



Purchasing Division

Invitation for Bid

IFB-5114-22-DD

2022 Waterline Replacement Project – Phase 1

Responses Due:

October 14, 2022 Prior to 2:00 PM

Accepting Electronic Responses Only
Responses Only Submitted Through the Rocky Mountain E-Purchasing
System (RMEPS)
www.bidnetdirect.com/colorado

(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)

NOTE: All City solicitation openings will continue to be held virtually.

Purchasing Representative:

Dolly Daniels, Senior Buyer

dollyd@gjcity.org

970-256-4048

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 solicitations. All vendors are required to thoroughly review this solicitation prior to responding. Submittal by **FAX, EMAIL or HARD COPY IS NOT ACCEPTABLE** for this solicitation.

Invitation for Bids

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1. Instructions to Bidders

NOTE: It is the Contractor's responsibility to read and review all solicitation documentation in its entirety, and to ensure that they have a clear and complete understanding of not only the scope, specifications, project requirements, etc., but also all other requirements, instructions, rules, regulations, laws, conditions, statements, procurement policies, etc. that are associated with the solicitation process and project/services being solicited.

- 1.1 Purpose:** The City of Grand Junction is soliciting competitive bids from qualified and interested companies for all labor, equipment, and materials required for 2022 Waterline Replacement Project – Phase 1. All dimensions and scope of work should be verified by Contractors prior to submission of bids.

IFB Questions:

Dolly Daniels; Senior Buyer
dollyd@gjcity.org

The City would like to remind all Contractors, Sub-Contractors, Vendors, Suppliers, Manufacturers, Service Providers, etc. that (with the exception of Pre-Bid or Site Visit Meetings) all questions, inquiries, comments, or communication pertaining to any formal solicitation (whether process, specifications, scope, etc.) must be directed (in writing) to the Purchasing Agent assigned to the project or Purchasing Division. Direct communication with the City assigned Project Managers/Engineers is not appropriate for public procurement and may result in disqualification.

- 1.2 Non-Mandatory Pre-Bid Meeting:** Prospective bidders are encouraged to attend a recommended pre-bid meeting on September 20, 2022, at 10:00 am. Meeting location shall be at the City Hall Auditorium, 250 North 5th Street, Grand Junction, CO 81501. The purpose of this visit will be to inspect and to clarify the contents of this Invitation for Bids (IFB). **NOTE: Bidders that arrive more than 10 minutes late to the meeting shall not be eligible to submit a bid response to this solicitation process for this project.**
- 1.3. Prequalification Requirement:** Contractors submitting bids over \$500,000 must be pre-qualified in accordance with the City's "*Contractors Prequalification Application*". All bids received by the specified time will be opened, but the City will reject bids over \$500,000 from contractors who have not been prequalified. Application forms for prequalification are available by clicking the [Application Link](#) Call 970-256-4082 for additional information. Due to the time required to process applications, all applications must be submitted no later than the application due date stated in the solicitation document. Contractors may view their approved pre-qualified categories by clicking the [Pre-Qualification List Link](#).
- 1.4. The Owner:** The Owner is the City of Grand Junction, Colorado and is referred to throughout this Solicitation. The term Owner means the Owner or his authorized representative.

- 1.5. **Procurement Process:** Procurement processes shall be governed by the most current version of the City of Grand Junction [Purchasing Policy and Procedure Manual](#).
- 1.6. **Submission:** *Each bid shall be submitted in electronic format only, and only through the Rocky Mountain E-Purchasing website (www.bidnetdirect.com/colorado).* *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/business-and-economic-development/bids/> 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**)

Bid Opening 2022 Waterline Replacement - Phase 1 IFB-5114-22-DD
 Oct 14, 2022, 2:30 – 3:00 PM (America/Denver)

Please join my meeting from your computer, tablet or smartphone.
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Access Code:

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- 1.7. **Modification and Withdrawal of Bids Before Opening.** Bids may be modified or withdrawn by an appropriate document stating such, duly executed and submitted to the place where Bids are to be submitted at any time prior to Bid Opening.
- 1.8. **Printed Form for Price Bid:** All Price Bids must be made upon the Price Bid Schedule attached and should give the amounts both in words and in figures and must be signed and acknowledged by the bidder.

The Offeror shall specify a unit price in figures for each pay item for which a quantity is given and shall provide the products (in numbers) of the respective unit prices and quantities in the Extended Amount column. The total Bid price shall be equal to the sum

of all extended amount prices. When an item in the Price Bid Schedule provides a choice to be made by the Offeror, Offeror's choice shall be indicated in accordance with the specifications for that particular item and thereafter no further choice shall be permitted.

Where the unit of a pay item is lump sum, the lump sum amount shall be shown in the "extended amount" column and included in the summation of the total Bid.

All blank spaces in the Price Bid Schedule must be properly filled out.

Bids by corporations must be executed in the corporate name by the president or vice president or other corporate office accompanied by evidence of authority to sign. The corporate address and state of incorporation shall be shown below the signature.

Bids by partnerships must be executed in the partnership name and signed by a partner whose title must appear under the signature and the official address of the partnership must be shown below the signature.

All names must be typed or printed below the signature.

The Offeror's Bid shall contain an acknowledgement of receipt of all Addenda, the numbers of which shall be filled in on the Contractor's Bid Form.

The contact information to which communications regarding the Bid are to be directed must be shown.

- 1.9. Exclusions:** No oral, telephonic, emailed, or facsimile bid will be considered
- 1.10. Contract Documents:** The complete IFB and bidder's response compose the Contract Documents. Copies of bid documents can be obtained from the City Purchasing website, <https://co-grandjunction.civicplus.com/501/Purchasing-Bids> .
- 1.11. Additional Documents:** The July 2010 edition of the "City Standard Contract Documents for Capital Improvements Construction", Plans, Specifications and other Bid Documents are available for review or download on the Purchasing Bids page at <https://co-grandjunction.civicplus.com/501/Purchasing-Bids>.
- 1.12. Definitions and Terms:** See Article I, Section 3 of the General Contract Conditions in the *Standard Contract Documents for Capital Improvements Construction*.
- 1.13. 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. Prior to submitting a bid, each Offeror shall, at a minimum:

- a. Examine the *Contract Documents* thoroughly.
- b. Visit the site to familiarize themselves with local conditions that may in any manner affect cost, progress, or performance of the Work;
- c. Become familiar with federal, state, and local laws, ordinances, rules, and regulations that may in any manner affect cost, progress, or performance of the Work.
- d. Study and carefully correlate Bidder's observations with the *Contract Documents*, and;
- e. Notify the Purchasing Agent of all conflicts, errors, ambiguities, or discrepancies in or among the *Contract Documents* within the designated inquiry period.

On request, the Owner will provide each Offeror access to the site to conduct such investigations and tests as each Bidder deems necessary for submission of a Bid. It shall be the Offeror's responsibility to make or obtain any additional examinations, investigations, explorations, tests and studies and obtain any additional information and data which pertain to the physical conditions (including without limitation, surface, subsurface and underground utilities) at or contiguous to the site or otherwise which may affect cost, progress or performance of the work and which the Offeror deems necessary to determine its Bid for performing the work in accordance with the time, price and other terms and conditions of the *Contract Documents*. Location of any excavation or boring made by Offeror shall be subject to prior approval of Owner and applicable agencies. Offeror shall fill all holes, restore all pavements to match the existing structural section and shall clean up and restore the site to its former condition upon completion of such exploration. The Owner reserves the right to require the Offeror to execute an access agreement with the Owner prior to accessing the site.

The lands upon which the Work is to be performed, rights of way, and access thereto, and other lands designated for use by Contractor in performing the Work, are identified on the Drawings.

Information and data reflected in the *Contract Documents* with respect to underground utilities at or contiguous to the site are based upon information and data furnished to the Owner and the Engineer by the owners of such underground utilities or others, and the Owner does not assume responsibility for the accuracy or completeness thereof, unless it is expressly provided otherwise in the *Contract Documents*.

By submission of a Bid, the Offeror shall be conclusively presumed to represent that the Offeror has complied with every requirement of these Instructions to Bidders, that the *Contract Documents* are not ambiguous and are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Work.

- 1.14. 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 inquiry deadline.

- 1.15. 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/business-and-economic-development/bids/>. 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.
- 1.16. Taxes:** The Owner is exempt from State retail and Federal tax. The bid price must be net, exclusive of taxes.
- 1.17. Sales and Use Taxes:** The Contractor and all Subcontractors are required to obtain exemption certificates from the Colorado Department of Revenue for sales and use taxes in accordance with the provisions of the General Contract Conditions. Bids shall reflect this method of accounting for sales and use taxes on materials, fixtures, and equipment.
- 1.18. Offers Binding 60 Days:** Unless additional time is required by the Owner, or 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.
- 1.19. Exceptions and Substitutions:** Bidders taking exception to the specifications and/or scope of work shall do so at their own risk. The Owner reserves the right to accept or reject any or all substitutions or alternatives. When offering substitutions and/or alternatives, Bidder must state these exceptions in the section pertaining to that area. Exception/substitution, if accepted, must meet or exceed the stated intent and/or specifications and/or scope of work. The absence of such a list shall indicate that the Bidder has not taken exceptions, and if awarded a contract, shall hold the Bidder responsible to perform in strict accordance with the specifications and/or scope of work contained herein.
- 1.20. 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.
- 1.21. Disqualification of Bidders:** A Bid will not be accepted from, nor shall a Contract be awarded to, any person, firm, or corporation that is in arrears to the Owner, upon debt or contract, or that has defaulted, as surety or otherwise, upon any obligation to the Owner, or that is deemed irresponsible or unreliable.

Bidders may be required to submit satisfactory evidence that they are responsible, have a practical knowledge of the project bid upon and that they have the necessary financial and other resources to complete the proposed Work.

Either of the following reasons, without limitation, shall be considered sufficient to disqualify a Bidder and Bid:

- a. More than one Bid is submitted for the same Work from an individual, firm, or corporation under the same or different name: and
- b. Evidence of collusion among Bidders. Any participant in such collusion shall not receive recognition as a Bidder for any future work of the Owner until such participant has been reinstated as a qualified bidder.

1.22. Public Disclosure Record: If the bidder has knowledge of their employee(s) or sub-contractors having an immediate family relationship with a City 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.

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, shall constitute a contract equally binding between the City 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 by the Owner (City) and Contractor. City 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 anyone, 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 are, and shall remain, City 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, 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 ensure 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:** Contractor shall submit with their bid response 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. 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, and are as such, estimates only. The Owner 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 except as set forth in Article VIII, Section 70 of the *General Contract Conditions*. 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) as set forth in Article VIII, Sections 69 through 71 of the *General Contract Conditions*.

- 2.9. Substitutions:** The materials, products and equipment described in the *Solicitation Documents* shall be regarded as establishing a standard of required performance, function, dimension, appearance, or quality to be met by any proposed substitution. No substitution will be considered prior to receipt of Bids unless the Offeror submits a written request for approval to the City Purchasing Division at least ten (10) days prior to the date for receipt of Bids. Such requests for approval shall include the name of the material or equipment for which substitution is sought and a complete description of the proposed substitution including drawings, performance and test data, and other information necessary for evaluation, including samples if requested. The Offeror shall set forth changes in other materials, equipment, or other portions of the Work including changes of the work of other contracts, which incorporation of the proposed substitution would require to be included. The Owner's decision of approval or disapproval of a proposed substitution shall be final. If the Owner approves a proposed substitution before receipt of Bids, such approval will be set forth in an Addendum. Offerors shall not rely upon approvals made in any other manner.
- 2.10. 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.
- 2.11. 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.
- 2.12. 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.

- 2.13. **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.
- 2.14. **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.
- 2.15. **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.
- 2.16. **Insurance:** The Contractor shall secure and maintain such insurance policies as will provide the coverage and contain other provisions specified in the General Contract Conditions, or as modified in the Special Contract Conditions.

The Contractor shall file a copy of the policies or Certificates of Insurance acceptable to the City with the Engineer within ten (10) Calendar Days after issuance of the Notice of Award. These Certificates of Insurance shall contain a provision that coverage afforded under the policies shall not be canceled unless at least thirty (30) Calendar Days prior written notice has been given to the City.

- 2.17. **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.
- 2.18. **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.
- 2.19. **Time:** Time is of the essence with respect to the time of completion of the Project and any other milestones or deadline which are part of the Contract. It will be necessary for

each Bidder to satisfy the City of its ability to complete the Work within the Contract Time set forth in the Contract Documents. 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 Final Completion of the work is the date certified by the Owner when all construction, and all other work associated to include, but not be limited to: testing, QA/QC, receipt of required reports and/or forms, grant requirements (if applicable), punch list items, clean-up, receipt of drawings and/or as-builts, etc., is fully complete, and in accordance with the Contract Documents.

- 2.20. 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.
- 2.21. 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.
- 2.22. 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 Contract 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 in forfeiture of the Bid Guaranty to the City as Liquidated Damages.

Each bidder shall guaranty its total bid price for a period of sixty (60) Calendar Days from the date of the bid opening.

- 2.23. 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 signed 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.

- 2.24. 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.
- 2.25. Liquidated Damages for Failure to Enter Into Contract:** 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.
- 2.26. Liquidated Damages for Failure to Meet Project Completion Schedule:** 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 **\$2,500.00** (per CDOT Section 108) 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 fully 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 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.

2.27. Contingency/Force Account/Minor Contract Revisions: Contingency/Force Account/Minor Contract Revisions 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/Minor Contract Revisions Authorization will be directed by the Owner through an approved form. Contingency/Force Account/Minor Contract Revisions funds are the property of the Owner and any Contingency/Force Account/Minor Contract Revisions funds, not required for project completion, shall remain the property of the Owner. Contractor is not entitled to any Contingency/Force Account/Minor Contract Revisions funds, that are not authorized by Owner or Owner's Project Manager.

2.28. 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.

- 2.29. 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.
- 2.30. 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.
- 2.31. 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.
- 2.32. 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.
- 2.33. 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 discovery 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.

- 2.34. 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.
- 2.35. 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.
- 2.36. 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.
- 2.37. 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.
- 2.38. Conflict of Interest:** No public official and/or City/County employee shall have interest in any contract resulting from this IFB.
- 2.39. 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.
- 2.40. Employment Discrimination:** During the performance of any services per agreement with the Owner, the Contractor, by submitting a Bid, agrees to the following conditions:
- 2.40.1.** 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.
- 2.40.2.** 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.
- 2.40.3.** 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.
- 2.41. Affirmative Action:** In executing a Contract with the City, the Contractor agrees to comply with Affirmative Action and Equal Employment Opportunity regulations presented in the General Contract Conditions.
- 2.42. 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

workers without authorization 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).

- 2.43. **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.
- 2.44. **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.
- 2.45. **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.
- 2.46. **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.
- 2.47. **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.
- 2.48. **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.

Items for non-responsiveness may include, but not be limited to:

- a. Submission of the Bid on forms other than those supplied by the City;
- b. Alteration, interlineation, erasure, or partial detachment of any part of the forms which are supplied herein;
- c. Inclusion of unauthorized additions conditional or alternate Bids or irregularities of any kind which may tend to make the Bid incomplete, indefinite, or ambiguous as to its meaning;

- d. Failure to acknowledge receipt of any or all issued Addenda;
- e. Failure to provide a unit price or a lump sum price, as appropriate, for each pay item listed except in the case of authorized alternative pay items;
- f. Failure to list the names of Subcontractors used in the Bid preparation as may be required in the Solicitation Documents;
- g. Submission of a Bid that, in the opinion of the Owner, is unbalanced so that each item does not reasonably carry its own proportion of cost or which contains inadequate or unreasonable prices for any item;
- h. Tying of the Bid with any other bid or contract; and
- i. Failure to calculate Bid prices as described herein.

2.49. Evaluation of Bids and Offerors: The Owner reserves the right to:

- reject any and all Bids,
- waive any and all informalities,
- take into account any prompt payment discounts offered by Bidder,
- negotiate final terms with the Successful Bidder,
- take into consideration past performance of previous awards/contracts with the Owner of any Contractor, Vendor, Firm, Supplier, or Service Provider in determining final award. and
- disregard any and all nonconforming, nonresponsive or conditional Bids.

Discrepancies between words and figures will be resolved in favor of words. Discrepancies between Unit Prices and Extended Prices will be resolved in favor of the Unit Prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. The corrected extensions and totals will be shown in the tabulation of Bids.

The Owner may consider the qualifications and experience of Subcontractors and other persons and organizations (including those who are to furnish the principal items of material or equipment) proposed for those portions of the work as to which the identity of Subcontractors and other persons and organizations must be submitted. Operating costs, maintenance considerations performance data, and guarantees of materials and equipment may also be considered by the Owner.

The Owner will conduct such investigations as deemed necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of the Offeror, proposed Subcontractors and other persons and organizations to do the Work in accordance with the *Contract Documents* to the City's satisfaction within the Contract Time.

The Offeror shall furnish the Owner all information and data requested by the Owner to determine the ability of the Offeror to perform the Work. The Owner reserves the right to reject the Bid if the evidence submitted by, or investigation of such Offeror fails to satisfy the Owner that such Offeror is properly qualified to carry out the obligations of the Contract and to complete the Work contemplated therein.

By submitting a Bid, each Offeror authorizes the Owner to perform such investigation of the Offeror as the Owner deems necessary to establish the responsibility, qualifications and financial ability of the Offeror and, by its signature thereon, authorizes the Owner to obtain reference information concerning the Offeror and releases the party providing such information and the Owner from any and all liability to the Offeror as a result of such reference information so provided.

The Owner reserves the right to reject the Bid of any Offeror who does not pass any evaluation to the Owner's satisfaction.

If the Contract is to be awarded, it will be awarded to the Offeror who, by evaluation, the Owner determines will best meet the Owner's interests.

The Owner reserves the right to accept or reject the Work contained in any of the Price Bid Schedules or alternates, either in whole or in part.

2.50. Award of Contract: Unless otherwise indicated, a single award will be made for all the bid items in an individual bid schedule. In the event that the Work is contained in more than one Bid Schedule, the City may award Schedules individually or in combination. In the case of two Bid Schedules which are alternative to each other, only one of such alternative Schedules will be awarded. Within forty-five (45) Calendar Days of Bid Opening, the City will issue a Notice of Award to the Successful Bidder which will be accompanied by four (4) unsigned copies of the Contract and the Performance and Payment Bond forms. Within ten (10) Calendar Days thereafter, the Successful Bidder shall sign and deliver four (4) copies of the Contract, Performance Bond, Payment Bond and Certificates of Insurance to the City. Within ten (10) Calendar Days thereafter, the City will deliver two (2) fully executed counterparts of the Contract to the Contractor. No contract shall exist between the Successful Bidder and the City and the Successful Bidder shall have no rights at law or in equity until the Contract has been duly executed by the City.

The Successful Bidder's failure to sign and submit a Contract and other documents set forth in this Paragraph within the prescribed time shall be just cause of annulment of the award, and forfeiture of the Bid Guaranty. The award of Contract may then be made to the next qualified Bidder in the same manner as previously prescribed.

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

2.52. 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.

- 2.53. 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.
- 2.54. Remedies:** The Contractor and Owner agree that both parties have all rights, duties, and remedies available as stated in the Uniform Commercial Code.
- 2.55. 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.
- 2.56. Expenses:** Expenses incurred in preparation, submission and presentation of this IFB are the responsibility of the company and cannot be charged to the Owner.
- 2.57. 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.
- 2.58. 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 law 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.
- 2.59. 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.
- 2.60. 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).

2.60.1. "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 City of Grand Junction is soliciting competitive bids from qualified and interested companies for all labor, equipment, and materials required for the **2022 Waterline Replacement Project Phase 1**. All dimensions and scope of work should be verified by Contractors prior to submission of bids.

NOTE: The descriptions of pay items listed in the Price Bid Schedule for this Project may not agree with those listed in the Standard Specifications. Payment for all Work performed, as required in the Contract Documents, will be in accordance with the units listed in the Price Bid Schedule.

The performance of the Work for this Project shall conform to the General Contract Conditions presented in the City of Grand Junction's Standard Contract Documents for Capital Improvements Construction, revised July 2010, except as specifically modified or supplemented herein, on the Construction Drawings or Project Manual.

3.2. PROJECT DESCRIPTION: The 2022 Waterline Replacement Project – Phase 1 will include all necessary labor, supervision, equipment, tools, and materials for the construction of approximately 7,500 LF of 6" C900 PVC water main with ¾" copper service line connections, valves, bends, couplings, tees, crosses and fire hydrant laterals. The work also includes abandonment and capping of the existing water system at the connection locations.

3.3. SPECIAL CONDITIONS & PROVISIONS:

3.3.1 Non-Mandatory Pre-Bid Meeting: Prospective bidders are encouraged to attend a recommended pre-bid meeting on September 20, 2022, at 10:00 am. Meeting location shall be at the City Hall Auditorium located at 250 North 5th St, Grand Junction CO 81501 The purpose of this visit will be to inspect and to clarify the contents of this Invitation for Bids (IFB). **NOTE: Bidders that arrive more than 10 minutes late to the meeting shall not be eligible to submit a bid response to this solicitation process for this project.**

3.3.2 QUESTIONS REGARDING SOLICITATION PROCESS/SCOPE OF WORK:

Dolly Daniels; Senior Buyer
City of Grand Junction
dollyd@gjcity.org

3.3.3 Project Manager: The Project Manager for the Project is John Eklund, Project Engineer, who can be reached at (970)-244-1558. During Construction, all notices, letters, submittals, and other communications directed to the City shall be addressed and mailed or delivered to:

City of Grand Junction
Department of Public Works and Planning
Attn: John Eklund, Project Engineer
333 West Ave. Bldg. C
Grand Junction, CO 81501

3.3.4 Contract Administrator: The Contract Administrator for the Project is Duane Hoff Jr., Contract Administrator, who can be reached at (970)244-1545. During Construction, contract related inquiries, issues, and other communications shall be directed to:

Duane Hoff Jr., Contract Administrator
duaneh@gjcity.org

3.3.5 Pre-Qualification: Contractors must be pre-qualified in the following categories to submit a bid response to this project:

- 2E. Concrete Sidewalk, Curb, & Gutter
- 3C. Waterline Distribution

Contractors may view their approved pre-qualified categories by clicking the [Pre-Qualification List Link](#).

3.3.6 Affirmative Action: The Contractor is not required to submit a written Affirmative Action Program for the Project.

3.3.7 Pricing: 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, mobilization costs, fuel, set-up and take down costs, and full-time inspection costs, and all other costs related to the successful completion of the project.

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.

3.3.8 Freight/Shipping: All freight/shipping shall be F.O.B. Destination – Freight Pre-Paid and Allowed to the project site(s), Grand Junction, CO.

Contractor must meet all federal, state, and local rules, regulations, and requirements for providing such services.

3.3.9 Contract: A binding contract shall consist of: (1) the IFB and any amendments thereto, (2) Additional Documents as stated in Section 1.10, (3) the bidder's response (bid) to the IFB, (4) clarification of the bid, if any, and (5) 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.

3.3.10 Time of Completion: The scheduled time of Completion for the Project is 150 Calendar Days from the starting date specified in the Notice to Proceed.

Completion is achieved when site cleanup and all punch list items (resulting from the final inspection) have been completed. Completion shall have the meaning set forth in Article I, Section 3 (Definitions and Terms) of the General Contract Conditions.

3.3.11 Working Days and Hours: The working days and hours shall be as stated in the General Contract Conditions or as mutually agreed upon in the preconstruction meeting with the following exception:

All work shall be performed between the hours of 7:00 AM to 5:00 PM.

3.3.12 Licenses and Permits: Contractor is responsible for obtaining all necessary licenses and permits required for Construction, at Contractors expense. See Section 2.12. Contractor shall supply to Owner all copies of finalized permits.

3.3.13 Permits: The following permits are required for the Project and will be obtained by the City at no cost to the Contractor:
NONE

The following permits are required for the Project and shall be obtained and paid for by the Contractor with the costs included in the total bid price for the Project:

- Colorado Department of Public Health and Environment Dewatering Permit
- Mesa County Stormwater Permit

3.3.14 City Furnished Materials: The City will furnish the following materials for the Project:

- Door Hangers
- AutoCAD drawings for construction staking

3.3.15 Project Newsletters: A newsletter for the Project will be prepared and distributed by the City. It will include general information about the Project including interruptions in utility services, street closures, parking restrictions, project schedule, and the names and telephone numbers of the contacts for the City and Contractor. The newsletter will be mailed approximately one week before the Contractor commences work.

The Contractor will be responsible for notifying all businesses and/or residents located adjacent to the work. Door hanger notifications shall be distributed at least **two (2) working days prior** to the day the work is scheduled to begin. The City may make door hangers for the Contractor to distribute. The Contractor is responsible for notifying the Project Manager/Engineer at least one week prior to when the door hangers are to be hung on property doors.

3.3.16 Project Sign: Project signs, if any, will be furnished and installed by the City.

3.3.17 Authorized Representatives of the City: Those authorized to represent the City shall include Purchasing Agent, Engineers, and Inspectors employed by the City, only.

3.3.18 Stockpiling Materials and Equipment: All stockpiling/storage shall be in accordance with General Contract Condition Section 51.

3.3.19 Traffic Control: The Contractor shall provide and maintain traffic control in accordance with the approved Traffic Control Plan and the Manual on Uniform Traffic Control Devices (MUTCD). A Traffic Control Plan shall be prepared by the Contractor and reviewed by the City two (2) working days prior to the pre-construction meeting.

No personal driveway or access point to a property shall be left inaccessible at the end of each workday or over a weekend; and no construction equipment shall be parked in front of a driveway or access point during Contractor's non-working hours. When a driveway or access point must be closed off due to construction activity, the Contractor shall provide advanced notification to the affected resident(s) at least two (2) days prior to closure and arrange an alternative access point to the property. Refer to Contract Condition 26 – Maintenance of Access and Services.

Special Conditions for Traffic Control

1. All trenches shall be backfilled or protected at the end of each working day and access restored to all driveways and access points. If trenches are left open at night, the trenches will be limited to 30-feet in length. The entire perimeter of the

excavation shall be barricaded with construction equipment and/or temporary construction fence.

2. At times during the Project, the Contractor must ensure access is available for the U.S. Postal Service, trash collection trucks, school buses, emergency vehicles, etc., per the General Contract Conditions.
3. The Contractor shall adhere to all traffic control requirements when working within City right-of-way (ROW) and CDOT ROW.
4. Detours shall be provided when a section of road is closed to through traffic for waterline construction. Residents, employees, and property owners shall have access to their respective properties at all times during constructions.

3.3.20 Clean-Up: The Contractor is responsible for cleaning up all loose materials that have been deposited or swept into gutters, and onto sidewalks and driveways as a result of sidewalk operations. The costs for all clean-up work shall be considered incidental and will not be paid for separately.

3.3.21 Quality Control Testing: It is the responsibility of the Contractor to provide Quality Control testing per Table 1 in the Quality Control (QC) section within the City of Grand Junction's Standard Specifications for Road and Bridge Construction, and per Table 101 within the Standard Specifications for the Construction of Underground Utilities. Table 1 and Table 101 provide the testing frequencies. The Contractor shall provide test frequencies for Full-Time inspection. The cost of QC testing will not be paid for separately but shall be included in the cost of the Project. See Project Manual Section 01400 for further details.

3.3.22 Quality Assurance Testing: The City will provide Quality Assurance (QA) testing on this Project at the testing frequencies provided in table 1 in the City of Grand Junction's Standard Specifications for Road and Bridge Construction, and per Table 101 within the Standard Specifications for the Construction of Underground Utilities. Table 1 and Table 101 provide the testing frequencies. The City will provide QA testing frequencies for Full-Time inspection. The City is contracted with a local Geotechnical testing consultant that will be performing the QA tests. See Project Manual Section 01400 for further details.

3.3.23 Schedule of Submittals: Contractor shall deliver these submittals at least two days prior to the pre-construction meeting:

- Traffic Control Plan
- Project Schedule
- Water Pipe – C900 PVC
- Fittings (elbows, tees, crosses, reducers)
- Valves (Gate Valve, Butterfly Valves, etc.)
- Bedding Gradation, Type A
- Aggregate Base Course gradation and Proctor Curve (Class 6 material)
- Tracing Wire and Splices to be used
- Water Valve Boxes
- Asphalt Mix Design
- Concrete Mix Design

- 3.3.24 Uranium Mill Tailings:** It is anticipated that radioactive mill tailings can possibly be Encountered on this Project. The location of radioactive mill tailings is unknown. A pay item for the removal and disposal of radioactive mill tailings has been provided. If mill tailings are encountered, the Contractor will be required to remove the tailings from the trench and haul the millings to the mill tailings disposal site at City Shops located at 333 West Ave. Consult with Project Engineer prior to removing and hauling to disposal site.
- 3.3.25 Fugitive Petroleum or Other Contamination:** It is anticipated that soil contamination from fugitive petroleum or other contaminants will not be encountered with the Project.
- 3.3.26 Excess Material:** All excess materials shall be disposed in accordance with General Contract Condition Section 50.
- 3.3.27 Existing Utilities and Structures:** Utilities were potholed only at connection locations during design of this project. No other utilities were potholed during design of this project. The location of existing utilities and structures shown on the Plans is approximate with the information gathered during design. It is the responsibility of the Contractor to pothole/locate and protect all structures and utilities in accordance with General Contract Conditions Section 37.
- 3.3.28 Incidental Items:** Any item of work not specifically identified or paid for directly, but which is necessary for the satisfactory completion of any paid items of work, will be considered as incidental to those items, and will be included in the cost of those items.
- 3.3.29 Survey:** The Contractor shall give the City survey crew a minimum of 72 hours' notice for all requested survey.
- 3.3.30 Work to be Performed by the City (Prior to Construction):**
- Piping of open ditch
 - Storm inlet relocation
 - Shoulder widening
 - Sign removal and relocation
- 3.3.31 Existing Concrete Sidewalks, Pans, Fillets, Curbs and Gutters:** The existing sidewalks, pans, fillets, curb and gutter are in good serviceable condition. In most instances the installation of new sidewalk and pavement will be adjacent to existing concrete. The Contractor will need to protect all concrete adjacent to construction. If the concrete is damaged during construction the Contractor will be responsible for its replacement at no cost to the City. The Contractor, the City Project Inspector, and/or the City Project Manager will walk and record any concrete that is deemed to be damaged before construction has started.
- 3.3.32 ACI Concrete and Flatwork Finisher and Technician:** Hand finishing concrete will be permitted only when performed under the direct supervision of a craftsman holding the following certificate: ACI Concrete Flatwork Finisher and Technician (ACICFFT) or other Flatwork Finisher certification program approved by the City Engineering Manager.

- 3.3.33 Confined Space Entry:** If needed during the project, the Contractor is responsible for providing any and all confined space entry safety equipment including, but not limited to; air testing equipment, fresh air blowers, tripods, ladders, harnesses, and SCBA equipment, The contractor's air monitoring devices shall be calibrated and certified. The cost for all confined space entry equipment shall be incidental to the project cost and will not be paid separately.
- 3.3.34 Temporary Steel Plating:** If the contractor chooses to use steel plates to protect an open trench section, the cost for supplying and securely placing the steel plates will not be paid for separately but shall be included in the cost of the Project. Steel plates shall be set flush with the top surface of the asphalt roadway. The City will **not** accept plate placed on top of the pavement or drive surface.
- 3.3.35 Payment for Damage to Private Property beyond Easement/ROW Limits:** Easement and ROW lines are indicated on the Construction Plans. Any and all damage to improvements outside the easements and ROW or outside the Construction Limits Lines shall be repaired at the Contractor's expense. There will be no additional payment made for restoration of sod, landscaping, gravel, concrete, or asphalt driveways, irrigation systems, decorative borders, fences, etc. beyond the property line or the construction easement.
- 3.3.36 Interruptions of Utilities and Services:** The Contractor shall notify all property owners and residents affected by the interruption of utilities and other services caused by construction operations. Such notice shall be provided at least 24 hours prior to the interruption. Notice shall be given for, but not limited to the interruption of domestic water, sanitary sewer, trash pickup, mail delivery and changes in access to property.
- 3.3.37 Project Location Work Schedule:** See Project Manual Section 01010-1.6.
- 3.3.38 Construction Surveying and "As-Built" Drawings:** In addition to Items I and II in the General Contract Conditions, Section 54, As-Built record information will be provided to, and approved by City staff prior to Final Acceptance of the Project. Information to be provided must be in electronic format (e.g. AutoCAD and/or survey files) along with a PDF set of As-Built drawings. As-Built electronic files must contain information suitable for the City to maintain utility records to the standards set forth in the new Colorado 811 One Call/Subsurface Utility Law (effective August 8, 2018) and standards as described in the American Society of Civil Engineers (ASCE) Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data (ASCE 38-02).

Electronic information for As-Built records shall include, but is not limited to, verification of all horizontal and vertical changes in pipe alignments, elbows, tees, manholes, valves, control structures, service taps, service pipe (horizontal and vertical deflections to ROW line, meter pits, or clean-outs, whichever is closer), beginning and ending of slip-lined segments, tie-in or connection to existing infrastructure, etc. Distance between As-Built data points along pipe alignment is dependent on the amount of deflection used to install the pipe in the field. There must be sufficient point

data to create a plan and profile of all infrastructure accurate to within eighteen inches (18") of the physical structures anywhere along the project.

The cost for surveying all fittings, both sewer and water, shall be incidental to the project cost and will not be paid for separately.

3.3.39 Asphalt Removal and Temporary Asphalt Millings: Asphalt pavement shall be removed per the City's Standard Detail GU-03 using the "T Top" method in all locations. Any cuts to asphalt not made using a milling machine shall be completed using saw cutting.

3.4. SCOPE OF WORK: The scope of work generally includes the following: See Project Manual for more information.

A. The Work will include all necessary labor, supervision, equipment, tools, and materials for the construction of approximately 7,500 LF of 6" C900 PVC water main with ¾" copper service line connections, valves, bends, couplings, tees, crosses, and the fire hydrant laterals. The work also includes abandonment and capping of the existing water system at the connection locations.

B. Contractor shall furnish and pay for all materials, equipment, supplies, appurtenances; provide all construction equipment and tools; and perform all necessary labor and supervision.

C. Contractor shall coordinate the progress of the Work including coordination between trades, subcontractors, suppliers, public utilities and subsequent water treatment plant contractor performing work on site and Owner to insure the progress of Work.

D. It is the intent of this contract that Work proceed in the most expeditious manner possible.

E. Construct the Work under contract indicated in the Bid Form.

The cross-referencing of specification sections under the heading "Related Sections" and elsewhere within each specification section is intended as an aid to the Contractor and shall not relieve the Contractor from his responsibility to coordinate the Work under the Contract Documents. Listings of cross-references are not intended to be comprehensive. The omission of a cross-reference to an additional or related requirement shall not relieve the Contractor of his obligation to provide a complete Project.

3.5. Attachments:

Attachment A: Project Submittal Form

Attachment B: Project Manual

Attachment C: Construction Drawings

3.6. Contractor Bid Documents: For Contractor's convenience, the following is a list of forms/items to be submitted with the Contractor's bid response. However, should a form/item not be listed in this section, but required in the solicitation documents, it is the Contractor's responsibility to ensure all forms/items are submitted.

- **Contractor's Bid Form**
- **Price Bid Schedule**
- **References**
- **Manufacturer's Certificate of Authorizing for Contractor**

3.7. IFB TENTATIVE TIME SCHEDULE:

Invitation For Bids available on or about	September 7, 2022
Non-Mandatory Pre-Bid Meeting	September 20, 2022
Pre-Qualification Application Deadline	September 22, 2022
Inquiry deadline, no questions after this date	October 7, 2022
Addendum Posted	October 9, 2022
Submittal deadline for proposals	October 14, 2022
City Council Approval	November 2, 2022
Notice of Award & Contract execution	November 7, 2022
Bonding & Insurance Cert due	November 10, 2022
Preconstruction meeting	November 16, 2022
Work begins no later than	November 29, 2022
Final Completion	May 1, 2023
Holidays:	
Veterans Day	November 11, 2022
Thanksgiving	November 24/25, 2022
Christmas Observed	December 26, 2022
New Year's Observed	January 2, 2023
MLK Day	January 16, 2023
President's Day	February 20, 2023

4. Contractor's Bid Form

Bid Date: _____

Project: IFB-5114-22-DD "2022 Waterline Replacement Project – Phase 1"

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.

Prices in the bid proposal have not knowingly been disclosed with another provider and will not be prior to award.

- Prices in this bid proposal have been arrived at independently, without consultation, communication or agreement for the purpose of restricting competition.
- No attempt has been made nor will be to induce any other person or firm to submit a bid proposal for the purpose of restricting competition.
- The individual signing this bid proposal certifies they are a legal agent of the offeror, authorized to represent the offeror and is legally responsible for the offer with regard to supporting documentation and prices provided.
- Direct purchases by the City of Grand Junction are tax exempt from Colorado Sales or Use Tax. Tax exempt No. 98-03544. The undersigned certifies that no Federal, State, County or Municipal tax will be added to the above quoted prices.
- City of Grand Junction payment terms shall be Net 30 days.
- Prompt payment discount of _____ percent of the net dollar will be offered to the Owner if the invoice is paid within _____ days after the receipt of the invoice. The Owner reserves the right to take into account any such discounts when determining the bid award that are no less than Net 10 days.

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.

By signing below, the Undersigned agree to comply with all terms and conditions contained herein.

Company: _____

Authorized Signature: _____

Title: _____

The undersigned Bidder proposes to subcontract the following portion of Work:

<u>Name & address of Sub-Contractor</u>	<u>Description of work to be performed</u>	<u>% of Contract</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

The undersigned Bidder acknowledges the right of the City to reject any and all Bids submitted and to waive informalities and irregularities therein in the City's sole discretion.

By submission of the Bid, each Bidder certifies, and in the case of a joint Bid each party thereto certifies as to his own organization, that this Bid has been arrived at independently, without collusion, consultation, communication, or agreement as to any matter relating to this Bid with any other Bidder or with any competitor.

Bid Schedule: 2022 Waterline Replacement Phase 1

Item No.	CDOT, City Ref.	Description	Quantity	Units	Unit Price	Total Price
1	108.2	Water Main (6") (C-900 PVC, DR-18) (Includes cost of restrained connection to existing pipe)	7,465.	LF	\$ _____	\$ _____
2	108.3	Cross (8" x 6") MJ	1.	EA	\$ _____	\$ _____
3	108.3	End Cap/Plug (6") (Includes Concrete Thrustblock per City Std Detail W-07 & W-08)	1.	EA	\$ _____	\$ _____
4	108.3	Tee (6" x 6") MJ Swivel Tee	10.	EA	\$ _____	\$ _____
5	108.3	Fire Hydrant Assembly (6")	12.	EA	\$ _____	\$ _____
6	108.3	Elbow (6" x less than 90 deg)	16.		\$ _____	\$ _____
7	108.4	Gate Valve (6")	21.	EA	\$ _____	\$ _____
7	108.4	Service Tap - Includes Corporation Stop (3/4")	62.	EA	\$ _____	\$ _____
8	108.4	Water Service Line (3/4") (Type K Copper) (If Lead or Poly service line is encountered, water service shall be replaced to meter) (Includes cost of connection to existing pipe)	460.	LF	\$ _____	\$ _____
9	202	Remove Existing Fire Hydrant (Return Hydrant to City Shops)	12.	EA	\$ _____	\$ _____
10	202	Abandon Existing Water Valve (Close valve, remove top half of existing valve box, fill cavity to finished subgrade with flow-fill material)	15.	EA	\$ _____	\$ _____
11	202	Abandon Pipe (Abandon pipe by plugging ends with concrete)	20.	EA	\$ _____	\$ _____
12	202	Removal of Concrete Curb and Gutter	40.	LF	\$ _____	\$ _____
13	202	Removal of Concrete Sidewalk	300.	SF	\$ _____	\$ _____
14	202	Removal of Asphalt +C20:C37Mat (Planning) (2" Thick for T-Top Section)	47,000.	SF	\$ _____	\$ _____
15	202	Removal of Asphalt Mat (Full Depth)	47,200.	SF	\$ _____	\$ _____
16	208	Erosion & Sediment Control		Lump Sum	---	\$ _____
17	210	Reset Landscape Ground Cover (Match in Kind) (Contractor shall remove ground cover and underlying weed barrier as needed and stockpile materials. Contractor shall reset these materials and provide additional materials as needed)	400.	SF	\$ _____	\$ _____

Bid Schedule: 2022 Waterline Replacement Phase 1

Item No.	CDOT, City Ref.	Description	Quantity	Units	Unit Price	Total Price
18	212	Seeding (20 lbs/AC)	0.1	AC	\$ _____	\$ _____
19	304	Aggregate Base Course (Class 6) (6" thick)	5,250.	SY	\$ _____	\$ _____
20	401	Hot Bituminous Pavement (Patching) (3 " Thick Bottom Lift, 2" Thick Top Lift) (Grading SX, PG 64-22) (GYR.=75) (One 3" Lift Bottom Mat) Includes T-Top	50,000.	SF	\$ _____	\$ _____
21	608	Concrete Drainage Pan (6' Wide x 8" Thick) (Match in Kind) (Includes #5 rebar tie-bars) (City Std. Detail C-12)	5.	SY	\$ _____	\$ _____
22	608	Concrete Curb and Gutter (2' Wide) (Match in Kind) (City Std. Detail C-05)	50.	LF	\$ _____	\$ _____
23	608	Concrete Sidewalk (6") (Match in Kind) (City Std. Detail C-10)	300.	SF	\$ _____	\$ _____
24	620	Portable Sanitary Facility		Lump Sum	---	\$ _____
25	625	Construction Surveying (Includes As-Built Drawings)		Lump Sum	---	\$ _____
26	626	Mobilization		Lump Sum	---	\$ _____
27	630	Traffic Control (Complete in Place)		Lump Sum	---	\$ _____
FA	202	Disposal of Radioactive Material (Dispose at City Shops, 333 West Ave.)	1,000.	CY	\$ _____	\$ _____
FA	206	Structure Backfill (Flow-Fill) (This flow-fill quantity takes into account the flow-fill quantity necessary for Abandon Existing Water Valve, and Abandon Manhole)	50.	CY	\$ _____	\$ _____
FA		Utility Allowance to Support & Relocate Existing Utilities		Lump Sum	---	\$ _____
FA		Utility Locates and Potholing		Lump Sum	---	\$ _____
MCR		Minor Contract Revisions		---	---	\$ <u>150,000.00</u>

Bid Amount: \$ _____

Bid Amount:

dollars



SET NO. _____

PROJECT MANUAL

BID SET

CITY OF GRAND JUNCTION

**CITY OF GRAND JUNCTION 2022 WATERLINE
REPLACEMENT PROJECT PHASE 1**

JULY 2022

PROJECT MANUAL

BID SET

CITY OF GRAND JUNCTION

CITY OF GRAND JUNCTION 2022 WATERLINE REPLACEMENT PROJECT PHASE 1

JVA, Inc.
817 Colorado Ave., Suite 301
Glenwood Springs, CO 81601

JVA Job No. 1071.15e

July, 2022

PROJECT MANUAL

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CITY OF GRAND JUNCTION
CITY OF GRAND JUNCTION 2022 WATERLINE REPLACEMENT PROJECT PHASE 1

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SECTION 01010
SUMMARY OF WORK

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Work covered by contract documents
- B. Work by others
- C. Contractor use of site and premises
- D. Work sequence
- E. Easements and right-of-way
- F. Protection of public and private property
- G. Maintenance of traffic
- H. Barricades and lights
- I. Lines and grades
- J. Regulatory requirements
- K. Cutting and patching

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work will include all necessary labor, supervision, equipment, tools and materials for the construction of approximately 7,500 lf of 6" C900 PVC water main with ¾" copper service line connections, valves, bends, couplings, tees, crosses and fire hydrant laterals. The work also includes abandonment and capping of the existing water system at the connection locations.
- B. Contractor shall furnish and pay for all materials, equipment, supplies, appurtenances; provide all construction equipment and tools; and perform all necessary labor and supervision
- C. Contractor shall coordinate the progress of the Work including coordination between trades, subcontractors, suppliers, public utilities and subsequent water treatment plant contractor performing work on site and Owner to insure the progress of Work
- D. It is the intent of this contract that Work proceed in the most expeditious manner possible

- E. Construct the Work under contract indicated in the Bid Form
- F. The cross-referencing of specification sections under the heading "Related Sections" and elsewhere within each specification section is intended as an aid to the Contractor and shall not relieve the Contractor from his responsibility to coordinate the Work under the Contract Documents. Listings of cross-references are not intended to be comprehensive. The omission of a cross-reference to an additional or related requirement shall not relieve the Contractor of his obligation to provide a complete Project.

1.3 WORK BY OTHERS

1.4 CONTRACTOR USE OF SITE AND PREMISES

- A. Contractor shall limit use of the premises for Work and will use the designated staging area for field offices, equipment, and material storage.
- B. Coordinate use of premises under direction of Engineer and/or Owner
- C. Assume full responsibility for the protection and safekeeping of equipment and products stored on site under this Contract
- D. Contractor may use only those areas indicated on the Drawings for storage and such additional areas as Engineer may designate
- E. Contractor should plan for normal workdays, Monday through Friday, within the hours of 7:00 am to 5:00 pm. Other work hours and days may be allowed by City of Grand Junction and Engineer upon 48 hours written notice and approval.

1.5 OWNER USE OF SITE AND PREMISES

- A. Owner shall coordinate with Contractor the entrance into work site for work performed under the Contract Documents to ensure Contractor's health and safety plans are followed
- B. Existing facility to remain operational during construction. All access maintained.

1.6 WORK SEQUENCE AND WORK RESTRICTIONS

- A. Construct work to allow for work by others. Coordinate construction schedule with the Owner.
- B. Provide open access for Owner to property at all times during construction. Maintain minimum width clearance for access of City of Grand Junction, Contractor personnel, and emergency vehicles at all times.
- C. Construct work in stages to minimize water service outages. Coordinate construction schedule and water main shutdowns with Engineer and Owner. Contractor must notify

affected homeowners and/or businesses of planned service outages a minimum of two (2) days prior.

- D. Contractor must provide temporary water service if service outage exceeds two (2) hours, unless approved by the Owner or Engineer
- E. Power outages of up to 2 hours duration, and water service interruptions of up to 4 hours duration will be permitted
 - 1. Schedule each outage with Engineer and Owner
 - a. Number of outages to be kept to a minimum
- F. Sequences other than those specified will be considered by Engineer, provided they afford equivalent continuity of operations

1.7 EASEMENTS AND RIGHT-OF-WAY

- A. Work will be performed in the dedicated street Right-of-Way, utility easement, and on City of Grand Junction's property
- B. Confine construction operations to the immediate vicinity of the location indicated on drawings and use due care in placing construction tools, equipment, excavated materials, and pipeline materials and supplies, so as to cause the least possible damage to property
- C. Construction Area Limits
 - 1. Confine construction operations to the immediate vicinity of the location indicated on Drawings and in accordance with the Owner. Lay-down, stockpiling and work should remain in the ROW. Contractor is responsible to repair any property damage.
 - 2. Areas not designated for access roads, parking areas, storage areas, existing facilities areas, and construction areas, Contractor shall not trespass in or on these areas:
 - a. Contractor shall be responsible for keeping all their personnel out of areas not designated for Contractor use except in case of isolated Work located within these areas for which the Contractor shall coordinate with Owner and shall not proceed with such work without Owner approval
 - 3. Contractor shall use due care in placing construction tools, equipment, excavated materials, and pipeline materials and supplies, so as to cause the least possible damage to property outside the ~~Town property~~
 - a. Responsibility for protection and safekeeping of materials and equipment on or near the work site shall be entirely that of the Contractor and no claim shall be made against the Owner for any reason
 - b. If the Owner needs access to the sites occupied by stored materials or equipment, Contractor shall provide access
- D. On Private Property
 - 1. Do not enter for material delivery or occupy for any purpose with personnel, tools, equipment, construction materials, or excavated materials, any private property outside the designated construction easement without written permission of the owner and tenant

- E. Within Street Right-of-Way and Utility Easement
 - 1. Perform all work and conduct all operations of Contractor, his employees, and his subcontractors in accordance with the requirements of the City of Grand Junction and/or Mesa County

1.8 PROTECTION OF PUBLIC AND PRIVATE PROPERTY

- A. Protect, shore, brace, support, and maintain underground conduits, drains, and other underground construction uncovered or otherwise affected by construction operations
- B. Contractor shall be responsible for all damage to streets, roads, highways, shoulders, street lighting and/or signage, embankments, culverts, location or character, which may be caused by transporting equipment, materials, or personnel to or from the Work or any part or site thereof, whether by him or his subcontractors
- C. Make satisfactory and acceptable arrangements with the Owner of, or the agency or authority having jurisdiction over, any damaged property concerning its repair or replacement, or payment of costs incurred in connection with the damage

1.9 PROTECTION OF WORK AND FACILITIES

- A. Contractor shall be solely responsible for the protection of Work until final acceptance
- B. Contractor shall protect all and any previously performed Work, work in progress or completed by others, and existing facilities from damage during the performance of Work in the area

1.10 MAINTENANCE OF TRAFFIC

- A. Conduct Work to interfere as little as possible with public travel, whether vehicular or pedestrian
 - 1. Whenever it is necessary to cross, close, or obstruct private roads, driveways, multi use paths, and walks, provide and maintain suitable and safe detours, or other temporary expedients for accommodation of private travel
 - a. Submit traffic control plans for work within right-of-ways for approval by City of Grand Junction prior to pre-construction meeting.
 - 2. Maintenance of traffic is not required if Contractor obtains written permission from the owner and tenant of private property, or from the authority having jurisdiction over public property involved, to obstruct traffic at the designated point

1.11 BARRICADES AND LIGHTS

- A. Protect streets, roads, highways, and other public thoroughfares which are closed to traffic by effective barricades with acceptable warning and directional signs
- B. Locate barricades at the street intersecting public thoroughfare on each side of the blocked section

- C. Provide suitable barriers, signs, and lights to the extent required to adequately protect the public
- D. Provide similar warning signs and lights at obstructions such as material piles and equipment
- E. Illuminate barricades and obstructions with warning lights from sunset to sunrise
- F. Store materials and conduct work to cause the minimum obstruction to the other contracts
- G. Install and maintain barricades, signs, lights, and other protective devices in conformity with applicable statutory requirements including the Manual of Uniform Traffic Control Devices and as required by Mesa County

1.12 LINES, GRADES AND SURVEY

- A. Construct all Work to the lines, grades, and elevations indicated on the Drawings
 - 1. The Owner may employ a separate surveyor to perform a verification survey to check final layout and grades.
 - 2. Contractor is responsible for correcting all incorrect grades or grades not meeting specified tolerances
- B. Engineer has established basic horizontal and vertical control points in the Drawings
 - 1. Use these points as datum for the Work
 - 2. Provide such competent personnel and tool, stakes, and other materials as Engineer may require in establishing or designating control points, in establishing construction easement boundaries, or in checking layout survey, and measurement work performed by Contractor
- C. Provide all survey, layout, and measurement work required
 - 1. Work performed by a qualified professional engineer or registered land surveyor acceptable to Engineer
 - 2. Locate and protect control points prior to starting site work, and preserve all permanent reference points during construction
 - a. Make no changes or relocations without prior written notice to Engineer
 - b. Report to Engineer when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations
 - c. Require surveyor to replace Project control points which may be lost or destroyed
 - d. Establish replacements based on original survey control
 - 3. Establish lines and levels, locate and lay out, by instrumentation and similar appropriate means
 - a. Temporary project benchmark
 - b. Stakes for grading, fill and topsoil placement
 - c. Utility slopes and invert elevations
 - 4. From time to time, verify layouts by the same methods
 - 5. Maintain a complete, accurate log of all control and survey work as it progresses
 - 6. On request of Engineer, submit documentation to verify accuracy or field engineering work

1.13 REGULATORY REQUIREMENTS

- A. Comply with all federal, state, and local laws, regulations, codes, and ordinances applicable to the Work
- B. References in the Contract Document to local codes shall mean the codes in effect in the City of Grand Junction and Mesa County according to the jurisdiction in which the Work is performed
- C. Other standards and codes which apply to the Work are designated in the specific technical specifications

1.14 CUTTING AND PATCHING

- A. Contractor shall be responsible for all cutting, and patching, including attendant excavation and backfill, required to complete the Work or to
 - 1. Uncover portions of the Work to provide for installation of ill-timed work
 - 2. Remove and replace defective work
 - 3. Remove and replace work not conforming to requirements of Contract Documents
 - 4. Remove samples of installed work as specified for testing
- B. Provide products as specified or as required to complete cutting and patching operations
- C. Inspection
 - 1. Inspect existing conditions of the Project, including elements subject to damage or to movement during cutting and patching
 - 2. After uncovering work, inspect the conditions affecting the installation of products, or performance of the work
 - 3. Report unsatisfactory or questionable conditions to the Engineer in writing; do not proceed with the work until the Engineer has provided further instructions
- D. Preparation
 - 1. Provide devices and methods to protect other portions of the Project from damage
 - 2. Provide protection from the elements for that portion of the Project which may be exposed by cutting and patching work, and maintain excavations free from water
 - 3. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes
 - 4. Restore work which has been cut or removed; install new products to provide completed Work in accord with requirements of Contract Documents

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01035
MODIFICATION PROCEDURES

Refer to City of Grand Junction Department of Public Works and Planning Engineering Division
General Contract Conditions – Section VIII: Changes in Work or Contract Price

END OF SECTION

SECTION 01039

COORDINATION AND MEETINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. General requirements
- B. Coordination
- C. Field engineering
- D. Alteration project procedures
- E. Preconstruction conference
- F. Progress meetings
- G. Requests for information

1.2 RELATED SECTIONS

- A. Section 01010 – Summary of Work
- B. Section 01340 – Shop Drawings and Product Data
- C. Section 01700 – Contract Closeout

1.3 GENERAL REQUIREMENTS

- A. Refer to General Conditions for Owner meetings and other requirements
- B. Engineer will schedule and administer pre-construction meeting according to agenda
 1. Prepare agenda for meetings including items required by Owner and Contractor
 2. Notify Contractor and Owner 4 days in advance of meeting date
 3. Preside at meeting
- C. Contractor will schedule and administer site mobilization and weekly progress meetings. Contractor will also be responsible for coordination, field engineering, alteration, project procedures, cutting and patching procedures outlined herein. If work progress does not warrant a meeting, all parties can mutually agree to postpone meeting.
 1. Arrange for the attendance of Contractor's agents, employees, subcontractors, and suppliers as appropriate to the agenda
 2. Record the minutes; include all significant proceedings and decisions
 3. Reproduce and distribute copies of minutes within one week after each meeting
 - a. To all participants in the meetings

- b. To Engineer
 - c. To Owner
 - 4. Owner and other inspecting parties such as the geotechnical engineer/technician as well as plant operators may attend meetings
 - 5. Engineer will attend weekly meetings either via phone or on site
- D. Representatives of contractors, subcontractors, and suppliers attending the meetings shall be qualified and authorized to act on behalf of the entity each represents

1.4 COORDINATION

- A. Coordinate scheduling, submittals, and Work of the various Sections of specifications to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later by others.
- B. Verify that utility requirement characteristics of operating equipment are compatible with available utilities. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment, and coordinate preparation of grading and other requirements for installation utility work by others.
- C. Coordinate completion and clean-up of Work of separate Sections in preparation for final completion and for portions of Work designated for Owner's use
- D. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.5 FIELD ENGINEERING

- A. Employ a Land Surveyor registered in the State of Colorado and acceptable to the Engineer and Owner.
- B. Contractor will locate and protect survey control and reference points.
- C. Control datum for survey is that established by Owner provided survey and shown on Drawings.
- D. Provide field engineering services. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.

1.6 ALTERATION PROJECT PROCEDURES

- A. Materials: As specified in product Sections; match existing products and work for patching and extending work.
- B. Where new work abuts or aligns with existing, perform a smooth and even transition. Patched work to match existing adjacent work in texture and appearance.

- C. When finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Engineer.
- D. Where a change of plane of 1/4-inch or more occurs, submit recommendation for providing a smooth transition for Engineer review.
- E. Patch or replace portions of existing surfaces, which are damaged, lifted, or showing other imperfections.
- F. Finish surfaces as specified in individual product sections.

1.7 PRECONSTRUCTION CONFERENCE

- A. Engineer will schedule a conference after Notice of Award
- B. Location: On site
- C. Attendance
 - 1. Owner's Representative
 - 2. Engineer and his professional consultants
 - 3. Geotechnical Engineer
 - 4. Contractor's Project Manager
 - 5. Contractor's Superintendent
 - 6. Major Subcontractors
 - 7. Others as Appropriate
- D. Agenda:
 - 1. Execution of Owner Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Submission of list of subcontractors and suppliers, list of products, Schedule of Values, and Construction Project Schedule in critical path format.
 - 5. Designation of personnel representing the parties in Contractor, Owner, and the Engineer.
 - 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, cost proposal requests, Change Orders and Contract closeout procedures.
 - 7. Construction scheduling and updates.
 - 8. Scheduling activities of Geotechnical Engineer, equipment manufacturers representatives, and other field tests
 - 9. Critical work sequencing
 - 10. Major equipment deliveries and priorities
 - 11. Procedures for maintaining Record Documents
 - 12. Construction facilities, controls and construction aids
 - 13. Temporary utilities provided by Owner
 - 14. Safety and first-aid procedures
 - 15. Security and housekeeping procedures

16. Procedures for testing

1.8 PROGRESS MEETINGS

- A. Contractor will schedule and administer meetings throughout progress of the Work at weekly intervals. If work progress does not warrant meeting, all parties can mutually agree to postpone the weekly meeting.
- B. Location of the Meetings: The project field office of the Contractor, or other locations arranged for by Contractor, convenient to all parties
- C. Contractor will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings, record minutes, and distribute copies within one week to Contractor, Owner, participants, and those affected by decisions made.
- D. Attendance
 - 1. Owner's Representative
 - 2. Engineer, and his professional consultants as needed
 - 3. Contractor's Superintendent
 - 4. Subcontractors as appropriate to the agenda
 - 5. Suppliers as appropriate to the agenda
 - 6. Others, as appropriate
- E. Suggested Agenda
 - 1. Review Minutes of Previous meetings
 - 2. Review Unresolved issues from Last Meeting
 - 3. Review of Work Progress
 - 4. Field Observations, Problems, Conflicts and Decisions
 - 5. RFI Review
 - 6. Review of Submittals Schedule and Status of Submittals
 - 7. Schedule
 - a. General Schedule Issues
 - b. Review of off-site fabrication and delivery schedules
 - c. Planned progress during succeeding work period (3-week "Look ahead")
 - d. Maintenance of construction project schedule
 - e. Corrective measures to regain project schedules
 - 8. Maintenance of Quality and Work Standards
 - 9. Change Orders
 - 10. New PR's
 - 11. Accepted Change Orders
 - 12. Pay Requests
 - 13. Other Business

1.9 REQUESTS FOR INFORMATION (RFI)

- A. The Contractor shall prepare and submit an RFI upon the discovery of the need for interpretation of the Contract Documents or additional information.
 - 1. Only the Contractor shall submit RFIs to the Engineer.

2. RFIs shall be submitted on Engineer's RFI form. Engineer will provide a template for the Contractor upon request.
- B. RFI shall include:
1. Project Name
 2. Engineer Job Number
 3. Date
 4. Name of Contractor
 5. Name of Engineer
 6. RFI number, numbered sequentially
 7. Related specification section number, title, and related paragraphs, as needed
 8. Drawing number and detail references, as needed
 9. Field conditions
 10. Contractor's proposed solution. If the Contractor's solution(s) affect contract times or contract price, Contractor shall state the effects on the RFI.
 11. Contractor's signature
 12. Relevant attachments including but not limited to drawings, descriptions, measurements, photos, product data, and shop drawings
- C. Electronically Submitted RFIs
1. Contractor shall submit one (1) complete RFI file in Adobe Acrobat PDF format
- D. Engineer's Response
1. Engineer will review each RFI, determine action required, and respond.
 2. Engineer will review and respond to each RFI within seven (7) working days
 3. If Engineer receives an RFI after 1:00 P.M. local time, the RFI will be considered as received the following working day.
 4. Engineer will not respond to RFIs requesting approval of submittals, approval of substitutions, coordination and information already indicated in Contract Documents, adjustment in contract time or contract amount, or erroneous RFIs.
 5. Engineer may respond to RFIs on related issues with a single response.
 6. If Engineer requests additional information as a result of the RFI, any further action or RFIs submitted by the Contractor will restart a new seven (7) day review period.
 7. Contractor shall submit any request for change of contract time or contract price utilizing proper Change Order forms.
- E. Contractor shall log and track all RFIs submitted organized by RFI number.
1. RFI log shall be submitted at each progress meeting
 2. RFI log shall include:
 - a. Project name
 - b. Name, address, and phone number of Contractor
 - c. Contractor representative name
 - d. RFI number
 - e. RFI description
 - f. RFI submittal date
 - g. RFI response date
 - h. Related Change Order number, as needed

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01200

PAYMENT PROCEDURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.
- B. This information is supplemental to the requirements as stated in the General Conditions.

1.2 SUMMARY

- A. This Section includes additional administrative and procedural requirements necessary to prepare and process Applications for Payment. Refer to General Conditions for most requirements of the Owner.
 - 1. Unit Prices for administrative requirements governing use of unit prices
 - 2. Construction Progress Schedules

1.3 DEFINITIONS

- A. Unit Price: An amount proposed by bidders, stated on the Bid Form, as a price per unit of measurement for materials or services.

1.4 PROCEDURES FOR UNIT PRICES

- A. Unit bid prices, as quoted in the Bid Form, shall be in full compensation for labor, materials, equipment, rentals, freight, applicable taxes, overhead, profit and incidentals to complete all work for each pay item; and for all risk, loss, damage, or expense of whatever nature arising from the nature of the work or the prosecution thereof.
- B. Work or materials that are essential to the work, but for which there are no pay items, will not be measured and paid for separately, but shall be included in other items of work.
- C. Prices include all necessary material, for a complete installation, insurance, applicable taxes, overhead, and profit
 - 1. Bid Item No. 1: Demolish Existing Miscellaneous Structures
 - a. Description: No separate measurement for payment will be made for any labor, equipment, and materials required for this item. The measurement for payment for this item will be the total number listed in the bid schedule and will include all of Contractor's costs. This bid item includes but is not limited to the following items installed or conducted in accordance with the Drawings and Specifications or as otherwise directed by Engineer: protecting all existing items, materials, and surfaces not to be demolished; demolishing, hauling, and disposing of existing structures encountered that have not been identified in the construction plans;

- clean up; and providing all other related and necessary labor, equipment, and materials to complete the Work not covered by other items in this section.
- b. Unit of Measurement: No measurement for payment will be made for this work. It shall be paid for at the Contract Lump Sum Price based upon the percentage completed and accepted of the work required by this bid item. One-third of the lump sum price for this item will be paid after twenty-five percent (25%) of the original Contract amount has been earned; the second third will be paid after fifty percent (50%) of the original Contract amount has been earned; and the final third upon final acceptance of the Project.
2. Bid Item No. 2: Demolish Existing Curb and Gutter
 - a. Description: No separate measurement for payment will be made for any labor, equipment, and materials required for this item. The measurement for payment for this item will be the total number listed in the bid schedule and will include all of Contractor's costs. This bid item includes but is not limited to the following items installed or conducted in accordance with the Drawings and Specifications or as otherwise directed by Engineer: protecting all existing items, materials, and surfaces not to be demolished; demolishing, hauling, and disposing of existing asphalt and concrete materials to be demolished as required; clean up; and providing all other related and necessary labor, equipment, and materials to complete the Work not covered by other items in this section.
 - b. Unit of Measurement: Per the actual number of linear feet of curb and gutter demolished. Payment will be based on units completed and accepted of the Work required by this bid item.
 3. Bid Item No. 3: Demolish Existing Sidewalk
 - a. Description: No separate measurement for payment will be made for any labor, equipment, and materials required for this item. The measurement for payment for this item will be the total number listed in the bid schedule and will include all of Contractor's costs. This bid item includes but is not limited to the following items installed or conducted in accordance with the Drawings and Specifications or as otherwise directed by Engineer: protecting all existing items, materials, and surfaces not to be demolished; demolishing, hauling, and disposing of existing asphalt and concrete materials to be demolished as required; clean up; and providing all other related and necessary labor, equipment, and materials to complete the Work not covered by other items in this section.
 - b. Unit of Measurement: Per square feet (surface area) of actual sidewalk removed. Length of sidewalk area will be measured parallel to the alignment of the sidewalk and width of sidewalk area will be measured perpendicular to the alignment of the sidewalk. Payment will be based on units completed and accepted of the Work required by this bid item.
 4. Bid Item No. 4: Demolish Existing Asphalt
 - a. Description: No separate measurement for payment will be made for any labor, equipment, and materials required for this item. The measurement for payment for this item will be the total number listed in the bid schedule and will include all of Contractor's costs. This bid item includes but is not limited to the following items installed or conducted in accordance with the Drawings and Specifications or as otherwise directed by Engineer: protecting all existing items, materials, and

surfaces not to be demolished; saw cutting, demolishing, hauling, and disposing of existing asphalt materials to be demolished as required; clean up; and providing all other related and necessary labor, equipment, and materials to complete the Work not covered by other items in this section.

- b. Unit of Measurement: Per square feet (surface area) of actual asphalt removed. Payment will be based on units completed and accepted of the Work required by this bid item.
5. Bid Item No. 5: Utility Allowance to Support and Relocate Existing Utilities
 - a. Description: No separate measurement for payment will be made for any labor, equipment, and materials required for this item. The lump sum price will include all of Contractor's costs. This bid item includes but is not limited to the following items installed or conducted in accordance with the Drawings and Specifications or as otherwise directed by Engineer: locating and protecting all existing above and below ground utilities and connections on the site; coordination with utility providers for required utility relocation; providing support to utility providers for required utility relocation; relocating existing utilities in accordance with the Drawings and Specifications and any applicable local, state or federal requirements; and providing all other related and necessary labor, equipment, and materials to complete the Work not covered by other items in this section.
 - b. Unit of Measurement: No measurement for payment will be made for this work. It shall be paid for at the Contract Lump Sum Price based upon the percentage completed and accepted of the work required by this bid item. One-third of the lump sum price for this item will be paid after twenty-five percent (25%) of the original contract amount has been earned; the second third will be paid after fifty percent (50%) of the original contract amount has been earned; and the final third upon final acceptance of the project.
6. Bid Item No. 6: Traffic Control
 - a. Description: No separate measurement for payment will be made for any labor, equipment, and materials required for this item. The lump sum price will include all of Contractor's costs. This bid item includes but is not limited to the following items installed or conducted in accordance with the Drawings and Specifications or as otherwise directed by Engineer: preparing, implementing, adjusting as necessary, and maintaining the approved Traffic Control Plan in accordance with the Drawings and Specifications and accepted Traffic Control Plan; temporary traffic lights; and providing all other related and necessary labor, equipment, and materials to complete the Work not covered by other items in this section.
 - b. Unit of Measurement: No measurement for payment will be made for this work. It shall be paid for at the Contract Lump Sum Price based upon the percentage completed and accepted of the work required by this bid item. One-third of the lump sum price for this item will be paid after twenty-five percent (25%) of the original Contract amount has been earned; the second third will be paid after fifty percent (50%) of the original Contract amount has been earned; and the final third upon final acceptance of the Project.
7. Bid Item No. 7: Seeding and Revegetation

Description: The measurement for payment for this item will be on an acreage basis, complete in place, in accordance with the Drawings or Specifications or as

otherwise directed by Engineer. The measurement for payment for this item will be the total number listed in the bid schedule and will include all of Contractor's costs associated with seeding/sod/landscaping/ topsoil/re-vegetation, watering, planting, edging, plastic weed barrier, cleanup, haul, and any replacement of existing conditions, to existing condition or better, to Owner's/Engineer's satisfaction. Reseeding all areas disturbed by the Work per the seed mix requirements as specified on the Construction Documents including seed bed preparation, fertilization, seeding, and all other costs not included under other bid items. Inspecting and providing all other related and necessary labor, equipment, and materials to complete the Work not covered by other items in this section.

- a. Unit of Measurement: Per actual number of acres of ground surface seeded. Payment will be based on units completed and accepted of the Work required by this bid item.
8. Bid Item No. 8: Construction Surveying
 - a. Description: No separate measurement for payment will be made for any labor, equipment, and materials required for this item. The lump sum price will include all of Contractor's costs. This bid item includes but is not limited to the following items installed or conducted in accordance with the Drawings and Specifications or as otherwise directed by Engineer: all construction surveying, locating, referencing, calculating, and staking necessary for the construction of the Work record drawings in accordance with the Drawings and Specifications and in conformance with the CDOT Survey Manual.
 - b. Unit of Measurement: No measurement for payment will be made for this work. It shall be paid for at the Contract Lump Sum Price based upon the percentage completed and accepted of the work required by this bid item. One-third of the lump sum price for this item will be paid after twenty-five percent (25%) of the original contract amount has been earned; the second third will be paid after fifty percent (50%) of the original contract amount has been earned; and the final third upon final acceptance of the project.
 9. Bid Item No. 9: Utility Locates & Potholing
 - a. Description: The lump sum price will include all of Contractor's costs associated with locating and potholing all utilities necessary for the construction of the Work in accordance with the Drawings and Specifications and in conformance with the CDOT Survey Manual.
 - b. Unit of Measurement: No measurement for payment will be made for this work. It shall be paid for at the Contract Price based upon the percentage completed and accepted of the work required by this bid item.
 10. Bid Item No. 10: Erosion and Sediment Control
 - a. Description: No separate measurement for payment will be made for any labor, equipment, and materials required for this item. The measurement for payment will be the total number listed in the bid schedule and will include all of Contractor's costs. This bid item includes but is not limited to the following items installed or conducted in accordance with the Drawings and Specifications or as otherwise directed by Engineer: furnishing and installing all materials including concrete washout areas, inlet protection, outlet protection, silt fence, curb socks, sediment control logs, vehicle tracking control, and any other materials required

to complete the Work; providing all materials, fabricating, and installing erosion and sediment control measures; excavation and backfill, as required for installation; providing and installing all ancillary erosion control items specified in the Drawings, and all other means and methods specified in the erosion control drawings; obtaining required permits; inspecting; maintaining BMPs throughout the project duration as needed to keep all BMPs in proper working order; and providing all other related and necessary labor, equipment, and materials to complete the Work not covered by other items in this section.

- b. Unit of Measurement: No measurement for payment will be made for this work. It shall be paid for at the Contract Lump Sum Price based upon the percentage completed and accepted of the work required by this bid item. One-third of the lump sum price for this item will be paid after twenty-five percent (25%) of the original Contract amount has been earned; the second third will be paid after fifty percent (50%) of the original Contract amount has been earned; and the final third upon final acceptance of the Project.
11. Bid Item No. 11: Mobilization/Demobilization
- a. Description: No separate measurement for payment will be made for any labor, equipment, materials, and incidental work required for this item. The lump sum price will include all of Contractor's costs. This bid item includes but is not limited to the following items installed or conducted in accordance with the Drawings and Specifications or as otherwise directed by Engineer: preparing and installing temporary fencing around project work and staging areas, and any other fencing/security items as deemed necessary by Contractor and not covered by another bid item; establishing Contractor's staging area, construction trailers, offices, buildings, other necessary facilities, and temporary power and communications; obtaining permits; providing required bonds and insurance; preparing the project schedule. Item also includes demobilization at the completion of the project including the removal of the Contractor's equipment, supplies, temporary facilities, excess materials, and cleaning up the site; and providing all other related and necessary labor, equipment, and materials to complete the Work not covered by other items in this section.
 - b. Unit of Measurement: The total bid amount for mobilization and demobilization shall not exceed eight percent (8%) of the total bid price. Bids received that exceed this amount may be grounds for rejection of the total bid. No measurement for payment will be made for this work. It shall be paid for at the Contract Lump Sum Price based upon the percentage completed and accepted of the work required by this bid item. Fifty percent (50%) of the lump sum price will be paid at the time of the first monthly progress payment; an additional thirty percent (30%) will be paid when one-half of the original Contract amount is earned. The remaining twenty percent (20%) will be paid upon final acceptance of the Project.
12. Bid Item No. 12: Road Base – 6”
- a. Description: No separate measurement for payment will be made for any labor, equipment, and materials required for this item. The measurement for payment for this item will be the total number listed in the bid schedule and will include all of Contractor's costs. This bid item includes but is not limited to the following items installed or conducted in accordance with the Drawings and Specifications or as

otherwise directed by Engineer: furnishing and installing Class II aggregate base with CDOT Class VI gradation; site grading to establish grade prior to placement of Road Base; subgrade preparation; removing debris and excess materials; and providing all other related and necessary labor, equipment, and materials to complete the Work not covered by other items in this section.

- b. Unit of Measurement: Per actual number of tons of road base installed. Payment will be based on units completed and accepted of the Work required by this bid item.
13. Bid Item No. 13: Asphalt T-Patch Paving
- a. Description: No separate measurement for payment will be made for any labor, equipment, and materials required for this item. The measurement for payment for this item will be the total number listed in the bid schedule and will include all of Contractor's costs. This bid item includes but is not limited to the following items installed or conducted in accordance with the Drawings and Specifications or as otherwise directed by Engineer: saw cutting and patching or repairing existing asphalt and concrete as required to install improvements; furnishing all new materials and labor required to install improvements; installation of all materials as indicated, including all required surface and subgrade preparation; tack coat; clean up; and providing all other related and necessary labor, equipment, and materials to complete the Work not covered by other items in this section.
 - b. Unit of Measurement: Per actual number of square feet (surface area) of asphalt road surface paved. Payment will be based on units completed and accepted of the Work required by this bid item.
14. Bid Item No. 14: Concrete – 6-inch
- a. Description: No separate measurement for payment will be made for any labor, equipment, and materials required for this item. The measurement for payment for this item will be the total number listed in the bid schedule and will include all of Contractor's costs. This bid item includes but is not limited to the following items installed or conducted in accordance with the Drawings and Specifications or as otherwise directed by Engineer: saw cutting existing asphalt and concrete as required to install improvements; furnishing all new materials and labor required to install improvements; installation of all materials as indicated, including all required surface and subgrade preparation; clean up; and providing all other related and necessary labor, equipment, and materials to complete the Work not covered by other items in this section.
 - b. Unit of Measurement: Per actual number of square feet (surface area) of concrete drive installed. Payment will be based on units completed and accepted of the Work required by this bid item.
15. Bid Item No. 15: Concrete – Curb and Gutter (6-inch Vertical, 2-foot Pan)
- a. Description: No separate measurement for payment will be made for any labor, equipment, and materials required for this item. The measurement for payment for this item will be the total number listed in the bid schedule and will include all of Contractor's costs. This bid item includes but is not limited to the following items installed or conducted in accordance with the Drawings and Specifications or as otherwise directed by Engineer: saw cutting existing asphalt and concrete as required to install improvements; furnishing all new materials and labor required

- to install improvements; installation of all materials as indicated, including all required surface and subgrade preparation; clean up; and providing all other related and necessary labor, equipment, and materials to complete the Work not covered by other items in this section.
- b. Unit of Measurement: Per actual number of linear feet of concrete curb and gutter installed. Payment will be based on units completed and accepted of the Work required by this bid item.
16. Bid Item No. 16: Concrete – 6-foot Pan (8-inch thick, reinforced)
- a. Description: No separate measurement for payment will be made for any labor, equipment, and materials required for this item. The measurement for payment for this item will be the total number listed in the bid schedule and will include all of Contractor's costs. This bid item includes but is not limited to the following items installed or conducted in accordance with the Drawings and Specifications or as otherwise directed by Engineer: saw cutting existing asphalt and concrete as required to install improvements; furnishing all new materials and labor required to install improvements; installation of all materials as indicated, including all required surface and subgrade preparation; clean up; and providing all other related and necessary labor, equipment, and materials to complete the Work not covered by other items in this section.
 - b. Unit of Measurement: Per actual number of linear feet of concrete pan installed. Payment will be based on units completed and accepted of the Work required by this bid item.
17. Bid Item No. 17 & 18: Connect to Existing Water Services & Water pipe ¾" Type K copper
- a. Description: The measurement for payment for this item will be on a per-each basis, complete in place, in accordance with the Drawings or Specifications or as otherwise directed by Engineer. The unit price will include all of Contractor's costs. This bid item includes but is not limited to the following items: locating and protecting all existing utilities along and around the item; adjusting location of any existing small utilities and valves; furnishing, transporting, and installing all materials including any sheeting and/or bracing required for support trenches; tapping connection to new pipes with brass tapping saddle; new corp stops; new copper pipe service from main to curb stops; curb stop replacement and relocation to as near to edge of right-of-way as practical; excavating, including exploratory excavation; backfilling, and compacting, including imported backfill material and flowfill; removing pavement, base course, subbase material, sod, and other surfacing material outside of the prescribed trench width which is not paid for under another section of this Specification; protecting aboveground and underground utilities and service connections; disposing of debris, pipe, excess excavated material, and damaged materials; testing; inspecting; and providing all other related and necessary labor, equipment, and materials to complete the Work not covered by other items in this section.
 - b. Unit of Measurement: Per actual number of water service connections installed. Payment will be based on units completed and accepted of the Work required by this bid item.

18. Bid Item No. 19: Water Pipe – 6-inch PVC C900

- a. No separate measurement for payment will be made for any labor, equipment, and materials required for this item. The measurement for payment for this item will be the number of linear feet of pipe as listed in the bid schedule. The unit price will include all of Contractor's costs which are not specifically measured and paid for under other bid items. This bid item includes but is not limited to the following items installed or conducted in accordance with the Drawings and Specifications or as otherwise directed by Engineer: locating and protecting all existing above and below ground utilities and connections along and around the item; topsoil removal, stockpiling, and replacement; excavating, backfilling, and compaction of excavations with suitable material(s); rock and muck excavation and backfill with suitable material(s); furnishing, transporting, and installing all pipe, detectable marking tape, tracer wire, and materials as indicated; adjusting location of existing small utilities and valves; tapping and/or connecting to pipes or structures and repairing all structures as necessary; furnishing, transporting, and installing special fittings or items not otherwise provided for elsewhere in the Drawings and Specifications; furnishing, transporting, and installing joining materials including O-rings, gaskets, bolts, joint restraints, connecting bands, and other miscellaneous items; removing and replacing surfacing materials, as required; excavating, including exploratory excavation; constructing the specific bedding including the furnishing, placing, and compacting of flowfill, sand, gravel, and rock; supporting trenches as required; disposing of debris, pipe, excess excavated material, and damaged materials; testing; inspecting; and providing all other related and necessary labor, equipment, and materials to complete the Work not covered by other items in this section.
- b. Unit of Measurement: Per actual number of linear feet of pipe installed. Payment will be based on the units completed and accepted of the Work required by this bid item.

19. Bid Item No. 20: Gate Valve 6-inch With Box

- a. Description: The measurement for payment for this item will be on a per-each basis, complete in place, in accordance with the Drawings or Specifications or as otherwise directed by Engineer. The unit price will include all of Contractor's costs. This bid item includes but is not limited to the following items: locating and protecting all existing utilities along and around the item; adjusting location of any existing small utilities and valves; furnishing, transporting, and installing all materials including any sheeting and/or bracing required for support trenches; constructing required connections to existing and new pipes; excavating, backfilling, and compacting, including imported backfill material and flowfill; removing pavement, base course, subbase material, sod, and other surfacing material outside of the prescribed trench width which is not paid for under another section of this Specification; protecting aboveground and underground utilities and service connections; disposing of debris, pipe, excess excavated material, and damaged materials; testing; inspecting; and providing all other related and necessary labor, equipment, and materials to complete the Work not covered by other items in this section.

- b. Unit of Measurement: Per actual number of gate valves installed. Payment will be based on units completed and accepted of the Work required by this bid item.
20. Bid Item No. 21 & 22: Tee – 6-inch, Cross – 8-inch by 6-inch
- a. Description: The measurement for payment for this item will be on a per-each basis, complete in place, in accordance with the Drawings or Specifications or as otherwise directed by Engineer. The unit price will include all of Contractor's costs. This bid item includes but is not limited to the following items: locating and protecting all existing utilities along and around the item; adjusting location of any existing small utilities and valves; furnishing, transporting, and installing all materials including any sheeting and/or bracing required for support trenches; including kick blocks as needed; constructing required connections to existing and new pipes; excavating, backfilling, and compacting, including imported backfill material and flowfill; removing pavement, base course, subbase material, sod, and other surfacing material outside of the prescribed trench width which is not paid for under another section of this Specification; protecting aboveground and underground utilities and service connections; disposing of debris, pipe, excess excavated material, and damaged materials; testing; inspecting; and providing all other related and necessary labor, equipment, and materials to complete the Work not covered by other items in this section.
 - b. Unit of Measurement: Per actual number of tees installed. Payment will be based on units completed and accepted of the Work required by this bid item.
21. Bid Item No. 23: Bend – 6-inch (Less than 90 degrees) with Kick Block
- a. Description: The measurement for payment for this item will be on a per-each basis, complete in place, in accordance with the Drawings or Specifications or as otherwise directed by Engineer. The unit price will include all of Contractor's costs. This bid item includes but is not limited to the following items: locating and protecting all existing utilities along and around the item; adjusting location of any existing small utilities and valves; furnishing, transporting, and installing all materials including any sheeting and/or bracing required for support trenches; including kick blocks as needed; constructing required connections to existing and new pipes; excavating, backfilling, and compacting, including imported backfill material and flowfill; removing pavement, base course, subbase material, sod, and other surfacing material outside of the prescribed trench width which is not paid for under another section of this Specification; protecting aboveground and underground utilities and service connections; disposing of debris, pipe, excess excavated material, and damaged materials; testing; inspecting; and providing all other related and necessary labor, equipment, and materials to complete the Work not covered by other items in this section.
 - b. Unit of Measurement: Per actual number of bends installed. Payment will be based on units completed and accepted of the Work required by this bid item.
22. Bid Item No. 24: Connection & Abandonment of Existing Line
- a. Description: The measurement for payment for this item will be on a per-each basis, complete in place, in accordance with the Drawings or Specifications or as otherwise directed by Engineer. The unit price will include all of Contractor's costs. This bid item includes but is not limited to the following items: locating and protecting all existing utilities along and around the item; adjusting location of

any existing small utilities and valves; furnishing, transporting, and installing all materials including any sheeting and/or bracing required for support trenches; installing transition coupling for unlike materials, capping abandoned pipe, removal of all existing gate valve box on the abandoned water lines and installing kick block in accordance with the Drawings and Specifications and any applicable local state or federal requirements; excavating, including exploratory excavation; backfilling, and compacting, including imported backfill material and flowfill; removing pavement, base course, subbase material, sod, and other surfacing material outside of the prescribed trench width which is not paid for under another section of this Specification; protecting aboveground and underground utilities and service connections; disposing of debris, pipe, excess excavated material, and damaged materials; testing; inspecting; and providing all other related and necessary labor, equipment, and materials to complete the Work not covered by other items in this section.

- b. Unit of Measurement: Per actual number of water service connections installed. Payment will be based on units completed and accepted of the Work required by this bid item.
23. Bid Item No. 25 & 26: Fire Hydrant Assembly & Fire Hydrant Removal (Return to City)
- a. Description: The measurement for payment for this item will be on a per-each basis, complete in place, in accordance with the Drawings or Specifications or as otherwise directed by Engineer. The unit price will include all of Contractor's costs. This bid item includes but is not limited to the following items: locating and protecting all existing utilities along and around the item; adjusting location of any existing small utilities and valves; furnishing, transporting, and installing all materials including any sheeting and/or bracing required for support trenches; installing fire hydrant assembly including gate valve, hydrant lateral pipe line, mechanical joint restraint, tracer wire and tracer wire test station, removal of the existing fire hydrant assembly and existing gate valve box in accordance with the Drawings and Specifications and any applicable local, state or federal requirements; constructing required connections to existing and new pipes; excavating, backfilling, and compacting, including imported backfill material and flowfill; removing pavement, base course, subbase material, sod, and other surfacing material outside of the prescribed trench width which is not paid for under another section of this Specification; protecting aboveground and underground utilities and service connections; disposing of debris, pipe, excess excavated material, and damaged materials; testing; inspecting; and providing all other related and necessary labor, equipment, and materials to complete the Work not covered by other items in this section.
 - b. Unit of Measurement: Per actual number of Fire Hydrant Assemblies installed. Payment will be based on units completed and accepted of the Work required by this bid item.

D. Measurement and Payment: Refer to bid form and 1.5 (A) of this Section for establishment of unit prices

- E. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor.

1.5 APPLICATION FOR PAYMENTS

A. General

1. Refer to City of Grand Junction Engineering Division – General Contract Conditions Section XII: Measurement, Payment and Acceptance.
2. Submit itemized payment request as required in General Conditions together with Schedule of Values and other submittals as specified herein
3. Contractor shall not "project" work completed beyond the date of Application for Payment submittal for the purpose of payment request

B. Each Application for Payment shall be consistent with previous applications and payments as certified by the Engineer and paid for by the Owner.

1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements

C. Payment Application Times: Each progress payment date is as indicated in the Agreement. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement

D. Application Preparation: Complete every entry on the form, including notarization and execution by person authorized to sign legal documents on behalf of the Owner. Incomplete applications will be returned without action.

1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions have been made.
2. Include amounts of Change Orders issued prior to the last day of the construction period covered by the application

E. Transmittal

1. Submit copy of each Application for Payment to the Engineer by means ensuring receipt within 24 hours
2. Transmit each copy with a transmittal form listing attachments, and recording appropriate information related to the application in a manner acceptable to the Engineer

F. Initial Application for Payment

1. Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include the following:
 - a. List of subcontractors
 - b. List of principal suppliers and fabricators
 - c. Schedule of Values
 - d. Contractor's Construction Schedule (preliminary if not final)
 - e. Schedule of principal products

- f. List of Contractor's staff assignments
 - g. Copies of building permits
 - h. Copies of authorizations and licenses from governing authorities for performance of the Work
 - i. Certificates of insurance and insurance policies
 - j. Performance and payment bonds, if required
- G. Application for Payment at Substantial Completion
1. Following issuance of the Certificate of Substantial Completion, submit an Application for Payment. This application shall reflect any Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of Work
 - a. Administrative actions and submittals that shall precede or coincide with this application include:
 - i) Occupancy permits and similar approvals
 - ii) Warranties (guarantees) and maintenance agreements
 - iii) Test/adjust/balance records
 - iv) Maintenance instructions
 - v) Meter readings
 - vi) Start-up performance reports
 - vii) Change-over information related to Owner's occupancy, use, operation and maintenance
 - viii) Final cleaning
 - ix) Application for reduction of retainage, and consent of surety
 - x) Advice on shifting insurance coverages
 - b. List of incomplete Work, recognized as exceptions to Engineer's Certificate of Substantial Completion
- H. Application for Final Payment
1. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Price, previous payments, and sum remaining due.
 2. Application for Final Payment will not be considered until the following have been accomplished:
 - a. Completion of Project closeout requirements
 - b. Completion of items specified for completion after Substantial Completion
 - c. Assurance that unsettled claims will be settled
 - d. Assurance that Work not complete and accepted will be completed without undue delay
 - e. Transmittal of required Project construction records to Owner
 - f. Proof that taxes, fees and similar obligations have been paid
 - g. Removal of temporary facilities and services
 - h. Removal of surplus materials, rubbish and similar elements

1.6 PROCEDURES FOR THE CONSTRUCTION PROGRESS SCHEDULE

- A. Coordination: coordinate preparation and updates of Contractor's Construction Schedule with the preparation of Schedule of Values.

1. Correlate line items in the Construction Schedule with required project tasks, including the following:
 - a. Mobilization/demobilization
 - b. Permits and regulatory requirements
 - c. Submittals
 - d. Equipment
 - e. O&M Manuals
 - f. Work breakdown of major project work
 - g. Major subcontractors work
 - h. Startup and commissioning
 - i. Training
 - j. Substantial completion
 - k. Final completion
 - l. Milestones and operational shutdown requirements

- B. Utilize the Critical Path Method (CPM) type construction schedule to establish preliminary progress schedule and track Work progress
 1. After acceptance by Engineer of preliminary Progress Schedule submitted per requirements of General Conditions, set preliminary Progress Schedule as the Construction Baseline Schedule
 2. Update and submit the construction progress schedule on a monthly basis with the pay application
 - a. Monthly submittal should indicate progress of tasks, changes to baseline schedule logic, work additions such as change orders, milestone and contract date changes
 - b. Submit two (2) color print copies, 11" x 17" size, and one Adobe pdf copy
 - c. Upon request provide copy of project schedule CPM data file

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

- A. Provide a list of unit prices as indicated in Section 00310 – Bid Form

END OF SECTION

SECTION 01340

SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Submission of all shop drawings and product data as required by the Contract Documents for all equipment and materials to be furnished under this contract unless specifically indicated otherwise

1.2 RELATED SECTIONS

- A. Section 01600 – Materials and Equipment
- B. Section 01730 – Operations and Maintenance Data
- C. Specification Divisions 2 thru 16

1.3 SUBMITTALS

A. Definitions

1. Technical submittals: Shop drawings, product data and samples prepared by Contractor, subcontractors, suppliers, or manufacturers
 - a. Shall be submitted by the Contractor to Engineer for approval for the use of Equipment and Materials to complete the Work or as needed to describe the following:
 - i) Operation and maintenance
 - ii) Technical properties
 - iii) Installation
 - b. Shop drawings: Custom prepared data for the Project and Work including performance and capacity curves, diagrams, bills of material, instructions, and other information
 - c. Product data: Non-custom prepared printed information for the Project and Work on materials and products
 - d. Samples: Fabricated and non-fabricated tangible samples of products and material
 - i) Used for visual inspection and testing and analysis
2. Informational submittals: Reports, administrative informational submittals, certification and guarantees not including and defined as shop drawings, samples and product data
 - a. Reports: Include laboratory reports and tests, technical procedures and records and design analysis
 - b. Administrative informational submittals: Submittals necessary for administrative records such as construction photographs, work records, schedules, standards, record project data, safety data, and similar information submittals
 - c. Certification: Includes manufacturer or supplier certificates and guarantees

B. General Requirements

1. Quality

- a. Shall be of suitable quality for legibility and reproduction purposes
- b. Shall be useable for reproduction yielding legible hard copy
- c. Submittals not conforming to specified requirements herein and as specified in Divisions 2 through 16 shall be subject to rejection by Engineer and upon Engineer request, Contractor shall resubmit documents that are in conformance

2. Dimensions

- a. English units shall be provided on submittals
- b. Metric units are acceptable in addition to English units
- c. English units shall govern

3. Form of submittals

- a. Submittals shall be transmitted in electronic format as specified herein
- b. Scanned submittals are acceptable
- c. Electronic project documents and submittals shall be transmitted in the following format:
 - i) Native electronic format, nonproprietary
 - ii) Adobe PDF produced from native electronic format
- d. Filename:
 - i) Shall be consistent for the initial and any subsequent submission revisions for a single submittal
 - ii) Contractor shall use a consistent naming convention for all submittals
 - a) Use number of original submittal followed directly by a capital letter corresponding to the number of times a submittal is resubmitted (i.e., #001, #001A, #001B, etc.)

4. Non-conforming submittals shall be subject to rejection by Owner and/or Engineer

5. Submittal completion requirements

- a. Submittals shall include design criteria, dimensions, construction materials and all other information specified for a complete submittal to facilitate Engineer review of the submittal information adequately
- b. In the event various drawings are included a submittal for a class of Equipment, Contractor shall annotate clearly which parts apply to furnished Equipment
 - i) Information not pertaining to the submittal shall be clearly annotated. Highlighting of such information will cause rejection of the submittal by the Engineer
- c. Contract Drawings
 - i) Copies or portions thereof will not be allowed as acceptable fabrication or erection drawings
 - ii) In the event Contract Drawings are used by the Engineer for erection drawings to annotate information on erection or identify reference details, Engineer title block and professional seal shall be removed and replaced with the Contractor's title block on the Contract Drawing(s). Contractor shall revise such erection drawings for subsequent revisions by the Engineer to Contract Drawings

C. Preparation

1. Shop Drawings

- a. Drawings shall be presented in a clear and thorough manner:
 - b. Identify details by reference to sheet and detail, schedule or room numbers shown on Contract Drawings
 - c. Identify equipment by reference to equipment name and tag number shown on Contract Drawings
 - d. Scale and Measurements: Make drawings accurate to a scale with sufficient detail to show the kind, size, arrangement and function of component materials and devices
 - e. Minimum sheet size: 8.5" by 11"
 - f. Fabrication drawing size: 11" by 17" or 24" by 36"
2. Product Data
- a. Clearly mark each copy to identify pertinent products or models submitted for review
 - b. Identify equipment by reference to equipment name and P&ID number
 - c. Catalog cut sheets: Cross-out or hatch irrelevant data
- D. Technical Submittals: Shop Drawings and Product Data Submittal Requirements
1. Shop Drawings and Product Data shall include the following, at a minimum:
- a. Specifications of manufacturer(s)
 - b. Equipment parts and catalogs
 - c. Bills of materials, material lists, and schedules
 - d. Shop erection and fabrication drawings
 - e. Drawings shall include equipment dimensions, weights, installation location requirements, plates required, main components, support details, anchor bolt details/sizes/locations, support base sizes, baseplate sizes, spacing and clearance requirements for installation, erection, operation and maintenance disassembly
 - f. Electrical requirements:
 - i) Shall include schematic diagrams including one-line diagrams, terminal block numbers, internal wiring diagrams, external connections, controls, and any other information as requested in individual specification sections
 - g. List of spare parts
 - h. Instruction and Operation and Maintenance (O&M) manuals
 - i) As specified herein and in Specification Section 01730
 - i. Manufacturer's performance testing of equipment
 - j. Concrete mix design data and information
 - k. Performance characteristics and capacities
 - l. External connections, anchorages, and supports required
 - m. Other drawings, parts, catalogs, specifications, samples, or data necessary for the Engineer to determine conformance with Contract Documents
2. Samples – Office samples shall be of sufficient size and quantity to clearly illustrate:
- a. Functional characteristics of the product, with integrally related parts and attachment devices
 - b. Full range of color, texture and pattern
 - c. Comply with requirements identified in individual specification sections

- E. Construction Schedule: Designate in the construction schedule, or in a separate coordinated shop drawing schedule, the dates for submission and the dates that reviewed Shop Drawings and Product Data will be needed, if accelerated review is requested
- F. Field samples and Mock-ups:
 - 1. Contractor shall erect, at the Project Site, at a location acceptable to the Engineer and Owner
 - 2. Size or area: as specified in the respective specification section
 - 3. Fabricate each sample and mock-up complete and finished
 - 4. Remove mock-ups at conclusion of Work or when acceptable to Engineer

1.4 CONTRACTOR RESPONSIBILITIES

- A. Review shop drawings and product data prior to submission for accuracy and completeness of each submission
- B. Approve and stamp each submission before submitting to Engineer
- C. Determine and verify:
 - 1. Field measurements
 - 2. Field construction criteria
 - 3. Catalog numbers and similar data
 - 4. Conformance with specifications and identification of all deviations
 - 5. Confirm assignment of unit responsibility
- D. Prior to each submission, carefully review and coordinate all aspects of each item being submitted
- E. Verify that each item and the corresponding submittal conform in all respects with specified requirements of the Work and of the Contract Documents with respect to means, methods, techniques, sequences, and operations of construction, and safety precautions and programs incidental thereto
- F. Make submissions promptly in accordance with Construction Schedule, and in such sequence as to cause no delay in the Work or in the work of any other Contractor
- G. Limit requirement for accelerated submittal review by Engineer to no more than 10% percent of total number of submittals
 - 1. Accelerated submittal review period: less than 14 calendar days
- H. Notify Engineer in writing, at time of submission, of any deviations in the submittals from Contract Document requirements:
 - 1. Identify and tabulate all deviations in transmittal letter
 - 2. Indicate essential details of all changes proposed, including modifications to other facilities that may be a result of the deviation
 - 3. Include required piping and wiring diagrams

1.5 SUBMISSION REQUIREMENTS

- A. Make submissions far enough in advance of scheduled dates for installation to provide time required for reviews, for securing necessary approvals, for possible revisions and resubmissions, and for placing orders and securing delivery
- B. In scheduling, allow fourteen (14) calendar days for review by Engineer following receipt of submission in Engineer's office:
 - 1. Time required to mail submissions or resubmissions is not considered a part of review period
- C. Submittal Naming and Numbering
 - 1. Assign a unique number to include all shop drawings, product data and other information required for individual specification sections, beginning with #001.
 - 2. Resubmissions shall have the original number with a letter, starting with "A". If the first submittal required resubmission, it would be labeled #001A.
 - 3. Each specification section may still have more than one submittal number for later submissions (i.e., Preliminary O&M Manuals, Final O&M Manuals, etc.)
 - 4. Contractor shall use a consistent naming convention for all submittals
- D. Quantity of Submittals Required
 - 1. Shop Drawings and Product Data:
 - a. Initial submittal:
 - i) Electronic – One (1) copy to Engineer
 - b. Resubmittal:
 - i) Electronic – One (1) copy to Engineer
 - c. Final Submittal for Distribution
 - i) Paper hard copy - Maximum of two (2) copies for Contractor's use, plus a maximum of three (3) copies which will be distributed by Engineer when approved. Do not submit more than five (5) copies
 - ii) One (1) electronic copy to Engineer
 - d. As –constructed document submittals
 - i) Paper hard copy – Maximum of two (2) copies for Contractor's use, plus a maximum of three (3) copies which will be distributed by Engineer when approved. Do not submit more than five (5) copies
 - ii) Electronic – One (1) copy to Engineer and one (1) copy to Owner
 - 2. Samples
 - a. Initial submittal:
 - i) Submit three (3) of each sample unless specified otherwise in individual specification section
 - b. Resubmittal:
 - i) Submit three (3) to Engineer
 - c. One (1) sample of approved sample submittal will be returned to Contractor
 - 3. Informational submittals
 - a. Technical reports and administrative submittals
 - i) Electronic – One (1) copy to Engineer
 - ii) Paper: Three (3) copies to Engineer
 - b. Certificates and guarantees:

- i) Electronic – One (1) copy to Engineer
 - ii) Paper: Three (3) copies to Engineer
 - c. Test reports
 - i) Paper
 - a) Owner: Two (2) copies
 - b) Engineer: One (1) copy
 - c) Contractor: Two (2) copies
 - d) Manufacturer/supplier: One (1) copy
 - 4. Instruction and O&M manuals
 - a. In accordance to Specification Section 01730
 - 5. At no additional cost to the Owner and whether or not submittals are copyrighted, the Owner may copy and use for staff training and/or internal operations any submittals approved for final distribution as well as required by this Contract
- E. Submittal Transmittal Requirements
- 1. Accompany each submittal with a letter of transmittal showing all information required for identification and checking
 - 2. Shall include:
 - a. Drawing numbers and titles
 - b. Revision number
 - c. Electronic filename
 - d. Deviations from Contract Documents: As specified herein
 - e. Submittals unidentifiable will be returned for proper identification
 - f. Date
- F. Submittals Requirements
- 1. Submittal number
 - 2. Date of submission and dates of any previous submissions
 - 3. Project title and number
 - 4. Owner Contract identification number if applicable
 - 5. Names of:
 - a. Contractor
 - b. Supplier
 - c. Manufacturer
 - 6. Identification of the product, with the specification section number
 - 7. Field dimensions, clearly identified as such
 - 8. Relation to adjacent or critical features of the Work or materials
 - 9. Applicable standards, such as ASTM or Federal Specification numbers
 - 10. Identification of deviations from Contract Documents:
 - a. If Contractor proposes to provide material or equipment of Work which deviates from the Project Manual, Contractor shall indicate so under “deviations” on the transmittal form accompanying the submittal copies
 - b. Identify all requested deviations as specified and on the copies of Specifications and Drawings required by paragraph below.
 - 11. Confirmation of compliance with Contract Documents and, if applicable, identification of deviations from Contract Documents:

- a. Provide the following documents to demonstrate compliance with the contract specifications:
 - i) A copy of the relevant Drawing(s) with all addendum updates that apply to the equipment in various Divisions marked to show specific changes necessary for the equipment proposed in the Contractor's submittal
 - a) If no changes are required, the Drawing(s) shall be clearly marked "No Changes Required"
 - b) Failure to include copies of relevant Drawing(s) with the submittal, whether changes are required or not, shall be cause for rejection of the entire submittal with no further review by Engineer
 - c) Relevant Drawing(s) include as a minimum the control diagrams, process and instrumentation diagrams (P&IDs), and Process (P) drawings.
 - ii) A copy of each pertinent specification section with all addendum updates included, all referenced and applicable specifications sections, with their respective addendum updates included, with each paragraph check-marked to indicate specification compliance or marked to indicate the requested deviations from the specification requirements:
 - a) If deviations from the specifications are indicated and, therefore requested, by the Contractor, the submittal shall be accompanied by a detailed, written justification for each deviation
 - b) Failure to include a copy of the marked up specification sections, along with justification for any requested deviations to the specification requirements, with the submittal shall be cause for rejection of the entire submittal with no further review by Engineer

- 12. Identification of revisions on resubmissions
- 13. An 8" by 4" blank space for Contractor's and Engineer's stamps
- 14. Stamp cover sheet of each submittal as identified in letter of transmittal
- 15. Contractor's stamp: Initialed or signed, certifying review and approval of submittal, verification of products, field measurements and field construction criteria, and coordination of the information within the submittal with requirements of the Work and of Contract Documents. Use stamp to include wording similar to the following:

This submittal has been reviewed by [Name of Contractor] and approved with respect to the means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incidental thereto. [Name of Contractor] also warrants that this submittal complies with contract documents and comprises no deviations thereto:
 Section No: _____ Submittal No: _____
 Date: _____ By: _____

- G. For equipment that is provided directly by manufacturer without specification provide:
 - 1. Shop drawings: Illustrate complete assembly of products; foundation, installation and anchor requirements; dimensions and total weights of each, electrical wiring diagrams

2. Product data: Provide manufacturer's literature including general assembly, materials of construction, model and type, detailed data describing parts and accessories, sufficient data to verify compliance with specifications
 3. Manufacturer's installation instructions: Provide detailed connection requirements and startup instructions
 4. Manufacturer's field report: Indicate personnel present and actual start-up procedures that were performed by manufacturer's representative
 5. Field report and test results shall be submitted to the Engineer by the Contractor
- H. Submittal Log:
1. Maintain an accurate submittal log for duration of the Work showing current status of all submissions
 2. Show submittal number, section number, section title, submittal description, dates and disposition of submittal
 3. Make submittal log available to Engineer for Engineer's review upon request
- I. Unless specified otherwise, make submissions in groups to facilitate efficient review and approval:
1. Include all associated items from individual specification sections to assure that all information is available for checking each item when it is received
 2. Submit a complete initial submittal including all components when an item consists of components from several sources
 3. Partial submittals may be rejected as not complying with provisions of the Contract
 4. Engineer will not be held liable for delays due to poorly organized or incomplete submissions
 5. Do not include items from more than one specification section for any one submittal number
- J. Contractor may require subcontractors to provide drawings, setting diagrams and similar information to help coordinate the Work, but such data shall remain between Contractor and his subcontractors and will not be reviewed by Engineer unless specifically called for within the Contract Documents
- K. All submittals for each component of multi-component systems shall be compiled and submitted through the Contractor to the Engineer by the manufacturer having System Responsibility
- 1.6 DISPOSITION OF SHOP DRAWINGS, PRODUCT DATA, AND INFORMATION SUBMITTALS
- A. "No Exceptions Taken": Approved with No Corrections Noted
1. One copy sent to Owner
 2. One copy sent to Resident Project Representative
 3. One copy retained in Engineer's file
 4. Remaining copies returned to Contractor for his use
 - a. One copy to be kept on file at Contractor's office at job site
 - b. Remaining copies for Contractor's office file, suppliers, or subcontractors

5. No corrections or comments noted on the submittal or on a Submittal Response Summary Sheet
 6. Issues or miscellaneous comments pertaining to other related items of the Work may be included in transmittal letter
 7. Resubmission not required
- B. "Exceptions Noted": Approved with Corrections Noted
1. One copy sent to Owner
 2. One copy sent to Resident Project Representative
 3. One copy retained in Engineer's file
 4. Remaining copies returned to Contractor for his use
 - a. One copy to be kept on file at Contractor's office at job site
 - b. Remaining copies for Contractor's office file, suppliers or subcontractors
 - c. Copies of submittal data in operation and maintenance manuals to be revised according to corrections
 5. Comply with corrections or comments as noted on the submittal or on a Submittal Response Summary Sheet
 6. Resubmission not required
- C. "Revise And Resubmit": Incorrect information provided or Significant Information Still Required
1. One copy sent to Resident Project Representative
 2. One copy retained in Engineer's file
 3. All remaining copies returned to Contractor for revision and re-submittal
 4. Copy of transmittal letter and/or Submittal Response Summary Sheet sent to Owner. A "No Exceptions Taken" or "Exceptions Noted" submittal it will be forwarded to Owner after review per above disposition requirements
 5. Submittal is either: incorrectly annotated; specific comments need to be addressed and incorporated in re-submittal; and/or additional information may be required as noted on the submittal or on a Submittal Response Summary Sheet
 6. Submitted information may not include or address specific item required per the specification as identified on the submittal or on a Submittal Response Summary Sheet
 7. Specific information related to identified item may be required for final approval of submittal
 8. Resubmission of entire submittal may be required or resubmission of specific item may be required as identified on the submittal or on a Submittal Response Summary Sheet
- D. "Rejected": Returned for Correction
1. One copy sent to Resident Project Representative
 2. One copy retained in Engineer's file
 3. All remaining copies returned to Contractor
 4. Copy of transmittal letter and/or Submittal Response sent to Owner
 5. Contractor required to resubmit complete submittal package in accordance with Contract Documents
 6. Submittal does not comply with provisions of Contract Documents as noted on the submittal or on a Submittal Response Summary Sheet

7. Resubmission required
- E. "Receipt Acknowledged": For Reference Purposes Only, or for Record Copy:
 1. Applicable to manufacturer or Contractor provided calculations and other miscellaneous documentation no subject to Engineer review and approval
 2. One copy sent to Resident Project Representative
 3. One copy retained in Engineer's file
 4. One copy returned to Contractor
 5. Copy of transmittal letter sent to Owner
 6. Remaining submittal copies destroyed
 7. Detailed review and comment by Engineer not required
 8. Resubmission not required

1.7 DISPOSITION OF SAMPLES

- A. "No Exceptions Taken": Approved with No Corrections Noted
 1. One sample sent to Owner
 2. One sample sent to Resident Project Representative
 3. One sample retained in Engineer's file
 4. Acknowledgement: Copy of transmittal letter sent to Contractor
 5. Resubmission not required
- B. "Exceptions Noted": Approved with Corrections Noted
 1. One sample sent to Owner
 2. One sample sent to Resident Project Representative
 3. One sample retained in Engineer's file
 4. Acknowledgement: Copy of transmittal letter sent to Contractor
 5. Work performed or products furnished to comply with exceptions noted in acknowledgement
 6. Resubmission not required
- C. "Rejected": Returned for Correction
 1. One sample retained in Engineer's file
 2. Remaining samples sent to Contractor for resubmittal and compliance with the Contract Documents as noted in transmittal letter
 3. Copy of transmittal letter sent to Owner
 4. Resubmission required

1.8 RESUBMISSION REQUIREMENTS

- A. Make any corrections or changes in submittals required by Engineer and resubmit until approved
- B. Transmit each resubmission under new letter of transmittal. Use number of original submittal followed directly by a capital letter corresponding to the number of times a submittal is resubmitted (i.e., #001, #001A, #001B, etc.)
- C. Shop Drawings and Product Data

1. Revise initial drawings or data and resubmit as specified for the initial submittal
2. Indicate any changes which have been made other than those requested by Engineer

D. Samples: Submit new samples as required for initial submittal

E. Reimbursement of Resubmission Review Costs:

1. Review of first submittal and one resubmittal will be performed by Engineer at no cost to Contractor
2. Cost for review of subsequent resubmissions will be directly paid by Contractor
3. Engineer will document work-hours required for review and costs for Engineer review will be deducted from payments due Contractor as Change Order deducts
4. Charges for review of resubmissions will include Engineer at maximum rate of \$150 per hour and administrative staff at maximum rate of \$75 per hour

1.9 PROJECT RECORD SUBMITTALS

A. After completion of the Work and prior to final payment, Contractor shall furnish record documents and final approved shop drawings and samples (as-constructed shop drawings and samples) in the number of copies specified herein.

1. Contractor shall provide additional copies of final approved shop drawings and samples for insertion in Equipment instruction and O&M manuals as required
2. All copies shall be clearly marked "Project Record"

1.10 ENGINEER'S DUTIES

A. Review submittals with reasonable promptness and in accordance with approved submission schedule provided that each submittal has been called for by the Contract Documents and is stamped by Contractor as indicated above

1. No extensions of time are allowed due to Engineer's delay in reviewing submittals unless all the following criteria are met:
 - a. Contractor has notified Engineer in writing that timely review of particular submittal in question is critical to the progress of the Work and Contractor has identified the requested submittal return date.
 - b. Engineer has failed to return submittal within 21 days of receipt of the submittal or receipt of said notice, whichever is later
 - c. Contractor demonstrates that delay in progress of the Work was directly attributable to Engineer's failure to return submittal within 21 days
2. No extensions of time are allowed due to delays in progress of the Work caused by rejection and subsequent resubmission of data, including multiple resubmissions
3. Engineer's review shall not extend to means, methods, techniques, sequences, construction operations, and safety precautions and programs incidental thereto. No information regarding these items will be reviewed whether or not included in submittals
4. In the event that Engineer will require more than 21 calendar days to perform review, Engineer shall so notify Contractor

B. Review drawings and data submitted only for general conformity with Contract Documents

1. Engineer's review of drawings and data returned marked No Exceptions Taken or Exceptions Noted does not indicate a thorough review of all dimensions, quantities, and details of material, equipment device or items shown
 2. Engineer's review does not relieve Contractor of responsibility for errors, omissions or deviations nor responsibility for compliance with the Contract Documents
- C. Assume that no shop drawing or related submittal comprises a deviation to the Contract Documents unless Contractor advises Engineer otherwise in writing which is acknowledged by Engineer in writing:
1. Consider and review only those deviations from the Contract Documents clearly identified as such on the submittal and tabulated on the Contractor's transmittal sheet.
- D. Review informational submittals for indications of Work or Material deficiencies and will respond to Contractor regarding such deficiencies
- E. Return submittals to Contractor for distribution or for resubmission
- F. Transmit, unreviewed, to Contractor all copies of submittals received directly from suppliers, manufacturers and subcontractors
- G. Transmit, unreviewed, to Contractor all copies of submittals not called for by the Contract Documents or which have not been approved by Contractor
- H. Engineer will not review uncalled-for shop drawings or product data except by special arrangement
- I. Affix stamp and indicate approval for submittal or resubmission requirements with the following stamp:



JVA, Inc.

Received: _____

No Exceptions Noted

Exceptions Noted

Revise and Resubmit

Rejected

JVA's review is limited to general conformance with the design intent as expressed in the Construction Documents. Notations and comments made on the product submittal or shop drawing during this review do not relieve the Contractor from compliance with the Construction Documents, as well as applicable laws, codes, and regulations. Review of a specific item shall not be construed to include review of an assembly of which the item is a component. The Contractor is responsible for dimensions and quantities to be confirmed and correlated at the job site; information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences, and procedures of construction; coordination of the Work with that of all other trades; and performing all Work in a safe and satisfactory manner.

By: _____ Date: _____

10/21

1.11 SUBMITTAL SCHEDULE

- A. Unless indicated otherwise, provide all submittals required by individual sections of the Contract Documents to establish compliance with the specified requirements.
- B. Contractor to produce schedule of submittals for Engineer review

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01380

CONSTRUCTION PHOTOGRAPHS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Construction record photographs prior to commencing and during the course of the Work

1.2 RELATED SECTIONS

- A. Section 01010 – Summary of Work
- B. Section 01700 – Contract Closeout: Project Record Documents

1.3 PHOTOGRAPHY REQUIRED

- A. Take photographs of the existing conditions prior to commencing work to document existing conditions
- B. Take photographs on the date on which each scheduled Application for Payment is due. Intent is for digital photos to be kept as project record
- C. CD of Digital photos become the property of Owner

1.4 COSTS OF PHOTOGRAPHY

- A. Pay all costs for specified photography and printing
 - 1. Parties requiring additional photography or prints will pay for them directly

1.5 DELIVERY OF PHOTOS

- A. Submit digital photos to the Engineer with monthly pay requests or within 20 days of photo date

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 TECHNIQUE

- A. Factual Presentation
- B. Correct Exposure and Focus
 - 1. High resolution and sharpness

2. Maximum depth-of-field
3. Minimum distortion

3.2 VIEWS REQUIRED

- A. Photograph from locations to adequately illustrate the condition of construction and the state of the Project
 1. Photographic survey of the existing site
 - a. Show all areas to be modified
 - b. Show all areas in which Contractor will conduct operations or store equipment
 2. Weekly photographs
 - a. Minimum of eight (8) views weekly until final acceptance
 - b. Views as designated by the Engineer or Owner

3.3 PHOTOGRAPH REQUIREMENTS FOR PROGRESS SITE PHOTOGRAPHS

- A. Responsibility
 1. Site photographs for Owner record of construction progress shall be the responsibility of the Contractor
 2. Contractor shall be responsible for site photographs including the existing and progress of Work
- B. Photographs shall include, but not limited to, the following:
 1. Existing site: Photographs of existing site conditions before site work commences
 - a. Number of views shall be sufficient to cover the existing site conditions
 2. Progress of work: Shall include photographs from clearing throughout construction
 - a. Number of views shall be sufficient to cover progress in Work and shall include a minimum of eight (8) different views
 3. After completion of Work: Shall be sufficient to show completed and finished Work
- C. Digital images
 1. Provide images in uncompressed JPEG format
 2. Minimum resolution: 1500 x 2200
 3. Submitted digital images shall not be cropped
- D. Identify each digital image file
 1. Name of project
 2. Orientation and description of view
 3. Date and time of exposure

3.4 ADDITIONAL PHOTOGRAPHS

- A. Contractor shall provide additional photographs upon the request of the Engineer
- B. Additional photographs may include, but not limited to, the following:
 1. Publicity photographs
 2. Special events at Project site
 3. Major phase of Work

4. Substantial Completion
5. Follow-up investigations for on-site events such as construction damage or losses
6. Additional record photographs during final acceptance

3.5 PROJECT RECORD

- A. Submit CD of all photos, grouped by date
- B. Engineer will distribute, after review
 1. One copy of each view to Owner
 2. One copy of each view to Engineer's file
 3. One copy of each view returned to Contractor for inclusion in Project Record Document

END OF SECTION

SECTION 01400
QUALITY CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Quality assurance / Control of installation
- B. Inspection and testing laboratory services
- C. Qualification of laboratory
- D. Laboratory duties
- E. Limitations of authority of testing laboratory
- F. Contractor's responsibilities
- G. Field testing
- H. Testing and services schedule

1.2 RELATED SECTIONS

- A. Section 01010 - Summary of Work
- B. Section 01340 - Shop Drawings, Product Data, and Samples
- C. Section 01600 - Material and Equipment

1.3 REFERENCES

- A. Conform to reference standard by date of issue current on date of Contract Documents
- B. Obtain copies of standards when required by Contract Documents
- C. Where specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding
- D. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document

1.4 SUBMITTALS

- A. Submit under provisions of Section 01340

- B. Provide copies of written reports for materials, equipment or systems as scheduled at the end of this section. Reference each report by respective section number.
- C. Laboratory Test Reports: Provide written reports of each test and inspection to Engineer. Each report shall include:
 - 1. Date issued
 - 2. Project title and number
 - 3. Testing laboratory name, address and telephone number
 - 4. Name and signature of laboratory inspector
 - 5. Date and time of sampling or inspection
 - 6. Record of temperature and weather conditions
 - 7. Date of test
 - 8. Identification of product and specification section
 - 9. Location of sample or test in the Project
 - 10. Type of inspection or test
 - 11. Results of tests and compliance with Contract Documents
 - 12. Interpretation of test results when requested by Engineer
- D. Shop Test Reports: Provide reports detailing results of tests and certification from manufacturer to verify compliance with specifications
- E. Field Test Reports: Provide reports detailing results of the tests. Indicate compliance or non-compliance with Contract Documents. Identify corrective action for materials and equipment which fails to pass field tests.

1.5 QUALITY ASSURANCE/CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship to produce Work of specified quality
- B. Comply fully with manufacturer's instructions, including each step in sequence
- C. Should manufacturer's instructions conflict with Contract Documents, request clarification from Engineer before proceeding
- D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship
- E. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement
- F. Inspections and testing required by laws, ordinances, rules, regulations, orders or approvals of public authorities: Conditions of the Contract
- G. Certification of products: Respective sections of specifications
- H. Laboratory tests required and standards for testing: Respective sections of specifications

1.6 INSPECTION AND TESTING LABORATORY SERVICES

- A. Owner will employ and pay for the services of a testing agency to perform specified laboratory testing of materials where the technical specifications specifically obligate the Owner to provide the services
 - 1. It is the Contractor's responsibility to initiate and coordinate all required tests and inspections including conformance with requirements of all applicable public agencies and authorities. Contractor will be responsible for coordinating the testing requirement with testing agency and provide the testing agency no less than two (2) working days advance notification to schedule tests.
 - 2. Employment of the testing agency shall in no way relieve Contractor's obligations to perform the Work of the Contract
 - 3. Contractor shall employ and pay for the services of a testing agency to perform all specified services and testing not specifically identified in the technical specifications to be provided by Owner related to the design of mixes, products and equipment, to Engineer's review of proposed materials and equipment before, during and after incorporation in the Work and to retest materials and equipment which fail original tests
- B. Retesting required because of non-conformance to specified requirements shall be performed by the same testing agency on instructions by the Engineer. Payment for retesting will be charged to the Contractor by deducting inspection or testing charges from the Contract Sum/Price

1.7 QUALIFICATION OF TESTING AGENCY

- A. Meet "Recommended Requirements for Independent Laboratory Qualification", published by American Council of Independent Laboratories
- B. Meet basic requirements of ASTM E 329, "Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction" as applicable
- C. Authorized to operate in the State in which the Project is located

1.8 TESTING AGENCY DUTIES

- A. Cooperate with Engineer and Contractor; provide qualified personnel after due notice
- B. Perform specified inspections, sampling, and testing of materials and methods of construction
 - 1. Comply with specified standards
 - 2. Ascertain compliance of materials with requirements of Contract Documents
- C. Promptly notify Engineer and Contractor of observed irregularities or deficiencies of work or products

1.9 LIMITATIONS OF AUTHORITY OF TESTING AGENCY

- A. Testing Agency Is Not Authorized To
 - 1. Release, revoke, alter or enlarge on requirements of Contract Documents
 - 2. Approve or accept any portion of the Work
 - 3. Owner employed testing agency shall not perform any duties of the Contractor

1.10 CONTRACTOR'S RESPONSIBILITIES

- A. Cooperate with laboratory and testing agency personnel and provide access to Work
- B. Secure and deliver to the laboratory adequate quantities of representative samples of materials proposed to be used and which require testing
- C. Provide to the laboratory the preliminary design mix proposed to be used for concrete and other material mixes which require control by the testing laboratory
- D. Furnish copies of product test reports as required
- E. Furnish Incidental Labor and Facilities
 - 1. To provide access to Work to be tested
 - 2. To obtain and handle samples at the project site or at the source of the product to be tested
 - 3. To facilitate inspections and tests
 - 4. For storage and curing of test samples
- F. Cooperate with testing agency; furnish samples of materials, design mix, equipment, tools, storage and assistance as requested
 - 1. Notify Engineer and testing agency 24 hours prior to expected time for operations requiring services to allow for scheduling of tests and laboratory assignment of personnel
 - 2. Make arrangements with testing agency and pay for additional samples and tests required for Contractor's use

1.11 FIELD TESTING

- A. Contractor shall pay all costs associated with standard field testing of materials as detailed in these specifications. Contractor shall pay all costs for testing of piping and equipment as detailed in these specifications. Owner's testing agency will take concrete samples, cure and break samples and report results. Owner's testing agency will also provide compaction testing and proctors for backfill operations. Contractor shall pay for all retesting due to tests indicating failed conditions.
- B. Provide all required materials, labor, equipment, water, and power required for testing
- C. Perform all tests in presence of Engineer or Owner and provide one copy of field test results to Engineer same day of tests

- D. Repair with no additional compensation all materials and equipment which fail during testing

1.12 LABORATORY TESTING AND SERVICES SCHEDULE

- A. Testing laboratory services shall be provided for, but shall not be limited to, the following:

Specification Section	Type of Material, Equipment, or System	Quality Assurance (QA) or Quality Control (QC)	Owner (O) or Contractor (C) Provided
02300	Earthwork	QA	O
02300	Earthwork	QC	C
02740	Flexible Paving	QA	O
02740	Flexible Paving	QC	C
03000	Rigid paving	QA	O
03000	Rigid paving	QC	C

1.13 FIELD TESTING AND SERVICES SCHEDULE

- A. Field testing shall be provided for, but shall not be limited to, the following:

Specification Section	Type of Material, Equipment, or System	Quality Assurance (QA) or Quality Control (QC)	Owner (O) or Contractor (C) Provided
02300	Earthwork	QA	O
02300	Earthwork	QC	C
02510	Water Distribution System	QA	O
02510	Water Distribution System	QC	C
02676	Disinfection of Water System	QA	O
02676	Disinfection of Water System	QC	C
02740	Asphalt	QA	O
02740	Asphalt	QC	C
03300	Cast-In-Place Concrete	QA	O
03300	Cast-In-Place Concrete	QC	C

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01550

CUTTING AND PATCHING

PART 1 GENERAL

1.1 SUMMARY

- A. This Section specifies administrative and procedural requirements for cutting and patching
- B. Work included in this Section
 - 1. Cutting and patching not required to be performed as part of the work of other sections
 - 2. Cutting and patching existing work altered or disturbed to accommodate new construction
 - 3. Cutting and patching existing work damaged or defaced during new construction as required to restore to existing or better condition at the time of award of Contract
 - 4. Cutting and patching required to:
 - a. Install or correct non-coordinated work
 - b. Remove and replace defective and non-conforming work
 - c. Remove samples of installed work for testing
- C. Contractor shall be responsible for all cutting, and patching, including attendant excavation and backfill, required to complete the Work or to:
 - 1. Uncover portions of the Work to provide for installation of ill-timed work
 - 2. Remove and replace defective work
 - 3. Remove and replace work not conforming to requirements of Contract Documents
 - 4. Remove samples of installed work as specified for testing

1.2 DEFINITIONS

- A. Cutting includes cutting into nominally completed or existing construction including, but not limited to, the following, in order to provide for the coordination of Work, installation of Work, uncovering of other facilities and structures for access or inspection, or obtaining samples for testing or other similar purposes
 - 1. Concrete
 - 2. Steel
 - 3. Wood
 - 4. Miscellaneous metal structures
 - 5. Piping and pavement
- B. Patching includes the repair required to restore cut materials to original or better condition
- C. Submittals
 - 1. Submit a proposal describing procedures in advance of the time cutting and patching will be performed, requesting approval to proceed. Include the following information:

- a. Extent: For each occurrence, describe the cutting and patching required, show how it will be performed and indicate the reason(s) it cannot be avoided
- b. In-place construction changes: Describe anticipated results and include changes to structural elements and operating components in addition to changes in building's appearance and other significant visual elements
- c. Products: List products to be used and firms or entities that will perform the Work
- d. Dates: Indicate when cutting and patching will be performed
- e. Utility services and mechanical and electrical systems:
 - i) List services and systems that cutting and patching procedures will disturb or affect
 - ii) List services and systems that will be relocated and that will be temporarily out of service
 - iii) Indicate how long services and systems will be disrupted
- f. Structural elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with the original structure
- g. Approval by Engineer:
 - i) Obtain approval of cutting and patching proposal before cutting and patching
 - ii) Approval does not waive right to later require removal and replacement of unsatisfactory work

D. Quality Assurance

- 1. Structural work requirements: Do not cut and patch structural elements in a manner that would reduce their load-carrying or load-deflection ratio
 - a. Obtain Engineer approval of cutting and patching proposal before cutting and patching the following structural elements:
 - i) Bearing and retaining walls, foundation construction, and structural concrete and structural steel
 - ii) Lintels
 - iii) Timber and primary wood framing
 - iv) Structural decking and stair systems
 - v) Equipment supports, piping, ductwork, vessels, and equipment
 - vi) Miscellaneous structural metals
- 2. Operational limitations: Do not cut and patch operating elements or safety related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance or decreased operational life or safety
 - a. Obtain Engineer approval of cutting and patching proposal before cutting and patching the following operating elements or safety related systems:
 - i) Primary operational systems and equipment
 - ii) Air, smoke, water, moisture, or vapor barriers
 - iii) Membrane and flashings
 - iv) Fire protection, control, communication, or electrical wiring systems
 - v) Noise and vibration control elements and systems
- 3. Visual requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would, in the Engineer's opinion, reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching

- a. Retain the original installer or fabricator throughout construction phases to cut and patch the following categories of exposed work, if possible, or if it is not possible to engage the original installer or fabricator, engage another recognized experienced and specialized firm:
 - i) Concrete finishes
 - ii) Pre-formed metal panels
 - iii) Painting
 - iv) Wall covering
 - v) HVAC enclosures, cabinets, or covers
 - vi) Firestopping

E. Warranty

- 1. For existing warranties, Contractor shall replace, patch, and repair material and/or surfaces cut and/or damaged by methods and with materials in order to not void any warranties required or existing

PART 2 PRODUCTS

A. Materials

- 1. Use materials identical to existing materials unless not available
 - a. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials matching existing adjacent surfaces to the fullest extent possible with regard to visual effect
 - b. Before proceeding, Contractor shall obtain approval of the Engineer
 - c. Use materials whose installed performance will equal or surpass that of existing materials

PART 3 EXECUTION

3.1 INSPECTION

- A. Inspect existing conditions of the Project, including elements subject to damage or to movement during cutting and patching. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered
- B. After uncovering work, inspect the conditions affecting the installation of products, or performance of the work
- C. Report unsatisfactory or questionable conditions to the Engineer in writing; do not proceed with the work until the Engineer has provided further instructions

3.2 PREPARATION

- A. Provide devices and methods to protect other portions of the Project from damage
- B. Provide temporary support of Work to be cut where required

- C. Provide protection from the elements for that portion of the Project which may be exposed by cutting and patching work, and maintain excavations free from water
 - 1. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations
- D. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas
- E. Take all precautions necessary to avoid cutting existing pipe, conduit or ductwork serving the building, but scheduled to be removed or relocated until provisions have been made to bypass them
- F. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes
- G. Restore work which has been cut or removed; install new products to provide completed Work in accordance with requirements of Contract Documents

3.3 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay
- B. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition
 - 1. Cutting: Cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible review proposed procedures with the original installer; comply with the original installer's recommendations
 - a. In general, where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use
 - b. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces
 - c. Cut through concrete and masonry using a cutting machine such as a carborundum saw or diamond core drill
 - d. By-pass utility services such as pipe or conduit, before cutting, where services are shown or required to be removed, relocated or abandoned. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting
 - e. Provide fire-safe seals to maintain fire rating at all penetrations
 - 2. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances
 - a. Where feasible, inspect and test patched areas to demonstrate integrity of the installation

- b. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing
 - c. Where removal of walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space to provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary to achieve uniform color and appearance
 - d. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken containing the patch, after the patched area has received primer and second coat
 - e. Patch, repair or re-hang existing ceilings as necessary to provide an even plane surface of uniform appearance
 - f. Replace concrete walkways to nearest construction joint
3. Plaster Installation: Comply with manufacturer's instructions and install thickness and coats as indicated

3.4 CLEANING

- A. Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove completely paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition

END OF SECTION

SECTION 01700
CONTRACT CLOSEOUT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Substantial completion
- B. Final acceptance
- C. Project record documents
- D. Closeout procedures
- E. Final cleaning
- F. Final adjustment of accounts
- G. Final application for payment

1.2 RELATED SECTIONS

- A. Section 00700 – General Conditions
- B. Section 01500 – Construction Facilities and Temporary Controls
- C. Section 01340 – Shop Drawings and Product Data

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Prior to requesting inspection for certification of Substantial Completion, complete the following and list exceptions in the request:
 - 1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100% completion for the portion of the Work claimed as Substantially Complete
 - a. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Price
 - b. If 100% completion cannot be shown, include a list of incomplete items, the value of incomplete Work, and reasons the Work is not complete. All items remaining outstanding on the Contractor's punch list shall include a projected date of completion and/or correction with an explanation of why such item is not presently completed
 - 2. Advise Owner of pending insurance changeover requirements
 - 3. Submit specific warranties, workmanship Bonds, maintenance agreements, final certifications, and similar documents

4. Obtain and submit releases enabling Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases
5. Submit record survey/drawings, instruction books and operating manuals, final project photographs, damage or settlement surveys, property surveys, and similar final record information
6. Deliver tools, spare parts, extra stock, and similar items
7. Make final changeover of permanent locks and transmit keys to Owner. Advise Owner's personnel of changeover in security provisions
8. Complete final clean up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes

- B. Inspection Procedures: On receipt of a request for inspection, Engineer will either proceed with inspection or advise Contractor of unfilled requirements. Engineer will prepare the Certificate of Substantial Completion following inspection or advise Contractor of construction that must be completed or corrected before the certificate will be issued
1. Engineering will repeat inspection when requested and assured by Contractor that the Work is Substantially Complete.
 2. Results of the completed inspection will form the basis of requirements for final acceptance

1.4 FINAL ACCEPTANCE

- A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.
1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and completed operations where required
 2. Submit an updated final statement, accounting for final additional changes to the Contract Price
 3. Submit a certified copy of Engineer's final inspection list of items to be completed or corrected, endorsed and dated by Engineer. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by Engineer.
 4. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the Date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work
 5. Submit consent of surety to final payment
 6. Submit evidence of final, continuing insurance coverage complying with insurance requirements
- B. Reinspection Procedure: Engineer will reinspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to Engineer.

1. Upon completion of reinspection, Engineer will prepare a certificate of final acceptance. If the Work is incomplete, Engineer will advise Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance
2. If necessary, reinspection will be repeated, but at the expense of the Contractor who will reimburse the Owner for these services by the Engineer

1.5 PROJECT RECORD DOCUMENTS

A. General

1. Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Engineer's reference during normal working hours
2. Maintain on site, one set of the following record documents; record actual revisions to the Work:
 - a. Contract Drawings
 - i) Includes as-built survey points on top of pipe, tees, elbows, valves, service line taps, etc.
 - b. Specifications
 - c. Addenda
 - d. Change Orders and other Modifications to the Contract
 - e. Reviewed shop drawings, product data, and samples
 - f. Field test reports
 - g. Construction photographs
3. Store Record Documents and samples separate from documents used for construction
 - a. Provide files and racks for storage of documents
 - b. Provide locked cabinet or secure storage space for samples

B. Record Drawings

1. Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings; digital drawings are also acceptable.
2. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown
3. Mark which drawing is most capable of showing conditions fully and accurately. Where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings
4. Give particular attention to concealed elements that would be difficult to measure and record at a later date
 - a. Record information concurrently with construction progress
 - b. Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the Work. Mark each document "Project Record" in neat, large, printed letters
 - c. Mark new information that is important to Owner but was not shown on Contract Drawings or Shop Drawings
 - d. Note related Change Order numbers where applicable

- e. Organize record drawing sheets into manageable sets. Bind sets with durable-paper cover sheets; print suitable titles, dates, and other identification on the cover of each set
 - f. Upon completion of the Work, submit record drawings to Engineer for Owner's records
5. Contract Drawings and approved Shop Drawings: Legibly mark each item to record actual construction, including:
- a. Measured depths of elements of foundation in relation to finish grade or first floor datum
 - b. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvement
 - c. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of construction.
 - d. Field changes of dimensions and details
 - e. Changes made by Addenda or Change Order(s), if any
 - f. Details not on original Contract Drawings
 - g. References to related Shop Drawings and Modifications
- C. Record Specifications: Maintain one complete copy of the Project Manual including addenda. Include with the Project Manual one copy of other written construction documents, such as Change Orders and Modifications issued in printed form during construction
- 1. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.
 - 2. Give particular attention to substitutions and selection of options and information on concealed construction that cannot otherwise be readily discerned later by direct observation.
 - 3. Note related record drawing information and product data.
 - 4. Upon completion of the Work, submit record Specifications to Engineer for Owner's records
- D. Record Product Data: Maintain one copy of each product data Submittal. Note related Change Orders and markup of record drawings and specifications.
- 1. Mark record documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the Site and from the manufacturer's installation instructions and recommendations.
 - 2. Give particular attention to concealed products and portions of the Work that cannot otherwise be readily discerned later by direct observation.
 - 3. Upon completion of markup, submit complete set of record product data to Engineer for Owner's records
 - 4. Legibly mark and record at each Product section description of actual Products installed, including the following:
 - a. Manufacturer's name, product model, number, trade name and supplies
 - b. Product substitutions or alternates utilized
 - c. Changes made by Addenda, field order or change order

- E. Record Samples Submitted: Immediately prior to Substantial Completion, Contractor shall meet with Engineer and Owner's personnel at the Project Site to determine which Samples are to be transmitted to Owner for record purposes. Comply with Owner's instructions regarding packaging, identification, and delivery to Owner.
- F. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record keeping and Submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records, and place in good order. Identify miscellaneous records properly and bind or file, ready for continued use and reference. Submit to Engineer for Owner's records
- G. Maintenance Manuals: Contractor shall organize operation and maintenance data as specified in Section 01730
- H. Submit documents to Engineer with claim for final Application for Payment
- I. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes
- J. Make documents and samples available at all times for inspection by Engineer
- K. Label each document "Project Record" in neat, large-printed letters

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 CLOSEOUT PROCEDURES

- A. General
 1. Comply with requirements stated in the Owner's General Conditions of the Contract and in these specifications for administrative procedures in closing out the Work
 2. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's inspection
 3. Provide submittals to Engineer/Owner that are required by governing or other authorities
 4. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due
- B. Operation and Maintenance Instructions: Arrange for each installer of Equipment that requires regular maintenance to meet with Owner's personnel at Project Site to provide instruction in proper operation and maintenance. Provide instruction by manufacturer's representatives if installers are not experienced in operation and maintenance procedures. Include a detailed review of the following items:

1. Maintenance manuals
 2. Record documents
 3. Spare parts, materials and tools
 4. Lubricants and fuels
 5. Identification systems
 6. Control sequences
 7. Hazards, hazardous chemicals data sheets
 8. Cleaning
 9. Warranties and bonds
 10. Maintenance agreements and similar continuing commitments
- C. As part of instruction for operating Equipment, demonstrate the following procedures:
1. Startup
 2. Shutdown
 3. Emergency operations
 4. Noise and vibration adjustments
 5. Safety procedures
 6. Economy and efficiency adjustments
 7. Effective energy utilization

3.2 FINAL CLEANING

- A. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
1. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion
 - a. Remove labels that are not permanent labels
 - b. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition
 - c. Wipe surfaces of mechanical and electrical Equipment. Remove excess lubrication and other substances
 2. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction
 3. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the Site and dispose of lawfully.
 - a. Where extra materials of value remaining after completion of associated Work become Owner's property. Dispose of these materials as directed by Owner

3.3 CONTRACTOR'S CLOSEOUT SUBMITTALS

- A. Evidence of Payment and Release of Liens: As specified in the General Conditions

- B. Final inspection reports by all regulatory agencies demonstrating the agencies' final approval
- C. At Contract close-out, deliver Record Documents to Engineer for the Owner
- D. Accompany Submittal with Transmittal Letter in Duplicate, Containing
 - 1. Date
 - 2. Project title and number
 - 3. Contractor's name and address
 - 4. Title and number of each Record Document
 - 5. Signature of Contractor or his authorized representative

3.4 FINAL ADJUSTMENTS OF ACCOUNTS

- A. Submit a Final Statement of Accounting to Engineer
- B. Statement Shall Reflect All Adjustments to the Contract Sum
 - 1. The original Contract Sum
 - 2. Additions and deductions resulting from
 - a. Previous Change Orders
 - b. Deductions for uncorrected Work
 - c. Deductions for liquidated damages
 - d. Deductions for reinspection payments
 - e. Other adjustments
 - 3. Total Contract Sum, as adjusted
 - 4. Previous payments
 - 5. Sum remaining due

3.5 FINAL APPLICATION FOR PAYMENT

- A. Contractor shall submit the final Application for Payment in accordance with procedures and requirements stated in the General Conditions of the Contract

END OF SECTION

SECTION 02220

DEMOLITION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Demolition, removal, salvage and disposal of existing site features, piping, structures and materials where indicated on the drawings and as specified in this section
- B. Demolition and removal of concrete foundations, sidewalks, concrete and asphaltic paving

1.2 RELATED SECTIONS

- A. Section 02300 – Earthwork
- B. Section 02950 - Seeding

1.3 SUBMITTALS

- A. Permits and Certificates.
 - 1. Permits and notices authorizing building demolition
 - 2. Certificates of severance of utility service
 - 3. Permit for transport and disposal of debris

1.4 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Division 1 specifications
- B. Accurately record actual locations of capped utilities and subsurface obstructions

1.5 REGULATORY REQUIREMENTS

- A. Conform to applicable State and City of Grand Junction codes for demolition of structures, safety of adjacent structures, dust control, and disposal
- B. Obtain required permits from authorities
- C. Notify affected utility companies before starting work and comply with their requirements
- D. Do not close or obstruct roadways, sidewalks, or hydrants without written permission from Owner
- E. Conform to applicable regulatory procedures when discovering hazardous or contaminated materials

1.6 SCHEDULING

- A. Schedule and submit under provisions of Division 1 specifications
- B. Provide detailed descriptions for demolition and removal procedures
- C. Notify Engineer and Owner of any demolition work one (1) week prior to commencement
- D. Coordinate all demolition work with Engineer and Owner

PART 2 PRODUCTS

2.1 SALVAGE OF MATERIALS

- A. Remove and return to Owner the following Equipment and Materials:
 - 1. Fire hydrant
- B. All existing construction and items not salvaged to Owner shall be considered waste and shall become the property of Contractor for off-site disposal
- C. Remove and reinstall as indicated on Drawings and herein the following Equipment and Materials:

2.2 HANDLING AND STORAGE

- A. Contractor shall carefully disassemble Equipment and Materials that are to be reused and returned to Owner in such a way to avoid any damage. Contractor shall store such Equipment and Materials in such a way to avoid any damage, corrosion, or staining

2.3 FILL MATERIALS

- A. Fill Material: Use on site fill material under provisions of Section 02300 and in accordance with Geotechnical recommendation

PART 3 EXECUTION

3.1 INSPECTION

- A. Verify areas to be demolished are unoccupied and discontinued in use
- B. Do not commence work until conditions are acceptable to Engineer and Owner
- C. Existing conditions of Equipment and Materials, structures, surfaces, or properties that could be misinterpreted as damaged as a result of demolition work shall be photographed and filed with Owner and Engineer prior to commencement of Work

3.2 PREPARATION

- A. Provide, erect, and maintain temporary barriers, enclosures, security fences and shoring at demolition locations in accordance with Division 1 and other related specifications to protect personnel
- B. Protect existing structures and utilities which are not to be demolished
- C. Provide temporary wiring and connections to maintain existing telephone, electrical, instrumentation and control systems in service during construction
- D. Protect existing electrical and controls equipment and cabinets from dust and debris intrusion. Set up temporary barriers to preclude dust from being introduced into cabinets and equipment. Additionally, seal all cabinets and equipment while demolition is occurring. Control and or turn off existing heating and ventilation systems that will introduce or distribute dust and debris from the demolition operations.
- E. Mark location of existing utilities

3.3 GENERAL REQUIREMENTS

- A. Sprinkle Work with water to minimize dust where applicable. Provide hoses and water connections for this purpose.
- B. Do not use water to extent causing flooding, contaminated runoff, or icing
- C. Remove demolished material from the site
- D. Repair damage to adjacent structures
- E. Remove existing exposed piping and electrical wiring and conduit to be abandoned to structural surface, cut flush, and finish to match existing surfaces
- F. Remove buried piping, wiring, and conduit to be abandoned as required for the Work. Plug the remainder flush.

3.4 DISPOSAL

- A. Do not store or burn waste materials on-site
- B. Transport demolition debris to designated off-site disposal area
- C. If hazardous materials are encountered during demolition work, Contractor shall comply with applicable regulations and laws regarding the removal, handling, and protection of environment and human health

3.5 CONNECTION TO EXISTING CONSTRUCTION

- A. Cut and remove portions of existing construction as necessary to allow for proper installation of new construction Equipment and Materials
- B. Shore and brace existing structures to maintain safe structure conditions and until permanent structures and supports are completed
 - 1. Contractor shall repair all damage in result of installation of shoring and bracing
- C. Cap, seal or abandon pipe and cable as indicated on Drawings and specified herein

3.6 CLEANUP AND REPAIR

- A. Contractor shall remove tools, equipment and demolished materials from Site upon completion of demolition work
 - 1. Remove protections
 - 2. Interior areas shall be broom clean
 - 3. Inspect and clean all electrical control cabinets, interior and exterior, exposed to dust and debris during the demolition process
- B. Contractor shall repair demolition performed in excess of that required or indicated
 - 1. Surfaces and structures to remain shall be repaired to the existing conditions prior to commencement of demolition work

3.7 SITE DEMOLITION

- A. Disconnect, remove, cap and identify designated utilities within demolition area
- B. Remove asphalt paving, parkway, and other concrete work to facilitate construction. Remove concrete to nearest joint beyond demolition area.
- C. Backfill areas excavated caused as a result of demolition, in accordance with Section 02300
- D. Rough grade and compact areas affected by demolition to maintain site grades and contours as shown on drawings
- E. Remove demolished materials from site
- F. Do not burn or bury materials on site, unless otherwise directed by Owner. Leave site in clean condition.

END OF SECTION

SECTION 02300

EARTHWORK

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, and Division One and other related specification sections apply to work of this section.

1.2 SECTION INCLUDES

- A. Clearing, grubbing and site preparation
- B. Removal and disposal of debris
- C. Handling, storage, transportation, and disposal of excavated material
- D. Sheeting, shoring, bracing and protection work
- E. Pumping and dewatering as required or necessary
- F. Backfilling
- G. Pipe embedment
- H. Construction of fills and embankments
- I. Excavation for buildings & structures
- J. Pavement Subgrade preparation
- K. Trench Stabilization
- L. Final grading
- M. Slope Stabilization
- N. Appurtenant work

1.3 RELATED SECTIONS

- A. Section 02370 – Erosion and Sedimentation Control
- B. Section 02740 – Flexible Paving
- C. Section 02750 – Rigid Paving

D. Section 02950 – Seeding

1.4 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO)
- B. American Society for Testing and Materials (ASTM):
 - 1. C33 – Concrete Aggregates
 - 2. C136 – Sieve Analysis of Fine and Coarse Aggregates
 - 3. D698 – Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5 lb. Rammer and 12-Inch Drop
 - 4. D1241 – Material for Soil Aggregate Subbase, Base and Surface Courses
 - 5. D1557 – Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
 - 6. D4253 – Test Methods for Maximum Index Density of Soils and Unit Weight of Soils Using a Vibratory Table
 - 7. D4254 – Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density
 - 8. D4318 – Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
 - 9. D6938 – Test Method for In-Place Density and Water Content of Soil and Soil Aggregate by Nuclear Methods (Shallow Depth)
- C. American Concrete Institute (ACI):
 - 1. 229 – Controlled Low-Strength Materials
- D. Council of American Building Officials/American National Standards Institute (CABO/ANSI):
 - 1. A117.1 – Accessible and Useable Buildings and Facilities Standards
- E. Colorado Department of Transportation (CDOT)
- F. Occupational Safety and Health Administration (OSHA):
 - 1. Part 1926 – Safety and Health Regulations for Construction

1.5 SUBMITTALS

- A. Submit under provisions of Division One specifications.
- B. Product Data: Submit on all products or materials supplied herein
- C. Test Reports: Indicate supplier, sieve analysis, optimum moisture content and density in accordance with ASTM D698 if appropriate for crushed rock or gravel, pipe embedment and material for fills and embankment

1.6 REGULATORY REQUIREMENTS

- A. Burning will not be allowed on-site. Comply with all City of Grand Junction applicable codes, regulations, and laws.

- B. Comply with applicable requirements of CABO/ANSI A117.1 for accessibility requirements related to walks, ramps, parking areas, drives, curb ramps, etc.
- C. Obtain and comply with all requirements of City of Grand Junction and CDPHE Stormwater and/or Groundwater Discharge Permits, as required.
- D. For public improvements only, in the event of a conflict between municipal standards and this specification, municipal standards for products and installation will govern.
- E. Excavation work will be performed in compliance with City of Grand Junction and current OSHA requirements.

1.7 ENVIRONMENTAL REQUIREMENTS

- A. Protect adjacent structures and surrounding areas from damage during excavation, filling, and backfilling
- B. Protect work from erosion or other similar types of damage until the project has been accepted. Leave protection in place for subsequent contractors' use.
- C. Do not backfill or construct fills during freezing weather. Backfill or construct fills only when temperature is 35°F and rising
- D. Do not use frozen materials, snow, or ice in any backfill or fill area
- E. Do not backfill or construct fill on frozen surfaces
- F. Protect excavated material from becoming frozen
- G. Do not backfill or construct fills or embankments during periods of heavy rainfall or precipitation when soil moisture conditions will not allow proper compaction to be achieved
- H. Do not remove trees from outside excavation or fill areas unless authorized by the Owner; protect from permanent damage by construction activities
- I. Provide temporary bridges for roadways, walkways, driveways, etc.

1.8 QUALITY ASSURANCE

- A. All imported material to be free of hazardous and organic wastes, "clean" as defined by EPA, and approved for its intended use by the Owner or project Geotechnical Engineer.

PART 2 PRODUCTS

2.1 MATERIALS

- A. General - Soil materials, whether from sources on or off the site must be approved by the Geotechnical Engineer as suitable for intended use and specifically for required location or purpose.
- B. Classification of Excavated Materials:
 - 1. No classification applies. Remove and handle all excavated materials regardless of its type, character, composition, condition, or depth. This includes all material that is not classified as rock excavation as described in Paragraph 2.1.B.2 Rock Excavation is included herein.
 - 2. Waste Materials:
 - a. Waste materials are considered unacceptable materials for compaction or placement fill. Site fills will not include environmental pollutants, hazardous substances or waste, hazardous products or by-products.
 - b. Transport and properly dispose of any rubble and waste materials found in excavation off the Owner's property
 - c. If hazardous, transite or asbestos containing materials are found in excavation, stop work immediately and notify the Owner within one hour of discovery. Comply with special handling requirements.
- C. Fills and Embankments
 - 1. To the maximum extent practical use excess earth from onsite excavation for fills and embankments.
 - 2. Free from rocks or stones larger than 12 inch in greatest dimension and free from brush, stumps, logs, roots, debris, and organic and other deleterious materials
 - 3. Fill and embankment material must be acceptable to Engineer
 - 4. No rocks or stones larger than 6 inch in upper 18 inches of fill or embankment. Where allowed, distribute rocks and stones through the fill to not interfere with compaction.
- D. Topsoil
 - 1. Topsoil is defined as fertile, friable, natural loam, surface soil, reasonably free of subsoil, clay lumps, brush, weeds and other litter, and free of rocks, stumps, stones larger than 2 inches in any dimension, and other extraneous or toxic matter harmful to plant growth for areas to be seeded or planted. Coordinate testing requirements with Owner.
 - 2. Clean topsoil free of plants and seeds will be spread to 4-inch minimum depth or as specified by Drawings, whichever is greater.
- E. Grubbings
 - 1. Grubbings are defined as the first 1 inch of surface vegetation and topsoil consisting of primarily existing grass groundcover free of roots, brush, and other objectionable material and debris.

2. Reuse grubbing and surface topsoil containing plants and seeds in designated revegetation areas only.

F. Pipe Embedment: Graded gravel

1. Comply with City of Grand Junction requirements for pipe embedment for public utilities.
2. 3/4” – 1” Crushed rock – AASHTO 57/67

Sieve Size (Inch)	Percent Passing by Weight
1	100
3/4”	90-100
1/2”	25-60
3/8”	20-55
NO. 4	0-10
NO. 8	0-5
NO. 200	0-2

G. Compacted Trench Backfill

1. Job excavated material finely divided, free of debris, organic material, and stones larger than 6 inches in greatest dimension without masses of moist, stiff clay, or topsoil
2. In upper 18 inches, no rock or rock excavated detritus, larger than 6 inches except with specific approval from Geotechnical Engineer.
3. No rock greater than 3 inches in greatest dimension within 3 feet of top of pipe
4. Graded gravel: as specified or shown on Drawings for pipe embedment

H. Coarse Base Rock

1. Granular material, maximum 3 inches, less than 10% passing 1-inch sieve.
2. Free of trash, clay and dust
3. Compaction as specified by Geotechnical Engineer

I. Road Base

1. Will meet ASTM specification for Class II aggregate base and CDOT Class 6 gradation

Sieve Size	Percent Passing by Weight
3/4"	90-100
No. 4	30-65
No. 8	22-55
No. 200	3-12

2.2 ACCESSORIES

A. Controlled Low Strength Material (Flow Fill)

1. Comply with City of Grand Junction requirements and ACI 229 for the use of flowable fill within the right-of-way or for public utility trench backfill.
 2. Product will be a lean, sand-cement slurry, “flowable fill” or similar material with a 28-day unconfined compressive strength between 50 and 200 psi.
- B. Non-woven geotextile fabric
1. Needle-punched nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Product must be inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids. Product must meet AASHTO M288-06 Class 3 for elongation > 50%.
 - a. Mirafi 140N or accepted substitution

PART 3 EXECUTION

3.1 EXAMINATION

- A. Field verify the location of all underground utilities, pipelines and structures prior to excavation

3.2 PERFORMANCE — GENERAL

- A. Contractor to verify quantities of cuts and fills and perform all earthwork required to meet the grades as shown on the Drawings, including but not limited to, additional import or export required to handle compaction, building and pavement subgrade preparation, and pipe bedding.
- B. Perform work in a safe and proper manner with appropriate precautions against hazard
- C. Provide adequate working space and clearances for work performed within excavations and for installation and removal of utilities
- D. Contain all construction activity on the designated site and within the limits of work. Cost of restoration offsite will be the responsibility of the Contractor
- E. Maintain service to pipelines and utilities indicated on Drawings during construction

3.3 PREPARATION

- A. Clearing and Grubbing
 1. Clear all site areas within the limits of work of grasses, roots, brush, and other objectionable material and debris.
 2. Strip subgrade for fills and embankments of surface vegetation, sod, tree stumps and organic topsoil. Strip and stockpile all on-site material meeting the topsoil definition for all areas receiving grading where shown on Drawings
 3. Remove all waste materials from site and dispose. Stockpile all acceptable grubblings for reuse in revegetation areas.

4. Remove and dispose of tree stumps and roots over 3 inches in diameter to a minimum depth of 18 inches below the natural surface or 5 feet below finished surface level, whichever is lower.
 5. Remove debris including all demolished trees, underbrush, stumps, roots and other combustible materials from site and dispose of off-site; on-site burning is not permitted
 6. Backfill all excavated depression include grub holes with approved material
- B. Preservation of Trees
1. Do not remove trees outside fill or excavated areas, except as authorized by Engineer
 2. Protect trees and their roots within the drip line that are to remain from permanent damage by construction operation
 3. Trim standing trees in conflict with construction operations as directed by Owner or Engineer.
 4. Removal of trees with trunks 6" or larger shall be removed by certified arborist.
- C. Topsoil Stripping
1. Strip onsite material meeting the topsoil definition to minimum depth of 4 inches from areas to receive grading as shown on Drawings.
 2. Stockpile topsoil in areas designated by Owner and indicated on Drawings where it will not interfere with construction operations and activities and existing facilities
 3. At the completion of work in each area, place and grade topsoil to maintain gradient as indicated and required. Roughen surface as required for erosion control.
- D. Waste and Debris
1. Stockpile all acceptable grubbing for reuse in native revegetation areas
 2. Remove and dispose of all waste materials and debris from clearing, grubbing, stripping and demolition off site
- E. Stockpiles
1. Segregate materials suitable for the following:
 - a. Topsoil
 - b. Embankments and fills
 - c. Backfill
 - d. Spoils and waste only
 2. No excavation will be deposited or stockpiled at any time so as to endanger stability of banks or structures, health of trees and shrubs to be protected, or portions of the Work, either by direct pressure or indirectly by overloading banks contiguous to the operation
 3. Stockpile soil materials away from edge of excavations
 4. Do not obstruct or prevent access to roads, driveways, ditches, natural drainage channels, and utility control devices
 5. If in result of adjacent structures, easement limitations, or other restrictions sufficient storage is not available within Project limits, Contractor will arrange for off-site areas for stockpiling and for moving material to and from the storage area at no additional cost to the Owner

3.4 PROTECTION OF EXISTING UTILITIES AND STRUCTURES

- A. Excavation and backfill operations will be performed in such a manner to prevent cave-ins of excavations or the undermining, damage or disturbing of existing utilities and structures or of new work.
- B. Backfill will be placed and compacted so as to prevent future settlement or damage to existing utilities and structures and new work
- C. Any excavations improperly backfilled or where settlement occurs will be reopened to the depth required then refilled with approved materials and compacted, and the surface restored to the required grade and condition, at no additional costs to the Owner
- D. Any damage due to excavation, backfilling, or settlement of the backfill, or injury to persons or damage to property occurring as a result of such damage will be the responsibility of the Contractor. All costs to repair such damage, in a manner satisfactory to the Engineer, will be borne by the Contractor at no additional expense to the Owner

3.5 DEWATERING

- A. General
 - 1. All dewatering activities in accordance with all federal, state, and local regulations regarding site drainage, dewatering, and erosion and sediment control including permitting requirements
 - 2. Design and provide dewatering system using accepted and professional methods consistent with current industry practice to eliminate water entering the excavation under hydrostatic head from the bottom and/or sides. Design system to prevent differential hydrostatic head, which would result in floating out soil particles in a manner, termed as a “quick” or “boiling” condition. System will not be dependent solely upon sumps and/or pumping water from within the excavation where differential head would result in a quick condition, which would continue to worsen the integrity of the excavation’s stability
 - 3. Provide and maintain adequate dewatering equipment including power supply, if necessary, to remove and dispose of surface and groundwater entering excavations, trenches, and other parts of the Work
 - 4. Provide dewatering system of sufficient size and capacity to prevent ground and surface water flow into the excavation and to allow all Work to be installed in a dry condition
 - 5. Control groundwater in a manner that preserves strength of foundation soils, does not cause instability or raveling of excavation slopes, and does not result in damage to existing structures. Where necessary to these purposes, lower water level in advance of excavation, utilizing wells, wellpoints, jet educators, or similar positive methods
 - 6. Keep each excavation dry during subgrade preparation and continually thereafter until the structure to be built or the pipe to be installed is completed to the extent that no damage from hydrostatic pressure, flotation, or other cause will result

7. Dewater excavations which extend to or below groundwater by lowering and keeping the groundwater level beneath such excavation at least 12 inches below the bottom of the excavation
8. Design, furnish, install, test, operate, monitor and maintain dewatering system of sufficient scope, size and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of groundwater and permit excavation and construction to proceed on dry, stable subgrades
9. Divert surface water or otherwise prevent it from entering excavated areas or trenches to the extent practical without damaging adjacent property
10. Maintain all drainage pipes, keep clean and free of sediment during construction and final cleanup
11. Open pumping with sumps and ditches will be allowed, provided it does not result in boils, loss of fines, softening of the ground, or instability of slopes
12. No additional payment will be made for any supplemental measures to control seepage, groundwater, or artesian head
13. Dewatering to surface waterways requires Colorado Department of Public Health and Environment dewatering permit. Contractor must obtain dewatering permit and comply with discharge requirements therein, including water treatment prior to discharge, if necessary

B. Design

1. Contractor will be responsible for the accuracy of the Drawings, design data, and operational records required
2. Contractor will be solely responsible for the design, installation, operation, maintenance, and any failure of any component of the system

C. Damages

1. Contractor will be responsible for and will repair without cost to the Owner any damage to work in place, or other contractor's equipment, utilities, residences, highways, roads, railroads, private and municipal well systems, adjacent structures, natural resources, habitat, existing wells, and the excavation including, damage to the bottom due to heave and including but not limited to, removal and pumping out of the excavated area that may result from Contractor's negligence, inadequate or improper design and operation of the dewatering system, and any mechanical or electrical failure of the dewatering system
2. Remove sub grade materials rendered unsuitable by excessive wetting and replace with approved backfill material at no additional cost to the Owner

D. Maintaining Excavation in Dewatered Condition

1. Dewatering will be a continuous operation. Interruptions due to power outages, or any other reason will not be permitted
2. Continuously maintain excavation in a dry condition with positive dewatering methods during preparation of subgrade, installation of pipe, and construction of structures until the critical period of construction and/or backfill is completed to prevent damage of subgrade support, piping, structure, side slopes, or adjacent facilities from flotation or other hydrostatic pressure imbalance

3. Provide standby equipment on site, installed, wired, and available for immediate operation if required to maintain dewatering on a continuous basis in the event any part of the system becomes inadequate or fails. If dewatering requirements are not satisfied due to inadequacy or failure of dewatering system, perform such work as may be required to restore damaged structures and foundation soils at no additional cost to Owner
 4. System maintenance will include supervision by personnel skilled in the operation, maintenance, and replacement of system components, and any other work required to maintain excavation in dewatered condition
- E. System Removal
1. Remove dewatering equipment from the site, including related temporary electrical service
 2. Wells will be removed or cut off a minimum of 3 feet below final ground surface, capped, and abandoned in accordance with regulations by agencies having jurisdiction

3.6 SHEETING, SHORING AND BRACING

- A. All sheeting, shoring and bracing in accordance with OSHA and IBC requirements
- B. Prevent undermining and damage to all structures, buildings, underground facilities, pavements and slabs
- C. Contractor will responsible for obtaining all required permits or easements for encroachments into the public right-of-way and for coordinating any encroachments onto adjacent properties.
- D. If sheet pile cut off walls are required, submit design calculations, stamped by a Colorado licensed Professional Engineer
- E. Contractor will be solely responsible for proper design, installation, operation, maintenance, and any failure of any system component
 1. Engineer review of Contractor's design and data does not relieve the Contractor from full responsibility for errors or from the entire responsibility for complete and adequate design and performance of the sheeting, shoring and bracing system
- F. Provide proper and substantial sheeting, shoring, and bracing, in accordance with OSHA Standards as required, to prevent caving or sliding, to protect workmen and the Work, and to protect existing structures and facilities
- G. Design, furnish, build, maintain and subsequently remove, to extent required a system of temporary supports for cut and cover, open cut, temporary bypass road, or trench excavations, including bracing, dewatering, and all associated items to support the sides and ends of excavations where excavation slopes may endanger in-place or proposed improvements, extend beyond construction right-of-ways or as otherwise specified or indicated in the Drawings
 1. Design and build sheeting, shoring, and bracing to withstand all loads that might be caused by earth movement or pressure

2. Design and build sheeting, shoring and bracing to be rigid, maintain shape and position under all circumstances.
- H. Design excavation support system and components for the following to allow safe and expeditious construction of permanent structures without movement/settlement of the ground and to prevent damage to or movement of adjacent buildings, structures, other improvements and underground facilities
 1. To support lateral earth pressures
 2. Loads from utilities, traffic, construction, buildings and surcharge loads
 - I. Provide sheeting, shoring and bracing equipment and materials onsite prior to start of excavation in each section, making adjustments as required to meet unexpected conditions
 - J. Contractor will make his own assessment of existing conditions including adjacent property, the possible effects of his proposed temporary works and construction methods, and will select and design support systems, methods, and details as will assure safety to the public, adjacent property, and the completed Work.
 - K. Employ caution in areas of underground facilities, which will be exposed by hand or other excavation methods acceptable to Owner or Engineer.
 - L. Space and arrange sheeting and bracing as required to exclude adjacent material and according to the stability of excavation slopes
 - M. Do not pull trench sheeting before backfilling
 - N. Do not brace sheeting left in place against the pipe, but support it in a manner that precludes concentrated loads or horizontal thrusts on pipe
 - O. Cross braces installed above the pipe to support sheeting may be removed after pipe embedment is completed
 - P. Damages
 1. Contractor will document and all existing damage to adjacent facilities and submit written documentation to Owner and Engineer prior to performing any excavation. Documentation will include written description of existing damages, measurements, diagrams, maps and associated photographs
 2. Repair all damage resulting from excavation and remove and place any existing structure or underground facility damaged during shoring and sheeting and all undermined pavements with Owner-approved equal, concrete or asphalt, at no cost to the Owner.

3.7 TRENCH STABILIZATION

- A. Thoroughly compact and consolidate subgrades for concrete structures, precast structures, and utility trench bottoms so they remain firm, dense and intact during required construction activities

- B. Remove all mud and muck during excavation per City of Grand Junction spec section 103.8. If further excavation needs to be completed to achieve a suitable subbase for the pipe contractor to inform Owner and Engineer and receive approval prior to continuing excavation.
- C. Reinforce subgrades with crushed rock or gravel and geotextile fabric if trench conditions become mucky during construction activities per City of Grand Junction details.
- D. Finished elevation of stabilized subgrades are to be at or below subgrade elevations indicated on Drawings
- E. Allow no more than ½ inch depth of mud or muck to remain on trench bottoms when pipe bedding material is placed thereon
- F. Scarify trench subgrade to a depth of 6 to 8 inches before compaction

3.8 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 0.10 foot
- B. Remove existing unsuitable/uncompacted fill, old foundations, rubble/debris, soft or otherwise unsuitable material, and replace with suitable material in excavation
- C. Extend excavations to a sufficient distance from structures for placing and removing concrete formwork, installing services and other construction and inspections
- D. Trim to neat lines where details call for concrete to be deposited against earth
- E. Excavate by hand in areas where space and access will not permit use of machines
- F. Provide dewatering and temporary drainage as required to keep excavations dry.
- G. Reshape subgrade and wet as required
- H. Notify Geotechnical Engineer when structure excavation has reached designated depth. Do not proceed with structure construction until excavation is approved by Geotechnical Engineer.
- I. Proof roll at a maximum of 24 hours prior to paving or concrete placement to locate any soft spots in grade. Contractor to stabilize any soft areas with aggregate base course and compact to 95% of maximum density at optimum moisture content, per ASTM D1557, to a minimum depth of 6 inches. Reshape subgrade and wet as required.

3.9 PAVEMENT OVEREXCAVATION AND SUBGRADE PREPARATION

- A. Excavate subgrade for asphalt pavement areas per the lines, grades, and dimensions indicated on Drawings within a tolerance of plus or minus 0.10 foot. Excavate subgrade

for concrete pavement areas per the lines, grades, and dimensions indicated on Drawings within a tolerance of plus or minus 0.05 foot.

- B. Overexcavate and scarify existing soil as required under pavement areas, slabs, curbs and walks to meet the moisture and compaction specifications herein to depth shown on Drawings.
- C. Extend subgrade preparation a minimum of one foot beyond back of proposed pavement, slabs, curbs and walks.
- D. Proof roll with a pneumatic tire equipment with a minimum axle load of 18 kips per axle a maximum of 24 hours prior to paving to locate any soft spots that exhibit instability and deflection beyond subgrade tolerances listed above. Areas that are observed to have soft spots in the subgrade, where deflection is not uniform or is excessive as determined by the Geotechnical Engineer, will be ripped, scarified, dried or wetted as necessary and recompacted to the requirements for density and moisture at the Contractor's expense. After recompaction, these areas will be proof rolled again and all failures again corrected at the Contractor's expense.
- E. If the Contractor fails to place the sub base, base course, or initial pavement course within 24 hours or the condition of the subgrade changes due to weather or other conditions, proof rolling and correction will be performed again at the Contractor's expense.

3.10 COMPACTION

- A. Place backfill and fill materials in layers not more than 12 inches , 8-inches within 2' of structure in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill materials evenly on all sides of structures to required elevations. Place backfill and fill uniformly along the full length of each structure as described herein.
- C. Percentage of Maximum Dry Density Requirements: Moisture treat and compact soil to not less than the following percentages of maximum dry density and to within the specified moisture content range of optimum moisture content according to ASTM D698 as follows:

Surface Improvement	Compaction %	Moisture Content
Structures	98%	-2 to +2
Paved Areas	95%	-2 to +2
Utility Trenches	95%	-2 to +2
Lawns or Unpaved Areas	90%	-2 to +2
Public Right-of-way	Per municipal standards	

- 1. Do not deposit or compact tamped or otherwise mechanically compacted backfill if frozen or if in water.

2. Take particular care to compact backfill which will be beneath slabs, pipes, drives, roads, parking areas, curb, gutters, or other surface construction.
- D. The location, size, shape, depth, drainage, and surfacing of borrow or spoil pits will be acceptable to Owner.
- E. Make all areas regular in shape with graded and surfaced side and bottom slopes when completed
- F. Cut side slopes not steeper than 1:1 and uniform for the entire length of any one side
- G. Final grade disturbed areas of borrow to uniform slope (maximum slope = 4:1, minimum slope = 50:1).
- H. Use material free of debris and deleterious material
- I. Contractor is responsible for compliance with Colorado Discharge Permit System and City of Grand Junction erosion control permitting requirements for any and all onsite disturbed spoil and borrow areas. Upon completion of spoil and/or borrow operations, clean up spoil and/or borrow areas in a neat and reasonable manner to the satisfaction of the offsite property owner, Owner and Engineer.

3.11 DISPOSAL OF EXCESS EXCAVATED MATERIALS

- A. Use excess excavated materials in fills and embankments as indicated on the Drawings to the extent needed. Coordinate with Owner and Engineer on locations for excess material placement.
- B. The Contractor is responsible for disposing of all excess excavated materials from the site to a location approved by the Owner or Engineer and permitted with the local authorities.
- C. At the Owner's discretion and with the Engineer's approval, suitable excess excavated materials from onsite may be disposed offsite at locations directed by Owner or specified on the Drawings.
- D. Remove debris, junk, broken concrete, broken asphalt, rock, stones, stumps, logs, roots,

3.12 TRENCH EXCAVATION

- A. Establish alignment and grade or elevation from offset stakes provided by the Contractor's surveyor.
- B. Excavate trenches so pipes can be laid straight at uniform grade without dips or bumps, between the terminal elevations indicated on the Drawings
- C. Comply with pipe specification sections regarding vertical and horizontal alignment and maximum joint deflection

- D. Where grades or elevations are not fixed on the Drawings, excavate trenches to provide a minimum depth of backfill cover over the top of pipe as follows. Coordinate depth of cover with utility owners. Increase depth as required by utility owner and at crossings. Minimum depths are:
1. 2.0 feet for drainage piping
 2. 2.5 feet for gas piping
 3. 2.5 feet for electric, telecom, and fiber optic conduit
 4. 2.0 feet for irrigation piping
 5. 3.0 feet for sanitary sewer
 6. 4.0 feet for water piping
 7. Increase depth as required at vertical curves and for clearance beneath existing pipes, conduits, drains, drainage structures, or other obstructions encountered at normal pipe grades
- E. Measure pipe cover depth vertically from top of pipe to finished ground or surface elevation
- F. Do not open more trench in advance of pipe laying than is necessary to expedite the work; not more than 200 feet
- G. Total length of open trench will be limited to 200 feet unless otherwise approved by the Engineer
- H. Except where tunneling or boring is indicated on the Drawings, specified, required by jurisdictional agency or permitted by Engineer, excavate trenches by open cut from the surface
- I. Limiting trench widths
1. Excavate to a width which will provide adequate working space and pipe clearances for proper pipe installation, jointing, embedment
 2. If needed to reduce earth loads to prevent sliding, cut banks back on slopes which extend not lower than 1 foot above the top of the pipe
 3. Stipulated minimum clearances are minimum clear distances, not minimum average distances
 4. Maximum trench width from six inches above the top of pipe to trench bottom is the pipe outside diameter plus 24 inches
 5. Limiting trench widths and permissible clearances from 6 inches above top of pipe to trench bottom for installed pressure and non-pressure piping

Pipe Size (inch)	Minimum Trench Width	Maximum Trench Width
3	1' 3"	1' 9"
4	1' 4"	1' 10"
6	1' 6"	2' 0"
8	1' 8"	2' 2"
10	1' 10"	2' 4"
12	2' 0"	2' 6"
16	2' 4"	2' 10"

Pipe Size (inch)	Minimum Trench Width	Maximum Trench Width
18	2' 6"	3' 0"
24	3' 0"	3' 2"
36	4' 0"	4' 6"

6. If the width of the lower portion of the trench exceeds the maximum permitted, provide special pipe embedment, or concrete encasement as required by loading conditions
7. No excessive trench widths will be allowed to avoid the use of sheeting or shoring and bracing

J. Trench Side Walls

1. Will be sloped, shored, sheeted, braced, or otherwise supported by means of sufficient strength to protect workmen in accordance with applicable rules and regulations established for construction by the federal, state, and local ordinances and regulations
2. Sheet and brace where necessary and as specified herein
3. Excavate without undercutting

K. Trench Bottom

1. Will be thoroughly protected and maintained when suitable natural materials are encountered
2. Will be thoroughly compacted and in approved condition prior to placing gravel bedding, if required
3. Where in earth, trench bottoms for 6 inches and smaller pipe may be excavated below pipe subgrade and granular embedment provided or the trench may be graded to provide uniform and continuous support between bell holes or end joints of the installed pipe at the Contractor's option
4. Whenever so directed by Engineer, excavate to such depth below grade as Engineer directs and bring the trench bottom to grade with such material approved by Engineer
5. Do not allow any part of bells or couplings to contact the trench bottom, walls, or granular embedment when pipe is joined
6. PVC pipe will not be laid directly on trench bottom

L. Mechanical excavation

1. Do not use where its operation would damage buildings, culverts, or other existing property, structures, or utilities above or below ground; hand excavate only in such areas
2. Use mechanical equipment of a type and design which can be operated to provide the following:
 - a. Rough trench bottom to a controlled elevation
 - b. Uniform trench widths and vertical sidewalls are obtained from 1 foot above the top of the installed pipe to the bottom of the trench
 - c. Trench alignment is such that pipe is accurately laid to specified alignment and is centered in the trench with adequate clearance between pipe and trench sidewalls
3. Do not undercut trench sidewalls
4. Recompact trench bottom disturbed by bucket teeth prior to placement of embedment material

- M. Except as otherwise required, excavate trenches below the underside of pipes as indicated in the Drawings to provide for installation of granular embedment pipe foundation material
- N. Whenever so directed by Engineer, excavate to such depth below grade as Engineer directs and bring the trench bottom to grade with such material as Engineer may direct
- O. For unstable soils, provide concrete or other bedding as directed by Engineer
- P. Do not allow any part of bells or couplings to contact the trench bottom, walls, or granular embedment when pipe is joined
- Q. Cuts in existing surface construction
 - 1. No larger than necessary to provide adequate working space
 - 2. Cut a clean groove not less than 1½ inch deep along each side of trench or around perimeter of excavation area
 - 3. Remove pavement and base pavement to provide shoulder not less than 6 feet wide between cut edge and top edge of trench
 - 4. Do not undercut trenches, resulting in bottom trench width greater than top widths
 - 5. Make pavement cuts to and between straight or accurately marked curved lines parallel to trench centerline or limits of excavation
 - 6. Remove pavement for connections to existing lines or structures only to the extent required for the installation
 - 7. Replace the pavements between saw cuts to match original surface construction

3.13 PIPE EMBEDMENT

- A. Embed pipes above and below the bottom of pipe as indicated on the Drawings and as specified herein
- B. Granular embedment
 - 1. Spread and surface grade granular embedment to provide continuous and uniform support beneath pipe at all points between pipe joints.
 - a. Level bottom layer at proper grade to receive and uniformly support pipe barrel throughout length
 - b. Barrel of pipe will have a bearing for its full length
 - 2. Form depressions under each joint to permit the proper jointing. No part of joint will be in contact with trench when pipe is placed in position
 - 3. After grading, aligning, and placing pipe in final position, and shoring home, deposit and compact sufficient embedment under and around each side of the pipe to hold the pipe in proper position and alignment during subsequent operations
 - 4. Place and compact embedment material uniformly and simultaneously on both sides of pipe to prevent displacement
 - 5. Complete embedment promptly after jointing operations and approval to proceed by Engineer
 - 6. Granular embedment compaction by slicing with shovel or vibrating
 - a. Maximum uncompacted thickness of layers: 6 inch

7. Compacted embedment will be compacted to 90 percent maximum density per ASTM D1557

a. Maximum uncompacted depth thickness of horizontal layers: 8 inch

C. Arch and concrete encasement

1. Include in locations indicated on Drawings or where over-width trench conditions need correction as approved by Engineer
2. Install and form as indicated on Drawings or as specified
3. Concrete will have a 28-day minimum 3,000 psi compressive strength

D. Do not backfill until tests and inspections have been made and backfilling is authorized by Engineer. Use care in backfilling to avoid damage or displacement of pipe systems

3.14 TRENCH BACKFILL

A. Backfilling will be conducted in a continuous manner to prevent damage to the pipe and its coating and kept as close to the pipe laying operation as possible. Backfilling procedures will be in accordance with additional requirements, if any, of local authorities or private right-of-way agreements.

B. Compacted backfill

1. Provide full depth of trench above embedment at all locations
2. Beneath pavements, surfacing, driveways, curbs, gutters, walks or other surface construction or structures
3. In street or highway shoulders
4. Beneath fills and embankments

C. Where the trench for one pipe passes beneath the trench of another pipe, compact the backfill for the lower trench to the bottom of the upper trench

D. Site excavated materials

1. Place job excavated materials in 8 inches maximum uncompacted thickness, uniform layers
2. Increased layer thickness may be permitted for incohesive material if Contractor demonstrates to Engineer's satisfaction that specified compacted density will be achieved
3. Use methods and equipment appropriate to the material to be compacted to prevent transmission of damaging shocks to pipe
4. Thoroughly compact each layer to meet the moisture and compaction specifications herein.

E. Graded gravel

1. Deposit in uniform layers of 9 inches maximum uncompacted thickness
2. Compact with suitable vibrating roller or platform vibrator to not less than 70 percent relative density per ASTM D4253/D4254

F. Uncompacted backfill

1. Compaction of backfill above pipe embedment in locations other than those specified, is required only to prevent future settlement
 2. May be placed by any method acceptable to Engineer which will not impose excessive concentrated or unbalanced loads, shock, or impact on, and will not result in displacement of installed pipe
 3. Until compacted depth over conduit exceeds 3 feet, do not drop fill material over 5 feet. Distance may be increased 2 feet for each additional 1 foot of cover
- G. Finish the top portion of backfill with at least 4 inches of topsoil or as specified by landscaping specifications, whichever is greater, corresponding to, or better than, that underlying adjoining turf areas.
- H. Trench backfill within the public right-of-way will conform to municipal street and utility standards.
- I. Trench backfills through unimproved areas should be restored to previous conditions and left 3" above adjacent grades to allow for settlement. Seed all disturbed areas according to erosion control and landscape specifications.
- J. Protection of trench backfill
1. Where trenches are constructed in ditches or other water courses, protect backfill from erosion
 2. Install ditch checks where the ditch grade exceeds 1 percent
 - a. Minimum depth: 2 feet below the original ditch or water course bottom for the full bottom width
 - b. Minimum width: 18 inches into the side slopes
 - c. Minimum thickness: 12 inches

3.15 DRAINAGE MAINTENANCE

- A. Do not backfill trenches across roadways, drives, walks or other trafficways adjacent to drainage ditches or water courses prior to backfilling the trench on the upstream side of the trafficway to prevent impounding water after pipe is laid
- B. Backfill so that water does not accumulate in unfilled or partially filled trenches
- C. Remove materials deposited in roadway ditches or other water courses crossed by the trench line immediately after backfilling is completed and restore ditches and water courses to original section, grade, and contours
- D. Do not obstruct surface drainage any longer than necessary
- E. Provide and maintain temporary bridges and other structures across unfilled trenches as required to maintain traffic
- F. Provide adequate storm flow conveyance through the site at all times during construction to avoid flooding of any buildings or adjacent property. Provide overland drainage

routing when storm sewer inlets are not fully functioning due to erosion and sediment control measures.

3.16 FINAL GRADING

- A. After completion of all other outside work and after backfilling is completed and settled, bring to grade at the indicated elevations, slopes and contours, all areas being graded on site
- B. Graders and other power equipment may be used for final grading and slope dressing if the result is uniform and equivalent to hand work
- C. Grade all surfaces for effective drainage, provide a 2 percent minimum slope except as otherwise shown on the Drawings
- D. Provide a smooth transition between adjacent existing grades and new grades
- E. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances
- F. Slope grades to direct water away from buildings and prevent ponds from forming where not intended
- G. Finish subgrades at lawns and unpaved areas to required elevations within a tolerance of plus or minus one (1) inch
- H. Finish grades will be no more than 0.1 foot above or below those indicated
- I. Finish all ditches, swales and gutters to drain readily
- J. Coordinate final subgrade depth with finish landscape treatment and required topsoil depths
- K. Topsoil
 1. Clean topsoil, free of plants and seed will be spread to 4-inch minimum depth, or as specified by the City of Grand Junction.
 2. Reuse grubblings and surface topsoil containing plants and seeds in designated revegetation areas only.
- L. Lay fabric smoothly on surface, bury top end of each section in 6-inch deep excavated topsoil trench. Provide 6-inch overlap minimum of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil
- M. Secure outside edges and overlaps at 48 inch intervals with 4-inch to 6-inch U-shaped type pins or wooden stakes depending on ground condition
- N. Lightly dress slopes with topsoil to ensure close contact between fabric and soil

- O. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches
- P. Maintain integrity of erosion control fabric
- Q. Prior to laying fabric, seed disturbed areas under provisions of related seeding and landscaping specification sections.

3.17 SETTLEMENT

- A. Warranty for settlement of all fills, embankments, and backfills is stipulated in the General Conditions from final completion of Contract under which Work is performed
- B. Repair or replace within 30 days after notice by Engineer or Owner

3.18 FIELD QUALITY CONTROL

- A. Provide under provisions of General Conditions and Division One Specifications
- B. Coordinate testing with Owner. Owner will employ testing agency for field testing to determine compliance of in-place and backfill materials and compaction in accordance with the specifications, and to verify design bearing capacities, for QA purposes only. Refer to 1.12 and 1.13 in Section 01400: Quality Control for designation of QA vs QC responsibilities.
- C. It is the Contractor's responsibility to initiate, coordinate and accommodate all required tests and inspections including conformance with requirements of all applicable public agencies and authorities. Contractor will be responsible for coordinating the testing schedule with the Owner so to provide the testing agency contractually required, 24-hour, one business day, advance notification to schedule tests. Refer to City's General Contract Conditions – VII.66: Inspection of Work and City's Standard Specifications for Road and Bridge Construction – Quality Control and Quality Assurance.
- D. Fills and Embankment Testing
 - 1. Two moisture-density relationship tests, ASTM D698, on each type of fill material
 - 2. One in-place compaction test for each 5,000 square feet every 1.5 feet of vertical lift of material placed
 - 3. Additional in-place compaction tests at the discretion of the Owner
- E. Pipe Embedment and Backfill Testing
 - 1. Two moisture-density relationship tests, ASTM D698, or two relative density tests, ASTM D4253/D4254, as appropriate for each type of embedment on backfill material proposed, except granular embedment material
 - 2. One in-place compaction test every 200 lineal feet of trench in the compacted embedment zone and at every 1.5 feet of vertical lift of backfill materials, per ASTM D6938
 - 3. One in-place compaction test near top of trench for trench depth of 2 feet or less, per ASTM D6938

4. Additional in-place compaction tests at the discretion of the Owner
- F. Pavement and Structural Subgrade Testing
1. At a minimum, two moisture-density relationship tests, ASTM D698, or two relative density tests, ASTM D4253/D4254, as appropriate and adequate for each type backfill material proposed.
 2. Perform tests for each footing, concrete site feature, and drainage structure subgrade. Perform tests at every 100 linear feet of subgrade of foundation walls, retaining walls, and every 150 feet for curbing, pans, drainage features, walks, etc. (or portions thereof). Perform tests every 2,000 square feet required of building slab area, exterior slabs and pavement/flatwork areas (with no less than 3 tests). Test at subgrade and at every vertical lift of backfill materials placed.
 3. Additional in-place compaction tests at the discretion of the Owner
- G. Inspection and approval
1. A qualified Geotechnical Engineer will inspect the natural soil at bottom of excavations for structures
 2. Do not prepare subgrade or place concrete until Geotechnical Engineer's inspection has taken place and any resulting recommendations of the Geotechnical Engineer have been fulfilled or until the inspection has been waived by the Geotechnical Engineer
 3. Prior to placement of structural fill, overexcavated foundations subgrades will be observed and tested by a qualified Geotechnical Engineer to ensure suitable bearing materials exist
 4. Geotechnical Engineer will provide a letter to Engineer to confirm the presence of suitable subgrade material and properly placed fill materials by Contractor in accordance with Drawings and geotechnical report.
- H. Retesting of failed compaction will be performed by Geotechnical Engineer for Owner, but paid for the Contractor

END OF SECTION

SECTION 02370

EROSION AND SEDIMENTATION CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. This work consists of temporary measures needed to control erosion and water pollution. These temporary measures will include, but not be limited to, berms, dikes, dams, sediment basins, fiber mats, netting, gravel, mulches, grasses, slope drains, and other erosion control devices or methods. These temporary measures shall be installed at the locations where needed to control erosion and water pollution during the construction of the project and during site restoration, and as directed by ENGINEER, and as shown on the drawings.
- B. The Erosion Control Plan presented in the drawings serves as a minimum for the requirements of erosion control during construction. Contractor has the ultimate responsibility for providing adequate erosion control and water quality throughout the duration of the project. Therefore, if the provided plan is not working sufficiently to protect the project areas, then Contractor shall provide additional measures as required to obtain the required protection.
- C. Contractor shall include in the bid price for erosion control a minimum of all items shown on the Erosion Control Plan and any additional items that may be needed to control erosion and water pollution.

1.2 RELATED SECTIONS

- A. Section 02220 – Demolition
- B. Section 02300 – Earthwork
- C. Section 02740 – Flexible Paving
- D. Section 02750 – Rigid Paving
- E. Section 02950 – Seeding

1.3 REFERENCES AND STANDARDS

- A. CDOT – Colorado Department of Transportation
- B. UDFCD – Urban Drainage and Flood Control District
- C. CDPHE – Colorado Department of Public Health and Environment

1.4 SUBMITTALS

- A. Submit under provisions of Division One specifications.
- B. Submit the following information:
 - 1. Erosion Control Plan,
 - 2. Construction schedule for Erosion Control per Article Scheduling,
 - 3. Sequencing Plan per Article Scheduling,
 - 4. All applicable permits for Erosion Control.
- C. Product data: Submit on all products or materials supplied herein.

1.5 REGULATORY REQUIREMENTS

- A. Obtain and comply with all requirements of City of Grand Junction and CDPHE Stormwater and/or Groundwater Discharge Permits, as required.
- B. 401 Construction Dewatering Industrial Wastewater Permit (Construction Dewatering Permit 401):
 - 1. Contractor shall apply for and obtain a Construction Dewatering Permit 401 from the Colorado Department of Public Health and Environment.
 - 2. All costs for this permit shall be the responsibility of Contractor.
 - 3. This permit requires that specific actions be performed at designated times.
 - 4. Contractor is legally obligated to comply with all terms and conditions of the permit including testing for effluent limitations.
 - 5. Contractor shall allow the Colorado Department of Public Health and Environment or other representatives to enter the site to test for compliance with the permit.
 - 6. Non-compliance with the permit can result in stoppage of all work.
- C. In the event of conflict between these requirements and erosion and pollution control laws, rules, or regulations of other Federal, State, or local agencies, the more restrictive laws, rules, or regulations shall apply.

1.6 SCHEDULING

- A. Sequencing Plan:
 - 1. Contractor shall submit a sequencing plan for approval for erosion control in conformance with Contractor's overall Construction Plan for approval by City of Grand Junction.
 - 2. Changes to the Erosion Control Sequencing Plan may be considered by City of Grand Junction only if presented in writing by the Contractor.
- B. Temporary Erosion Control:
 - 1. When so indicated in the Contract Documents, or when directed by City of Grand Junction. Contractor shall prepare construction schedules for accomplishing temporary erosion control work including all maintenance procedures.
 - 2. These schedules shall be applicable to clearing and grubbing, grading, structural work, construction, etc.

- C. Contractor shall submit for acceptance the proposed method of erosion control on haul roads and borrow pits and a plan for disposal of waste material.
- D. Contractor shall be required to incorporate all permanent erosion control features into the project at the earliest practicable time as outlined in the accepted schedule. Temporary erosion control measures shall then be used to correct conditions that develop during construction.
- E. Work shall not be started until the erosion control schedules and methods of operations have been accepted.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Comply with all applicable municipal or local Municipal Separate Storm Sewer System (MS4) requirements.
- B. All materials shall be submitted for approval prior to installation.
- C. Natural or biodegradable materials shall be reasonably clean, free of deleterious materials, and certified weed free. Materials may include, but are not limited to, hay bales, straw, fiber mats, fiber netting, wood cellulose, fiber fabric, gravel.
- D. Grass Seed:
 - 1. Temporary grass cover (if required) shall be a quick growing species, suitable to the area, in accordance with local criteria and permit requirements, which will provide temporary cover, and not compete with the grasses sown for permanent cover.
 - 2. All grass seed shall be approved by Engineer, City of Grand Junction, and in accordance with local regulations prior to installation.
- E. Fertilizer and soil conditioners shall be approved by Engineer, City of Grand Junction, and in accordance with local regulations prior to installation.
- F. Silt Fence Fabric: woven polypropylene
 - 1. Mirafi 100X, "Envirofence"
 - 2. Or accepted substitution

PART 3 EXECUTION

3.1 GENERAL

- A. All temporary and permanent erosion and sediment control practices will be maintained and repaired as needed to ensure continued performance of their intended function.

- B. City of Grand Junction will monitor Contractor's erosion control methods. If the overall function and intent of erosion control is not being met, the City of Grand Junction will require Contractor to provide additional measures as required to obtain the desired results.
- C. The erosion control features installed by Contractor shall be adequately maintained by Contractor until the project has reached final acceptance.

3.2 PROTECTION OF ADJACENT PROPERTIES

- A. Properties adjacent to the site of a land disturbance shall be protected from sediment deposition.
- B. In addition to the erosion control measures required on the drawings, perimeter controls may be required if damage to adjacent properties is likely, and may include, but is not limited to:
 - 1. Vegetated buffer strip around the lower perimeter of the land disturbance.
 - a. Vegetated buffer strips may be used only where runoff in sheet flow is expected and should be at least twenty (20) feet in width.
 - 2. Sediment barriers such as straw bales, erosion logs, and silt fences.
 - 3. Sediment basins and porous landscape detention ponds.
 - 4. Combination of above measures.

3.3 CONSTRUCTION

- A. Stabilization of Disturbed Areas:
 - 1. Temporary sediment control measures shall be established within five (5) days from time of exposure or disturbance.
 - 2. Permanent erosion protection measures shall be established within five (5) days after final grading of areas.
- B. Stabilization of Sediment and Erosion Control Measures:
 - 1. Sediment barriers, perimeter dikes, and other measures intended to either trap sediment or prevent runoff from flowing over disturbed areas shall be constructed as a first step in grading and be made functional before land disturbance takes place.
 - 2. Earthen structures such as dams, dikes, and diversions shall be stabilized within five (5) days of installation.
 - 3. Stormwater outlets shall also be stabilized prior to any upstream land disturbing activities.
- C. Stabilization of Waterways and Outlets:
 - 1. All onsite stormwater conveyance channels used by Contractor for temporary erosion control purposes shall be designed and constructed with adequate capacity and protection to prevent erosion during storm and runoff events.
 - 2. Stabilization adequate to prevent erosion shall also be provided at the outlets of all pipes and channels.

- D. Storm Sewer Inlet Protection: All storm sewer inlets which are made operable during construction or which drain stormwater runoff from a construction site shall be protected from sediment deposition by the use of filters.
- E. Construction Access Routes:
 - 1. Wherever construction vehicles enter or leave a construction site, a Stabilized Construction Entrance is required.
 - 2. Where sediment is transported onto a public road surface, the roads shall be cleaned thoroughly at the end of each day.
 - 3. Sediment shall be removed from roads by shoveling or sweeping and be transported to a sediment controlled disposal area.
 - 4. Street washing shall be allowed only after sediment is removed in the manner described above.

3.4 DISPOSITION OF TEMPORARY MEASURES

- A. All temporary erosion and sediment control measures shall be disposed of within thirty (30) days after final site stabilization is achieved or after the temporary measures are no longer needed as determined by City of Grand Junction.
- B. Trapped sediment and other disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion.
- C. Substantial Completion of Erosion Control Measures:
 - 1. At the time specified in the Contract Documents, and subject to compliance with specified materials and installation requirements, Contractor shall receive a Substantial Completion Certificate for temporary erosion control measures.
 - 2. Maintenance of Erosion Control Measures after Substantial Completion: Contractor shall be responsible for maintaining temporary erosion control measures as specified in the drawings and Contract Documents until such time as work has been accepted by City of Grand Junction and as specified in Division 1 for Closeout Procedures.

PART 4 MEASUREMENT FOR PAYMENT

4.1 LUMP SUM

- A. Contractor shall include in the bid price for erosion and sedimentation control work a minimum of all items shown on the Erosion Control Plan, as required by City of Grand Junction and any additional items that may be needed to control erosion and water pollution throughout all phases of the project.

END OF SECTION

SECTION 02510

WATER DISTRIBUTION SYSTEM

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Buried pipe, fittings, hydrants, valves, appurtenances, and associated accessories for water distribution and transmission lines
- B. Disinfection of potable water piping

1.2 RELATED SECTIONS

- A. Section 02300 – Earthwork
- B. Section 02676 – Disinfection of Water Systems

1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. A36 – Standard Specification for Carbon Structural Steel
 - 2. A48 – Standard Specification for Gray Iron Castings
 - 3. A53 – Standard Specification for Pipe, Steel, Black and Hot Dipped, Zinc Coated, Welded and Seamless
 - 4. A126 – Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings
 - 5. A185 – Standard Specification for Welded Steel Wire Fabric for Concrete Reinforcement
 - 6. A242 – Standard Specification for High-Strength Low-Alloy Structural Steel
 - 7. A276 – Standard Specification for Stainless Steel Bars and Shapes
 - 8. A307 – Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 PSI Tensile Strength
 - 9. A449 – Standard Specification for Hex Cap Screws, Bolts and Studs, Steel, Heat Treated, 120/105/90 ksi Minimum Tensile Strength, General Use
 - 10. A536 – Standard Specification for Ductile Iron Castings
 - 11. A674 – Standard Practice for Polyethylene Encasement for Ductile Iron Pipe for Water or Other Liquids
 - 12. A615 – Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
 - 13. A1011 – Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength
 - 14. B62 – Standard Specification for Composition Bronze or Ounce Metal Castings
 - 15. B88 – Standard Specification for Seamless Copper Water Tube

16. B96 – Standard Specification for Copper-Silicon Alloy Plate, Sheet, Strip, and Rolled Bar for General Purposes and Pressure Vessels
17. B763 – Standard Specification for Copper Alloy Sand Castings for Valve Applications
18. B843 – Magnesium Alloy Anodes for Cathodic Protection
19. C33 – Standard Specification for Concrete Aggregates
20. C136 – Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
21. C150 – Standard Specification for Portland Cement
22. C913 – Standard Specification for Precast Concrete Water and Wastewater Structures
23. C1227 – Standard Specification for Precast Concrete Septic Tanks
24. D429 – Standard Test Methods for Rubber Property-Adhesion to Rigid Substrates
25. D698 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kn-m/m³))
26. D1241 – Standard Specification for Materials for Soil-Aggregate Subbase, Base, and Surface Courses
27. D1248 – Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable
28. D1330 – Standard Specification for Rubber Sheet Gaskets
29. D1351 – Standard Specification for Thermoplastic Polyethylene Insulation for Electrical Wire and Cable
30. D1784 – Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds
31. D1785 – Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120
32. D2000 – Standard Classification System for Rubber Products in Automotive Applications
33. D2239 – Standard Specification for Polyethylene (PE) Plastic Pipe (SIDR-PR) Based on Controlled Inside Diameter
34. D2241 – Standard Specification for Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series)
35. D2467 – Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80
36. D2454 – Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems
37. D2737 – Standard Specification for Polyethylene (PE) Plastic Tubing
38. D2774 – Standard Practice for Underground Installation of Thermoplastic Pressure Piping
39. D2837 – Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermoplastic Pipe Products
40. D3035 – Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter
41. D3139 – Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals
42. D3212 – Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals

43. D3261 – Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing
44. D3350 – Standard Specification for Polyethylene Plastics Pipe and Fittings Materials
45. D3139 – Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals
46. D3950 – Standard Specification for Strapping, Nonmetallic (and Joining Methods)
47. D4253 – Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
48. D4254 – Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density
49. D6938 – Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
50. E8 – Standard Test Methods for Tension Testing of Metallic Materials
51. F412 – Standard Terminology Relating to Plastic Piping Systems
52. F477 – Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
53. F714 – Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Outside Diameter
54. G97 – Standard Test Method for Laboratory Evaluation of Magnesium Sacrificial Anode Test Specimens for Underground Applications

B. American Water Works Association (AWWA)

1. B300 – Standard for Hypochlorites
2. B301 – Standard for Liquid Chlorine
3. B302 – Standard for Ammonium Sulfate
4. B303 – Standard for Sodium Chlorite
5. C104 – Standard for Cement-Mortar Lining for Ductile-Iron Pipe and Fittings
6. C105 – Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems
7. C110 – Standard for Ductile-Iron and Gray-Iron Fittings
8. C111 – Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
9. C115 – Flanged Ductile-Iron Pipe with Ductile-Iron or Grey-Iron Threaded Flanges
10. C116 – Standard for Protective Fusion-Bonded Epoxy Coatings for Interior and Exterior Surfaces of Ductile-Iron and Gray-Iron Fittings
11. C150 – Standard for Thickness Design of Ductile-Iron Pipe
12. C151 – Standard for Ductile-Iron Pipe, Centrifugally Cast
13. C153 – Standard for Ductile-Iron Compact Fittings
14. C200 – Standard for Steel Water Pipe 6 In. (150 mm) and Larger
15. C203 – Standard for Coal-Tar Protective Coatings & Linings for Steel Water Pipes
16. C206 – Standard for Field Welding of Steel Water Pipe
17. C207 – Standard for Steel Pipe Flanges for Waterworks Service, Sizes 4 In. Through 144 In. (100 mm Through 3,600 mm)
18. C213 – Standard for Fusion-Bonded Epoxy Coatings and Linings for Steel Water Pipe and Fittings
19. C214 – Standard for Tape Coatings for Steel Water Pipelines
20. C219 – Standard for Bolted, Sleeve-Type Couplings for Plain-End Pipe
21. C500 – Standard for Metal-Seated Gate Valves for Water Supply Service
22. C502 – Standard for Dry-Barrel Fire Hydrants

23. C504 – Standard for Rubber-Seated Butterfly Valves
 24. C509 – Standard for Resilient-Seated Gate Valves for Water Supply Service
 25. C515 – Standard for Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service
 26. C550 – Standard for Protective Epoxy Interior Coatings for Valves and Hydrants
 27. C600 – Standard for Installation of Ductile Iron Mains and Their Appurtenances
 28. C604 – Standard for Installation of Buried Steel Water Pipe – 4 In. (100 mm) and Larger
 29. C605 – Standard for Underground Installation of Polyvinyl Chloride (PVC) and Molecularly Oriented Polyvinyl Chloride (PVCO) Pressure Pipe and Fittings
 30. C651 – Disinfecting Water Mains
 31. C700 – Standard for Cold-Water Meters – Displacement Type, Metal Alloy Main Case
 32. C800 – Standard for Underground Service Line Valves and Fittings
 33. C900 – Standard for Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. Through 60 In. (100 mm Through 1,500 mm) for Water Transmission and Distribution
 34. C901 – Standard for Polyethylene (PE) Pressure Pipe and Tubing 1/2 In. (13 mm) Through 3 In. (76 mm) for Water Service
 35. C906 – Polyethylene (PE) Pressure Pipe and Fittings 4 in. (100 mm) Through 63 In. (1,600 mm) for Water Distribution and Transmission
 36. M11 – Steel Pipe: A Guide for Design and Installation
 37. M17 – Standard for Installation, Field Testing, and Maintenance of Fire Hydrants
 38. M23 – Standard for PVC Pipe Design and Installation
 39. M41 – Standard for Ductile-Iron Pipe and Fittings
- C. Colorado Department of Transportation (CDOT)
- D. National Fire Protection Agency (NFPA)
- E. Occupational Safety and Health Administration (OSHA)
- F. NSF International:
1. Standard 60 – Drinking Water Treatment Chemicals – Health Effects
 2. Standard 61 – Drinking Water System Components – Health Effects
- G. Surface Preparation Standards (SSPC)
- H. American Welding Society (AWS):
1. D1.1 – Structural Welding Code – Steel
- I. National Association of Corrosion Engineers (NACE):
1. SP0169 – Control of External Corrosion on Underground or Submerged Metallic Piping Systems
 2. SP0286 – Electrical Isolation of Cathodically Protected Pipelines
- J. Uni-Bell PVC Pipe Association:
1. Uni-Pub-8: Tapping Guide for PVC Pressure Pipe

- K. Plastics Pipe Institute (PPI):
 - 1. TR-4 – HDB / HDS / SDB / PDB / MRS Ratings for Thermoplastic Piping Materials or Pipe
 - 2. TR-33 – Generic Butt Fusion Joining Procedure for Field Joining of Polyethylene Pipe
 - 3. Handbook of Polyethylene Pipe
 - 4. Material Handling Guide
- L. Ductile Iron Pipe Research Association (DIPRA):
 - 1. Thrust Restraint Design for Ductile Iron Pipe
- M. American Railway Engineering and Maintenance-Of-Way Association (AREMA)
- N. International Plumbing Code (IPC)
- O. International Code Council (ICC)
- P. Underwriters' Laboratories (UL)

1.4 SUBMITTALS

- A. Submit under provisions of Division 1 Specifications
- B. Shop Drawings: Provide piping layout and assembly drawings with fitting dimensions. Provide sufficient information to verify compliance with specifications
- C. Shop Drawings: Provide sufficient data to verify compliance with the specifications and to illustrate construction and assembly of precast vault
- D. Product Data: Provide manufacturer's catalog information with dimensions, material and assembled weight. Indicate pressure ratings for pipe, fittings, valves
 - 1. Pipe materials
 - 2. Special, fitting, and coupling details
 - 3. Joint restraint system
 - 4. Valves
 - 5. Laying and installation schedule
 - 6. Specifications and data sheets
 - 7. Affidavits of compliance for protective shop coatings and linings
- E. Product Data: Provide manufacturer catalog information on castings, grating, and accessories to indicate compliance with specifications of precast vault
- F. Design Data: Include calculations prepared by precast manufacturer indicating design loads and material requirements for reinforcement
- G. Manufacturer's Certificate: Certify that products meet or exceed specified requirements and applicable standards. Provide prior to shipment.

H. Test Reports: Submit reports of field pressure and disinfection tests under provisions of Section 01340

I. Test Reports: Indicate disinfection results comparative to specified requirements

1.5 PROJECT RECORD DOCUMENTS

A. Submit under provisions of Division 1 Specifications

B. Accurately record actual locations using a surveyor of piping mains, valves, connections, top of pipe elevations, and any mapped or unmapped utilities.

C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities

D. Disinfection report; record:

1. Type and form of disinfectant used
2. Date and time of disinfectant injection start and time of completion
3. Test locations
4. Initial and 24 hour disinfectant residuals (quantity in treated water) in parts per million (ppm) or milligram per liter (mg/L) for each outlet tested
5. Date and time of flushing start and completion
6. Disinfectant residual after flushing in ppm for each outlet tested

E. Bacteriological report; record:

1. Date issued, project name, and testing laboratory name, address, and telephone number
2. Time and date of water sample collection
3. Name of person collecting samples
4. Test locations
5. Initial and 24 hour disinfectant residuals in ppm for each outlet tested
6. Coliform bacteria test results for each outlet tested
7. Bacteriologist's signature and authority

1.6 QUALITY ASSURANCE

A. Manufacturers shall be experienced in the design and manufacturing of materials specified herein for a minimum period of 5 years

B. All PVC pipe, regardless of diameter, shall be supplied by a single manufacturer

C. Perform Work in accordance with AWWA C651, and the Colorado Department of Public Health and Environment (CDPHE), Mesa County, and City of Grand Junction.

D. Contractor shall conduct visual inspection before installation

E. Provide manufacturer's name and pressure rating marked on piping and valves

- F. Provide piping complete with all fittings, jointing materials, supports, joint restraint system, and necessary appurtenances for watertight, fully operational water lines

1.7 REGULATORY REQUIREMENTS

- A. Conform to all municipal codes and ordinances, laws and regulations of Mesa County, City of Grand Junction, CDPHE, the notes and details on the drawings and as specified herein, and CDPHE Stormwater Management and/or Construction Dewatering Permit
- B. Conform to AWWA C651, as appropriate, and CDPHE Design Criteria for Potable Water Systems for performing the work of this Section
- C. In case of apparent conflict, CDPHE requirements govern over these specifications
- D. In absence of State and local regulations, International Plumbing Code applies
- E. NFPA Compliance: Install fire water systems in accordance with NFPA 24 “Standard for the Installation of Private Fire Service Mains and Their Appurtenances”
- F. UL Compliance: Provide fire hydrants that comply with UL 246 “Hydrants for Fire-Protection Service,” and are listed by UL.
- G. Contractor, not Owner, shall prepare, submit, pay, and otherwise obtain all necessary permits from all appropriate entities

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Division 1 specifications
- B. Delivery
 - 1. Ship rubber gaskets in cartons and store in a clean area away from grease, oil, ozone producing electric motors, heat and the direct sunlight
- C. Storage
 - 1. Store pipe, fittings and gaskets in clean locations protected from environmental conditions such as: direct sunlight, mud, etc.
 - 2. Do not use pipe and fittings stored in direct sunlight for periods in excess of 18 months
 - 3. Store pipe on a flat surface which provides even support for the barrel with bell ends overhanging
 - a. Do not stack pipe higher than 5 feet
- D. Storage: Use the following precautions for valves, during storage:
 - 1. Do not remove end protectors unless necessary for inspection; then reinstall for storage
 - a. Protect valves from weather by storing indoors or support valves off ground or pavement in watertight enclosures when outdoor storage is necessary

- E. Handling
 - 1. Handle so as to insure installation in sound undamaged condition
 - 2. Use equipment, tools and methods for unloading, reloading, hauling and laying that do not damage pipe or cause an impact. Damaged pipe will be cause for rejection.
 - 3. Use hooks or straps with broad, well-padded contact surfaces for lifting sections of pipe
- F. Preparation for Transport: Prepare valves, for shipping as follows: Ensure that valves are dry and internally protected against rust and corrosion. Protect valves against damage to threaded ends, flange faces, and weld ends. Set valves in best position for handling. Set valves closed to prevent rattling
- G. Deliver and store valves and accessories in shipping containers with labeling in place in accordance with AWWA C500
- H. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation
- I. Seal valve ends to prevent entry of foreign materials into valve body
- J. During loading, transporting and unloading, exercise care to prevent damage to material
 - 1. Use nylon slings only
 - 2. Do not drop pipe or fittings
 - 3. Do not roll or skid against pipe already on ground
 - 4. Repair any damage done to coating or lining
 - 5. Handle per manufacturer's recommendations
 - 6. Store rubber gaskets in cool dark location
 - 7. Store all material on wood pallets or timbers
- K. Adequately tag or otherwise mark all piping, fittings, and valves as to size per AWWA C509 and C900
- L. Shop coated materials shall be handled, transported, stored and shipped in a manner that will prevent damage to the coating and lining. Coating or lining damaged in handling or other operations shall be repaired to the approval of and at no additional cost to the Owner
- M. Any damage to the pipe or the protective coating from any cause during the installation of the pipeline and before final acceptance by the Engineer shall be repaired in accordance with these Specifications and at no additional cost to the Owner

1.9 JOB CONDITIONS

- A. All work which requires the interruption of active water service lines must be completed as quickly as possible in order to minimize inconvenience to customers and risk to the City of Grand Junction and coordinated as specified in Division 1
- B. Underground Obstructions

1. Underground Obstructions known to Engineer are shown on Drawings
 - a. Locations shown may prove inaccurate and other obstructions not known to Engineer may be encountered
 - b. Contractor shall field locate and verify all obstructions where or not shown on the Drawings
 2. Notify each utility owner and request utility be field located by surface reference at least 48 hours prior to trenching or excavation
 3. Expose and verify size, location and elevation of underground utilities and other obstructions where conflicts might exist sufficiently in advance to permit changes in the event of a conflict
 - a. Notify Engineer and Owner in case of a conflict
 - b. In case of a conflict, the proposed work may be changed by Engineer
 4. Maintain, protect, and support by shoring, bracing or other means existing utilities and appurtenances
- C. Verify existing system operation, pressures, and valve settings (open or closed) prior to construction

PART 2 PRODUCTS

2.1 PIPE, FITTINGS, AND ACCESSORIES

- A. Comply with the most current City of Grand Junction standards and specifications for the public water system products and accessories.

END OF SECTION

SECTION 02676

DISINFECTION OF WATER SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Disinfection of potable water piping, potable water storage facilities, treatment unit equipment and piping, pumping equipment and piping; testing and reporting results

1.2 RELATED SECTIONS

- A. Section 02510 – Water Distribution System

1.3 REFERENCES

- A. American Water Works Association (AWWA):
 1. B300 – Standard for Hypochlorites
 2. B301 – Standard for Liquid Chlorine
 3. C651 – Disinfecting Water Mains
 4. C652 – Disinfection of Water Storage Facilities
 5. C653 – Disinfection of Water Treatment Plants
- B. National Sanitation Foundation (NSF):
 1. Standard 60 – Drinking Water Treatment Chemicals – Health Effects

1.4 SUBMITTALS

- A. Test Reports: Indicate results comparative to specified requirements

1.5 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Section 01700
- B. Disinfection report; record:
 1. Type and form of disinfectant used
 2. Date and time of disinfectant injection start and time of completion
 3. Test locations
 4. Initial and 24 hour disinfectant residuals (quantity in treated water) in parts per million (ppm) or milligram per liter (mg/L) for each outlet tested
 5. Date and time of flushing start and completion
 6. Disinfectant residual after flushing in ppm for each outlet tested
- C. Bacteriological (Bac-T) report; record:
 1. Date issued, project name, and testing laboratory name, address, and telephone number
 2. Time and date of water sample collection

3. Name of person collecting samples
4. Test locations
5. Initial and 24 hour disinfectant residuals in ppm for each outlet tested
6. Coliform bacteria test results for each outlet tested
7. Bacteriologist's signature and authority

1.6 QUALITY ASSURANCE

- A. Perform work in accordance with AWWA C651, C652, C653, and the Colorado Department of Public Health and Environment (CDPHE)

1.7 REGULATORY REQUIREMENTS

- A. Conform to AWWA C651, C652, C653, the City of Grand Junction as appropriate, and CDPHE regulations for performing the work of this Section

PART 2 PRODUCTS

2.1 DISINFECTION CHEMICALS

- A. Calcium and sodium hypochlorite shall conform to AWWA B300 and B301
- B. Store hypochlorite in a cool, dark place away from flammable materials

PART 3 EXECUTION

3.1 CLEANING

- A. Verify that piping has been cleaned and inspected
- B. Verify that piping has been successfully pressure tested and flushed
- C. Perform scheduling and disinfection activity with start-up, testing, adjusting, demonstration procedures, including coordination with related systems

3.2 DISINFECTION

- A. Provide and attach required equipment to perform the work of this Section
- B. Tablet, continuous, or slug disinfection may be followed in accordance with AWWA C651
- C. The preferred method is continuous disinfection, summarized as follows:
 1. Inject treatment disinfectant, free chlorine in liquid form into piping system to obtain 50 to 80 ppm residual
 2. Bleed water from outlets to ensure distribution and test for disinfectant residual
 3. Maintain disinfectant in system for 24 hours

4. If final disinfectant residual tests less than 25 ppm, repeat treatment.
5. Flush, circulate and clean until residual equal to that of incoming potable water or 1.0 mg/L is achieved

D. Replace permanent system devices removed for disinfection

3.3 FINAL FLUSHING

A. Maintain a flushing velocity of 2.5 feet per second in piping

B. Collect chlorinated water for proper disposal and/or dechlorinate to less than 0.1 ppm free chlorine prior to discharge in accordance with State, County, and local regulations

C. City of Grand Junction to provide and pay for flushing water

3.4 FIELD QUALITY CONTROL

A. After final flush, and before main or equipment is placed in service, collect water samples from representative points along the main or from the equipment and field test for chlorine residual

B. Chlorine residual shall be within 50 percent of the chlorine residual prevailing in the source

C. If initial disinfection fails to provide satisfactory samples, repeat disinfection until satisfactory samples have been obtained

3.5 TESTING AND ACCEPTANCE

A. The Contractor will perform Bac-T sampling and testing after pipes have been disinfected and flushed as specified in Section 02510

B. If any portion of the piping or equipment fails Bacteriological testing, the Contractor is responsible for repeating disinfection procedures until passing Bac-T test is obtained

C. Contractor shall provide and pay for services of a certified laboratory to complete Bac-T testing

D. Submit test reports per Section 01700

END OF SECTION

SECTION 02740
FLEXIBLE PAVING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Full depth and/or composite hot bituminous pavement (asphalt) over prepared subgrade
- B. Overlay, patch and/or pavement rehabilitation applications for streets, parking lots and other miscellaneous asphalt pavement

1.2 RELATED SECTIONS

- A. Section 02300 – Earthwork
- B. Section 02750 – Rigid Paving

1.3 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. T 230: Standard Method of Test of Determining Degree of Pavement Compaction of Bituminous Aggregate Mixtures
- B. American Society for Testing and Materials (ASTM):
 - 1. C29: Unit Weight and Voids in Aggregate
 - 2. C88: Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
 - 3. C117: Materials Finer than No. 200 Sieve in Mineral Aggregates by Washing
 - 4. C128: Specific Gravity Test and Absorption of Fine Aggregate
 - 5. C131: Resistance to Degradation of Small Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
 - 6. C136: Sieve or Screen Analysis of Fine and Coarse Aggregates
 - 7. D70: Specific Gravity of Semi-Solid Bituminous Materials
 - 8. D2726: Bulk Specific Gravity of Compacted Bituminous Mixtures
 - 9. D2041: Theoretical Maximum Specific Gravity of Bituminous Paving Mixtures
 - 10. D4462: Viscosity of Asphalts (Bitumens)
 - 11. D2172: Quantities Extraction of Bitumens from Bituminous Paving Mixtures
 - 12. D2419: Sand Equivalent Value of Soils and Fine Aggregate
 - 13. D290: Bituminous Mixing Plant Inspection
 - 14. D6373: Performance Graded Asphalt Binder
 - 15. D692: Course Aggregate for Bituminous Paving
 - 16. D1073: Fine Aggregate for Bituminous Paving Mixtures
 - 17. D1241: Materials for Soil-Aggregate Subbase, Base and Surface Courses
 - 18. D2026: Cutback Asphalt (Slow-Curing Type)
 - 19. D2027: Cutback Asphalt (Medium-Curing Type)

- 20. D2028: Cutback Asphalt (Rapid-Curing Type)
- 21. D2950: Density of Bituminous Concrete in Place by Nuclear Methods

- C. Surface Preparation Standards (SSPC):
 - 1. SP-2: Superior Performing Asphalt Pavement System (Superpave) Level 1 Mix Design
- D. Colorado Department of Transportation
- E. Colorado Asphalt Pavement Association
- F. City of Grand Junction construction specifications, standards and details.

1.4 SUBMITTALS

- A. Submit under provisions of Division One Specifications
- B. Record of Work: Maintain record of time and date of placement, temperature, and weather conditions, retain until completion and furnish copy to engineer.
- C. Proposed Design Job Mix Formula for each mixture required by the contract. The mixture design shall be determined using AASHTO T-312 or Colorado Procedure CP-L 5115 for the Superpave Method of Mixture Design.
- D. Test Reports: Proposed Design Job Mix testing shall be performed in a materials laboratory under the direct supervision of; and shall be stamped and signed by a Professional Engineer licensed in the State of Colorado practicing in this field. In addition, the General Contractor shall submit as part of the Proposed Design Job Mix, documents to verify the following:
 - 1. Source of materials
 - 2. Gradation, specific gravity, source and description of individual aggregates and the final blend
 - 3. Aggregate physical properties
 - 4. Source and Grade of the Performance Graded Binder (PG Binder)
 - 5. Proposed Design Job Mix – aggregate and additive blending, final gradation shown on 0.45 power graph, optimum asphalt content
 - 6. Required mixing and compaction temperatures
 - 7. Mixture properties determined at a minimum of four asphalt contents and interpolated at optimum and graphs showing mixture properties versus asphalt content.
 - 8. Sampling and testing of asphalt concrete mixtures for quality control during paving operations
 - a. Uncompacted asphalt concrete mix
 - i) Asphalt cement content: ASTM D2172 (AASHTO T164)
 - ii) Maximum Specific Gravity: ASTM D2041 (AASHTO T209)
 - b. Compacted asphalt concrete mix
 - i) Bulk density: ASTM D1188 (AASHTO T166)
 - c. Perform at least one test for each day's paving but not less than one test per each 4000 sf of each lift.

1.5 QUALITY ASSURANCE

- A. Materials and installation shall conform to applicable portions of Colorado Department of Transportation (CDOT) and City of Grand Junction construction specifications, standards and details.

1.6 REGULATORY REQUIREMENTS

- A. For work on public streets or rights-of-way conform to the requirements of City of Grand Junction construction specifications, standards and details for the construction of concrete, curbs, gutters, sidewalks, driveways, roadways, street paving, and other public right-of-way Improvements.
- B. Comply with applicable requirements of CABO/ANSI A117.1 for accessibility requirements related to walks, ramps, parking areas, drives, curb ramps, etc.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, protect and handle materials under provisions of Division One Specifications
- B. Transport mixture from mix plant in trucks with tight, clean, smooth, non-sticking compartments. Thinly coat hauling compartments with lime-water mixture, paraffin oil or other approved release agent to prevent sticking. Petroleum distillates such as kerosene or fuel oil are not approved release agents. Elevate and drain compartment of excess solution before loading mix.
- C. Cover to protect from weather and prevent loss of heat
- D. Provide insulated truck beds during temperature below 50 degrees F on long distance deliveries

1.8 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply when underlying surface is muddy, frozen or wet
- B. Weather conditions permit pavement to be properly placed and compacted
- C. The hot mix asphalt will be placed only when both the air and surface temperatures are equal to or exceed the temperatures specified in the table below:

CDOT Table 401-3: Placement Temperature Limitations in F

Compacted Layer Thickness (Inches)	Minimum Air and Surface Temp. (Degrees F and rising)	
	Top Layer	Other Layers
1½ or less	60	50
>1½ to 3	50	40
3 to 4	45	35

Note: Air temperature shall be taken in the shade. Surface is defined as the existing base on which the new pavement is to be placed.

PART 2 PRODUCTS

2.1 MATERIALS

- A. General: Pavement shall be asphalt of the plant hot mix type. Materials and construction shall comply with Section 403 and 702 of the CDOT Standards and Specifications for Road and Bridge Construction.
- B. Tack Coat:
 - 1. SS-1 or CSS-1h
 - 2. AASHTO M208 or M140
- C. Asphaltic Cement:
 - 1. Superpave Performance Graded (PG) binder of PG64-22 or PG58-28 Table 702-1 of CDOT standard section 702
 - 2. Will not be acidic modified or alkaline modified
 - 3. Will not contain any used oils that have not been refined
 - 4. Modifiers will not be carcinogenic
- D. Aggregate for Asphaltic Concrete, General
 - 1. Sound, angular crushed stone, crushed gravel, or crushed slag: ASTM D692
 - 2. Sand, stone, or slag screening: ASTM D1073
 - 3. Percent wear: ASTM C131, less than 45 for aggregates retained in #10 sieve
- E. Base Course Aggregates for Asphaltic Concrete
 - 1. Uncrushed gravel may be used in mixture if it meets design criteria specified
 - 2. Provide uniform quality combined aggregates with a minimum sand equivalent value of 40
 - 3. Provide aggregate in gradations for courses to comply with Class S and SG, Colorado Department of Transportation, ASTM C136
- F. Surface Course Aggregates for Asphaltic Concrete
 - 1. Provide natural sand, unless sand prepared from stone, slag, or gravel or combinations are required to suit local conditions
 - 2. Provide uniform quality combined aggregate with a minimum sand equivalent value of 50
 - 3. Provide aggregate in gradations for courses to comply with Class SX, Colorado Department of Transportation, ASTM C136.
- G. Hydrated Lime for Aggregate:
 - 1. May be added at the rate of 1% by dry weight of the aggregate and shall be included in the amount of material passing the No. 200 sieve. Hydrated lime for aggregate pretreatment will conform to ASTM C207, Type N. Residue retained on a No. 200

sieve will not exceed 10% when determined in accordance with ASTM C110. Drying of the residue in an atmosphere free from carbon dioxide will not be required.

- H. Weed Control: First application, "Roundup." Second application, Casoron "W-50" or "G-10" with colored marker dye, manufactured by Pacific Coast Borax Company or an accepted substitute of non-flammable type.

2.2 ACCESSORIES

A. Traffic Control Devices

1. Signs.

- a. Comply with City of Grand Junction standards and specifications for signs within the public right-of-way.
- b. Sign faces, posts and bases shall be in conformance with the following materials specifications. All nonstandard sign faces, posts and bases must be approved by City of Grand Junction. Private property or nonstandard signs will be maintained by the owner. Submit shop drawings for approval prior to fabrication. All signs shall conform to current M.U.T.C.D. Standards and Colorado Supplements. All signs shall be 3M-engineer grade reflective sheeting or accepted substitute.
- c. Traffic/Parking Signs: Sign blanks shall be 6061 or 5052-H38 aluminum alloy .080 inches thick. Facing shall be specified reflective sheeting with standard sign colors based on standard graphics and as shown on the plans.

2. Sign Posts.

- a. For large signs greater than 12"W x 18"H and for multiple signs of any size mounted on the same post: sign posts shall be two (2) inch by two (2) inch galvanized telespar tube.
- b. For regular single signs 12"W x 18"H or smaller: sign posts shall be one and one-half (1-1/2) inch by one and one-half (1-1/2) inch galvanized telespar tube.
- c. Galvanized telespar tube shall have 0.120-inch wall thickness, and three-eighths (3/8) inch holes drilled on one (1) inch centers, all sides over full length, ten (10) feet in length (min).

- 3. Sign Post Anchor Bases (Stubs). All sign post anchor bases shall be twist resistant square galvanized telespar tube post with thickness and hole pattern the same as sign posts. Use 2-1/4" by 2-1/4" anchor for large posts and 1-3/4" by 1-3/4" anchor for regular posts. Bases shall be embedded a minimum of 36" below finished grade and shall extend 3" above finished grade.

- 4. Signs Post Anchor Bases with concrete footing: Sign, post, base and compacted soil shall be rigid and able to withstand wind loads. Where predominantly clay soils are present which will not properly compact at sign base, install a 6" diameter by 36" deep concrete footing around signs post anchor base for all signs in landscaped areas.

- 5. All signs and posts shall be mounted and secured with municipal-approved vandal-proof type TL-3896 drive rivets with washers, or accepted substitute.

- B. Pavement Marking. Specified pavement marking materials shall be used at locations as identified below.

1. Comply with City of Grand Junction standards and specifications for pavement marking within the public right-of-way. If there are no City of Grand Junction R-O-W standards, use CDOT standards.
2. FS TT-P-1952, Type I Alkyd, white, blue, yellow and red color paint meeting requirements of CDOT Standard Specification 708. Verify colors and extent of painting prior to painting. Unless noted on plans, evident at existing striping or instructed, provide white in color for traffic striping, parking stalls, and other control markings on internal pavement, yellow in color for traffic control markings or restricted parking or where indicated, blue in color for accessible parking stalls, and red in color for curbs where no parking is indicated. Reflectorized paint required for traffic stripes and control markings on internal drive, road or street pavements.
3. Furnish paint with a no-pick-up maximum drying time of 20 minutes, when tested according to ASTM D711 using a wet film thickness of 0.015-inch when tested and applied at 77 degrees F.
4. 3M Stamark 5730 preformed plastic marking material or an accepted substitute shall be used for crosswalks, stop bars, symbols (i.e. turn arrows) and striping for separation of turn and through lanes in right-of-way. Use of thermoplastic pavement marking is not permitted.

2.3 MIXES/SOURCE QUALITY CONTROL

- A. Determine full depth design mix based upon aggregates furnished
 1. Test mix by independent laboratory at Contractor's expense
 2. Grade dependent on temperature during placement
 3. Submit mix designs under provisions of Division One specifications for review and acceptance by Engineer
- B. Submit mix design giving unit weight and to meet following requirements prior to placement of asphalt:

Property	S(75)	SX(75)
Air Voids in Mix, % (N Design)	3.5-4.5	3.5-4.5
Initial Gyrations	7	7
Design Gyrations	75	75
Hveem Stability	28 min	28 min
Voids Filled w/ Asphalt	65-80	65-80

Establish a single percentage passing each sieve size, a single percent of asphalt and a mix temperature. Maintain job mixes within following percentages of design mix:

Aggregates:	
¾" and larger	± 6%
#4 to #8	± 5%
#30	± 4%
#200	± 2%

Asphalt Content Tolerance ± 0.3%
Discharge Mix temp ± 20° F

PART 3 EXECUTION

3.1 EXAMINATION

- A. Establish and maintain required lines and elevations. Provide grade and location stakes under this section as required for asphaltic concrete paving work.
- B. Operate heavy, rubber-tired front loader over subgrade of paved areas. Where soft spots occur, remove loose materials and replace with Class 6 road base aggregate complying with CDOT standards compacted to level of subgrade.

3.2 PREPARATION

- A. Prepare subgrade under provisions of Section 02300
- B. Loose and Foreign Material
 - 1. Remove loose and foreign material from compacted subgrade surface immediately before application of paving. Clean surface with mechanical sweeper, blowers, or hand brooms, until surfaces are free from dust
- C. Weed Control
 - 1. If weeds or vegetation exist at or on the subgrade, apply “Round-up” at rates following manufacturer’s instructions. Apply “Round-up” three days prior to removal of vegetation, subgrade preparation and application of Casoron as described below to allow “Round-up” to kill all vegetation. Remove all living and dead weeds, root balls, tree/shrub roots, vegetation, and/or any organic matter from on or in the subgrade per applicable earthwork specifications prior to subgrade preparation and paving at all areas to be paved.
 - 2. After all fine grading, checking, shaping, and compacting of the subgrade has been completed, and just prior to placing asphalt or aggregate base course, all subgrade soil in the area to receive asphalt pavement shall be thoroughly treated with Casoron soil sterilant (in addition to “Round-up” and regardless of presence of existing weeds or vegetation). Casoron shall be thoroughly sprinkled to distribute the chemical through the first two or three inches of the subgrade. For all areas to be paved, apply Casoron weed control at a minimum rate per 100 square yards of 2.4 pounds for G-10 or 4.0 pounds for 50w at rates and methods recommended by manufacturer within one day of paving.
 - 3. The Contractor shall provide all necessary protection to prevent injury to animal, fish, or plant life and property occasioned by the application of the soil sterilant. Apply on a calm, wind-free day. The Contractor will be held responsible for all application of soil sterilant or the storage of same. Protect existing and new trees and shrubs beyond the limit of paving from damage due to weed killer or soil sterilant overspray or root

contact. Extra caution is required to prevent over-application of products in areas to be paved under tree canopies. Trees and shrubs damaged or killed by weed killer or sterilant application shall be replaced by the contractor at contractor's expense.

4. Do not apply within 20 feet of trees or shrubs

D. Tack Coat

1. Apply in similar manner as prime coat, except as modified
2. Dilute material with equal parts of water and apply to contact surfaces of previously constructed asphaltic concrete or portland cement concrete and surfaces
3. Apply at rate of 0.05 to 0.15 gallons per square yard of surface
4. Apply tack coat by brush to contact surfaces of curbs, gutters, catch basins, and other structures projecting into or abutting asphaltic concrete pavement
5. Allow surfaces to dry until material is at condition of tackiness to receive pavement
6. Where asphaltic concrete will adhere to surface, tack coat may be eliminated by Engineer

3.3 COLD MILLING

- A. Clean existing pavement surface of loose and deleterious material immediately before cold milling. Remove existing asphalt pavement by cold milling to grades and cross sections indicated.
 1. Mill to minimum depth of 1 ½-inches, or as indicated on the plans.
 2. Mill to a uniform finished surface free of gouges, grooves, and ridges of more than ¼ inch depth.
 3. Control rate of milling to prevent tearing of existing asphalt course.
 4. Repair or replace curbs, manholes, and other construction damaged during cold milling.
 5. Excavate and trim unbound-aggregate base course, if encountered, and keep material separate from milled hot-mix asphalt.
 6. Transport milled hot-mix asphalt to asphalt recycling facility.
 7. Keep milled pavement surface free of loose material and dust.

3.4 RING/FRAME ADJUSTMENTS

- A. Set ring/frames of subsurface structures to final grade as a part of this work.
- B. Placing Ring/Frames
 1. Surround ring/frames set to elevation with a ring of compacted asphalt concrete base prior to paving
 2. Place asphalt concrete mixture up to 1-inch below top of ring/frame, slope to grade, and compact by hand tamping
- C. Adjust frames to proper position to meet paving
- D. If permanent covers are not in place, provide temporary covers over openings until completion of rolling operations
- E. Set ring/frames to grade, flush with surface of adjacent pavement

3.5 PREPARING THE MIXTURE

- A. Comply with ASTM D995 for material storage, control, and mixing and for plant equipment and operation
- B. Stockpile
 1. Keep each component of the various sized combined aggregates in separate stockpiles
 2. Maintain stockpiles so that separate aggregate sizes will not be intermixed and to prevent segregation
- C. Heating
 1. Heat the asphalt cement at the mixing plant to viscosity at which it can be uniformly distributed throughout mixture
 2. Use lowest possible temperature to suite temperature viscosity characteristics of asphalt
 3. Do not exceed 350 degrees F
- D. Aggregate
 1. Heat-dry aggregates to acceptable moisture content
 2. Deliver to mixer at recommended temperature to suite penetration grade and viscosity characteristics of asphalt cement, ambient temperature, and workability of mixture
 3. Accurately weigh or measure dry aggregates and weigh or meter asphalt cement to comply with job-mix formula requirements
- E. Mix aggregate and asphalt cement to achieve 90-95 percent coated particles for base mixtures and 85-90 percent coated particles for surface mixture, per ASTM D2489

3.6 EQUIPMENT

- A. Bituminous Pavers:
 1. Self-propelled, spreads without tearing surfaces, equipped with an activated screed assembly, heated if necessary, controls pavement edges to true lines without use of stationary forms and capable of spreading and finishing the asphalt plant mix material in widths applicable to the typical sections and thicknesses shown in the contract documents.
 2. Pavers used for roadway shoulders, recreational paths and similar construction will be capable of spreading and finishing the courses of asphalt plant mix material in width shown in the contract documents.
 3. Pavers will be equipped with automatic screed controls with sensors capable of sensing grade from an outside reference line, and maintaining the screed at the specified longitudinal grade and transverse slope. The sensor will be constructed to operate from either or both sides of the paver and will be capable of working with the following devices:
 - a. Ski-type device at least 30 feet in length
 - b. Short ski or short shoe
 - c. At least 5,000 feet of control line and stakes

4. The controls will be capable of maintaining the screed at the specified transverse slope within plus or minus 0.1 percent.
5. Manual operation will be permitted:
 - a. For constructing irregularly shaped or minor areas
 - b. If the automatic controls fail or malfunction the equipment may be operated manually for the remainder of the normal working day, provided specified results are obtained. However, if specified surface tolerances cannot be achieved, paving operations will be suspended until satisfactory correction, repairs of equipment replacements are made.
6. Placement of hot mix asphalt on a waterproofed bridge deck shall be accomplished with equipment that will not damage the membrane or other protective covering

B. Rolling Equipment

1. Steel-wheel roller: Self-propelled, contact pressure of 250 to 350 psi per inch of width of roller wheel, equipped with adjustable scrapers and means for keeping wheel wet to prevent mix from sticking
2. Pneumatic-tired rollers: Self-propelled, contact pressure under each tire of 85 to 110 psi, wheels spaced so that one pass will accomplish one complete coverage equal to rolling width of machine, oscillating wheels. Remove and replace immediately tires picking up fines

C. Hand Tools: Provide rakes, lutes, shovels, tampers, smoothing irons, pavement cutters, portable heaters, and other miscellaneous small tools

3.7 PLACING THE MIX

- A. Place asphalt concrete mixture on prepared surface, spread and strike-off using paving machine
- B. Complete placement over full width of section on each day's run
- C. Spread mixture at minimum temperature specified by CDOT Table 401-5 for the specific binder used in the asphalt mix:
 1. PG 64-22: 320 F minimum mix discharge temperature, 235 F minimum delivered mix temperature
 2. PG 58-28: 275 F minimum mix discharge temperature, 235 F minimum delivered mix temperature
 3. The maximum mix discharge temperature will not exceed the minimum discharge temperature by more than 30 F.
 4. Delivered mix temperature will be measured behind the paver screed
 5. Hot asphalt mixture will be produced at the lowest temperature with the specified temperature range:
 - a. producing a workable mix and provides for uniform coating of aggregates, in accordance with AASHTO T195
 - b. allowing the required compaction to be achieved
- D. Inaccessible and small areas may be placed by hand

E. Conform to the grade, cross section, finish thickness, and density indicated.

F. Lift Thickness

1. Place in multiple lifts. Place asphalt in lifts such that each compacted lift thickness is no less than 2.0" thick and no greater than 3.0" thick. Top lift to be 2" thick.
2. Typical Lift Thickness Sequencing:

Final Asphalt Section Required (inches)	No. of Lifts	Thickness of each Lift (inches) from bottom to top lift
2"	1	2
3"	1	3
4"	2	2-2
5"	2	3-2
6"	3	2-2-2
7"	3	3-2-2
8"	3	3-3-2
9"	4	3-2-2-2
10"	4	3-3-2-2
>10	Review with Engineer	

G. Paver Placing

1. Unless otherwise directed, being placing along centerline of areas in crowned section and at high side on one-way slope and in direction of traffic flow
2. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips
3. Complete base courses before placing surface courses
4. Place mixture in continuous operation as practicable

H. Hand Placing

1. Spread, tamp, and finish mixing using hand tools in areas where machine spreading is not possible as acceptable to Engineer
2. Place mixture at a rate that will insure handling and compaction before mixture becomes cooler than acceptable working temperature

I. Joints

1. Construct transverse joint at right angles to centerline when operations are suspended long enough for mixture to chill
2. Construct joints to have same texture, density, and smoothness as adjacent sections of asphalt concrete course
3. Clean contact surfaces free of sand, dirt, or other objectionable material and apply tack coat
4. Offset transverse joints in succeeding courses not less than 24 inches
5. Cut back edge of existing pavement or previously placed course to expose an even, vertical surface for full course thickness
6. Offset longitudinal joints in succeeding courses not less than 6 inches

7. When the edges of longitudinal joints are irregular, honeycombed or inadequately compacted, cut back unsatisfactory sections to expose an even, vertical surface for full course thickness
 8. Wearing course constructed in even number of strips; place 1 longitudinal joint on centerline of road
 9. Wearing course constructed in odd number of strips; place the centerline of 1 strip on centerline of road
- J. Gutter: Finish surface high adjacent to concrete gutter so when compacted surface is **1"** higher than edge of curb and flashing.

3.8 COMPACTING THE MIX

- A. All paving will be compacted to 94 +/- 2% of Maximum Theoretical (RICE) density, CP-51 or AASHTO T209: Maximum Specific Gravity of Bituminous Paving Mixtures, as determined by ASTM D 2950. RICE values will be used in calculating Relative Compaction according to CP-44 or AASHTO T166.
- B. Provide pneumatic and steel-wheel type rollers to obtain the required pavement density, surface texture and rideability
- C. Begin rolling operations when the mixture will bear weight of roller without excessive displacement and complete as quickly as possible after placement occurs.
- D. Compaction operations will be continuous until the required density is achieved or the density requirements are not met and the mix temperature falls below 185° F or there is obvious surface distress or breakage. Minimum compaction temperatures may be adjusted according to the asphalt binder supplier recommendations. Adjusted minimum compaction temperatures must be shown on the approved mix design or on the asphalt binder supplier documentation kept on file at the jobsite.
- E. Do not permit heavy equipment, including rollers to stand on finished surface before it has thoroughly cooled or set
- F. Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers
- G. Start rolling longitudinally at extreme lower side of sections and proceed toward center of pavement. Roll to slightly different lengths on alternate roller runs
- H. Do not roll centers of sections first under any circumstances
- I. Breakdown Rolling
 1. Accomplish breakdown or initial rolling immediately following rolling of transverse and longitudinal joints and outside edge
 2. Operate rollers as close as possible to paver without causing pavement displacement
 3. Check crown, grade, and smoothness after breakdown rolling

4. Repair displaced areas by loosening at once with lutes or rakes and filling, if required, with hot loose material before continuing rolling

J. Second Rolling

1. Follow breakdown rolling as soon as possible, while mixture is hot and in condition for compaction
2. Continue second rolling until mixture has been thoroughly compacted

K. Finish Rolling

1. Perform finish rolling while mixture is still warm enough for removal of roller marks by combination of steel and pneumatic rollers
2. Continue rolling until roller marks are eliminated and course has attained specified density, and required surface texture and surface tolerances
3. After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened. Erect barricades to protect paving from traffic until mixture has cooled and attained its maximum degree of hardness

L. Patching

1. Remove and replace defective areas
2. Cut-out and fill with fresh, hot asphaltic concrete
3. Remove deficient areas for full depth of course
4. Cut sides perpendicular and parallel to direction of traffic with edges vertical
5. Apply tack coat to exposed surfaces before placing new asphaltic concrete mixture
6. Compact by rolling to specified surface density and smoothness

3.9 JOINING TO EXISTING WORK

- A. Cut sides vertically and apply tack coat to exposed asphalt surfaces before placing new pavement. Meet existing thickness of surface and base courses, but not less than specified for new work.
- B. All joins shall be compacted to 92.0% +/- 2.0% of RICE, taken fully on each side of joint, every 200 lineal feet. RICE values shall be used in calculating Relative Compaction according to AASHTO T166.

3.10 FIELD QUALITY CONTROL

- A. Coordinate testing with Owner. Owner will employ testing agency for field testing to determine compliance of in-place and backfill materials and compaction in accordance with the specifications, and to verify design bearing capacities, for QA purposes only. Refer to 1.12 and 1.13 in Section 01400: Quality Control for designation of QA vs QC responsibilities.
- B. It is the Contractor's responsibility to initiate, coordinate and accommodate all required tests and inspections including conformance with requirements of all applicable public agencies and authorities. Contractor will be responsible for coordinating the testing schedule with the Owner so to provide the testing agency contractually required, 24-hour, one business day, advance notification to schedule tests. Refer to City's General Contract

Conditions – VII.66: Inspection of Work and City’s Standard Specifications for Road and Bridge Construction – Quality Control and Quality Assurance.

- C. Testing Agency will test in-place pavement for density and thickness.
- D. Asphalt density testing:
 - 1. Every one-hundred fifty (150) lineal feet per driving lane.
 - 2. Every 2,000 square feet of parking lot
 - 3. Densities shall be between ninety-two percent (92%) and ninety-six percent (96%) of the RICE unit weight
- E. Contractor to verify final surfaces are of uniform texture, conforming to required grades and cross sections
- F. The Contractor will core the pavement as required by the testing agency for field density tests in accordance with AASHTO T 230, Method B, or for field calibration of nuclear density equipment in accordance with ASTM D 2950.
 - 1. Testing agency will take not less than 4-inch diameter pavement specimens
 - 2. At the testing agency’s discretion, cores may be required at the beginning of placement of each pavement layer or change of mixture materials or gradation.
 - 3. Untested areas during placement will require cores to be taken to verify compaction
 - 4. Contractor to repair holes from test specimens
- G. For each completed course or from locations directed by the testing agency, and at a minimum, a representative asphalt pavement sample shall be taken from the first one thousand (1,000) tons, and all mix properties shall be verified. The percent voids filled with asphalt cement, Hveem stability, and Lottman shall be verified at a minimum of every ten-thousand (10,000) tons. Asphalt testing shall comply with ASTM D1559. Two copies of all test reports shall be submitted directly to the Engineer.
- H. Acceptable density of in-place course materials is between 92 and 96 percent of the recorded laboratory RICE unit weight. Immediately re-compact asphaltic concrete not conforming to acceptable density. Remove and replace all sections not in conformance density requirements
- I. Thickness: Variations from drawings
 - 1. Base course: 1/4-inch +
 - 2. Remove and replace paving less than minimum thickness
- J. Grade Tolerance: ± 0.1 feet
- K. Surface Smoothness
 - 1. Test using a 10-foot straight edge applied parallel to direction of drainage
 - 2. Advance straight edge five feet, maximum 1/4-inch per foot from nearest point of contact
 - 3. Do not permit pockets or depressions where water may pool
 - 4. Remove and replace areas, deficient in smoothness. Overlay corrections may be permitted only if acceptable to Engineer

- L. Inspection: The work of this section is subject to the inspection and approval of the engineer and/or owner. The following inspections are required:
 - 1. Protection of adjacent property
 - 2. Staking and establishment of elevations
 - 3. Establishment and compaction of subgrade
 - 4. Placement and compaction of bituminous base course and wearing surface
 - 5. Final inspection
 - 6. Obtain approval of each element of work listed above in sequence of its completion before proceeding with the next item

3.11 CLEANING

- A. After completion of paving operations, clean surfaces of excess or spilled asphalt materials to the satisfaction of Engineer

3.12 PROTECTION OF FINISHED WORK

- A. After final rolling, do not permit vehicular traffic on asphalt concrete pavement until it has cooled and hardened and in no case sooner than 6 hours
- B. Provide barricades and warning devices as required to protect pavement and the general public

3.13 WARRANTY

- A. Provide installer's 2-year written warranty endorsed by the contractor warranting the pavement from creeping, shoring, cracking, softening, settling, ponding and other defects due to improper placing or defective materials. Replace defective materials upon notification by the owner in accordance with the requirements of the original work.

3.14 SCHEDULE OF MIX PLACEMENT

- A. Refer to Drawings for asphalt thickness and subgrade requirements.

END OF SECTION

SECTION 02750

RIGID PAVING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Forming, jointing, placing and curing of concrete pavements, curbs, gutters, cross pans, islands and sidewalks.

1.2 RELATED SECTIONS

- A. Section 02300 – Earthwork

1.3 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. M171 – Sheet Materials for Curing Concrete
- B. American Concrete Institute (ACI):
 - 1. 214 – Recommended Practice for Evaluating Compression Test Results of Field Concrete
 - 2. 301 – Specifications for Structural Concrete for buildings
 - 3. 304 – Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete
 - 4. 305/305R – Hot Weather Concreting
 - 5. 306/306R – Cold Weather Concreting
 - 6. 308 – Standard Practice for Curing Concrete
- C. American Society for Testing and Materials (ASTM):
 - 1. A1064 – Carbon Steel Wire and Welded Wire Reinforcement, Plain and Deformed for Concrete
 - 2. A615 – Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
 - 3. C31 – Making and Curing Concrete Test Specimens in the Field
 - 4. C33 – Concrete Aggregates
 - 5. C39 – Test Method for Compressive Strength of Cylindrical Concrete Specimens
 - 6. C94 – Ready Mix Concrete
 - 7. C143 – Test Method of Slump of Hydraulic Cement Concrete
 - 8. C150 – Portland Cement
 - 9. C260 – Air-Entraining Admixtures for Concrete
 - 10. C309/AASHTO M148 – Liquid Membrane-Forming Compounds for Curing Concrete
 - 11. C494 – Chemical Admixtures for Concrete
 - 12. C618 – Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
 - 13. C979 – Pigments for Integrally Colored Concrete

14. C1116 – Fiber Reinforced Concrete
15. D994 – Preformed Expansion Joint Filler for Concrete (Bituminous Type)
16. D1751 – Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction
17. D1752 – Preformed Sponge Rubber Cork Expansion and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction
18. D6690 – Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements
19. D7508 – Polyolefin Chopped Strands for Use in Concrete

D. CABO/ANSI A117.1 for accessibility requirements related to walks, ramps, parking areas, drives, curb ramps, etc.

E. The City of Grand Junction construction specifications, standards and details.

1.4 SUBMITTALS

A. Provide under provisions of Division One Specifications

B. Product Data: Provide sufficient information on mix design and products specified to verify compliance with specifications. Provide data on joint filler admixtures and curing compounds

1. Existing data on proposed design mixes, certified and complete
2. Submit reports of field quality control testing

1.5 QUALITY ASSURANCE

A. Perform work in accordance with ACI 301, Conform materials and installation to applicable portions of Colorado Department of Transportation, and the City of Grand Junction construction specifications, standards and details.

1.6 REGULATORY REQUIREMENTS

A. For work on public streets or rights-of-way conform to the requirements of the City of Grand Junction construction specifications, standards and details for the Construction of Curbs, Gutters, Sidewalks, Driveways, Street Paving, and other public right-of-way Improvements.

B. Comply with applicable requirements of CABO/ANSI A117.1 for accessibility requirements related to walks, ramps, parking areas, drives, curb ramps, etc.

C. Obtain cementitious materials and aggregate from same source for all work

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect and handle materials under provisions of Division One Specifications

- B. Reinforcing steel: Store on supports which will keep materials from contact with the ground and cover
- C. Rubber and plastic materials: Store in a cool place, do not expose to direct sunlight
- D. Prepare a delivery ticket for each load of ready-mixed concrete
- E. Contractor shall submit tickets for all concrete delivered to site:
 - 1. Quantity delivered
 - 2. Actual quantity of each material in batch
 - 3. Outdoor temp in the shade
 - 4. Time at which cement was added
 - 5. Numerical sequence of the delivery
 - 6. Quantity of water that can be added in the field based on mix design
 - 7. Free moisture in fine and coarse aggregate in percent by weight
 - 8. Temperature of batch

1.8 ENVIRONMENTAL REQUIREMENTS

- A. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen
- B. Protect concrete from rapid loss of moisture during hot water placement

PART 2 PRODUCTS

2.1 MATERIALS

- A. Form Materials
 - 1. Form Materials: Plywood: PS 1, waterproof resin-bonded, exterior type Douglas Fir; face adjacent to concrete Grade B or better
 - 2. Fiberboard: FS LL-B-810, Type IX, tempered, waterproof, screen back, concrete form hardboard
 - 3. Capable of supporting loads imposed by construction equipment, straight and free from warp. Clean and strong enough to resist pressure of concrete when placed and retain horizontal and vertical alignment. Coat forms with a non-staining form release agent that will not discolor or deface the surface of the concrete
 - 4. Joint filler: ASTM D1751 or D1752 type; 3/4-inch thick unless indicated otherwise
- B. Reinforcement
 - 1. Where reinforcement is specified herein or indicated on the plans:
 - a. Bars: ASTM A615, Grade 60
 - b. Reinforcing Welded Wire Fabric (WWF): ASTM A1064, steel, 16 gage minimum
 - i) Furnish in flat sheets
 - c. Dowels: ASTM A615; 40 ksi yield, Grade 60, plain steel, unfinished finish
 - d. Fibrous reinforcement: Collated, fibrillated, polypropylene fibers, tensile strength 70,000 psi

- i) ASTM C1116 and ASTM D7508
 - ii) Use minimum of 1.5 pounds per cubic yard
 - iii) Fibermesh or accepted substitution
- C. Weed Control: First application, "Roundup." Second application, Casoron "W-50" or "G-10" with colored marker dye, manufactured by Pacific Coast Borax Company or an accepted substitute of non-flammable type.

2.2 ACCESSORIES

- A. Curing Compound: ASTM C309, AASHTO M-148, white pigmented liquid membrane
- B. Joint Sealers: Polyurethane base, elastomeric, self leveling, chemical cure, handling 50% joint movement; Sikaflex-2C-SL or accepted substitutions
- C. Sheet Materials: AASHTO M171, 4 mil
- D. Expansion Joint Material: 0.5-inch thick, ASTM D1751, asphalt impregnated fiber board, glass fiber or sponge, or closed cell polyethylene foam; Texmastic "vinylex 3600," Sonneborn "Sonoflex F," or accepted substitutions

2.3 CONCRETE MIX

- A. Comply with ASTM C94
- B. Maximum Coarse Aggregate Size: 1-inch
- C. Portland Cement: ASTM C150, Type II; 555 pounds minimum per cubic yard of concrete
- D. Water/Cementitious Material (Cement and Fly Ash) Ratio: Less than or equal to 0.45
- E. Slump: 4-inch maximum
 - 1. May be increased to 4.5 inches for hand work, acceptable to Engineer
 - 2. As low as possible consistent with proper handling and thorough compaction
- F. Volumetric Air Content: 6.0%±2% after placement for 1-inch aggregate
 - 1. Vary air content with maximum size aggregate, ASTM C94, Table 3.
- G. Strength: Compressive strength as determined by ASTM C39, 4,500 psi minimum at 28 days
- H. Consistency: Uniform slump, suitable for the placement conditions with aggregate floating uniformly throughout the concrete mass, flowing sluggishly when vibrated or spaded
- I. Adjust mix as required to meet specifications
- J. Approved fly ash may be substituted for ASTM C150 cement up to a maximum of 25 percent Class C or Class F by weight of the cementitious material content. Fly ash for concrete shall conform to the requirements of ASTM C618 with the following exceptions:

1. The loss on ignition shall not exceed 3.0 percent
2. The CaO in Class F fly ash shall not exceed 18 percent

K. Admixtures: Content, batching method, and time of introduction in accordance with the manufacturer's recommendations for compliance with this specification

1. Include a water reducing admixture
2. Calcium chloride content shall not exceed 0.05% of the cement content by weight

2.4 SOURCE QUALITY CONTROL AND TESTS

- A. Provide under provisions of Division One Specifications
- B. Submit proposed mix design to Engineer for review prior to commencement of work
- C. Tests on cement and aggregates will be performed to ensure conformance with specified requirements
- D. Test samples in accordance with ACI 301.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify compacted subgrade is acceptable and ready to support paving and imposed loads
- B. Verify gradients and elevations of base are correct
- C. Check completed formwork for grade and alignment to the following tolerances:
 1. Top of forms not more than 1/8-inch in 10 feet
 2. Vertical face on longitudinal axis, not more than 1/4-inch in 10 feet

3.2 PREPARATION

- A. Subgrade
 1. Prepare subgrade in accordance with Section 02300
 2. Moisten subgrade to depth of 6 inches at optimal moisture not more than 12 hours prior to placement to minimize absorption of water from fresh concrete
 3. Check for soft spots by proof-rolling or other means prior to setting forms. Remove soft yielding material and replace. Compact to specifications under provisions of Section 02300
 4. Check crown and/or elevation of subgrade to assure specified thickness. Compact to specification additional material used to bring to correct elevation. Remove excess material where subgrade is too high
 5. Clean subgrade of all loose materials before placement of concrete. Do not disturb area inside forms after fine grading is complete
 6. Weed Control

- a. If weeds or vegetation exist at or on the subgrade, apply “Round-up” at rates following manufacturer’s instructions. Apply “Round-up” three days prior to removal of vegetation, subgrade preparation and application of Casoron as described below to allow “Round-up” to kill all vegetation. Remove all living and dead weeds, root balls, tree/shrub roots, vegetation, and/or any organic matter from on or in the subgrade per applicable earthwork specifications prior to subgrade preparation and paving at all areas to be paved.
- b. After all fine grading, checking, shaping, and compacting of the subgrade has been completed, and just prior to placing asphalt or aggregate base course, all subgrade soil in the area to receive asphalt pavement shall be thoroughly treated with Casoron soil sterilant (in addition to “Round-up” and regardless of presence of existing weeds or vegetation). Casoron shall be thoroughly sprinkled to distribute the chemical through the first two or three inches of the subgrade. For all areas to be paved, apply Casoron weed control at a minimum rate per 100 square yards of 2.4 pounds for G-10 or 4.0 pounds for 50w at rates and methods recommended by manufacturer within one day of paving.
- c. The Contractor shall provide all necessary protection to prevent injury to animal, fish, or plant life and property occasioned by the application of the soil sterilant. Apply on a calm, wind-free day. The Contractor will be held responsible for all application of soil sterilant or the storage of same. Protect existing and new trees and shrubs beyond the limit of paving from damage due to weed killer or soil sterilant overspray or root contact. Extra caution is required to prevent over-application of products in areas to be paved under tree canopies. Trees and shrubs damaged or killed by weed killer or sterilant application shall be replaced by the contractor at contractor’s expense.
- d. Do not apply within 20 feet of trees or shrubs

B. Frame Adjustment

1. Coat surfaces of manhole and catch basin frames with oil to prevent bond with concrete pavement for concrete collars
2. Set frames of structures in full grout bed to provide bearing. Set to final grade
3. Form construction joints and blockouts as indicated on drawings

3.3 PERFORMANCE AND INSTALLATION

A. Transporting mixed concrete

1. Transporting of mixed concrete shall conform to ACI 305R
2. Do not exceed manufacturer’s guaranteed capacity of truck agitators. Maintain the mixed concrete in a thoroughly mixed and uniform mass during handling
3. Do not incorporate additional mixing water into the concrete during hauling or after arrival at the delivery point, unless ordered by the Engineer. If additional water is to be incorporated into the concrete, revolve the drum not less than 30 revolutions at mixing speed after the water is added and before placing concrete.
4. Furnish a water measuring device in good working condition, mounted on each transit mix truck, for measuring the water added to the mix on the site by the Engineer
5. Provide delivery ticket and comply with delivery requirements of this section

B. Forming

1. Place and secure forms to correct location, dimension, profile, and gradient
2. Install sufficient quantity of forms to allow continuous progress of work so that forms can remain in place at least 24 hours after concrete placement
3. Join neatly and mechanically tamp to assure firm placement. Assemble formwork to permit easy stripping and dismantling without damaging concrete
4. Oil forms prior to concrete placement
5. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement
6. Set dowels, expansion joints, preformed construction joints and header boards as specified or indicated on the drawings
7. Low roll or mountable curbs may be formed without the use of face form by using a straight edge and template to form curb face
8. Backfill behind forms as required to prevent water from entering subgrade

C. Reinforcement

1. Add fiber reinforcement to mix at plant prior to delivery to jobsite. Mixing shall be as recommended by the manufacturer to distribute the product evenly throughout the concrete mix
2. Place bar or WWF reinforcement at mid-height of slabs-on-grade or as shown on the drawings
 - a. Install in as long lengths as possible. Lap adjoining pieces at least one full mesh and lace with wire
 - b. Support with metal chairs, brick or stone is unacceptable
3. Hold all tie and marginal dowels in proper position by sufficient supports or pins
4. Mechanically install dowels or place on supports if center longitudinal joint is sawed in lieu of placing plastic strip
5. Interrupt reinforcement at expansion joints
6. Place dowels to achieve pavement and curb alignment as detailed.
7. Provide doweled joints inch at interruptions of concrete with one end of dowel set in capped sleeve to allow longitudinal movement
8. Grease dowels on one side of joints with caps on greased end

D. Placing concrete

1. Place concrete in accordance with ACI 301
2. Lightly moisten subgrade or base course immediately before placing concrete.
3. Ensure reinforcement, inserts, embedded parts, and formed joints are not disturbed
4. during concrete placement
5. Deposit concrete near final position. Minimize segregation and damage to subgrade
6. Place concrete continuously over the full width of the panel and between predetermined construction joints. Spread mechanically to prevent segregation and separation of materials
7. Consolidate concrete with vibrators and spade next to forms to remove air spaces or honeycombs
8. Do not place concrete in forms that has begun to set
9. Do not place more concrete in one day than can be finished before dark the same day

10. Curbs and Gutters: Automatic machine may be used for curb and gutter placement at Contractor's option. If machine placement is to be used, submit revised mix design and laboratory test results which meet or exceed minimums specified. Machine placement must produce curbs and gutters to required cross-section, lines, grades, finish, and jointing as specified for formed concrete. If results are not acceptable, remove and replace with formed concrete as specified
11. Walks: Construct sidewalks with a minimum thickness of 4-inch. Tool edges to rounded profile and finish as specified or as shown on the drawings. Pitch walks 1/4-inch per foot for cross drainage unless otherwise indicated

E. Cold weather concreting

1. Conform to ACI 306/306R, except as modified herein
2. Minimum concrete temp at the time of mixing

Outdoor Temp at Placement (in shade)	Concrete Temp at Mixing
Below 30°F	70°F
Between 30°F & 45°F	60°F
Above 45°F	45°F

3. Do not place heated concrete which is warmer than 80 degrees F
4. If freezing temp are expected during curing, maintain the concrete temp at or above 50 deg F for 5 days or 70 deg F for 3 days with forms in place
5. Do not allow concrete to cool suddenly

F. Hot weather concreting

1. Conform to ACI 305/305R, except as modified herein
2. At air temp of 90 degrees F and above keep concrete as cool as possible during placement and curing. Fog sprayers or special wetting agents may be required for protection
3. Do not allow concrete temperature to exceed 70 deg F at placement
4. Prevent plastic shrinkage cracking due to rapid evaporation of moisture
5. Do not place concrete when the actual or anticipated evaporation rate equals or exceeds 0.2 lbs per sq ft per hr as determined from ACI 305, Fig 2.1.4

G. Joints

1. Provide concrete joints per CDOT Standard Details
2. Sidewalk and pavement
 - a. Contraction joints: At intervals not to exceed 10 feet and 1 1/2 inches deep, tooled or sawcut
 - b. Expansion joints: 1/2-inch premolded joints where sidewalks end at curb returns, against fixed objects, at points of sharp radius, and between sidewalk and driveway slabs. Place expansion joint at minimum of every 100 feet.
 - c. Construction joints: At all separate pours, and around all appurtenances such as manholes, utility poles, and other penetrations extending into and through sidewalks. Place backer rod and polyurethane sealant for entire joint length
3. Curb and Gutter

- a. Contraction joints: At intervals not to exceed 10 feet made by insertion of 1/8-inch template at right angles to curb and 1 1/2-inch deep.
 - b. Expansion joints: At curb returns, against fixed objects, at points of sharp radius, between adjacent sidewalk and curb at all curb returns, between sidewalk and all driveway slabs, and along straight lengths every 200 linear feet. Install expansion joint filler between concrete sidewalks and any fixed structure. Extend expansion joint material for full depth of concrete, except stop 1/2-inch below finish surface.
 - c. Construction joints: At all separate pours, place backer rod and polyurethane sealant for entire joint length.
4. Place expansion joint filler between paving components and buildings or other appurtenances at temperatures above 50 deg F. Clean all dust, debris and water from joint. Recess top of filler 1/2-inch for sealant placement.
 5. Provide keyed joints as indicated in details.

H. Finishing

1. Run straight-edge over forms with sawing motion to fill all holes and depressions.
2. After striking-off and consolidating concrete, smooth surface by screeding and floating. Use hand methods only where mechanical floating is not possible. Adjust floating to compact surface and produce uniform texture.
3. After floating, test surface for trueness with a 10' straightedge. Distribute concrete as required to remove surface irregularities, and re-float repaired areas to provide a continuous smooth finish
4. Finish surfaces with a wooden or magnesium float. Plastering of surfaces is not permitted
5. Immediately after float finishing, slightly roughen the concrete surface by brooming in the direction perpendicular to the main traffic route. Use fine hair fiber-bristle broom unless otherwise directed. Coordinate the required final finish with the Engineer before application.
6. On inclined slab surfaces and steps, provide a coarse, non-slip finish by scoring surface with a stiff-bristled broom, perpendicular to line of traffic
7. Edge all outside edges of the slab and all joints with a 0.25-inch radius edging tool.
8. Work edges of gutters, back top edge of curb, and formed joints with an edging tool, and round to 0.5-inch radius, unless otherwise indicated. Eliminate tool marks on concrete surface
9. Brush with soft bristle brush to remove trowel marks and leave a uniform appearance just before concrete takes initial set.
10. Direction of Texturing:
 - a. Curb and Gutter: At right angles to the curb line
 - b. Sidewalk: At right angles to centerline of sidewalk.
11. Place curing compound on exposed concrete surfaces immediately after finishing. Apply under pressure at the rate of one gallon to not more than 135 square feet by mechanical sprayers in accordance with manufacturer's instructions acceptable to Engineer.

I. Joint sealing

1. Seal joints and clean concrete prior to opening to traffic.
2. Seal all expansion joints.

3. Separate concrete from other structures with 3/4-inch thick joint filler.
4. Place joint filler in concrete pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
5. Extend joint filler from bottom of pavement to within 1/4-inch of finished surface.

J. Curing and protection

1. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury
2. Have plastic sheeting, straw, burlap and/or canvas materials available at all times to protect fresh uncured surfaces from adverse weather conditions
3. Do not permit pedestrian traffic over sidewalks for 7 days minimum after finishing. Do not permit vehicular traffic over pavement for 14 days minimum after finishing or until 75 percent design strength of concrete has been achieved

3.4 FIELD QUALITY CONTROL

- A. Comply with Division One Specifications - Quality Assurance: Field inspections and testing
- B. It is the Contractor's responsibility to initiate, coordinate and accommodate all required tests and inspections including conformance with requirements of all applicable public agencies and authorities. Contractor will be responsible for coordinating the testing requirement with testing agency and provide testing agency contractually required, regulated, 24 hour, one business day, advance notification to schedule tests.
- C. Tolerances
 1. Division One Specifications - Quality Assurance: Tolerances
 2. Maximum Variation of Surface Grade: 1/4- inch in 10 ft
 3. Maximum Variation from True Alignment: 3/8-inch in 10 ft
- D. Take cylinders and perform slump and air entrainment tests as required by Division One Specifications in accordance with ACI 301. Unit weight and mix temperature will also be taken
- E. The first three loads will be tested for slump and air content. If any one test fails to meet requirements, that load will be rejected and tests will continue on each load until three consecutive loads meet requirements. Thereafter, five concrete test cylinders will be taken for every 75 cu yds or less cu yds of concrete placed each day
- F. One additional test cylinder will be taken during cold weather and cured on site under same conditions as concrete it represents
- G. One slump and air entrainment test will be taken for each set of test cylinders taken
- H. Cylinders will be tested as follows: 2 at 7 days, 2 at 28 days and one at a later date, if necessary, as directed by the Engineer

- I. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken
- J. Thickness of fresh concrete may be checked by Owner at random. Coring will be conducted in accordance with City of Grand Junction requirements. Where average thickness of concrete is deficient in thickness by more than 0.20-inch, but not more than 1.0-inch, payment to Contractor will be adjusted based on amount indicated in schedule of values for portland cement concrete paving as specified in the following table.

CONCRETE PAVEMENT DEFICIENCY	
Deficiency in Thickness (Determined by Cores) INCHES	Proportional Part of Contract Price Allowed
0.00 to 0.20	100%
0.21 to 0.30	80%
0.31 to 0.40	72%
0.41 to 0.50	68%
0.51 to 0.75	57%
0.76 to 1.00	50%
Over 1.00	NONE

Note: When thickness of pavement is deficient by more than one inch, and judgment of the Engineer is that area of such deficiency should not be removed and replaced, there will be no payment for the area retained.

- K. Failure of Test Cylinders or Coring Results: Engineer may order removal and replacement of concrete as required upon failure of 28-day tests or if thickness of pavement is less than 95% of specified thickness

3.5 SCHEDULE OF CONCRETE

- A. See plans for concrete thicknesses and subgrade preparation.

3.6 SCHEDULE OF CONCRETE REINFORCEMENT

- A. Fiber reinforcement required for all concrete flatwork, including curb and gutter, sidewalk and pavement
- B. Reinforce all cross pans in conformance with City of Grand Junction standards and specifications.

Trash pad, dumpster locations and other locations shown on plans as heavy duty concrete will have 8-inch thick concrete with #4 rebar, 12-inches on center, each way, three inches clear on all sides

END OF SECTION

SECTION 02920

SEEDING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Soil preparation
- B. Fertilization
- C. Seeding methods
- D. Areas to be reseeded
- E. Seed Mix
- F. Maintenance
- G. Seed protection and slope stabilization

1.2 RELATED SECTIONS

- A. Section 02300 – Earthwork
- B. Section 02370 – Erosion and Sedimentation Control

1.3 REFERENCES

- A. Federal Specification (FS) O-F-241 - Fertilizers, Mixed, Commercial
- B. American Association of Nurserymen - Standardized Plant Names
- C. Association of Official Seed Analysts (AOSA)
- D. Colorado Department of Agriculture (CDA) Seed Act
- E. Colorado Department of Transportation (CDOT) Construction Specifications

1.4 SUBMITTALS

- A. Submit under Division One Specifications for products related to seeding work including but not limited to seed mixes, mulches, composts, tackifiers, fertilizers and herbicides.
- B. Product Data:

1. Certified Live Seed analyses not more than 6 months old by a recognized laboratory of seed testing for grass mixtures including percent of live seed (PLS), germination, all crop seeds in excess of 1 percent, inerts and weeds
2. Manufactures guaranteed chemical analysis, name, trade name, trademark and conformance to state and local laws of all fertilizers and herbicides

1.5 QUALITY ASSURANCE

- A. Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging
- B. Provide a certificate of the PLS test of the grass seed intended for the project, certifying that the seed furnished is from a lot that has been tested by a recognized laboratory within the last 6 months
- C. All brands furnished shall be free from such noxious seeds as Russian or Canadian Thistle, Coarse Fescue, European Birdweed, Johnson Grass, Leafy Spurge, field bindweed, kochia, or any state-listed CDOT-listed noxious weed species
- D. Any materials that have become wet, moldy or otherwise damaged in transit or in storage will not be used

1.6 QUALIFICATIONS

- A. Applicator: Company specializing in performing work of this section with landscaping license from State of Colorado
 1. Experienced with type, elevation, topography and scale of work specified
 2. Adequate equipment and personnel to perform work

1.7 REGULATORY REQUIREMENTS

- A. Comply with codes and ordinances of local regulatory agencies for fertilizer and herbicide composition and regulations of the City of Grand Junction and Mesa County.
- B. Provide certificate of compliance from authority having jurisdiction indicating approval of seed mixture

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Division One specifications
- B. All materials and products will remain in original manufacturers shipping bags or containers until they are used. All material or products will be stored in a manner to prevent them from coming into contact with water or other contaminating substance and in a manner that product effectiveness will not be impaired

- C. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable
- D. Commercial fertilizer or commercial herbicide: mixed in original bags or containers of the manufacturer, showing weight, chemical analysis and manufacturer name. Store in such a manner such that product effectiveness will not be impaired

1.9 ENVIRONMENTAL REQUIREMENTS

- A. Do not prepare or seed frozen soils
- B. Perform seeding and planting only after preceding work establishing final ground surface is completed
- C. Conduct minimum of two (2) soil tests to confirm fertilizer type and application rates

1.10 MAINTENANCE SERVICE

- A. Maintain seeded areas immediately after placement until grass is well established and exhibits vigorous growing condition

1.11 WARRANTY

- A. All plant material and work accomplished under this section shall be guaranteed to provide a uniform stand of grass acceptable to the Owner at the end of a one (1) year time period from the completion of the Seeding and Erosion Control work

PART 2 PRODUCTS

2.1 SEED

- A. In conformance with State and Federal regulations and subject to the testing provisions of the Associate of Official Seed Analysts (AOSA)
- B. Seed Suppliers: Licensed Seed Dealer with Colorado Department of Agriculture
- C. Provide the latest crop available in accordance with Colorado Department of Agriculture Seed Laws, Chapter 35, Article 27
- D. Compensate for percentage of purity and germination by furnishing sufficient additional seed to equal the specified pure live seed product. The formula for determining the quantity of pure live seed (PLS) is as follows:

Pounds of Seed (Bulk) x Purity x Germination = Pounds of Pure Live Seed (PLS)

2.2 See City of Grand Junction specification section 212 of the Road and Bridge Construction chapter for approved seed mixes.

2.3 SOIL MATERIALS

- A. Select onsite topsoil: Earth material of loose friable clay loam reasonably free of admixtures of subsoil, refuse stumps, roots, rocks, brush, weeds or other material which can be detrimental to the proper development of site revegetation

2.4 ACCESSORIES

A. Soil Additives (Fertilizer)

1. Dry fertilizers: Primary element composition by weight of 6-10-5
 - a. Nitrogen (N) six (6%) percent of which fifty (50%) per-cent inorganic, phosphoric acid (P_2O_5) ten (10%) percent, and potash (K_2O) five (5%) percent
2. Commercial fertilizer: Primary element composition by weight of 18-46-0
 - a. Nitrogen, eighteen (18%) percent, of which fifty (50%) percent is organic, and phosphoric acid (P_2O_5), forty-six (46%) percent
 - b. These elements may be organic, inorganic, or a combination and shall be available according to the methods adopted by the Association of Official Chemists
3. Dry, pelletized or granular, uniform in composition and a free flowing product. Do not use material which has caked, segregated, exceeded the expiration date of application, or be otherwise damaged
4. Thoroughly mixed by the manufacturer. Clearly identify the contents of each container. Do not use materials and containers previously opened, exceeding the expiration date for application or otherwise damaged

- B. Water: Clean, fresh and free of substances or matter which could inhibit vigorous growth of grass

- C. Mulching Material: Straw or onsite grasses from grubbing operation, dry, free from foreign matter detrimental to plant life

PART 3 EXECUTION

3.1 GENERAL

- A. Seed all areas disturbed by construction, including all areas along the roadside ditches
- B. Pattern for seeding and fertilization as required by field conditions. In no case shall revegetation occur within 30 days of the application of any chemical weed control substance
- C. Engineer to review grading prior to seeding

3.2 SOIL PREPARATION

- A. Uniformly place and spread topsoil removed during grubbing and stored on site. Provide minimum thickness of 4 inches to meet finished grade. Key topsoil to the underlying and surrounding material by the use of harrows, rollers or other equipment suitable for the purpose
- B. Apply water to the topsoil for compaction purposes in a fine spray by nozzles in such a manner that it will not wash or erode the newly placed soil
- C. Exercise care during soil preparation on all embankments so as not to disturb established ground cover. Areas disturbed during the soil preparation will be fertilized and seeded at the discretion of the Engineer in accordance with these documents

3.3 FERTILIZATION

- A. Do not proceed with fertilization in adverse weather and unsuitable ground conditions. Examples of these respective conditions may be wind, precipitation, frozen and untillable ground or conditions detrimental to the effectiveness of the application
- B. Apply fertilizer in a manner to assure uniform distribution, light watering is acceptable for dispersion
- C. In cases where work progress is stopped due to the above conditions, fertilization will begin again, when appropriate conditions exist. The application will begin again with a reasonable overlapping of the previously applied area

3.4 SEEDING METHODS

- A. All seeding shall be installed by broadcasting, drilling method, or hydroseed. Small areas of restoration may be broadcast seeded if directed by Engineer.
- B. Do not proceed with seeding in adverse weather and unsuitable ground conditions. Examples of these respective conditions may be wind, precipitation, frozen or untillable ground or conditions detrimental to the effectiveness of the application. All seeding shall be performed between either March 1st to May 30th of the calendar year of construction unless indicated otherwise by Engineer
- C. Drilling:
 - 1. Accomplish seeding by means of an approved power drawn drill, followed by drag chains. The grass drill should be equipped with a satisfactory feeding mechanism, agitation, and double disk furrow openers. Equip drills with depth bands set to maintain a planting depth of approximately 3 to 2 inch and shall be set to space rows not more than 7 inches apart
 - 2. If inspections indicate that strips wider than the specified space between the rows planted have been left or other areas skipped, the Engineer will require immediate resowing of seed in such areas at the Contractor's expense. The seeding mixture shown in the Materials Section applies at a pure live seed rate per acre

3. Immediately following seeding apply straw mulch at a rate of one (1) ton per acre
4. Apply water with a fine spray immediately after each area has been mulched. Saturate to four (4) inches of soil depth
5. Provide additional watering weekly until revegetation seed has germinated

D. Hydroseeding:

1. Apply seeded slurry with hydraulic seed at a rate of //160 lbs// live seed per 1,000 square feet, evenly in two intersecting directions
2. Do not hydroseed areas in excess of that which can be mulched on same day
3. Immediately following seeding apply mulch to a thickness of 1/8 inch
4. Apply water with a fine sprat immediately after each area has been mulched. Saturate to four (4) inches of soil

3.5 AREAS TO BE RESEEDDED

- A. Seed all disturbed areas that are damaged or disturbed by the Contractor's activities during the entire project scope
- B. Additional areas as requested by the Owner and approved by the Engineer

3.6 MAINTENANCE

- A. Fertilize the seeded areas once a uniform stand of grass has been established
- B. Maintain seeded areas until there is an acceptable uniform plant growth. Reseed areas that are not producing a uniform plant growth within five (5) weeks following seeding. Acceptable uniform plant growth shall be defined as that time when the scattered bare spots, not greater than 1 square foot in area, do not exceed three percent (3%) of the seeded area
- C. Maintenance period - 1 year
- D. Areas that are seeded late in the fall planting season which are not producing acceptable uniform plant growth, as described above, shall be reseeded during the following spring planting season. If such a condition exists, and the Contractor has diligently, in the opinion of the Engineer, pursued the performance of his work, the Owner at his option, may extend the contract completion date and reduce contract retainage. Retainage may be reduced to less than five percent (5%) of the total contract amount, but shall be at least two (2) times the estimated cost of obtaining the required growth in the indicated areas, plus areas which are susceptible to damage by winter kill, washout or other causes
- E. Contractor shall control perennial weeds, thistle, spotted and napweed, spurge and other weeds during the maintenance period

3.7 SEED PROTECTION AND SLOPE STABILIZATION

- A. Cover seeded slopes with erosion control fabric where grade is 4 to 1 or greater and where indicated on the Drawings and/or Section 02300 and Section 02730. Cover seed with mulch in all other areas
- B. Lay fabric smoothly on surface, bury top end of each section in 6-inch deep excavated topsoil trench. Provide 6-inch overlap minimum of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil
- C. Secure outside edges and overlaps at 48 inch intervals with 4-inch to 6-inch U-shaped type pins or wooden stakes depending on ground condition
- D. Lightly dress slopes with topsoil to ensure close contact between fabric and soil
- E. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches
- F. Maintain integrity of erosion control fabric until seed germination. If seed is washed out before germination, fertilize, reseed and restore affected areas

END OF SECTION

Attachment C Construction Drawings

CITY OF GRAND JUNCTION 2022 WATERLINE REPLACEMENT - PHASE 1 GRAND JUNCTION, COLORADO BID DOCUMENTS

CONTACTS

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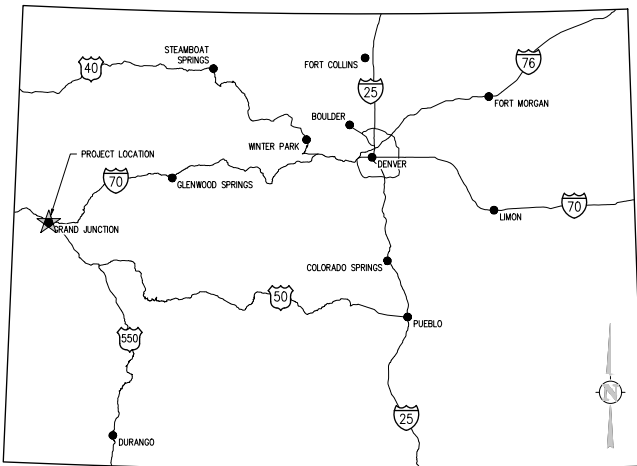
AUGUST 2022

PREPARED UNDER THE SUPERVISION OF

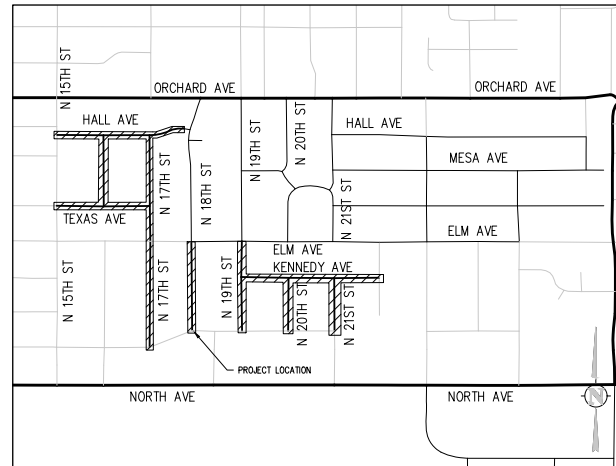
JVA, Inc.

DRAWING INDEX

SHEET NO.	TITLE
G0.0	COVER SHEET
G0.1	NOTES, LEGENDS, AND ABBREVIATIONS
CE1.0	EROSION CONTROL NOTES
CE1.1	EROSION CONTROL NOTES
CE1.2	EROSION CONTROL NOTES
C0.0	OVERALL UTILITY PLAN
C1.0	HALL AVE WATER PLAN & PROFILE
C1.1	HALL AVE WATER PLAN & PROFILE
C1.2	HALL AVE WATER PLAN & PROFILE
C2.0	TEXAS AVE WATER PLAN & PROFILE
C2.1	TEXAS AVE WATER PLAN & PROFILE
C3.0	KENNEDY AVE WATER PLAN & PROFILE
C3.1	KENNEDY AVE WATER PLAN & PROFILE
C3.2	KENNEDY AVE WATER PLAN & PROFILE
C4.0	N 16TH ST WATER PLAN & PROFILE
C4.1	N 16TH ST WATER PLAN & PROFILE
C5.0	N 17TH ST WATER PLAN & PROFILE
C5.1	N 17TH ST WATER PLAN & PROFILE
C5.2	N 17TH ST WATER PLAN & PROFILE
C5.3	N 17TH ST WATER PLAN & PROFILE
C5.4	N 17TH ST WATER PLAN & PROFILE
C6.0	N 18TH ST WATER PLAN & PROFILE
C6.1	N 18TH ST WATER PLAN & PROFILE
C7.0	N 19TH ST WATER PLAN & PROFILE
C7.1	N 19TH ST WATER PLAN & PROFILE
C8.0	N 20TH ST WATER PLAN & PROFILE
C8.1	N 20TH ST WATER PLAN & PROFILE
C9.0	N 21ST ST WATER PLAN & PROFILE
C9.1	N 21ST ST WATER PLAN & PROFILE



VICINITY MAP
NTS



PROJECT LOCATION MAP
NTS

STORMWATER MANAGEMENT PLAN (SWMP)

THIS STORMWATER MANAGEMENT PLAN IS TO BE RETAINED AND MAINTAINED ONSITE INCLUDING FINAL LANDSCAPING PLANS AND ANY OTHER EROSION CONTROL DOCUMENTATION. A SWMP ADMINISTRATOR WILL BE DESIGNATED BY THE CONTRACTOR AND IS RESPONSIBLE FOR DEVELOPING, IMPLEMENTING, MAINTAINING, AND REVISING THIS SWMP. THE SWMP ADMINISTRATOR IS THE CONTACT FOR ALL SWMP-RELATED ISSUES AND IS RESPONSIBLE FOR ITS ACCURACY, COMPLETENESS, AND IMPLEMENTATION. THE FOLLOWING HAS BEEN DESIGNATED AS THE SWMP ADMINISTRATOR FOR THIS PROJECT:

NAME: _____
 CONTACT INFO: _____

THE SITE IS LOCATED CONTAINED BY ORCHARD AVE AND BUNTING AVE ON THE NORTH AND SOUTH RESPECTIVELY AND BY N 15TH ST AND N 22ND ST ON THE WEST AND EAST RESPECTIVELY, AND AT APPROXIMATELY 39° 4' 51.5" N LATITUDE, 108° 32' 43.4" W LONGITUDE. THE PROPOSED PROJECT CONSISTS OF UTILITY INFRASTRUCTURE, UTILITY SERVICE CONNECTIONS, PAVING OF SIDEWALKS AND ROADWAYS, CONSTRUCTION IN THE CITY OF GRAND JUNCTION, COLORADO. THE TOTAL SITE AREA IS APPROXIMATELY 8.5 ACRES WITH AT TOTAL DISTURBANCE OF 1.1 ACRES. NO AREAS GREATER THAN 40 ACRES SHALL BE DISTURBED AT ANY GIVEN TIME. NO CONSTRUCTION ACTIVITIES SHALL OCCUR OFFSITE OR OUTSIDE OF THE CONSTRUCTION LIMITS SHOWN ON THE CONSTRUCTION DOCUMENTS. THE SEQUENCE OF CONSTRUCTION STARTS IS AS FOLLOWS:

PHASE	ESTIMATED	ACTUAL
CONSTRUCTION START	AUGUST, 2022	_____
UTILITY CONSTRUCTION	AUGUST, 2022	_____
PAVING	OCTOBER, 2022	_____
SITE RESTORATION	DECEMBER, 2022	_____

THE EXISTING SITE CONSISTS OF DEVELOPED LAND AND VEGETATION AND IS APPROXIMATELY 1% COVERED WITH VEGETATIVE GROUND COVER. A DRAINAGE REPORT WAS NOT COMPLETED AS HISTORIC AND DEVELOPMENT RUNOFFS WERE NOT ALTERED.

OFFSITE RUNOFF FLOWS ONTO THE PROPERTY FROM 15TH ST FROM THE WEST AND ELM STREET FROM THE NORTH. ONSITE FLOWS ARE DIRECTED TO THE GUTTERS AND STORM DRAINS. THERE ARE NO ONSITE DETENTION SITES. STORMWATER IS DISCHARGED FROM THIS SITE TO INDIAN WASH WHICH ULTIMATELY DRAINS INTO THE COLORADO RIVER. A DRAINAGE REPORT FOR THIS DEVELOPMENT HAS BEEN SUBMITTED TO THE ENGINEER OF THE CITY OF GRAND JUNCTION.

OTHER POTENTIAL POLLUTION SOURCES SUCH AS VEHICLE FUELING, VEHICLE WASHING, LOADING/ UNLOADING AREAS ARE LOCATED ONSITE. NON-STORMWATER COMPONENTS OF THE DISCHARGE LANDSCAPE IRRIGATION RETURN FLOW ARE LOCATED ONSITE.

BEST MANAGEMENT PRACTICES FOR STORMWATER MANAGEMENT

NON STRUCTURAL BMPs WILL BE IMPLEMENTED TO THE MAXIMUM EXTENT POSSIBLE. THE UTILIZATION OF NON STRUCTURAL BMPs WILL BE AN ONGOING PROCESS DIRECTED AT PREVENTING EROSION. THE NON STRUCTURAL BMPs WILL RECEIVE CONTINUOUS EMPHASIS THROUGHOUT CONSTRUCTION BECAUSE THEY AVERT PROBLEMS BEFORE THEY OCCUR AND REDUCE THE NEED FOR STRUCTURAL BMPs. NON STRUCTURAL BMPs WILL CONSIST PRIMARILY OF PRESERVATION OF EXISTING MATURE VEGETATION AND TREES, PLANNING AND SCHEDULING CONSTRUCTION ACTIVITIES AIMED AT ACHIEVING THE GOAL OF MINIMIZING EROSION. FURTHERMORE, CONSTRUCTION PERSONNEL WILL BE INSTRUCTED AND SUPERVISED IN CONSTRUCTION METHODS CONSISTENT WITH EROSION PREVENTION PRACTICES.

PLANNED STRUCTURAL BMPs FOR EROSION AND SEDIMENT CONTROL ARE SHOWN ON THE EROSION AND SEDIMENTATION CONTROL PLAN. IMPLEMENTING THESE MEASURES SHOULD MINIMIZE NUISANCE SILT AND SEDIMENTATION EXITING THE SITE AND PREVENT CLOGGING EXISTING STORM SEWERS AND STREET OUTLETS.

APPLICATION OF THESE BMPs FOR STORMWATER MANAGEMENT ARE FOR CONSTRUCTION PERIODS AND ARE CONSIDERED TEMPORARY. POST-DEVELOPMENT STORMWATER MANAGEMENT IS PROVIDED THROUGH STORM COLLECTION SYSTEM.

VEHICLE TRACKING CONTROL (VTC):

A STABILIZED CONSTRUCTION ENTRANCE WILL BE PROVIDED AT ALL ENTRANCES AND EXITS TO THE CONSTRUCTION SITES. THE CONSTRUCTION ACCESS AND PARKING WILL BE GRADED AND COVERED WITH A CRUSHED STONE BASE COURSE DURING CONSTRUCTION. THE VEHICLE TRACKING CONTROL WILL BE RELOCATED WITH THE CONSTRUCTION ACCESS AS NECESSARY.

SEDIMENT CONTROL LOGS (SCL):

SEDIMENT CONTROL LOGS SHALL BE INSTALLED WITH RESPECT TO PROPOSED DRAINAGE PATTERNS. SEDIMENT CONTROL LOGS SHALL BE CONSTRUCTED IN THE GUTTERS AND ALONG ANY DRAINAGE AREAS SUBJECT TO EROSION. THE SEDIMENT CONTROL LOGS SHALL BE INSTALLED AT THE DOWNHILL SIDE OF THE EXISTING SLOPES ACROSS THE SITE AND AT ALL POINT DISCHARGE AREAS WHETHER SHOWN OR NOT. SEDIMENT CONTROL LOGS SHALL BE MAINTAINED AS NEEDED THROUGHOUT THE CONSTRUCTION PROCESS. SEDIMENT CONTROL LOGS WILL REMAIN UNTIL THE STORM SEWER STRUCTURES ARE COMPLETED AND GROUND COVER IS EFFECTIVE.

INLET PROTECTION (IP):

THE INLET PROTECTION WILL BE INSTALLED AS THE STORM SEWER STRUCTURES ARE CONSTRUCTED. EACH INLET ON THE PROPOSED STORM SEWER SYSTEM WILL HAVE A TEMPORARY INLET SEDIMENT TRAP CONSTRUCTED AROUND IT. IN PAVED AREAS, THIS TRAP CONSISTS OF WIRE MESH SOCKS, CONCRETE BLOCKS, AND GRAVEL BAGS TO FILTER THE STORM RUNOFF AND ALLOW ANY SILT TO SETTLE OUT.

CONCRETE WASHOUT AREA:

CONCRETE WASHOUTS SHALL BE USED ON SITE DURING THE CONSTRUCTION OF FLATWORK SHOWN ON THE PLANS. CONTRACTOR TO USE ONLY ROLL-OFF/PORTABLE STYLE WASHOUT CONTAINERS, PIT STYLE WASHOUTS WILL NOT BE ACCEPTED ON THIS SITE.

DUST CONTROL MEASURES:

DISTURBED AREAS NOT YET READY TO BE SEEDED, LANDSCAPED, PAVED, OR OTHERWISE STABILIZED SHALL BE WATERED, OR RIPPED AS NECESSARY TO PRECLUDE VISIBLE DUST EMISSIONS.

ITEMS ARE SCHEDULED TO BE IMPLEMENTED ACCORDING TO THE CONSTRUCTION SCHEDULE. AS WORK PROCEEDS, IMPLEMENTATION OF INDIVIDUAL BMPs IS TO COINCIDE WITH THE CONSTRUCTION THEREBY MINIMIZING THE EXPOSURE OF UNPROTECTED AREAS. INLET PROTECTION (FOR EXISTING INLETS), AND GRAVELING OF THE CONSTRUCTION ENTRANCE WILL BE PERFORMED WHEN THE GROUND IS DISTURBED AND THE PROJECT EXCAVATION BEGINS. FUGITIVE DUST EMISSIONS RESULTING FROM GRADING ACTIVITIES AND/OR MINO SHALL BE CONTROLLED USING THE BEST AVAILABLE CONTROL TECHNOLOGY AS DEFINED BY THE COLORADO DEPARTMENT OF HEALTH AT THE TIME OF GRADING. THE GRAVELING IS TO BE MAINTAINED AND EXTENDED CONSTRUCTION PROGRESSES ESPECIALLY AROUND THE BUILDING SITE. THE STRUCTURAL BMPs ARE TO BE REMOVED, AS THE PERMANENT LANDSCAPING INSTALLATIONS ARE COMPLETED.

THE EROSION AND SEDIMENT CONTROL PLAN MAY BE MODIFIED BY THE DEPARTMENT OF HIGHWAYS AND TRANSPORTATION, OWNER'S ENGINEER, CITY OF GRAND JUNCTION OR ITS AUTHORIZED REPRESENTATIVE AS FIELD CONDITIONS WARRANT.

STORMWATER DETENTION AND WATER QUALITY:

STORMWATER DETENTION AND WATER QUALITY IS ACHIEVED THROUGH THE EXISTING STORMWATER COLLECTION SYSTEM.

TEMPORARY SEEDING AND MULCHING:

ALL SEEDS FURNISHED SHALL BE FREE FROM NOXIOUS SEEDS SUCH AS RUSSIAN OR CANADIAN THISTLE, COURSE FESCUE, EUROPEAN BIRDWEED, JOHNSON GRASS, KNAPWEED, AND LEAFY SPURGE. THE FORMULA USED FOR DETERMINING THE QUANTITY OF PURE LIVE SEED (PLS) IS (POUNDS OF SEED) X (PURITY) X (GERMINATION) = POUNDS OF PURE LIVE SEED (PLS). SEEDING RECOMMENDATIONS ARE PROVIDED BELOW, BUT MAY BE MODIFIED WITH THE OWNER'S APPROVAL TO MAKE THE BEST USE OF EXISTING CLEARINGS AND GRUBBINGS:

SPECIES	COMMON NAME	VARIETY	PLS RATE(LBS)/ACRE
AGROPYRON CRISTATUM	CRESTED WHEATGRASS	EPHRAM	6
AGROPYRON SMITH	WESTERN WHEATGRASS	ARBOA	16
BROMUS INERMIS	SMOOTH BROME	LINCOLN	12
SPOROBIOLUS ARBOIDES	ALKAU SACATON		0.5
PELLEGRINUS JAMESII	VIVA GALLETA GRASS		12
DACTYLIS GLOMERATA	ORCHARD GRASS	PAUTE	4
ARRHENATHERA ELATIS	FALL GALOPAS		8
LOLIUM PERENE	PERENNIAL WHEATGRASS	TETAPLOD	8

ALL SEEDS SHALL BE DRILLED NOT HYDROSEDED. ALL DISTURBED AREAS SHALL BE SEEDED AND CRIMP MULCHED IF PERMANENT VEGETATION IS NOT IMMEDIATELY INSTALLED. AFTER SEEDING HAS BEEN COMPLETED, A RATE OF 4,000 LBS. OF STRAW PER ACRE SHALL BE APPLIED UNIFORMLY. CRIMPED IN WITH A CRIMPER OR OTHER APPROVED EQUIPMENT OR OTHERWISE ATTACHED. A TACKIFIER OR JUTE NETTING TO ATTACH MULCH MAY BE USED WITH THE OWNER'S APPROVAL. THE SEEDED AREA SHALL BE CRIMPED MULCHED AND THE MULCH ATTACHED WITHIN TWENTY-FOUR (24) HOURS AFTER SEEDING. AREAS NOT MULCHED AND ATTACHED WITHIN TWENTY-FOUR (24) HOURS AFTER SEEDING MUST BE RESEED WITH THE SPECIFIED MIX AT THE CONTRACTOR'S EXPENSE. PRIOR TO MULCHING AND ATTACHING, ON STEEP SLOPES OR OTHER SPECIFIED AREAS AS SHOWN ON THE PLANTING PLAN, WHICH ARE DIFFICULT TO MULCH AND ATTACH BY CONVENTIONAL METHOD, BURLAP OR OTHER BLANKETING MATERIALS PROPERLY ANCHORED AND SECURED MAY BE USED WHEN APPROVED BY THE CITY OF GRAND JUNCTION.

PERMANENT STABILIZATION MEASURES:

PERMANENT LANDSCAPING WILL INCLUDE SEEDING TO OPEN AREAS. NATIVE PERENNIAL SEEDING WILL BE ESTABLISHED IN NON-IRRIGATED AREAS AND SOD OR OTHER VEGETATIVE COVER WILL BE ESTABLISHED IN IRRIGATED OPEN AREAS. ALL PERMANENT STABILIZATION MEASURES WILL BE SPECIFIED BY THE LANDSCAPE ARCHITECT OR OWNER.

MATERIALS AND SPILL PREVENTION:

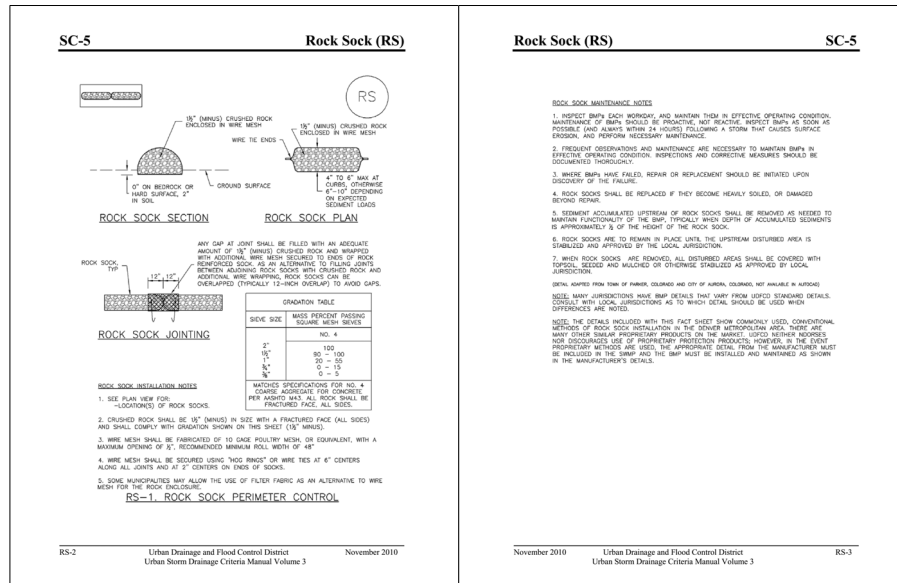
THE CONTRACTOR WILL STORE CONSTRUCTION MATERIALS AND EQUIPMENT IN CONFINED AREAS ON SITE FROM WHICH RUNOFF WILL BE CONTAINED AND FILTERED. MATERIALS WILL BE STORED OFF THE GROUND AND PROTECTED FROM THE WEATHER BY A COVER OR STORED IN A CONTAINER SUCH AS A VAN OR TRAILER. AN EARTHEN Dike WILL BE CONSTRUCTED AROUND THE PERIMETER OF THE FUEL STORAGE AREA TO PREVENT MATERIALS FROM CONTACT WITH SURFACE RUNOFF. EQUIPMENT MAINTENANCE WILL BE PERFORMED IN A DESIGNATED AREA AND STANDARD MAINTENANCE PROCEDURES, SUCH AS THE USE OF DRIP PANS, WILL BE USED TO CONTAIN PETROLEUM PRODUCTS.

INSPECTION AND MAINTENANCE:

THE EROSION CONTROL MEASURES WILL BE INSPECTED DAILY DURING CONSTRUCTION BY THE CONTRACTOR AND AFTER EACH RAIN EVENT. ALL INSPECTIONS SHALL BE DOCUMENTED AND SHALL INCLUDE THE DATE OF INSPECTION, ANY INCIDENCE OF NON-COMPLIANCE, SIGNED CERTIFICATION THAT THE SITE IS IN COMPLIANCE, AND ANY NOTES, DRAWINGS, MAPS, ETC. PERTAINING TO REPAIRS. COPIES OF ALL DOCUMENTATION SHALL BE DISTRIBUTED TO MUNICIPALITIES AND OWNER ON A REGULAR BASIS AS SPECIFIED BY OWNER. STRAW BALE BARRIERS WILL BE CHECKED FOR UNDERMINING AND BYPASS AND REPAIRED OR EXPANDED AS NEEDED. SEDIMENT SHOULD BE REMOVED FROM INLET FILTERS BEFORE ONE HALF OF THE DESIGN DEPTH HAS BEEN FILLED. SEDIMENTS DEPOSITED IN THE PUBLIC RIGHTS-OF-WAY WILL BE REMOVED IMMEDIATELY. THE TEMPORARY VEGETATION OF BARE SOILS WILL BE CHECKED REGULARLY AND AREAS WHERE IT IS LOST OR DAMAGED WILL BE RESEED. AT MINIMUM THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL BMPs EVERY 14 DAYS AND AFTER SIGNIFICANT PRECIPITATION OR SNOWMELT EVENTS. INSTALLATIONS AND MODIFICATIONS AS REQUIRED BY THE CITY OF GRAND JUNCTION WILL BE IMPLEMENTED WITHIN 48 HOURS OF NOTIFICATION. CONTRACTOR SHALL REMOVE TEMPORARY EROSION CONTROL MEASURES AND REPAIR AREAS AS REQUIRED AFTER VEGETATION IS ESTABLISHED AND ACCEPTED BY OWNER AND MUNICIPALITY.

FINAL STABILIZATION AND LONG-TERM STORMWATER QUALITY:

FINAL STABILIZATION IS REACHED WHEN ALL SOIL DISTURBING ACTIVITIES AT THE SITE HAVE BEEN COMPLETED, AND UNIFORM VEGETATIVE COVER HAS BEEN ESTABLISHED WITH A DENSITY OF AT LEAST 70% OR PRE-DISTURBANCE LEVELS OR EQUIVALENT PERMANENT, PHYSICAL EROSION REDUCTION METHODS HAVE BEEN EMPLOYED. FINAL STABILIZATION WILL BE ACHIEVED USING SOD, NATIVE SEEDING, PERMANENT BMPs, AND OTHER METHODS. CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL STABILIZATION REGARDLESS OF ACCEPTANCE BY OWNER OF THE CONTRACTOR ITEM.



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REVISION	DESCRIPTION	DATE	DRAWN BY	DATE	SCALE:
REVISION A			ZCF	07.18.2022	PLAN & PROFILE
REVISION B			LAL/ZCF	07.18.2022	
REVISION C			JJM	07.18.2022	
REVISION D					



2022 WATERLINE REPLACEMENT PROJECT - PHASE 1

EROSION CONTROL NOTES

CEI.0

EC-8 Temporary Outlet Protection (TOP)

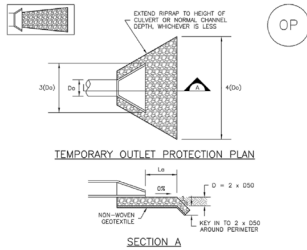


TABLE OF-1. TEMPORARY OUTLET PROTECTION SIZING TABLE

PIPE DIAMETER, D (INCHES)	DISCHARGE Q (CFS)	APPROX. LENGTH, L (FT)	FRAME PIPE DIAMETER, B (INCHES)
8	2.5	10	6
12	10	10	6
18	10	10	6
24	40	26	16
30	60	26	16
36	80	26	16
42	100	26	16

OP-1. TEMPORARY OUTLET PROTECTION

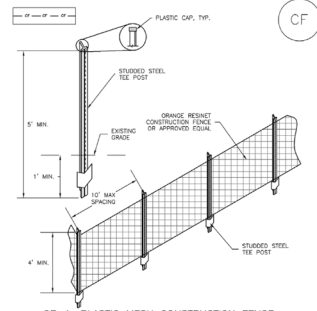
TOP-2 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 November 2010

Temporary Outlet Protection (TOP) EC-8

- TEMPORARY OUTLET PROTECTION INSTALLATION NOTES**
1. SEE PLAN VIEW FOR LOCATION OF OUTLET PROTECTION.
 2. DETAIL IS INTENDED FOR PIPES WITH SLOPE < 1%. ADDITIONAL EVALUATION OF RIPRAP SIZE AND OUTLET PROTECTION DIMENSIONS REQUIRED FOR STEEPER SLOPES.
 3. TEMPORARY OUTLET PROTECTION INFORMATION IS FOR OUTLETS INTENDED TO BE UTILIZED LESS THAN 2 HOURS.
- TEMPORARY OUTLET PROTECTION INSPECTION AND MAINTENANCE NOTES**
1. INSPECT BMPs EACH WORKDAY AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PRACTICE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
 2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
 3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
- NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM IUDCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.
- DETAILS ADAPTED FROM MANUAL, COLORADO AND PROVIDED THROUGH COURTESY OF IUDCD. NOT AVAILABLE IN AUTOCAD.

November 2010 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 TOP-3

SM-3 Construction Fence (CF)



CF-1. PLASTIC MESH CONSTRUCTION FENCE

- CONSTRUCTION FENCE INSTALLATION NOTES**
1. SEE PLAN VIEW FOR LOCATION OF CONSTRUCTION FENCE.
 2. CONSTRUCTION FENCE SHOWN SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
 3. CONSTRUCTION FENCE SHALL BE COMPOSED OF ORANGE, CONTRACTOR-GRADE MATERIAL THAT IS AT LEAST 4' HIGH. METAL POSTS SHOULD HAVE A PLASTIC CAP FOR SAFETY.
 4. STUCCO STEEL SEE POSTS SHALL BE UTILIZED TO SUPPORT THE CONSTRUCTION FENCE. MAXIMUM SPACING FOR STEEL POSTS SHALL BE 10'.
 5. CONSTRUCTION FENCE SHALL BE SECURELY FASTENED TO THE TOP, MIDDLE, AND BOTTOM OF EACH POST.

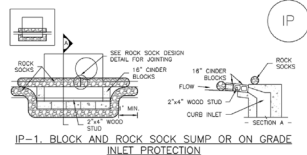
CF-2 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 November 2010

Construction Fence (CF) SM-3

- CONSTRUCTION FENCE MAINTENANCE NOTES**
1. INSPECT BMPs EACH WORKDAY AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PRACTICE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
 2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
 3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
 4. CONSTRUCTION FENCE SHALL BE REPAIRED OR REPLACED WHEN THERE ARE SIGNS OF DAMAGE SUCH AS RIPS OR SAGS. CONSTRUCTION FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.
 5. WHEN CONSTRUCTION FENCES ARE REMOVED, ALL DISTURBED AREAS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND/OR REMOVAL OF THE FENCE SHALL BE COVERED WITH TOPSOIL, SEEDING AND MULCHED, OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTIONS.
- NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM IUDCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.
- DETAILS ADAPTED FROM MANUAL, COLORADO, NOT AVAILABLE IN AUTOCAD.

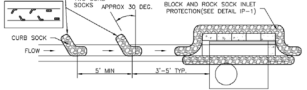
November 2010 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 CF-3

SC-6 Inlet Protection (IP)



IP-1. BLOCK AND ROCK SOCK SUMP OR ON GRADE INLET PROTECTION

- BLOCK AND CURB SOCK INLET PROTECTION INSTALLATION NOTES**
1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
 2. CONCRETE "TOE" BLOCKS SHALL BE Laid ON THEIR SIDES AROUND THE INLET IN A SINGLE ROW, ABUTTING ONE ANOTHER WITH THE OPEN END FACING AWAY FROM THE CURB.
 3. ORNAL BANDS SHALL BE PLACED AROUND CONCRETE BLOCKS, CLOSELY ABUTTING ONE ANOTHER AND JOINED TOGETHER IN ACCORDANCE WITH ROCK SOCK DESIGN DETAIL.

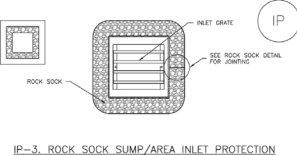


IP-2. CURB ROCK SOCKS UPSTREAM OF INLET PROTECTION

- CURB ROCK SOCK INLET PROTECTION INSTALLATION NOTES**
1. SEE ROCK SOCK DESIGN DETAIL INSTALLATION REQUIREMENTS.
 2. PLACEMENT OF THE SOCK SHALL BE APPROXIMATELY 30 DEGREES FROM PERPENDICULAR IN THE OPPOSITE DIRECTION OF FLOW.
 3. SOCKS ARE TO BE FLUSH WITH THE CURB AND SPACED A MINIMUM OF 3 FEET APART.
 4. AT LEAST TWO CURB SOCKS IN SERIES ARE REQUIRED UPSTREAM OF ON-GRADE INLETS.

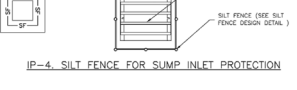
IP-4 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 August 2013

Inlet Protection (IP) SC-6



IP-3. ROCK SOCK SUMP/AREA INLET PROTECTION

- ROCK SOCK SUMP/AREA INLET PROTECTION INSTALLATION NOTES**
1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
 2. STRAW WATLES/SEDIMENT CONTROL LOSS MAY BE USED IN PLACE OF ROCK SOCKS FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



IP-4. SILT FENCE FOR SUMP INLET PROTECTION

- SILT FENCE INLET PROTECTION INSTALLATION NOTES**
1. SEE SILT FENCE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
 2. SOCKS SHALL BE PLACED AT EACH CORNER OF THE INLET AND AROUND THE EDGES AT A MAXIMUM SPACING OF 3 FEET.
 3. STRAW WATLES/SEDIMENT CONTROL LOSS MAY BE USED IN PLACE OF SILT FENCE FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.

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SC-6 Inlet Protection (IP)

GENERAL INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR LOCATION OF INLET PROTECTION.
- TYPE OF INLET PROTECTION (IP-1, IP-2, IP-3, IP-4, IP-5, IP-6)
3. INLET PROTECTION SHALL BE INSTALLED IMMEDIATELY AFTER INLET CONSTRUCTION OR PAVING IS COMPLETE (TYPICALLY WITHIN 48 HOURS) IF A RAINFALL/STORM EVENT IS FORECAST. INSTALL INLET PROTECTION PRIOR TO STREET OF TRAFFIC.
4. MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM IUDCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

- INLET PROTECTION MAINTENANCE NOTES**
1. INSPECT BMPs EACH WORKDAY AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PRACTICE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
 2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
 3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
 4. SEDIMENT ACCUMULATED UPSTREAM OF INLET PROTECTION SHALL BE REMOVED AS NECESSARY TO MAINTAIN BMP EFFECTIVENESS. TYPICALLY WHEN STORAGE VOLUME REACHES BOX OF CAPACITY, A DEPTH OF 6" WHEN SILT FENCE IS USED, OR 4" OF THE HEIGHT FOR STRAW BALES.
 5. INLET PROTECTION IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED, UNLESS THE LOCAL JURISDICTION APPROVES EARLIER REMOVAL OF INLET PROTECTION IN STREETS.
 6. WHEN INLET PROTECTION AT AREA INLETS IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, SEEDING AND MULCHED, OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

- NOTE: THE DETAILS ILLUSTRATED WITH THIS FACT SHEET SHOW CONSERVATIVE, CONVENTIONAL METHODS OF INLET PROTECTION IN THE DENVER METROPOLITAN AREA. THERE ARE MANY PROPRIETARY INLET PROTECTION METHODS ON THE MARKET. LOCAL JURISDICTIONS EXPLORE AND DISSEMINATE USE OF PROPRIETARY INLET PROTECTION METHODS. IN THE EVENT PROPRIETARY METHODS ARE USED, THE APPROVED DETAIL FROM THE MANUFACTURER MUST BE USED. THE BMP MUST BE INSTALLED AND MAINTAINED AS SHOWN IN THE MANUFACTURER'S DETAILS.
- NOTE: SOME MUNICIPALITIES DISALLOW OR PROHIBIT THE USE OF STRAW BALES FOR INLET PROTECTION. CONSULT WITH LOCAL JURISDICTION TO DETERMINE IF STRAW BALE INLET PROTECTION IS ACCEPTABLE.

IP-8 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 August 2013

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REVISION	DESCRIPTION	DATE	DRAWN BY	DATE
REVISION A			ZCF	07.18.2022
REVISION B			LAL/ZCF	07.18.2022
REVISION C			JJM	07.18.2022
REVISION D				

SCALES:
PLAN & PROFILE

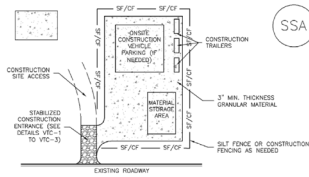


2022 WATERLINE REPLACEMENT PROJECT - PHASE 1
EROSION CONTROL NOTES

CE1.1

Stabilized Staging Area (SSA)

SM-6



SSA-1. STABILIZED STAGING AREA

STABILIZED STAGING AREA INSTALLATION NOTES

- 1. SEE PLAN VIEW FOR LOCATION OF STAGING AREA(S).
2. STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE.
3. STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.
4. THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3" THICK GRANULAR MATERIAL.
5. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 8" (MINUS) ROCK.
6. ADDITIONAL PERIMETER BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.

STABILIZED STAGING AREA MAINTENANCE NOTES

- 1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. ROCK SHALL BE REPLACED OR REGRADED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.

November 2010 Urban Drainage and Flood Control District SSA-3
Urban Storm Drainage Criteria Manual Volume 3

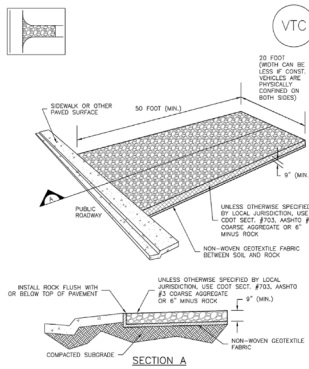
Stabilized Staging Area (SSA)

STABILIZED STAGING AREA MAINTENANCE NOTES
1. STABILIZED STAGING AREA SHALL BE ENCLOSED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING/LOADING OPERATIONS.
2. THE STABILIZED STAGING AREA SHALL BE REPAIRED AT THE END OF CONSTRUCTION.
NOTE: MANY JURISDICTIONS PROHIBIT THE USE OF RECYCLED CONCRETE AS GRANULAR MATERIAL FOR STABILIZED STAGING AREAS...

SSA-4 Urban Drainage and Flood Control District
Urban Storm Drainage Criteria Manual Volume 3 November 2010

Vehicle Tracking Control (VTC)

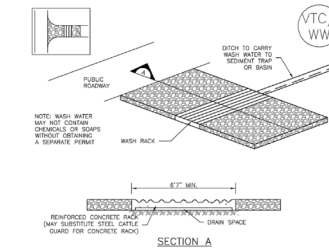
SM-4



VTC-1. AGGREGATE VEHICLE TRACKING CONTROL

November 2010 Urban Drainage and Flood Control District VTC-3
Urban Storm Drainage Criteria Manual Volume 3

Vehicle Tracking Control (VTC)

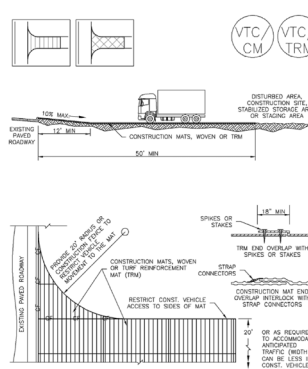


VTC-2. AGGREGATE VEHICLE TRACKING CONTROL WITH WASH RACK

VTC-4 Urban Drainage and Flood Control District
Urban Storm Drainage Criteria Manual Volume 3 November 2010

Vehicle Tracking Control (VTC)

SM-4



VTC-3. VEHICLE TRACKING CONTROL W/ CONSTRUCTION MAT OR TURF REINFORCEMENT MAT (TRM)

November 2010 Urban Drainage and Flood Control District VTC-5
Urban Storm Drainage Criteria Manual Volume 3

Vehicle Tracking Control (VTC)

STABILIZED CONSTRUCTION ENTRANCE/EXIT INSTALLATION NOTES

- 1. SEE PLAN VIEW FOR LOCATION OF CONSTRUCTION ENTRANCE/EXIT(S).
2. CONSTRUCTION MAT OR TRM STABILIZED CONSTRUCTION ENTRANCES ARE ONLY TO BE USED ON SHORT DURATION PROJECTS.
3. A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE LOCATED AT ALL ACCESS POINTS WHERE VEHICLES ACCESS THE CONSTRUCTION SITE FROM PAVED RIGHT-OF-WAYS.
4. STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
5. A NON-WOVEN GEOTEXTILE FABRIC SHALL BE PLACED UNDER THE STABILIZED CONSTRUCTION ENTRANCE/EXIT PRIOR TO THE PLACEMENT OF ROCK.

STABILIZED CONSTRUCTION ENTRANCE/EXIT MAINTENANCE NOTES

- 1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. ROCK SHALL BE REPLACED OR REGRADED AS NECESSARY TO THE STABILIZED ENTRANCE/EXIT TO MAINTAIN A CONSISTENT DEPTH.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM USUALLY STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

VTC-6 Urban Drainage and Flood Control District
Urban Storm Drainage Criteria Manual Volume 3 November 2010

N:\VTC\10\10\10\Phase 1 - Erosion\2018 - 01\EP-2018-0129\2022 - 04-04-24.dwg

Table with columns: REVISION, DESCRIPTION, DATE, DRAWN BY, DESIGNED BY, CHECKED BY, APPROVED BY, DATE.

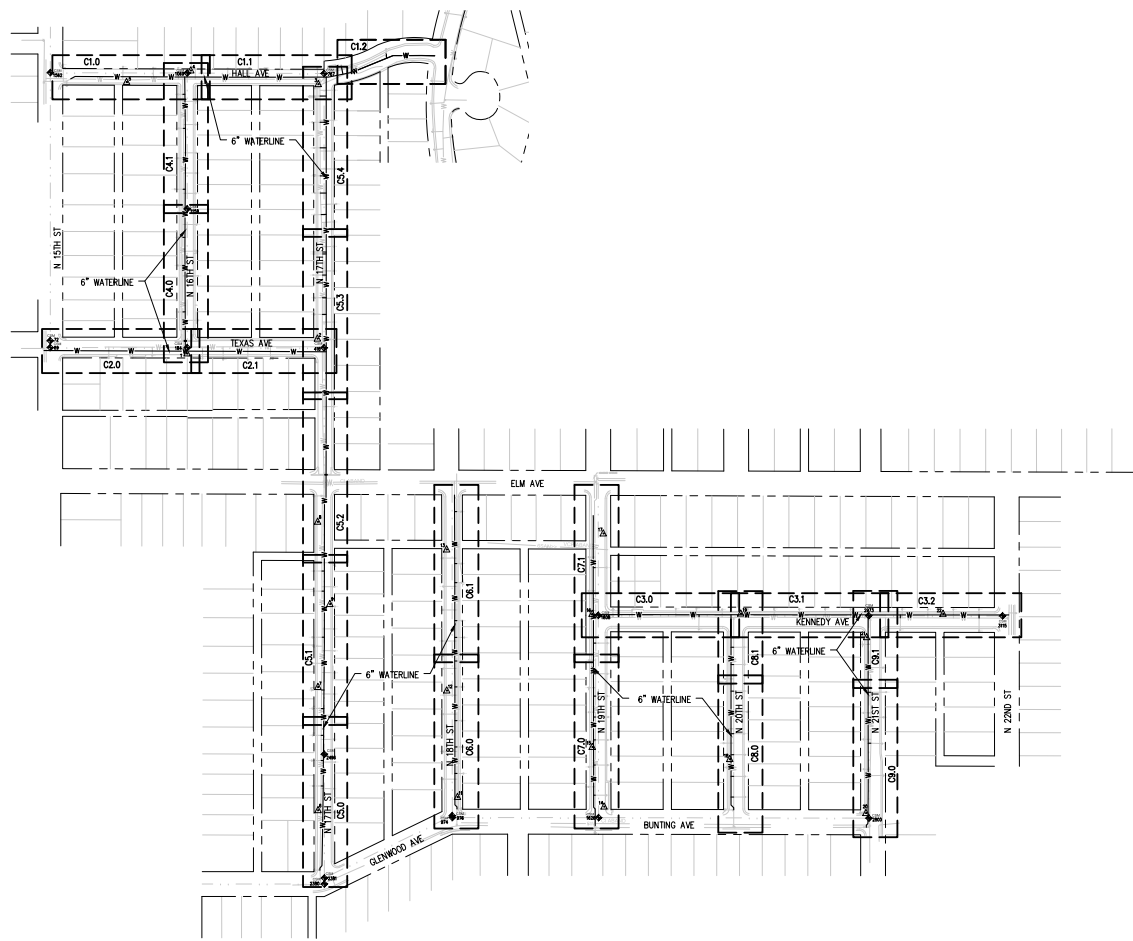
SCALES: PLAN & PROFILE



IWA, Inc. 817 Colorado Avenue, Suite 301
Greenwood Springs, CO 81601
970.404.3100
www.iwa.com

2022 WATERLINE REPLACEMENT PROJECT - PHASE 1 EROSION CONTROL NOTES

CEI.2



CONTROL POINT TABLE				
CONTROL POINT	DESCRIPTION	NORTHING	EASTING	ELEVATION
1	CP/16TH	41086.21	96354.86	4634.00
2	CP/17TH	41122.02	96669.27	4635.94
3	CP/17TH	41736.43	96671.37	4639.00
4	CP/16TH	41769.52	96363.59	4638.46
5	CP/ALLEY	41741.67	96208.48	4638.35
6	CP/CHURCH	39983.25	96670.86	4626.72
7	CP/1353	40280.74	96670.61	4629.78
8	CP/5 ELM	40678.82	96669.92	4631.65
9	CP/1400	40481.04	96699.47	4630.34
11	CP/18TH&BUNTING	40015.26	97007.59	4625.86
12	CP/1343 18TH	40272.37	96981.69	4626.96
13	CP/1421 18TH	40612.94	96981.33	4628.54
14	CP/19TH&BUNTING	39992.11	97361.61	4623.41
15	CP/1323 19TH	40136.04	97333.17	4624.55
16	CP/19TH&KENNEDY	40457.54	97332.80	4626.76
17	CP/19TH&ELM	40651.49	97359.69	4628.43
18	CP/1313 20TH	40106.92	97665.17	4623.25
19	CP/20TH&KENNEDY	40458.05	97691.67	4625.30
20	CP/21ST&BUNTING	39976.42	97993.81	4621.06
21	CP/21ST&KENNEDY	40401.02	97995.68	4623.62
22	CP/2150 KENNEDY	40457.65	98180.15	4623.07
69	CSM	41100.83	96023.92	4634.23
72	CSM	41117.32	96023.83	4634.36
184	CSM	41100.45	96354.70	4633.88
418	CSM	41099.97	96684.94	4635.99
767	CSM	41762.35	96685.10	4640.14
974	CSM	39965.78	96994.72	4626.08
976	CSM	39970.26	96994.54	4626.07
1069	CSM	41763.41	96354.42	4638.87
1158	CSM	41435.61	96354.58	4636.62
1562	CSM	41764.48	96024.02	4639.11
1626	CSM	39965.65	97347.98	4623.66
1808	CSM	40454.24	97347.33	4627.11
2380	CSM	39805.17	96685.85	4626.00
2381	CSM	39819.85	96685.82	4626.12
2496	CSM	40118.66	96685.71	4628.53
2800	CSM	39964.32	98000.77	4621.35
2973	CSM	40453.33	98000.37	4624.17
3115	CSM	40452.80	98323.46	4622.33

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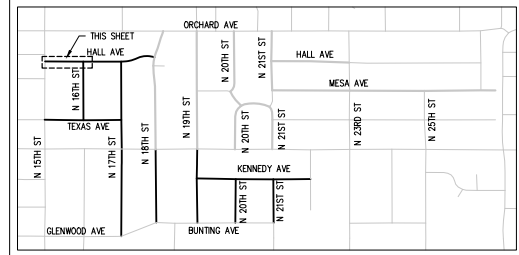
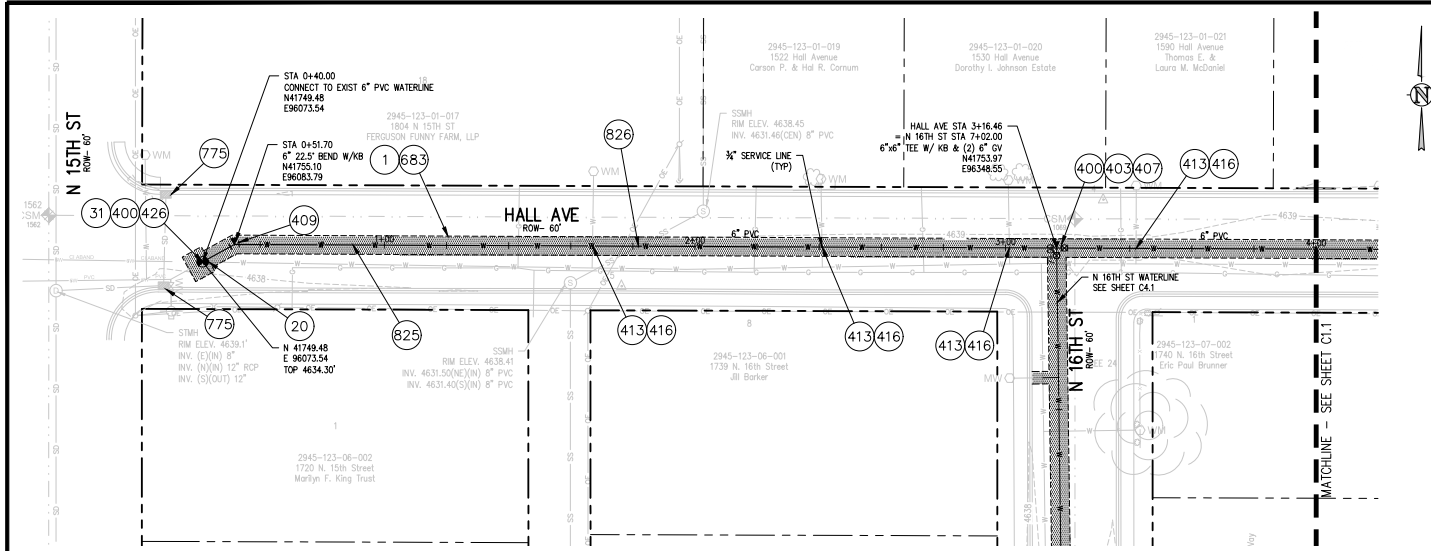
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2			LAL/ZCF	07.18.2022
3			JJM	07.18.2022
4				

SCALES:



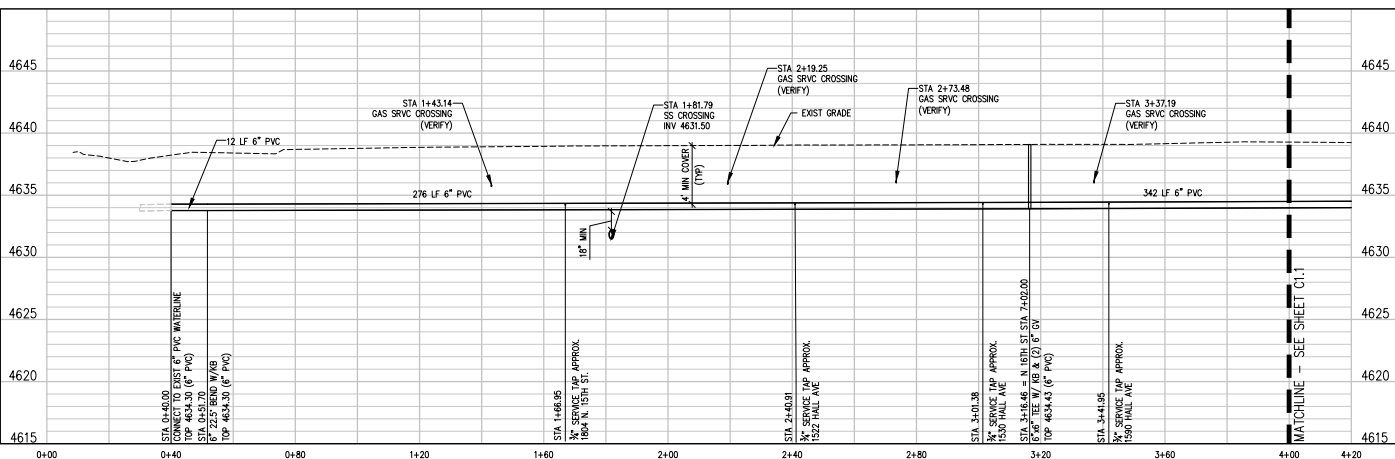
**2022 WATERLINE REPLACEMENT
PROJECT - PHASE 1
OVERALL UTILITY PLAN**

CO.0



CONSTRUCTION NOTES

- 1 202 - REMOVAL OF ASPHALT MAT. SAW CUT AND REMOVE ASPHALT AS SHOWN. (INDICATED BY DOT HATCH PATTERN).
- 20 202 - ABANDON PIPE. ABANDONED BY PLUGGING REMAINING ENDS WITH CONCRETE.
- 31 REMOVE EXISTING ELBOW. SALVAGE AND DELIVER TO CITY SHOPS.
- 400 102.7/108.2 - WATER MAIN PIPE (C-900 DR-18 PVC) (SIZE AS SHOWN). INCLUDES TYPE A BEDDING AND HAUNCHING MATERIAL AND BACKFILL OF TRENCH WITH NATIVE MATERIALS MEETING 103.16 EARTH BACKFILL MATERIAL.
- 403 102.8b/108.3 - GATE VALVE. (SIZE AS SHOWN)
- 407 102.8/108.3 - TEE (SIZE AS SHOWN)
- 409 102.8/108.3 - ELBOW (SIZE AND ANGLE AS SHOWN)
- 413 102.7C/108.4 - WATER SERVICE LINE (TYPE K COPPER) (SIZE AS SHOWN ON PLAN) THE CONTRACT UNIT PRICE FOR WATER SERVICE PIPE SHALL INCLUDE THE COST OF CONNECTION TO WATERLINE INCLUDING ALL MATERIALS TO MAKE THE CONNECTION AND CLOSING ORIGINAL CORPORATION STOP.
- 416 102.8/108.4 CORPORATION STOP (SIZE AS SHOWN ON PLAN)
- 426 CONNECT TO EXISTING WATER PIPE/VALVE/FITTING. THE CONTRACT UNIT PRICE FOR WATER PIPE SHALL INCLUDE THE COST OF CONNECTION TO EXISTING PIPELINE.
- 683 401.08 - HOT BITUMINOUS PAVEMENT (PATCHING) (4" THICK ON TOP OF 6" ABC) (GRADING SX, BINDER GRADE PG 64-22, GYR 75) (TWO 2" LIFTS)
- 775 208 - STORM DRAIN INLET PROTECTION (EROSION CONTROL LOG) (AS SHOWN AND PER DETAIL)
- 825 CONTRACTOR IS RESPONSIBLE FOR REPAIR COSTS ASSOCIATED WITH ANY/ALL DAMAGE TO PRIVATE PROPERTY BEHIND ROW LINE OR EASEMENT LIMITS.
- 826 PROTECT EXISTING UTILITY LINE IN PLACE.



- NOTES:**
1. CONNECT TO EXISTING SERVICE LINES OR EXTEND SERVICE LINES TO NEW 6" WATERLINE
 2. ALL CURB STOP AND SERVICE LINE LOCATIONS ARE APPROXIMATE AND SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION
 3. IF CURB STOP WAS NOT LOCATED FIELD LOCATE CURB STOP AND REPLACE EXIST SRVC CONNECTION WITH NEW CONNECTION TO NEW 6" WATERLINE

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REVISION	DESCRIPTION	DATE	DRAWN BY	DATE
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2			LAL/ZCF	07.18.2022
3			JJM	07.18.2022
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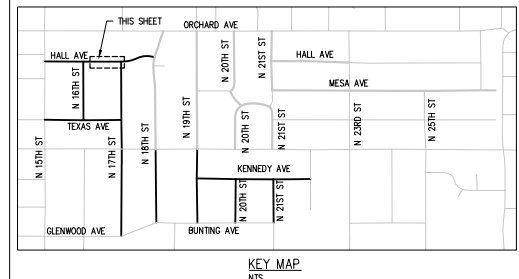
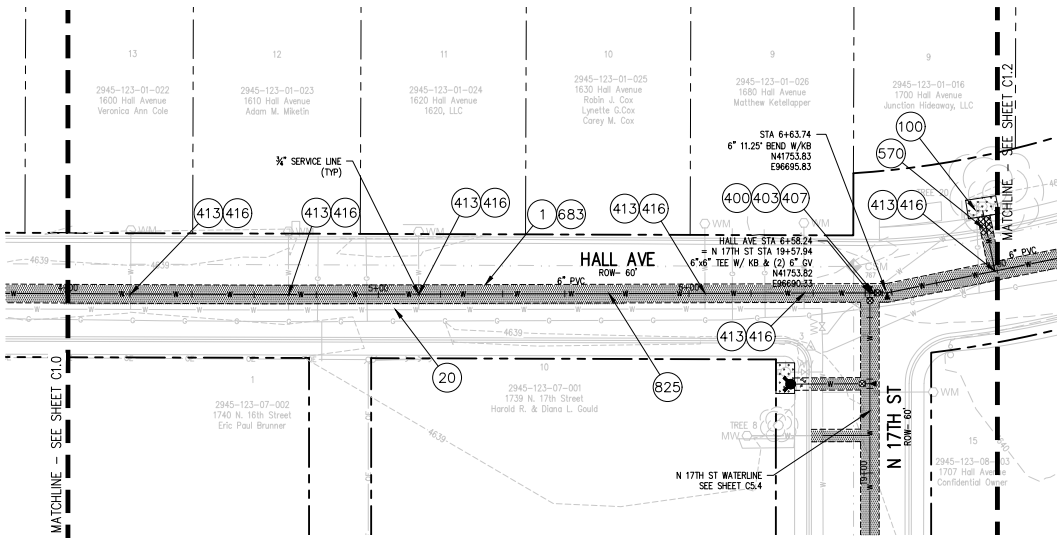
SCALES:

PLAN & PROFILE	1" = 40'
SECTION	1" = 4'
DETAIL	1" = 1"



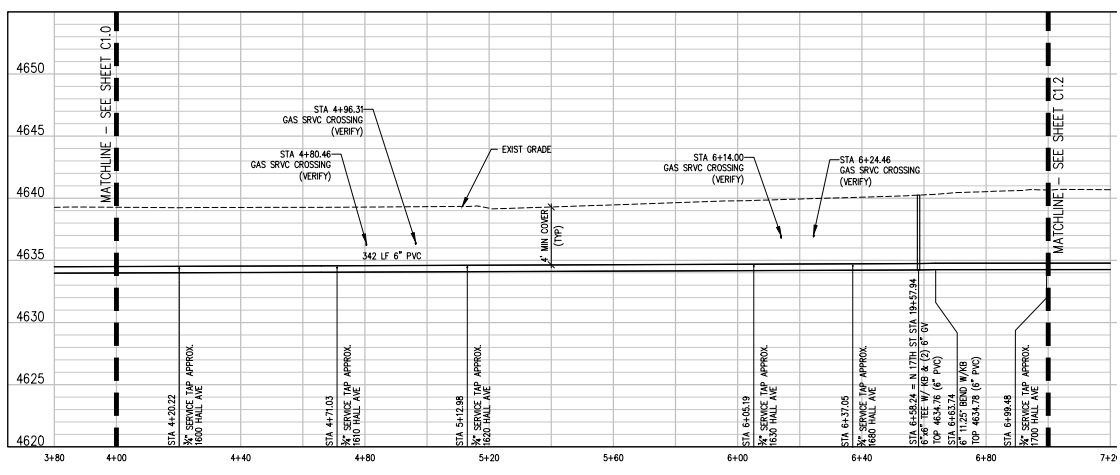
2022 WATERLINE REPLACEMENT PROJECT - PHASE 1
HALL AVE WATER PLAN & PROFILE

C1.0



CONSTRUCTION NOTES

- (1) 202 - REMOVAL OF ASPHALT MAT. SAW CUT AND REMOVE ASPHALT AS SHOWN, (INDICATED BY DOT HATCH PATTERN).
- (20) 202 - ABANDON PIPE. ABANDONED BY PLUGGING REMAINING ENDS WITH CONCRETE.
- (100) 210 - RESET LANDSCAPE GROUND COVER. CONTRACTOR SHALL REMOVE GROUND COVER AND ANY UNDERLYING WEED BARRIER AS NEEDED AND STOCKPILE MATERIALS. CONTRACTOR SHALL RESET THESE MATERIALS AND PROVIDE ADDITIONAL MATERIALS AS NEEDED TO RESTORE LANDSCAPING.
- (400) 102.7/108.2 - WATER MAIN PIPE (C-900 DR-18 PVC) (SIZE AS SHOWN). INCLUDES TYPE A BEDDING AND HAUNCHING MATERIAL AND BACKFILL OF TRENCH WITH NATIVE MATERIALS MEETING 103.16 EARTH BACKFILL MATERIAL.
- (403) 102.8b/108.3 - GATE VALVE. (SIZE AS SHOWN)
- (407) 102.8/108.3 - TEE (SIZE AS SHOWN)
- (413) 102.7C/108.4 - WATER SERVICE LINE (TYPE K COPPER) (SIZE AS SHOWN ON PLAN) THE CONTRACT UNIT PRICE FOR WATER SERVICE PIPE SHALL INCLUDE THE COST OF CONNECTION TO WATERLINE INCLUDING ALL MATERIALS TO MAKE THE CONNECTION AND CLOSING ORIGINAL CORPORATION STOP.
- (418) 102.8/108.4 CORPORATION STOP (SIZE AS SHOWN ON PLAN)
- (570) 608.06 - MONOLITHIC CURB, GUTTER, AND SIDEWALK (6" WIDE)
- (683) 401.08 - HOT BITUMINOUS PAVEMENT (PATCHING) (4" THICK ON TOP OF 6" ABC) (GRADING SX, BINDER GRADE PG 64-22, GYR 75) (TWO 2' LIFTS)
- (825) CONTRACTOR IS RESPONSIBLE FOR REPAIR COSTS ASSOCIATED WITH ANY/DAMAGE TO PRIVATE PROPERTY BEHIND ROW LINE OR EASEMENT LIMITS.



- NOTES:**
- CONNECT TO EXISTING SERVICE LINES OR EXTEND SERVICE LINES TO NEW 6" WATERLINE
 - ALL CURB STOP AND SERVICE LINE LOCATIONS ARE APPROXIMATE AND SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION
 - IF CURB STOP WAS NOT LOCATED FIELD LOCATE CURB STOP AND REPLACE EXIST SRVC CONNECTION WITH NEW CONNECTION TO NEW 6" WATERLINE

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REVISION	DESCRIPTION	DATE	DRAWN BY	DATE	DESIGNED BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE
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REVISION 2										
REVISION 3										

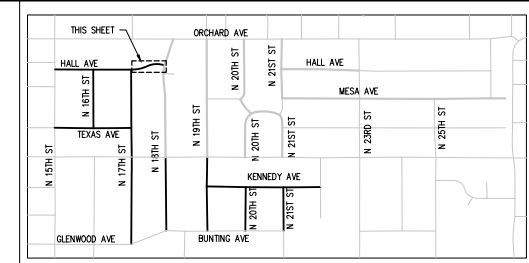
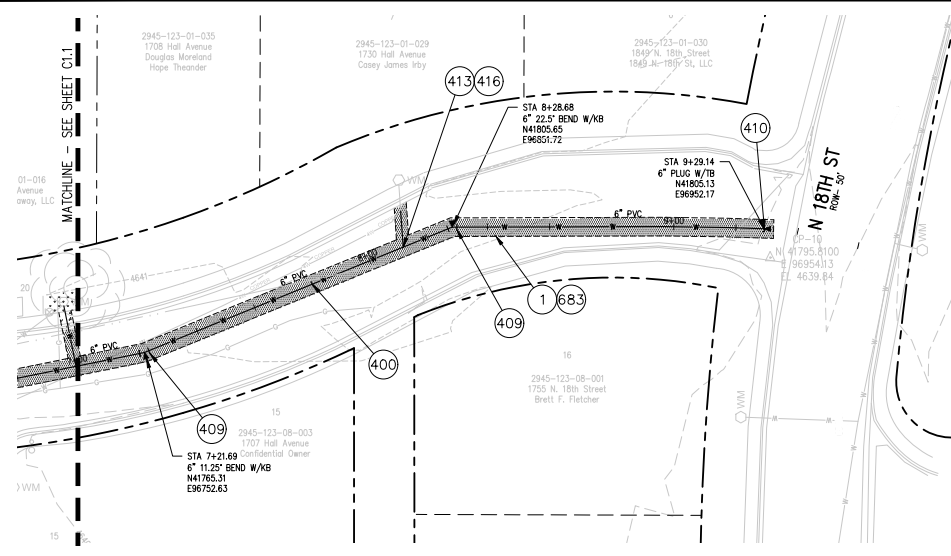
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VERTICAL	1" = 5'



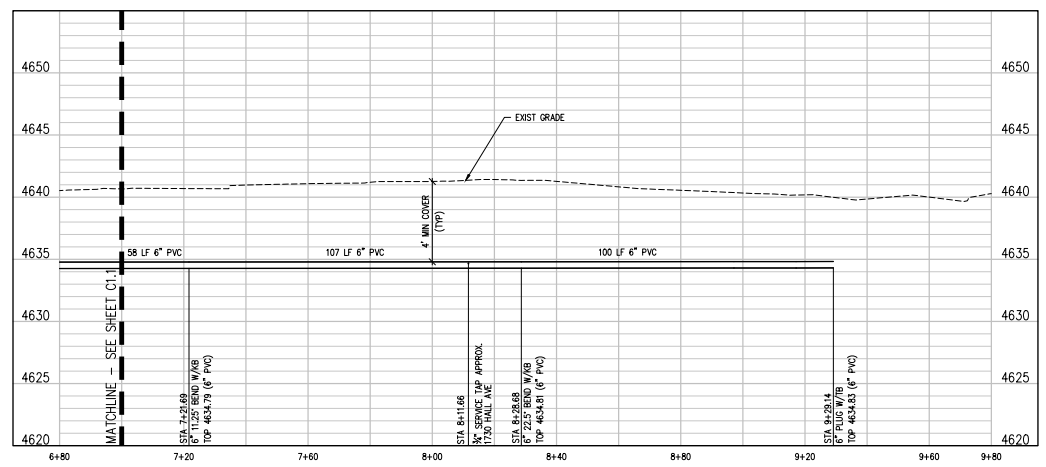
2022 WATERLINE REPLACEMENT PROJECT - PHASE 1
HALL AVE WATER PLAN & PROFILE

C1.1



CONSTRUCTION NOTES

- ① 202 - REMOVAL OF ASPHALT MAT. SAW CUT AND REMOVE ASPHALT AS SHOWN. (INDICATED BY DOT HATCH PATTERN).
- ④00 102.7/108.2 - WATER MAIN PIPE (C-900 DR-18 PVC) (SIZE AS SHOWN). INCLUDES TYPE A BEDDING AND HAUNCHING MATERIAL AND BACKFILL OF TRENCH WITH NATIVE MATERIALS MEETING 103.16 EARTH BACKFILL MATERIAL.
- ④10 102.8/108.3 - END CAP / PLUG (SIZE AS SHOWN)
- ④13 102.7C/108.4 - WATER SERVICE LINE (TYPE K COPPER) (SIZE AS SHOWN ON PLAN) THE CONTRACT UNIT PRICE FOR WATER SERVICE PIPE SHALL INCLUDE THE COST OF CONNECTION TO WATERLINE INCLUDING ALL MATERIALS TO MAKE THE CONNECTION AND CLOSING ORIGINAL CORPORATION STOP.
- ④16 102.8/108.4 CORPORATION STOP (SIZE AS SHOWN ON PLAN)
- ⑥83 401.08 - HOT BITUMINOUS PAVEMENT (PATCHING) (4\"/>



- NOTES:**
1. CONNECT TO EXISTING SERVICE LINES OR EXTEND SERVICE LINES TO NEW 6\"/>
 - 2. ALL CURB STOP AND SERVICE LINE LOCATIONS ARE APPROXIMATE AND SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION
 - 3. IF CURB STOP WAS NOT LOCATED FIELD LOCATE CURB STOP AND REPLACE EXIST SRVC CONNECTION WITH NEW CONNECTION TO NEW 6\"/>

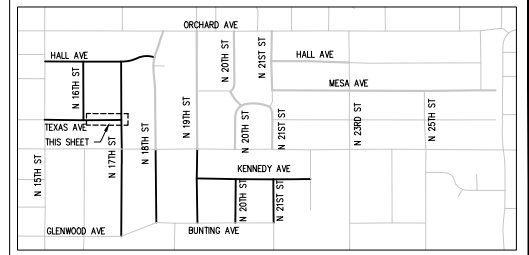
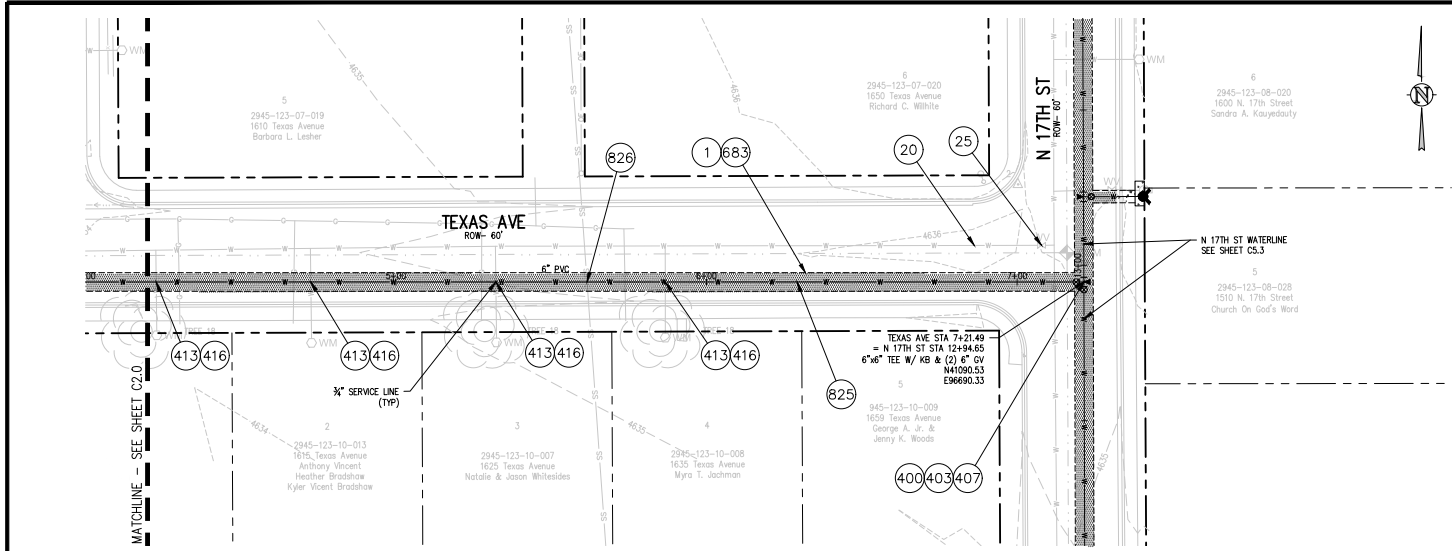
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1			ZCF	07.18.2022
2			LAL/ZCF	07.18.2022
3			JJM	07.18.2022
4				

SCALES:	
PLAN & PROFILE	1"=40'
	1"=20'
	1"=10'

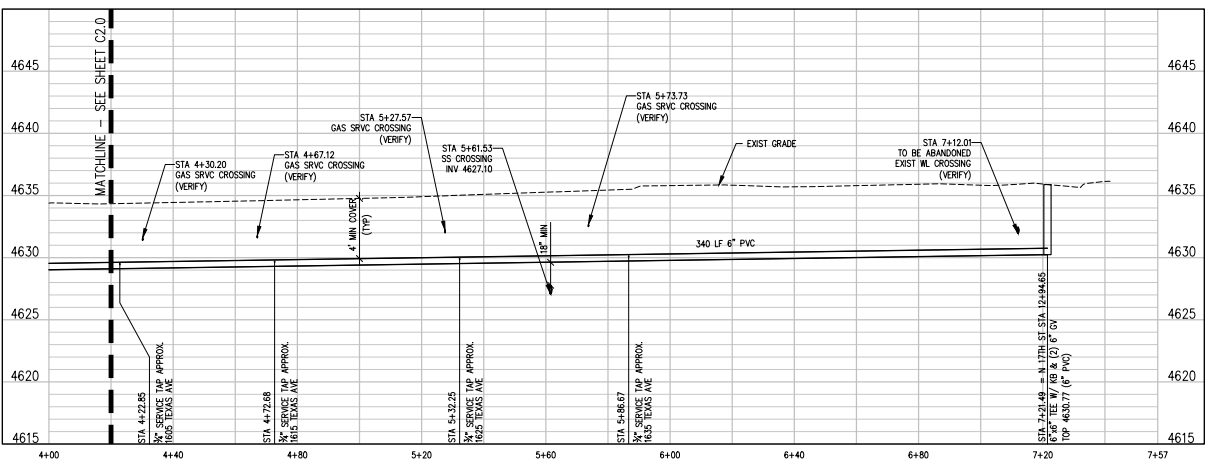


2022 WATERLINE REPLACEMENT PROJECT - PHASE 1 HALL AVE WATER PLAN & PROFILE



CONSTRUCTION NOTES

- 1 - 202 - REMOVAL OF ASPHALT MAT. SAW CUT AND REMOVE ASPHALT AS SHOWN, (INDICATED BY DOT HATCH PATTERN).
- 20 - 202 - ABANDON PIPE. ABANDONED BY PLUGGING REMAINING ENDS WITH CONCRETE.
- 25 - 202 - ABANDON EXISTING WATER VALVE. CLOSE VALVE, REMOVE TOP HALF OF EXISTING VALVE BOX, FILL CAVITY TO FINISHED SUBGRADE WITH FLOW FILL MATERIAL.
- 400 - 102.7/108.2 - WATER MAIN PIPE (C-900 DR-18 PVC) (SIZE AS SHOWN), INCLUDES TYPE A BEDDING AND HAUNCHING MATERIAL AND BACKFILL OF TRENCH WITH NATIVE MATERIALS MEETING 103.16 EARTH BACKFILL MATERIAL.
- 403 - 102.8b/108.3 - GATE VALVE, (SIZE AS SHOWN)
- 407 - 102.8/108.3 - TEE (SIZE AS SHOWN)
- 413 - 102.7C/108.4 - WATER SERVICE LINE (TYPE K COPPER) (SIZE AS SHOWN ON PLAN) THE CONTRACT UNIT PRICE FOR WATER SERVICE PIPE SHALL INCLUDE THE COST OF CONNECTION TO WATERLINE INCLUDING ALL MATERIALS TO MAKE THE CONNECTION AND CLOSING ORIGINAL CORPORATION STOP.
- 416 - 102.8j/108.4 CORPORATION STOP (SIZE AS SHOWN ON PLAN)
- 683 - 401.08 - HOT BITUMINOUS PAVEMENT (PATCHING) (4" THICK ON TOP OF 6" ABC) (GRADING SX, BINDER GRADE PG 64-22, GYR 75) (TWO 2" LIFTS)
- 825 - CONTRACTOR IS RESPONSIBLE FOR REPAIR COSTS ASSOCIATED WITH ANY/ALL DAMAGE TO PRIVATE PROPERTY BEHIND ROW LINE OR EASEMENT LIMITS.
- 826 - PROTECT EXISTING UTILITY LINE IN PLACE.



- NOTES:**
1. CONNECT TO EXISTING SERVICE LINES OR EXTEND SERVICE LINES TO NEW 6" WATERLINE
 2. ALL CURB STOP AND SERVICE LINE LOCATIONS ARE APPROXIMATE AND SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION
 3. IF CURB STOP WAS NOT LOCATED FIELD LOCATE CURB STOP AND REPLACE EXIST SRVC CONNECTION WITH NEW CONNECTION TO NEW 6" WATERLINE

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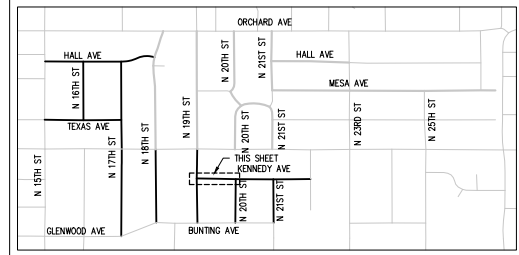
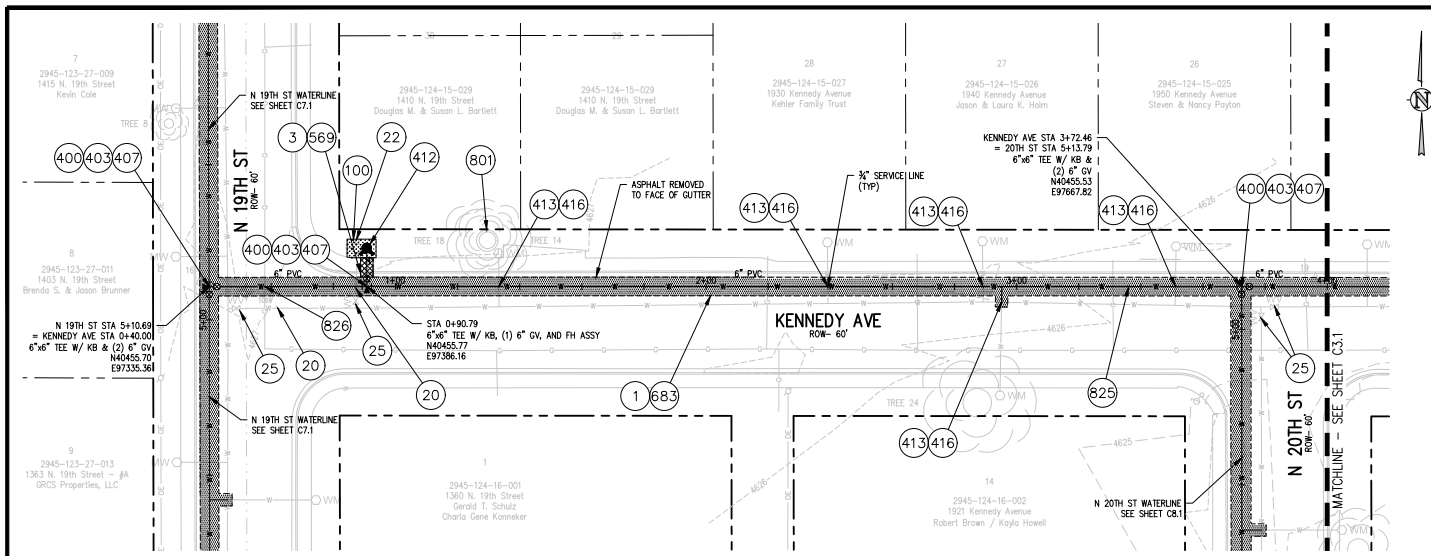
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1			ZCF	07.18.2022
2			LAL/ZCF	07.18.2022
3			JIM	07.18.2022
4				

SCALES:

PLAN	1" = 40'
PROFILE	1" = 4'



2022 WATERLINE REPLACEMENT PROJECT - PHASE 1
TEXAS AVE WATER PLAN & PROFILE



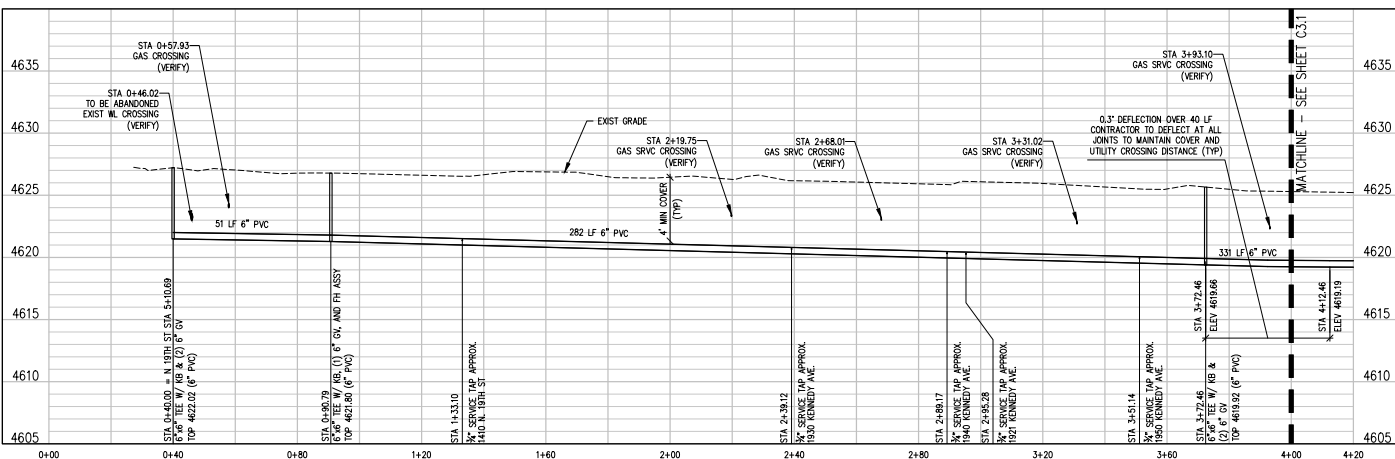
KEY MAP
NTS

CONSTRUCTION NOTES

- 1 202 - REMOVAL OF ASPHALT MAT. SAW CUT AND REMOVE ASPHALT AS SHOWN. (INDICATED BY DOT HATCH PATTERN).
- 3 202 - REMOVAL OF CONCRETE. SAW CUT AND REMOVE CONCRETE AS SHOWN. (INDICATED BY CROSS HATCH PATTERN) INCLUDES BUT NOT LIMITED TO CURB, GUTTER, SIDEWALK, DRIVEWAY, SLABS, V-PAN, CURB RAMPS, INTERSECTION CORNERS, APRONS, AND LANDSCAPE BORDERS.
- 20 202 - ABANDON PIPE. ABANDONED BY PLUGGING REMAINING ENDS WITH CONCRETE.
- 22 202 - REMOVE EXISTING FIRE HYDRANT AND RETURN TO CITY SHOPS.
- 25 202 - ABANDON EXISTING WATER VALVE. CLOSE VALVE, REMOVE TOP HALF OF EXISTING VALVE BOX, FILL CAVITY TO FINISHED SUBGRADE WITH FLOW FILL MATERIAL.
- 100 210 - RESET LANDSCAPE GROUND COVER. CONTRACTOR SHALL REMOVE GROUND COVER AND ANY UNDERLYING WEED BARRIER AS NEEDED AND STOCKPILE MATERIALS. CONTRACTOR SHALL RESET THESE MATERIALS AND PROVIDE ADDITIONAL MATERIALS AS NEEDED TO RESTORE LANDSCAPING.
- 400 102.7/108.2 - WATER MAIN PIPE (C-900 DR-18 PVC) (SIZE AS SHOWN). INCLUDES TYPE A BEDDING AND HAUNCHING MATERIAL AND BACKFILL OF TRENCH WITH NATIVE MATERIALS MEETING 103.16 EARTH BACKFILL MATERIAL.
- 403 102.8/108.3 - GATE VALVE. (SIZE AS SHOWN)
- 407 102.8/108.3 - TEE (SIZE AS SHOWN)
- 412 102.8/108.3 - FIRE HYDRANT
- 413 102.7/108.4 - WATER SERVICE LINE (TYPE K COPPER) (SIZE AS SHOWN ON PLAN) THE CONTRACT UNIT PRICE FOR WATER SERVICE PIPE SHALL INCLUDE THE COST OF CONNECTION TO WATERLINE INCLUDING ALL MATERIALS TO MAKE THE CONNECTION AND CLOSING ORIGINAL CORPORATION STOP.
- 416 102.8/108.4 CORPORATION STOP (SIZE AS SHOWN ON PLAN)
- 569 608.06 - MONOLITHIC CURB, GUTTER AND SIDEWALK (5' WIDE)
- 683 401.08 - HOT BITUMINOUS PAVEMENT (PATCHING) (4" THICK ON TOP OF 6" ABC) (GRADING SX, BINDER GRADE PG 64-22, GYR 75) (TWO 2" LIFTS)
- 801 PROTECT TREE
- 825 CONTRACTOR IS RESPONSIBLE FOR REPAIR COSTS ASSOCIATED WITH ANY/ALL DAMAGE TO PRIVATE PROPERTY BEHIND ROW LINE OR EASEMENT LIMITS.
- 827 PROTECT EXISTING GAS.

NOTES:

1. CONNECT TO EXISTING SERVICE LINES OR EXTEND SERVICE LINES TO NEW 6" WATERLINE
2. ALL CURB STOP AND SERVICE LINE LOCATIONS ARE APPROXIMATE AND SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION
3. IF CURB STOP WAS NOT LOCATED FIELD LOCATE CURB STOP AND REPLACE EXIST SRVC CONNECTION WITH NEW CONNECTION TO NEW 6" WATERLINE



N:\2023\10\10\2023-10-10\1023-10-10\1023-10-10\1023-10-10.dwg - 02:30:02 AM 10/20/2023 - 8:56 AM JLF

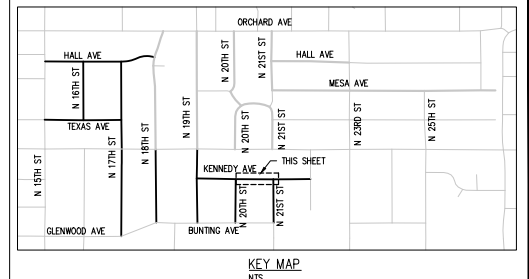
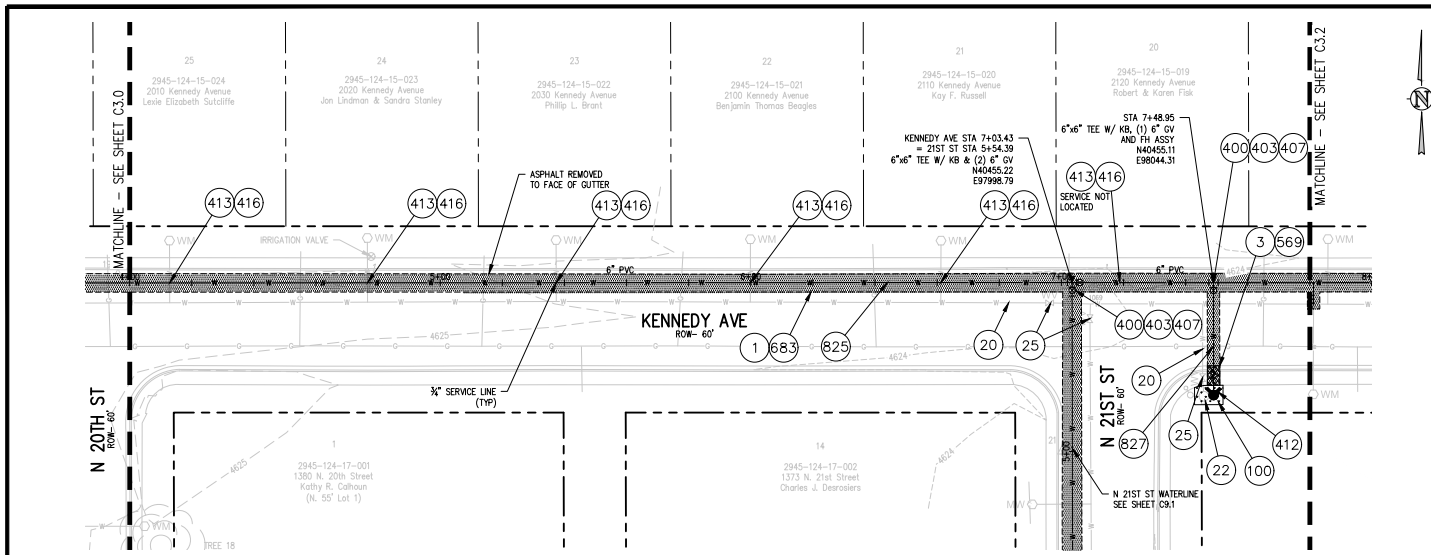
REVISION	DESCRIPTION	DATE	DRAWN BY	DATE
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2			LAL/ZCF	07.18.2022
3			JJM	07.18.2022
4				

SCALES:

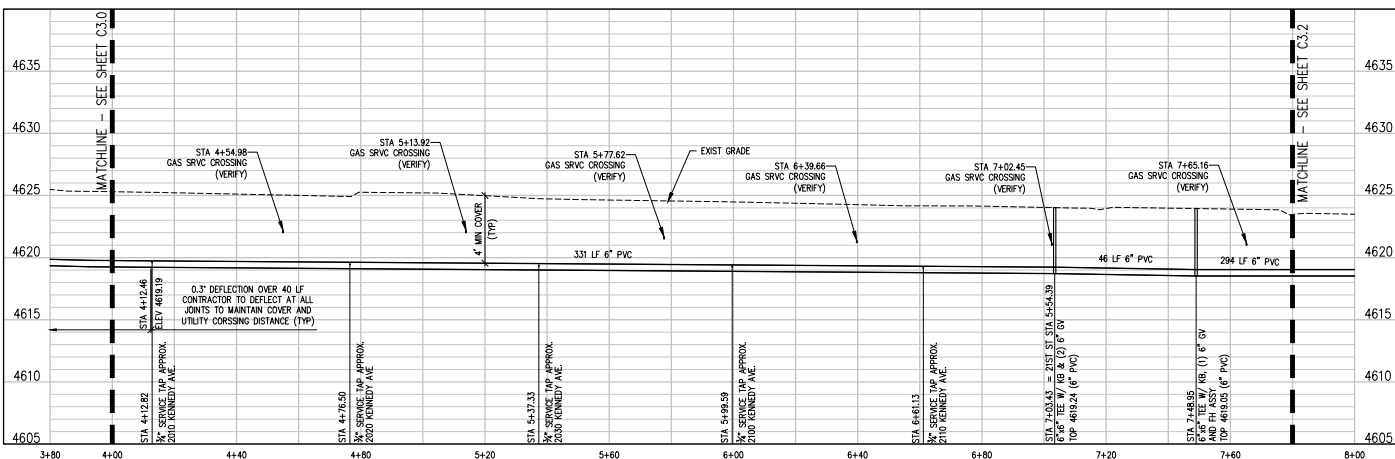
PLAN & PROFILE	1"=40'
SECTION	1"=10'
DETAIL	1"=2"



2022 WATERLINE REPLACEMENT PROJECT - PHASE 1
KENNEDY AVE WATER PLAN & PROFILE



- CONSTRUCTION NOTES**
- 1 202 - REMOVAL OF ASPHALT MAT. SAW CUT AND REMOVE ASPHALT AS SHOWN. (INDICATED BY DOT HATCH PATTERN).
 - 3 202 - REMOVAL OF CONCRETE. SAW CUT AND REMOVE CONCRETE AS SHOWN. (INDICATED BY CROSS HATCH PATTERN) INCLUDES BUT NOT LIMITED TO CURB, GUTTER, SIDEWALK, DRIVEWAY, SLABS, V-PAN, CURB RAMPS, INTERSECTION CORNERS, APRONS, AND LANDSCAPE BORDERS.
 - 20 202 - ABANDON PIPE. ABANDONED BY PLUGGING REMAINING ENDS WITH CONCRETE.
 - 22 202 - REMOVE EXISTING FIRE HYDRANT AND RETURN TO CITY SHOPS.
 - 25 202 - ABANDON EXISTING WATER VALVE. CLOSE VALVE. REMOVE TOP HALF OF EXISTING VALVE BOX, FILL CAVITY TO FINISHED SUBGRADE WITH FLOW FILL MATERIAL.
 - 100 210 - RESET LANDSCAPE GROUND COVER. CONTRACTOR SHALL REMOVE GROUND COVER AND ANY UNDERLYING WEED BARRIER AS NEEDED AND STOCKPILE MATERIALS. CONTRACTOR SHALL RESET THESE MATERIALS AND PROVIDE ADDITIONAL MATERIALS AS NEEDED TO RESTORE LANDSCAPING.
 - 400 102.7/108.2 - WATER MAIN PIPE (C-900 DR-18 PVC) (SIZE AS SHOWN). INCLUDES TYPE A BEDDING AND HAUNCHING MATERIAL AND BACKFILL OF TRENCH WITH NATIVE MATERIALS MEETING 103.16 EARTH BACKFILL MATERIAL.
 - 403 102.8b/108.3 - GATE VALVE. (SIZE AS SHOWN)
 - 407 102.8/108.3 - TEE (SIZE AS SHOWN)
 - 412 102.8a/108.3 - FIRE HYDRANT
 - 413 102.7/108.4 - WATER SERVICE LINE (TYPE K COPPER) (SIZE AS SHOWN ON PLAN) THE CONTRACT UNIT PRICE FOR WATER SERVICE PIPE SHALL INCLUDE THE COST OF CONNECTION TO WATERLINE INCLUDING ALL MATERIALS TO MAKE THE CONNECTION AND CLOSING ORIGINAL CORPORATION STOP.
 - 416 102.8/108.4 CORPORATION STOP (SIZE AS SHOWN ON PLAN)
 - 569 608.06 - MONOLITHIC CURB, GUTTER AND SIDEWALK (5' WIDE)
 - 683 401.08 - HOT BITUMINOUS PAVEMENT (PATCHING) (4" THICK ON TOP OF 6" ABC) (GRADING SX, BINDER GRADE PG 64-22, GYR 75) (TWO 2" LIFTS)
 - 825 CONTRACTOR IS RESPONSIBLE FOR REPAIR COSTS ASSOCIATED WITH ANY/ALL DAMAGE TO PRIVATE PROPERTY BEHIND ROW LINE OR EASEMENT LIMITS.
 - 827 PROTECT EXISTING GAS.

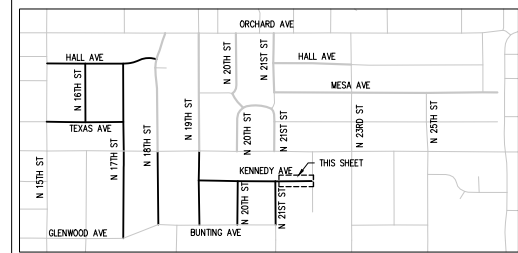
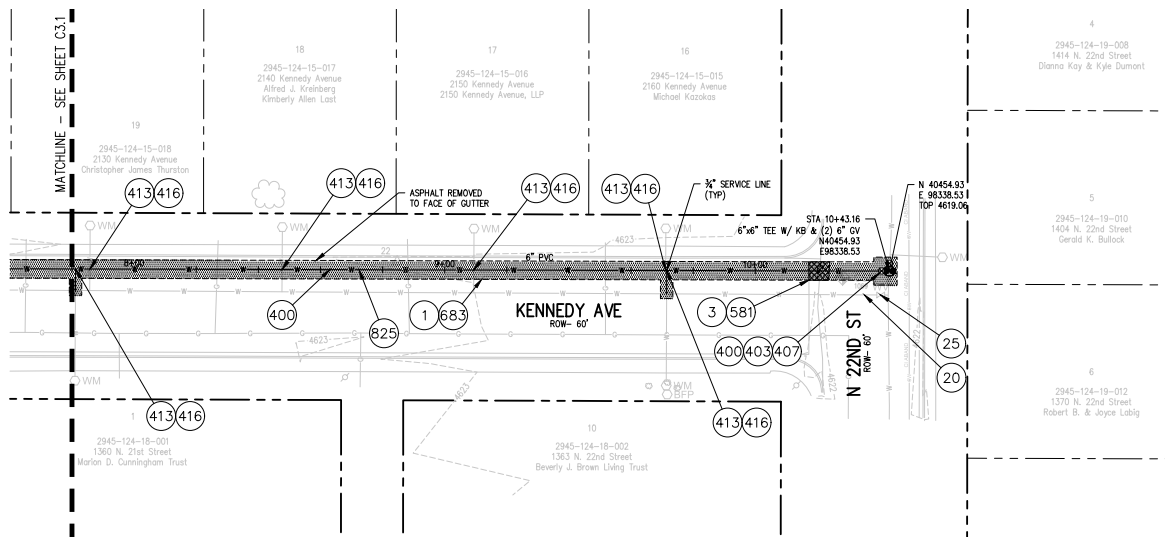


- NOTES:**
1. CONNECT TO EXISTING SERVICE LINES OR EXTEND SERVICE LINES TO NEW 6" WATERLINE
 2. ALL CURB STOP AND SERVICE LINE LOCATIONS ARE APPROXIMATE AND SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION
 3. IF CURB STOP WAS NOT LOCATED FIELD LOCATE CURB STOP AND REPLACE EXIST SRVC CONNECTION WITH NEW CONNECTION TO NEW 6" WATERLINE

REVISION	DESCRIPTION	DATE	DRAWN BY	DATE	SCALE:
REVISION A			JCF	07.18.2022	PLAN & PROFILE 1" = 40' 1" = 10'
REVISION B			LAL/ZCF	07.18.2022	
REVISION C			JIM	07.18.2022	
REVISION D					



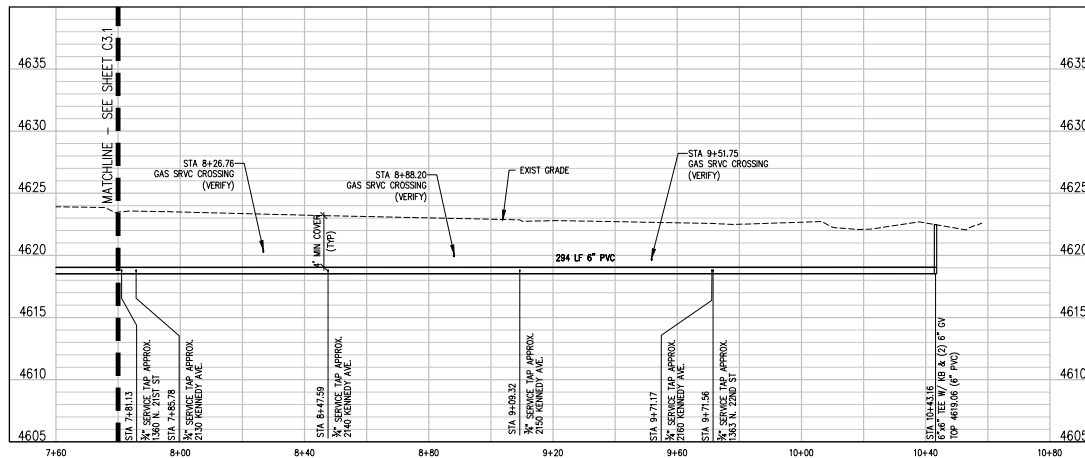
2022 WATERLINE REPLACEMENT PROJECT - PHASE 1
KENNEDY AVE WATER PLAN & PROFILE



KEY MAP
NTS

CONSTRUCTION NOTES

- 1 202 - REMOVAL OF ASPHALT MAT. SAW CUT AND REMOVE ASPHALT AS SHOWN. (INDICATED BY DOT HATCH PATTERN).
- 3 202 - REMOVAL OF CONCRETE. SAW CUT AND REMOVE CONCRETE AS SHOWN. (INDICATED BY CROSS HATCH PATTERN) INCLUDES BUT NOT LIMITED TO CURB, GUTTER, SIDEWALK, DRIVEWAY, SLABS, V-PAN, CURB RAMPS, INTERSECTION CORNERS, APRONS, AND LANDSCAPE BORDERS.
- 20 202 - ABANDON PIPE. ABANDONED BY PLUGGING REMAINING ENDS WITH CONCRETE.
- 25 202 - ABANDON EXISTING WATER VALVE. CLOSE VALVE, REMOVE TOP HALF OF EXISTING VALVE BOX. FILL CAVITY TO FINISHED SUBGRADE WITH FLOW FILL MATERIAL.
- 400 102.7/108.2 - WATER MAIN PIPE (C-900 DR-18 PVC) (SIZE AS SHOWN). INCLUDES TYPE A BEDDING AND HAUNCHING MATERIAL AND BACKFILL OF TRENCH WITH NATIVE MATERIALS MEETING 103.16 EARTH BACKFILL MATERIAL.
- 403 102.8b/108.3 - GATE VALVE. (SIZE AS SHOWN)
- 407 102.8/108.3 - TEE (SIZE AS SHOWN)
- 413 102.7C/108.4 - WATER SERVICE LINE (TYPE K COPPER) (SIZE AS SHOWN ON PLAN) THE CONTRACT UNIT PRICE FOR WATER SERVICE PIPE SHALL INCLUDE THE COST OF CONNECTION TO WATERLINE INCLUDING ALL MATERIALS TO MAKE THE CONNECTION AND CLOSING ORIGINAL CONNECTION STOP.
- 416 102.8j/108.4 CORPORATION STOP (SIZE AS SHOWN ON PLAN)
- 581 608.06 - CONCRETE DRAINAGE PAN (6" WIDE)
- 683 401.05 - HOT BITUMINOUS PAVEMENT (PATCHING) (4" THICK ON TOP OF 6" ABC) (GRADING SX, BINDER GRADE PG 64-22, GYR 75) (TWO 2" LIFTS)
- 825 CONTRACTOR IS RESPONSIBLE FOR REPAIR COSTS ASSOCIATED WITH ANY/ALL DAMAGE TO PRIVATE PROPERTY BEHIND ROW LINE OR EASEMENT LIMITS.



- NOTES:**
- 1. CONNECT TO EXISTING SERVICE LINES OR EXTEND SERVICE LINES TO NEW 6" WATERLINE
 - 2. ALL CURB STOP AND SERVICE LINE LOCATIONS ARE APPROXIMATE AND SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION
 - 3. IF CURB STOP WAS NOT LOCATED FIELD LOCATE CURB STOP AND REPLACE EXIST SRVC CONNECTION WITH NEW CONNECTION TO NEW 6" WATERLINE

REVISION	DESCRIPTION	DATE	DRAWN BY	DATE
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2			LAL/ZCF	07.18.2022
3			JJM	07.18.2022
4				

SCALES:

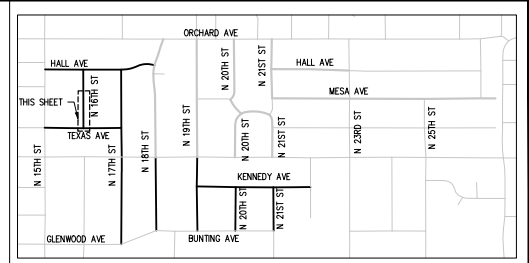
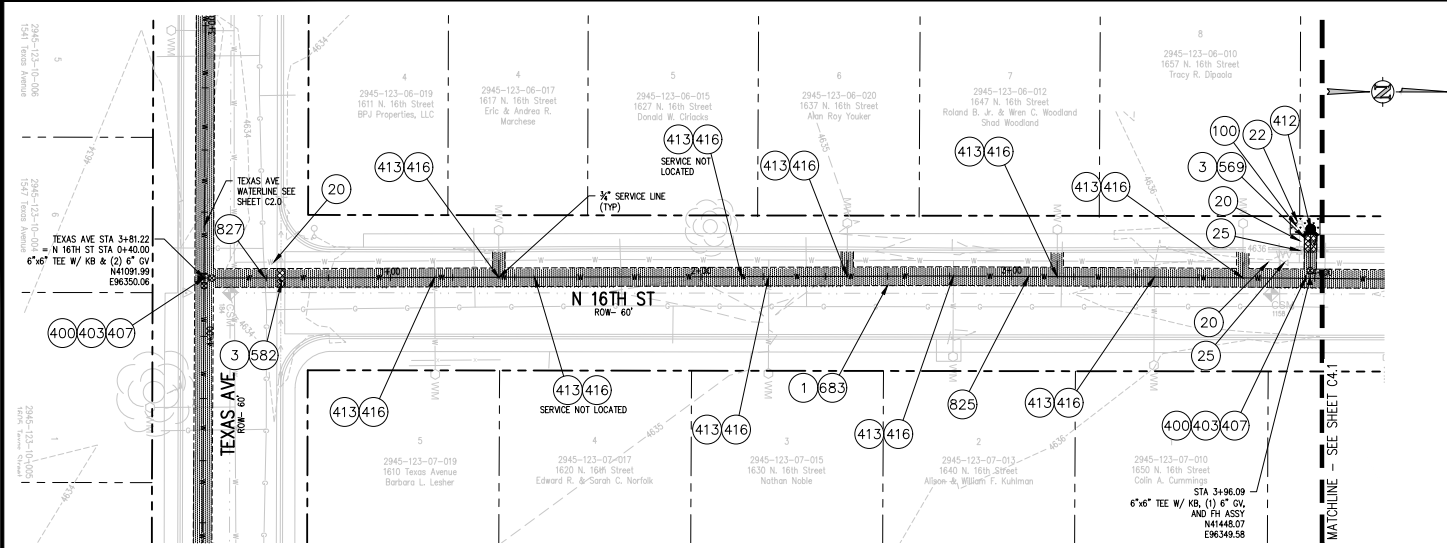
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VERTICAL	1" = 4'



2022 WATERLINE REPLACEMENT PROJECT - PHASE 1
KENNEDY AVE WATER PLAN & PROFILE

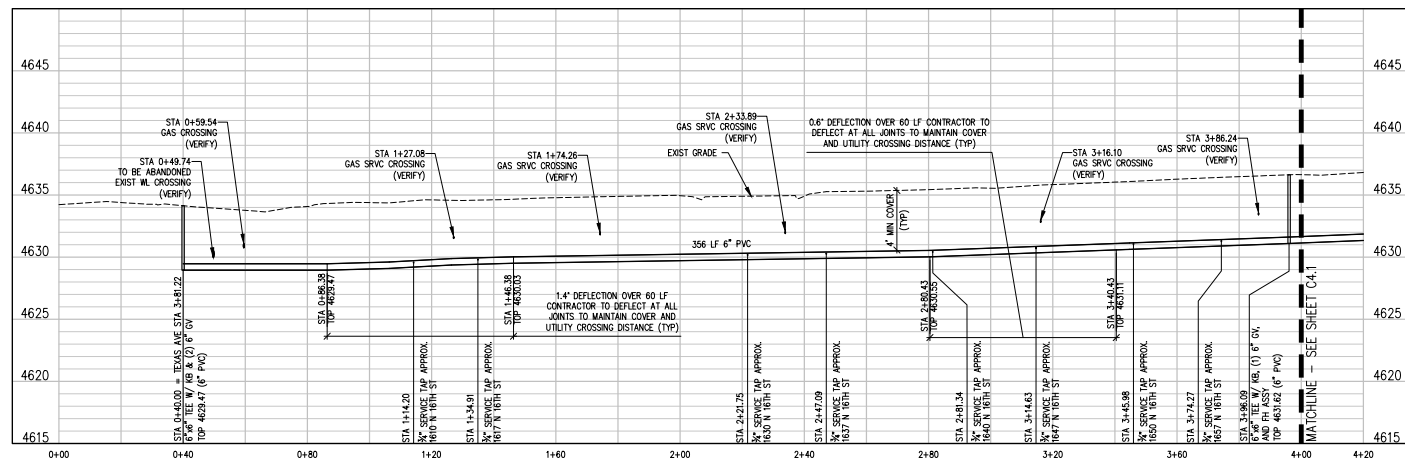
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CONSTRUCTION NOTES

- ① 202 - REMOVAL OF ASPHALT MAT. SAW CUT AND REMOVE ASPHALT AS SHOWN. (INDICATED BY DOT HATCH PATTERN).
- ③ REMOVAL OF CONCRETE. SAW CUT AND REMOVE CONCRETE AS SHOWN. (INDICATED BY CROSS HATCH PATTERN) INCLUDES BUT NOT LIMITED TO CURB, GUTTER, SIDEWALK, DRIVEWAY, V.PAN, CURB RAMPS, INTERSECTION CORNERS, APRONS, AND LANDSCAPE BORDERS.
- ②0 202 - ABANDON PIPE. ABANDONED BY PLUGGING REMAINING ENDS WITH CONCRETE.
- ②② 202 - REMOVE EXISTING FIRE HYDRANT AND RETURN TO CITY SHOPS.
- ②⑤ 202 - ABANDON EXISTING WATER VALVE. CLOSE VALVE, REMOVE TOP HALF OF EXISTING VALVE BOX, FILL CAVITY TO FINISHED SUBGRADE WITH FLOW FILL MATERIAL.
- ①00 210 - RESET LANDSCAPE GROUND COVER. CONTRACTOR SHALL REMOVE GROUND COVER AND ANY UNDERLYING WEED BARRIER AS NEEDED AND STOCKPILE MATERIALS. CONTRACTOR SHALL RESET THESE MATERIALS AND PROVIDE ADDITIONAL MATERIALS AS NEEDED TO RESTORE LANDSCAPING.
- ④00 102.7/108.2 - WATER MAIN PIPE (C-900 DR 18 PVC) (SIZE AS SHOWN). INCLUDES TYPE A BEDDING AND HAUNCHING MATERIAL AND BACKFILL OF TRENCH WITH NATIVE MATERIALS MEETING 103.16 EARTH BACKFILL MATERIAL.
- ④03 102.8b/108.3 - GATE VALVE. (SIZE AS SHOWN)
- ④07 102.8/108.3 - TEE (SIZE AS SHOWN)
- ④12 102.8a/108.3 - FIRE HYDRANT
- ④13 102.7C/108.4 - WATER SERVICE LINE (TYPE K COPPER) (SIZE AS SHOWN ON PLAN) THE CONTRACT UNIT PRICE FOR WATER SERVICE PIPE SHALL INCLUDE THE COST OF CONNECTION TO WATERLINE INCLUDING ALL MATERIALS TO MAKE THE CONNECTION AND CLOSING ORIGINAL CORPORATION STOP.
- ④16 102.8J/108.4 - CORPORATION STOP (INSTALL ONLY) (SIZE AS SHOWN ON PLAN)
- ⑤69 608.06 - MONOLITHIC CURB, GUTTER AND SIDEWALK (5' WIDE)
- ⑤82 608.06 - CONCRETE DRAINAGE PAN (3' WIDE)
- ⑥83 401.08 - HOT BITUMINOUS PAVEMENT (PATCHING) (4" THICK ON TOP OF 6" ABC) (GRADING SX, BINDER GRADE PG 64-22, GYR 75) (TWO 2" LIFTS)
- ⑧25 CONTRACTOR IS RESPONSIBLE FOR REPAIR COSTS ASSOCIATED WITH ANYALL DAMAGE TO PRIVATE PROPERTY BEHIND ROW LINE OR EASEMENT LIMITS.
- ⑧27 PROTECT EXISTING GAS.



NOTES:

1. CONNECT TO EXISTING SERVICE LINES OR EXTEND SERVICE LINES TO NEW 6" WATERLINE
2. ALL CURB STOP AND SERVICE LINE LOCATIONS ARE APPROXIMATE AND SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION
3. IF CURB STOP WAS NOT LOCATED FIELD LOCATE CURB STOP AND REPLACE EXIST SRVC CONNECTION WITH NEW CONNECTION TO NEW 6" WATERLINE

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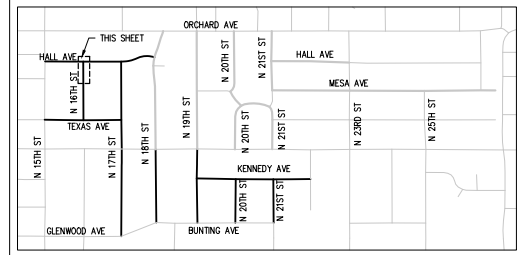
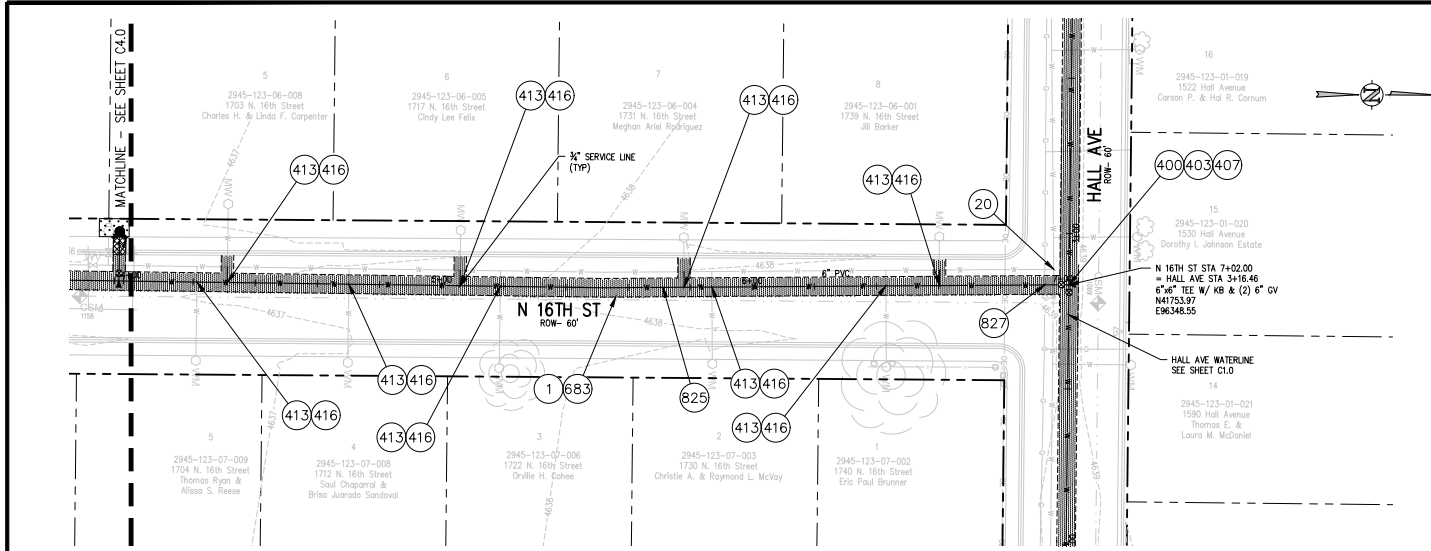
REVISION	DESCRIPTION	DATE	DRAWN BY	DATE
1			JCF	07.18.2022
2			LAL/JCF	07.18.2022
3			JIM	07.18.2022
4				

SCALE:
PLAN & PROFILE
1" = 40'
1" = 20'
1" = 10'



2022 WATERLINE REPLACEMENT PROJECT - PHASE 1
N 16TH ST WATER PLAN & PROFILE

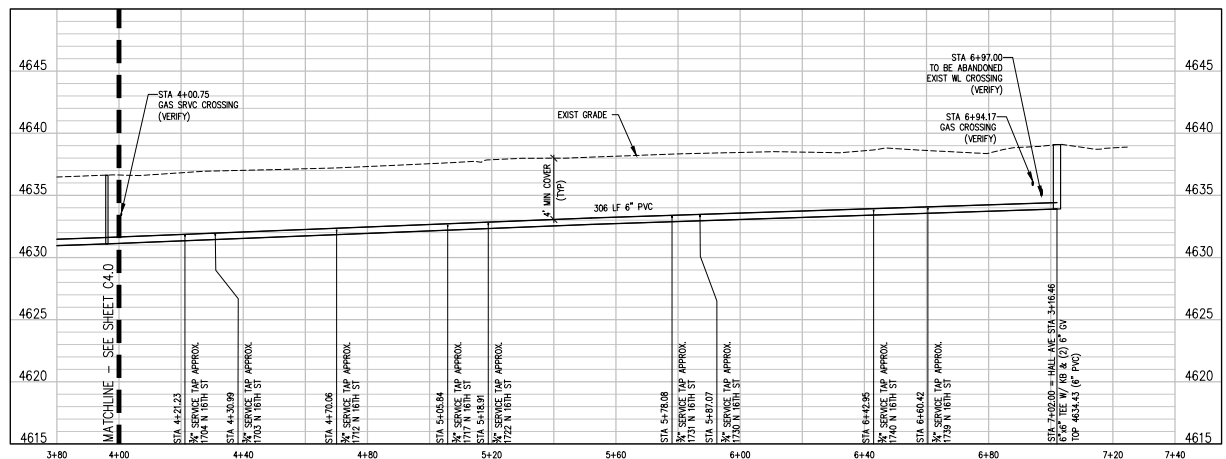
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KEY MAP
NTS

CONSTRUCTION NOTES

- 1 202 - REMOVAL OF ASPHALT MAT. SAW CUT AND REMOVE ASPHALT AS SHOWN. (INDICATED BY DOT HATCH PATTERN).
- 20 202 - ABANDON PIPE. ABANDONED BY PLUGGING REMAINING ENDS WITH CONCRETE.
- 400 102.7/108.2 - WATER MAIN PIPE (C-900 PVC DR-18) (SIZE AS SHOWN). INCLUDES TYPE A BEDDING AND HAUNCHING MATERIAL AND BACKFILL OF TRENCH WITH NATIVE MATERIALS MEETING 103.16 EARTH BACKFILL MATERIAL.
- 403 102.8/108.3 - GATE VALVE. (SIZE AS SHOWN)
- 407 102.8/108.3 - TEE (SIZE AS SHOWN)
- 413 102.7/108.4 - WATER SERVICE LINE (TYPE K COPPER) (SIZE AS SHOWN ON PLAN) THE CONTRACT UNIT PRICE FOR WATER SERVICE PIPE SHALL INCLUDE THE COST OF CONNECTION TO WATERLINE INCLUDING ALL MATERIALS TO MAKE THE CONNECTION AND CLOSING ORIGINAL CORPORATION STOP.
- 416 102.8/108.4 - CORPORATION STOP (SIZE AS SHOWN ON PLAN)
- 683 401.08 - HOT BITUMINOUS PAVEMENT (PATCHING) (4" THICK ON TOP OF 6" ABC) (GRADING SX, BINDER GRADE PG 64-22, GYR 75) (TWO 2' LIFTS)
- 825 CONTRACTOR IS RESPONSIBLE FOR REPAIR COSTS ASSOCIATED WITH ANY/ALL DAMAGES TO PRIVATE PROPERTY BEHIND ROW LINE OR EASEMENT LIMITS.
- 827 PROTECT EXISTING GAS.



- NOTES:**
1. CONNECT TO EXISTING SERVICE LINES OR EXTEND SERVICE LINES TO NEW 6" WATERLINE
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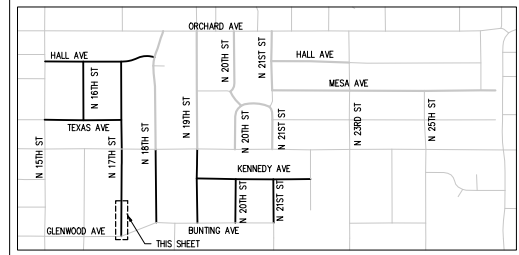
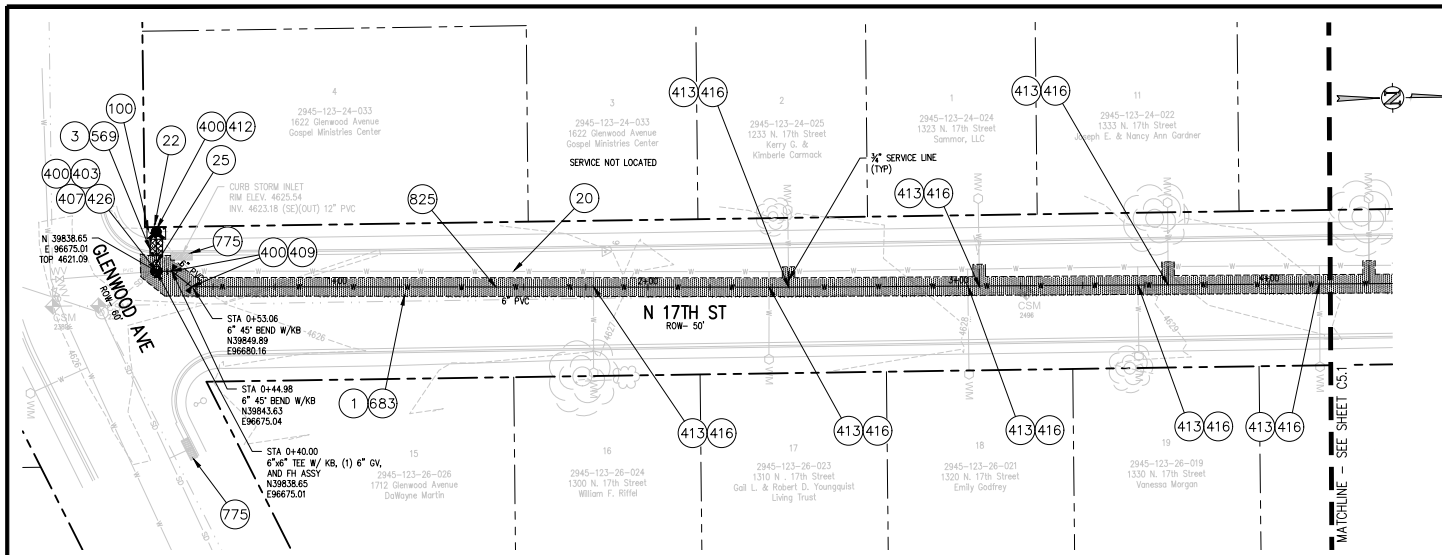
REVISION	DESCRIPTION	DATE	DRAWN BY	DATE
1			ZCF	07.18.2022
2			LAL/ZCF	07.18.2022
3			JIM	07.18.2022

SCALES:

PLAN & PROFILE	1" = 40'
SECTION	1" = 10'
DETAIL	1" = 2'

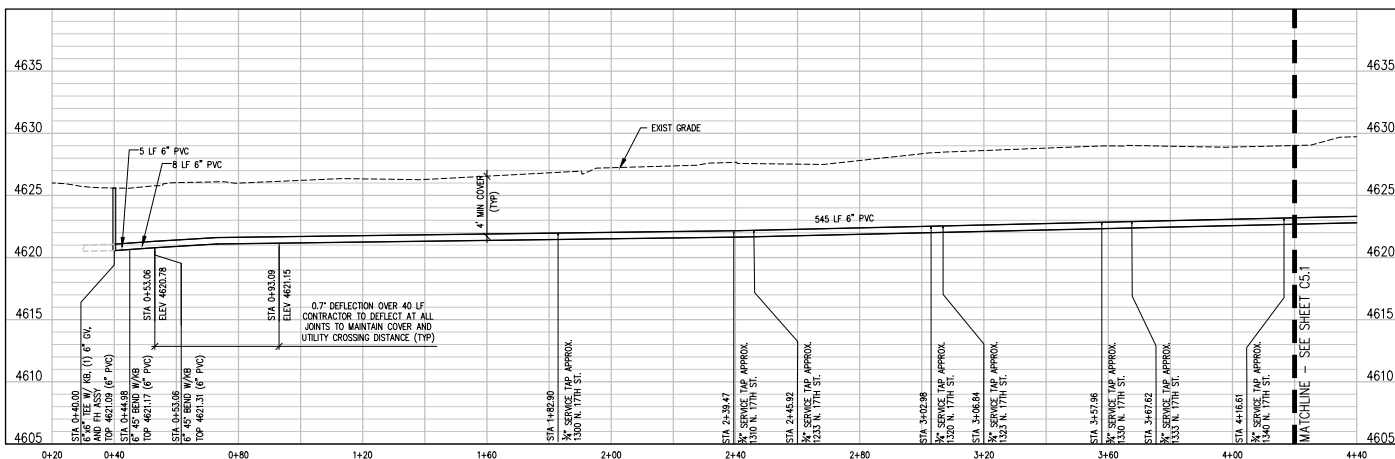


2022 WATERLINE REPLACEMENT PROJECT - PHASE 1
N 16TH ST WATER PLAN & PROFILE



CONSTRUCTION NOTES

- 1 202 - REMOVAL OF ASPHALT MAT. SAW CUT AND REMOVE ASPHALT AS SHOWN. (INDICATED BY DOT HATCH PATTERN).
- 3 202 - REMOVAL OF CONCRETE. SAW CUT AND REMOVE CONCRETE AS SHOWN. (INDICATED BY CROSS HATCH PATTERN) INCLUDES BUT NOT LIMITED TO CURB, GUTTER, SIDEWALK, DRIVEWAY, SLABS, V-PAN, CURB RAMPS, INTERSECTION CORNERS, APRONS, AND LANDSCAPE BORDERS.
- 20 202 - ABANDON PIPE. ABANDONED BY PLUGGING REMAINING ENDS WITH CONCRETE.
- 22 202 - REMOVE EXISTING FIRE HYDRANT AND RETURN TO CITY SHOPS.
- 25 202 - ABANDON EXISTING WATER VALVE. CLOSE VALVE. REMOVE TOP HALF OF EXISTING VALVE BOX. FILL CAVITY TO FINISHED SUBGRADE WITH FLOW FILL MATERIAL.
- 100 210 - RESET LANDSCAPE GROUND COVER. CONTRACTOR SHALL REMOVE GROUND COVER AND ANY UNDERLYING WEED BARRIER AS NEEDED AND STOCKPILE MATERIALS. CONTRACTOR SHALL RESET THESE MATERIALS AND PROVIDE ADDITIONAL MATERIALS AS NEEDED TO RESTORE LANDSCAPING.
- 400 102.7/108.2 - WATER MAIN PIPE (C-900 DR-18 PVC) (SIZE AS SHOWN). INCLUDES TYPE A BEDDING AND HAUNCHING MATERIAL AND BACKFILL OF TRENCH WITH NATIVE MATERIALS MEETING 103.16 EARTH BACKFILL MATERIAL.
- 403 102.8B/108.3 - GATE VALVE. (SIZE AS SHOWN)
- 407 102.8/108.3 - TEE (SIZE AS SHOWN)
- 409 102.8/108.3 - ELBOW (SIZE AND ANGLE AS SHOWN)
- 412 102.8A/108.3 - FIRE HYDRANT
- 413 102.7C/108.4 - WATER SERVICE LINE (TYPE K COPPER) (SIZE AS SHOWN ON PLAN) THE CONTRACT UNIT PRICE FOR WATER SERVICE PIPE SHALL INCLUDE THE COST OF CONNECTION TO WATERLINE INCLUDING ALL MATERIALS TO MAKE THE CONNECTION AND CLOSING ORIGINAL CORPORATION STOP.
- 416 102.8J/108.4 - CORPORATION STOP (INSTALL ONLY) (SIZE AS SHOWN ON PLAN)
- 426 CONNECT TO EXISTING WATER PIPE/VALVE/FITTING. THE CONTRACT UNIT PRICE FOR WATER PIPE SHALL INCLUDE THE COST OF CONNECTION TO EXISTING PIPELINE
- 569 608.06 - MONOLITHIC CURB, GUTTER AND SIDEWALK (5' WIDE)
- 683 401.08 - HOT BITUMINOUS PAVEMENT (PATCHING) (4" THICK ON TOP OF 6" ABC) (GRADING SIX, BINDER GRADE PG 64-22, GYR 75) (TWO 2" LIFTS)
- 775 208 - STORM DRAIN INLET PROTECTION (EROSION CONTROL LOG) (AS SHOWN AND PER DETAIL)
- 825 CONTRACTOR IS RESPONSIBLE FOR REPAIR COSTS ASSOCIATED WITH ANY/ALL DAMAGE TO PRIVATE PROPERTY BEHIND ROW LINE OR EASEMENT LIMITS.



NOTES:

1. CONNECT TO EXISTING SERVICE LINES OR EXTEND SERVICE LINES TO NEW 6" WATERLINE
2. ALL CURB STOP AND SERVICE LINE LOCATIONS ARE APPROXIMATE AND SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION
3. IF CURB STOP WAS NOT LOCATED FIELD LOCATE CURB STOP AND REPLACE EXIST SWIC CONNECTION WITH NEW CONNECTION TO NEW 6" WATERLINE

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REVISION	DESCRIPTION	DATE	DRAWN BY	DATE
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REVISION B			LAL/ZCF	07.18.2022
REVISION C			JIM	07.18.2022
REVISION D				

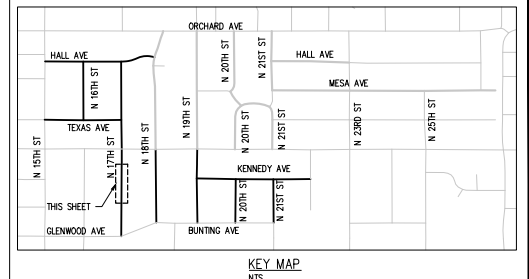
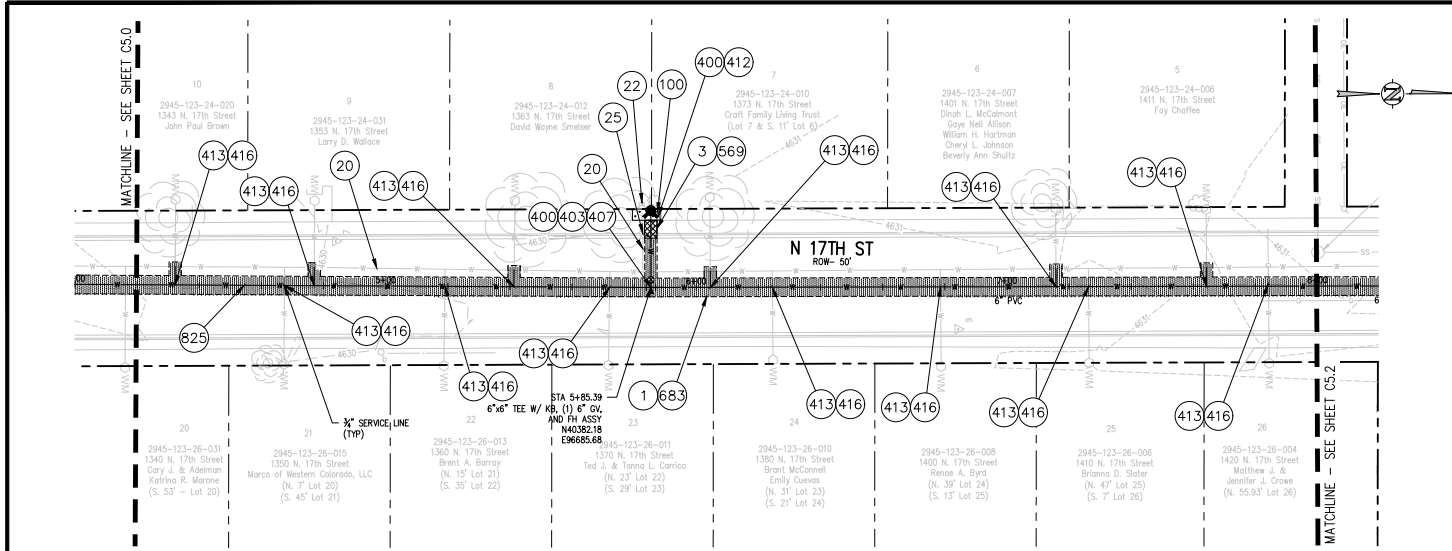
SCALES:

PLAN & PROFILE	1" = 40'
VERTICAL	1" = 4'



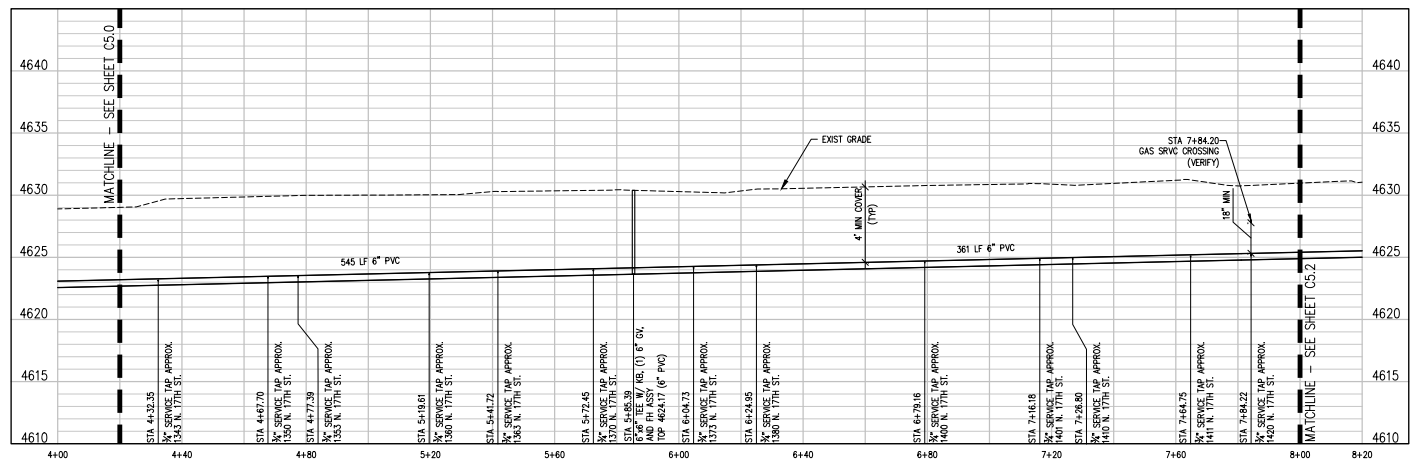
2022 WATERLINE REPLACEMENT PROJECT - PHASE 1
N 17TH ST WATER PLAN & PROFILE

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CONSTRUCTION NOTES

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- ③ 202 - REMOVAL OF CONCRETE. SAW CUT AND REMOVE CONCRETE AS SHOWN. (INDICATED BY CROSS HATCH PATTERN) INCLUDES BUT NOT LIMITED TO CURB, GUTTER, SIDEWALK, DRIVEWAY, SLABS, V-PAN, CURB RAMPS, INTERSECTION CORNERS, APRONS, AND LANDSCAPE BORDERS.
- ②0 202 - ABANDON PIPE. ABANDONED BY PLUGGING REMAINING ENDS WITH CONCRETE.
- ②2 202 - REMOVE EXISTING FIRE HYDRANT AND RETURN TO CITY SHOPS.
- ②5 202 - ABANDON EXISTING WATER VALVE. CLOSE VALVE. REMOVE TOP HALF OF EXISTING VALVE BOX. FILL CAVITY TO FINISHED SUBGRADE WITH FLOW FILL MATERIAL.
- ①00 210 - RESET LANDSCAPE GROUND COVER. CONTRACTOR SHALL REMOVE GROUND COVER AND ANY UNDERLYING WEED BARRIER AS NEEDED AND STOCKPILE MATERIALS. CONTRACTOR SHALL RESET THESE MATERIALS AND PROVIDE ADDITIONAL MATERIALS AS NEEDED TO RESTORE LANDSCAPING.
- ④00 102.7/108.2 - WATER MAIN PIPE (C-900 DR-18 PVC) (SIZE AS SHOWN). INCLUDES TYPE A BEDDING AND HAUNCHING MATERIAL AND BACKFILL OF TRENCH WITH NATIVE MATERIALS MEETING 103.16 EARTH BACKFILL MATERIAL.
- ④03 102.8b/108.3 - GATE VALVE. (SIZE AS SHOWN)
- ④07 102.8/108.3 - TEE (SIZE AS SHOWN)
- ④12 102.8A/108.3 - FIRE HYDRANT
- ④13 102.7C/108.4 - WATER SERVICE LINE (TYPE K COPPER) (SIZE AS SHOWN ON PLAN) THE CONTRACT UNIT PRICE FOR WATER SERVICE PIPE SHALL INCLUDE THE COST OF CONNECTION TO WATERLINE INCLUDING ALL MATERIALS TO MAKE THE CONNECTION AND CLOSING ORIGINAL CORPORATION STOP.
- ④16 102.8J/108.4 - CORPORATION STOP (INSTALL ONLY) (SIZE AS SHOWN ON PLAN)
- ⑤69 608.06 - MONOLITHIC CURB, GUTTER AND SIDEWALK (5' WIDE)
- ⑤83 401.08 - HOT BITUMINOUS PAVEMENT (PATCHING) (4" THICK ON TOP OF 6" ABC) (GRADING SX, BINDER GRADE PG 64-22, GYR 75) (TWO 2" LIFTS)
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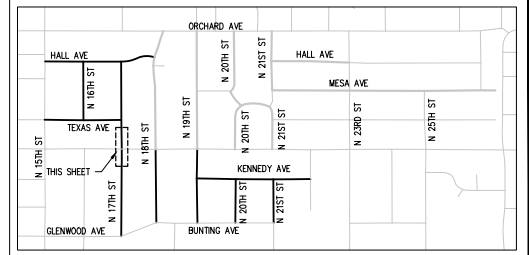
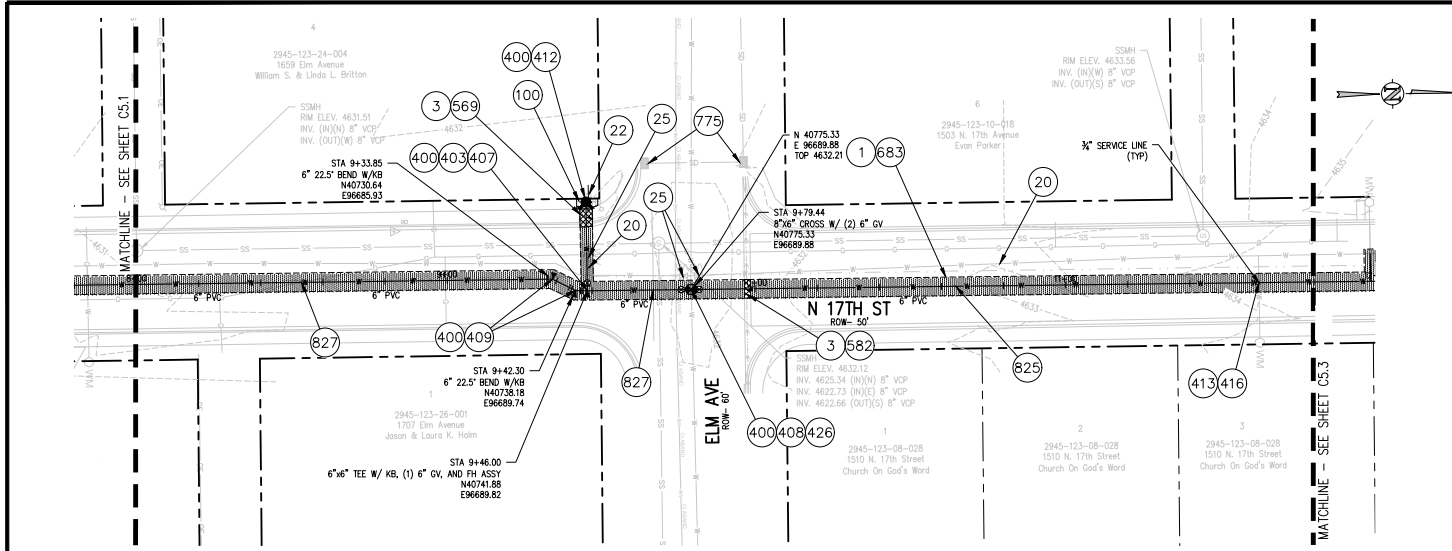
REVISION	DESCRIPTION	DATE	DRAWN BY	DATE
REVISION A			ZCF	07.18.2022
REVISION B			LAL/ZCF	07.18.2022
REVISION C			JJM	07.18.2022
REVISION D				

SCALES:

PLAN & PROFILE	1" = 40'
VERTICAL	1" = 4'
HYDRAULIC	1" = 10'



2022 WATERLINE REPLACEMENT PROJECT - PHASE 1
N 17TH ST WATER PLAN & PROFILE

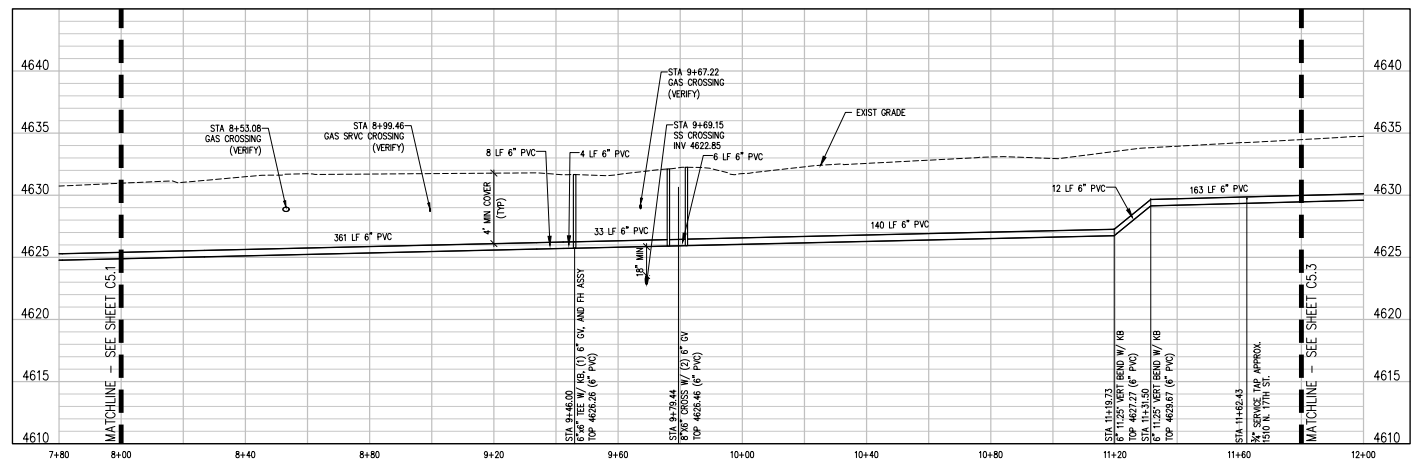


CONSTRUCTION NOTES

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- 20 202 - ABANDON PIPE. ABANDONED BY PLUGGING REMAINING ENDS WITH CONCRETE.
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- 25 202 - ABANDON EXISTING WATER VALVE. CLOSE VALVE, REMOVE TOP HALF OF EXISTING VALVE BOX, FILL CAVITY TO FINISHED SUBGRADE WITH FLOW FILL MATERIAL.
- 100 210 - RESET LANDSCAPE GROUND COVER. CONTRACTOR SHALL REMOVE GROUND COVER AND ANY UNDERLYING WEED BARRIER AS NEEDED AND STOCKPILE MATERIALS. CONTRACTOR SHALL RESET THESE MATERIALS AND PROVIDE ADDITIONAL MATERIALS AS NEEDED TO RESTORE LANDSCAPING.
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- 403 102.8b/108.3 - GATE VALVE. (SIZE AS SHOWN)
- 407 102.8/108.3 - TEE (SIZE AS SHOWN)
- 408 102.8/108.3 - CROSS (SIZE AS SHOWN)
- 409 102.8/108.3 - ELBOW (SIZE AND ANGLE AS SHOWN)
- 412 102.8A/108.3 - FIRE HYDRANT
- 413 102.7C/108.4 - WATER SERVICE LINE (TYPE K COPPER) (SIZE AS SHOWN ON PLAN) THE CONTRACT UNIT PRICE FOR WATER SERVICE PIPE SHALL INCLUDE THE COST OF CONNECTION TO WATERLINE INCLUDING ALL MATERIALS TO MAKE THE CONNECTION AND CLOSING ORIGINAL CORPORATION STOP.
- 416 102.8J/108.4 - CORPORATION STOP (INSTALL ONLY) (SIZE AS SHOWN ON PLAN)
- 426 CONNECT TO EXISTING WATER PIPE/VALVE/FITTING. THE CONTRACT UNIT PRICE FOR WATER PIPE SHALL INCLUDE THE COST OF CONNECTION TO EXISTING PIPELINE
- 569 608.06 - MONOLITHIC CURB, GUTTER AND SIDEWALK (5' WIDE)
- 582 608.06 - CONCRETE DRAINAGE PAN (3' WIDE)
- 683 401.08 - HOT BITUMINOUS PAVEMENT (PATCHING) (4" THICK ON TOP OF 6" ABC) (GRADING SX, BINDER GRADE PG 64-22, GYR 75) (TWO 2' LIFTS)
- 775 208 - STORM DRAIN INLET PROTECTION (EROSION CONTROL LOG) (AS SHOWN AND PER DETAIL)
- 825 CONTRACTOR IS RESPONSIBLE FOR REPAIR COSTS ASSOCIATED WITH ANY/ALL DAMAGE TO PRIVATE PROPERTY BEHIND ROW LINE OR EASEMENT LIMITS.
- 827 PROTECT EXISTING GAS.

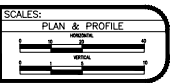
NOTES:

- CONNECT TO EXISTING SERVICE LINES OR EXTEND SERVICE LINES TO NEW 6" WATERLINE
- ALL CURB STOP AND SERVICE LINE LOCATIONS ARE APPROXIMATE AND SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION
- IF CURB STOP WAS NOT LOCATED FIELD LOCATE CURB STOP AND REPLACE EXIST SRVC CONNECTION WITH NEW CONNECTION TO NEW 6" WATERLINE



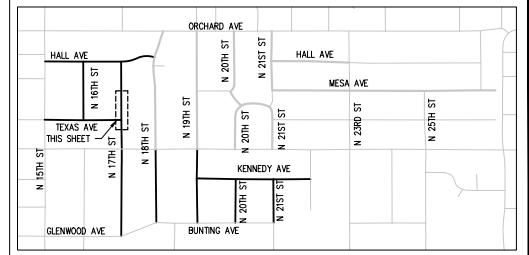
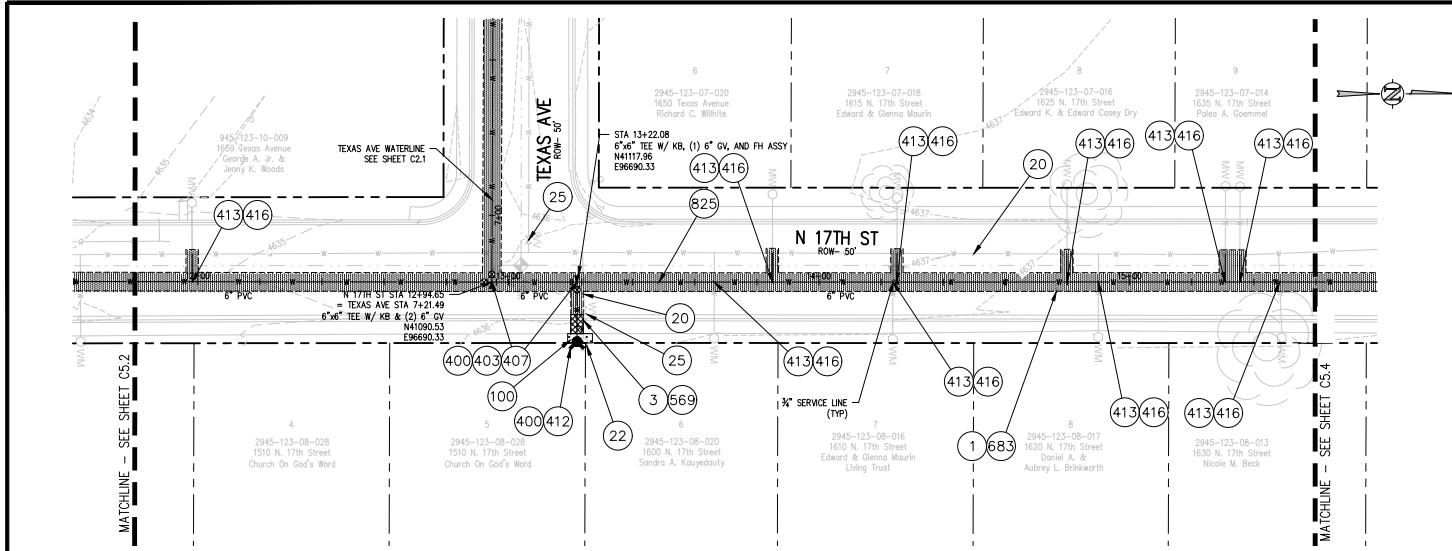
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REVISION	DESCRIPTION	DATE	DRAWN BY	DATE
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2			LAL/ZCF	07.18.2022
3			JIM	07.18.2022
4				



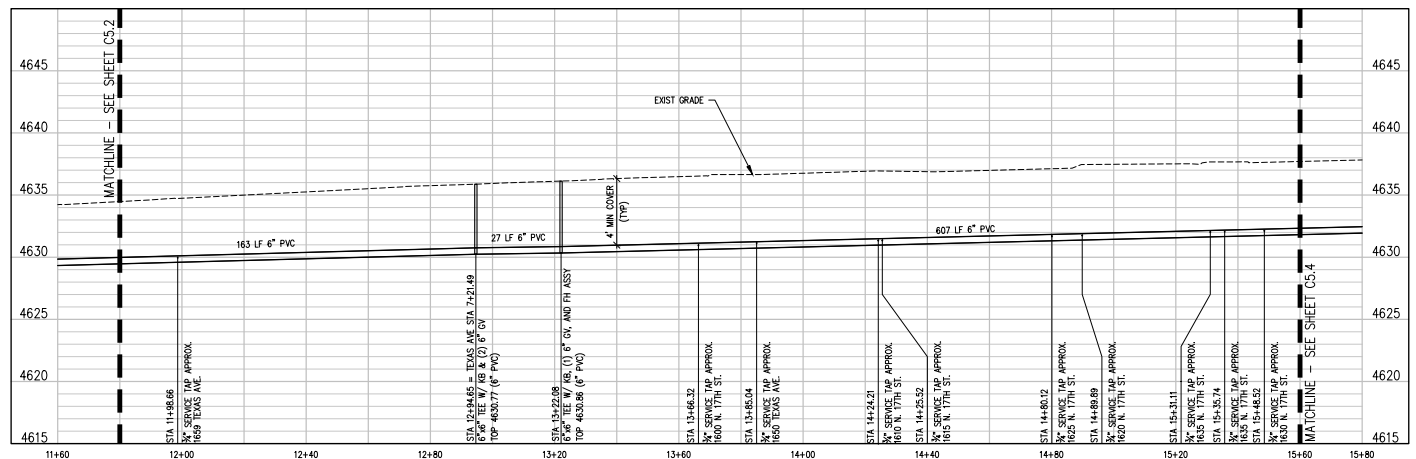
2022 WATERLINE REPLACEMENT PROJECT - PHASE 1
N 17TH ST WATER PLAN & PROFILE

C5.2



CONSTRUCTION NOTES

- ① 202 - REMOVAL OF ASPHALT MAT. SAW CUT AND REMOVE ASPHALT AS SHOWN. (INDICATED BY DOT HATCH PATTERN).
- ③ 202 - REMOVAL OF CONCRETE. SAW CUT AND REMOVE CONCRETE AS SHOWN. (INDICATED BY CROSS HATCH PATTERN) INCLUDES BUT NOT LIMITED TO CURB, GUTTER, SIDEWALK, DRIVEWAY, SLABS, V-PAN, CURB RAMPS, INTERSECTION CORNERS, APRONS, AND LANDSCAPE BORDERS.
- ②0 202 - ABANDON PIPE. ABANDONED BY PLUGGING REMAINING ENDS WITH CONCRETE.
- ②2 202 - REMOVE EXISTING FIRE HYDRANT AND RETURN TO CITY SHOPS.
- ②5 202 - ABANDON EXISTING WATER VALVE. CLOSE VALVE, CLOSE CORP STOPS, REMOVE TOP HALF OF EXISTING VALVE BOX, FILL CAVITY TO FINISHED SUBGRADE WITH FLOW FILL MATERIAL.
- ①00 210 - RESET LANDSCAPE GROUND COVER. CONTRACTOR SHALL REMOVE GROUND COVER AND ANY UNDERLYING WEED BARRIER AS NEEDED AND STOCKPILE MATERIALS. CONTRACTOR SHALL RESET THESE MATERIALS AND PROVIDE ADDITIONAL MATERIALS AS NEEDED TO RESTORE LANDSCAPING.
- ④00 102.7/108.2 - WATER MAIN PIPE (C-900 DR-18 PVC) (SIZE AS SHOWN). INCLUDES TYPE A BEDDING AND HAUNCHING MATERIAL AND BACKFILL OF TRENCH WITH NATIVE MATERIALS MEETING 103.16 EARTH BACKFILL MATERIAL.
- ④03 102.8b/108.3 - GATE VALVE. (SIZE AS SHOWN)
- ④07 102.8/108.3 - TEE (SIZE AS SHOWN)
- ④12 102.8A/108.3 - FIRE HYDRANT
- ④13 102.7C/108.4 - WATER SERVICE LINE (TYPE K COPPER) (SIZE AS SHOWN ON PLAN) THE CONTRACT UNIT PRICE FOR WATER SERVICE PIPE SHALL INCLUDE THE COST OF CONNECTION TO WATERLINE INCLUDING ALL MATERIALS TO MAKE THE CONNECTION AND CLOSING ORIGINAL CORPORATION STOP.
- ④18 102.8J/108.4 - CORPORATION STOP (INSTALL ONLY) (SIZE AS SHOWN ON PLAN)
- ⑤69 608.06 - MONOLITHIC CURB, GUTTER AND SIDEWALK (5' WIDE)
- ⑥83 401.08 - HOT BITUMINOUS PAVEMENT (PATCHING) (4" THICK ON TOP OF 6" ABC) (GRADING 6X, BINDER GRADE PG 64-22, GYR 75) (TWO 2' LIFTS)
- ⑧26 CONTRACTOR IS RESPONSIBLE FOR REPAIR COSTS ASSOCIATED WITH ANY/ALL DAMAGE TO PRIVATE PROPERTY BEHIND ROW LINE OR EASEMENT LIMITS.



NOTES:

1. CONNECT TO EXISTING SERVICE LINES OR EXTEND SERVICE LINES TO NEW 6" WATERLINE
2. ALL CURB STOP AND SERVICE LINE LOCATIONS ARE APPROXIMATE AND SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION
3. IF CURB STOP WAS NOT LOCATED FIELD LOCATE CURB STOP AND REPLACE EXIST SWIC CONNECTION WITH NEW CONNECTION TO NEW 6" WATERLINE

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REVISION	DESCRIPTION	DATE	DRAWN BY	DATE
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2			LAL/ZCF	07.18.2022
3			JIM	07.18.2022
4				

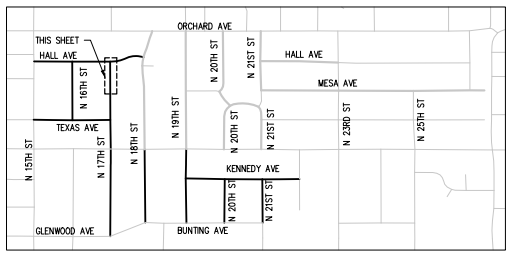
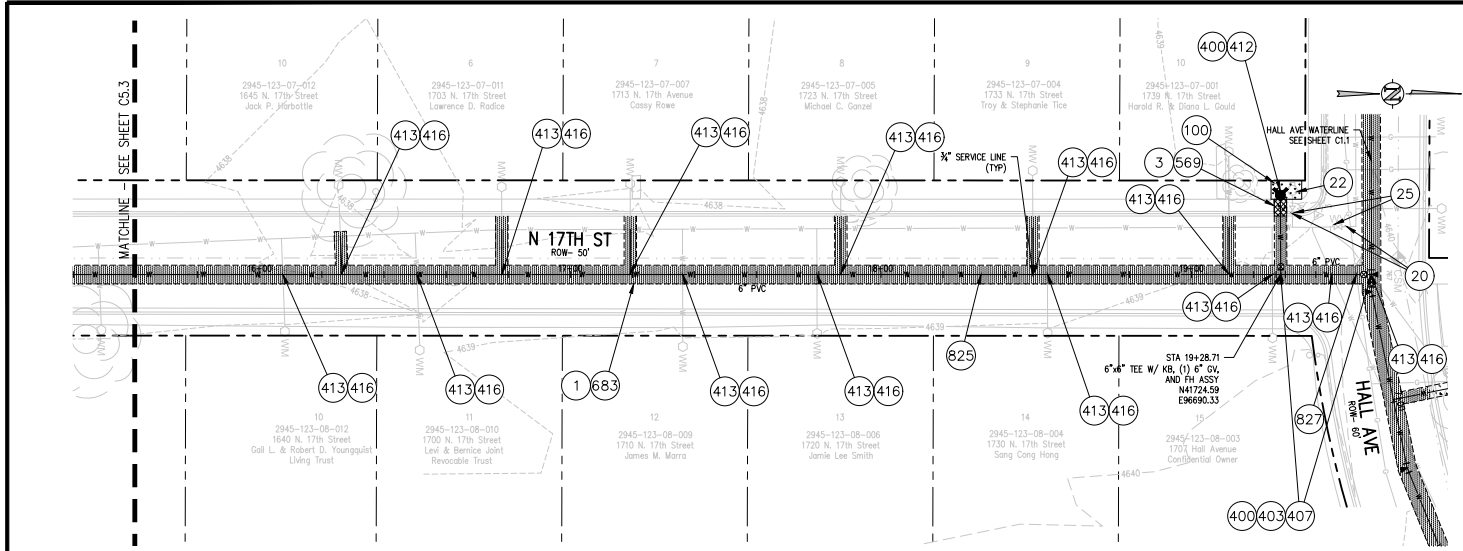
SCALES:

PLAN & PROFILE	1" = 40'
SECTION	1" = 4'
DETAIL	1" = 1'



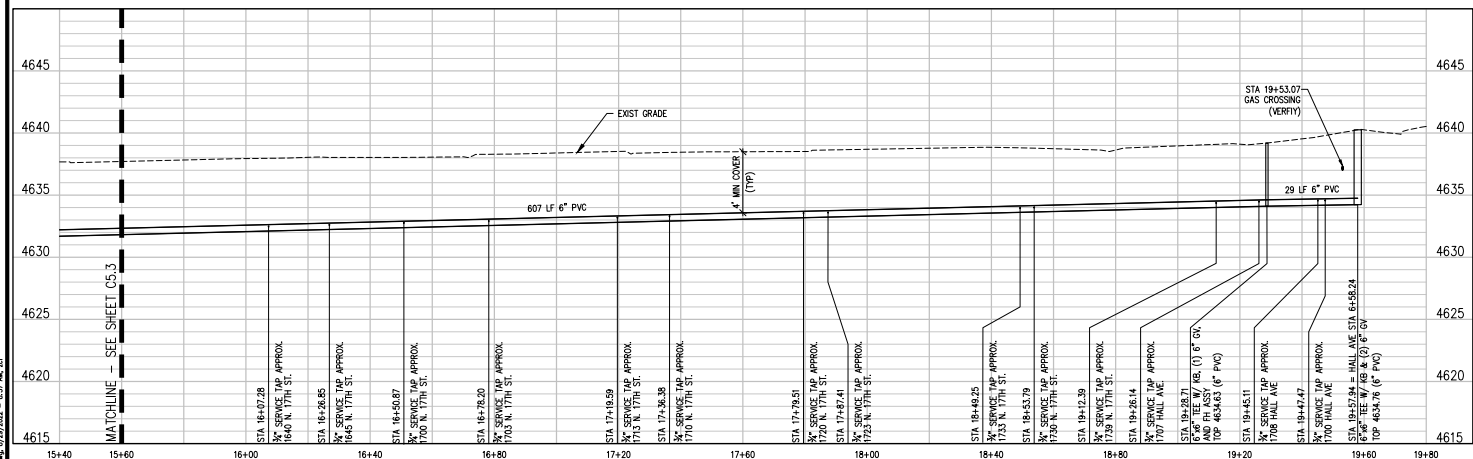
2022 WATERLINE REPLACEMENT PROJECT - PHASE 1
N 17TH ST WATER PLAN & PROFILE

C5.3



CONSTRUCTION NOTES

- 1 202 - REMOVAL OF ASPHALT MAT. SAW CUT AND REMOVE ASPHALT AS SHOWN. (INDICATED BY DOT HATCH PATTERN).
- 3 202 - REMOVAL OF CONCRETE. SAW CUT AND REMOVE CONCRETE AS SHOWN. (INDICATED BY CROSS HATCH PATTERN) INCLUDES BUT NOT LIMITED TO CURB, GUTTER, SIDEWALK, DRIVEWAY, SLABS, V-PAN, CURB RAMPS, INTERSECTION CORNERS, APRONS, AND LANDSCAPE BORDERS
- 20 202 - ABANDON PIPE. ABANDONED BY PLUGGING REMAINING ENDS WITH CONCRETE.
- 22 202 - REMOVE EXISTING FIRE HYDRANT AND RETURN TO CITY SHOPS.
- 25 202 - ABANDON EXISTING WATER VALVE. CLOSE VALVE, REMOVE TOP HALF OF EXISTING VALVE BOX, FILL CAVITY TO FINISHED SUBGRADE WITH FLOW FILL MATERIAL.
- 210 202 - RESET LANDSCAPE GROUND COVER. CONTRACTOR SHALL REMOVE GROUND COVER AND ANY UNDERLYING WEED BARRIER AS NEEDED AND STOCKPILE MATERIALS. CONTRACTOR SHALL RESET THESE MATERIALS AND PROVIDE ADDITIONAL MATERIALS AS NEEDED TO RESTORE LANDSCAPING.
- 400 102.7/108.2 - WATER MAIN PIPE (C-900 DR-19 PVC) (SIZE AS SHOWN). INCLUDES TYPIC BEDDING AND HAUNCHING MATERIAL AND BACKFILL OF TRENCH WITH NATIVE MATERIALS MEETING 103.16 EARTH BACKFILL MATERIAL.
- 403 102.8b/108.3 - GATE VALVE. (SIZE AS SHOWN)
- 407 102.8/108.3 - TEE (SIZE AS SHOWN)
- 412 102.8A/108.3 - FIRE HYDRANT
- 413 102.7C/108.4 - WATER SERVICE LINE (TYPE K COPPER) (SIZE AS SHOWN ON PLAN) THE CONTRACT UNIT PRICE FOR WATER SERVICE PIPE SHALL INCLUDE THE COST OF CONNECTION TO WATERLINE INCLUDING ALL MATERIALS TO MAKE THE CONNECTION AND CLOSING ORIGINAL CORPORATION STOP.
- 416 102.8J/108.4 - CORPORATION STOP (INSTALL ONLY) (SIZE AS SHOWN ON PLAN)
- 569 608.06 - MONOLITHIC CURB, GUTTER AND SIDEWALK (5' WIDE
- 683 401.08 - HOT BITUMINOUS PAVEMENT (PATCHING) (4" THICK ON TOP OF 6" ABC) (GRADING SX, BINDER GRADE PG 64-22, GYR 75) (TWO 2" LIFTS)
- 825 CONTRACTOR IS RESPONSIBLE FOR REPAIR COSTS ASSOCIATED WITH ANY/ALL DAMAGE TO PRIVATE PROPERTY BEHIND ROW LINE OR EASEMENT LIMITS.
- 827 PROTECT EXISTING GAS.



NOTES:

- CONNECT TO EXISTING SERVICE LINES OR EXTEND SERVICE LINES TO NEW 6" WATERLINE
- ALL CURB STOP AND SERVICE LINE LOCATIONS ARE APPROXIMATE AND SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION
- IF CURB STOP WAS NOT LOCATED FIELD LOCATE CURB STOP AND REPLACE EXIST SWIC CONNECTION WITH NEW CONNECTION TO NEW 6" WATERLINE

REVISION	DESCRIPTION	DATE	DRAWN BY	DATE
1			ZCF	07.18.2022
2			LAL/ZCF	07.18.2022
3			JIM	07.18.2022
4				

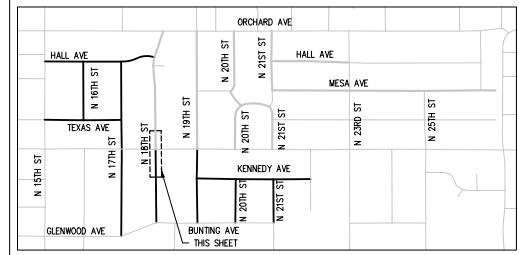
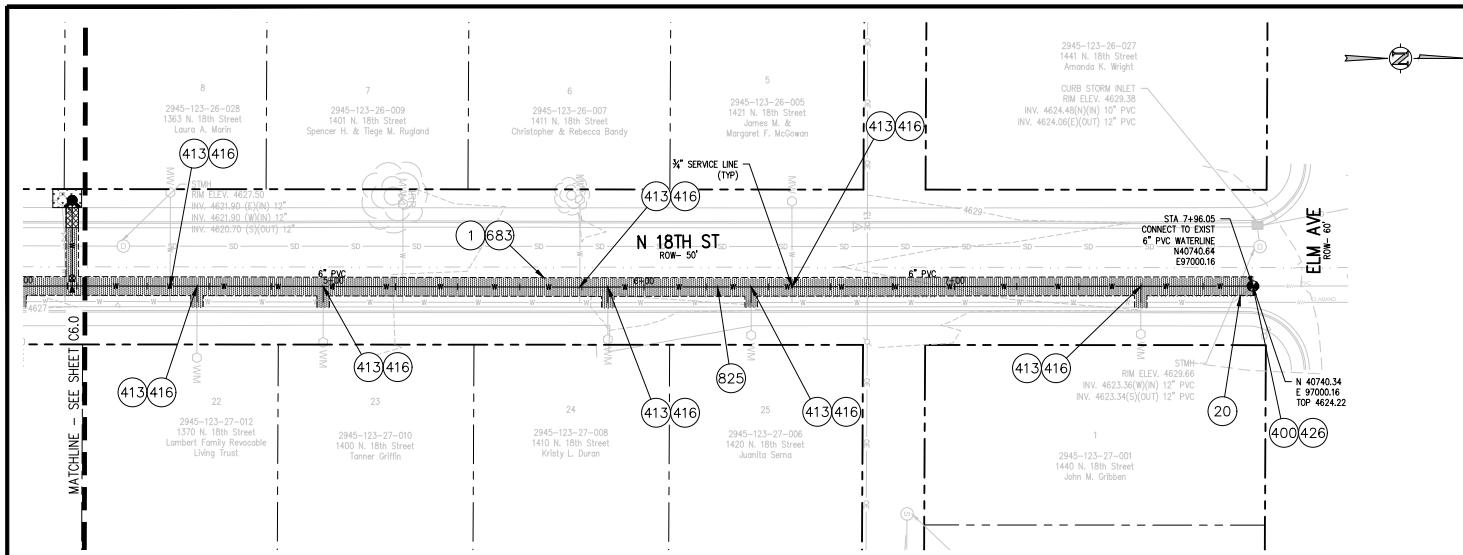
SCALES:

PLAN & PROFILE	1" = 40'
VERTICAL	1" = 4'



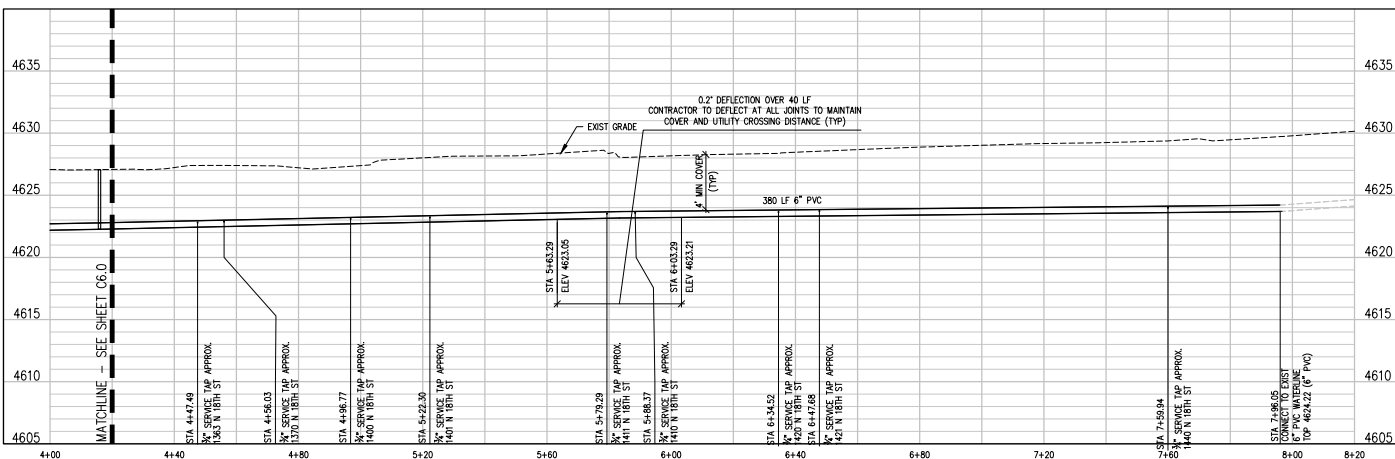
2022 WATERLINE REPLACEMENT PROJECT - PHASE 1
N 17TH ST WATER PLAN & PROFILE

C5.4



CONSTRUCTION NOTES

- 1 202 - REMOVAL OF ASPHALT MAT. SAW CUT AND REMOVE ASPHALT AS SHOWN, (INDICATED BY DOT HATCH PATTERN).
- 20 202 - ABANDON PIPE. ABANDONED BY PLUGGING REMAINING ENDS WITH CONCRETE.
- 400 102.7/108.2 - WATER MAIN PIPE (C-900 DR-18 PVC) (SIZE AS SHOWN). INCLUDES TYPE A BEDDING AND HAUNCHING MATERIAL AND BACKFILL OF TRENCH WITH NATIVE MATERIALS MEETING 103.16 EARTH BACKFILL MATERIAL.
- 413 102.7/108.4 - WATER SERVICE LINE (TYPE K COPPER) (SIZE AS SHOWN ON PLAN) THE CONTRACT UNIT PRICE FOR WATER SERVICE PIPE SHALL INCLUDE THE COST OF CONNECTION TO WATERLINE INCLUDING ALL MATERIALS TO MAKE THE CONNECTION AND CLOSING ORIGINAL CORPORATION STOP.
- 416 102.8J/108.4 - CORPORATION STOP (INSTALL ONLY) (SIZE AS SHOWN ON PLAN)
- 426 CONNECT TO EXISTING WATER PIPE/VALVE/FITTING. THE CONTRACT UNIT PRICE FOR WATER PIPE SHALL INCLUDE THE COST OF CONNECTION TO EXISTING PIPELINE
- 683 401.08 - HOT BITUMINOUS PAVEMENT (PATCHING) (4" THICK ON TOP OF 6" ABC) (GRADING SX, BINDER GRADE PG 64-22, GYR 75) (TWO 2" LIFTS)
- 825 CONTRACTOR IS RESPONSIBLE FOR REPAIR COSTS ASSOCIATED WITH ANY/ALL DAMAGE TO PRIVATE PROPERTY BEHIND ROW LINE OR EASEMENT LIMITS.



- NOTES:**
1. CONNECT TO EXISTING SERVICE LINES OR EXTEND SERVICE LINES TO NEW 6" WATERLINE
 2. ALL CURB STOP AND SERVICE LINE LOCATIONS ARE APPROXIMATE AND SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION
 3. IF CURB STOP WAS NOT LOCATED FIELD LOCATE CURB STOP AND REPLACE EXIST SWIC CONNECTION WITH NEW CONNECTION TO NEW 6" WATERLINE

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REVISION	DESCRIPTION	DATE	DRAWN BY	DATE
REVISION 1			ZCF	07.18.2022
REVISION 2			LAL/ZCF	07.18.2022
REVISION 3			JJM	07.18.2022
REVISION 4				

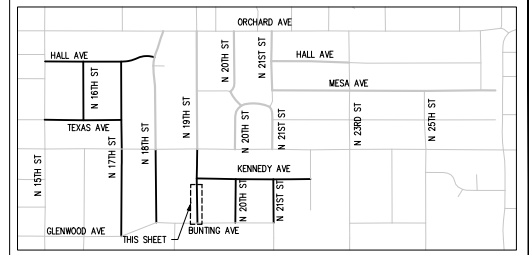
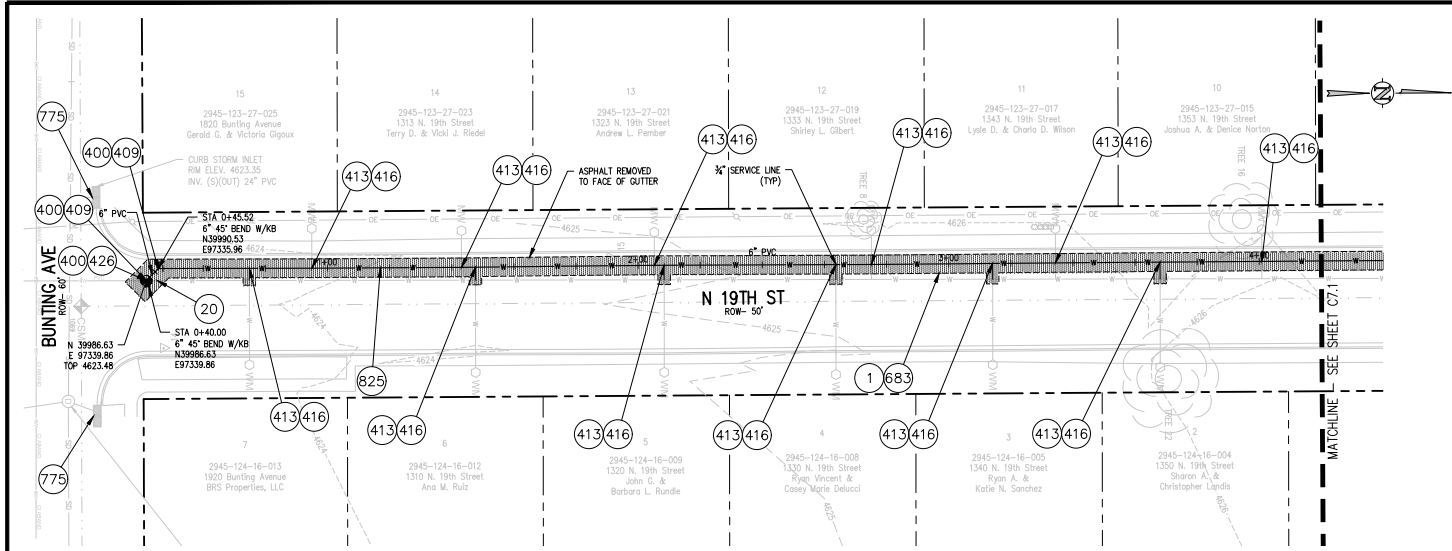
SCALES:

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SECTION	1" = 4'
DETAIL	1" = 1'



2022 WATERLINE REPLACEMENT PROJECT - PHASE 1
N 18TH ST WATER PLAN & PROFILE

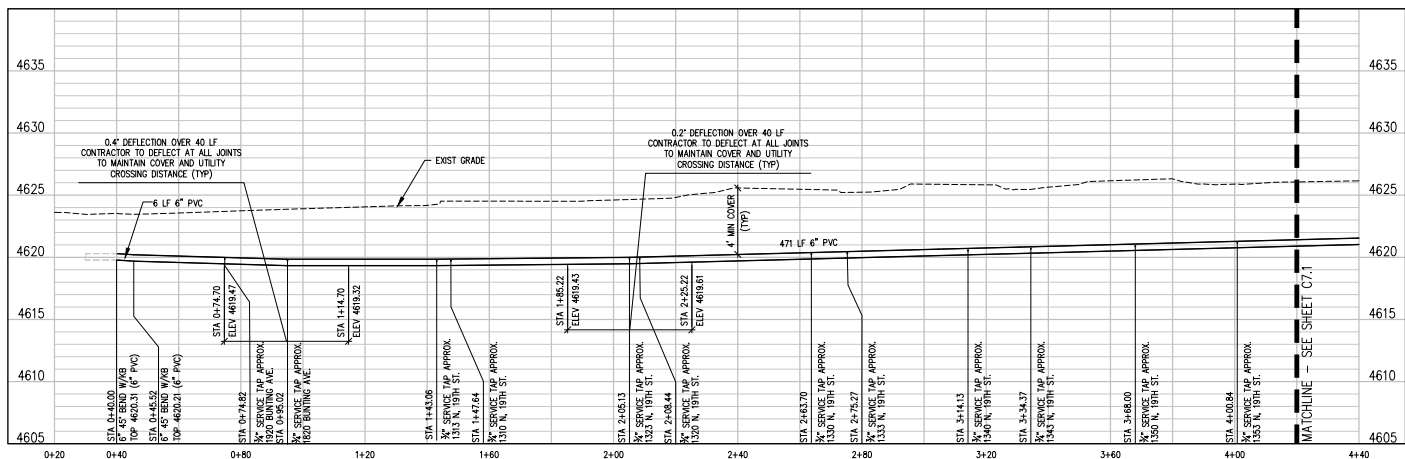
C6.1



KEY MAP
NTS

CONSTRUCTION NOTES

- 1 202 - REMOVAL OF ASPHALT MAT. SAW CUT AND REMOVE ASPHALT AS SHOWN. (INDICATED BY DOT HATCH PATTERN).
- 20 202 - ABANDON PIPE. ABANDONED BY PLUGGING REMAINING ENDS WITH CONCRETE.
- 400 102.7/108.2 - WATER MAIN PIPE (C-90 DR-18 PVC) (SIZE AS SHOWN). INCLUDES TYPE A BEDDING AND HAUNCHING MATERIAL AND BACKFILL OF TRENCH WITH NATIVE MATERIALS MEETING 103.16 EARTH BACKFILL MATERIAL.
- 409 102.8/108.3 - ELBOW (SIZE AND ANGLE AS SHOWN)
- 413 102.7C/108.4 - WATER SERVICE LINE (TYPE K COPPER) (SIZE AS SHOWN ON PLAN) THE CONTRACT UNIT PRICE FOR WATER SERVICE PIPE SHALL INCLUDE THE COST OF CONNECTION TO WATERLINE INCLUDING ALL MATERIALS TO MAKE THE CONNECTION AND CLOSING ORIGINAL CORPORATION STOP.
- 416 102.8J/108.4 - CORPORATION STOP (INSTALL ONLY) (SIZE AS SHOWN ON PLAN)
- 426 CONNECT TO EXISTING WATER PIPE/VALVE/FITTING. THE CONTRACT UNIT PRICE FOR WATER PIPE SHALL INCLUDE THE COST OF CONNECTION TO EXISTING PIPELINE
- 683 401.08 - HOT BITUMINOUS PAVEMENT (PATCHING) (4" THICK ON TOP OF 6" ABC) (GRADING SX, BINDER PG 64-22, GYR 75) (TWO 2" LIFTS)
- 775 208 - STORM DRAIN INLET PROTECTION (EROSION CONTROL LOG) (AS SHOWN AND PER DETAIL)
- 825 CONTRACTOR IS RESPONSIBLE FOR REPAIR COSTS ASSOCIATED WITH ANY/ALL DAMAGE TO PRIVATE PROPERTY BEHIND ROW LINE OR EASEMENT LIMITS.



- NOTES:**
1. CONNECT TO EXISTING SERVICE LINES OR EXTEND SERVICE LINES TO NEW 6" WATERLINE
 2. ALL CURB STOP AND SERVICE LINE LOCATIONS ARE APPROXIMATE AND SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION
 3. IF CURB STOP WAS NOT LOCATED FIELD LOCATE CURB STOP AND REPLACE EXIST SWIC CONNECTION WITH NEW CONNECTION TO NEW 6" WATERLINE

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REVISION	DESCRIPTION	DATE	DRAWN BY	DATE
REVISION A			ZCF	07.18.2022
REVISION B			LAL/ZCF	07.18.2022
REVISION C			JJM	07.18.2022
REVISION D				

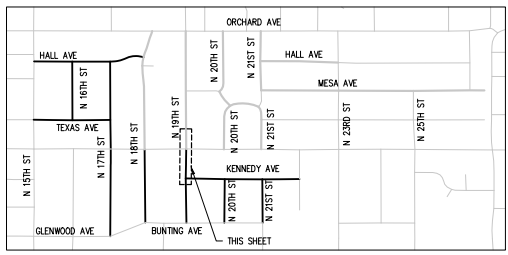
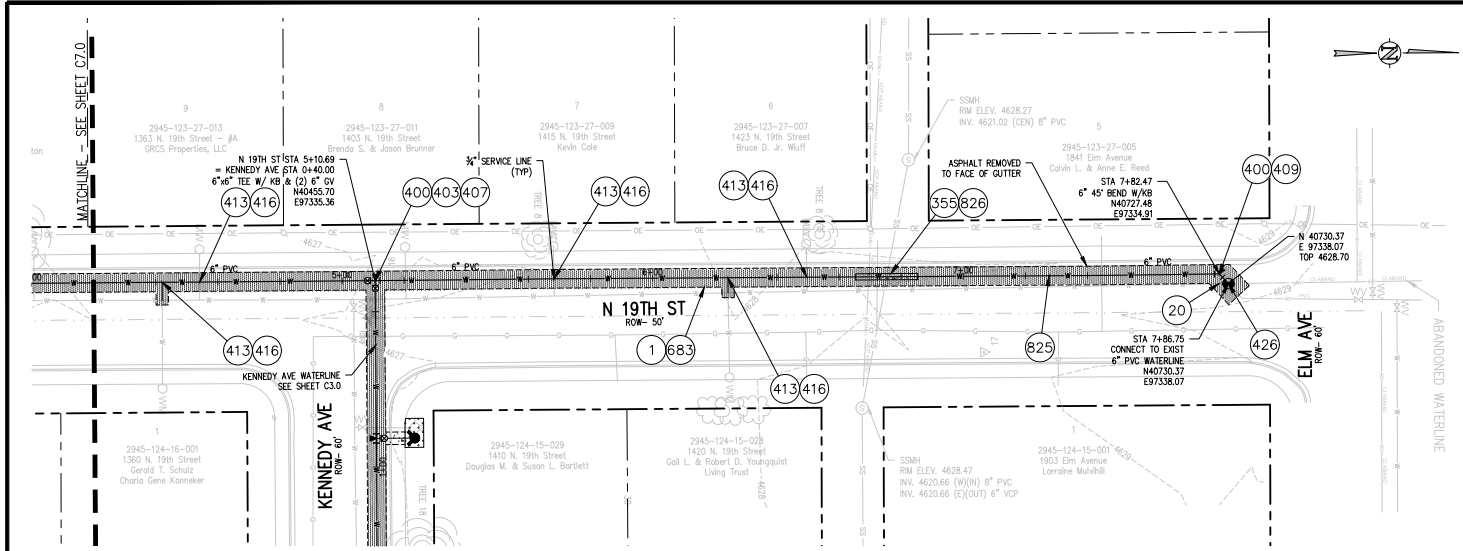
SCALES:

PLAN & PROFILE	1" = 40'
VERTICAL	1" = 4'
DETAIL	AS SHOWN



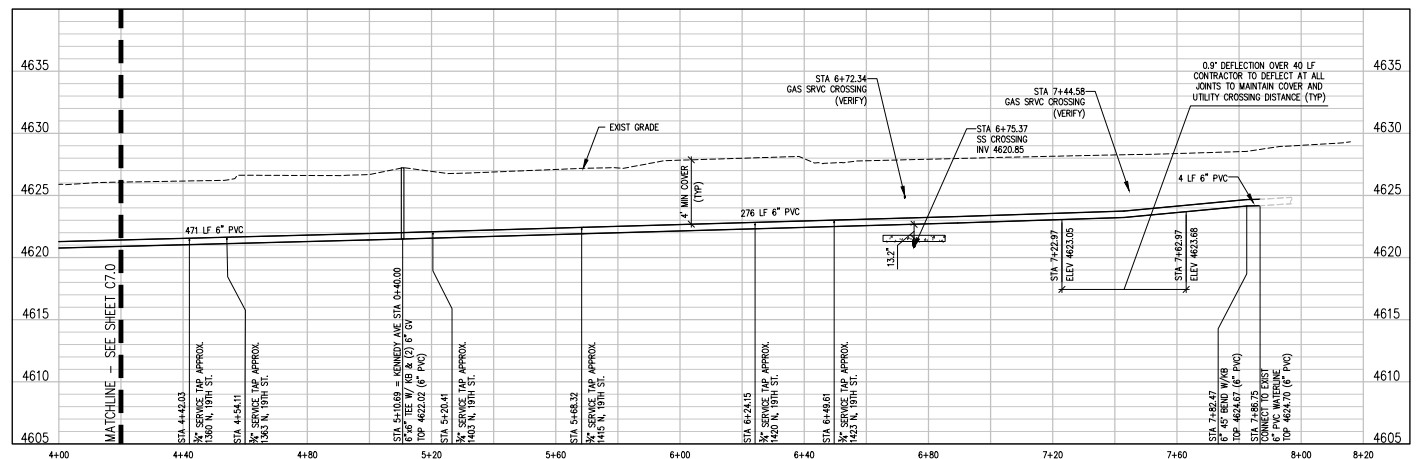
2022 WATERLINE REPLACEMENT PROJECT - PHASE 1
N 19TH ST WATER PLAN & PROFILE

C7.0



CONSTRUCTION NOTES

- 1 202 - REMOVAL OF ASPHALT MAT. SAW CUT AND REMOVE ASPHALT AS SHOWN. (INDICATED BY DOT HATCH PATTERN).
- 20 202 - ABANDON PIPE. ABANDONED BY PLUGGING REMAINING ENDS WITH CONCRETE.
- 355 104.40 - CAP TOP HALF OF SEWER IN CONCRETE PER STD. DETAIL GU-04. (WATER LINE LESS THAN 18" ABOVE SEWER LINE)
- 400 102.7/108.2 - WATER MAIN PIPE (C-900 DR-18 PVC) (SIZE AS SHOWN). INCLUDES TYPE A BEDDING AND HAUNCHING MATERIAL AND BACKFILL OF TRENCH WITH NATIVE MATERIALS MEETING 103.16 EARTH BACKFILL MATERIAL.
- 403 102.8b/108.3 - GATE VALVE. (SIZE AS SHOWN)
- 407 102.8/108.3 - TEE (SIZE AS SHOWN)
- 409 102.8/108.3 - ELBOW (SIZE AND ANGLE AS SHOWN)
- 413 102.7c/108.4 - WATER SERVICE LINE (TYPE K COPPER) (SIZE AS SHOWN ON PLAN) THE CONTRACT UNIT PRICE FOR WATER SERVICE PIPE SHALL INCLUDE THE COST OF CONNECTION TO WATERLINE INCLUDING ALL MATERIALS TO MAKE THE CONNECTION AND CLOSING ORIGINAL CORPORATION STOP.
- 416 102.8j/108.4 - CORPORATION STOP (INSTALL ONLY) (SIZE AS SHOWN ON PLAN)
- 426 CONNECT TO EXISTING WATER PIPE/VALVE/FITTING. THE CONTRACT UNIT PRICE FOR WATER PIPE SHALL INCLUDE THE COST OF CONNECTION TO EXISTING PIPELINE
- 683 401.08 - HOT BITUMINOUS PAVEMENT (PATCHING) (4" THICK ON TOP OF 6" ABC) (GRADING SX, BINDER GRADE PG 64-22, GYR 75) (TWO 2" LIFTS)
- 825 CONTRACTOR IS RESPONSIBLE FOR REPAIR COSTS ASSOCIATED WITH ANY/ALL DAMAGE TO PRIVATE PROPERTY BEHIND ROW LINE OR EASEMENT LIMITS.
- 826 PROTECT EXISTING UTILITY LINE IN PLACE.



- NOTES:**
1. CONNECT TO EXISTING SERVICE LINES OR EXTEND SERVICE LINES TO NEW 6" WATERLINE
 2. ALL CURB STOP AND SERVICE LINE LOCATIONS ARE APPROXIMATE AND SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION
 3. IF CURB STOP WAS NOT LOCATED FIELD LOCATE CURB STOP AND REPLACE EXIST SRVC CONNECTION WITH NEW CONNECTION TO NEW 6" WATERLINE

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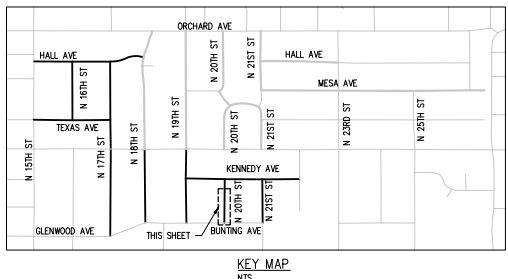
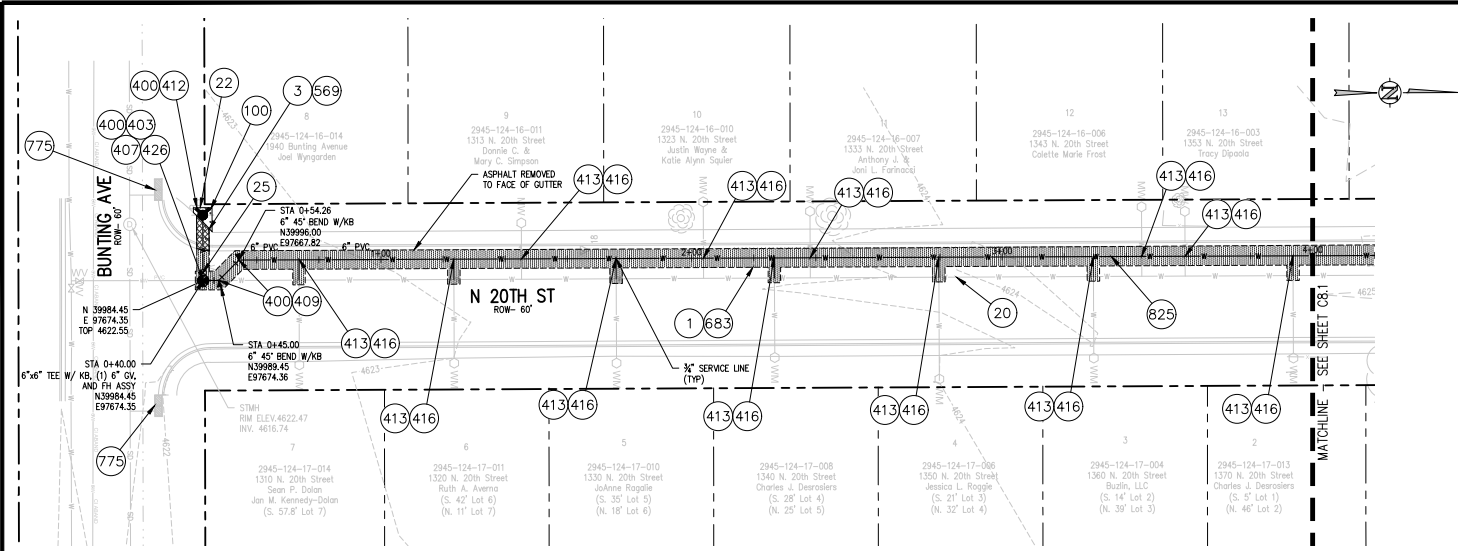
REVISION	DESCRIPTION	DATE	DRAWN BY	DATE
REVISION A			JCF	07.18.2022
REVISION B			LAL/JCF	07.18.2022
REVISION C			JIM	07.18.2022
REVISION D				

SCALES:

PLAN & PROFILE	1" = 40'
SECTION	1" = 10'
DETAIL	1" = 2"

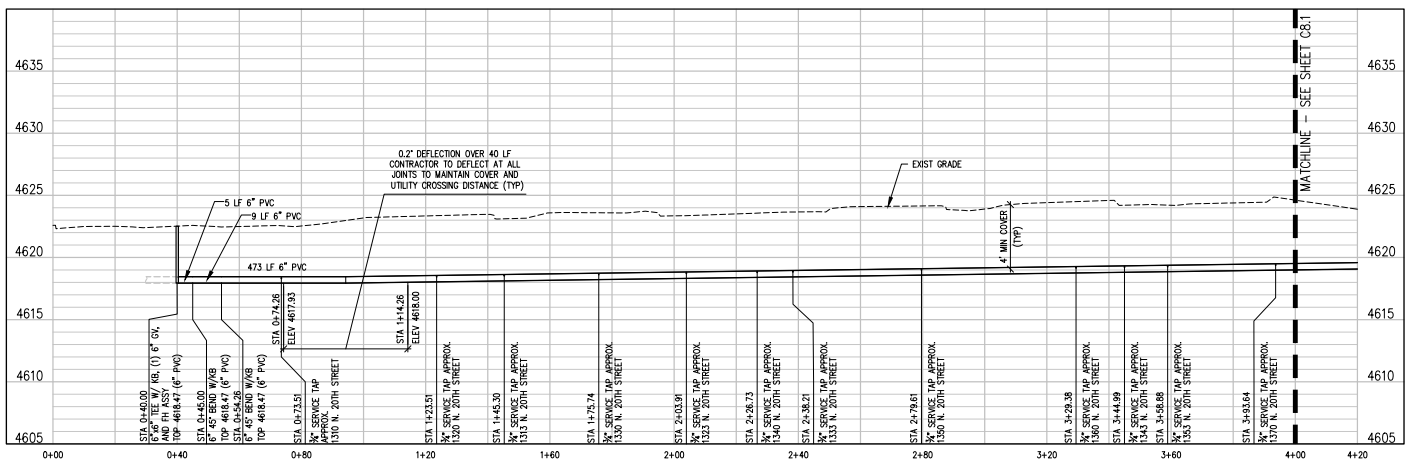


2022 WATERLINE REPLACEMENT PROJECT - PHASE 1
N 19TH ST WATER PLAN & PROFILE



CONSTRUCTION NOTES

- ① 202 - REMOVAL OF ASPHALT MAT. SAW CUT AND REMOVE ASPHALT AS SHOWN. (INDICATED BY DOT HATCH PATTERN).
- ③ 202 - REMOVAL OF CONCRETE. SAW CUT AND REMOVE CONCRETE AS SHOWN. (INDICATED BY CROSS HATCH PATTERN) INCLUDES BUT NOT LIMITED TO CURB, GUTTER, SIDEWALK, DRIVEWAY, SLABS, V-PAN, CURB RAMPS, INTERSECTION CORNERS, APRONS, AND LANDSCAPE BORDERS
- ②0 202 - ABANDON PIPE. ABANDONED BY PLUGGING REMAINING ENDS WITH CONCRETE.
- ②② 202 - REMOVE EXISTING FIRE HYDRANT AND RETURN TO CITY SHOPS.
- ②⑤ 202 - ABANDON EXISTING WATER VALVE. CLOSE VALVE, REMOVE TOP HALF OF EXISTING VALVE BOX, FILL CAVITY TO FINISHED SUBGRADE WITH FLOW FILL MATERIAL.
- ①00 210 - RESET LANDSCAPE GROUND COVER. CONTRACTOR SHALL REMOVE GROUND COVER AND ANY UNDERLYING WEED BARRIER AS NEEDED AND STOCKPILE MATERIALS. CONTRACTOR SHALL RESET THESE MATERIALS AND PROVIDE ADDITIONAL MATERIALS AS NEEDED TO RESTORE LANDSCAPING.
- ④00 102.7/108.2 - WATER MAIN PIPE (C-900 DR-18 PVC) (SIZE AS SHOWN). INCLUDES TYPE A BEDDING AND HAUNCHING MATERIAL AND BACKFILL OF TRENCH WITH NATIVE MATERIALS MEETING 103.16 EARTH BACKFILL MATERIAL.
- ④03 102.8b/108.3 - GATE VALVE. (SIZE AS SHOWN)
- ④07 102.8/108.3 - TEE (SIZE AS SHOWN)
- ④09 102.8/108.3 - ELBOW (SIZE AND ANGLE AS SHOWN)
- ④12 102.8a/108.3 - FIRE HYDRANT
- ④13 102.7C/108.4 - WATER SERVICE LINE (TYPE K COPPER) (SIZE AS SHOWN ON PLAN) THE CONTRACT UNIT PRICE FOR WATER SERVICE PIPE SHALL INCLUDE THE COST OF CONNECTION TO WATERLINE INCLUDING ALL MATERIALS TO MAKE THE CONNECTION AND CLOSING ORIGINAL CORPORATION STOP.
- ④18 102.8J/108.4 - CORPORATION STOP (INSTALL ONLY) (SIZE AS SHOWN ON PLAN)
- ④26 CONNECT TO EXISTING WATER PIPE/VALVE/FITTING. THE CONTRACT UNIT PRICE FOR WATER PIPE SHALL INCLUDE THE COST OF CONNECTION TO EXISTING PIPELINE
- ⑤69 608.06 - MONOLITHIC CURB, GUTTER AND SIDEWALK (5' WIDE
- ⑥83 401.08 - HOT BITUMINOUS PAVEMENT (PATCHING) (4" THICK ON TOP OF 6" ABC) (GRADING SX, BINDER GRADE PG 64-22, GYR 75) (TWO 2" LIFTS)
- ⑦75 208 - STORM DRAIN INLET PROTECTION (EROSION CONTROL LOG) (AS SHOWN AND PER DETAIL)
- ⑧25 CONTRACTOR IS RESPONSIBLE FOR REPAIR COSTS ASSOCIATED WITH ANY/ALL DAMAGE TO PRIVATE PROPERTY BEHIND ROW LINE OR EASEMENT LIMITS.



- NOTES:**
- 1. CONNECT TO EXISTING SERVICE LINES OR EXTEND SERVICE LINES TO NEW 6" WATERLINE
 - 2. ALL CURB STOP AND SERVICE LINE LOCATIONS ARE APPROXIMATE AND SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION
 - 3. IF CURB STOP WAS NOT LOCATED FIELD LOCATE CURB STOP AND REPLACE EXIST SWIC CONNECTION WITH NEW CONNECTION TO NEW 6" WATERLINE

N:\UTL\DWG\2022\Phase 1 - Bunting\2022-08-07.dwg, 8/20/2022, 8:59 AM, zcf

REVISION	DESCRIPTION	DATE	DRAWN BY	DATE
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REVISION B			LAL/ZCF	07.18.2022
REVISION C			JJM	07.18.2022
REVISION D				

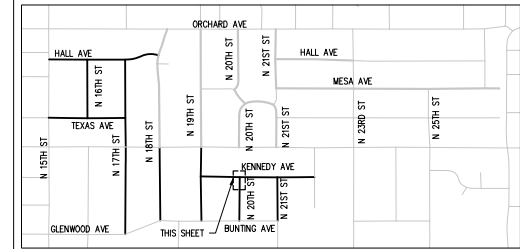
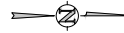
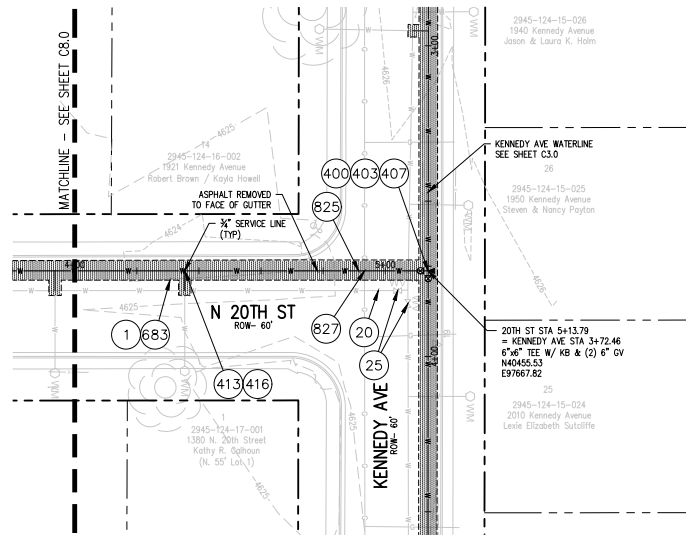
SCALES:

PLAN & PROFILE	1" = 40'
VERTICAL	1" = 4'



2022 WATERLINE REPLACEMENT PROJECT - PHASE 1
N 20TH ST WATER PLAN & PROFILE

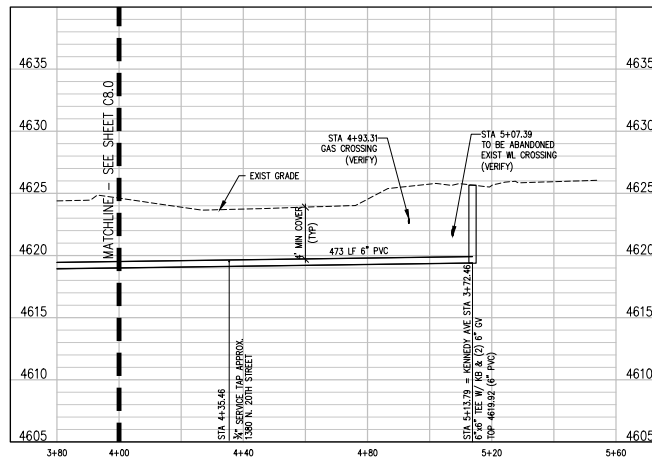
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KEY MAP
NTS

CONSTRUCTION NOTES

- ① 202 - REMOVAL OF ASPHALT MAT. SAW CUT AND REMOVE ASPHALT AS SHOWN. (INDICATED BY DOT HATCH PATTERN).
- ②0 202 - ABANDON PIPE. ABANDONED BY PLUGGING REMAINING ENDS WITH CONCRETE.
- ②8 202 - ABANDON EXISTING WATER VALVE. CLOSE VALVE, REMOVE TOP HALF OF EXISTING VALVE BOX, FILL CAVITY TO FINISHED SUBGRADE WITH FLOW FILL MATERIAL.
- ④00 102.7/108.2 - WATER MAIN PIPE (C-900 DR-18 PVC) (SIZE AS SHOWN). INCLUDES TYPE A BEDDING AND HAUNCHING MATERIAL AND BACKFILL OF TRENCH WITH NATIVE MATERIALS MEETING 103.16 EARTH BACKFILL MATERIAL.
- ④03 102.8b/108.3 - GATE VALVE. (SIZE AS SHOWN)
- ④07 102.8/108.3 - TEE (SIZE AS SHOWN)
- ④13 102.7C/108.4 - WATER SERVICE LINE (TYPE K COPPER) (SIZE AS SHOWN ON PLAN) THE CONTRACT UNIT PRICE FOR WATER SERVICE PIPE SHALL INCLUDE THE COST OF CONNECTION TO WATERLINE INCLUDING ALL MATERIALS TO MAKE THE CONNECTION AND CLOSING ORIGINAL CORPORATION STOP.
- ④16 102.8J/108.4 - CORPORATION STOP (INSTALL ONLY) (SIZE AS SHOWN ON PLAN)
- ⑥83 401.08 - HOT BITUMINOUS PAVEMENT (PATCHING) (4" THICK ON TOP OF 6" ABC) (GRADING SX, BINDER GRADE PG 64-22, GYR 75) (TWO 2" LIFTS)
- ⑧25 CONTRACTOR IS RESPONSIBLE FOR REPAIR COSTS ASSOCIATED WITH ANY/ALL DAMAGE TO PRIVATE PROPERTY BEHIND ROW LINE OR EASEMENT LIMITS.
- ⑧27 PROTECT EXISTING GAS.

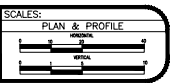


- NOTES:
1. CONNECT TO EXISTING SERVICE LINES OR EXTEND SERVICE LINES TO NEW 6" WATERLINE
 2. ALL CURB STOP AND SERVICE LINE LOCATIONS ARE APPROXIMATE AND SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION
 3. IF CURB STOP WAS NOT LOCATED FIELD LOCATE CURB STOP AND REPLACE EXIST SRVC CONNECTION WITH NEW CONNECTION TO NEW 6" WATERLINE

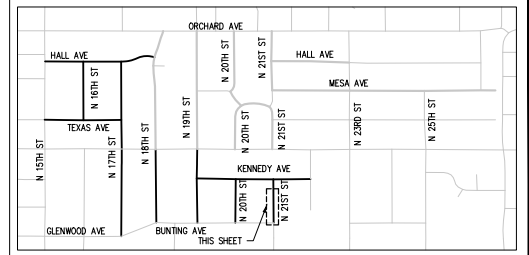
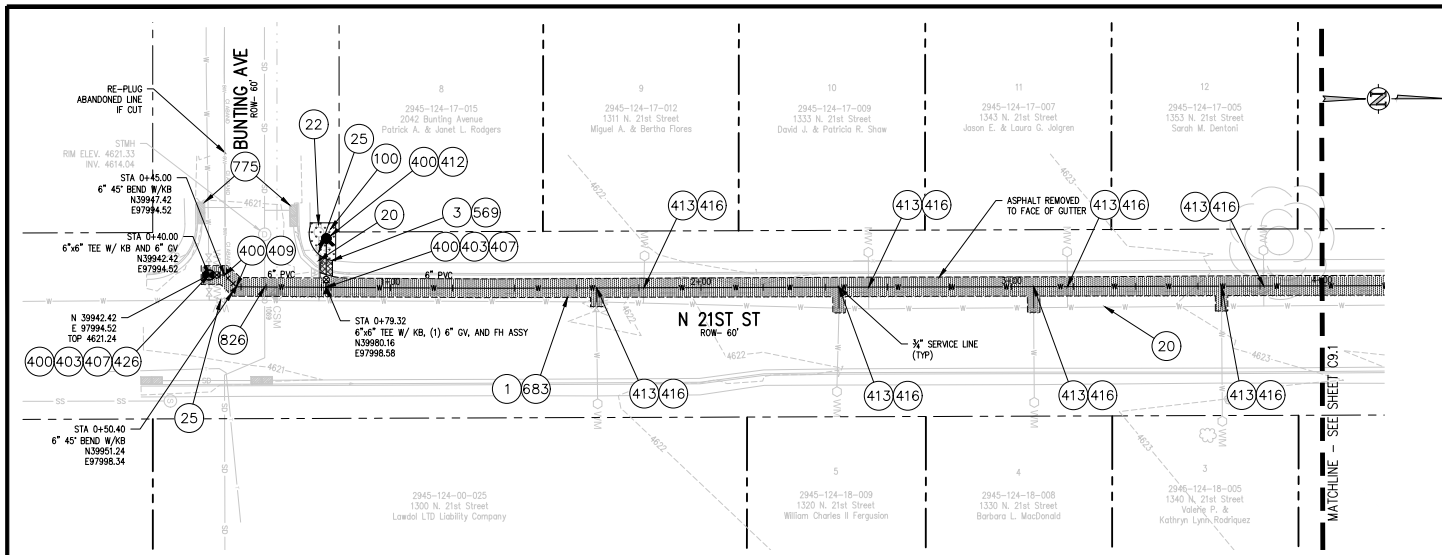
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REVISION	DESCRIPTION	DATE	DRAWN BY	DATE
1			ZCF	07.18.2022
2			LAL/ZCF	07.18.2022
3			JIM	07.18.2022

DESIGNED BY: LAL/ZCF
CHECKED BY: JIM
APPROVED BY: _____



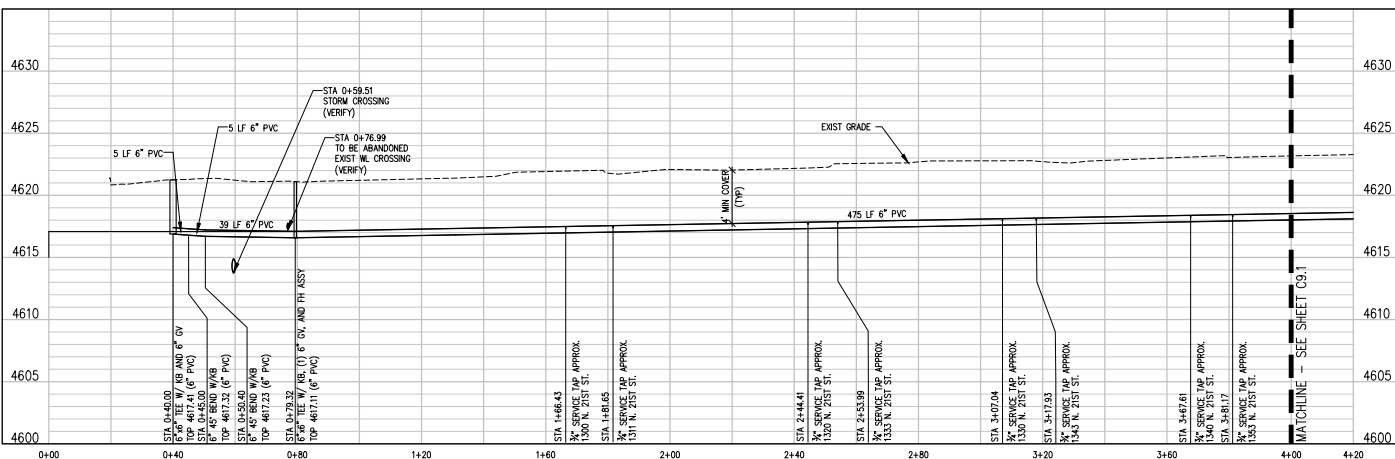
2022 WATERLINE REPLACEMENT
PROJECT - PHASE 1
N 20TH ST WATER PLAN & PROFILE



CONSTRUCTION NOTES

- ① 202 - REMOVAL OF ASPHALT MAT. SAW CUT AND REMOVE ASPHALT AS SHOWN. (INDICATED BY DOT HATCH PATTERN).
- ③ 202 - REMOVAL OF CONCRETE. SAW CUT AND REMOVE CONCRETE AS SHOWN. (INDICATED BY CROSS HATCH PATTERN) INCLUDES BUT NOT LIMITED TO CURB, GUTTER, SIDEWALK, DRIVEWAY, SLABS, V-PAN, CURB RAMPS, INTERSECTION CORNERS, APRONS, AND LANDSCAPE BORDERS.
- ②0 202 - ABANDON PIPE. ABANDONED BY PLUGGING REMAINING ENDS WITH CONCRETE.
- ②② 202 - REMOVE EXISTING FIRE HYDRANT AND RETURN TO CITY SHOPS.
- ②⑤ 202 - ABANDON EXISTING WATER VALVE. CLOSE VALVE, REMOVE TOP HALF OF EXISTING VALVE BOX, FILL CAVITY TO FINISHED SUBGRADE WITH FLOW FILL MATERIAL.
- ①00 210 - RESET LANDSCAPE GROUND COVER. CONTRACTOR SHALL REMOVE GROUND COVER AND ANY UNDERLYING WEED BARRIER AS NEEDED AND STOCKPILE MATERIALS. CONTRACTOR SHALL RESET THESE MATERIALS AND PROVIDE ADDITIONAL MATERIALS AS NEEDED TO RESTORE LANDSCAPING.
- ④00 102.7/108.2 - WATER MAIN PIPE (C-900 DR-18 PVC) (SIZE AS SHOWN), INCLUDES TYPE A BEDDING AND HAUNCHING MATERIAL AND BACKFILL OF TRENCH WITH NATIVE MATERIALS MEETING 103.16 EARTH BACKFILL MATERIAL.
- ④03 102.8b/108.3 - GATE VALVE. (SIZE AS SHOWN)
- ④07 102.8/108.3 - TEE (SIZE AS SHOWN)
- ④09 102.8/108.3 - ELBOW (SIZE AND ANGLE AS SHOWN)
- ④12 102.8a/108.3 - FIRE HYDRANT
- ④13 102.7C/108.4 - WATER SERVICE LINE (TYPE K COPPER) (SIZE AS SHOWN ON PLAN) THE CONTRACT UNIT PRICE FOR WATER SERVICE PIPE SHALL INCLUDE THE COST OF CONNECTION TO WATERLINE INCLUDING ALL MATERIALS TO MAKE THE CONNECTION AND CLOSING ORIGINAL CORPORATION STOP.
- ④16 102.8J/108.4 - CORPORATION STOP (INSTALL ONLY) (SIZE AS SHOWN ON PLAN)
- ④26 CONNECT TO EXISTING WATER PIPE/VALVE/FITTING. THE CONTRACT UNIT PRICE FOR WATER PIPE SHALL INCLUDE THE COST OF CONNECTION TO EXISTING PIPELINE
- ⑤69 608.06 - MONOLITHIC CURB, GUTTER AND SIDEWALK (5' WIDE)
- ⑥83 401.08 - HOT BITUMINOUS PAVEMENT (PATCHING) (4" THICK ON TOP OF 6" ABC) (GRADING SX, BINDER GRADE PG 64-22, GYR 75) (TWO 2' LIFTS)
- ⑦75 208 - STORM DRAIN INLET PROTECTION (EROSION CONTROL LOG) (AS SHOWN AND PER DETAIL)
- ⑧25 CONTRACTOR IS RESPONSIBLE FOR REPAIR COSTS ASSOCIATED WITH ANYALL DAMAGE TO PRIVATE PROPERTY BEHIND ROW LINE OR EASEMENT LIMITS.
- ⑧26 PROTECT EXISTING UTILITY LINE IN PLACE.

- NOTES:**
1. CONNECT TO EXISTING SERVICE LINES OR EXTEND SERVICE LINES TO NEW 6" WATERLINE
 2. ALL CURB STOP AND SERVICE LINE LOCATIONS ARE APPROXIMATE AND SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION
 3. IF CURB STOP WAS NOT LOCATED FIELD LOCATE CURB STOP AND REPLACE EXIST SRVC CONNECTION WITH NEW CONNECTION TO NEW 6" WATERLINE



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REVISION	DESCRIPTION	DATE	DRAWN BY	DATE
REVISION A			ZCF	07.18.2022
REVISION B			LAL/ZCF	07.18.2022
REVISION C			JIM	07.18.2022
REVISION D				

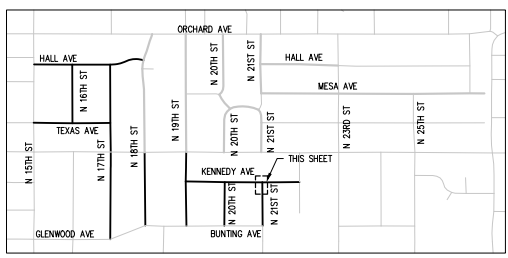
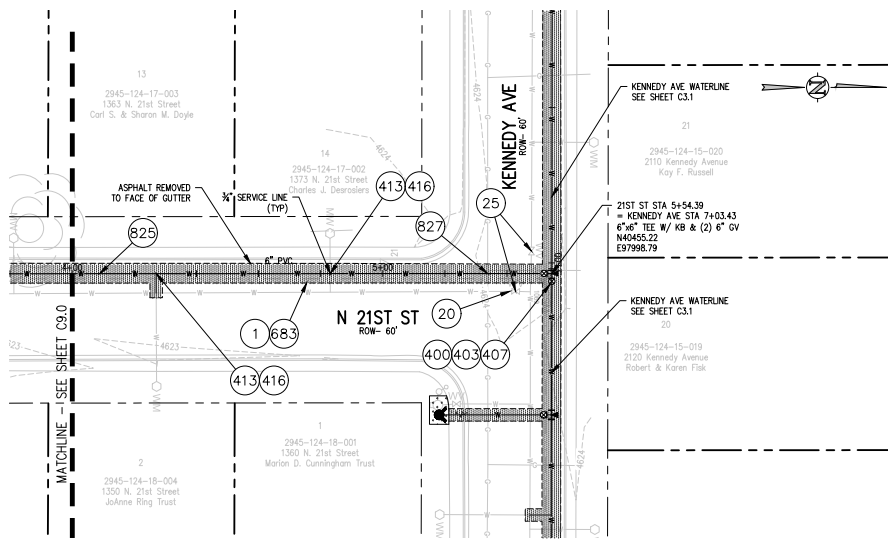
SCALES:

PLAN & PROFILE	1" = 40'
VERTICAL	1" = 4'



2022 WATERLINE REPLACEMENT PROJECT - PHASE 1
N 21ST ST WATER PLAN & PROFILE

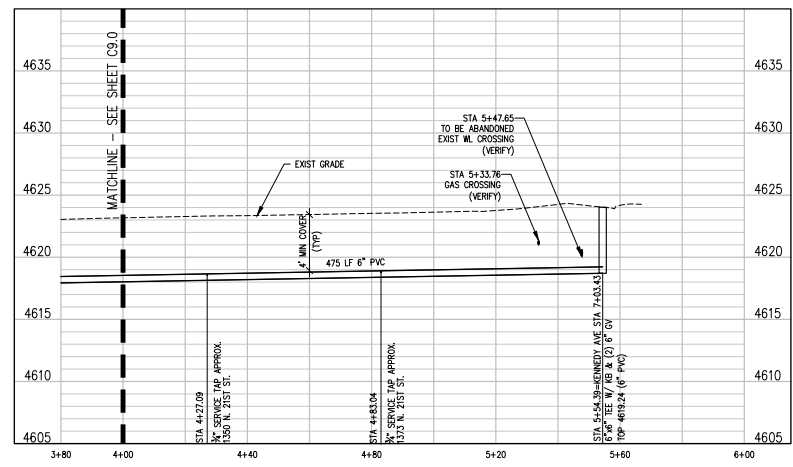
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KEY MAP
NTS

CONSTRUCTION NOTES

- 1 202 - REMOVAL OF ASPHALT MAT. SAW CUT AND REMOVE ASPHALT AS SHOWN. (INDICATED BY DOT HATCH PATTERN).
- 202 - ABANDON PIPE. ABANDONED BY PLUGGING REMAINING ENDS WITH CONCRETE.
- 25 202 - ABANDON EXISTING WATER VALVE. CLOSE VALVE. REMOVE TOP HALF OF EXISTING VALVE BOX. FILL CAVITY TO FINISHED SUBGRADE WITH FLOW FILL MATERIAL.
- 400 102.7/108.2 - WATER MAIN PIPE (C-900 DR-18 PVC) (SIZE AS SHOWN). INCLUDES TYPE A BEDDING AND HAUNCHING MATERIAL AND BACKFILL OF TRENCH WITH NATIVE MATERIALS MEETING 103.16 EARTH BACKFILL MATERIAL.
- 403 102.8b/108.3 - GATE VALVE. (SIZE AS SHOWN)
- 407 102.8/108.3 - TEE (SIZE AS SHOWN)
- 413 102.7c/108.4 - WATER SERVICE LINE (TYPE K COPPER) (SIZE AS SHOWN ON PLAN) THE CONTRACT UNIT PRICE FOR WATER SERVICE PIPE SHALL INCLUDE THE COST OF CONNECTION TO WATERLINE INCLUDING ALL MATERIALS TO MAKE THE CONNECTION AND CLOSING ORIGINAL CORPORATION STOP.
- 416 102.8j/108.4 - CORPORATION STOP (INSTALL ONLY) (SIZE AS SHOWN ON PLAN)
- 683 401.08 - HOT BITUMINOUS PAVEMENT (PATCHING) (4" THICK ON TOP OF 6" ABC) (GRADING SX, BINDER GRADE PG 64-22, GYR 75) (TWO 2' LIFTS)
- 825 CONTRACTOR IS RESPONSIBLE FOR REPAIR COSTS ASSOCIATED WITH ANY/ALL DAMAGE TO PRIVATE PROPERTY BEHIND ROW LINE OR EASEMENT LIMITS.
- 827 PROTECT EXISTING GAS.



- NOTES:**
1. CONNECT TO EXISTING SERVICE LINES OR EXTEND SERVICE LINES TO NEW 6" WATERLINE (TYP)
 2. ALL CURB STOP AND SERVICE LINE LOCATIONS ARE APPROXIMATE AND SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION
 3. IF CURB STOP WAS NOT LOCATED FIELD LOCATE CURB STOP AND REPLACE EXIST SRVC CONNECTION WITH NEW CONNECTION TO NEW 6" WATERLINE

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REVISION	DESCRIPTION	DATE	DRAWN BY	ZCF	DATE	07.18.2022
REVISION A			DESIGNED BY	LAL/ZCF	DATE	07.18.2022
REVISION B			CHECKED BY	JJM	DATE	07.18.2022
REVISION C			APPROVED BY		DATE	

SCALES:

PLAN & PROFILE	AS SHOWN
	AS SHOWN



2022 WATERLINE REPLACEMENT PROJECT - PHASE 1
N 21ST ST WATER PLAN & PROFILE

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