93+72.10	R=40.12	1		1		1		1,2,4
LE-9	SA-34	94+86.02	R=40.19	1		1		1		1,2,4
LE-9	SA-35	95+98.09	R=40.53	1		1		1		1,2,4
LE-9	SA-36	97+12.09	R=40.32	1		1		1		1,2,4
LE-9	SA-37	98+29.71	R=39.68	1		1		1		1,2,4
LE-4	SA-38	60+13.72	L=53.94	1		1		1		1,2,3
TABLE TOTALS				38		38		38		

SCHEDULE OF LIGHTING DEVICES NOTES:

1. FOUNDATION TOP HEIGHT EQUAL TO ADJACENT SIDEWALK
2. LUMINAIRE LED (66 WATT) IS TO BE INCLUDED IN THE COST OF PAY ITEM 613-30005 LIGHT STANDARD AND LUMINAIRE (PEDESTRIAN)
3. BASE BID
4. ALT ADD #2

811 Know what's **below.** **Call** before you dig.

Print Date: 12-08-15
File Name:
Horiz. Scale: AS SHOWN Vert. Scale: 1
Unit Information: City of GJ Unit Leader Initials: JE

ACM CONSULTING AND ENGINEERING
PH: (970) 245-7292
EMAIL: JOELMRTINEZ@GMAIL.COM

Sheet Revisions

Date:	Comments	Init.

Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

AS CONSTRUCTED
No Revisions:
Revised:
Void:

LIGHTING SCHEDULES

Designer: AJM
Detailer: AJM
Sheet Subset: LIGHTING
Structure Numbers:
Subset Sheets: LE2 of 12

Project No./Code
TCSP M555-029
19365
Sheet Number 263

Schedule of Lighting Devices

ITEM No.				613-30005		613-40012		See note 2		
LONG DESCRIPTION				LIGHT STANDARD AND LUMINAIRE (PEDESTRIAN)		LIGHT STANDARD FOUNDATION SPECIAL		LUMINAIRE LED (66 WATT)		NOTES
UNITS				EACH(BY OTHERS)		EACH		EACH		
				PLAN	AS CONST	PLAN	AS CONST	PLAN	AS CONST	
SHEET NO.	I.D. NO.	STATION	OFFSET							
LE-4	SA-39	61+13.75	R=52.33	1		1		1		1,2,3
LE-4	SA-40	62+14.19	L=45.20	1		1		1		1,2,3
LE-4	SA-41	62+97.41	L=40.03	1		1		1		1,2,3
LE-4	SA-42	64+3.92	L=40.21	1		1		1		1,2,3
LE-4	SA-43	65+12.03	L=40.13	1		1		1		1,2,3
LE-5	SA-44	66+1.27	L=40.24	1		1		1		1,2,3
LE-5	SA-45	67+1.27	L=40.31	1		1		1		1,2,3
LE-5	SA-46	68+4.29	L=41.76	1		1		1		1,2,3
LE-5	SA-47	66+95.72	L=40.54	1		1		1		1,2,3
LE-5	SA-48	69+78.36	L=40.60	1		1		1		1,2,3
LE-5	SA-49	70+70.36	L=40.66	1		1		1		1,2,3
LE-5	SA-50	71+88.93	L=40.75	1		1		1		1,2,3
LE-5	SA-51	72+62.37	L=40.08	1		1		1		1,2,3
LE-6	SA-52	73+52.66	L=40.00	1		1		1		1,2,3
LE-6	SA-53	74+35.42	L=40.31	1		1		1		1,2,3
LE-6	SA-54	75+24.36	L=40.34	1		1		1		1,2,3
LE-6	SA-55	75+99.71	L=40.42	1		1		1		1,2,3
LE-6	SA-56	76+99.71	L=40.50	1		1		1		1,2,3
LE-6	SA-57	78+2.41	L=39.80	1		1		1		1,2,3
LE-6	SA-58	79+11.18	L=40.48	1		1		1		1,2,3
LE-7	SA-59	80+10.68	L=40.75	1		1		1		1,2,3
LE-7	SA-60	80+91.40	L=42.39	1		1		1		1,2,3
LE-7	SA-61	81+75.02	L=42.46	1		1		1		1,2,3
LE-7	SA-62	83+29.23	L=39.95	1		1		1		1,2,3
LE-7	SA-63	84+8.61	L=39.77	1		1		1		1,2,3
LE-7	SA-64	85+34.97	L=39.87	1		1		1		1,2,3
LE-7	SA-65	86+34.92	L=40.04	1		1		1		1,2,3
LE-8	SA-66	87+78.45	L=39.95	1		1		1		1,2,3
LE-8	SA-67	89+9.07	L=40.56	1		1		1		1,2,3
LE-8	SA-68	90+45.72	L=37.90	1		1		1		1,2,3
LE-8	SA-69	91+48.83	L=38.09	1		1		1		1,2,3
LE-8	SA-70	92+53.61	L=39.57	1		1		1		1,2,3
LE-8	SA-71	93+53.61	L=39.76	1		1		1		1,2,3
LE-9	SA-72	94+58.60	L=39.95	1		1		1		1,2,3
LE-9	SA-73	95+56.52	L=37.37	1		1		1		1,2,3
LE-9	SA-74	96+50.37	L=37.31	1		1		1		1,2,3
LE-9	SA-75	97+40.75	L=37.48	1		1		1		1,2,3
LE-9	SA-76	98+32.39	L=37.44	1		1		1		1,2,3
TABLE TOTALS				38		38		38		

SCHEDULE OF LIGHTING DEVICES NOTES:

1. FOUNDATION TOP HEIGHT EQUAL TO ADJACENT SIDEWALK
2. LUMINAIRE LED (66 WATT) IS TO BE INCLUDED IN THE COST OF PAY ITEM 613-30005 LIGHT STANDARD AND LUMINAIRE (PEDESTRIAN)
3. BASE BID
4. ALT ADD #2

Tabulation of Approximate Quantities(BASE PROJECT)

Item No.	Ref. No.	Construction Note Description	Quantity	Unit	NOTES
	613-01200	2 Inch Electrical Conduit (Plastic)	4112	LF	
	613-07001	Type One Pull Box	40	EA	
	613-10000	Wiring	1	LS	
	613-30005	Light Standard and Luminaire (Pedestrian)	39	EA	
	613-40012	Light Standard Foundation (Special)	39	EA	
	613-50106	Lighting Control Center (Special)	1	EA	
SUMMARY NOTES:					
1. ITEM 613-30005 BY OTHERS					

Tabulation of Approximate Quantities(ADD ALT #2)

Item No.	Ref. No.	Construction Note Description	Quantity	Unit	NOTES
	613-01200	2 Inch Electrical Conduit (Plastic)	4015	LF	
	613-07001	Type One Pull Box	38	EA	
	613-10000	Wiring	1	LS	
	613-30005	Light Standard and Luminaire (Pedestrian)	37	EA	
	613-40012	Light Standard Foundation (Special)	37	EA	
SUMMARY NOTES:					
1. ITEM 613-30005 BY OTHERS					
2. INCLUDES 2" CONDUIT UNDER NORTH AVE. TO SOUTH SIDE AT 16TH ST.					

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File Name:		Date:	Comments	Init.	
Horiz. Scale: AS SHOWN Vert. Scale: 1					606 South 9th Street
Unit Information: City of GJ Unit Leader Initials: JE					Grand Junction, CO, 81501
ACM CONSULTING AND ENGINEERING					Phone: 970-683-6351 FAX: 970-683-6369
PH: (970) 245-7292					Region 3 RBB
EMAIL: JOELMRTINEZ@GMAIL.COM					

AS CONSTRUCTED	LIGHTING SCHEDULES		Project No./Code
No Revisions:			TCSP M555-029
Revised:	Designer: AJM	Structure Numbers	19365
Void:	Detailer: AJM		
	Sheet Subset: LIGHTING	Subset Sheets: LE3 of 12	Sheet Number 264

811
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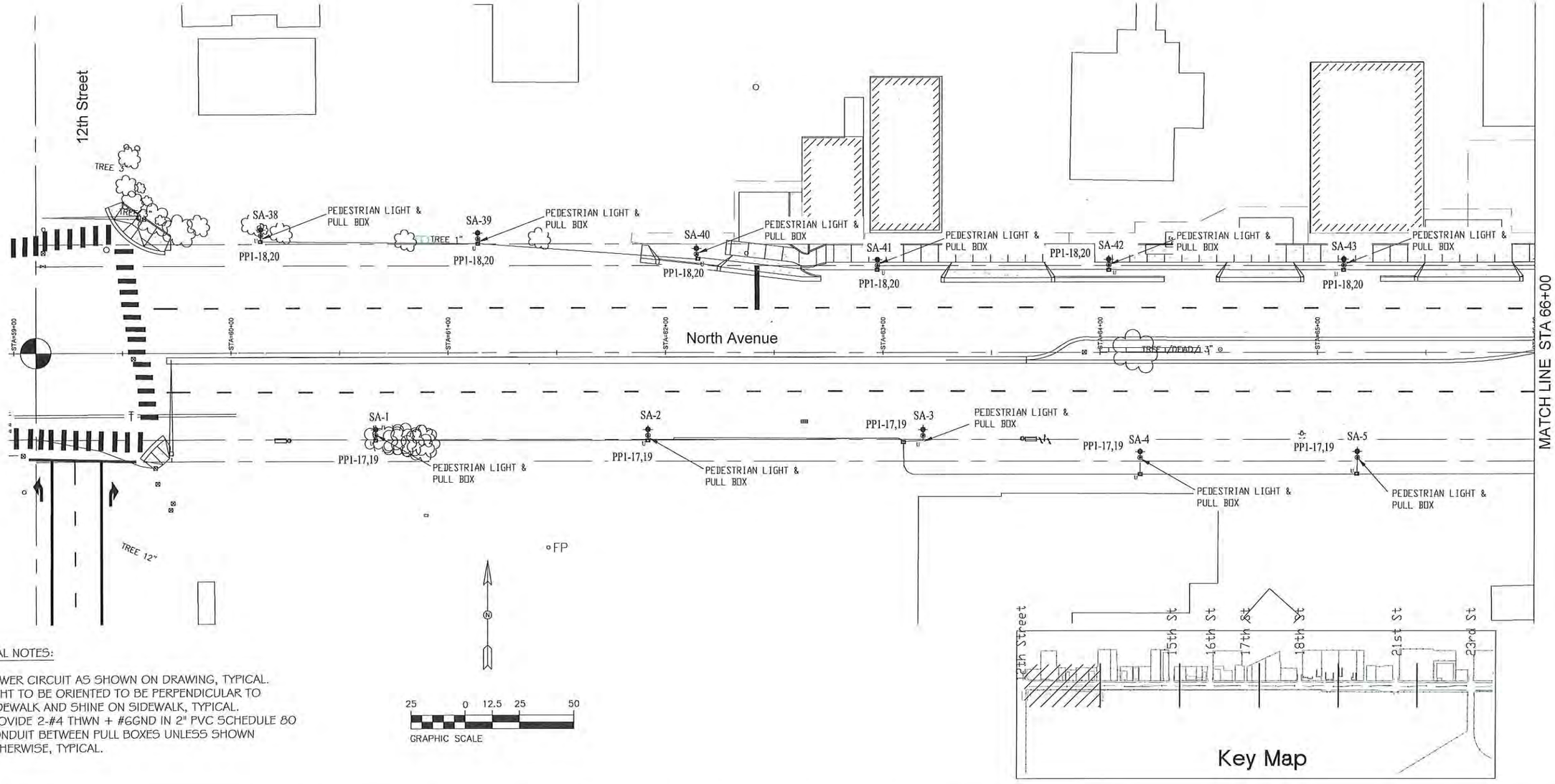

GENERAL NOTES:

1. POWER CIRCUIT AS SHOWN ON DRAWING, TYPICAL.
2. LIGHT TO BE ORIENTED TO BE PERPENDICULAR TO SIDEWALK AND SHINE ON SIDEWALK, TYPICAL.
3. PROVIDE 2-#4 THWN + #6GND IN 2" PVC SCHEDULE 80 CONDUIT BETWEEN PULL BOXES UNLESS SHOWN OTHERWISE, TYPICAL.

Print Date: 12-08-15	Sheet Revisions	Colorado Department of Transportation	As Constructed
File Name:	Date: / Comments / Init.	606 South 9th Street, Grand Junction, CO, 81501	No Revisions:
Horiz. Scale: 1:50 Vert. Scale: NA		Phone: 970-683-6351 FAX: 970-683-6369	Revised:
Unit Information: City of GJ Unit Leader Initials: JE		Region 3 RBB	Void:
ACM CONSULTING AND ENGINEERING PH: (970) 245-7292 EMAIL: JOELMRTINEZ@GMAIL.COM			

Roadway Plan			Project No./Code
Designer: AJM	Structure Numbers		TCSP M555-029
Detailer: AJM			19365
Sheet Subset: RD PLAN	Subset Sheets: LE4 OF 10		Sheet Number 265

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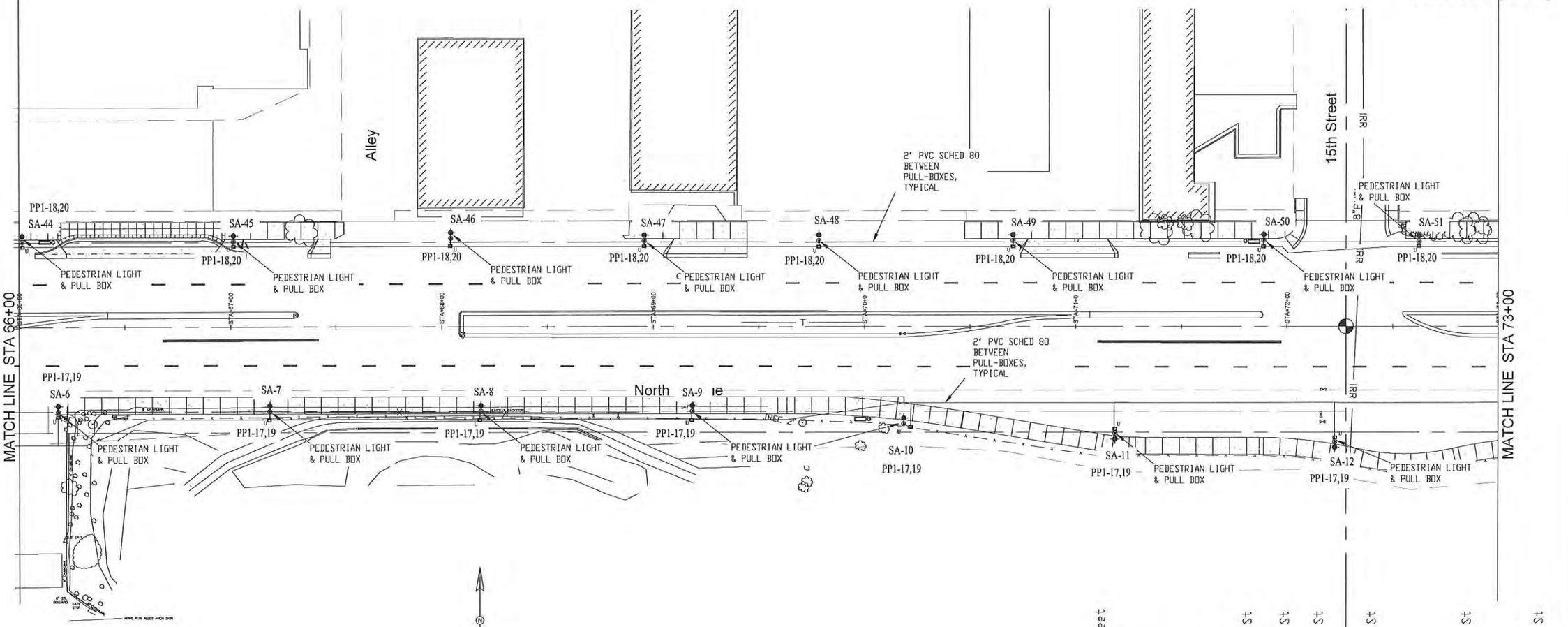

GENERAL NOTES:

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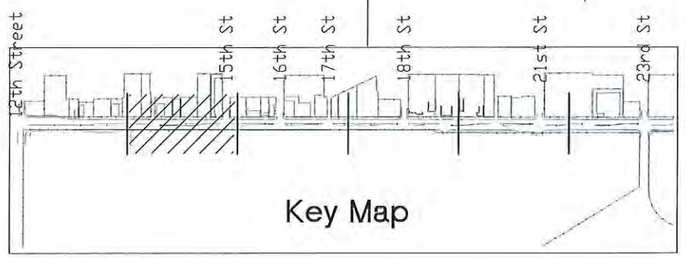
3. PROVIDE 2-#4 THWN + #6GND IN 2" PVC SCHEDULE 80 CONDUIT BETWEEN PULL BOXES UNLESS SHOWN OTHERWISE, TYPICAL.

25 0 12.5 25 50
GRAPHIC SCALE



Key Map

Print Date: 12-08-15		Sheet Revisions			Colorado Department of Transportation	As Constructed	Roadway Plan		Project No./Code
File Name:		Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:			TCSP M555-029
Horiz. Scale: 1:50 Vert. Scale: NA						Revised:	Designer: AJM	Structure Numbers	19365
Unit Information: City of GJ Unit Leader Initials: JE							Detailer: AJM		
ACM CONSULTING AND ENGINEERING PH: (970) 245-7292 EMAIL: JOELMRTINEZ@GMAIL.COM					Region 3 RBB	Void:	Sheet Subset: LIGHTING	Subset Sheets: LE5 of 12	Sheet Number 266

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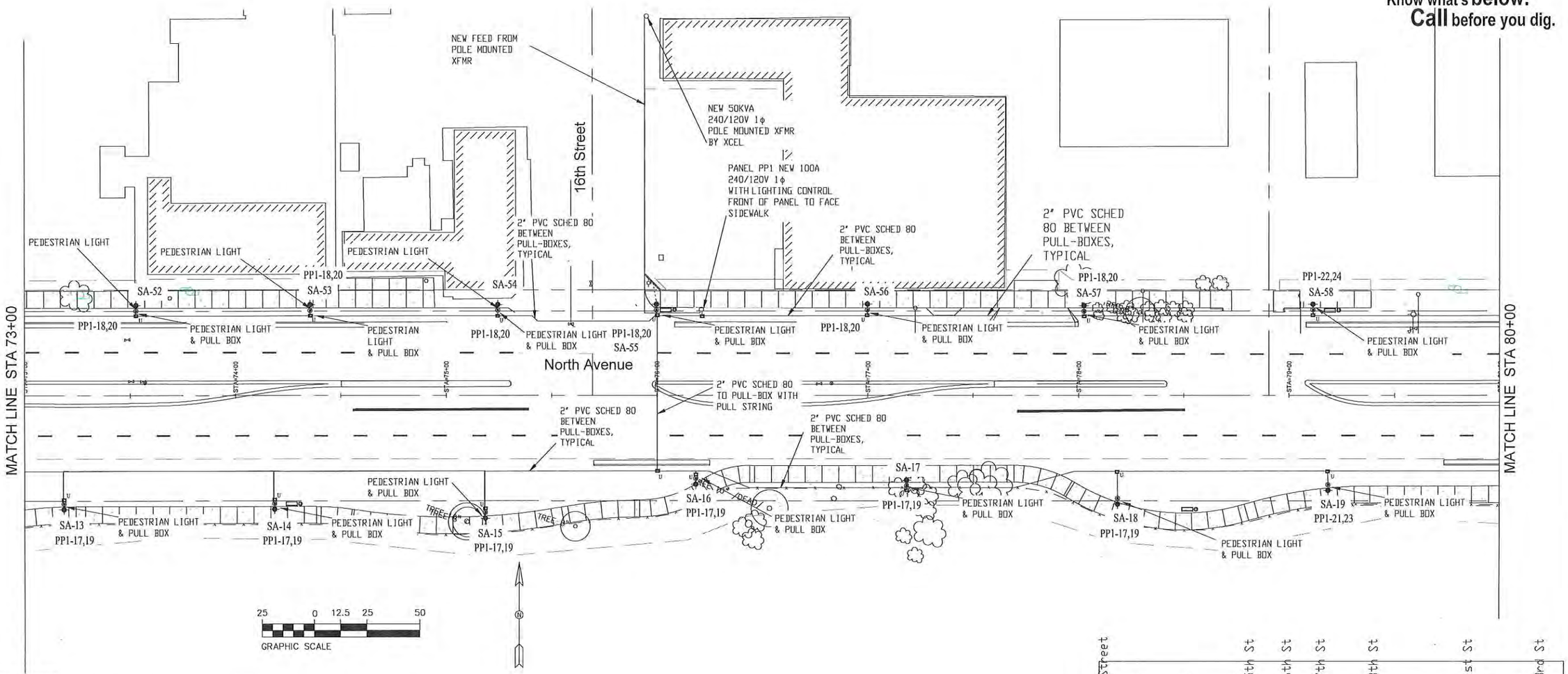
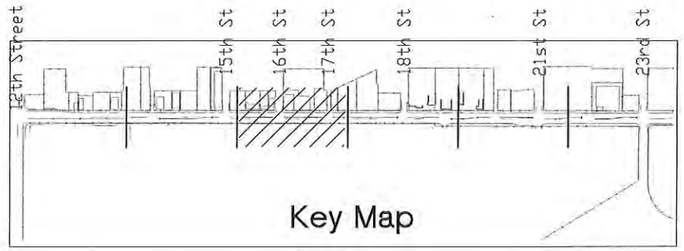


GENERAL NOTES:
1. POWER CIRCUIT AS SHOWN ON DRAWING, TYPICAL.
2. LIGHT TO BE ORIENTED TO BE PERPENDICULAR TO SIDEWALK AND SHINE ON SIDEWALK, TYPICAL.
3. PROVIDE 2-#4 THWN + #6GND IN 2" PVC SCHEDULE 80 CONDUIT BETWEEN PULL BOXES UNLESS SHOWN OTHERWISE, TYPICAL.
4. FOR ADD ALT #2 PROVIDE PULLBOX, 2" CONDUIT AND WIRE UNDER NORTH AVENUE TO SOUTH SIDE.
5. COORDINATE FEED AND CONNECTION WITH XCEL ENERGY FROM NEW POLE MOUNTED TRANSFORMER TO PANEL PP-1.



Key Map

Print Date: 12-08-15	Sheet Revisions			Colorado Department of Transportation	As Constructed
File Name:	Date:	Comments	Init.	CDOT 606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:
Horiz. Scale: 1:50 Vert. Scale: NA				Region 3 RBB	Revised:
Unit Information: City of GJ Unit Leader Initials: JE					Void:
ACM CONSULTING AND ENGINEERING PH: (970) 245-7292 EMAIL: JOELMRTINEZ@GMAIL.COM					

Roadway Plan			Project No./Code
			TCSP M555-029
Designer: AJM	Structure Numbers		19365
Detailer: AJM			
Sheet Subset: LIGHTING	Subset Sheets: LE6 of 12		Sheet Number 267

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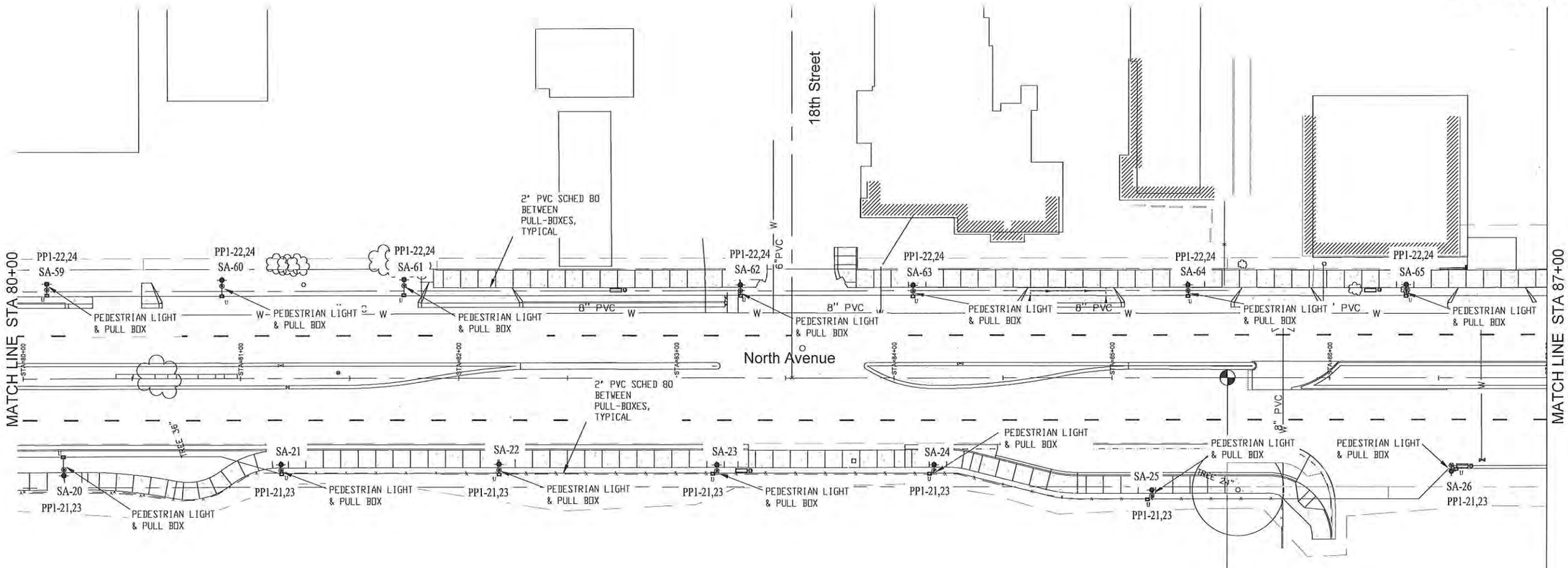

GENERAL NOTES:

1. POWER CIRCUIT AS SHOWN ON DRAWING, TYPICAL.
2. LIGHT TO BE ORIENTED TO BE PERPENDICULAR TO SIDEWALK AND SHINE ON SIDEWALK, TYPICAL.
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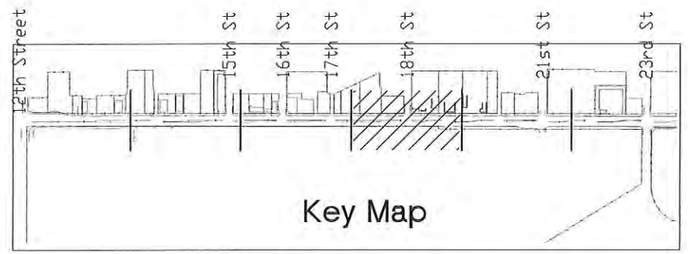
25 0 12.5 25 50
GRAPHIC SCALE

N



Key Map

Print Date: 12-08-15	Sheet Revisions			Colorado Department of Transportation	As Constructed
File Name:	Date:	Comments	Init.	606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:
Horiz. Scale: 1:50 Vert. Scale: NA				Region 3 RBB	Revised:
Unit Information: City of GJ Unit Leader Initials: JE					Void:
ACM CONSULTING AND ENGINEERING PH: (970) 245-7292 EMAIL: JOELMRTINEZ@GMAIL.COM					

Roadway Plan			Project No./Code
			TCSP M555-029
Designer: AJM	Structure Numbers		19365
Detailer: AJM			
Sheet Subset: LIGHTING	Subset Sheets: LE7 of 12		Sheet Number 268

Know what's **below.**
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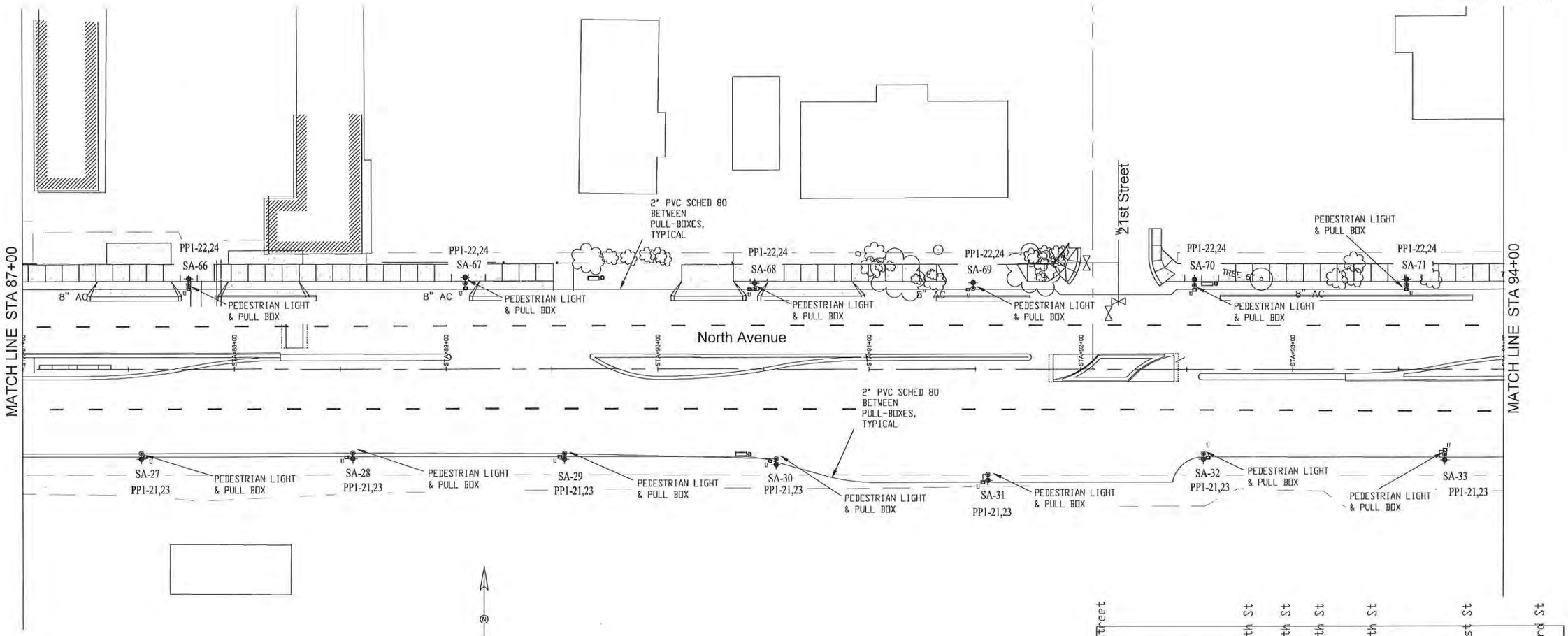

GENERAL NOTES:

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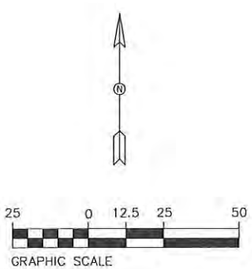
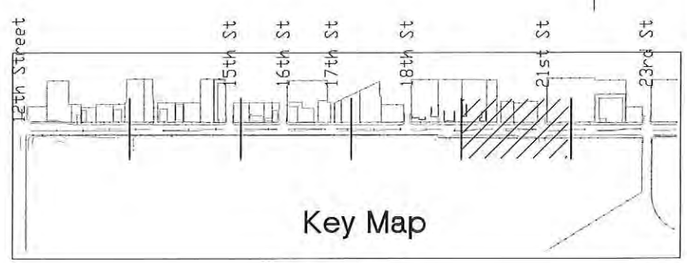
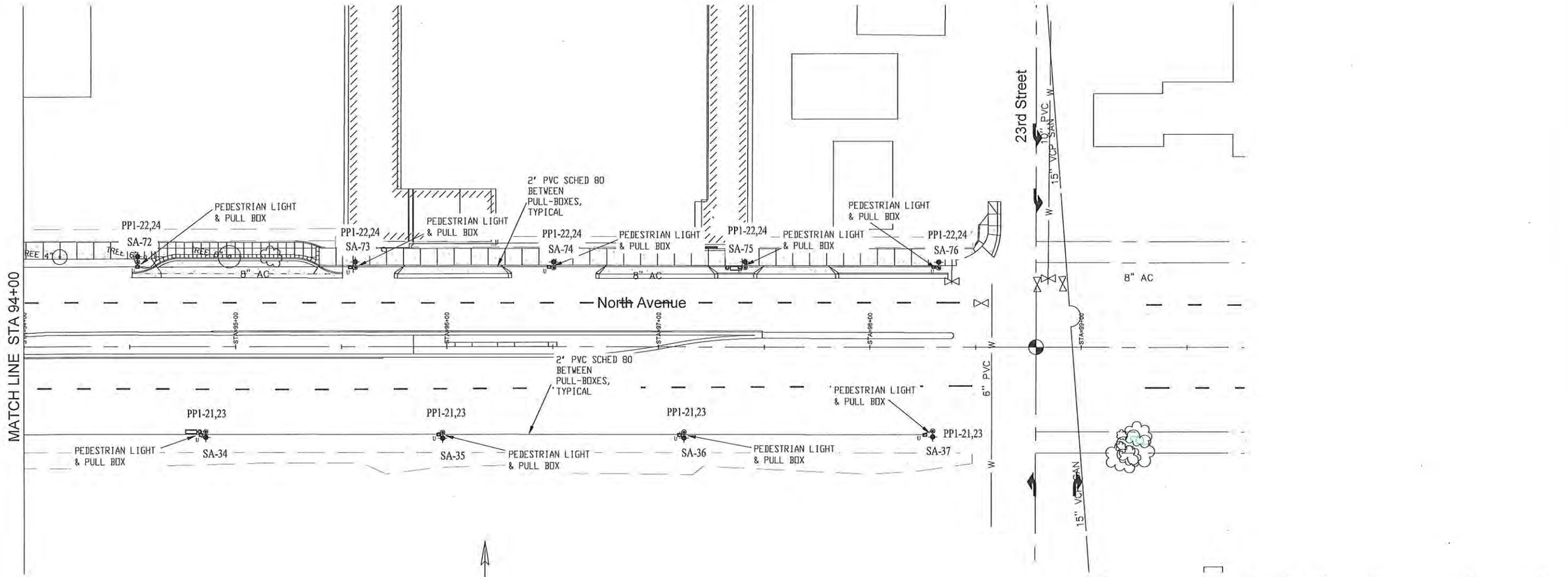
3. PROVIDE 2-#4 THWN + #6GND IN 2" PVC SCHEDULE 80 CONDUIT BETWEEN PULL BOXES UNLESS SHOWN OTHERWISE, TYPICAL.





Print Date: 12-08-15		Sheet Revisions			Colorado Department of Transportation	As Constructed	Roadway Plan		Project No./Code
File Name:		Date:	Comments	Init.	CDOT 606 South 9th Street Grand Junction, CO, 81501 Phone: 970-683-6351 FAX: 970-683-6369	No Revisions:			TCSP M555-029
Horiz. Scale: 1:50 Vert. Scale: NA						Revised:	Designer: AJM	Structure Numbers	19365
Unit Information: City of GJ Unit Leader Initials: JE							Detailer: AJM		
ACM CONSULTING AND ENGINEERING PH: (970) 245-7292 EMAIL: JOELMRTINEZ@GMAIL.COM					Region 3 RBB	Void:	Sheet Subset: RD PLAN	Subset Sheets: LE8 of 12	Sheet Number 269

Know what's **below.**
Call before you dig.



GENERAL NOTES:

1. POWER CIRCUIT AS SHOWN ON DRAWING, TYPICAL.
2. LIGHT TO BE ORIENTED TO BE PERPENDICULAR TO SIDEWALK AND SHINE ON SIDEWALK, TYPICAL.
3. PROVIDE 2-#4 THWN + #6GND IN 2" PVC SCHEDULE 80 CONDUIT BETWEEN PULL BOXES UNLESS SHOWN OTHERWISE, TYPICAL.

Print Date: 12-08-15	Sheet Revisions	Colorado Department of Transportation	As Constructed
File Name:	Date: / Comments / Init.	606 South 9th Street	No Revisions:
Horiz. Scale: 1:50 Vert. Scale: NA		Grand Junction, CO, 81501	Revised:
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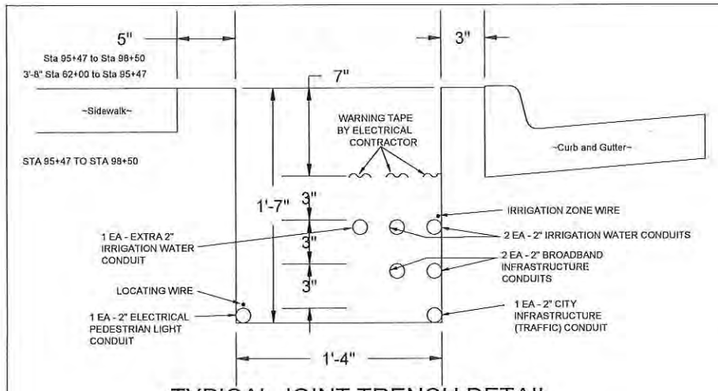
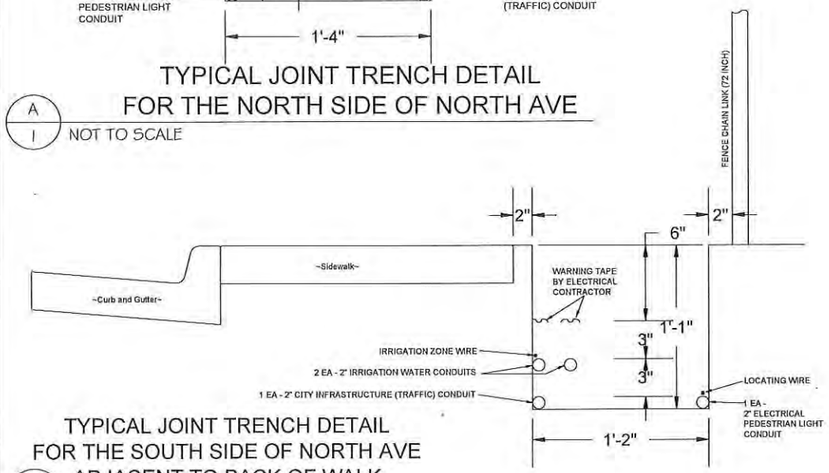
Roadway Plan		Project No./Code
		TCSP M555-029
Designer: AJM	Structure Numbers	19365
Detailer: AJM		
Sheet Subset: RD PLAN	Subset Sheets: LE9 of 12	Sheet Number 270



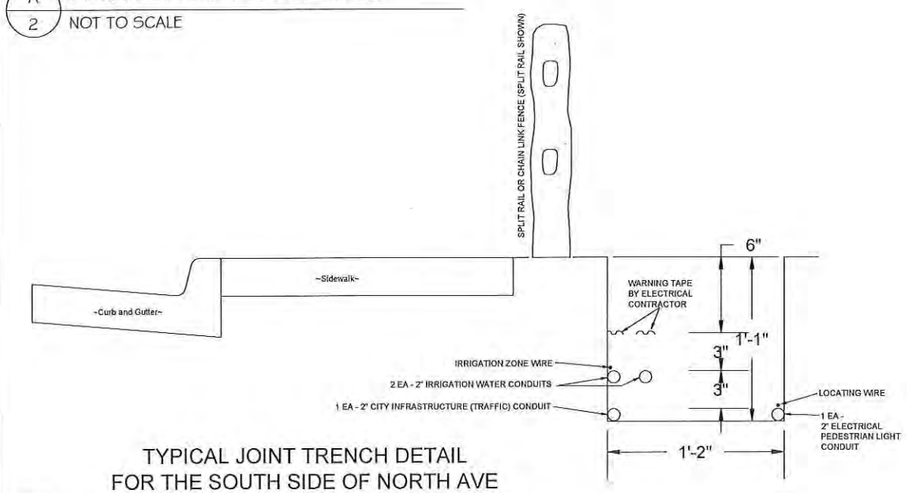
TYPICAL JOINT TRENCH DETAIL
FOR THE NORTH SIDE OF NORTH AVE

A/1 NOT TO SCALE



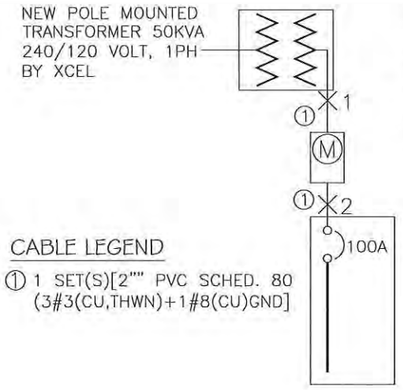
TYPICAL JOINT TRENCH DETAIL
FOR THE SOUTH SIDE OF NORTH AVE
ADJACENT TO BACK OF WALK

A/2 NOT TO SCALE



TYPICAL JOINT TRENCH DETAIL
FOR THE SOUTH SIDE OF NORTH AVE
ADJACENT TO FENCE AT BACK OF WALK

A/3 NOT TO SCALE



A/4 ONE-LINE DIAGRAM

NOT TO SCALE

SHORT CIRCUIT SCHEDULE		
TAG	AIC	LENGTH (FT)
X1	14881	
X2	11831	10

GENERAL NOTES:

1. IN AS MUCH AS DESIGN REQUIRES THAT CERTAIN ASSUMPTIONS BE MADE REGARDING EXISTING CONDITIONS, AND BECAUSE SOME OF THESE ASSUMPTIONS CANNOT BE VERIFIED. FIELD COORDINATION DURING CONSTRUCTION SERVICES IS IMPERATIVE. CONTRACTORS BIDDING THIS WORK MUST MAKE REASONABLE ALLOWANCES FOR UNFORESEEN CONTINGENCIES.
2. THE SERVING ELECTRICAL ASSOCIATION SHALL ADVISE THE OWNER/ENGINEER PRIOR TO SERVICE MODIFICATION REQUIRING COST TO THE OWNER.
3. REFERENCE CIVIL, LANDSCAPE AND IRRIGATION DRAWING PLANS FOR COORDINATION AND LOCATION OF ALL UNDER GROUND SYSTEMS.
4. ALL WORK SHALL BE COORDINATED WITH OTHER TRADES AS REQUIRED: REFERENCE CIVIL LANDSCAPE AND IRRIGATION DRAWINGS.
5. ALL WIRING IS SHOWN DIAGRAMMATICALLY ON DRAWINGS, FIELD VERIFY ALL CONDITIONS PRIOR TO ROUGH-IN.
6. ALL ELECTRICAL WORK SHALL COMPLY WITH THE LATEST EDITION OF NATIONAL ELECTRICAL CODE AND ALL APPLICABLE LOCAL CODES.
7. ALL WIRE TO BE #12 UNLESS NOTED OTHERWISE.
8. CONDUCTOR COUNT IS SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL ENSURE THAT ANY AND ALL DEVICES AND EQUIPMENT ARE CIRCUITED PROPERLY. CONTRACTOR SHALL ENSURE THAT NO EQUIPMENT OR DEVICES ARE COMBINED OTHER THAN WHAT IS DEPICTED.
9. FIELD VERIFY ALL DIMENSIONS, DO NOT SCALE DRAWINGS.
10. COORDINATE INSTALLATION OF METER AND ELECTRICAL REQUIREMENTS WITH XCEL ENERGY.
11. PEDESTAL MUST MEET ALL XCEL ENERGY REQUIREMENTS I.E. COLD SEQUENCE PADLOCK SLIP LATCH ON METER COVER, HOLD OPEN BAR ON METER HOOD.

Panel Schedule PP1

Circuit Information::	Protection Information::	Conductor Information::
Circuits: 16 UNSWITCHED/16 SWITCHED	Frame Size: 100A	Conductor: 2-3 ga.
Voltage: 120 / 240	Load (A): 21	Neutral: 1-3 ga.
System: 1Ø,	NEMA: Type 1	Ground: 1-3 ga.
Hertz: 60	OCPD Size: 100A	Insulation: THWN
	22 Kaic	Material: Copper
		Raceway: 2 in. - PVC-80

UN-SWITCHED CIRCUIT DIRECTORY

Ckt#	Load Description BØ	OCPD Size / Ø	Load - kVA AØ	Load - kVA BØ	Load - kVA CØ	L	Load - kVA CØ	Load - kVA BØ	Load - kVA AØ	OCPD Size / Ø	Load Description BØ	Ckt#
1	MAIN	100A /2				L1			0.18	15A /2	CONTROL POWER	2
3	—					L2		0.3		60A /2	SWITCHED LC CONTROL	4
5						L1			0.3		—	6
7						L2						8
9						L1						10
11						L2						12
13						L1						14
15						L2						16

SWITCHED CIRCUIT DIRECTORY

Ckt#	Load Description BØ	OCPD Size / Ø	Load - kVA AØ	Load - kVA BØ	Load - kVA CØ	L	Load - kVA CØ	Load - kVA BØ	Load - kVA AØ	OCPD Size / Ø	Load Description BØ	Ckt#
17	SW SA-1 TO SA-18	20A /2	0.6			L1			0.66	20A /2	NW SA-38 TO SA-57	18
19	—			0.6		L2		0.66			—	20
21	SE SA-19 TO SA-37	20A /2	0.6			L1			0.63	20A /2	NE SA-58 TO SA-76	22
23	—			0.6		L2		0.63			—	24
25						L1						26
27						L2						28
29						L1						30
31						L2						32
	Phase Totals - kVA:		1.19	1.19				1.59	1.77			

Load Balance	Phase A:	Phase B:
	24.63	23.13

Load Totals	Amps:	kVA:
	24.63	5.73

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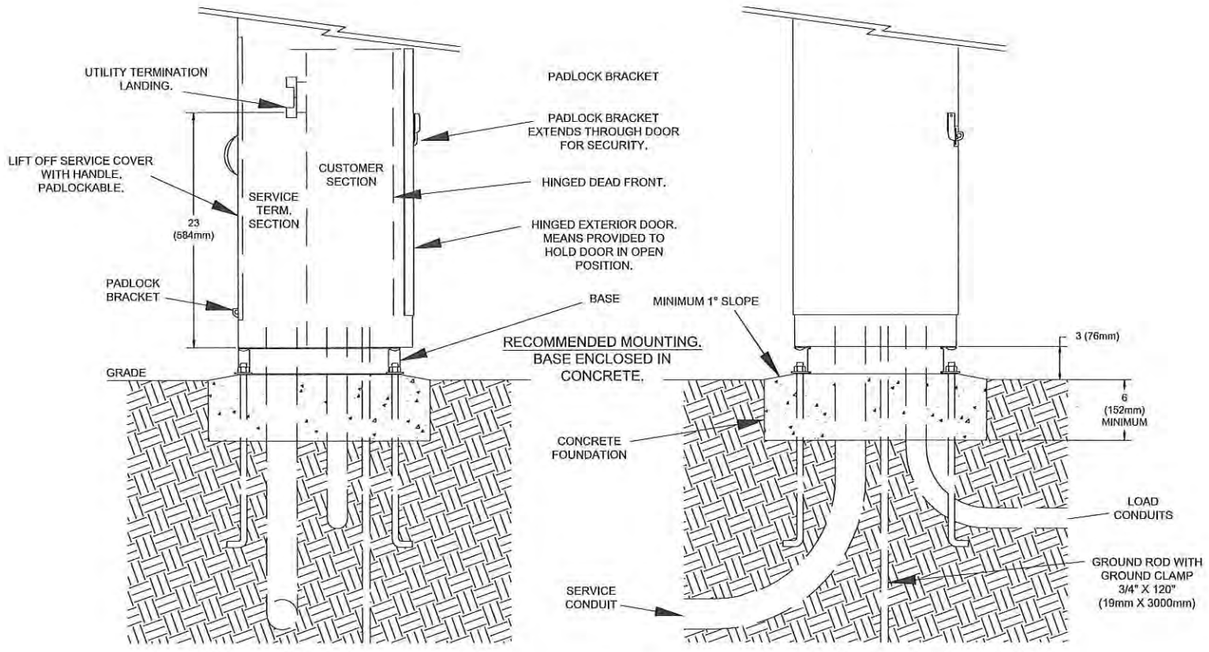
Horiz. Scale: AS SHOWN Vert. Scale: 1			
Unit Information: City of GJ Unit Leader Initials: JE			
ACM CONSULTING AND ENGINEERING PH: (970) 245-7292 EMAIL: JOELMARTINEZ@GMAIL.COM			

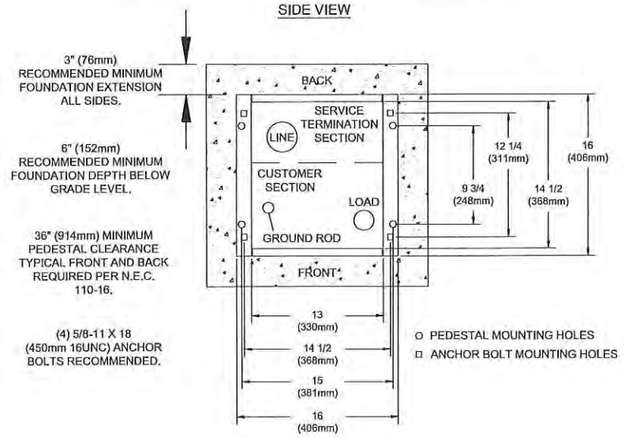
Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

AS CONSTRUCTED	ELECTRICAL DETAILS, ONE-LINE		Project No./Code
No Revisions:			TCSP M555-029
Revised:	Designer: AJM	Structure Numbers	19365
Void:	Detailer: AJM		Sheet Number 271
	Sheet Subset: LIGHTING	Subset Sheets: LE10 of 12	

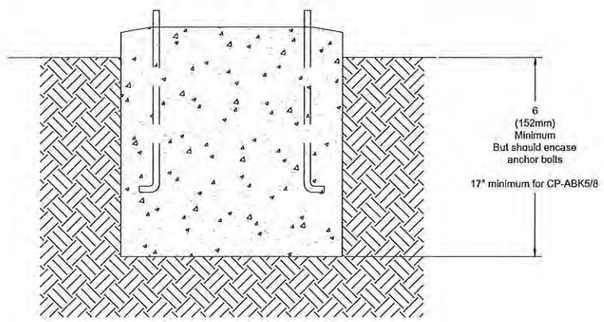


SIDE VIEW

FRONT VIEW



MOUNTING BASE DETAIL (TOP VIEW)



OPTIONAL MOUNTING
NO BASE, MOUNT DIRECTLY ON FOUNDATION.

B / 1 TYPICAL POWER PEDESTAL/LIGHTING CONTROL CENTER (SPECIAL) PLAN
NOT TO SCALE

NOTES

1. CONTROL CABINET SHALL BE U/L LISTED "INDUSTRIAL CONTROL PANEL" PER UL 508.

2. CONSTRUCTION SHALL BE NEMA 3R, 12 GA. A60 STEEL. POWDER COATED MINT GREEN WITH PHOTO ELECTRIC CELL IN SERVICE CABINET. ELECTRICAL CONTRACTOR TO PROVIDE PHOTOCELL.

3. VOLTAGE RATINGS OF SERVICE EQUIPMENT SHALL CONFORM TO THE SERVICE VOLTAGES INDICATED ON THE PLANS.

4. SERVICE EQUIPMENT ENCLOSURE AND METERING EQUIPMENT SHALL MEET THE REQUIREMENTS OF THE SERVING UTILITY. WHEN THE SERVING UTILITY PROVIDES BOTH METERED AND UNMETERED CIRCUITS, A SEPARATE BUS SHALL BE PROVIDED FOR EACH CIRCUIT. THE METER AREA SHALL HAVE A SEALING, LOCKABLE, RAIN TIGHT COVER THAT CAN BE REMOVED WITHOUT THE USE OF TOOLS.

5. SERVICE EQUIPMENT SHALL BE FACTORY WIRED AND CONFORM TO NEMA STANDARDS.

6. THE EXTERIOR DOOR SHALL HAVE PROVISIONS FOR PADLOCKING. THE PADLOCK HOLE SHALL BE A MINIMUM DIAMETER OF 11mm.

7. ALL TERMINALS FOR INCOMING SERVICE CONDUCTORS SHALL BE COMPATIBLE WITH EITHER COPPER OR ALUMINUM CONDUCTORS SIZED TO SUIT THE CONDUCTORS SHOWN ON THE PLAN. TERMINAL LUGS SHALL BE COPPER OR TIN-PLATED ALUMINUM. SOLID NEUTRAL TERMINAL STRIP SHALL BE RATED 125A UNLESS OTHERWISE SPECIFIED AND FOR USE WITH COPPER OR ALUMINUM CONDUCTORS. THE TERMINAL SHOULD INCLUDE BUT NOT BE LIMITED TO:
   A) INCOMING TERMINALS (LANDING LUGS)
   B) NEUTRAL LUGS
   C) SOLID NEUTRAL TERMINAL STRIP.
   D) TERMINAL STRIPS FOR CONDUCTORS WITHIN THE ENCLOSURE.

8. AT LEAST 4 STANDARD SINGLE POLE 240V AND 1 SINGLE POLE 120 CIRCUIT BREAKER SPACES (20mm NOMINAL) SHALL BE PROVIDED FOR BRANCH CIRCUITS. CIRCUIT BREAKER INTERIORS SHALL BE COPPER. INTERIORS SHALL ACCEPT PLUG-IN OR CABLE-IN/ CABLE-OUT CIRCUIT BREAKERS.

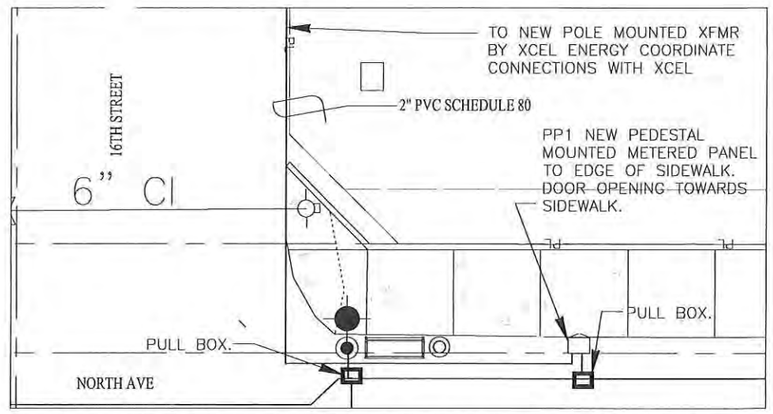
9. PLUG-IN CIRCUIT BREAKERS MAY BE MOUNTED IN THE VERTICAL OR HORIZONTAL POSITION. CABLE-IN/ CABLE-OUT CIRCUIT BREAKERS SHALL BE MOUNTED IN THE VERTICAL POSITION.

10. FASTENERS ON THE EXTERIOR OF THE ENCLOSURE SHALL BE VANDAL RESISTANT AND SHALL NOT BE REMOVABLE FROM THE EXTERIOR. ALL NUTS, BOLTS, SCREWS, WASHERS, AND HINGES SHALL BE STAINLESS STEEL.

11. PHENOLIC NAME PLATES SHALL BE PROVIDED AS REQUIRED.

12. A PLASTIC COVERED WIRING DIAGRAM SHALL BE ATTACHED TO THE INSIDE OF THE FRONT DOOR.

13. FOUNDATION SHALL EXTEND 50mm MINIMUM BEYOND EDGE OF ENCLOSURE.



B / 2 TYPICAL LIGHTING CONTROL CENTER AND POWER PEDESTAL(SPECIAL) LOCATION PLAN
NOT TO SCALE

811 Know what's below. Call before you dig.

Print Date: 12-08-15	Sheet Revisions			AS CONSTRUCTED	POWER/LIGHTING PEDESTAL CONTROL CENTER DETAILS	Project No./Code
File Name:	Date:	Comments	Init.	No Revisions:		TCSP M555-029
Horiz. Scale: AS SHOWN Vert. Scale: 1				Revised:	Designer: AJM / Detailer: AJM / Structure Numbers	19365
Unit Information: City of GJ Unit Leader Initials: JE				Void:	Sheet Subset: LIGHTING / Subset Sheets: LE11 of 12	Sheet Number 272
ACM CONSULTING AND ENGINEERING PH: (970) 245-7292 EMAIL: JOELMRTINEZ@GMAIL.COM						

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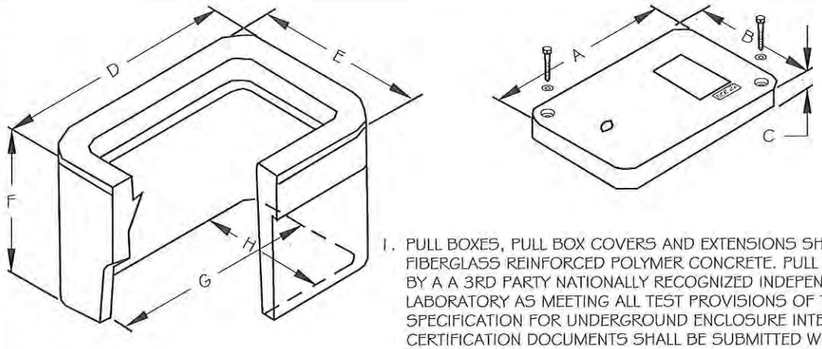
Region 3 RBB



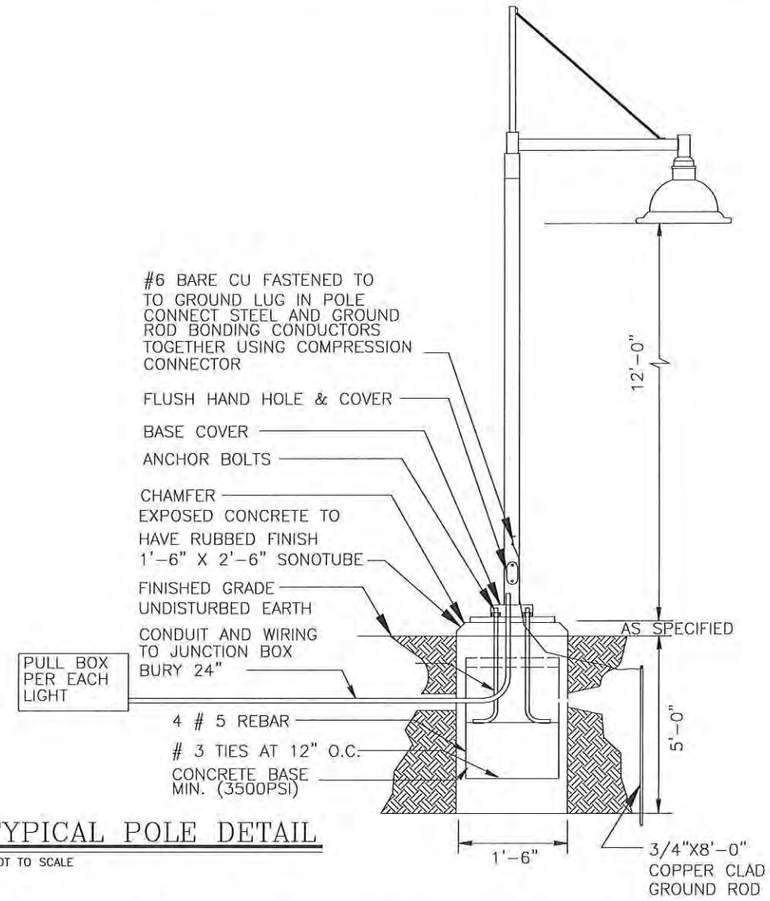
UTILITY BOX DIMENSIONS

A	18-1/8"
B	11-1 /4"
C	1-1/4"
D	20-1/2"
E	13-3/8"
F	12"
G	15-3/4"
H	8-7/8"

1. PULL BOXES, PULL BOX COVERS AND EXTENSIONS SHALL BE MADE OF FIBERGLASS REINFORCED POLYMER CONCRETE. PULL BOXES SHALL BE VERIFIED BY A A 3RD PARTY NATIONALLY RECOGNIZED INDEPENDENT TESTING LABORATORY AS MEETING ALL TEST PROVISIONS OF THE LATEST ANSI/SCTE 77 SPECIFICATION FOR UNDERGROUND ENCLOSURE INTEGRITY, TIER 22 RATING. CERTIFICATION DOCUMENTS SHALL BE SUBMITTED WITH MATERIALS SUBMITTALS. THE PULL BOX SHALL HAVE A DETACHABLE COVER WITH A SKID RESISTANT SURFACE AND HAVE THE WORDS ELECTRICAL CAST INTO THE SURFACE. PAINTING THE WORDS SHALL NOT BE ACCEPTED. MARKINGS SHOWING THE TIER 22 RATING MUST BE LABELED OR STENCILED ON THE INSIDE AND OUTSIDE OF THE BOX AND THE ON THE UNDER SIDE OF THE COVER. THE COVER SHALL BE ATTACHED TO THE PULL BOX BODY BY MEANS OF A MINIMUM 3/8 - 7 UNIFIED NATIONAL COURSE (UNC) STAINLESS STEEL PENTA HEAD BOLTS AND SHALL HAVE TWO LIFT SLOTS TO AID IN THE REMOVAL OF THE LID.
2. PULL SLOTS SHALL BE RATED FOR A MINIMUM PULL OUT OF 3,000 POUNDS. MAGNESIUM CHLORIDE TESTS SHOULD BE PERFORMED IN ACCORDANCE WITH THE LATEST ANSI/SCTE 77 SPECIFICATION FOR UNDERGROUND ENCLOSURE INTEGRITY, TIER 22 RATING.

C 1 UTILITY BOX DETAIL
NOT TO SCALE

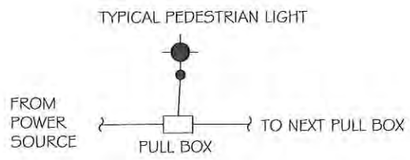
811 Know what's **below.** **Call** before you dig.



C 3 TYPICAL POLE DETAIL
NOT TO SCALE

POLE DETAIL NOTES:

1. ORDER STEINBERG URBAN LINE 5" ROUND STRAIGHT STEEL POLES. OBTAIN POLE MOUNTING TEMPLATE PATTERN FROM MANUFACTURER PRIOR TO ROUGH-IN.
2. PROVIDE EACH PEDESTRIAN LIGHT INSTALLED IN THIS CONTRACT WITH J-BOX.



1. EACH LIGHT LOCATION TO HAVE PULL BOX

C 2 UTILITY BOX CONNECTION DETAIL
NOT TO SCALE

LUMINAIRE SCHEDULE PEDESTRIAN

TYPE	MANUFACTURER MODEL NUMBER	APPROVAL	VOLTAGE MOUNTING # OF LAMPS	BALLAST LAMPE TYPE LAMP CAT. #	DESCRIPTION
SA	STERNBERG LIGHTING 1A-1527LED-R-SV1-4ARC35T2-MDL03-EZ/OAPT/450P414/BK	OWNER REQUESTED	240 POLE 1	ELECTRONIC LED 66 W	PEDESTRIAN LUMINAIRE, ARM MOUNTED, LED, CUTOFF, ORDER POLE SO THAT LAMP HEIGHT IS 12' AFG MEASURED AT BOTTOM OF LUMINAIRE. ORDER WITH BRD ARM COLOR OF POLE AND ARM TO MATCH POLE.

Print Date: 12-08-15	Sheet Revisions			AS CONSTRUCTED	LIGHTING DETAILS, SCHEDULES
File Name:	Date:	Comments	Init.	No Revisions:	
Horiz. Scale: AS SHOWN Vert. Scale: 1				Revised:	Designer: AJM / Detailer: AJM / Sheet Subset: LIGHTING / Structure Numbers / Subset Sheets: LE12 of 12
Unit Information: City of GJ Unit Leader Initials: JE				Void:	
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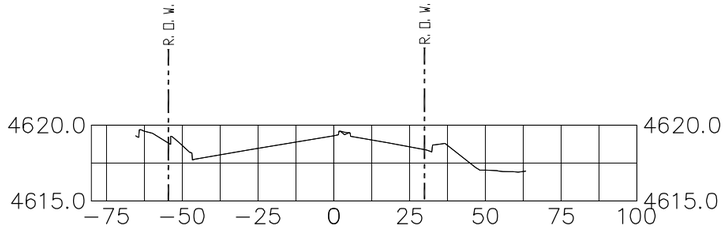

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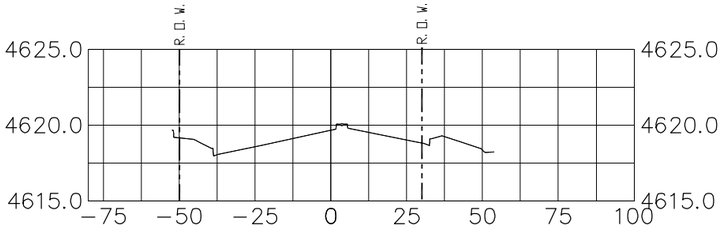

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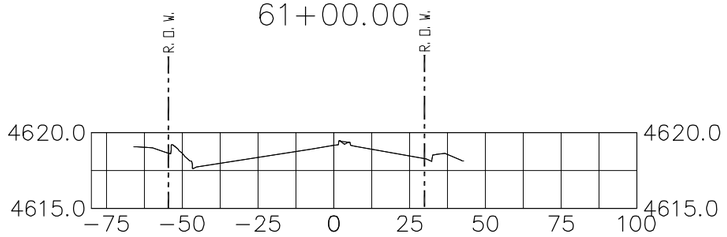

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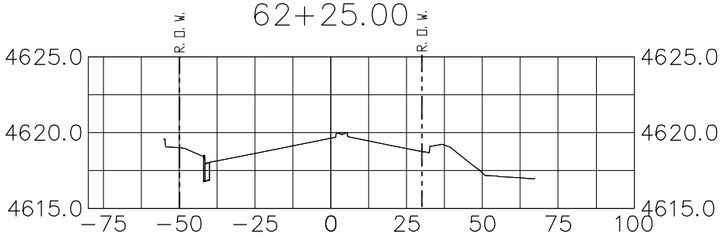

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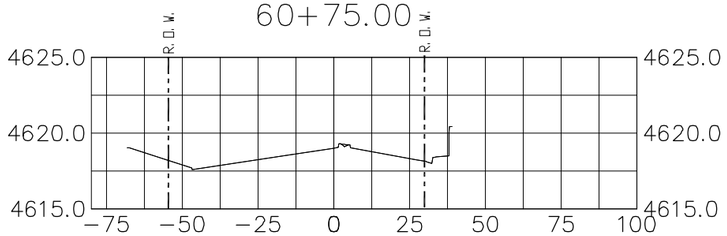

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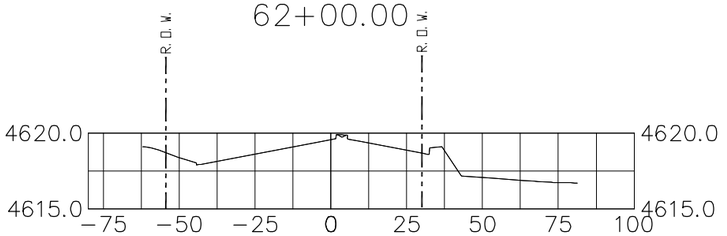

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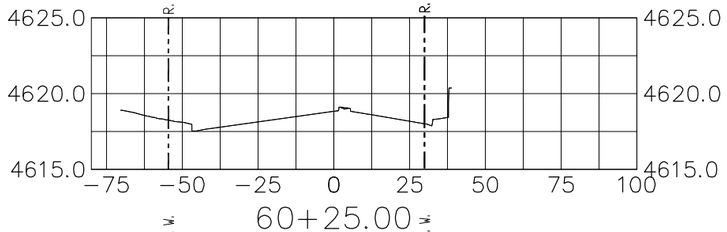

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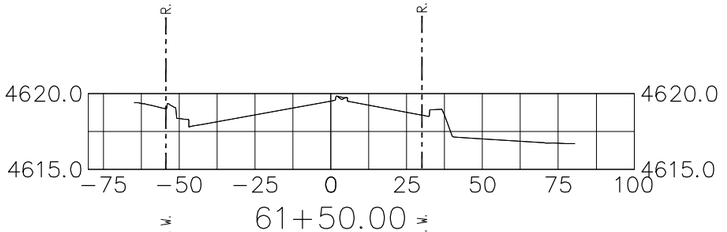

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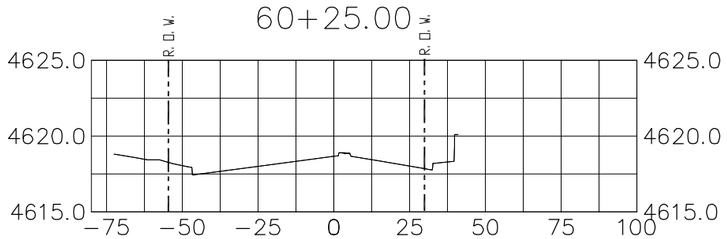

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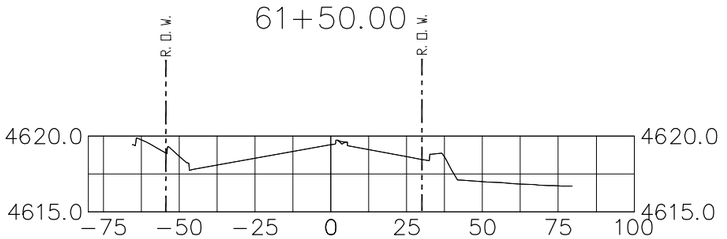

61+25.00

N:\Cadd\John Smith\Projects\(NORTH AVE)\ACAD Drawings\roadway plans with city std dwy curts.dwg, 8/20/2015 4:10:49 PM

Print Date: AT LEFT			
File Name: AT LEFT			
Horiz. Scale: 1:50	Vert. Scale: 1:10		
Unit Information: City of GJ	Unit Leader Initials: DPJ		

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Sheet Revisions

Date:	Comments	Init.

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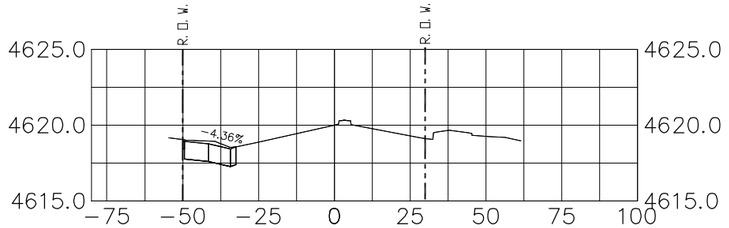
As Constructed
No Revisions:
Revised:
Void:

Roadway Cross Sections

Designer: John Smith
Detailer: John Smith
Sheet Subset:
Structure Numbers
Subset Sheets: 1 of 16

Project No./Code
TCSP M555-029
19365
Sheet Number 274



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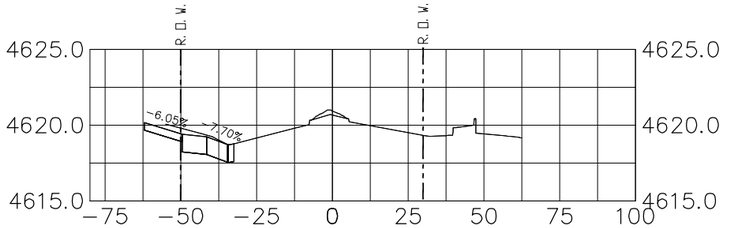

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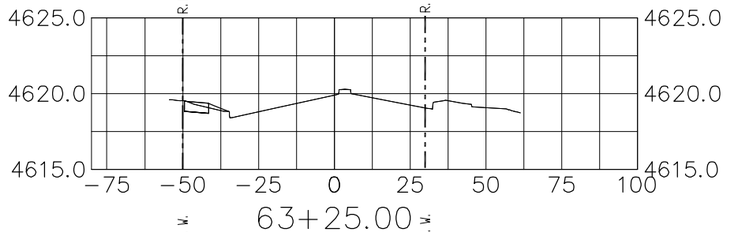

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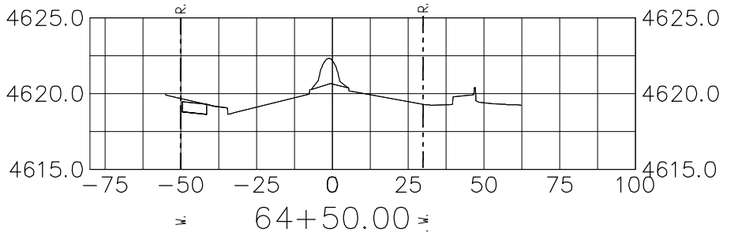

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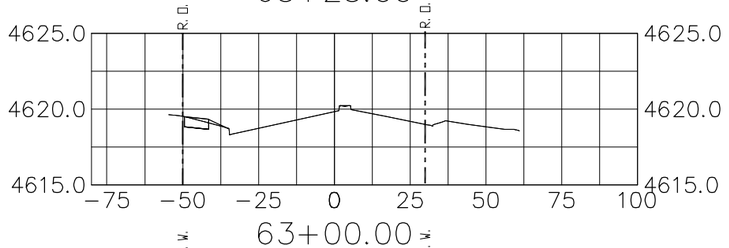

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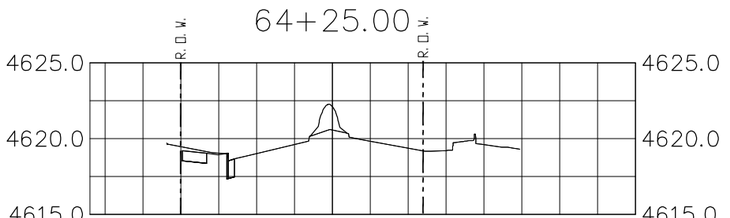

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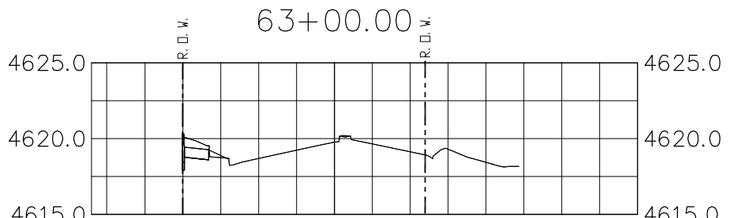

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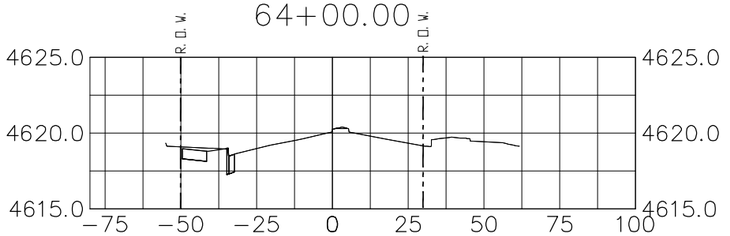

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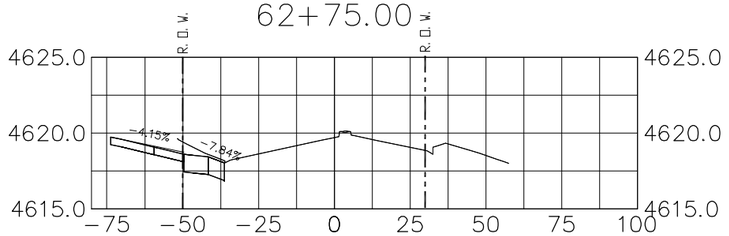

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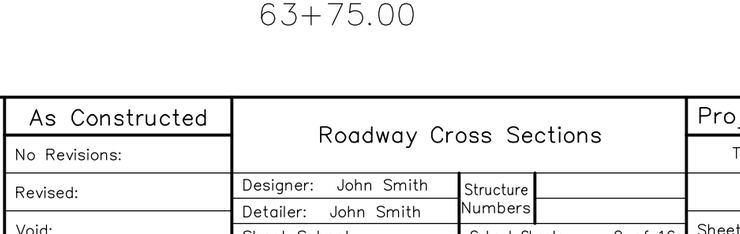

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Unit Information: City of GJ	Unit Leader Initials: DPJ		

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Sheet Revisions

Date:	Comments	Init.

Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

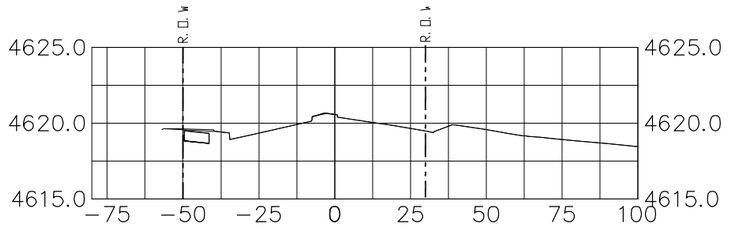
As Constructed

No Revisions:	
Revised:	
Void:	

Roadway Cross Sections

Designer: John Smith		Structure Numbers	
Detailer: John Smith			
Sheet Subset:		Subset Sheets:	2 of 16

Project No./Code
TCSP M555-029
19365
Sheet Number 275



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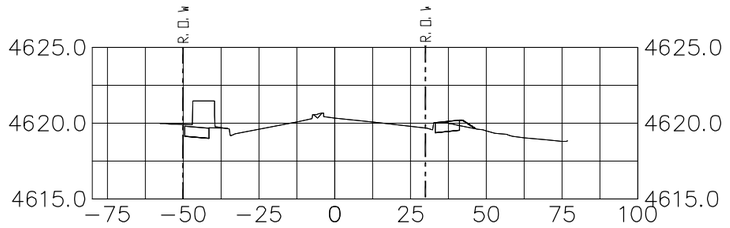

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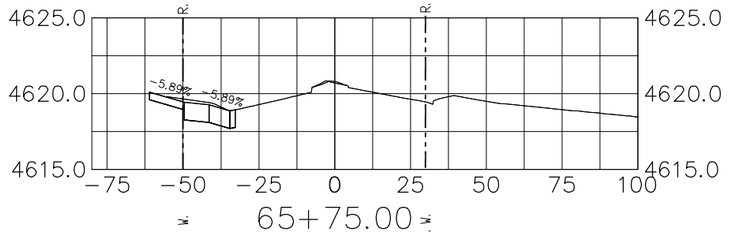

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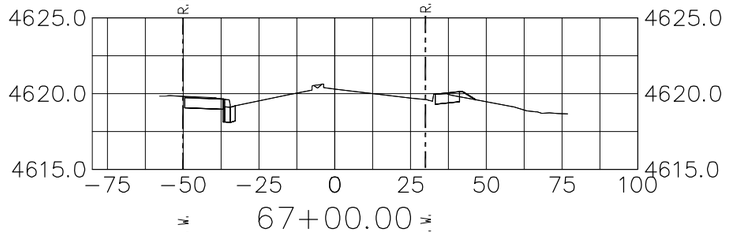

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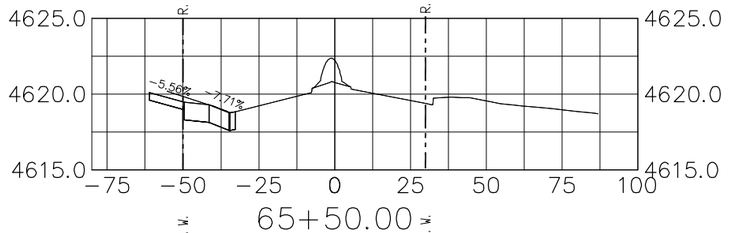

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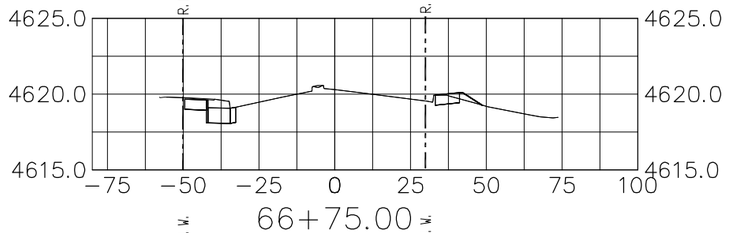

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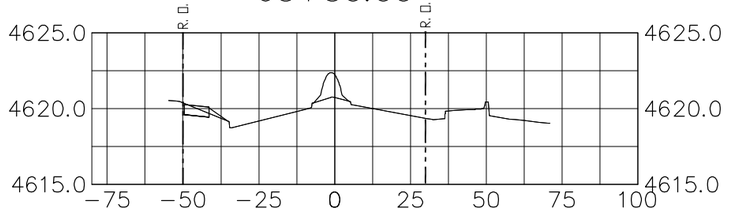

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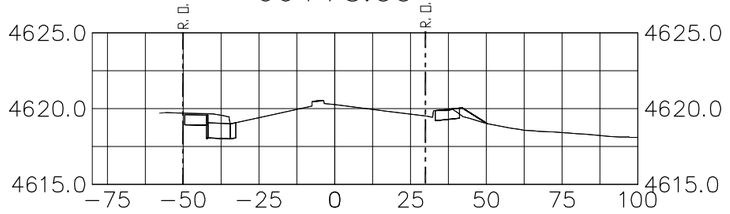

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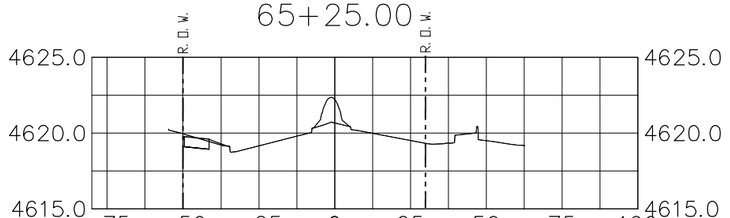

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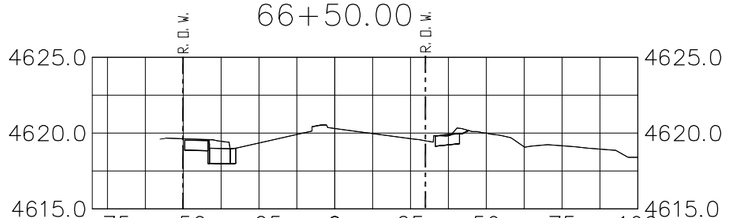

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Sheet Revisions

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Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

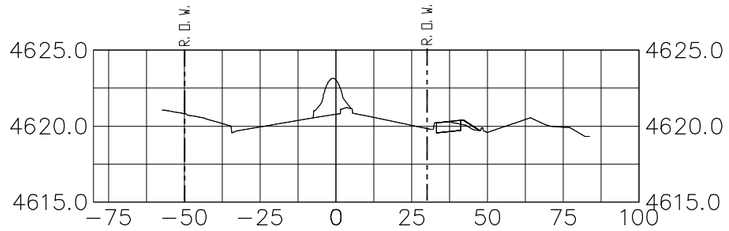
As Constructed

No Revisions:	
Revised:	
Void:	

Roadway Cross Sections

Designer: John Smith		Structure Numbers	
Detailer: John Smith			
Sheet Subset:		Subset Sheets:	3 of 16

Project No./Code
TCSP M555-029
19365
Sheet Number 276



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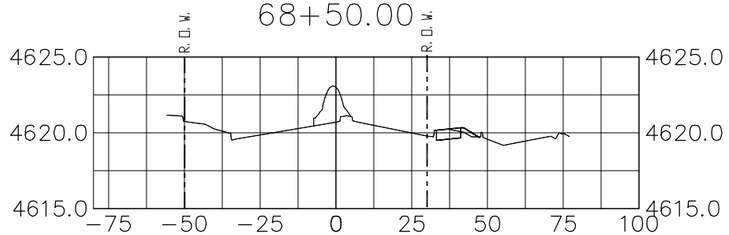

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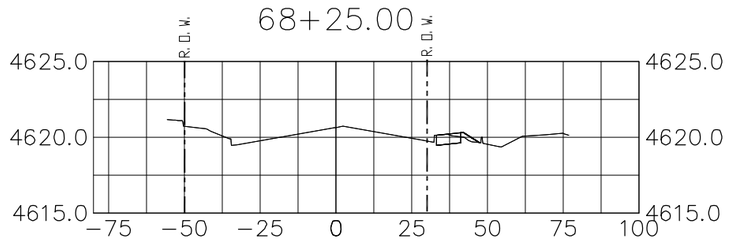

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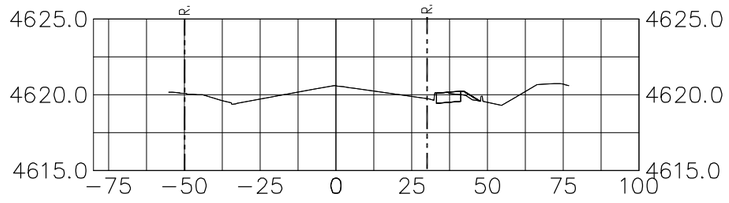

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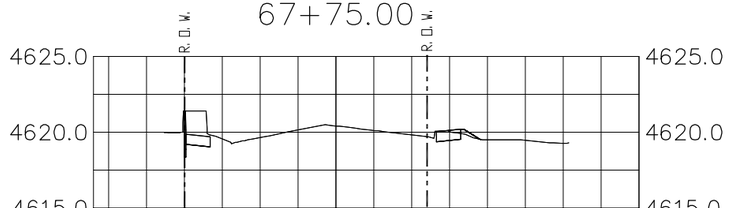

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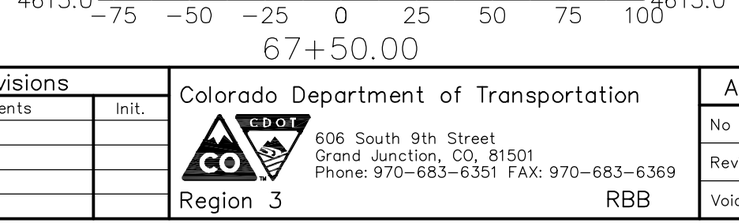

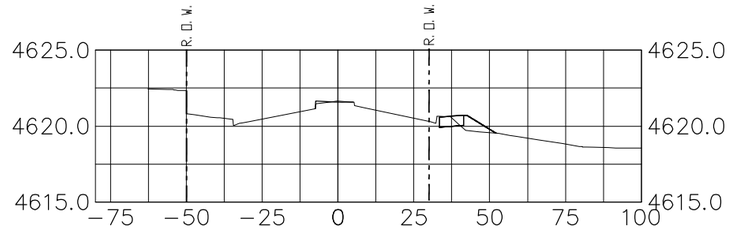

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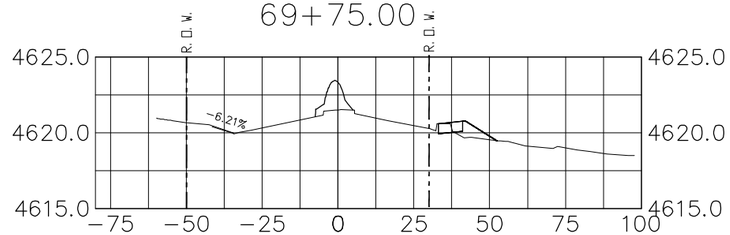

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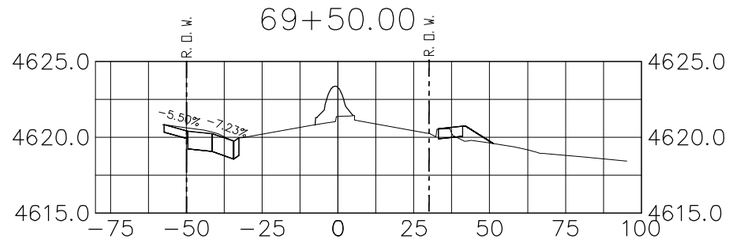

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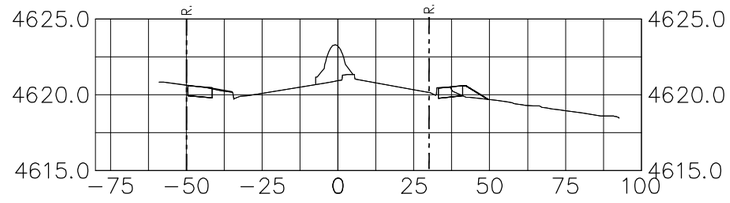

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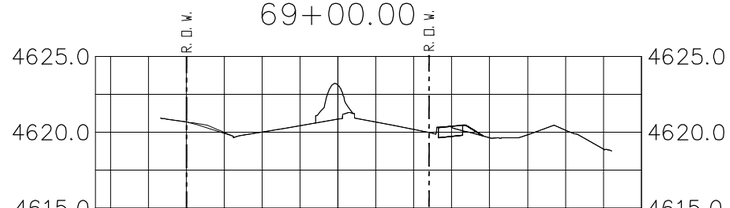

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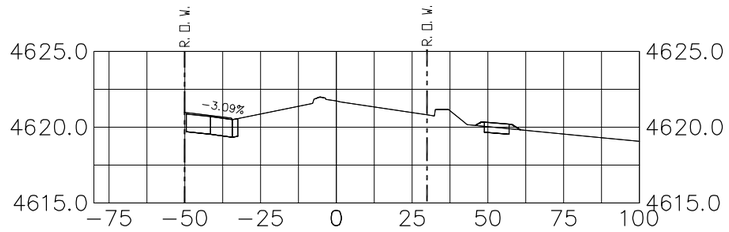
Horiz. Scale: 1:50 Vert. Scale: 1:10		Grand Junction, CO, 81501	Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ		Phone: 970-683-6351 FAX: 970-683-6369	Void:
		Region 3 RBB	

Roadway Cross Sections			Project No./Code
			TCSP M555-029
Designer: John Smith	Structure Numbers		19365
Detailer: John Smith			
Sheet Subset:	Subset Sheets: 4 of 16		Sheet Number 277



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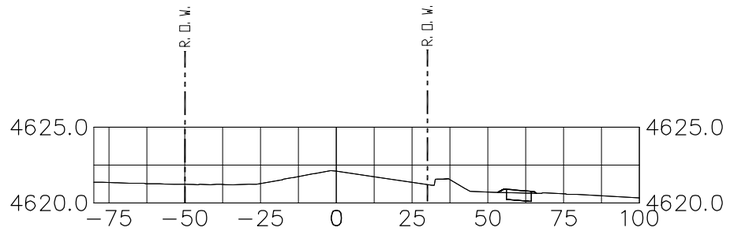

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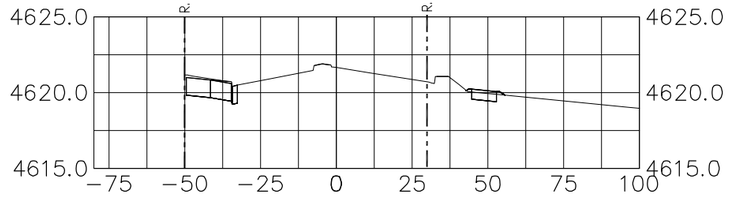

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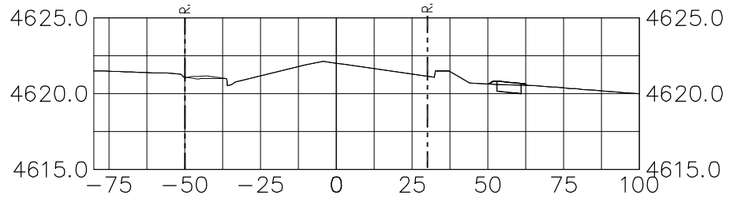

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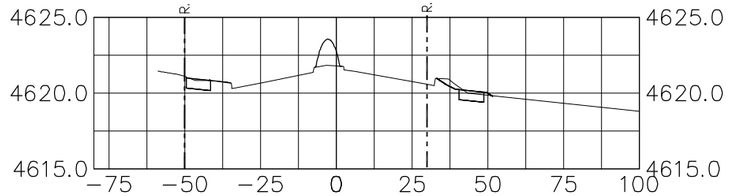

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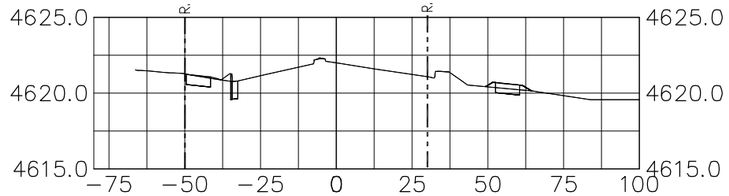

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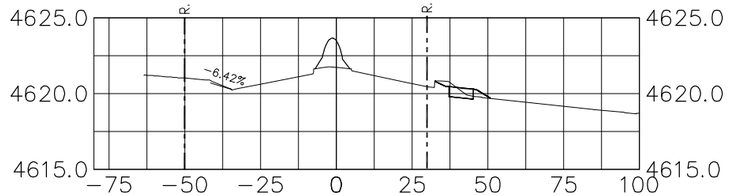

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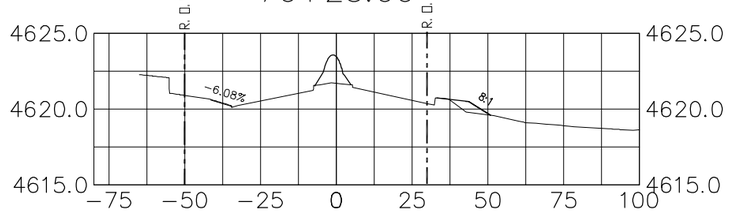

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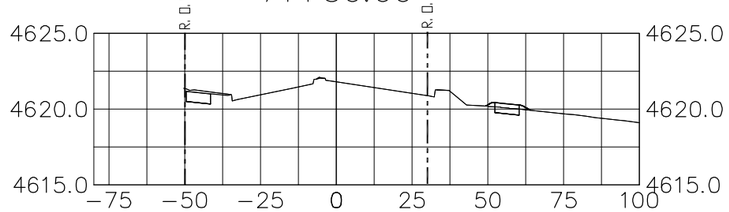

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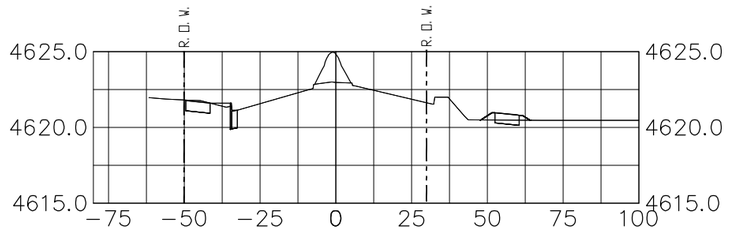
Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

As Constructed
No Revisions:
Revised:
Void:

Roadway Cross Sections

Designer: John Smith
Detailer: John Smith
Sheet Subset:
Structure Numbers
Subset Sheets: 5 of 16

Project No./Code
TCSP M555-029
19365
Sheet Number 278



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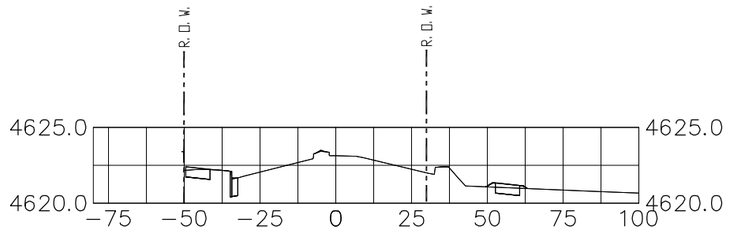

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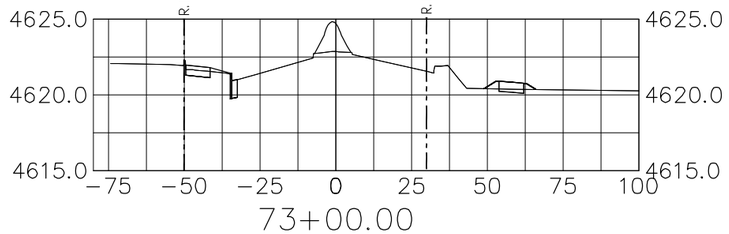

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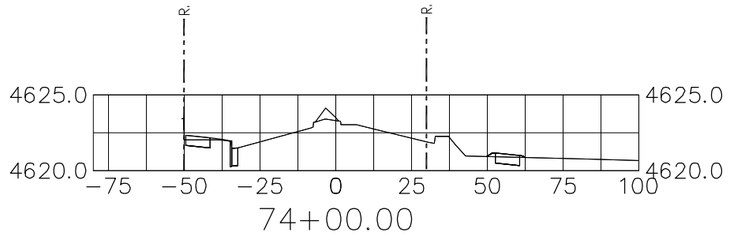

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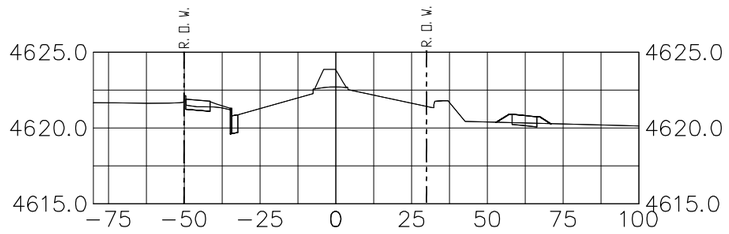

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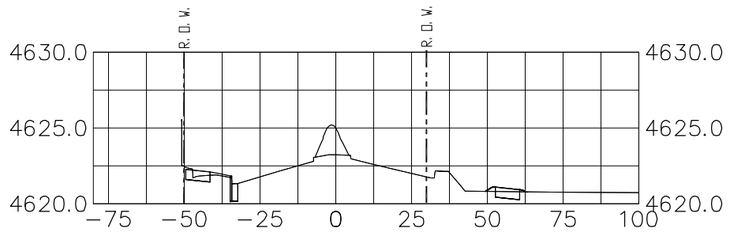

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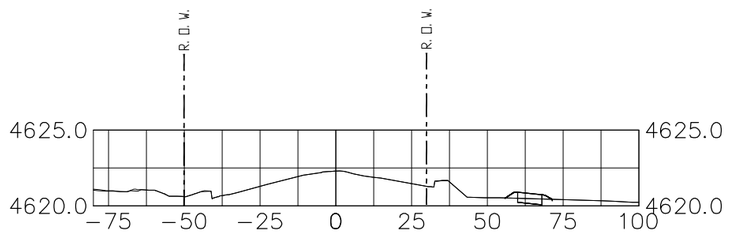

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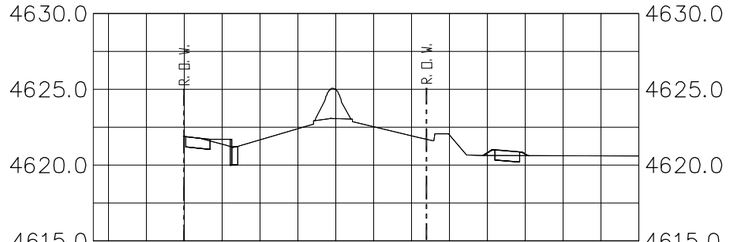

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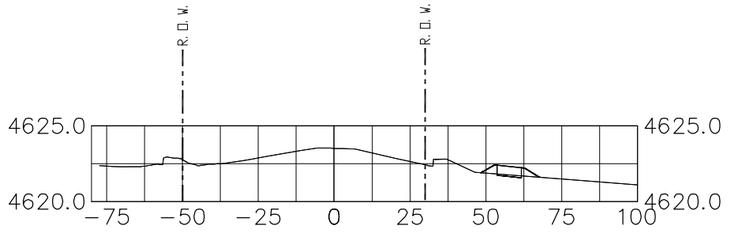
Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

As Constructed
No Revisions:
Revised:
Void:

Roadway Cross Sections

Designer: John Smith
Detailer: John Smith
Sheet Subset:
Structure Numbers
Subset Sheets: 6 of 16

Project No./Code
TCSP M555-029
19365
Sheet Number 279



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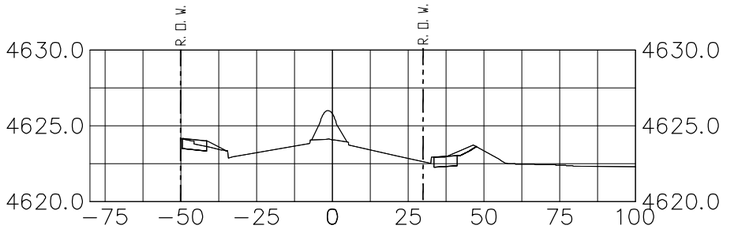

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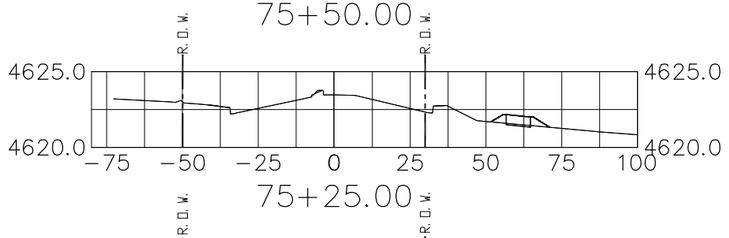

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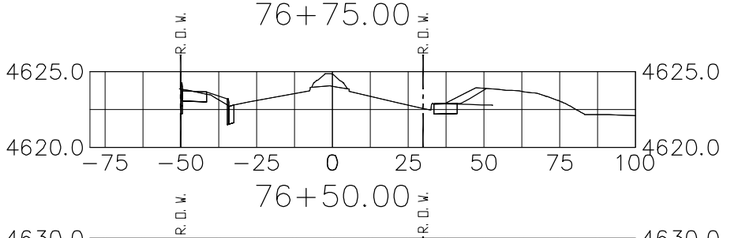

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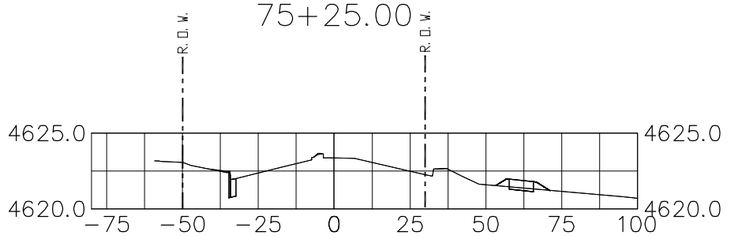

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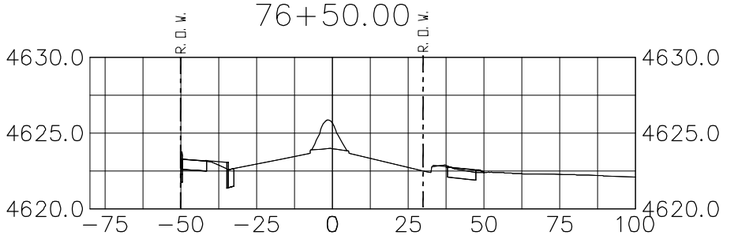

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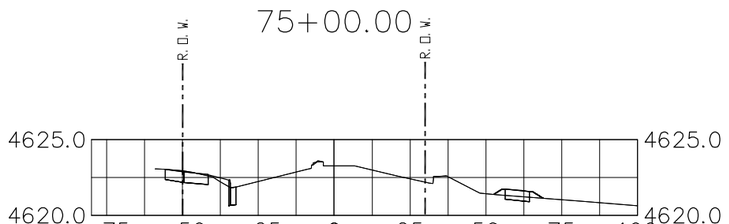

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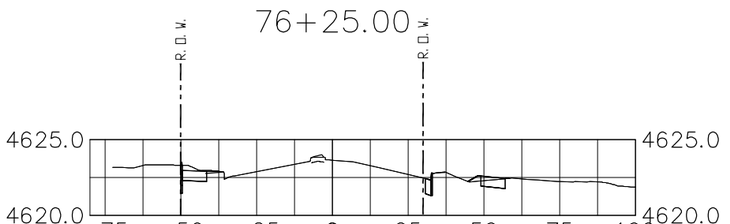

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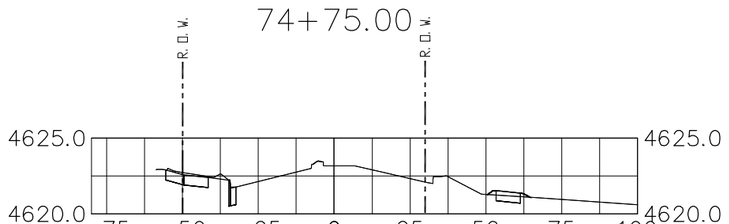

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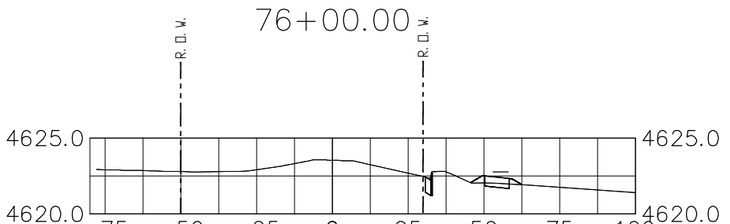

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Unit Information: City of GJ Unit Leader Initials: DPJ			

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Sheet Revisions

Date:	Comments	Init.

Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

As Constructed

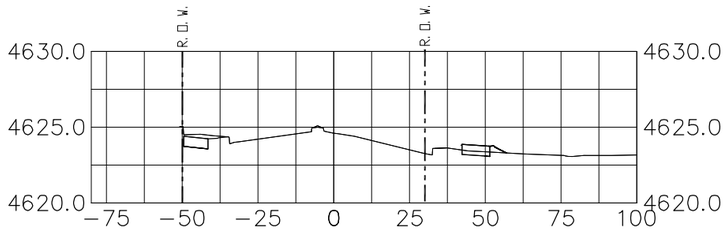
No Revisions:	
Revised:	
Void:	

Roadway Cross Sections

Designer: John Smith		Structure Numbers	
Detailer: John Smith			
Sheet Subset:		Subset Sheets:	7 of 16

Project No./Code

TCSP M555-029
19365
Sheet Number 280



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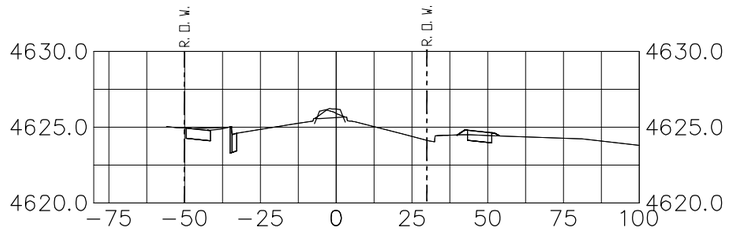

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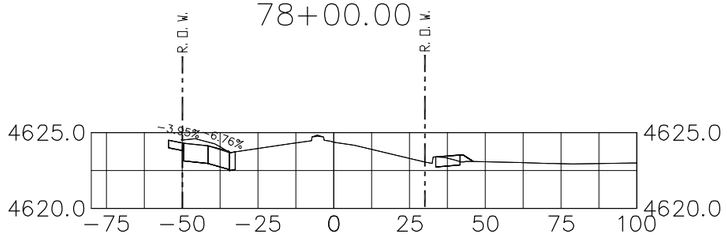

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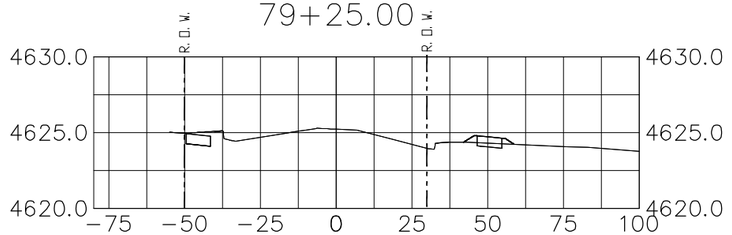

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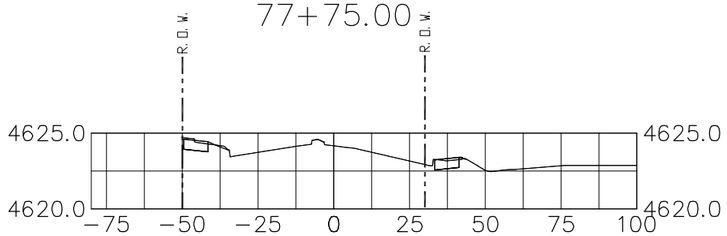

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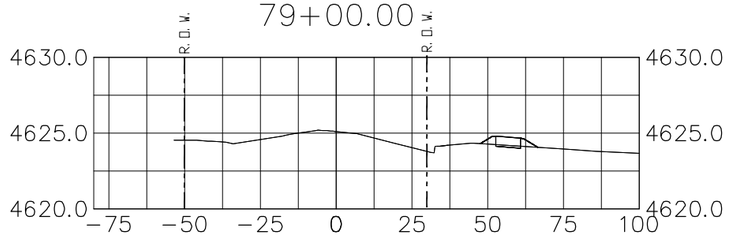

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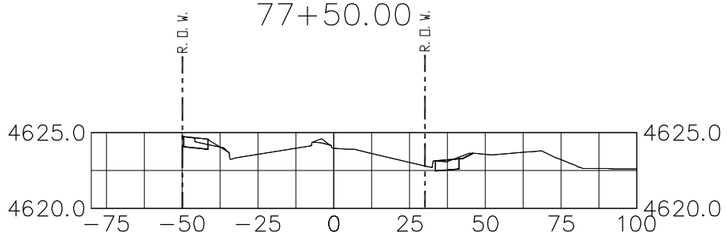

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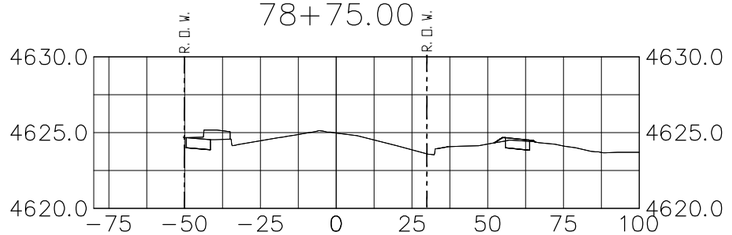

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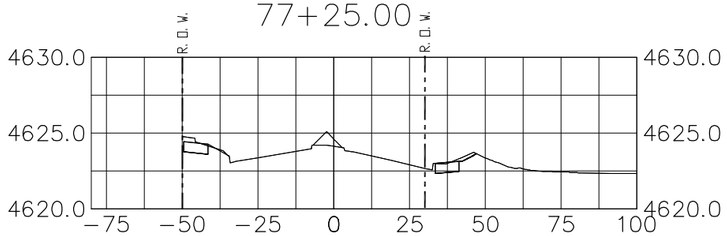

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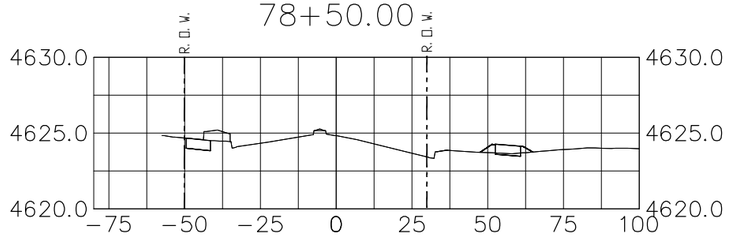

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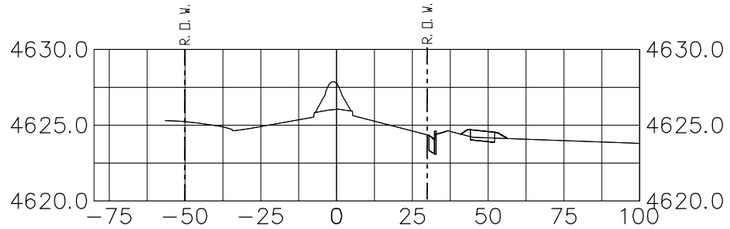
Horiz. Scale: 1:50 Vert. Scale: 1:10		Grand Junction, CO, 81501	Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ		Phone: 970-683-6351 FAX: 970-683-6369	Void:
		Region 3 RBB	

Roadway Cross Sections			Project No./Code
Designer: John Smith	Structure Numbers		TCSP M555-029
Detailer: John Smith			19365
Sheet Subset:	Subset Sheets:	8 of 16	Sheet Number 281



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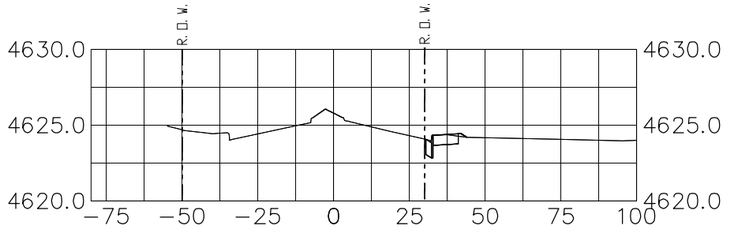

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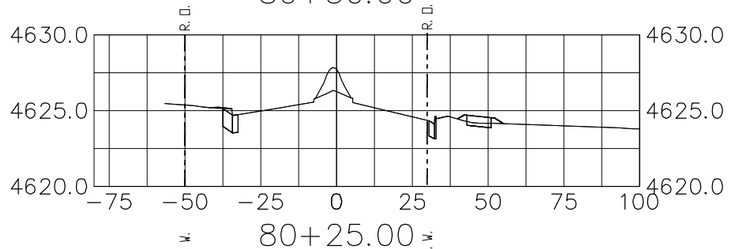

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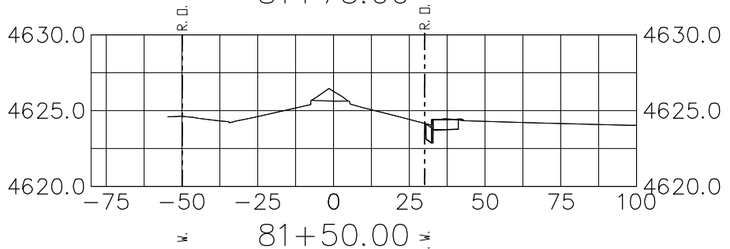

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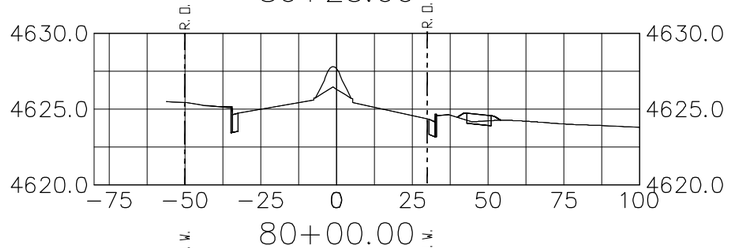

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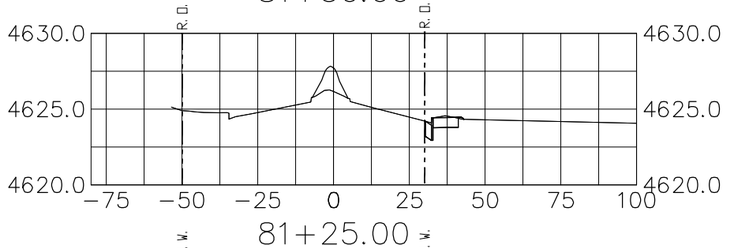

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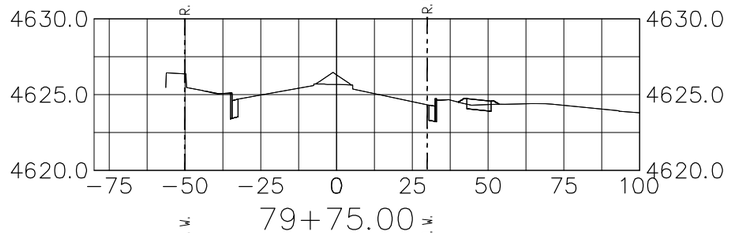

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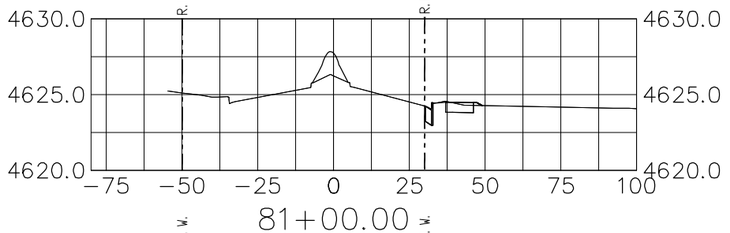

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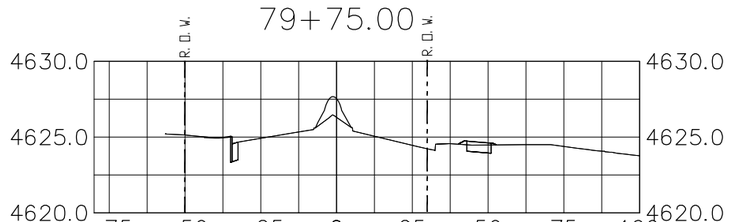

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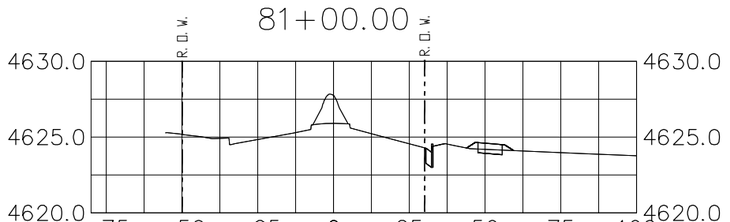

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Unit Information: City of GJ Unit Leader Initials: DPJ				

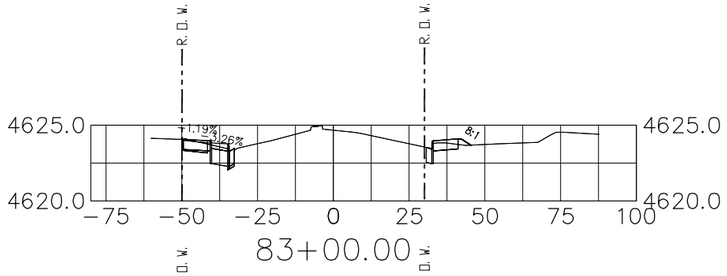
Colorado Department of Transportation
606 South 9th Street
Grand Junction, CO, 81501
Phone: 970-683-6351 FAX: 970-683-6369
Region 3 RBB

As Constructed
No Revisions:
Revised:
Void:

Roadway Cross Sections

Designer: John Smith
Detailer: John Smith
Sheet Subset:
Structure Numbers
Subset Sheets: 9 of 16

Project No./Code
TCSP M555-029
19365
Sheet Number 282



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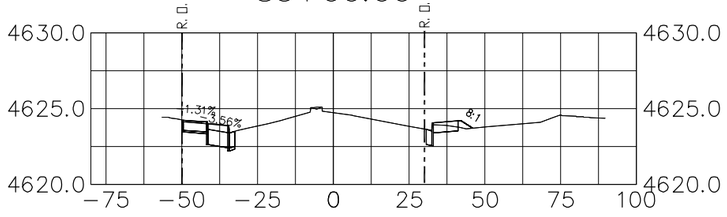

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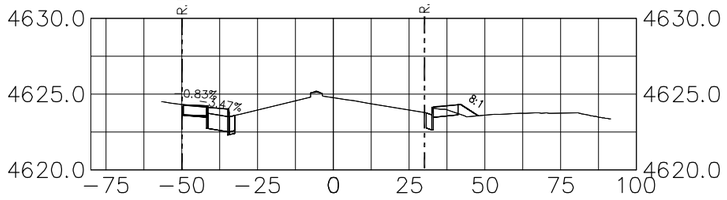

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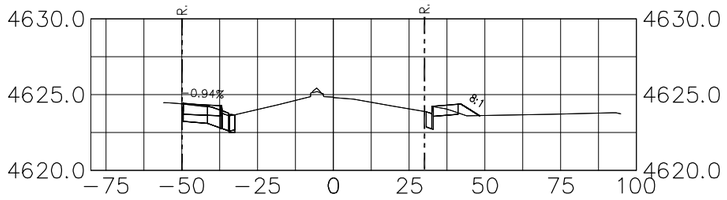

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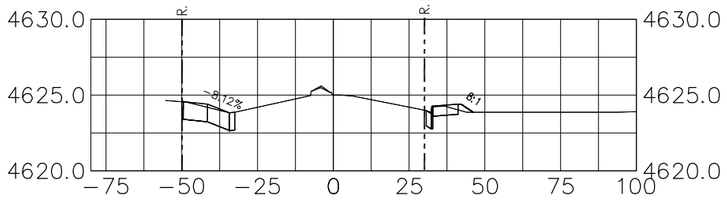

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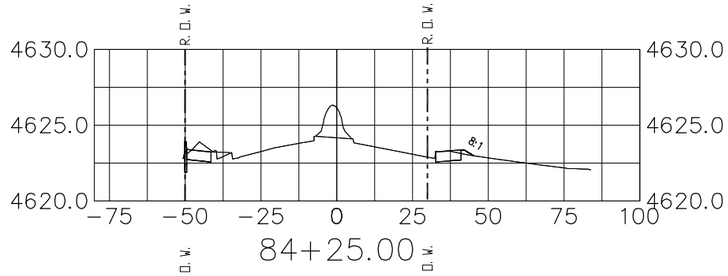

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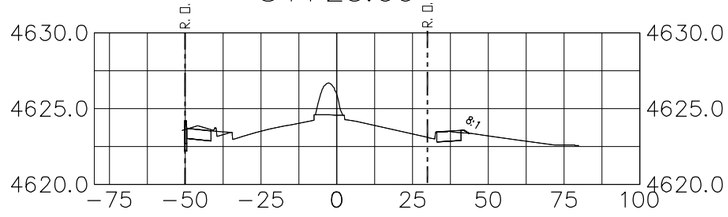

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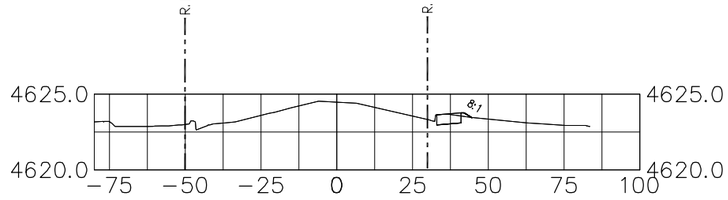

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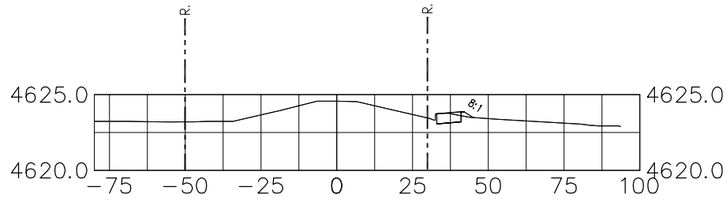

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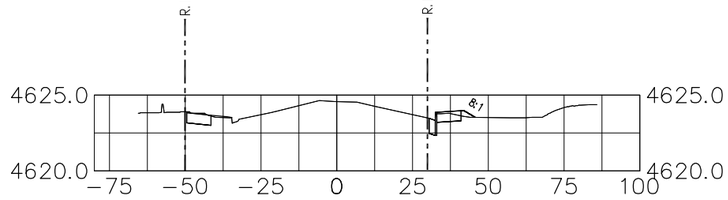

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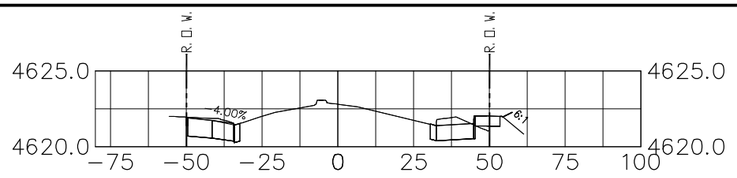
Horiz. Scale: 1:50 Vert. Scale: 1:10					Region 3 RBB
Unit Information: City of GJ Unit Leader Initials: DPJ					

As Constructed	Roadway Cross Sections			Project No./Code
No Revisions:				TCSP M555-029
Revised:	Designer: John Smith	Structure Numbers		19365
Void:	Detailer: John Smith			Sheet Number 283
	Sheet Subset:	Subset Sheets:	10 of 16	



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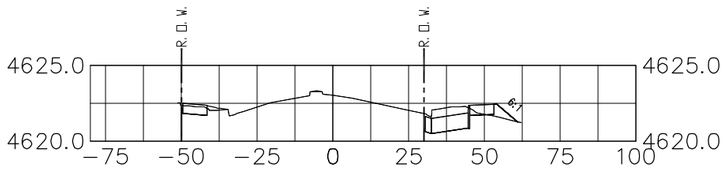

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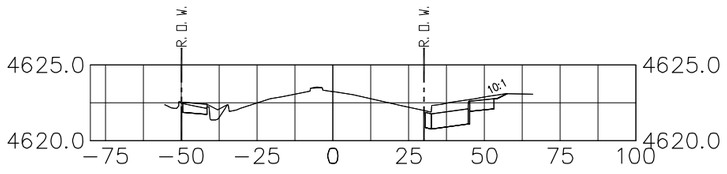

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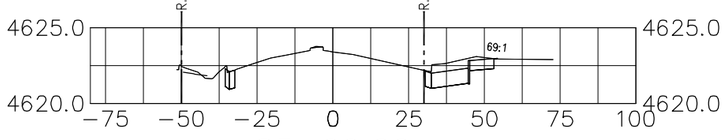

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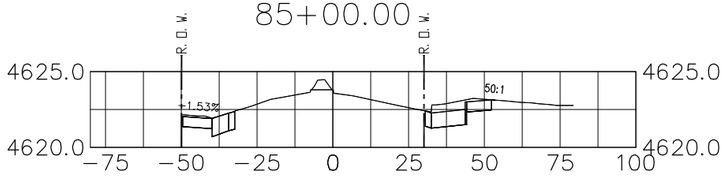

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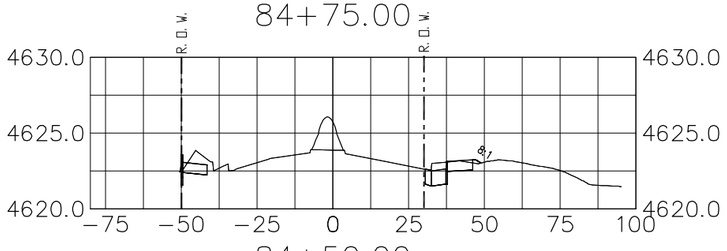

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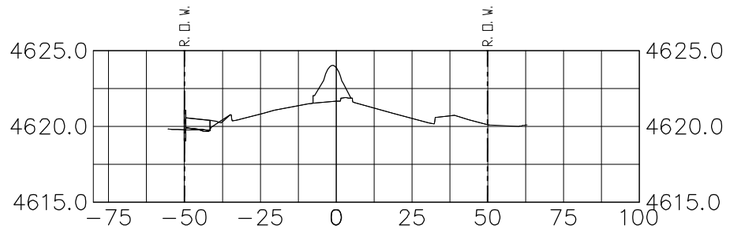

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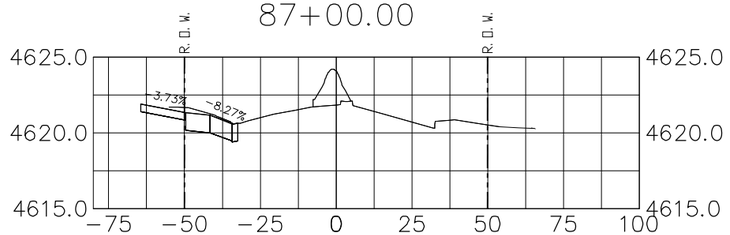

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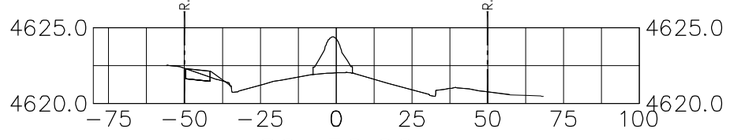

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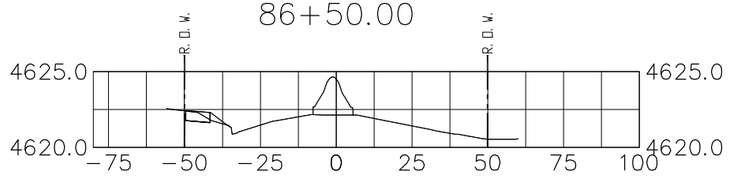

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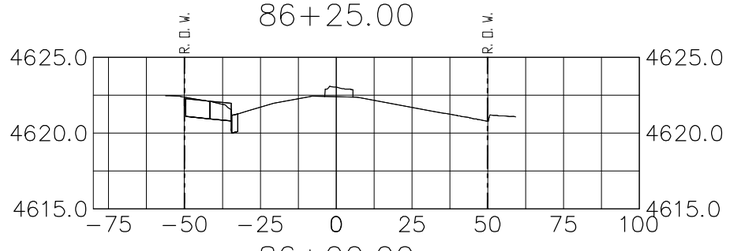

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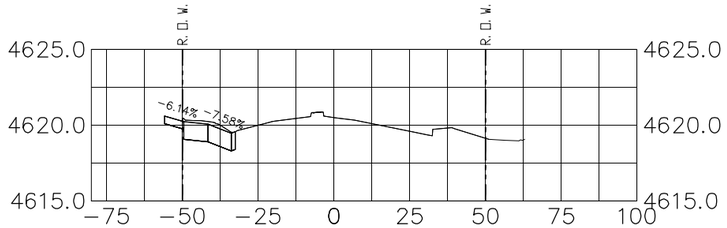
Horiz. Scale: 1:50 Vert. Scale: 1:10		Phone: 970-683-6351 FAX: 970-683-6369	Revised:
Unit Information: City of GJ Unit Leader Initials: DPJ		Region 3 RBB	Void:

Roadway Cross Sections			Project No./Code
Designer: John Smith	Structure Numbers		TCSP M555-029
Detailer: John Smith			19365
Sheet Subset:	Subset Sheets: 11 of 16		Sheet Number 284



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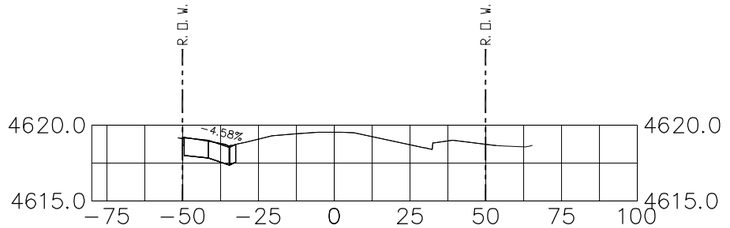

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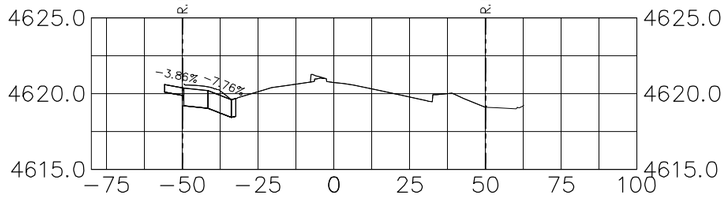

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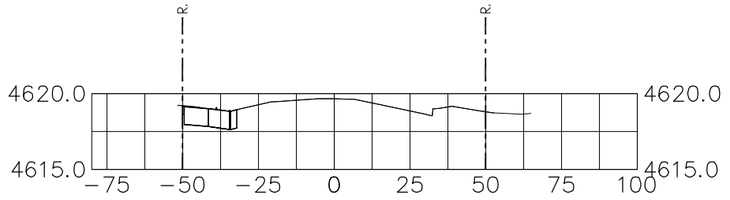

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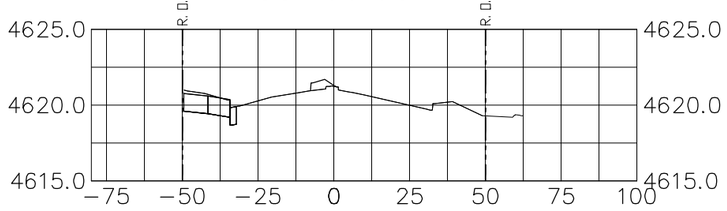

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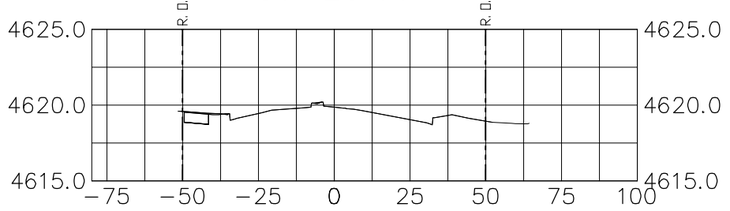

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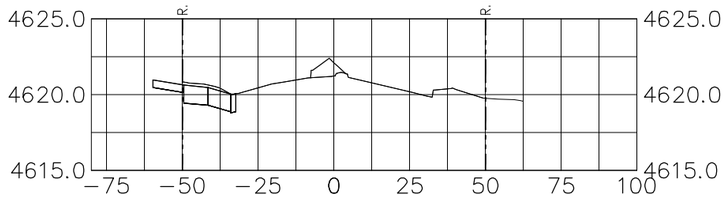

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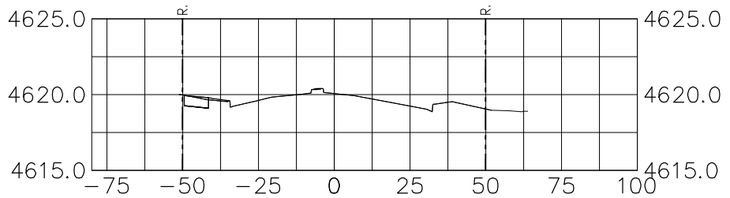

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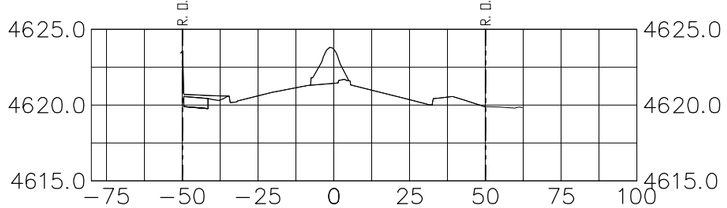

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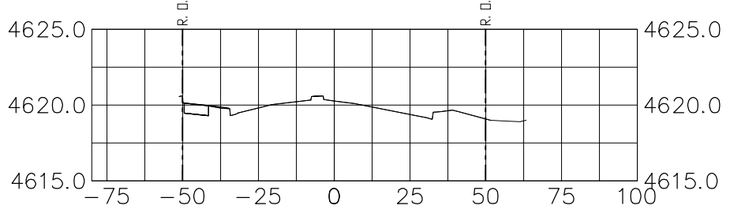

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Region 3 RBB

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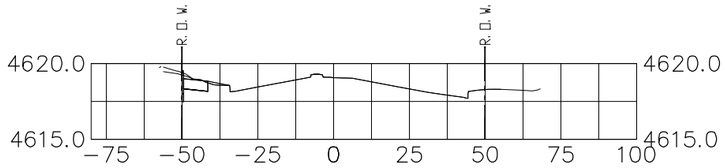
No Revisions:	
Revised:	
Void:	

Roadway Cross Sections

Designer: John Smith		Structure Numbers	
Detailer: John Smith			
Sheet Subset:		Subset Sheets:	12 of 16

Project No./Code
TCSP M555-029
19365
Sheet Number 285



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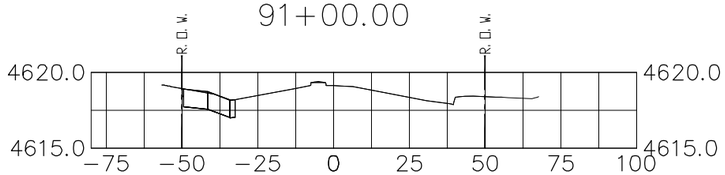

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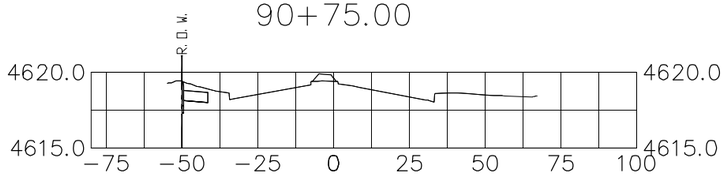

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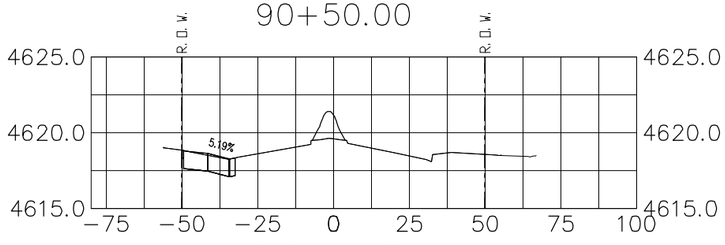

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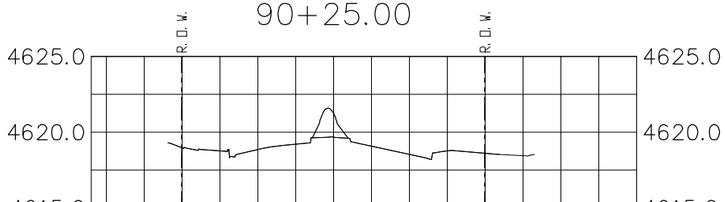

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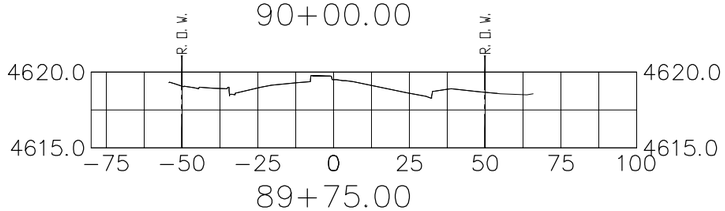

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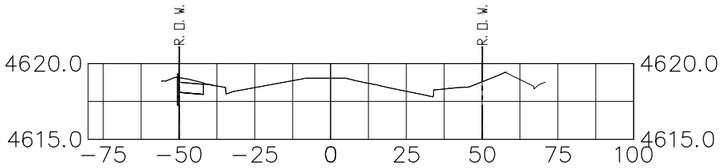

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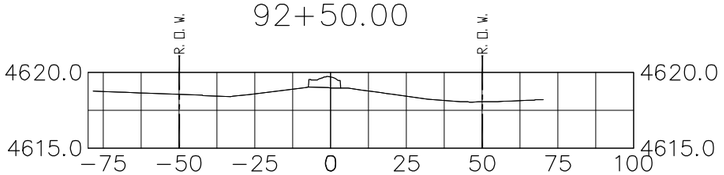

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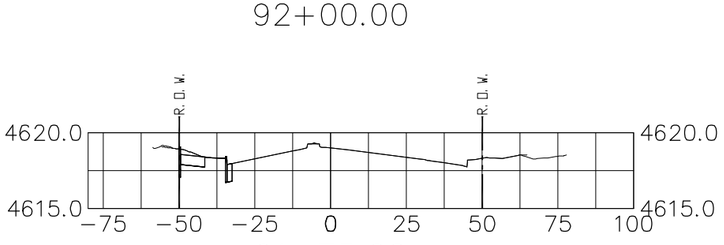

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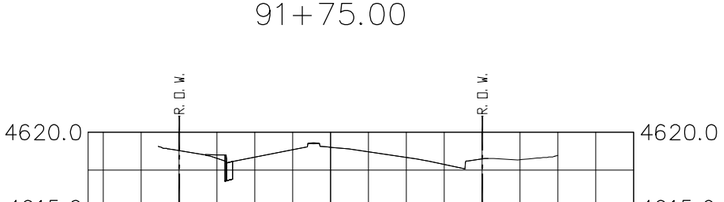

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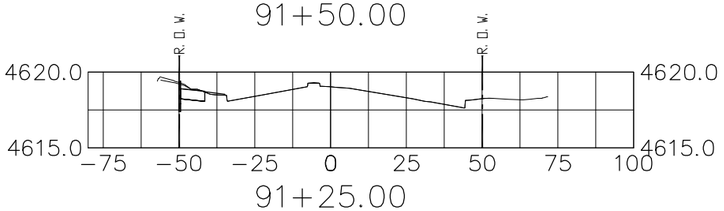

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As Constructed	Roadway Cross Sections			Project No./Code
No Revisions:				TCSP M555-029
Revised:	Designer: John Smith	Structure Numbers		19365
Void:	Detailer: John Smith			Sheet Number 286
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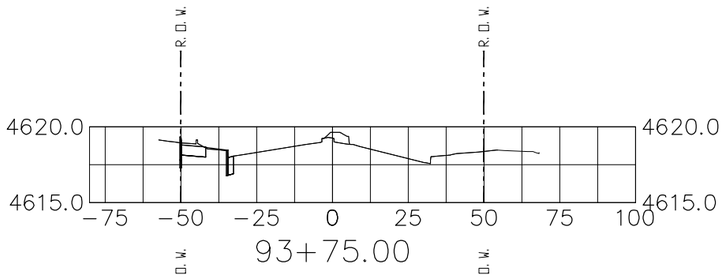

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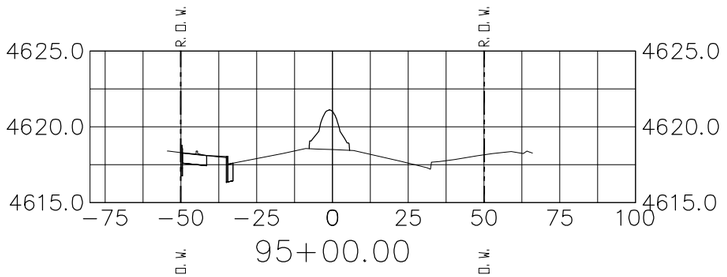

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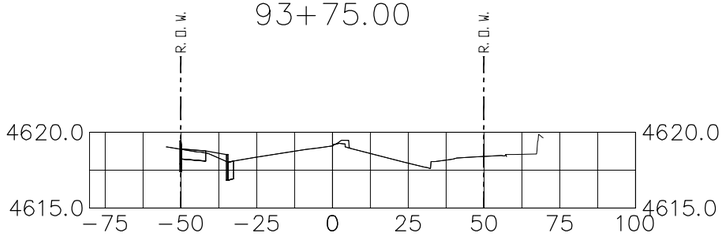

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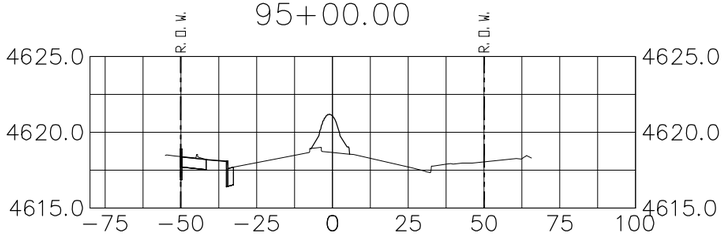

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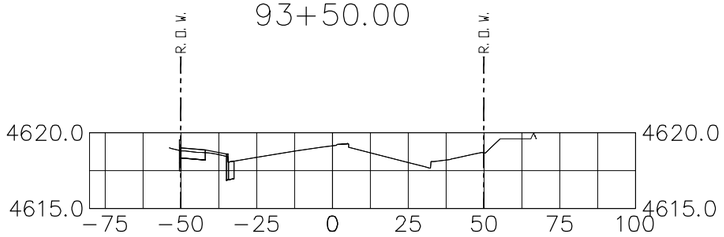

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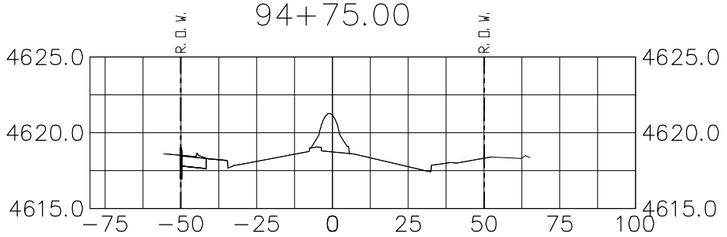

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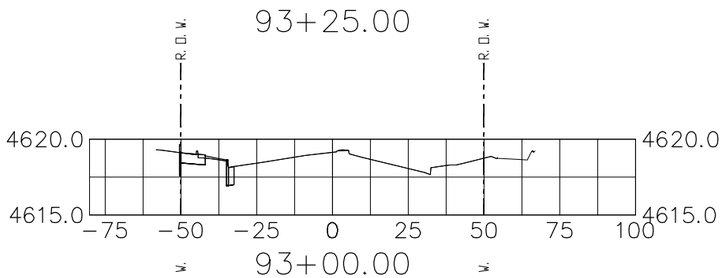

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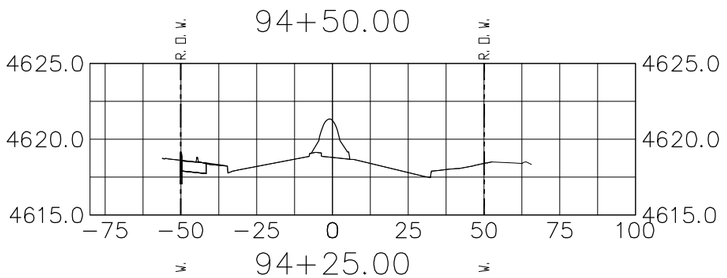

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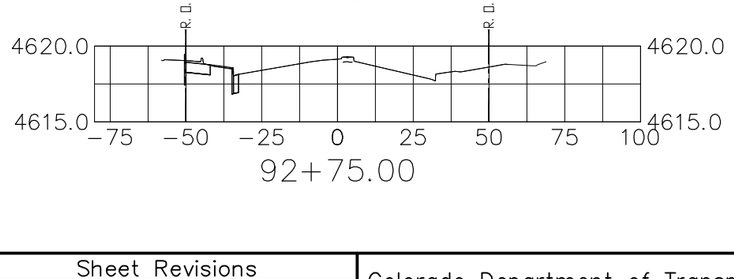

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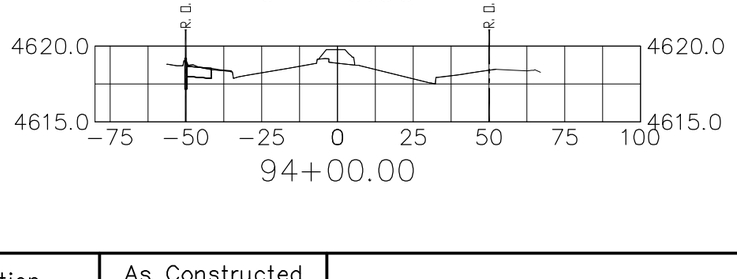

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As Constructed	Roadway Cross Sections			Project No./Code
No Revisions:				TCSP M555-029
Revised:	Designer: John Smith	Structure Numbers		19365
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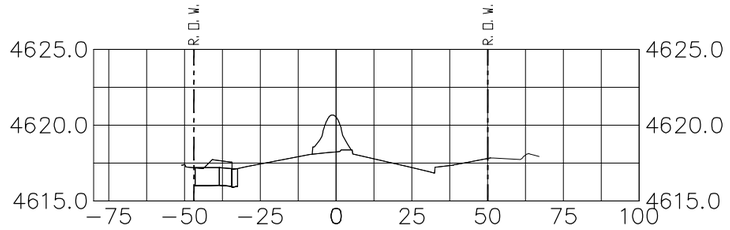

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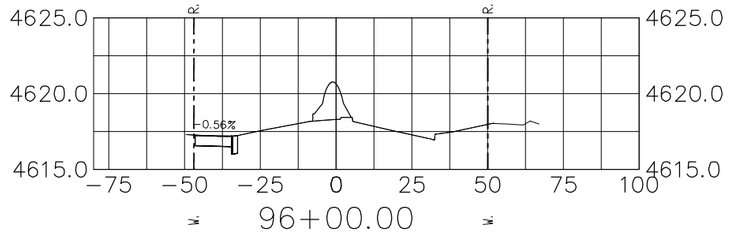

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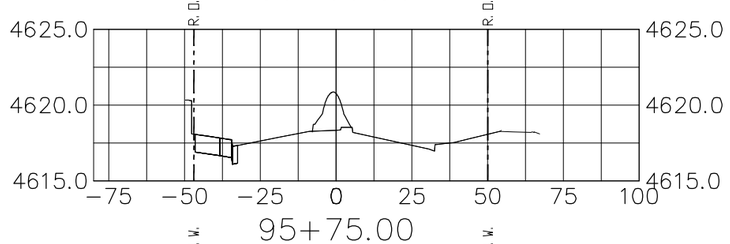

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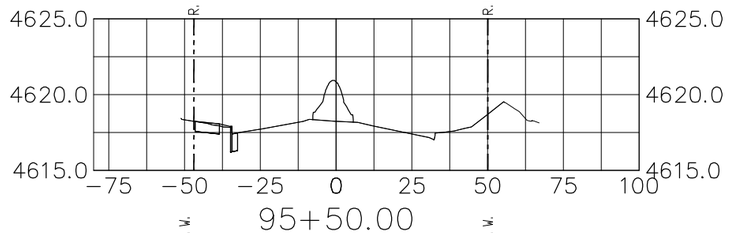

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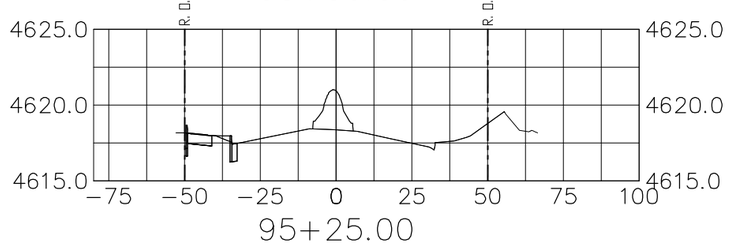

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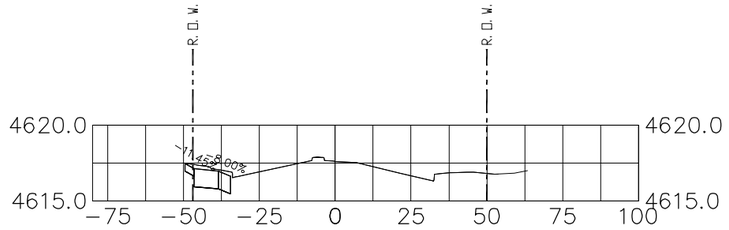

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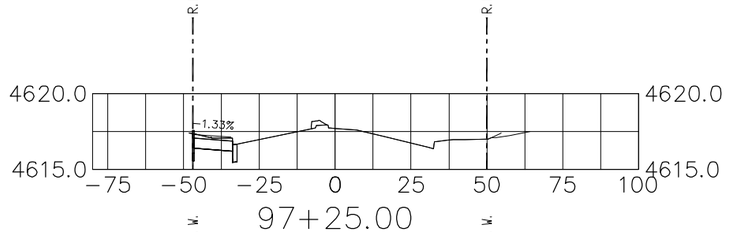

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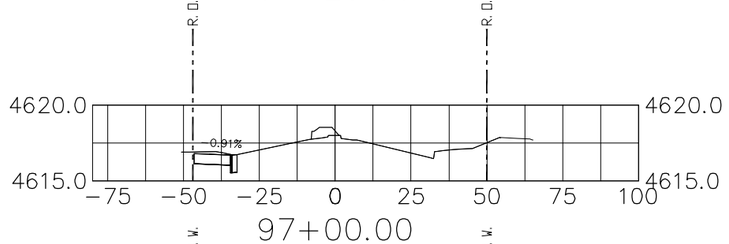

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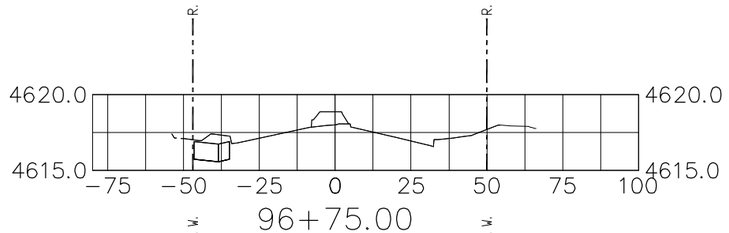

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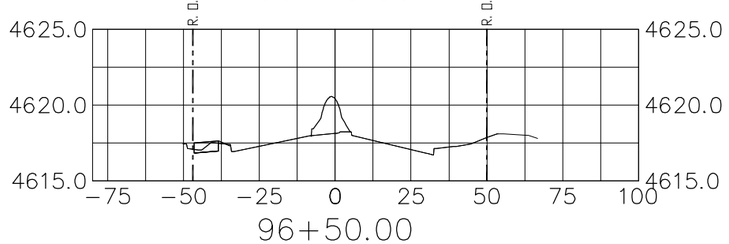

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As Constructed	Roadway Cross Sections			Project No./Code
No Revisions:				TCSP M555-029
Revised:	Designer: John Smith	Structure Numbers		19365
Void:	Detailer: John Smith			Sheet Number 288
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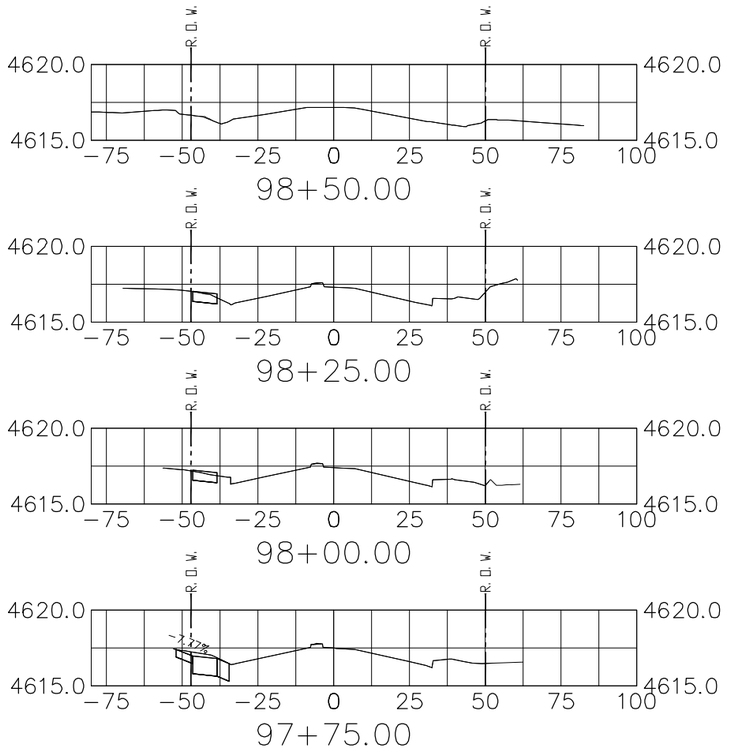

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Unit Information: City of GJ Unit Leader Initials: DPJ					Void:	Sheet Subset: / Subset Sheets: 16 of 16	Sheet Number 289

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GENERAL NOTES

1. ALL CONSTRUCTION ZONE TRAFFIC CONTROL DEVICES, INCLUDING BUT NOT LIMITED TO BARRICADES, SIGNS, ARROW PANELS, FLASHING BEACON (PORTABLE), AND CHANNELIZING DEVICES, SHALL BE FURNISHED, INSTALLED, MAINTAINED (INCLUDING WASHING), REPLACED IF DAMAGED, REMOVED WHEN TEMPORARILY NOT IN USE AND RETURNED WHEN REQUIRED, RESET AS NECESSARY DURING THE PROGRESS OF CONSTRUCTION, AND REMOVED ENTIRELY WHEN THE PROJECT IS COMPLETED. ALL DEVICES SHALL MEET THE REQUIREMENTS OF THE LATEST EDITION OF THE ATSSA "QUALITY GUIDELINES FOR TEMPORARY TRAFFIC CONTROL DEVICES & FEATURES".

2. WORK ON THE PROJECT SHALL NOT BE STARTED UNTIL ALL REQUIRED TRAFFIC CONTROL DEVICES ARE IN PLACE, AND APPROVED BY THE ENGINEER.

3. WHEN SPEED LIMIT REDUCTION IS REQUIRED, SUCH REDUCTION SHALL BE IN ACCORDANCE WITH CDOT FORM 568, "AUTHORIZATION AND DECLARATION OF TEMPORARY SPEED LIMITS."

   WHEN A CHANGE IN AN EXISTING SPEED LIMIT IS REQUIRED, THE R2-1 SIGNS, SHOWN ON THE SCHEDULE OF CONSTRUCTION TRAFFIC CONTROL DEVICES, SHOULD BE INSTALLED AT THE LOCATIONS SHOWN ON THE TYPICAL CASES BY R2-1 (OPTIONAL) SIGNS.

   AN ADVISORY SPEED PLATE (W13-1P) MAY BE USED WITH A WARNING SIGN WHEN THE MAXIMUM RECOMMENDED SPEED FOR CONDITION NAMED IS LOWER THAN THE POSTED SPEED LIMIT.

   THE REGULATORY OR ADVISORY SPEED REDUCTION DISPLAYED SHALL NOT EXCEED 15 MPH PER SIGN INSTALLATION.

4. ANY TRAFFIC CONTROL DEVICE THAT IS DAMAGED, WEATHERED, WORN, OR OTHERWISE DEEMED UNACCEPTABLE BY THE ENGINEER, SHALL BE REPLACED.

5. CONTRACTOR AND PERSONAL VEHICLE PARKING IS PROHIBITED WITHIN THE RIGHT-OF-WAY UNLESS DESIGNATED ON THE PLANS, OR APPROVED BY THE ENGINEER.

6. CONSTRUCTION TRAFFIC SIGNS SHALL BE MEASURED BY THE FOLLOWING SIZES AND DESCRIPTIONS:

PANEL SIZE A	0.01 TO 9.00 SQ. FT. (INCLUDING TYPE 1 AND TYPE 2 BARRICADES).
PANEL SIZE B	9.01 TO 16.00 SQ. FT.
PANEL SIZE C	GREATER THAN 16 SQ. FT.

   CONSTRUCTION TRAFFIC SIGN (SPECIAL), SQ. FT., MAY BE USED FOR SOME PROJECT SPECIFIC INFORMATION SIGNS.

   FOR DETAILED DIMENSIONS OF SIGNS WITH SIGN CODE NUMBERS, SEE "STANDARD HIGHWAY SIGNS" AND THE "COLORADO SUPPLEMENT" THERETO. SIGN LAYOUTS FOR OTHER SIGNS WILL BE FURNISHED IN THE PLANS, TRANSMITTED TO THE ENGINEER AFTER AWARD, OR MAY BE AVAILABLE UPON REQUEST.

   W20-5 WARNING SIGNS SHALL BE FURNISHED WITH EXCHANGEABLE PLAQUES READING "RIGHT", "LEFT", "CENTER", "RIGHT 2", ETC. AT NO ADDITIONAL COST.

7. ALL WARNING AND REGULATORY SIGNS SHALL BE POSTED ON BOTH SIDES OF THE ROADWAY ON DIVIDED HIGHWAYS, MULTI-LANE RAMPS, ONE-WAY STREETS, AND AS DIRECTED BY THE ENGINEER, EXCEPT WHERE ONLY ONE SHOULDER IS CLOSED (EX: CASE 11 ON SHEET 7).

8. ADDITIONAL TRAFFIC CONTROL DEVICES ADDRESSING FLAGGING, SPEED REDUCTION, ETC. WILL BE NECESSARY FOR SET-UP AND TAKE-DOWN OF MOST CASE APPLICATIONS; DAILY WORK SITE ACCESS; AND PAVEMENT MARKING REMOVAL AND INSTALLATION OPERATIONS.

9. BASED ON SIGHT DISTANCE AND OTHER CONSIDERATIONS, THE FINAL LOCATIONS OF SIGNS ARE SUBJECT TO APPROVAL OF THE ENGINEER.

10. IF CONSTRUCTION RELATED TRAFFIC CONGESTION BACKS UP BEYOND THE INSTALLED ADVANCE SIGN SEQUENCE, ADDITIONAL ADVANCE SIGNING SHALL BE PLACED BEYOND THE CONGESTION.

11. ALL SIGN MATERIAL SHALL BE SOUND AND DURABLE TO THE DEGREE NECESSARY FOR MAINTAINING EFFECTIVE AND NEAT APPEARING TRAFFIC CONTROLS, AND:

    a. SIGN PANELS MAY BE FABRICATED FROM PLYWOOD, STEEL, ALUMINUM, OR OTHER SUITABLE MATERIAL.
    b. REFLECTIVE SHEETING SHALL CONFORM TO ASTM D4956. THE TYPE SHALL BE AS DESCRIBED IN THE STANDARD SPECIFICATIONS AND/OR AS SHOWN ON THE PLANS.
    c. SYMBOLS AND LEGEND SHALL BE OF GOOD WORKMANSHIP (UNEVEN OR HAND LETTERING WILL NOT BE ACCEPTED).
    d. PORTABLE OR TEMPORARY MOUNTING SHALL NOT BE CONSTRUCTED OR WEIGHTED BY ANY METHOD OR MATERIAL THAT MAKES THEM HAZARDOUS TO TRAFFIC.
    e. CERTAIN POST SIZES AND SHAPES REQUIRE A "BREAK-AWAY" DEVICE. SEE THE APPLICABLE STANDARD PLAN. OTHER POST DESIGNS OR SYSTEMS REQUIRE THE SUBMITTAL OF AN FHWA LETTER OF ACCEPTANCE TO THE ENGINEER, AND MUST BE APPROVED BY THE ENGINEER PRIOR TO THEIR USE.

12. ALL CONSTRUCTION SIGN PLACEMENT SHALL BE IN ACCORDANCE WITH STANDARD PLAN "TYPICAL GROUND SIGN PLACEMENT" UNLESS OTHERWISE APPROVED.

    SIGNS APPROVED TO BE MOUNTED ON PORTABLE SUPPORTS, OR APPROPRIATE SIGNS MOUNTED ON BARRICADES, MAY BE AT LOWER HEIGHTS, BUT THE BOTTOM OF THE SIGNS SHALL NOT BE LESS THAN ONE FOOT ABOVE THE PAVEMENT ELEVATION.

13. SIGNS MOUNTED ON THE MEDIAN OF DIVIDED HIGHWAYS WHERE MEDIAN BARRIER IS IN PLACE MAY BE MOUNTED ON THE BARRIER WITH A SADDLE TYPE BRACKET. IF THE BRACKET ALLOWS THE SIGN PANEL TO BE TURNED PARALLEL TO THE ROADWAY, THE SIGN MAY REMAIN IN PLACE WHEN NOT APPLICABLE, BUT LAYING THE SIGN PANEL DOWN IN A HORIZONTAL POSITION IS NOT PERMITTED.

14. TRAFFIC CONES SHALL BE AT LEAST 28 INCHES IN HEIGHT. HOWEVER, THE MINIMUM SIZE SHALL BE 36 INCHES WHEN THEY ARE USED ON FREEWAYS AND EXPRESSWAYS, OR DURING NIGHT TIME WORKING HOURS. THEY SHOULD ALSO BE 36 INCHES WHEN USED ON OTHER HIGH SPEED ROADWAYS (45 MPH OR MORE) WITH AN ADT OF 6,000 OR MORE.

15. TYPE 1 BARRICADES SHALL NOT BE USED ON FREEWAYS, EXPRESSWAYS, OR OTHER HIGH SPEED ROADWAYS (55 MPH OR MORE).

16. WHEN TWO-WAY TRAFFIC IS PLACED ON ONE ROADWAY OF A NORMALLY DIVIDED HIGHWAY, OPPOSING TRAFFIC SHALL BE SEPARATED EITHER WITH CONCRETE BARRIER (TEMPORARY), OR WITH CHANNELIZING DEVICES APPROVED FOR THIS APPLICATION, THROUGHOUT THE LENGTH OF TWO-WAY OPERATION. THE TRANSITION ZONES SHALL HAVE CONCRETE BARRIER (TEMPORARY). THE BARRIER SHALL BE TIED TO AN EXISTING STRUCTURE OR GUARD RAIL, FLARED OR EXTENDED, TO MEET CLEAR ZONE REQUIREMENTS, OR FITTED WITH AN IMPACT ATTENUATION DEVICE.

17. CHANNELIZING DEVICE SPACING, IN FEET, SHALL BE AS FOLLOWS:
    a. FOR TAPERS AND TRANSITIONS, SPACING EQUALS THE NUMERICAL VALUE OF THE SPEED LIMIT. (e.g. 45 MPH = 45 FEET)
    b. FOR TANGENTS ALONG THE BUFFER SPACE OR WORK AREA, SPACING MAY NOT BE GREATER THAN TWO TIMES THE SPEED LIMIT. (e.g. 50 MPH = 50 FEET TO 100 FEET MAXIMUM)

18. FOR DETAILS ON BARRICADES, CONCRETE BARRIER (TEMPORARY), VERTICAL PANELS, AND FLASHING BEACON (PORTABLE), SEE THE APPLICABLE STANDARD PLANS.

19. FLOOD LIGHTS SHALL BE USED TO ILLUMINATE FLAGGER STATIONS DURING THE HOURS OF DARKNESS UNLESS OTHERWISE APPROVED. A TYPICAL LIGHT SHOULD PROVIDE THE FOLLOWING: A FULLY DIRECTIONAL SWIVEL MOUNT QUARTZ LIGHT SOURCE (500 WATT MINIMUM), SELF-SUPPORTING STAND WITH VARIABLE LIGHT HEIGHT FROM A MINIMUM OF EIGHT FEET ABOVE THE ROADWAY, AND A POWER SOURCE. IT SHALL ILLUMINATE THE STATION AREA AND A FLAGGER ESCAPE PATH, BUT SHALL NOT PRESENT ANY GLARE TO TRAFFIC.

20. FOR TEMPORARY PAVEMENT MARKINGS AND CONTROL POINTS FOR INSTALLING THOSE PAVEMENT MARKINGS FOR UNDIVIDED ROADWAYS THAT ARE BEING CONSTRUCTED UNDER TRAFFIC, FULL COMPLIANCE CENTER LINE, LANE LINE, AND EDGE LINE TEMPORARY MARKINGS SHALL BE IN PLACE AT THE END OF EACH WORK DAY IN ACCORDANCE WITH SECTION 627.03(d)2.

    FOR ADDITIONAL PAVEMENT MARKING DETAILS, SEE STANDARD PLAN "TYPICAL PAVEMENT MARKINGS".

21. BUFFER SPACE IS OPTIONAL. NEED MUST BE DETERMINED ON A PROJECT OR SITE SPECIFIC BASIS AS DIRECTED BY THE ENGINEER. WHEN A BUFFER SPACE IS USED, DIMENSIONS AND/OR DEVICES USED ARE TO BE INCORPORATED IN THE TRAFFIC CONTROL PLAN (TCP) OR THE CONTRACTOR'S METHOD OF HANDLING TRAFFIC (MHT).

22. ADDITIONAL VMS SIGNAGE SHOULD BE CONSIDERED AT LEAST A MILE IN ADVANCE OF THE SIGNING SHOWN IN THE DETAIL FOR ANY LANE CLOSURES ON INTERSTATE AND OTHER HIGH SPEED FACILITIES ESPECIALLY WHEN THE LEVEL OF SERVICE IS SIGNIFICANTLY REDUCED AS A RESULT OF CONSTRUCTION. THE LEGENDS SHOULD BE CHANGED TO ADVISE MOTORISTS OF UPCOMING TRAFFIC CONDITIONS AND TO ALERT THEM OF UPCOMING LANE USAGE.

    ADDITIONAL ADVANCE WARNING SIGNAGE IS ENCOURAGED IN ALL CASES WHERE TRAFFIC VOLUMES AND SPEEDS ARE HIGH AND/OR WHERE THERE ARE INFREQUENT EXITS. ADDITIONAL SIGNAGE IS ALSO ENCOURAGED IN LOCATIONS WHERE DRIVERS' LINE OF SIGHT TO ADVANCE WARNING SIGNS IS OBSTRUCTED.

23. WHEN ARROW BOARDS ARE USED TO CLOSE MULTIPLE LANES, A SEPARATE ARROW BOARD SHALL BE USED FOR EACH CLOSED LANE.

    IF ARROW BOARDS ARE USED FOR SHOULDER WORK, BLOCKING THE SHOULDER, FOR ROADSIDE WORK NEAR THE SHOULDER, OR FOR TEMPORARILY CLOSING ONE LANE ON A TWO-LANE, TWO-WAY ROADWAY, USE THE ARROW BOARDS ONLY IN THE CAUTION MODE.

24. RAISED PAVEMENT MARKERS MAY BE USED TO SUPPLEMENT TEMPORARY STRIPING DURING NON-SNOW PERIODS. THEIR USE IS ENCOURAGED ON HIGHER SPEED FACILITIES WHEN TRAFFIC IS BEING DIVERTED FROM ITS USUAL COURSE.

25. THE TYPICAL CASES DEPICTED IN THIS STANDARD REFLECT THE MINIMUM REQUIREMENTS, UNLESS AS OTHERWISE DIRECTED BY THE PROJECT PLANS AND SPECIFICATIONS, AND/OR THE PROJECT ENGINEER.

26. A SIGNIFICANT PROJECT IS DEFINED AS ONE THAT, ALONE OR IN COMBINATION WITH OTHER CONCURRENT PROJECTS NEARBY, IS ANTICIPATED TO CAUSE SUSTAINED WORK ZONE IMPACTS AT A LOCATION FOR THREE OR MORE CONSECUTIVE DAYS WITH EITHER INTERMITTENT OR CONTINUOUS LANE CLOSURES.

Sheet Revisions

	Date:	Comments
R-1	02/06/13	SHEET 13 - UPDATE TO 2009 MUTCD STD
R-2	02/26/13	SHEET 1 - UPDATE TO NOTE 1
R-3	02/27/13	SHEET 4 - UPDATE TAPER TO MUTCD STD
R-4	07/26/13	SHTS 9,10,15 & 20 - CORRECTED SIGN CODE DESIGNATION
R-5	**03/27/14**	SHTS 17 & 18 - UPDATED SIGNS AND TMA'S
R-6	**07/22/14**	SHEET 1 - UPDATE TO NOTE 20
R-7	**12/8/14**	SHEETS 17 TO 24 - ADDED AND RENUMBERED SHEET 22 - SIGN CODE UPDATE, W5-4D & W21-5a

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DEPARTMENT OF TRANSPORTATION
4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9219
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TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

Issued By: Safety & Traffic Engineering Branch July 4, 2012

STANDARD PLAN NO.

S-630-1

INDEX TO TYPICAL WORK ZONE CASES

Computer File Information		Sheet Revisions	
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Phone: (303) 757-9543
Fax: (303) 757-9219
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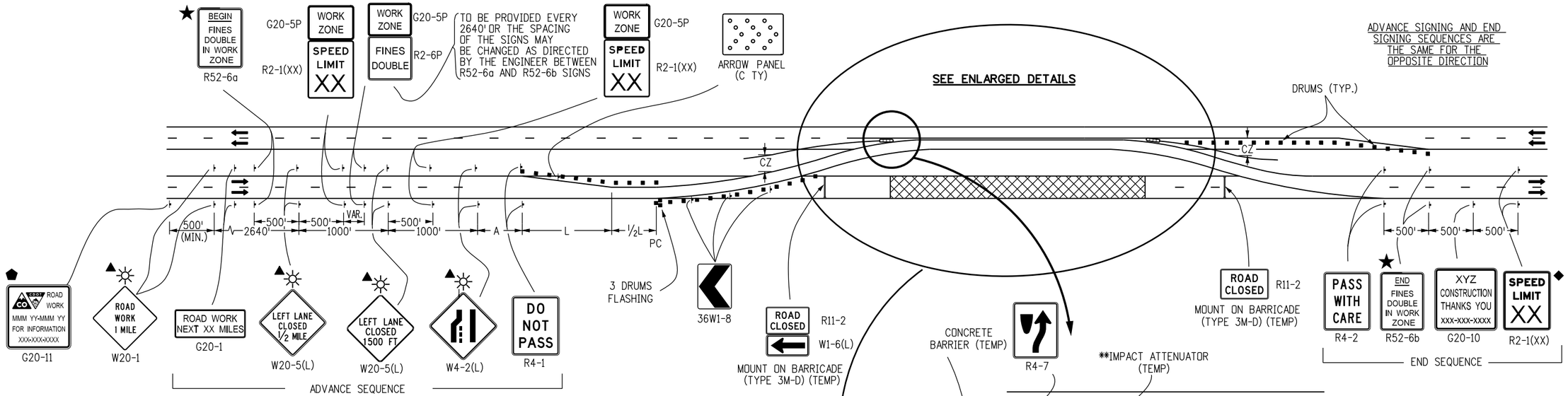
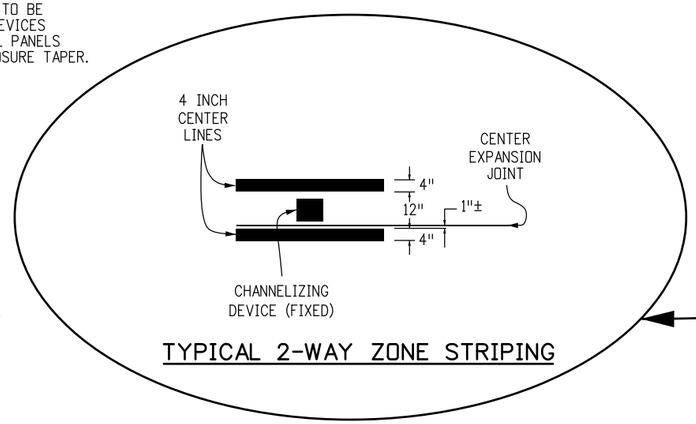


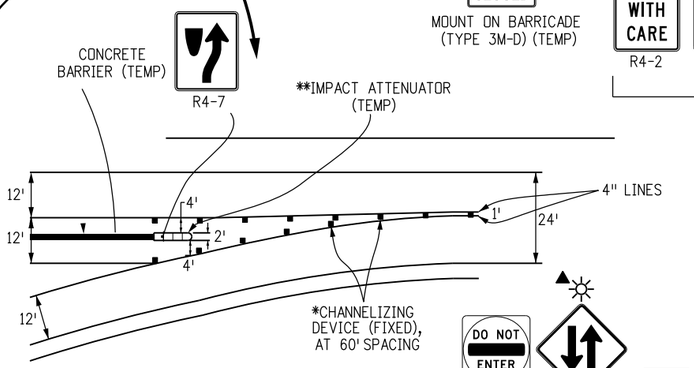
LEGEND

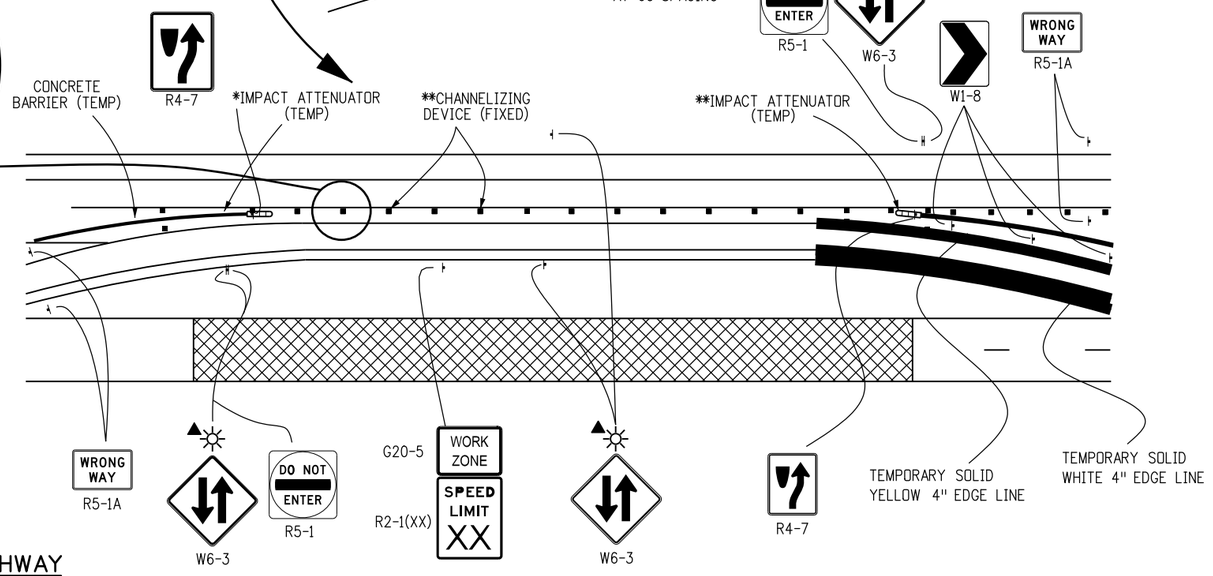
- ▪ CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. DRUMS OR VERTICAL PANELS SHALL BE USED TO DELINEATE THE LANE CLOSURE TAPER.
- TYPE III BARRICADE
- CONCRETE BARRIER (TEMPORARY)
- FLAGGER
- DIRECTION OF TRAVEL
- WORK AREA
- L TRANSITION TAPER LENGTH:
  - L = MINIMUM LENGTH OF TAPER
  - SPEED 45 MPH OR MORE: $L = S \times W$
  - SPEED 40 MPH OR LESS: $L = \frac{WS^2}{60}$
  - S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED
  - W = WIDTH OF OFFSET
- ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL
- A = 100' (URBAN LOW SPEED)
  - 350' (URBAN HIGH SPEED)
  - 500' (RURAL)
  - 1,000' (EXPRESSWAY / FREEWAY)
- CZ CLEAR ZONE (SEE GENERAL NOTE 16 ON SHEET 1).
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
- VAR. BUFFER SPACE (SEE GENERAL NOTE 21 ON SHEET 1).
- IMPACT ATTENUATOR AS DETAILED ON THE PLANS
- FLASHING BEACON



TYPICAL 2-WAY ZONE STRIPING

- ◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.
- * THESE ITEMS ARE NOT REQUIRED WHEN CONTINUOUS CONCRETE BARRIER IS USED FOR CHANNELIZATION.
- ** SEE GENERAL NOTE 16 ON SHEET 1.
- ⬟ G20-11 SIGN IS REQUIRED IF SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.





CASE NO. 1
TYPICAL APPLICATION
CLOSURE OF ONE ROADWAY 4-LANE DIVIDED HIGHWAY

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Phone: (303) 757-9543
Fax: (303) 757-9219
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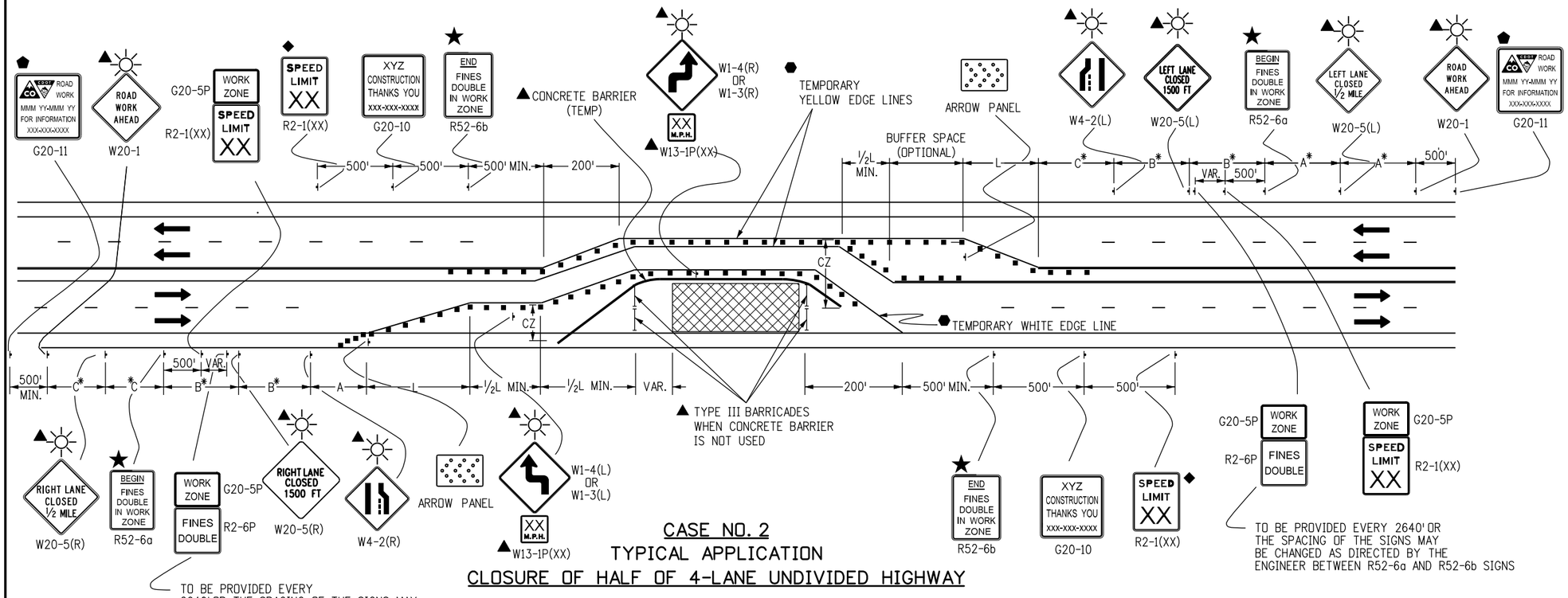
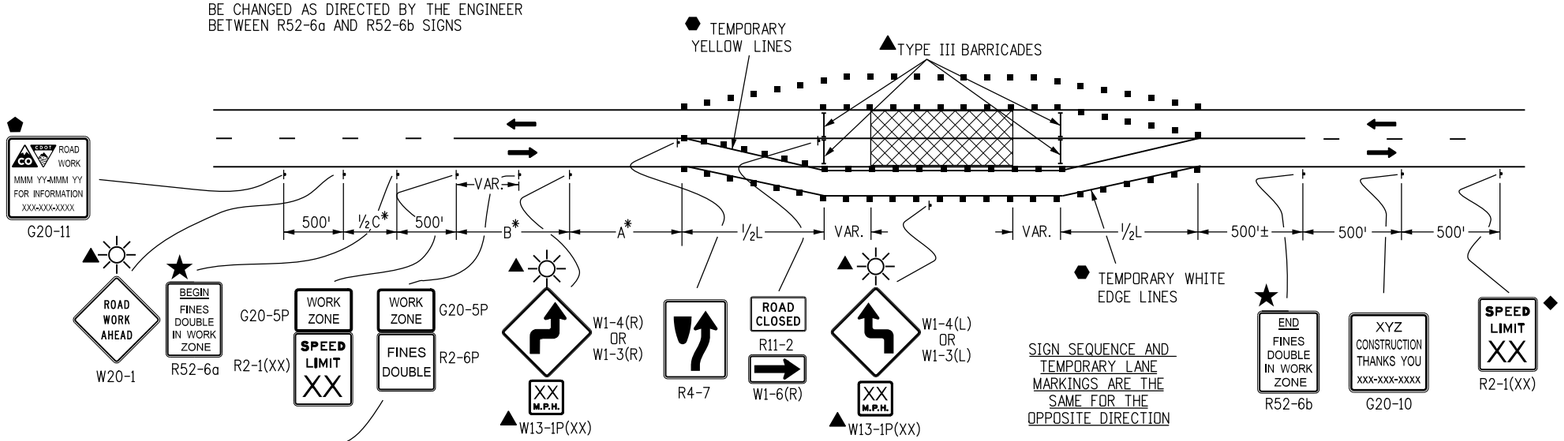


CASE NO. 2
TYPICAL APPLICATION
CLOSURE OF HALF OF 4-LANE UNDIVIDED HIGHWAY



CASE NO. 3
TYPICAL APPLICATION
ROAD CLOSURE, USE OF ADJACENT SHOULDERS

TO BE PROVIDED EVERY 2640' OR THE SPACING OF THE SIGNS MAY BE CHANGED AS DIRECTED BY THE ENGINEER BETWEEN R52-6a AND R52-6b SIGNS

LEGEND

- CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. DRUMS OR VERTICAL PANELS SHALL BE USED TO DELINEATE THE LANE CLOSURE TAPER.
- TYPE III BARRICADE
- FLAGGER
- DIRECTION OF TRAVEL
- WORK AREA
- L — TRANSITION TAPER LENGTH:
  - L = MINIMUM LENGTH OF TAPER
  - SPEED 45 MPH OR MORE: $L = S \times W$
  - SPEED 40 MPH OR LESS: $L = \frac{WS^2}{60}$
  - S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED
  - W = WIDTH OF OFFSET
  - SHOULDER TAPER = 1/3 L
- ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL.
- A = 100' (URBAN LOW SPEED)
  350' (URBAN HIGH SPEED)
  500' (RURAL)
  1,000' (EXPRESSWAY / FREEWAY)
- CZ — CLEAR ZONE (SEE GENERAL NOTE 16 ON SHEET 1)
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
- ◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.
- VAR. BUFFER SPACE (SEE GENERAL NOTE 21 ON SHEET 1).
- ⬢ REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
- ⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- FLASHING BEACON
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.

* KEY TO ADVANCE SIGNING DISTANCES

ROAD TYPE	DISTANCE BETWEEN SIGNS		
	A	B	C
URBAN (<=40 MPH)	100	100	100
URBAN (>=45 MPH)	350	350	350
RURAL	500	500	500
EXPRESSWAY/FREEWAY	1000	1500	2640

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R-X		
R-X		

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4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9219
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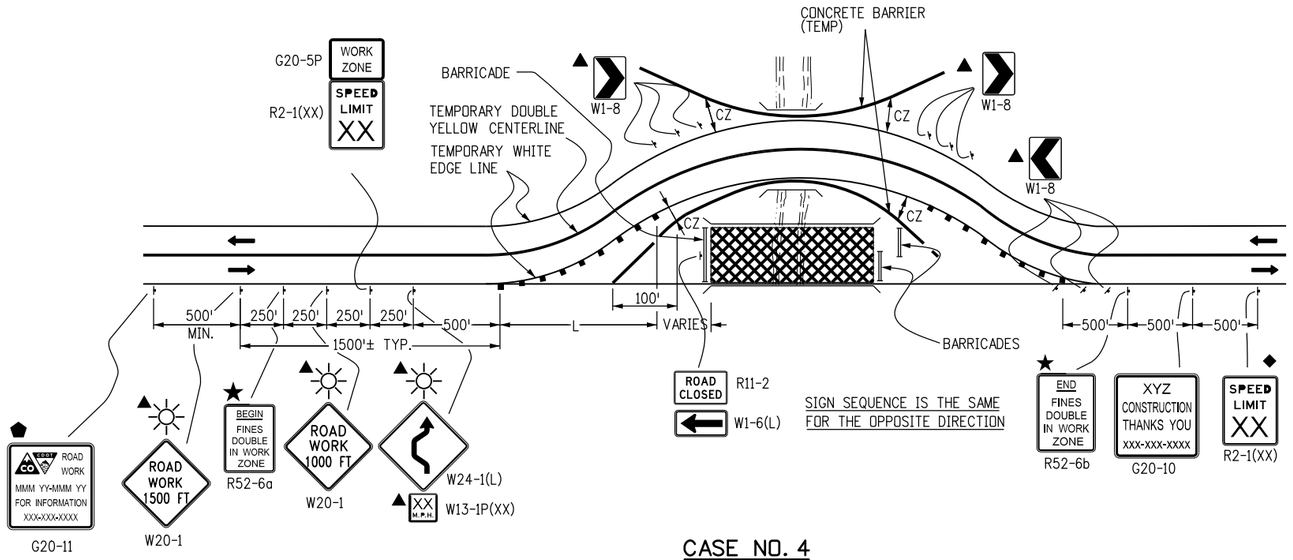
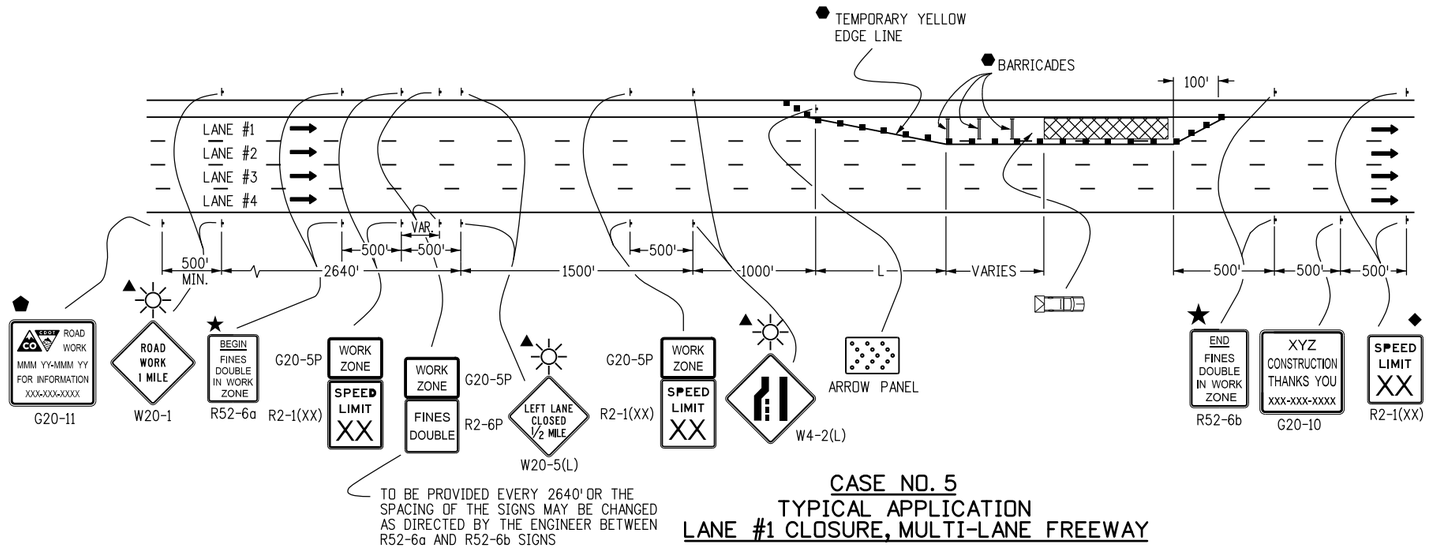


CASE NO. 4
TYPICAL APPLICATION
ROAD CLOSURE, BYPASS DETOUR PROVIDED



TO BE PROVIDED EVERY 2640' OR THE SPACING OF THE SIGNS MAY BE CHANGED AS DIRECTED BY THE ENGINEER BETWEEN R52-6a AND R52-6b SIGNS

CASE NO. 5
TYPICAL APPLICATION
LANE #1 CLOSURE, MULTI-LANE FREEWAY

LEGEND

- ▪ CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. DRUMS OR VERTICAL PANELS SHALL BE USED TO DELINEATE THE LANE CLOSURE TAPER.
- TYPE III BARRICADE
- CONCRETE BARRIER (TEMPORARY)
- FLAGGER
- DIRECTION OF TRAVEL
- WORK AREA
- L — TRANSITION TAPER LENGTH:
  - L = MINIMUM LENGTH OF TAPER
  - SPEED 45 MPH OR MORE: $L = S \times W$
  - SPEED 40 MPH OR LESS: $L = \frac{WS^2}{60}$
  - S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED
  - W = WIDTH OF OFFSET
  - SHOULDER TAPER = 1/3 L
- ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL
- CZ — CLEAR ZONE (SEE GENERAL NOTE 16 ON SHEET 1).
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
- ◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.
- VARIES — BUFFER SPACE (SEE GENERAL NOTE 21 ON SHEET 1).
- ⬢ REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
- ⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- TRUCK MOUNTED ATTENUATOR (TMA)
- FLASHING BEACON
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.

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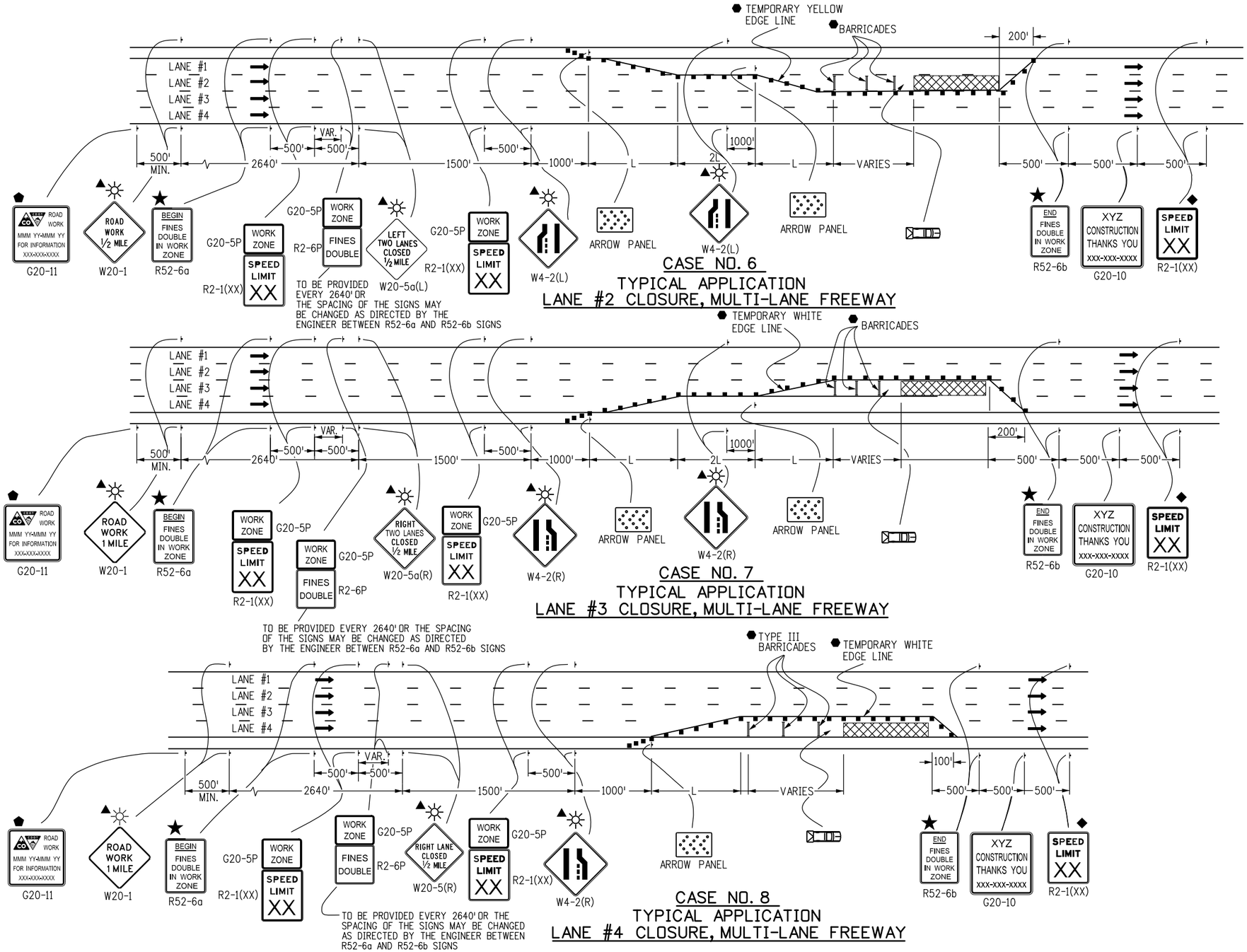

CASE NO. 6
TYPICAL APPLICATION
LANE #2 CLOSURE, MULTI-LANE FREEWAY

CASE NO. 7
TYPICAL APPLICATION
LANE #3 CLOSURE, MULTI-LANE FREEWAY

CASE NO. 8
TYPICAL APPLICATION
LANE #4 CLOSURE, MULTI-LANE FREEWAY

LEGEND

- CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. DRUMS OR VERTICAL PANELS SHALL BE USED TO DELINEATE THE LANE CLOSURE TAPER.
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  - SHOULDER TAPER = 1/3 L
- ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL
- CZ — CLEAR ZONE (SEE GENERAL NOTE 16 ON SHEET 1).
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
- ◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.
- VARIES — BUFFER SPACE (SEE GENERAL NOTE 21 ON SHEET 1).
- ⬢ REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
- ⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- TRUCK MOUNTED ATTENUATOR (TMA)
- FLASHING BEACON
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.

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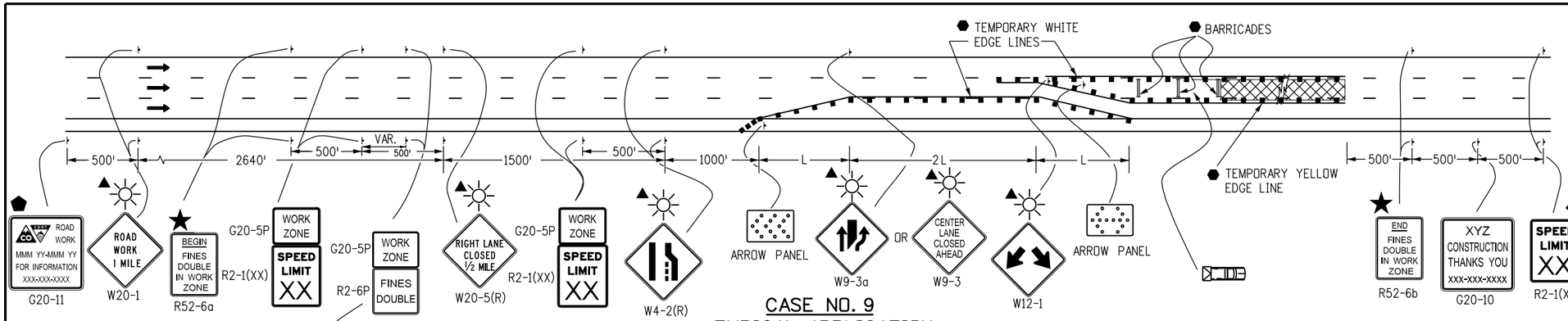
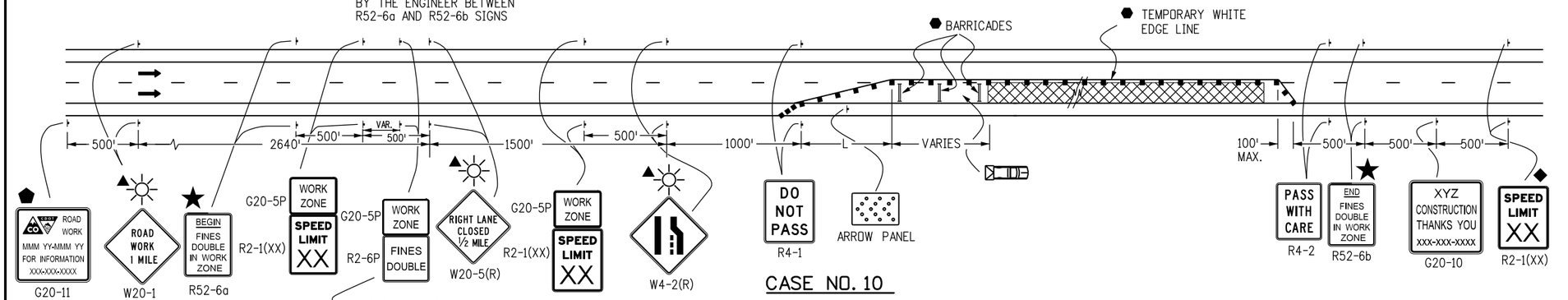
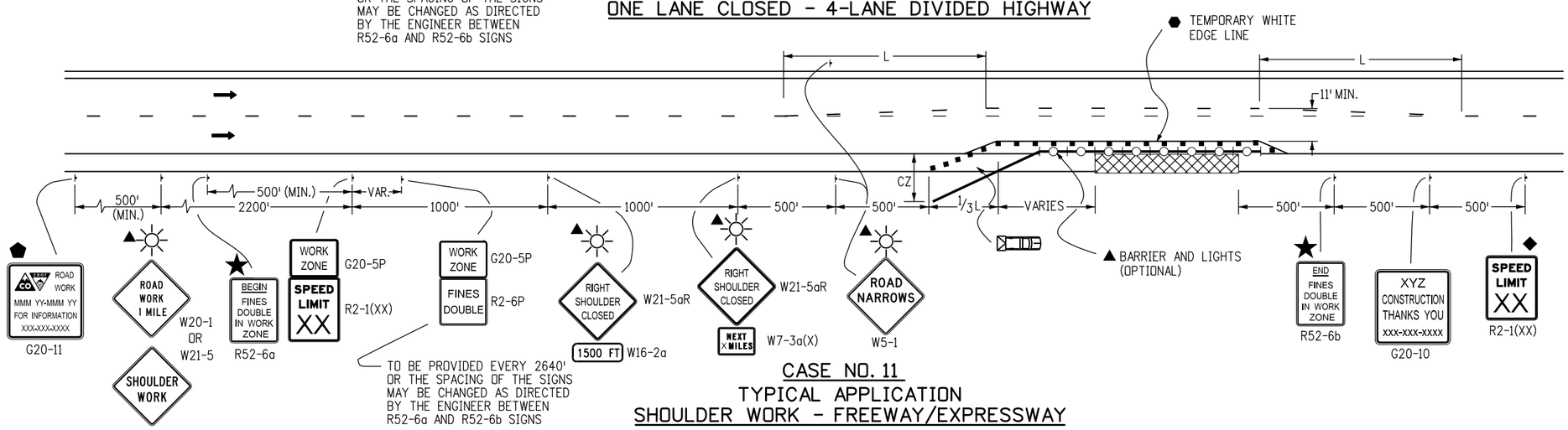


CASE NO. 9
TYPICAL APPLICATION
CENTER LANE CLOSURE - MULTI-LANE FREEWAY



CASE NO. 10
TYPICAL APPLICATION
ONE LANE CLOSED - 4-LANE DIVIDED HIGHWAY



CASE NO. 11
TYPICAL APPLICATION
SHOULDER WORK - FREEWAY/EXPRESSWAY

LEGEND

- ■ CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. DRUMS OR VERTICAL PANELS SHALL BE USED TO DELINEATE THE LANE CLOSURE TAPER.
- TYPE III BARRICADE
- CONCRETE BARRIER (TEMPORARY)
- FLAGGER
- DIRECTION OF TRAVEL
- WORK AREA
- L TRANSITION TAPER LENGTH:
  - L = MINIMUM LENGTH OF TAPER
  - SPEED 45 MPH OR MORE: L = S x W
  - SPEED 40 MPH OR LESS: $L = \frac{WS^2}{60}$
  - S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED
  - W = WIDTH OF OFFSET
  - SHOULDER TAPER = 1/3 L
- ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL
- CZ CLEAR ZONE (SEE GENERAL NOTE 16 ON SHEET 1).
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
- ◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.
- FLASHING BEACON
- VARIES BUFFER SPACE (SEE GENERAL NOTE 21 ON SHEET 1).
- ⬢ REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
- ⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- TRUCK MOUNTED ATTENUATOR (TMA)
- CONCRETE BARRIER (TEMPORARY) WITH LIGHTS
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.

Computer File Information		Sheet Revisions	
Creation Date: 07/04/12 Initials: RRR		Date:	Comments
Last Modification Date: Initials:	R-X		
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Drawing File Name: S-630-01_7of24.dgn	R-X		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	R-X		

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Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9219
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TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

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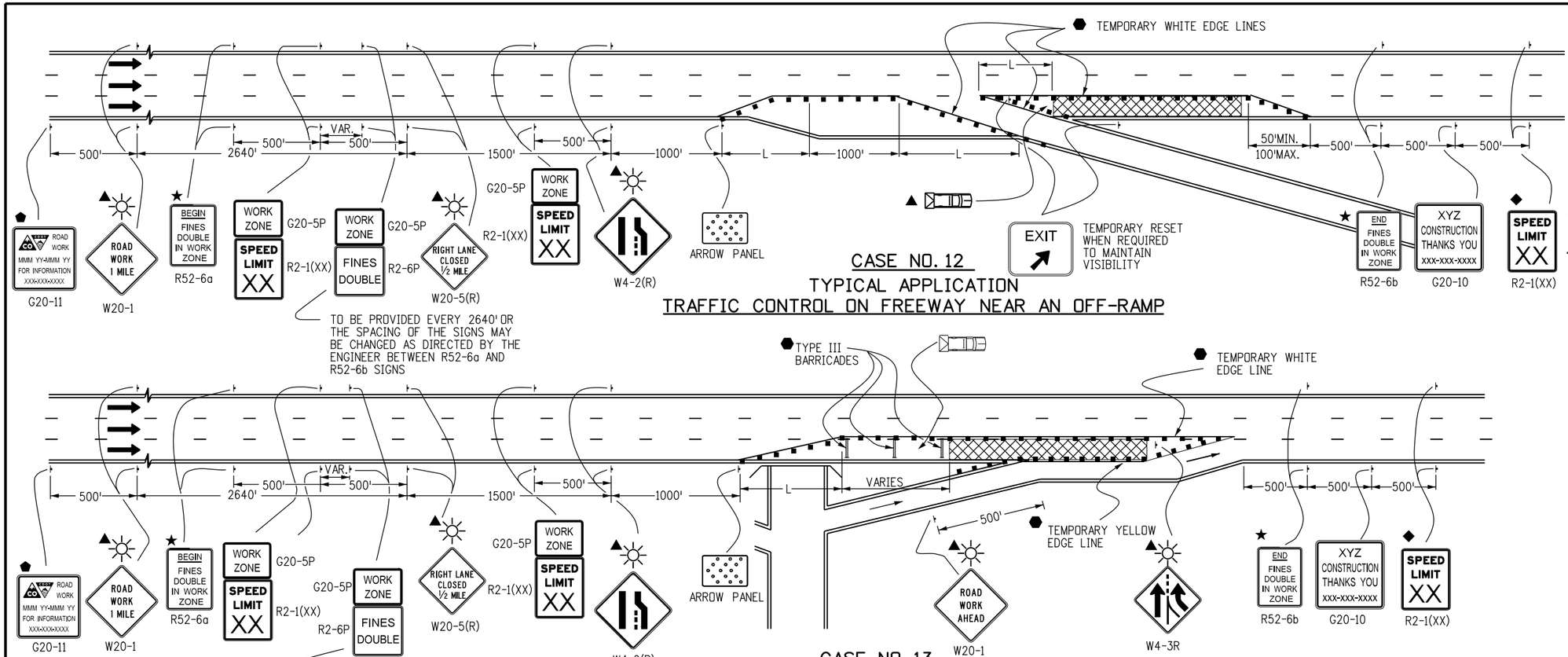
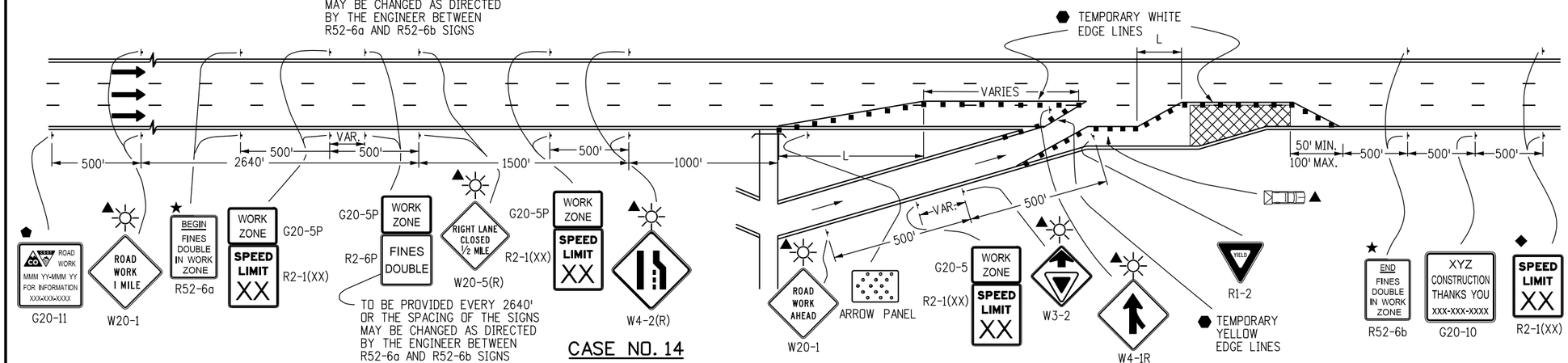


CASE NO. 12
TYPICAL APPLICATION
TRAFFIC CONTROL ON FREEWAY NEAR AN OFF-RAMP

CASE NO. 13
TYPICAL APPLICATION - TRAFFIC CONTROL ON FREEWAY BEFORE AN ON-RAMP



CASE NO. 14
TYPICAL APPLICATION - TRAFFIC CONTROL ON FREEWAY ALLOWING ACCESS FROM ON-RAMP

LEGEND

- CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. DRUMS OR VERTICAL PANELS SHALL BE USED TO DELINEATE THE LANE CLOSURE TAPER.
- TYPE III BARRICADE
- CONCRETE BARRIER (TEMPORARY)
- FLAGGER
- DIRECTION OF TRAVEL
- WORK AREA

L TRANSITION TAPER LENGTH:

L = MINIMUM LENGTH OF TAPER

SPEED 45 MPH OR MORE: $L = S \times W$

SPEED 40 MPH OR LESS: $L = \frac{WS^2}{60}$

S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED

W = WIDTH OF OFFSET

SHOULDER TAPER = 1/3 L

- ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL
- CZ CLEAR ZONE (SEE GENERAL NOTE 16 ON SHEET 1).
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
- ◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.
- VARIES BUFFER SPACE (SEE GENERAL NOTE 21).
- ● REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
- ⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- TRUCK MOUNTED ATTENUATOR (TMA)
- FLASHING BEACON
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.

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Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9219
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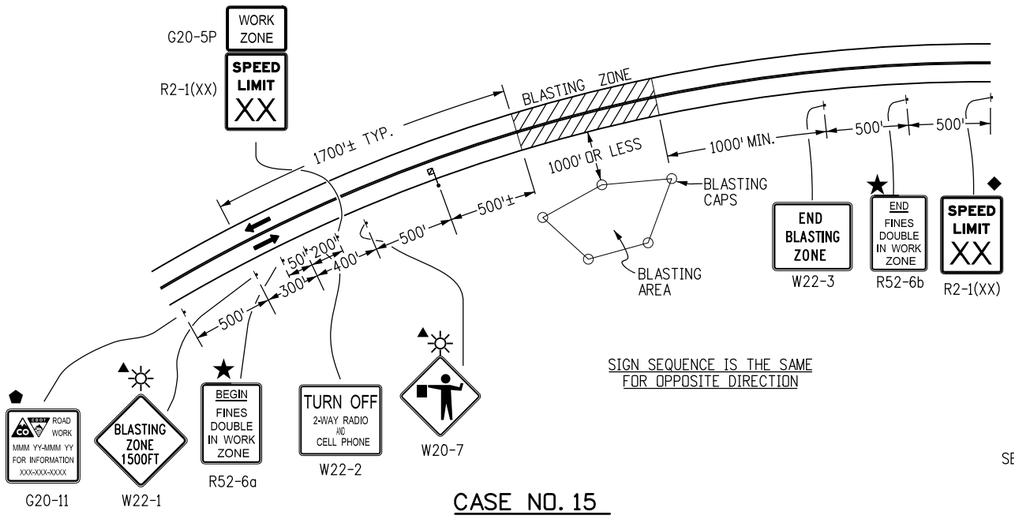
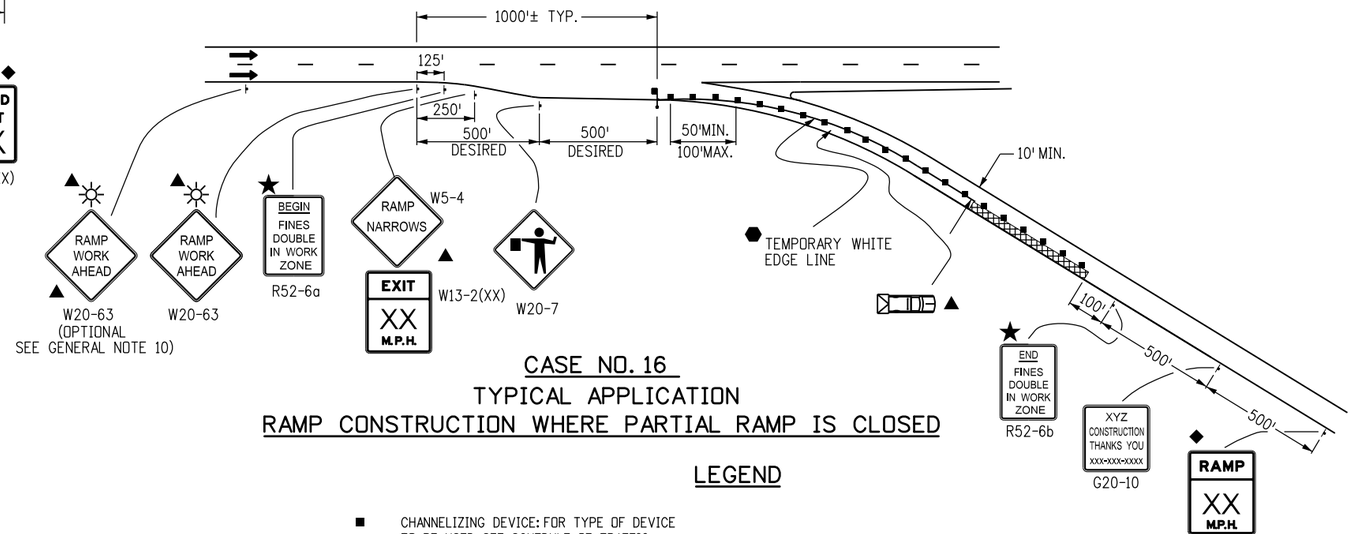
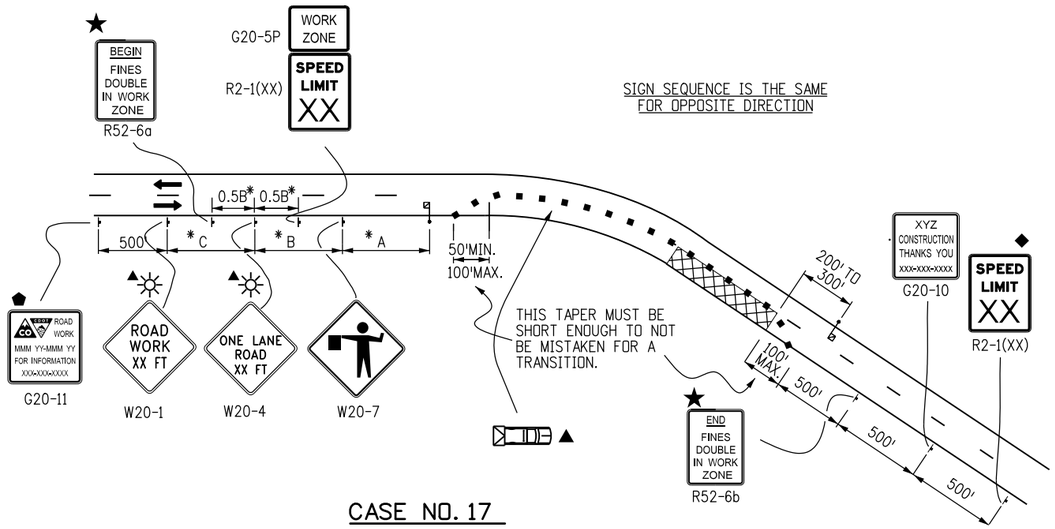


SIGN SEQUENCE IS THE SAME FOR OPPOSITE DIRECTION

CASE NO. 15
TYPICAL APPLICATION
BLASTING ZONE



CASE NO. 16
TYPICAL APPLICATION
RAMP CONSTRUCTION WHERE PARTIAL RAMP IS CLOSED



SIGN SEQUENCE IS THE SAME FOR OPPOSITE DIRECTION

CASE NO. 17
TYPICAL APPLICATION
LANE CLOSURE, 2-LANE HIGHWAY, AT CURVE

LEGEND

- ■ CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. DRUMS OR VERTICAL PANELS SHALL BE USED TO DELINEATE THE LANE CLOSURE TAPER.
- TYPE III BARRICADE
- CONCRETE BARRIER (TEMPORARY)
- FLAGGER
- DIRECTION OF TRAVEL
- WORK AREA
- L TRANSITION TAPER LENGTH:
  - L = MINIMUM LENGTH OF TAPER
  - SPEED 45 MPH OR MORE: $L = S \times W$
  - SPEED 40 MPH OR LESS: $L = \frac{WS^2}{60}$
  - S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED
  - W = WIDTH OF OFFSET
  - SHOULDER TAPER = 1/3 L
- TRUCK MOUNTED ATTENUATOR (TMA)
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12
- ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL
- CZ CLEAR ZONE (SEE GENERAL NOTE 16 ON SHEET 1).
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
- ◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.
- FLASHING BEACON
- ⬢ REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
- ⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.

*KEY TO ADVANCE SIGNING DISTANCES

ROAD TYPE	DISTANCE BETWEEN SIGNS		
	A	B	C
URBAN (<= 40 MPH)	100	100	100
URBAN (>= 45 MPH)	350	350	350
RURAL	500	500	500
EXPRESSWAY/FREEWAY	1000	1500	2640

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Last Modification Date: 07/26/13	Initials: KEN	R-4
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Sheet Revisions	
Date:	Comments
07/26/13	CORRECTED SIGN CODE DESIGNATION FOR FLAGGER (SYMBOL) SIGN TO W20-7

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4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9219
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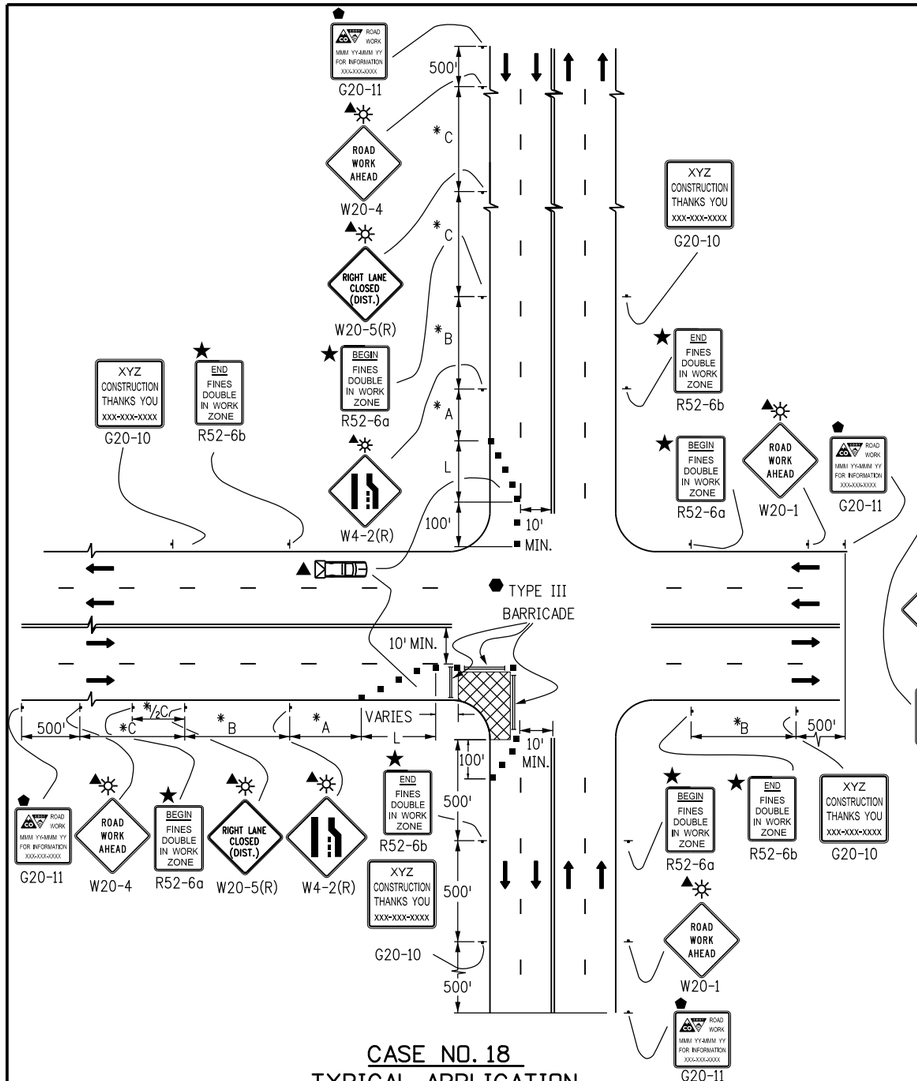
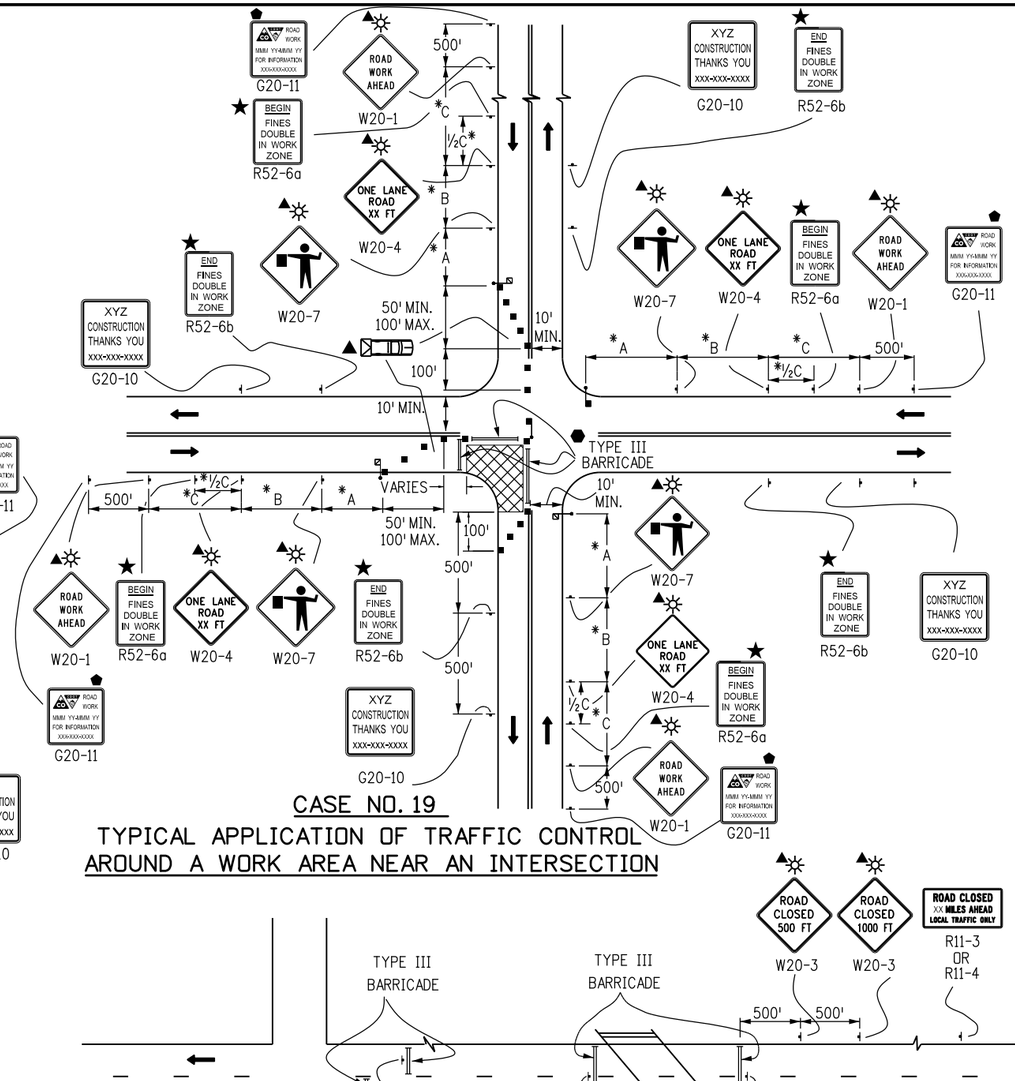


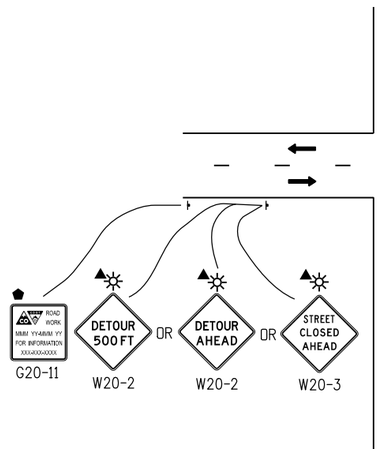
CASE NO. 18
TYPICAL APPLICATION TRAFFIC CONTROL AROUND A WORK AREA NEAR AN INTERSECTION, ONE LANE CLOSED

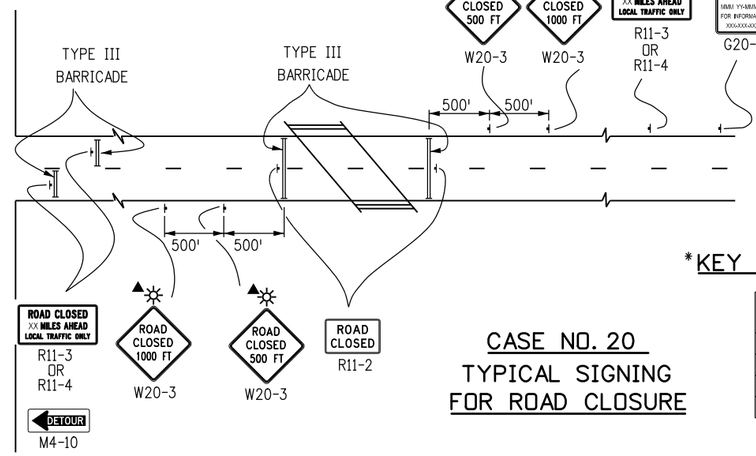


CASE NO. 19
TYPICAL APPLICATION OF TRAFFIC CONTROL AROUND A WORK AREA NEAR AN INTERSECTION

NOTES:

1. SIGN PLACEMENT SHOWN ON CASES 18 AND 19 TYPIFIES RURAL APPLICATIONS. URBAN APPLICATIONS REQUIRE THE SIGNS TO BE PLACED WITHIN ONE, OR PERHAPS TWO, BLOCKS.
2. TRUCK-MOUNTED ATTENUATORS (TMA) OPTIONAL FOR ALL CASES AS DETERMINED BY THE ENGINEER.





CASE NO. 20
TYPICAL SIGNING FOR ROAD CLOSURE

LEGEND

- ■ CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. DRUMS OR VERTICAL PANELS SHALL BE USED TO DELINEATE THE LANE CLOSURE TAPER.
- TYPE III BARRICADE
- CONCRETE BARRIER (TEMPORARY)
- ■→ FLAGGER
- DIRECTION OF TRAVEL
- WORK AREA
- L TRANSITION TAPER LENGTH:
  - L = MINIMUM LENGTH OF TAPER
  - SPEED 45 MPH OR MORE: L = S x W
  - SPEED 40 MPH OR LESS: L = $\frac{WS^2}{60}$
  - S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED
  - W = WIDTH OF OFFSET
  - SHOULDER TAPER = 1/3 L
- TRUCK MOUNTED ATTENUATOR (TMA)
- CZ CLEAR ZONE (SEE GENERAL NOTE 16).
- FLASHING BEACON
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
- VARIES BUFFER SPACE (SEE GENERAL NOTE 21 ON SHEET 1).
- ⬟ REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.
- ⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.

*KEY TO ADVANCE SIGNING DISTANCES

ROAD TYPE	DISTANCE BETWEEN SIGNS		
	A	B	C
URBAN (<= 40 MPH)	100	100	100
URBAN (>= 45 MPH)	350	350	350
RURAL	500	500	500
EXPRESSWAY/FREEWAY	1000	1500	2640

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Fax: (303) 757-9219
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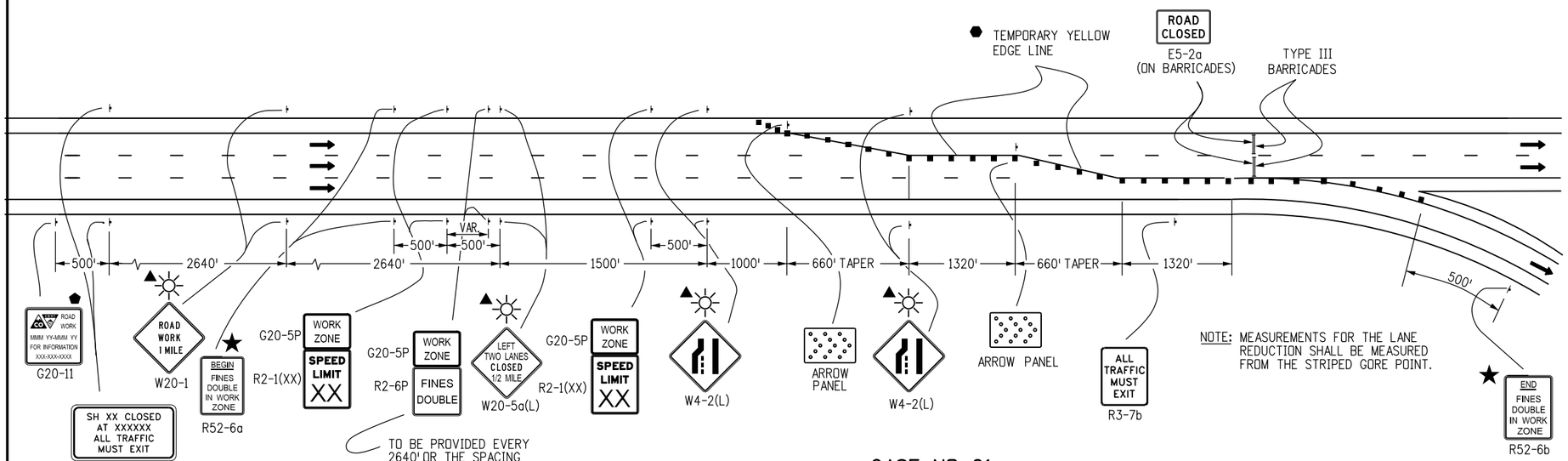
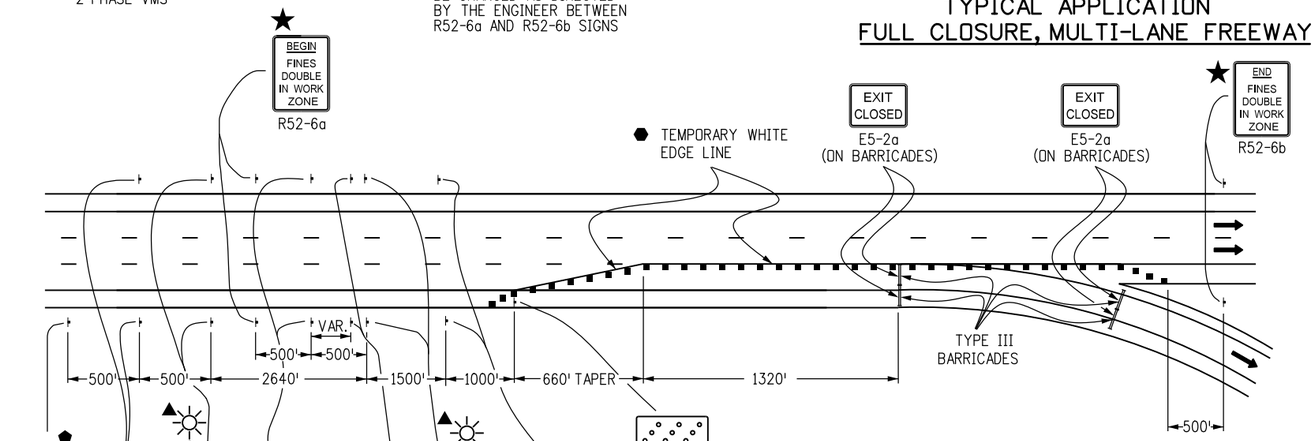
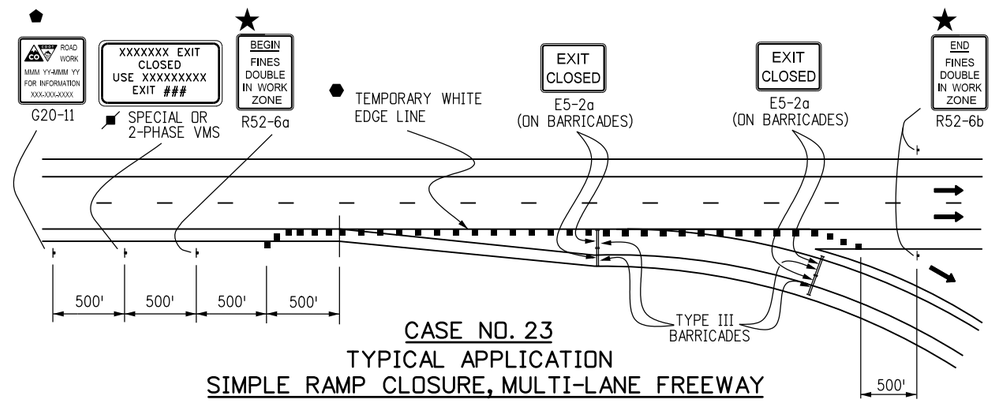


NOTE: MEASUREMENTS FOR THE LANE REDUCTION SHALL BE MEASURED FROM THE STRIPED GORE POINT.

CASE NO. 21
TYPICAL APPLICATION
FULL CLOSURE, MULTI-LANE FREEWAY



CASE NO. 22
TYPICAL APPLICATION
CONTINUOUS LANE RAMP CLOSURE, MULTI-LANE FREEWAY



CASE NO. 23
TYPICAL APPLICATION
SIMPLE RAMP CLOSURE, MULTI-LANE FREEWAY

LEGEND

- ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED WILL BE DETERMINED BY THE DESIGNER BASED ON DETOUR DESIGN AND/OR SCOPE OF THE CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE PLANS.
- ⬢ REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
- ⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- ■ CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. DRUMS OR VERTICAL PANELS SHALL BE USED TO DELINEATE THE LANE CLOSURE TAPER.
- TYPE III BARRICADE
- DIRECTION OF TRAVEL
- L TRANSITION TAPER LENGTH:
  - L = MINIMUM LENGTH OF TAPER
  - SPEED 45 MPH OR MORE: $L = S \times W$
  - SPEED 40 MPH OR LESS: $L = \frac{WS^2}{60}$
  - S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED
  - W = WIDTH OF OFFSET
  - SHOULDER TAPER = 1/3 L
- CLOSURE AND EXIT MESSAGES ON SIGN LEGEND(S) SHOULD BE MODIFIED TO FIT THE SITUATION.
- FLASHING BEACON
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.

NOTES

1. NOTICE OF EXIT CLOSURE SHALL ALSO BE GIVEN IN ADVANCE OF THE PREVIOUS EXIT TO PROVIDE MOTORISTS WITH THE OPTION TO EXIT AT THAT LOCATION.
2. ADDITIONAL SIGNING TO REDIRECT DETOURED TRAFFIC SHALL BE PROVIDED FOR IN THE PROJECT'S METHOD OF HANDLING TRAFFIC.
3. FOR LONG TERM SETUPS, A BLACK ON ORANGE "EXIT CLOSED" (E5-2a) PANEL SHALL BE MOUNTED DIAGONALLY ACROSS ALL EXISTING GUIDE SIGNS THAT PERTAIN TO THE CLOSED EXIT.

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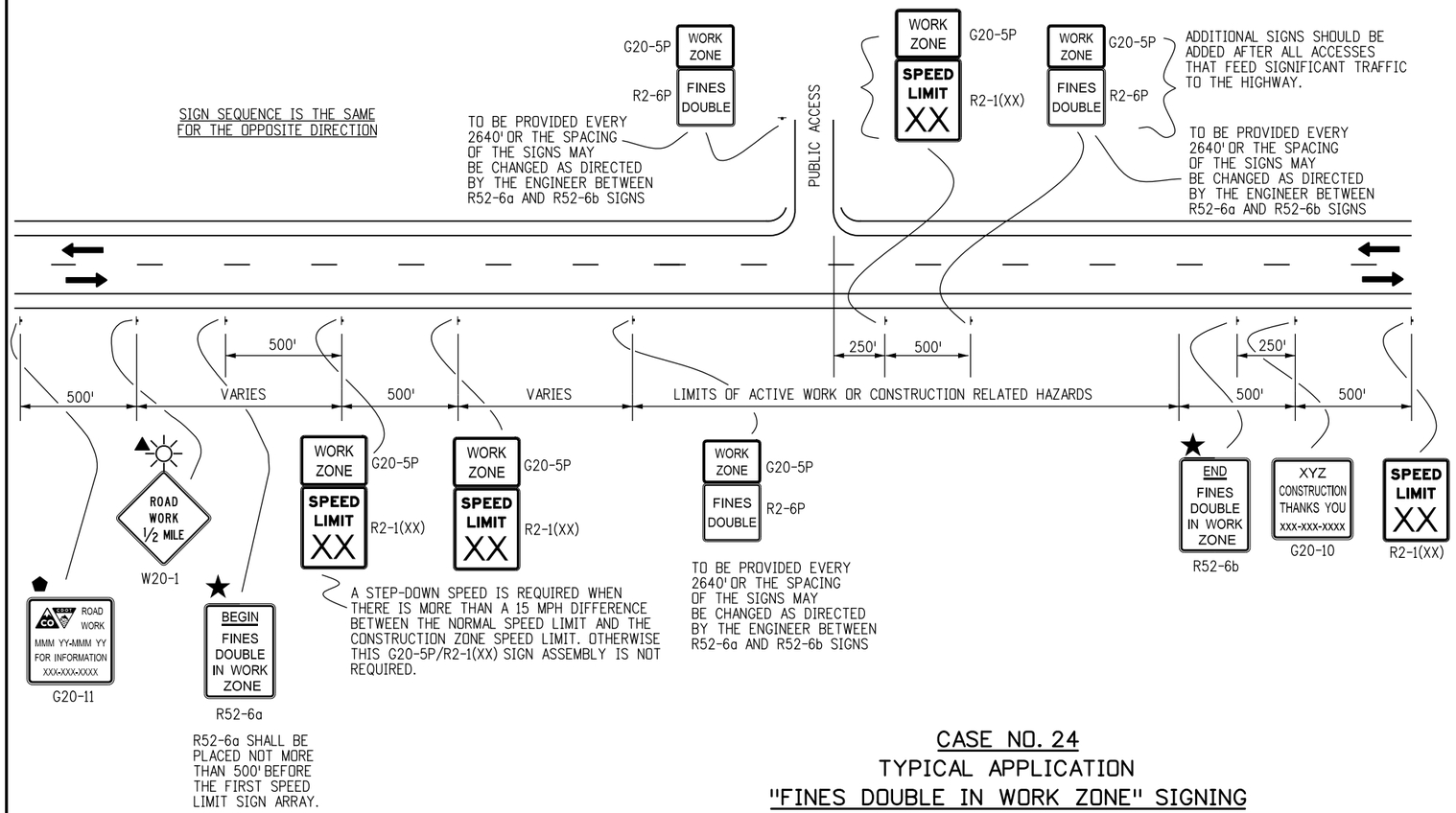

LEGEND

- DIRECTION OF TRAVEL
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED WILL BE DETERMINED BY THE DESIGNER BASED ON DETOUR DESIGN AND/OR SCOPE OF THE CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE PLANS.
- ⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- FLASHING BEACON
- ★ FINES DOUBLE SIGNING NOTES, SEE BELOW

FINES DOUBLE SIGNING NOTES:

1. SIGNS SHALL NOT BE PLACED SOONER THAN FOUR HOURS BEFORE WORK IS TO BEGIN AND SHALL BE REMOVED AS SOON AS WORK ACTIVITIES ARE CONCLUDED, UNLESS POTENTIAL HAZARDS INTRODUCED AS A RESULT OF THE WORK ARE STILL PRESENT AT THE END OF THE WORK DAY. IF SIGNS ARE LEFT IN PLACE AFTER WORK ACTIVITIES, THE TRAFFIC CONTROL SUPERVISOR SHALL MAKE AN ENTRY IN THEIR DAILY DIARY THAT JUSTIFIES THEIR USE.

   "HAZARDS" INCLUDE BUT ARE NOT LIMITED TO:
   - EDGE DROP OFFS
   - EQUIPMENT, WORKERS OR NON-SHIELDED OBJECTS IN THE CLEAR ZONE
   - ROUGH PAVEMENT
   - MAJOR CHANGE IN ALIGNMENT
   - REDUCED SHOULDER WIDTH
   - TEMPORARY GUARD RAIL OR BARRIER
   - LANE CLOSURE

2. SIGNS SHALL ONLY BE PLACED WHERE WORKERS ARE PRESENT IN THE ROADWAY OR CLEAR ZONE OR ARE AT RISK, OR WHERE THERE ARE HAZARDS IN THE TRAVELWAY, SHOULDERS OR CLEAR ZONE.

3. SIGNS SHOULD BE PLACED SO THAT MOTORISTS IMMEDIATELY ASSOCIATE THE SIGNS WITH PRESENT WORK ACTIVITIES. IF THE ZONE OF WORK ACTIVITY MOVES, THE SIGNS SHOULD BE MOVED ACCORDINGLY.

4. SIGNING SHOWN IS REQUIRED TO ENFORCE DOUBLE FINES IN A WORK ZONE. ADDITIONAL SIGNING SHALL BE IN ACCORDANCE WITH THAT NORMALLY REQUIRED FOR THE PARTICULAR WORK ZONE. PLACEMENT OF "FINES DOUBLE" SIGNING MAY BE ADJUSTED AS NEEDED TO PROVIDE A MINIMUM 250' SPACING BETWEEN OTHER SIGNING REQUIRED FOR THE SPECIFIC WORK ZONE SETUP.

CASE NO. 24
TYPICAL APPLICATION
"FINES DOUBLE IN WORK ZONE" SIGNING
(WITH SPEED REDUCTION)

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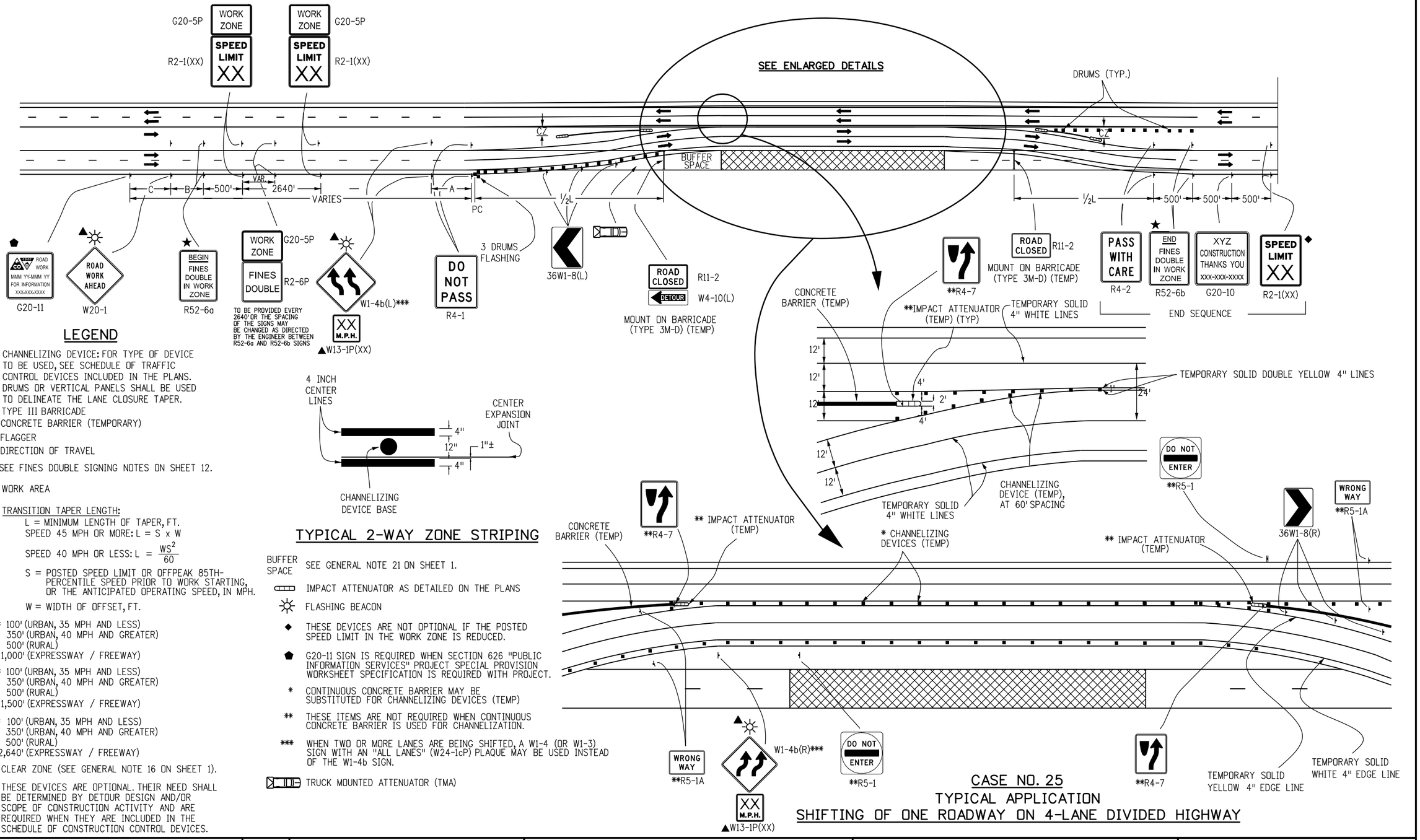

LEGEND

- ▪ CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. DRUMS OR VERTICAL PANELS SHALL BE USED TO DELINEATE THE LANE CLOSURE TAPER.
- TYPE III BARRICADE
- CONCRETE BARRIER (TEMPORARY)
- FLAGGER
- DIRECTION OF TRAVEL
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.
- WORK AREA
- L TRANSITION TAPER LENGTH:
  - L = MINIMUM LENGTH OF TAPER, FT.
  - SPEED 45 MPH OR MORE: $L = S \times W$
  - SPEED 40 MPH OR LESS: $L = \frac{WS^2}{60}$
  - S = POSTED SPEED LIMIT OR OFFPEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED, IN MPH.
  - W = WIDTH OF OFFSET, FT.
- A = 100' (URBAN, 35 MPH AND LESS); 350' (URBAN, 40 MPH AND GREATER); 500' (RURAL); 1,000' (EXPRESSWAY / FREEWAY)
- B = 100' (URBAN, 35 MPH AND LESS); 350' (URBAN, 40 MPH AND GREATER); 500' (RURAL); 1,500' (EXPRESSWAY / FREEWAY)
- C = 100' (URBAN, 35 MPH AND LESS); 350' (URBAN, 40 MPH AND GREATER); 500' (RURAL); 2,640' (EXPRESSWAY / FREEWAY)
- CZ CLEAR ZONE (SEE GENERAL NOTE 16 ON SHEET 1).
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.

TYPICAL 2-WAY ZONE STRIPING

- BUFFER SPACE: SEE GENERAL NOTE 21 ON SHEET 1.
- IMPACT ATTENUATOR AS DETAILED ON THE PLANS
- FLASHING BEACON
- ◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.
- ⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- * CONTINUOUS CONCRETE BARRIER MAY BE SUBSTITUTED FOR CHANNELIZING DEVICES (TEMP)
- ** THESE ITEMS ARE NOT REQUIRED WHEN CONTINUOUS CONCRETE BARRIER IS USED FOR CHANNELIZATION.
- *** WHEN TWO OR MORE LANES ARE BEING SHIFTED, A W1-4 (OR W1-3) SIGN WITH AN "ALL LANES" (W24-1cP) PLAQUE MAY BE USED INSTEAD OF THE W1-4b SIGN.
- TRUCK MOUNTED ATTENUATOR (TMA)

CASE NO. 25
TYPICAL APPLICATION
SHIFTING OF ONE ROADWAY ON 4-LANE DIVIDED HIGHWAY

Computer File Information		Sheet Revisions	
Creation Date: 07/04/12 Initials: RRR		Date:	Comments
Last Modification Date: 02/06/13 Initials: KEN	R-1	02/06/13	UPDATE TO 2009 MUTCD STANDARD
Full Path: www.coloradodot.info/library/traffic/traffic-s-standard-plans	R-X		
Drawing File Name: S-630-01_13of24.dgn	R-X		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	R-X		

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Phone: (303) 757-9543
Fax: (303) 757-9219
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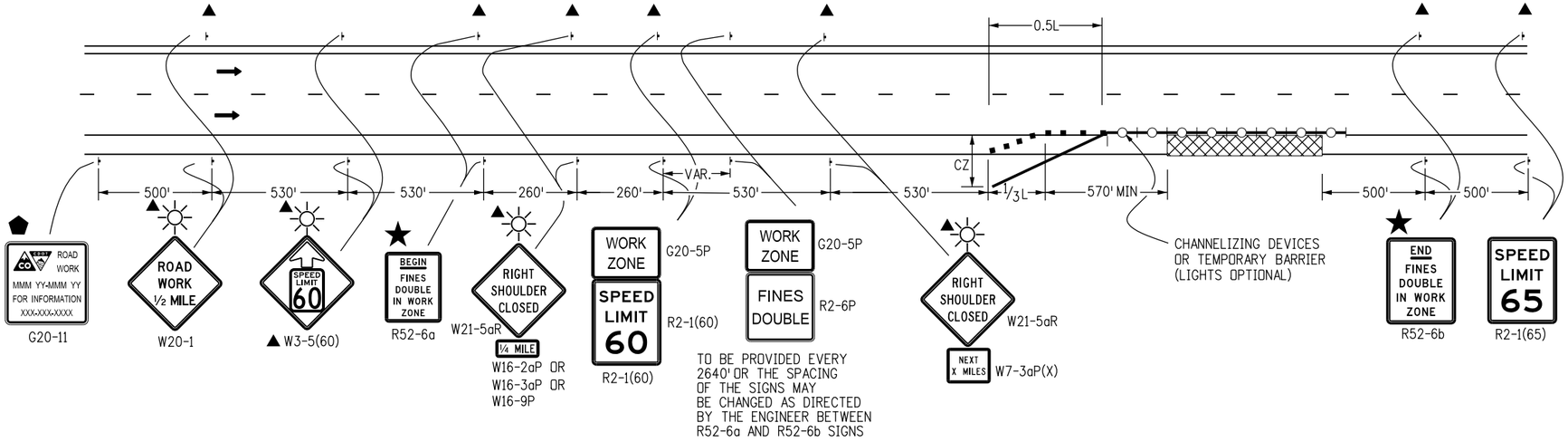
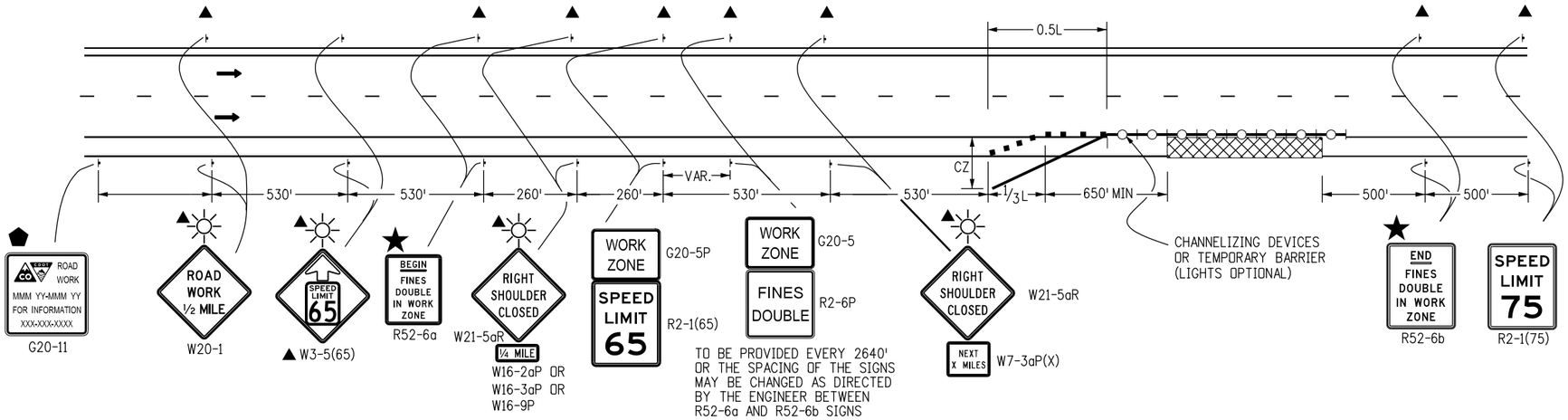


CASE NO. 26
TYPICAL APPLICATION
SHOULDER WORK - FREEWAY/EXPRESSWAY w/ 65 MPH SPEED LIMIT

WHEN HAZARDS (WORKERS, EQUIPMENT, OR TEMPORARY BARRIER) ARE WITHIN 8 FT OF TRAVEL WAY



CASE NO. 27
TYPICAL APPLICATION
SHOULDER WORK - FREEWAY/EXPRESSWAY w/ 75 MPH SPEED LIMIT

WHEN HAZARDS (WORKERS, EQUIPMENT, OR TEMPORARY BARRIER) ARE WITHIN 10 FT OF TRAVEL WAY

LEGEND

- CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE SCHEDULE OF TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. DRUMS OR VERTICAL PANELS SHALL BE USED TO DELINEATE THE LANE CLOSURE TAPER.
- TYPE III BARRICADE
- CONCRETE BARRIER (TEMPORARY)
- FLAGGER
- DIRECTION OF TRAVEL
- WORK AREA
- L — TRANSITION TAPER LENGTH:
  - L = MINIMUM LENGTH OF TAPER
  - SPEED 45 MPH OR MORE: L = S x W
  - S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED
  - W = WIDTH OF OFFSET
  - SHOULDER TAPER = 1/3 L
- ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL
- CZ — CLEAR ZONE (SEE GENERAL NOTE 16 ON SHEET 1).
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY TRAFFIC VOLUMES AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
- ⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- ⬟ REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
- TRUCK MOUNTED ATTENUATOR
- FLASHING BEACON
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.

Computer File Information		Sheet Revisions	
Creation Date: 07/04/12 Initials: RRR		Date:	Comments
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Full Path: www.coloradodot.info/library/traffic/traffic-s-standard-plans	R-X		
Drawing File Name: S-630-01_14of24.dgn	R-X		
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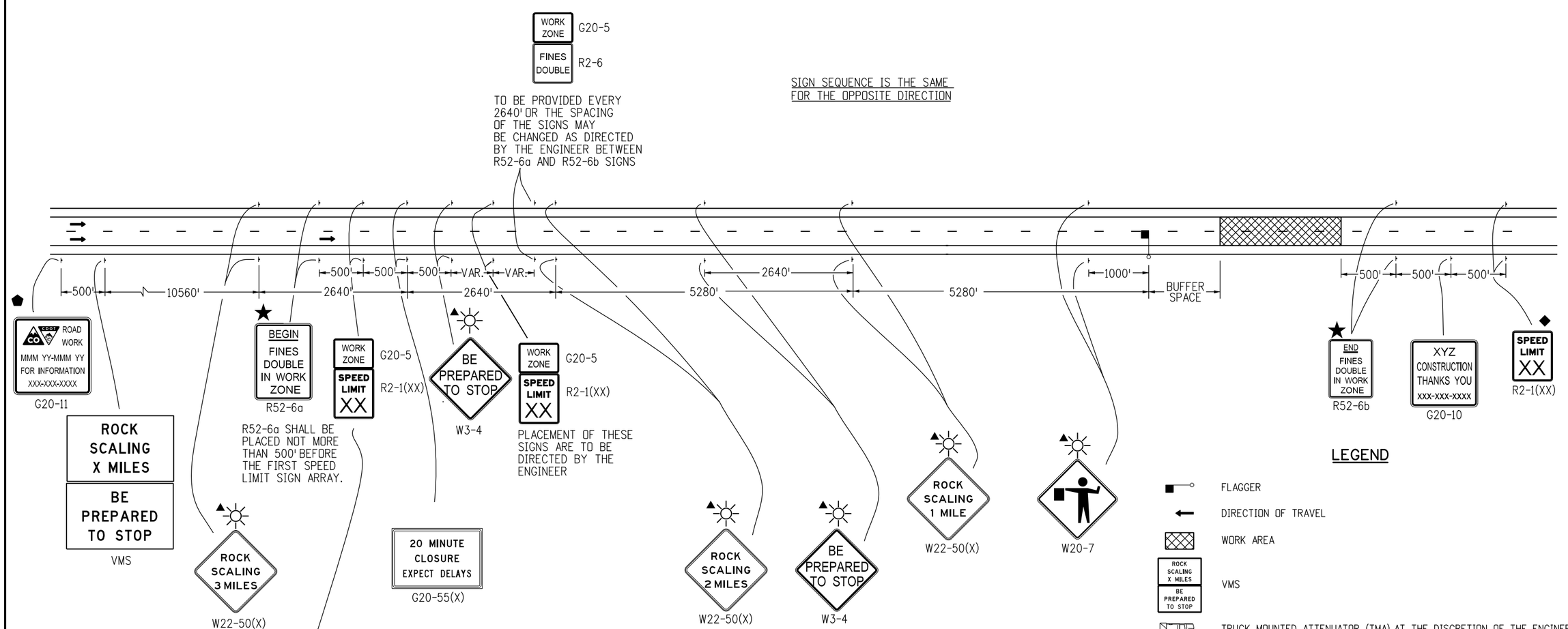

CASE NO. 28
TYPICAL APPLICATION
ROCK SCALING - ROAD CLOSURE, 4-LANE DIVIDED HIGHWAY

LEGEND

- FLAGGER
- DIRECTION OF TRAVEL
- WORK AREA
- ROCK SCALING X MILES / BE PREPARED TO STOP — VMS
- TRUCK MOUNTED ATTENUATOR (TMA) AT THE DISCRETION OF THE ENGINEER
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
- ◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.
- ⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- BUFFER SPACE — SEE GENERAL NOTE 21 ON SHEET 1.
- FLASHING BEACON
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.

Computer File Information		Sheet Revisions	
Creation Date: 07/04/12 Initials: RRR		Date:	Comments
Last Modification Date: 07/26/13 Initials: KEN	R-4	07/26/13	CORRECTED SIGN CODE DESIGNATION FOR FLAGGER (SYMBOL) SIGN TO W20-7
Full Path: www.coloradodot.info/library/traffic/traffic-s-standard-plans	R-X		
Drawing File Name: S-630-01_15of24.dgn	R-X		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	R-X		

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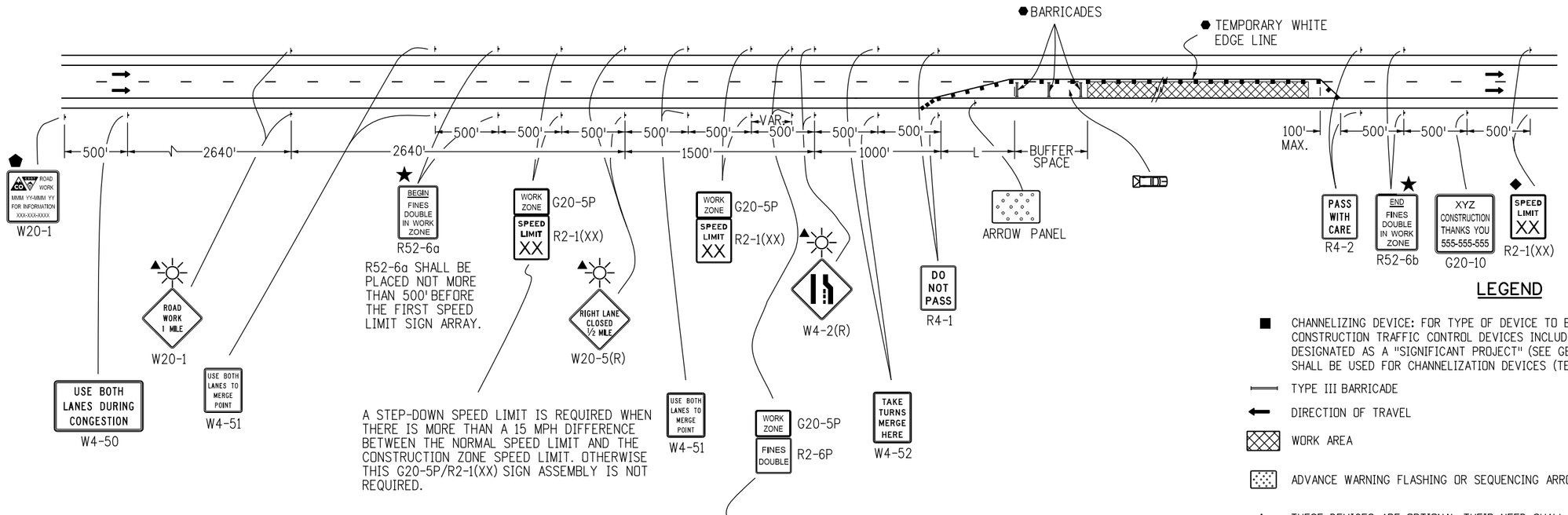

LEGEND

- ■ CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE THE SCHEDULE OF CONSTRUCTION TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. IF PROJECT IS DESIGNATED AS A "SIGNIFICANT PROJECT" (SEE GENERAL NOTE 25), CONCRETE BARRIER SHALL BE USED FOR CHANNELIZATION DEVICES (TEMP) AS DETERMINED BY THE ENGINEER.
- TYPE III BARRICADE
- DIRECTION OF TRAVEL
- WORK AREA
- ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL.
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
- ◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.
- ⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- FLASHING BEACON
- ⬢ REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.
- TRUCK MOUNTED ATTENUATOR (TMA)
- L TRANSITION TAPER LENGTH:

  L = MINIMUM LENGTH OF TAPER

  SPEED 45 MPH OR MORE: $L = S \times W$

  SPEED 40 MPH OR LESS: $L = \frac{WS^2}{60}$

  S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED

  W = WIDTH OF OFFSET

  SHOULDER TAPER = 1/3 L
- BUFFER SPACE SEE GENERAL NOTE 21 ON SHEET 1.

CASE NO. 29
TYPICAL APPLICATION
LATE MERGING - ONE LANE CLOSED, 4-LANE DIVIDED HIGHWAY

Computer File Information		Sheet Revisions	
Creation Date: 07/04/12 Initials: RRR		Date:	Comments
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Full Path: www.coloradodot.info/library/traffic/traffic-s-standard-plans	R-X		
Drawing File Name: S-630-01_16of24.dgn	R-X		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	R-X		

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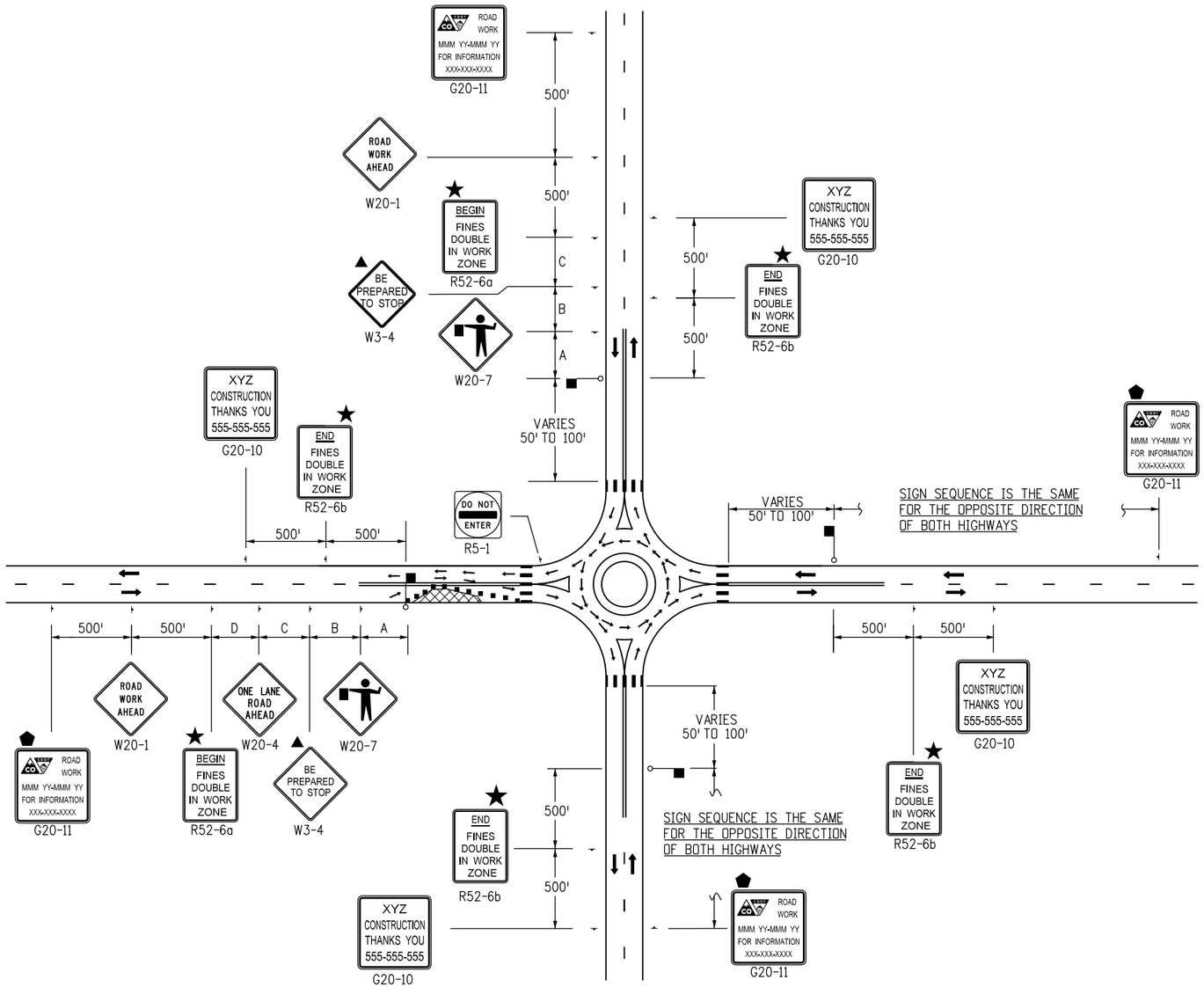

CASE NO. 30
TYPICAL APPLICATION
ROUNDABOUT - PARTIAL CLOSURE NEAR ONE-LANE ROUNDABOUT

LEGEND

- ■ CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE THE SCHEDULE OF CONSTRUCTION TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. IF PROJECT IS DESIGNATED AS A "SIGNIFICANT PROJECT" (SEE GENERAL NOTE 25), CONCRETE BARRIER SHALL BE USED FOR CHANNELIZATION DEVICES (TEMP) AS DETERMINED BY THE ENGINEER.
- TYPE III BARRICADE
- DIRECTION OF TRAVEL
- WORK AREA
- ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL.
- ▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.
- ◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.
- ⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.
- FLASHING BEACON
- ⬢ REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.
- ★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.
- TRUCK MOUNTED ATTENUATOR (TMA)
- L TRANSITION TAPER LENGTH:

  L = MINIMUM LENGTH OF TAPER

  SPEED 45 MPH OR MORE: $L = S \times W$

  SPEED 40 MPH OR LESS: $L = \frac{WS^2}{60}$

  S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED

  W = WIDTH OF OFFSET

  SHOULDER TAPER = 1/3 L
- BUFFER SPACE — SEE GENERAL NOTE 21 ON SHEET 1.
- FLAGGER

ROAD TYPE	DISTANCE BETWEEN SIGNS		
	A	B	C
URBAN (<= 40 MPH)	100	100	100
URBAN (>= 45 MPH)	350	350	350
RURAL	500	500	500
EXPRESSWAY/FREEWAY	1000	1500	2640

Computer File Information		Sheet Revisions	
Creation Date: 07/04/12 Initials: KEN		Date:	Comments
Last Modification Date: 12/08/14 Initials: KEN	R-7	12/08/14	NEW SHEET 17. OLD SHEET 17 NOW SHEET 21
Full Path: www.coloradodot.info/library/traffic/traffic-s-standard-plans	R-X		
Drawing File Name: S-630-01_17of24.dgn	R-X		
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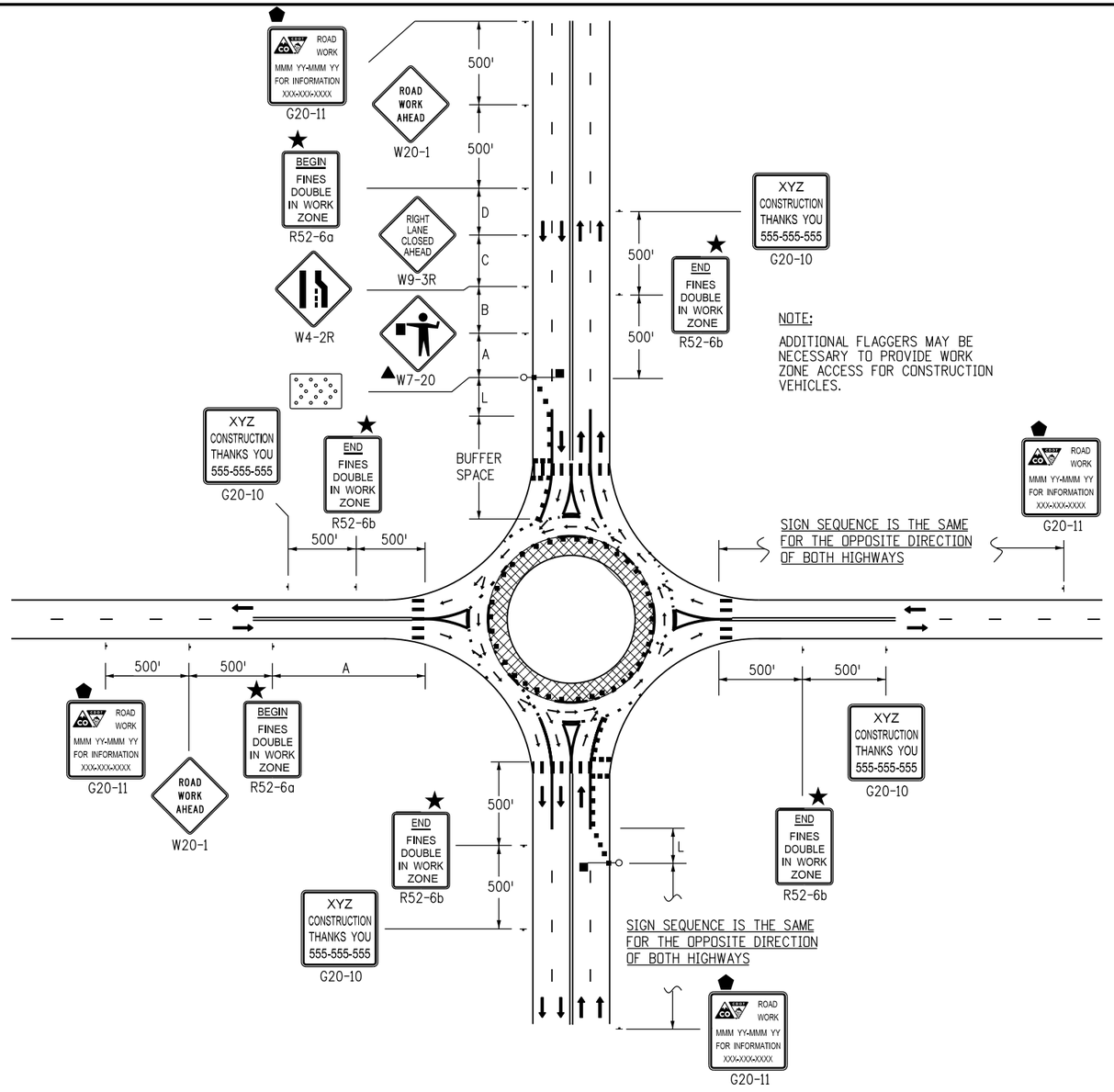

CASE NO. 31
TYPICAL APPLICATION *
ROUNDABOUT - INSIDE LANE CLOSURE FOR TWO-LANE ROUNDABOUT

LEGEND

* A TRUCK DETOUR ROUTE MAY BE NECESSARY TO DIVERT TRUCKS AWAY FROM THE ROUNDABOUT CIRCLE. ALSO NECESSARY IS A STREET NAME AND/OR ROUTE NUMBER SIGN, INFORMING MOTORISTS WHERE THEY NEED TO EXIT THE ROUNDABOUT CIRCLE TO ENTER THE DESIRED STREET AND/OR ROUTE NUMBER.

■ CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE THE SCHEDULE OF CONSTRUCTION TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. IF PROJECT IS DESIGNATED AS A "SIGNIFICANT PROJECT" (SEE GENERAL NOTE 25), CONCRETE BARRIER SHALL BE USED FOR CHANNELIZATION DEVICES (TEMP) AS DETERMINED BY THE ENGINEER.

TYPE III BARRICADE

DIRECTION OF TRAVEL

WORK AREA

ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL.

▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.

◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.

⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.

FLASHING BEACON

⬢ REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.

★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.

TRUCK MOUNTED ATTENUATOR (TMA)

L TRANSITION TAPER LENGTH:

L = MINIMUM LENGTH OF TAPER

SPEED 45 MPH OR MORE: $L = S^2 W / 60$

SPEED 40 MPH OR LESS: $L = WS^2 / 155$

S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED

W = WIDTH OF OFFSET

SHOULDER TAPER = 1/3 L

BUFFER SPACE SEE GENERAL NOTE 21 ON SHEET 1.

FLAGGER

ROAD TYPE	DISTANCE BETWEEN SIGNS		
	A	B	C
URBAN (<= 40 MPH)	100	100	100
URBAN (>= 45 MPH)	350	350	350
RURAL	500	500	500
EXPRESSWAY/FREEWAY	1000	1500	2640

Computer File Information	
Creation Date: 07/04/12	Initials: KEN
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Full Path: www.coloradodot.info/library/traffic/traffic-s-standard-plans	
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Sheet Revisions		
	Date:	Comments
R-7	12/08/14	NEW SHEET 18. OLD SHEET 18 NOW SHEET 22
R-X		
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R-X		

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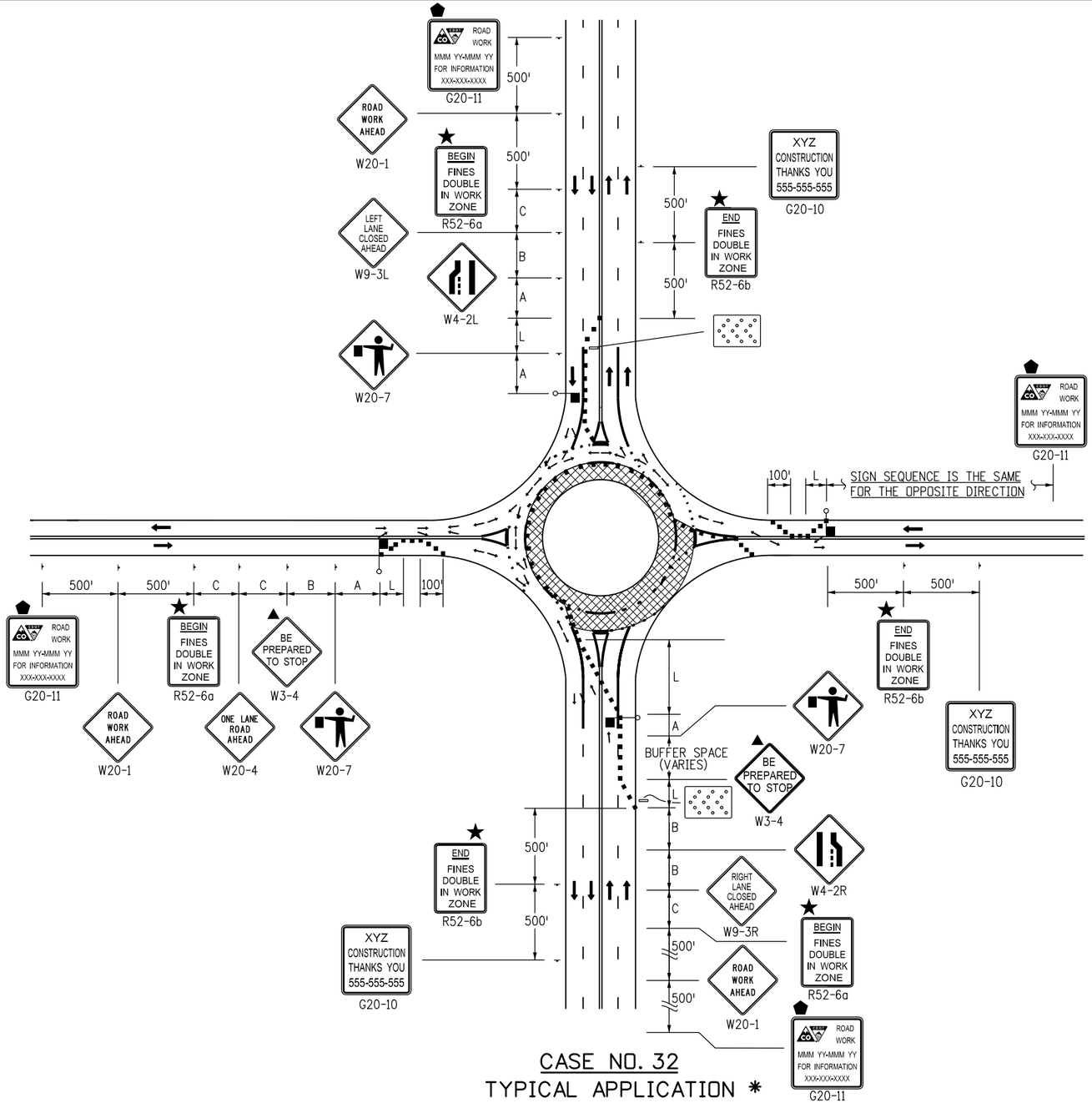

CASE NO. 32

TYPICAL APPLICATION *

ROUNDABOUT - OUTSIDE LANE CLOSURE FOR TWO-LANE ROUNDABOUT

LEGEND

* A TRUCK DETOUR ROUTE MAY BE NECESSARY TO DIVERT TRUCKS AWAY FROM THE ROUNDABOUT CIRCLE. ALSO NECESSARY IS A STREET NAME AND/OR ROUTE NUMBER SIGN, INFORMING MOTORISTS WHERE THEY NEED TO EXIT THE ROUNDABOUT CIRCLE TO ENTER THE DESIRED STREET AND/OR ROUTE NUMBER.

■ CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE THE SCHEDULE OF CONSTRUCTION TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. IF PROJECT IS DESIGNATED AS A "SIGNIFICANT PROJECT" (SEE GENERAL NOTE 25), CONCRETE BARRIER SHALL BE USED FOR CHANNELIZATION DEVICES (TEMP) AS DETERMINED BY THE ENGINEER.

TYPE III BARRICADE

DIRECTION OF TRAVEL

WORK AREA

ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL.

▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.

◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.

⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.

FLASHING BEACON

⬟ REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.

★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.

TRUCK MOUNTED ATTENUATOR (TMA)

L TRANSITION TAPER LENGTH: =

L = MINIMUM LENGTH OF TAPER $\frac{WS^2}{60}$

SPEED 45 MPH OR MORE: L = S x W

SPEED 40 MPH OR LESS: L

S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED

W = WIDTH OF OFFSET

SHOULDER TAPER = 1/3 L

BUFFER SPACE — SEE GENERAL NOTE 21 ON SHEET 1.

FLAGGER

ROAD TYPE	DISTANCE BETWEEN SIGNS		
	A	B	C
URBAN (<= 40 MPH)	100	100	100
URBAN (>= 45 MPH)	350	350	350
RURAL	500	500	500
EXPRESSWAY/FREEWAY	1000	1500	2640

Computer File Information			Sheet Revisions	
Creation Date: 07/04/12	Initials: KEN		Date:	Comments
Last Modification Date: 12/08/14	Initials: KEN	R-7	12/08/14	NEW SHEET 19. OLD SHEET 19 NOW SHEET 23
Full Path: www.coloradodot.info/library/traffic/traffic-s-standard-plans		R-X		
Drawing File Name: S-630-01_19of24.dgn		R-X		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English		R-X		

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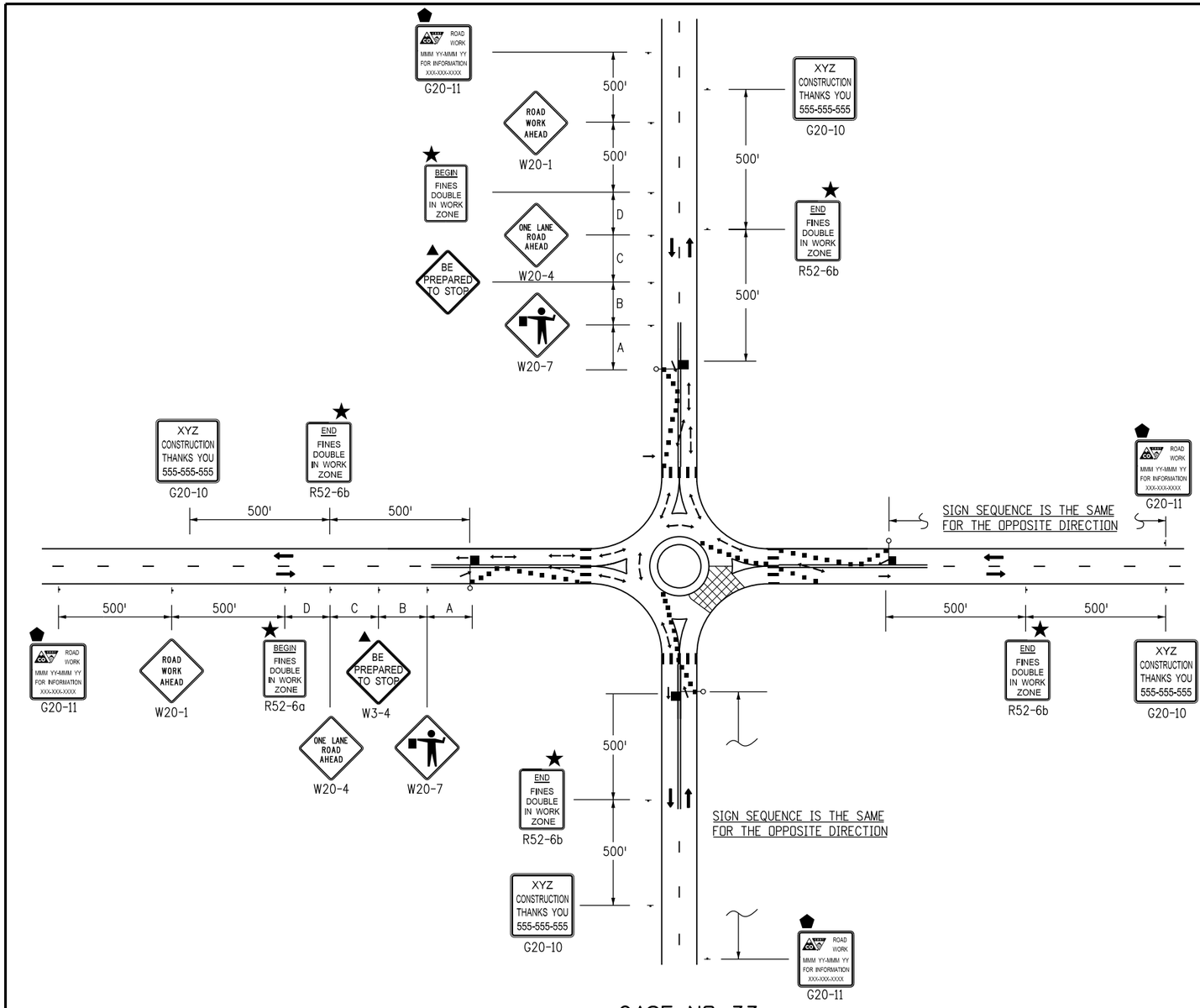

CASE NO. 33

TYPICAL APPLICATION *

ROUNDABOUT - PARTIAL CLOSURE FOR ONE-LANE ROUNDABOUT

LEGEND

* A TRUCK DETOUR ROUTE MAY BE NECESSARY TO DIVERT TRUCKS AWAY FROM THE ROUNDABOUT CIRCLE. ALSO NECESSARY IS A STREET NAME AND/OR ROUTE NUMBER SIGN, INFORMING MOTORISTS WHERE THEY NEED TO EXIT THE ROUNDABOUT CIRCLE TO ENTER THE DESIRED STREET AND/OR ROUTE NUMBER.

■ CHANNELIZING DEVICE: FOR TYPE OF DEVICE TO BE USED, SEE THE SCHEDULE OF CONSTRUCTION TRAFFIC CONTROL DEVICES INCLUDED IN THE PLANS. IF PROJECT IS DESIGNATED AS A "SIGNIFICANT PROJECT" (SEE GENERAL NOTE 25), CONCRETE BARRIER SHALL BE USED FOR CHANNELIZATION DEVICES (TEMP) AS DETERMINED BY THE ENGINEER.

TYPE III BARRICADE

DIRECTION OF TRAVEL

WORK AREA

ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL.

▲ THESE DEVICES ARE OPTIONAL. THEIR NEED SHALL BE DETERMINED BY DETOUR DESIGN AND/OR SCOPE OF CONSTRUCTION ACTIVITY, AND ARE REQUIRED WHEN THEY ARE INCLUDED IN THE SCHEDULE OF CONSTRUCTION CONTROL DEVICES.

◆ THESE DEVICES ARE NOT OPTIONAL IF THE POSTED SPEED LIMIT IN THE WORK ZONE IS REDUCED.

⬟ G20-11 SIGN IS REQUIRED WHEN SECTION 626 "PUBLIC INFORMATION INFORMATION SERVICES" PROJECT SPECIAL PROVISION WORKSHEET SPECIFICATION IS REQUIRED WITH PROJECT.

FLASHING BEACON

⬢ REQUIRED WHEN WORK OCCUPIES THE LOCATION FOR MORE THAN 3 DAYS.

★ SEE FINES DOUBLE SIGNING NOTES ON SHEET 12.

TRUCK MOUNTED ATTENUATOR (TMA)

L TRANSITION TAPER LENGTH:

L = MINIMUM LENGTH OF TAPER

SPEED 45 MPH OR MORE: $L = \frac{WS^2}{60}$

SPEED 40 MPH OR LESS: $L = WS$

S = NUMERICAL VALUE OF SPEED LIMIT OR 85 PERCENTILE SPEED

W = WIDTH OF OFFSET

SHOULDER TAPER = 1/3 L

BUFFER SPACE SEE GENERAL NOTE 21 ON SHEET 1.

FLAGGER

ROAD TYPE	DISTANCE BETWEEN SIGNS		
	A	B	C
URBAN (<= 40 MPH)	100	100	100
URBAN (>= 45 MPH)	350	350	350
RURAL	500	500	500
EXPRESSWAY/FREEWAY	1000	1500	2640

Computer File Information			Sheet Revisions	
Creation Date: 07/04/12	Initials: KEN		Date:	Comments
Last Modification Date: 12/08/14	Initials: KEN	R-Z	12/08/14	NEW SHEET 20. OLD SHEET 20 NOW SHEET 24
Full Path: www.coloradodot.info/library/traffic/traffic-s-standard-plans		R-X		
Drawing File Name: S-630-01_20of24.dgn		R-X		
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LEGEND

VEHICLE WITH TRUCK-MOUNTED ATTENUATORS (TMA), TWO 360-DEGREE YELLOW FLASHING BEACONS, AND YELLOW FLASHING VEHICLE LIGHTS OR STROBES.

VMS — VARIABLE MESSAGE SIGN (VMS).

▲ WHEN VMS IS USED, THE "SHOULDER CLOSED" SIGN BECOMES OPTIONAL.

■ THE "PICK-UP VEHICLES" OR "WARNING VEHICLE" MAY ENCROACH INTO THE TRAFFIC LANE WHEN THE SHOULDER IS TOO NARROW TO DRIVE ON.

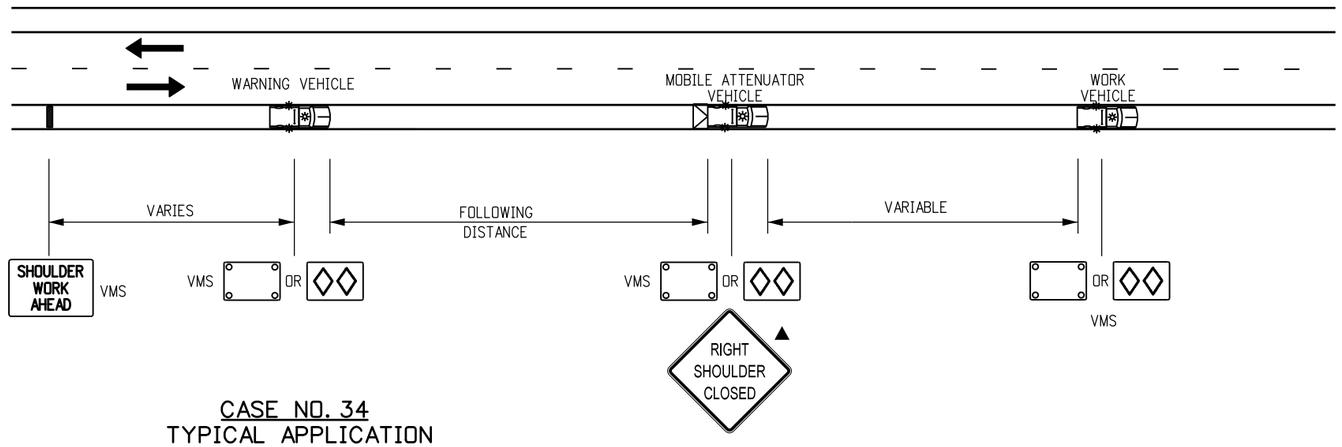
● IF TRACKING OF THE WET PAINT IS ANTICIPATED, THE USE OF CONES OR STATIONARY "WET PAINT" SIGNS SHALL BE POSTED.

⬢ THE VARIABLE SEPARATION DISTANCE BETWEEN THE "CONE PLACEMENT VEHICLE" AND "CONE PICKUP VEHICLE" SHALL BE DETERMINED BY THE TRACK DRYING TIME OF THE PAVEMENT MARKING MATERIAL.

⬬ OPTIONAL

FOLLOWING DISTANCE CHART FOR WARNING AND MOBILE ATTENUATOR (OR CONE PICKUP) VEHICLE

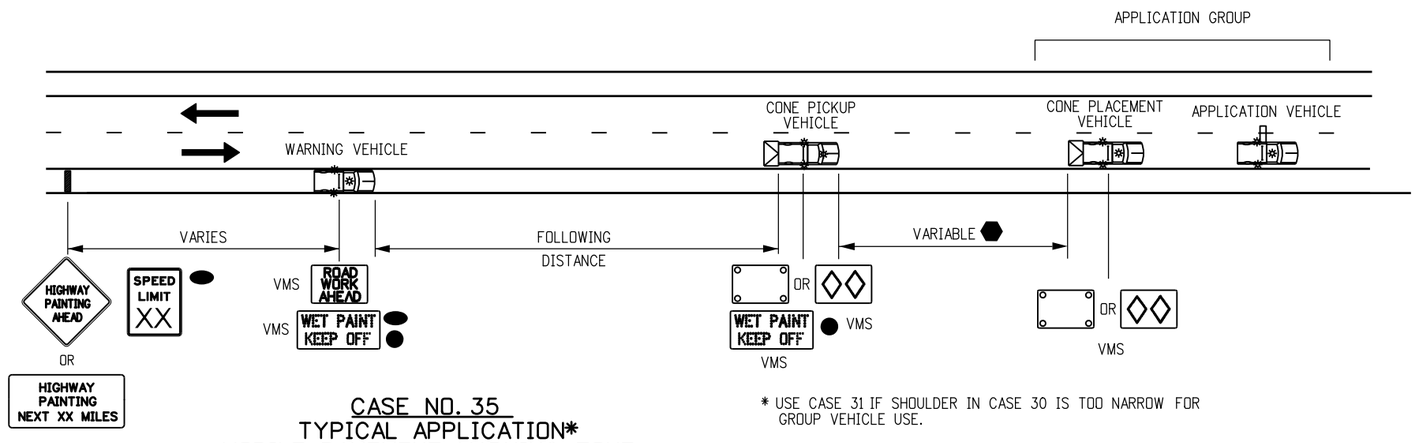
POSTED WZ SPEED LIMIT (MPH)	FOLLOWING DISTANCE (FEET)
0 - 30	250 - 550
35 - 40	325 - 700
45 - 50	600 - 900
55	750 - 1200
60 - 65	1000 - 1400
70 - 75	1200 - 1600



CASE NO. 34
TYPICAL APPLICATION
MOBILE WORK ZONE
MOBILE SHOULDER CLOSURE ON 2-LANE UNDIVIDED HIGHWAY

NOTE

THE VARIABLE SEPARATION DISTANCE BETWEEN THE "CONE PLACEMENT VEHICLE" AND "CONE PICKUP VEHICLE" SHALL BE DETERMINED BY THE TRACK DRYING TIME OF THE PAVEMENT MARKING MATERIAL.



CASE NO. 35
TYPICAL APPLICATION*
MOBILE PAVEMENT MARKING ZONE
CENTERLINE STRIPING ON 2-LANE UNDIVIDED HIGHWAY

* USE CASE 31 IF SHOULDER IN CASE 30 IS TOO NARROW FOR GROUP VEHICLE USE.

Computer File Information		Sheet Revisions	
Creation Date: 07/04/12 Initials: KEN		Date:	Comments
Last Modification Date: 12/8/14 Initials: KEN	R-5	3/27/14	REDUCED NUMBER OF TMA VEHICLES, REVISE VMS AND ADD STATIONARY SIGNS
Full Path: www.coloradodot.info/library/traffic/traffic-s-standard-plans	R-7	12/8/14	FORMERLY SHEET 17.
Drawing File Name: S-630-1_21of24.dgn	R-X		
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4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9219
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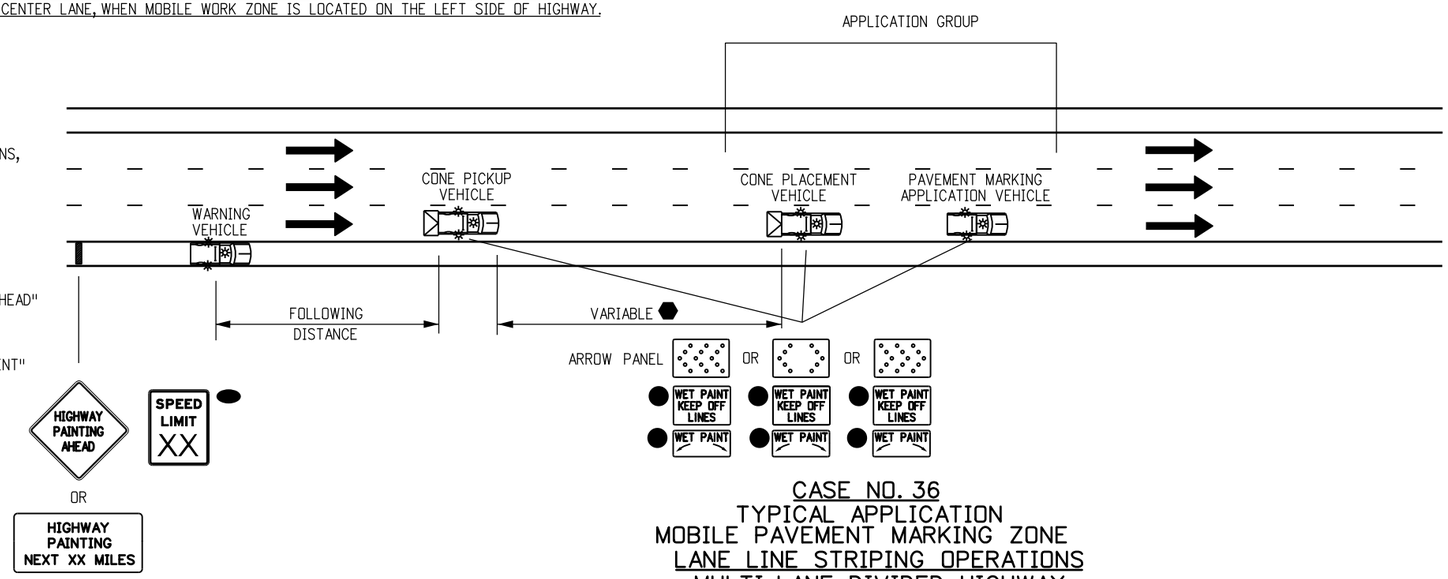
FOR CASE #32, VEHICLE/SIGN SEQUENCE IS THE SAME FOR THE LEFT SIDE OF HIGHWAY, WHILE TAPER IS MIRRORED ABOUT THE CENTER LANE, WHEN MOBILE WORK ZONE IS LOCATED ON THE LEFT SIDE OF HIGHWAY.

LEGEND

- VEHICLE WITH TRUCK-MOUNTED ATTENUATORS (TMA), TWO 360-DEGREE YELLOW FLASHING BEACONS, AND YELLOW FLASHING VEHICLE LIGHTS OR STROBES.
- ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL.
- AHEAD / LANE CLOSED — PORTABLE VARIABLE MESSAGE SIGN (VMS).
- ▲ WHEN THE VMS IS USED, THE "SHOULDER CLOSED" (W21-5aX) OR W21-5bX), AND "RAMP CLOSED AHEAD" SIGNS BECOME OPTIONAL.
- ● IF TRACKING OF THE WET PAINT IS ANTICIPATED, THE USE OF CONES OR STATIONARY "WET PAINT" SIGNS SHALL BE POSTED.
- ⬢ THE VARIABLE SEPARATION DISTANCE BETWEEN THE "CONE PLACEMENT VEHICLE" AND "CONE PICKUP VEHICLE" SHALL BE DETERMINED BY THE TRACK DRYING TIME OF THE PAVEMENT MARKING MATERIAL.
- ⬬ OPTIONAL



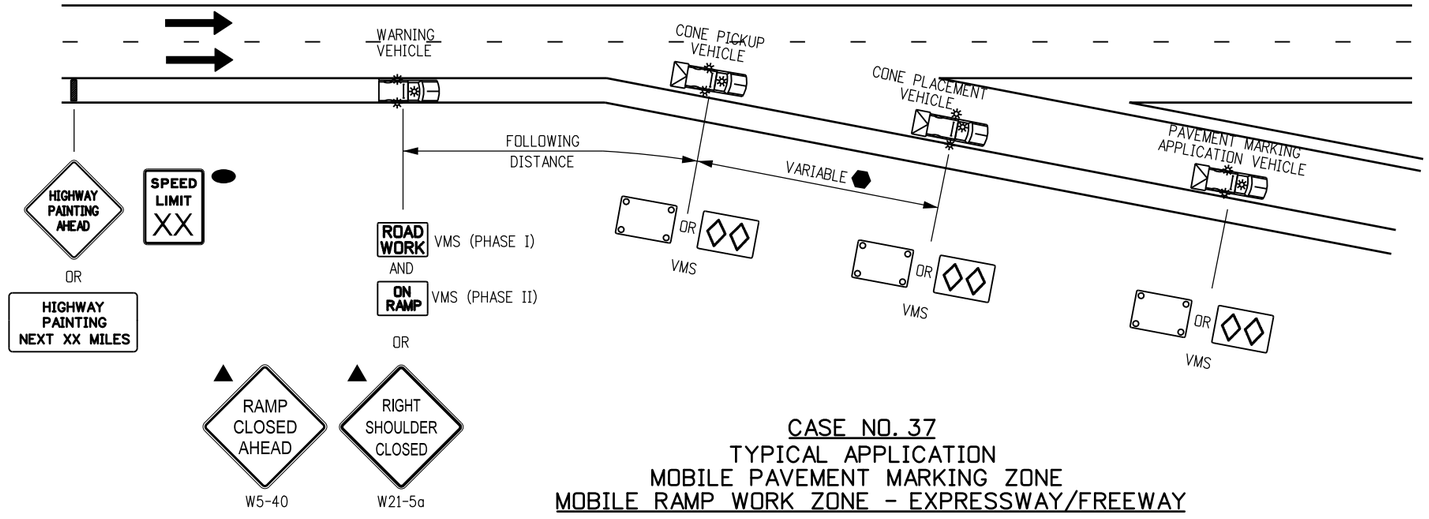
CASE NO. 36
TYPICAL APPLICATION
MOBILE PAVEMENT MARKING ZONE
LANE LINE STRIPING OPERATIONS
MULTI-LANE DIVIDED HIGHWAY

FOLLOWING DISTANCE CHART FOR WARNING VEHICLE AND CONE PICKUP VEHICLES

POSTED WZ SPEED LIMIT (MPH)	FOLLOWING DISTANCE (FEET)
0 - 30	250 - 550
35 - 40	325 - 700
45 - 50	600 - 900
55	750 - 1200
60 - 65	1000 - 1400
70 - 75	1200 - 1600

NOTES

1. THE SIGNING VEHICLES MAY ENCROACH INTO THE TRAFFIC LANE WHEN THE SHOULDER IS TOO NARROW TO DRIVE ON.
2. IF THE RAMP CANNOT BE REOPENED WITHIN 15 MINUTES, USE CASE NO. 22 OF THE S-630-1 STANDARD PLAN.



CASE NO. 37
TYPICAL APPLICATION
MOBILE PAVEMENT MARKING ZONE
MOBILE RAMP WORK ZONE - EXPRESSWAY/FREEWAY

Computer File Information		Sheet Revisions	
Creation Date: 07/04/12 Initials: KEN		Date:	Comments
Last Modification Date: 12/8/14 Initials: KEN	R-5	3/27/14	REDUCE NUMBER OF TMA VEHICLES, REVISE VMS, AND ADD STATIONARY SIGNS
Full Path: www.coloradodot.info/library/traffic/traffic-s-standard-plans	R-7	12/8/14	FORMERLY SHEET 18. SIGN CODE UPDATE. W5-40 & W21-5a.
Drawing File Name: S-630-1_22of24.dgn	R-X		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	R-X		

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4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9219
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LEGEND

VEHICLE WITH TRUCK-MOUNTED ATTENUATORS (TMA), TWO 360-DEGREE YELLOW FLASHING BEACONS, AND YELLOW FLASHING VEHICLE LIGHTS OR STROBES.

ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL.

LANE CLOSED — PORTABLE VARIABLE MESSAGE SIGN (VMS).

▲ WHEN THE VMS IS USED, THE "RIGHT LANE CLSED AHEAD" (W9-3X) SIGN BECOMES OPTIONAL.

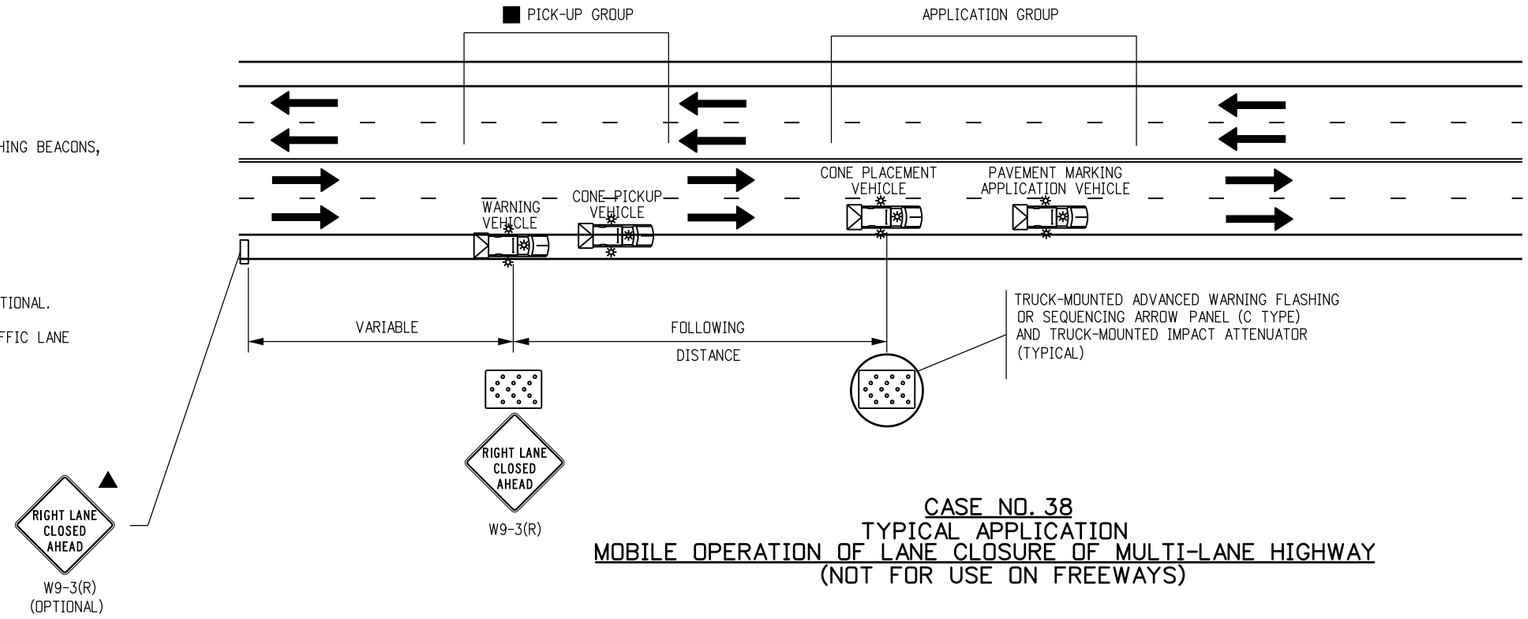
■ THE "CONE PICK-UP VEHICLE" OR "WARNING VEHICLE" MAY ENCROACH INTO THE TRAFFIC LANE WHEN THE SHOULDER IS TOO NARROW TO DRIVE ON.

NOTES

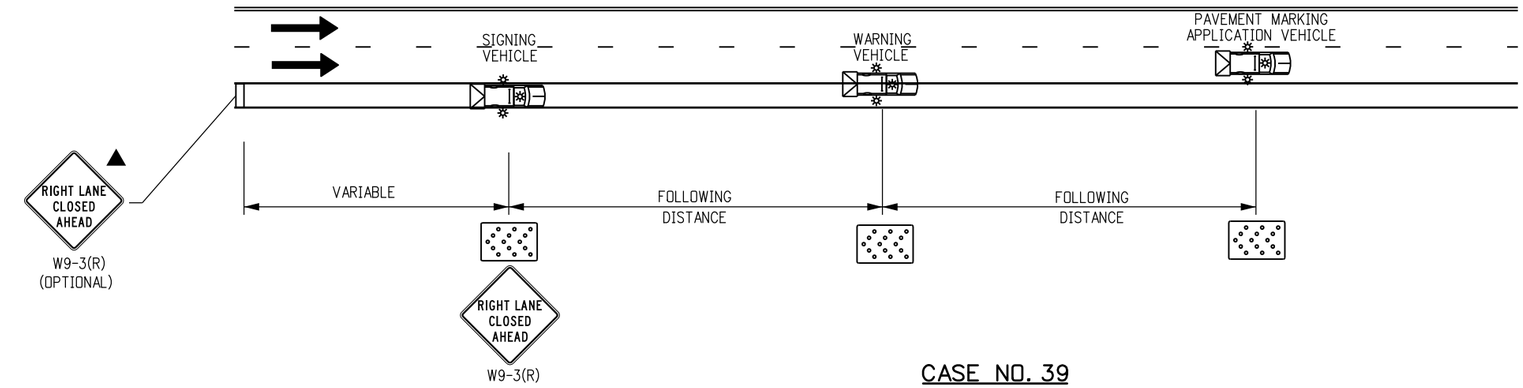
1. IN ROADWAY WHERE THE AADT IS 2,000 OR LESS, A SINGLE WORK VEHICLE WITH APPROPRIATE WARNING DEVICES ON THE VEHICLE MAY BE USED.
2. RADIO COMMUNICATIONS BETWEEN THE WORKCREW AND THE MOVING BLOCKADE ARE REQUIRED TO ADJUST THE BLOCKADE TO INCREASE OR DECREASE THE CLOSURE TIME. RELEASE TRAFFIC ONLY AFTER CONFIRMATION THAT ALL WORKERS AND THEIR VEHICLES ARE CLEAR OF THE ROADWAY.
3. IF APPLICABLE, ALL RAMPS AND ACCESS BETWEEN THE MOVING BLOCKADE AND WORK OPERATION AREA SHALL BE TEMPORARILY CLOSED USING TRAFFIC CONTROL EQUIPMENT AND PERSONNEL. EACH RAMP MUST REMAIN CLOSED UNTIL THE CREW DOING THE WORK GIVES THE "ALL CLEAR" SIGNAL OR UNTIL THE FRONT OF THE MOVING BLOCKADE PASSES THE CLOSED RAMP(S).

FOLLOWING DISTANCE CHART FOR WARNING VEHICLE AND SIGNING VEHICLES

POSTED WZ SPEED LIMIT (MPH)	FOLLOWING DISTANCE (FEET)
0 - 30	250 - 550
35 - 40	325 - 700
45 - 50	600 - 900
55	750 - 1200
60 - 65	1000 - 1400
70 - 75	1200 - 1600



CASE NO. 38
TYPICAL APPLICATION
MOBILE OPERATION OF LANE CLOSURE OF MULTI-LANE HIGHWAY
(NOT FOR USE ON FREEWAYS)



CASE NO. 39
TYPICAL APPLICATION
MOBILE OPERATION OF LANE CLOSURE OF MULTI-LANE HIGHWAY

Computer File Information		Sheet Revisions	
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Last Modification Date: 12/8/14 Initials: KEN	R-7	12/8/14	FORMERLY SHEET 19.
Full Path: www.coloradodot.info/library/traffic/traffic-s-standard-plans	R-X		
Drawing File Name: S-630-1_23of24.dgn	R-X		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	R-X		

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4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9219
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TYPICAL CONSTRUCTION ZONE SIGNS

THESE SIGNING NOTES ARE INTENDED AS A QUICK REFERENCE
FOR TYPICAL SIGN USE AND PLACEMENT IN CONSTRUCTION ZONES.

G20-1 "ROAD/WORK/NEXT XX MILES" - THIS SIGN SHALL BE ERECTED AT THE LIMITS OF ANY ROAD CONSTRUCTION OR MAINTENANCE PROJECT OF MORE THAN TWO (2) MILES IN LENGTH WHERE TRAFFIC IS MAINTAINED THROUGH THE PROJECT.

G20-4 "PILOT CAR/FOLLOW ME" - THIS SIGN SHALL BE MOUNTED IN A CONSPICUOUS POSITION ON THE REAR OF A VEHICLE USED FOR GUIDING ONE-WAY TRAFFIC THROUGH OR AROUND THE PROJECT.

G20-5P "WORK ZONE" - THIS PLAQUE SHALL BE MOUNTED JUST ABOVE THE WORK ZONE SPEED LIMIT SIGNS PRIOR TO THE WORK ZONE AREA.

G20-10 THANK YOU SIGN - THIS SIGN SHOULD BE ERECTED APPROXIMATELY 500 FEET BEYOND THE END OF THE PROJECT.

G20-11 CONSTRUCTION PROJECT INFORMATION SIGN - THIS SIGN SHOULD BE ERECTED AS DESCRIBED IN THE SECTION 626 STANDARD SPECIFICATION.

G20-55(X) "X MINUTE CLOSURE. EXPECT DELAYS" - THIS SIGN IS INTENDED FOR USE 500 FEET PAST THE "WORK ZONE"/SPEED LIMIT SIGN.

M4-9( ) "DETOUR/<<<<" - THIS SIGN IS USED FOR UNNUMBERED ROUTES; FOR USE IN EMERGENCY SITUATIONS; FOR PERIODS OF SHORT DURATION; OR WHERE, OVER RELATIVELY SHORT DISTANCES. IT IS NOT NECESSARY TO SHOW ROUTE MARKERS TO GUIDE TRAFFIC ALONG THE DETOUR AND BACK TO ITS AUTHORIZED ROUTE.

M4-10( ) "DETOUR ARROW" - THIS SIGN SHOULD BE MOUNTED JUST BELOW THE ROAD CLOSED SIGN AT THE POINT WHERE THE DETOUR ROADWAY OR ROUTE HAS BEEN ESTABLISHED DUE TO THE CLOSURE OF THE STREET OR HIGHWAY TO THROUGH TRAFFIC.

R2-1( ) "SPEED/LIMIT/XX" - THESE SIGNS ARE INTENDED TO REDUCE TRAFFIC SPEED IN ADVANCE OF THE DAILY WORK AREA WITHIN THE OVERALL PROJECT LIMITS.

R2-1(XX) "SPEED/LIMIT/XX" - THIS SIGN IS INTENDED FOR USE 500 FEET PAST THE "THANK YOU" SIGN TO BRING TRAFFIC BACK TO ORIGINAL POSTED SPEED.

R2-6P "FINES DOUBLE" - THIS SIGN IS INTENDED FOR USE WITHIN WORK ZONES TO PROVIDE NOTICE OF INCREASED FINES FOR TRAFFIC VIOLATIONS WITHIN WORK ZONES.

R4-1 "DO NOT PASS" - THIS SIGN SHOULD BE PLACED AT TRANSITION TAPER POINT.

R4-2 "PASS WITH CARE" - THIS SIGN SHOULD BE PLACED AT TRANSITION TAPER POINT.

R11-2 "ROAD/CLOSED" - THIS SIGN IS TO BE MOUNTED ON THE BARRICADE THAT IS PLACED BEFORE THE WORK ZONE ENTRANCE TO PROHIBIT TRAFFIC FROM ENTERING THE WORK ZONE.

R11-3 "ROAD CLOSED/X MILES AHEAD/L.T.D. - THIS SIGN SHOULD BE PLACED WHERE THROUGH TRAFFIC MUST DETOUR TO AVOID THE CLOSURE OF THE ROAD SOME DISTANCE BEYOND, BUT WHERE THE ROAD IS OPEN TO LOCAL TRAFFIC UP TO THE POINT OF CLOSURE.

R11-4 "ROAD CLOSED/TO/THRU TRAFFIC" FOR URBAN USE - THIS SIGN SHOULD BE PLACED WHERE THROUGH TRAFFIC MUST DETOUR TO AVOID THE CLOSURE OF THE ROAD SOME DISTANCE BEYOND, BUT WHERE THE ROAD IS OPEN TO LOCAL TRAFFIC UP TO THE POINT OF CLOSURE.

R52-6a "BEGIN FINES DOUBLE IN WORK ZONE" SIGN IS PLACED AT THE BEGINNING OF THE ADVANCED WARNING AREA OF THE TRAFFIC CONTROL ZONE.

R52-6b "END FINES DOUBLE IN WORK ZONE" SIGN IS PLACED AFTER WORK ZONE AREA, PAST DOWNSTREAM TAPER SECTION.

W1-1( ) "TURN ARROW" - THIS SIGN IS INTENDED FOR USE WHERE ENGINEERING INVESTIGATIONS OF ROADWAY CONDITIONS SHOW THE RECOMMENDED SPEED ON THE TURN TO BE 30 MPH OR LESS.✱

W1-2( ) "CURVE ARROW" - THIS SIGN IS INTENDED FOR USE WHERE ENGINEERING INVESTIGATIONS OF ROADWAY CONDITIONS SHOW THE RECOMMENDED SPEED ON THE CURVE TO BE IN THE RANGE BETWEEN 30 AND 60 MILES PER HOUR.✱

W1-3( ) "REVERSE TURN ARROW" - THIS SIGN IS INTENDED FOR USE WHERE TWO TURNS OR THE CURVE AND A TURN IN OPPOSITE DIRECTIONS ARE SEPARATED BY A TANGENT OF LESS THAN 600 FEET.✱

W1-4( ) "REVERSE CURVE ARROW" - THIS SIGN IS INTENDED FOR USE WHERE TWO CURVES IN OPPOSITE DIRECTIONS ARE SEPARATED BY A TANGENT OF LESS THAN 600 FEET.✱

W1-6( ) "ARROW" - THIS SIGN SHOULD BE MOUNTED JUST BELOW THE ROAD CLOSED SIGN AT THE POINT WHERE THE DIVERSION HAS BEEN ESTABLISHED DUE TO THE LANE CLOSURE.

W3-2 "YIELD AHEAD" - THIS SIGN IS INTENDED FOR USE AT THE APPROACH TO THE YIELD SIGN THAT IS NOT VISIBLE FOR A SUFFICIENT DISTANCE TO PERMIT THE DRIVER TO BRING HIS VEHICLE TO A STOP AT THE YIELD SIGN.✱

W3-4 "BE PREPARED TO STOP" - THIS SIGN TO BE PLACED 1.5 MILES IN ADVANCED OF A FLAGGER.

W4-2(X) "LEFT (RIGHT) LANE TRANSITION SYMBOL" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF THE REDUCTION IN THE NUMBER OF TRAFFIC LANES IN THE DIRECTION OF TRAVEL ON THE MULTILANE HIGHWAY.✱

W4-50 "USE BOTH LANES DURING CONGESTION" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF THE "ROAD WORK X MILE" ADVANCED WARNING SIGN.

W4-51 "USE BOTH LANES TO MERGE POINT" - THIS SIGN IS INTENDED TO DIRECT MOTORISTS TO USE BOTH TRAVEL LANES UNTIL THE LANES ARE REDUCED TO ONE LANE.

W4-52 "TAKE TURNS MERGE HERE" - THIS SIGN IS INTENDED TO WARN MOTORISTS IN ADVANCED TO MOVE FROM THE CLOSED TRAVEL LANE TO THE OPEN TRAVEL LANE, USUALLY 500 FEET IN ADVANCED OF THE START OF THE TRANSITION TAPER .

W5-1 "ROAD NARROWS" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF THE TRANSITION ON THE ROAD WHERE THE PAVEMENT WIDTH IS REDUCED ABRUPTLY TO A WIDTH SUCH THAT TWO CARS CANNOT PASS WITHOUT REDUCING SPEED.✱

W5-2a "NARROW BRIDGE SYMBOL" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A BRIDGE OR CULVERT HAVING A CLEAR TWO-WAY ROADWAY WIDTH OF 16 TO 18 FEET OR ANY BRIDGE OR CULVERT HAVING A ROADWAY CLEARANCE LESS THAN THE WIDTH OF THE APPROACH PAVEMENT.✱

W5-3 "ONE LANE/BRIDGE" - THIS SIGN SHOULD BE PLACED ON TWO-WAY ROADWAYS IN ADVANCE OF THE BRIDGES OR CULVERTS WHERE THE ROADWAY WIDTH IS LESS THAN 16 FEET (18 FEET FOR COMMERCIAL VEHICLES) OR WHEN THE ALIGNMENT IS POOR ON THE APPROACH TO THE STRUCTURE HAVING A CLEAR ROADWAY WIDTH OF 18 FEET OR LESS✱

W6-1 "DIVIDED HIGHWAY SYMBOL" - THIS SIGN SHOULD BE PLACED ON THE APPROACHES TO THE SECTION OF HIGHWAY WHERE OPPOSING FLOWS OF TRAFFIC ARE SEPARATED BY A PHYSICAL MEDIAN.

W6-2 "DIVIDED HIGHWAY ENDS SYMBOL" - THIS SIGN SHOULD BE PLACED AT THE END OF THE SECTION OF PHYSICALLY DIVIDED HIGHWAY AS A WARNING OF TWO-WAY TRAFFIC AHEAD.

W6-3 "TWO-WAY TRAFFIC SYMBOL" - THIS SIGN IS INTENDED FOR USE TO GIVE WARNING OF TRANSITION FROM A SEPARATED ONE-WAY ROADWAY TO A TWO-WAY ROADWAY.✱

W7-1 "HILL SYMBOL" - THIS SIGN SHOULD BE PLACED AT A POINT IN ADVANCE OF THE DOWNGRADE WHERE THE LENGTH, PERCENT OF GRADE, HORIZONTAL CURVATURE, OR OTHER PHYSICAL FEATURES REQUIRE SPECIAL CONSIDERATION ON THE PART OF DRIVERS.✱

W8-1,W8-2 "BUMP"/"DIP" - THESE SIGNS ARE INTENDED FOR USE TO GIVE WARNING OF A SHARP RISE OR DEPRESSION IN THE PROFILE OF THE ROAD THAT IS SUFFICIENTLY ABRUPT TO AFFECT VEHICLE OPERATION OR CAUSE CONSIDERABLE DISCOMFORT TO PASSENGERS.✱

W8-3a "PAVEMENT ENDS SYMBOL" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE THE PAVEMENT SURFACE CHANGES FROM A HARD-SURFACED PAVEMENT TO THE LOW-TYPE SURFACE OR EARTH ROAD.✱

W8-4 "SOFT SHOULDER" - THIS SIGN IS INTENDED FOR USE TO WARN OF A SOFT SHOULDER CONDITION THAT COULD PRESENT A PROBLEM TO VEHICLES THAT MAY GET OFF THE PAVEMENT.✱

W8-5 "SLIPPERY WHEN WET SYMBOL" - THIS SIGN SHOULD BE PLACED IN ADVANCE OF THE CONDITION WHERE THE HIGHWAY SURFACE IS SLIPPERY BEYOND WHAT IS ORDINARY WHEN WET.✱

W8-9a "SHOULDER DROP-OFF" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A SHOULDER DROP-OFF THAT EXCEEDS THREE INCHES IN HEIGHT.✱

W8-11 "UNEVEN LANES" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF AN UNEVEN ADJACENT LANE SITUATION THAT EXCEEDS ONE INCH IN HEIGHT.✱

W9-1( ) "LEFT (RIGHT) LANE ENDS" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF THE PAVEMENT WIDTH TRANSITION SIGN (W4-2).

W9-2( ) "LANE ENDS/MERGE LEFT (RIGHT)" - THIS SIGN IS INTENDED FOR USE AS A SUPPLEMENT TO THE PAVEMENT WIDTH TRANSITION SIGN (W4-2).

W9-3 OR W9-3a( ) "CENTER LANE CLOSED AHEAD" - THIS SIGN SHOULD BE USED IN ADVANCE OF THE POINT WHERE WORK OCCUPIES THE CENTER LANE AND TRAFFIC IS DIRECTED TO THE RIGHT OR LEFT OF THE WORK ZONE.✱

W12-1 "DOUBLE ARROW SYMBOL" - THIS SIGN SHOULD BE PLACED AT THE POINT OF THE OBSTRUCTION IN THE ROADWAY, WHERE TRAFFIC IS PERMITTED TO PASS ON EITHER SIDE OF THE OBSTRUCTION.

W12-2 "LOW CLEARANCE SYMBOL" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF AN OBSTRUCTION TO WARN VEHICLE OPERATORS OF CLEARANCES LESS THAN THE MAXIMUM VEHICLE HEIGHT PERMITTED PLUS 12 INCHES.✱

W13-1P( ) "ADVISORY SPEED PLAQUE" - THIS PLAQUE IS INTENDED TO SUPPLEMENT WARNING SIGNS ONLY AND SHALL NOT BE MOUNTED ALONE. IT IS USED TO INDICATE THE MAXIMUM RECOMMENDED SPEED FOR THE INDICATED CONDITION.

W13-3 "ADVISORY RAMP SPEED" - THIS SIGN IS TO BE POSTED TO INFORM MOTORISTS WHAT THE SUGGESTED SPEED LIMIT IS ON A RAMP.

W20-1 "ROAD/WORK/AHEAD" - THIS SIGN IS TO BE LOCATED IN ADVANCE OF THE INITIAL ACTIVITY OR DETOUR A DRIVER MAY ENCOUNTER, AND IS INTENDED TO BE USED AS A WARNING OF OBSTRUCTIONS OR RESTRICTIONS.

W20-2 "DETOUR/(DIST.)" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF THE POINT AT WHICH TRAFFIC IS DIVERTED OVER A TEMPORARY ROADWAY OR ROUTE.

W20-3 "ROAD/CLOSED/(DIST.)" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT AT WHICH A ROADWAY IS CLOSED TO ALL TRAFFIC OR TO ALL BUT LOCAL TRAFFIC.

W20-4 "ONE LANE/ROAD/(DIST.)" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE TRAFFIC IN BOTH DIRECTIONS MUST USE A SINGLE LANE.

W20-5( ) "XXX LANE/CLOSED/(DIST.)" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE ONE LANE OF A MULTIPLE-LANE ROADWAY IS CLOSED. IT SHOULD BE PROVIDED WITH INTERCHANGEABLE PLAQUES READING "RIGHT", "LEFT", AND "CENTER" AT NO ADDITIONAL COST TO THE PROJECT.

W20-7 "FLAGGER SYMBOL" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF ANY POINT AT WHICH A FLAGGER HAS BEEN STATIONED TO CONTROL TRAFFIC THROUGH OR AROUND THE PROJECT.✱

W20-52 "GROOVED/PAVEMENT/AHEAD" - THIS SIGN IS INTENDED TO BE USED IN ADVANCE OF A ROADWAY THAT HAS BEEN GROOVED AND/OR ROTO MILLED.

W21-1a "WORKER SYMBOL" - THIS SIGN IS INTENDED FOR USE IN CONJUNCTION WITH MINOR MAINTENANCE AND PUBLIC UTILITY OPERATIONS FOR THE PROTECTION OF MEN WORKING IN OR NEAR THE ROADWAY.

W21-2 "FRESH/OIL" - THIS SIGN IS INTENDED FOR USE WHERE RE-SURFACING OPERATIONS HAVE RENDERED THE SURFACE OF THE PAVEMENT TEMPORARILY WET, AND OBJECTIONABLE SPLASHING ON VEHICLES MAY OCCUR.✱

W21-3 "ROAD/MACHINERY/AHEAD" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF THE AREAS WHERE HEAVY EQUIPMENT IS OPERATING IN OR ADJACENT TO THE ROADWAY.✱

W21-4 "ROAD/WORK/(DIST.)" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF MAINTENANCE FOR MINOR RECONSTRUCTION OPERATIONS IN THE ROADWAY.

W21-5 "SHOULDER/WORK" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF THE PROJECT INVOLVING THE SHOULDER, WHERE THE TRAVELED WAY REMAINS UNOBSTRUCTED.

W21-6 "SURVEY/CREW" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF A POINT WHERE A SURVEYING CREW IS WORKING IN OR ADJACENT TO THE ROADWAY.✱

W22-1 "BLASTING/ZONE/(DIST.)" - THIS SIGN IS INTENDED FOR USE IN ADVANCE OF ANY POINT OR WORK SITE WHERE THERE ARE EXPLOSIVES BEING USED. THE W22-2 AND W22-3 SIGNS MUST BE USED IN SEQUENCE WITH THIS SIGN.

W22-2 "TURN OFF/2-WAY RADIOS/AND/CELLULAR/PHONES" - THIS SIGN IS TO BE USED IN SEQUENCE WITH THE W22-1 AND W22-3 SIGNS AND PLACED AT LEAST 1000 FEET FROM THE BEGINNING OF THE BLASTING ZONE.

W22-3 "END/BLASTING/ZONE" - THIS SIGN IS TO BE USED TO DENOTE THE END OF THE RADIO INFLUENCE AREA AND SHALL BE PLACED A MINIMUM OF 1000 FEET FROM THE BLASTING ZONE, EITHER WITH OR PRECEDING THE END CONSTRUCTION SIGN.

W22-50(X) "ROCK SCALING X MILE(S)" - THIS SIGN IS INTENDED TO BE USED IN ADVANCE OF A FLAGGER IN ADVANCED OF THE WORK ZONE AREA.

ADVANCE PLACEMENT OF WARNING SIGNS

POSTED OR 85TH PERCENTILE SPEED	+ CONDITION A	++ CONDITION B: DECLARATION TO THE LISTED ADVISORY SPEED (MPH) FOR THE CONDITION — ADVANCE PLACEMENT DISTANCE (FEET)							
		MPH							
		0	10	20	30	40	50	60	70
20	225	●	●	--	--	--	--	--	--
25	325	●	●	●	--	--	--	--	--
30	450	●	●	●	--	--	--	--	--
35	550	●	●	●	●	--	--	--	--
40	650	125	●	●	●	--	--	--	--
45	750	175	125	●	●	●	--	--	--
50	850	250	200	150	100	●	--	--	--
55	950	325	275	225	175	100	●	--	--
60	1100	400	350	300	250	175	●	--	--
65	1200	475	425	400	350	275	175	●	--
70	1250	550	525	500	425	350	250	150	--
75	1350	650	625	600	525	450	350	250	100

+ CONDITION A: SPEED REDUCTION AND LANE CHANGING IN HEAVY TRAFFIC. TYPICAL SIGNS ARE "MERGE" AND "RIGHT LANE ENDS".

++ CONDITION B: TYPICAL CONDITIONS ARE THE WARNING OF A POTENTIAL STOP SITUATION AND LOCATIONS WHERE THE ROAD USER MUST DECREASE SPEED TO MANEUVER THROUGH THE WARNED CONDITION. TYPICAL SIGNS ARE "STOP AHEAD", "SIGNAL AHEAD", "YIELD AHEAD", "CURVE", "REVERSE CURVE", "TURN".

● NO SUGGESTED DISTANCES ARE PROVIDED AT THESE SPEEDS, AS THE PLACEMENT IS DEPENDENT ON SITE CONDITIONS AND OTHER SIGNING.

A SUPPLEMENTAL PLAQUE MAY BE USED WITH WARNING SIGNS SPECIFYING THE DISTANCE TO THE CONDITION IF THERE IS AN IN-BETWEEN INTERSECTION THAT MIGHT CONFUSE THE MOTORIST.

✱ PLACEMENT SHOULD BE IN ACCORDANCE WITH WARNING SIGN PLACEMENT TABLE.

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	Sheet Revisions	
	Date:	Comments
R-4	07/26/13	CHANGE W20-7a SIGN CODE TO W20-7
R-7	12/8/14	FORMERLY SHEET 20.
R-X		
R-X		

Colorado Department of Transportation
4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
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