Purchasing Division

Invitation for Bid

IFB-4860-21-DH
Persigo Wastewater Treatment Plant – Small Repairs

Responses Due:

January 18, 2021 prior to 3:00pm
Accepting Electronic Responses Only
Responses Only Submitted Through the Rocky Mountain E-Purchasing System (RMEPS)
https://www.rockymountainbidsystem.com/default.asp
(Purchasing Representative does not have access or control of the vendor side of RMEPS. If website or other problems arise during response submission, vendor MUST contact RMEPS to resolve issue prior to the response deadline. 800-835-4603)

IMPORTANT NOTICE:

Due to the recent developments with increased COVID-19 cases in Mesa County, public in-person bid openings are temporarily being suspended. Bid openings will still take place on their designated date and time virtually, and bid tabulations will still be posted for public view/access. Once the crisis has passed, public in-person bid openings will resume as normal. Attached is the virtual link and information to attend the bid opening. Public may addend through the link, or via phone.

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

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

Invitation for Bids

Table of Contents

1. Instructions to Bidders

1.1. **Purpose:** The City of Grand Junction is soliciting competitive bids from qualified and interested companies for all labor, equipment, and materials required to perform concrete repairs of the Aeration Basin platforms and the Aerobic Digester stairwells. All dimensions and scope of work should be verified by Contractors prior to submission of bids.

IFB Questions:
Duane Hoff Jr., Senior Buyer
duaneh@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. **Mandatory Site Visit Meeting:** **Prospective bidders are required to attend a mandatory pre-bid meeting on January 5, 2021 at 10:00am**. Meeting location shall be in the Persigo Wastewater Treatment Plant Conference Room, located at 2145 River Road, Grand Junction, CO. The purpose of this visit will be to inspect and to clarify the contents of this Invitation for Bids (IFB).

Please only one representative per company in attendance.

1.3. **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.

1.4. **Procurement Process:** Procurement processes shall be governed by the most current version of the City of Grand Junction Purchasing Policy and Procedure Manual.

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

Please join Solicitation Opening, IFB-4860-20-DH, Persigo Wastewater Treatment Plant - Small Repairs on GoToConnect from your computer using the Chrome browser.
https://my.jive.com/meet/386866605

You can also dial in using your phone.
US: (571) 317-3116

Access Code: 386-866-605

1.6. **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.

1.7. **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.

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

1.9. **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, http://www.gjcity.org/business-and-economic-development/bids/ .

1.10. 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 Public Works & Planning/Engineering page at www.gjcity.org. Electronic copies may be obtained on a CD format at the Department of Public Works and Planning at City Hall.

1.11. Definitions and Terms: See Article I, Section 3 of the General Contract Conditions in the *Standard Contract Documents for Capital Improvements Construction*.

1.12. 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.

1.13. 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.

1.14. 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.

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

1.16. 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.

1.17. 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.

1.18. 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.

1.19. 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.

1.20. 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.

1.21. 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 any one, shall be as

binding as if required by all. The intention of the documents is to include all labor, materials, equipment and other items necessary for the proper execution and completion of the scope of work as defined in the technical specifications and drawings contained herein. All drawings, specifications and copies furnished by the City 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 insure the proper implementation of the intent of the Contract Documents, he will have authority to require the Contractor to stop the work or any portion, or to require special inspection or testing of the work, whether or not such work can be then be fabricated, installed, or completed. The Owner will not be responsible for the acts or omissions of the Contractor, and sub-Contractor, or any of their agents or employees, or any other persons performing any of the work.

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

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

2.7. Award of Sub-Contractors & Other Contracts for Portions of the Work: 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. Offeors 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 Contact is awarded, the apparent successful bidder has ten calendar days to enter into a contractor in the form prescribed and to furnish the bonds with a legally responsible and approved surety. Failure to do so will result I forfeiture of the Bid Guaranty to the City as Liquidated Damages.

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 singed by an agent must be accompanied by a certified copy of the Authority Act. If the surety on any bond furnished by the Contractor is declared bankrupt, or becomes insolvent, or its rights to do business in Colorado are terminated, or it ceases to meet the requirements of clauses (1) and (2) of this section, Contractor shall within five (5) days thereafter substitute another bond and surety, both of which shall be acceptable to the City.

2.24. 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 **$500.00** is reasonable and necessary to pay for the actual damages resulting from such delay. The parties agree that the real costs and injury to the City for such delay include hard to quantify items such as:

additional engineering, inspection and oversight by the City and its agents; additional contract administration; inability to apply the efforts of those employees to the other work of the City; perceived inefficiency of the City; citizens having to deal with the construction and the Work, rather than having the benefit of a completed Work, on time; inconvenience to the public; loss of reputation and community standing for the City during times when such things are very important and very difficult to maintain.

The Contractor must complete the Work and achieve final completion included under the Bid Schedule in the number of consecutive calendar days after the City gives is written Notice to Proceed. When the Contractor considers the entire Work ready for its intended use, Contractor shall certify in writing that the Work is 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 discover of condition. All such defective or non-conforming work under the above paragraphs shall be removed from the site where necessary and the work shall be corrected to comply with the contract documents without cost to the Owner. The Contractor shall bear the cost of making good all work of separate Contractors destroyed or damaged by such removal or correction. If the Owner prefers to accept defective or non-conforming work, he may do so instead of requiring its removal and correction, in which case a Change Order will be issued to reflect an appropriate reduction in the payment or contract sum, or, if the amount is determined after final payment, it shall be paid by the Contractor.

2.34. 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 illegal alien workers or otherwise violate the provisions of the Federal Immigration Reform and Control Act of 1986 and/or the immigration compliance requirements of State of Colorado C.R.S. § 8-17.5-101, *et.seq.* (House Bill 06-1343).

2.43. 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 Statutes prohibit obligation of public funds beyond the fiscal year for which the budget was approved. Anticipated expenditures/obligations beyond the end of the current Owner's fiscal year budget shall be subject to budget approval. Any contract will be subject to and must contain a governmental non-appropriation of funds clause.

2.59. 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 work request is for repairs to the existing concrete at the Aeration Basins and Aerobic Digester stairwells for the Persigo Wastewater Treatment Plant. The repairs will include Removal and Replacement of Deteriorated Concrete, New Sealant Joints, and Temporary Shoring.

3.2. PROJECT DESCRIPTION: Aeration Basin: The repairs at the Aeration Basin include repair of deteriorated concrete at existing aluminum guardrail posts and steel gate valves. Repairs will include removal of incipiently spalled concrete, as well as sound concrete, to prepare the surface to receive a concrete repair. The concrete repair will be anchored to adjacent sound concrete with new reinforcing.

Aerobic Digester: The repairs at the Aerobic Digester include repair of deteriorated concrete soffit and installation of supplemental reinforcing steel at two existing stairwells. Shoring may be required to be installed as part of the repairs. Repairs will include removal of incipiently spalled concrete, as well as sound concrete, to prepare the surface to receive concrete repair. The concrete repair will be anchored to adjacent sound concrete with new reinforcing.

All dimensions, scope of work, and schedule should be verified by Contractors prior to submission of bids.

3.3. SPECIAL CONDITIONS & PROVISIONS:

3.3.1 Mandatory Site Visit Meeting: **Prospective bidders are required to attend a mandatory pre-bid meeting on January 5, 2021 at 10:00am**. Meeting location shall be in the Persigo Wastewater Treatment Plant Conference Room, located at 2145 River Road, Grand Junction, CO. The purpose of this visit will be to inspect and to clarify the contents of this Invitation for Bids (IFB).

Please only one representative per company in attendance.

3.3.2 QUESTIONS REGUARDING SOLICIATION PROCESS/SCOPE OF WORK:

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

3.3.3 Project Manager: The Project Manager for the Project is Kirsten Armbruster, Project Engineer, who can be reached at (970)244-1421. 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: Kirsten Armbruster, Project Manager
250 North Fifth Street
Grand Junction, CO 81501

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

3.3.5 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.

3.3.6 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.

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

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

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

3.3.8 Time of Completion: The scheduled time of Completion for the Project is 56 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.

3.3.9 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 Monday – Friday, between the hours of 7:00 AM to 5:00 PM.

3.3.10 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.

3.3.11 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:

None

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

- Door-hangers

3.3.13 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.

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

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

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

3.3.17 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. A Traffic Control Plan shall be prepared by the Contractor and reviewed by the City two days prior to the pre-construction meeting.

3.3.18 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.

3.3.19 Quality Control Testing: Supplier shall perform quality control testing on concrete. The City will perform all other necessary QA/QC.

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

- Traffic Control Plans
- Project Schedule

3.3.21 Uranium Mill Tailings: It is anticipated that radioactive mill tailings will not be encountered on this Project.

3.3.22 Fugitive Petroleum or Other Contamination: It is anticipated that soil contamination from fugitive petroleum or other contaminants will not be encountered with the Project.

3.3.23 Excess Material: All excess materials shall be disposed in accordance with General Contract Condition Section 50.

3.3.24 Existing Utilities and Structures: Utilities were **not** 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 Condition Section 37.

3.3.25 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.

3.3.26 Work to be Performed by the City (Prior to Construction):

- None

3.3.27 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.

3.3.28 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.

3.4. SCOPE OF WORK:

The contractor shall follow the Project Specific Specifications provided in Appendix B. These Specifications modify the City of Grand Junction Standard Contract Documents for Capital Improvement Construction.

3.5. Attachments:

Appendix A: Project Submittal Forms (Aeration Basin & Anerobic Digester repairs)
Appendix B: Existing Persigo WWTP Structure Drawings for Reference
Appendix C: Project Specific Specifications (Aeration Basin & Anerobic Digester repairs)
Appendix D: Construction Drawings (Aeration Basin & Anerobic Digester repairs)

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
- Bid Bond

3.7. IFB TENTATIVE TIME SCHEDULE:

Invitation For Bids available	December 15, 2020
Mandatory Site Visit Meeting	January 5, 2021
Inquiry deadline, no questions after this date	January 8, 2021
Addendum Posted	January 12, 2021
Submittal deadline for proposals	January 18, 2021
Notice of Award & Contract execution	January 22, 2021
Bonding & Insurance Cert due	January 29, 2021
Preconstruction meeting	January 29, 2021
Work begins no later than	Upon Receipt of Notice to Proceed
Final Completion	56 Calendar Days
Holidays:	February 15, 2020

4. Contractor's Bid Form

Bid Date: _____

Project: IFB-4860-21-DH "Persigo Wastewater Treatment Plant – Small Repairs"

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. 98-903544. 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.

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: _____

Bid Schedule: Persigo WWTP Small Repairs

Item No.	CDOT, City Ref.	Description	Quantity	Units	Unit Price	Total Price
1	1-1	Corner Post Concrete Repair	42.	EA	$ _____	$ _____
2	1-2	Center Post Concrete Repair	21.	EA	$ _____	$ _____
3	2-1	Partial Depth Concrete Repair at	98.	SF	$ _____	$ _____
4	2-2	New Sealant Joint	47.	LF	$ _____	$ _____
5	2-3	Temporary Shoring	Lump	sum	- - -	$ _____
6		Sanitary Facility	1.	EA	$ _____	$ _____
7		Mobilization	Lump	sum	- - -	$ _____
8		General Conditions (Protection, Access, Temporary Removal and Reset of Utilities)	Lump	sum	- - -	$ _____
MCR		Minor Contract Revisions	- - -	- - -	- - -	$ 15,000.00

Bid Amount: **$** _____

Bid Amount:

_____ **dollars**

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

Name & address of Sub-Contractor	Description of work to be performed	% of Contract

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.

APPENDIX A
Project Submittal Form

Aeration Basin
Schedule of Submittals

Specification Section	Description	Product Submitted	Current Submittal Number	Current Submittal Date	Date of WJE Review/Return	Submittal Due	No Exceptions Taken	Make Corrections Indicated	Amend and resubmit	Rejected - See Remarks	Info Only
00 65 36	Installer's Warranty for Concrete - 03 01 34					C					X
01 70 20	Project Record Drawings					C					X
01 70 20	Project Record Specifications					C					X
03 21 00	Corrosion Inhibiting Coating Material					P					
03 21 00	Supplemental Mechanical Anchors					P					
03 01 34	Formed Vertical and Overhead Replacement Material					P					
03 01 34	Aggregate Compliance with C33					P					
03 21 00	Reinforcing Mill Certifications for Rebar					P					
03 21 00	Product Data for Anchor Adhesive					P					

KEY to "DUE" Column:
P = Prior to Start
A = As available
C = Closeout

Note: This list does not alleviate the Contractor and Subcontractors from submitting all items in accordance with the Contract Documents.

Aerobic Digester
Schedule of Submittals

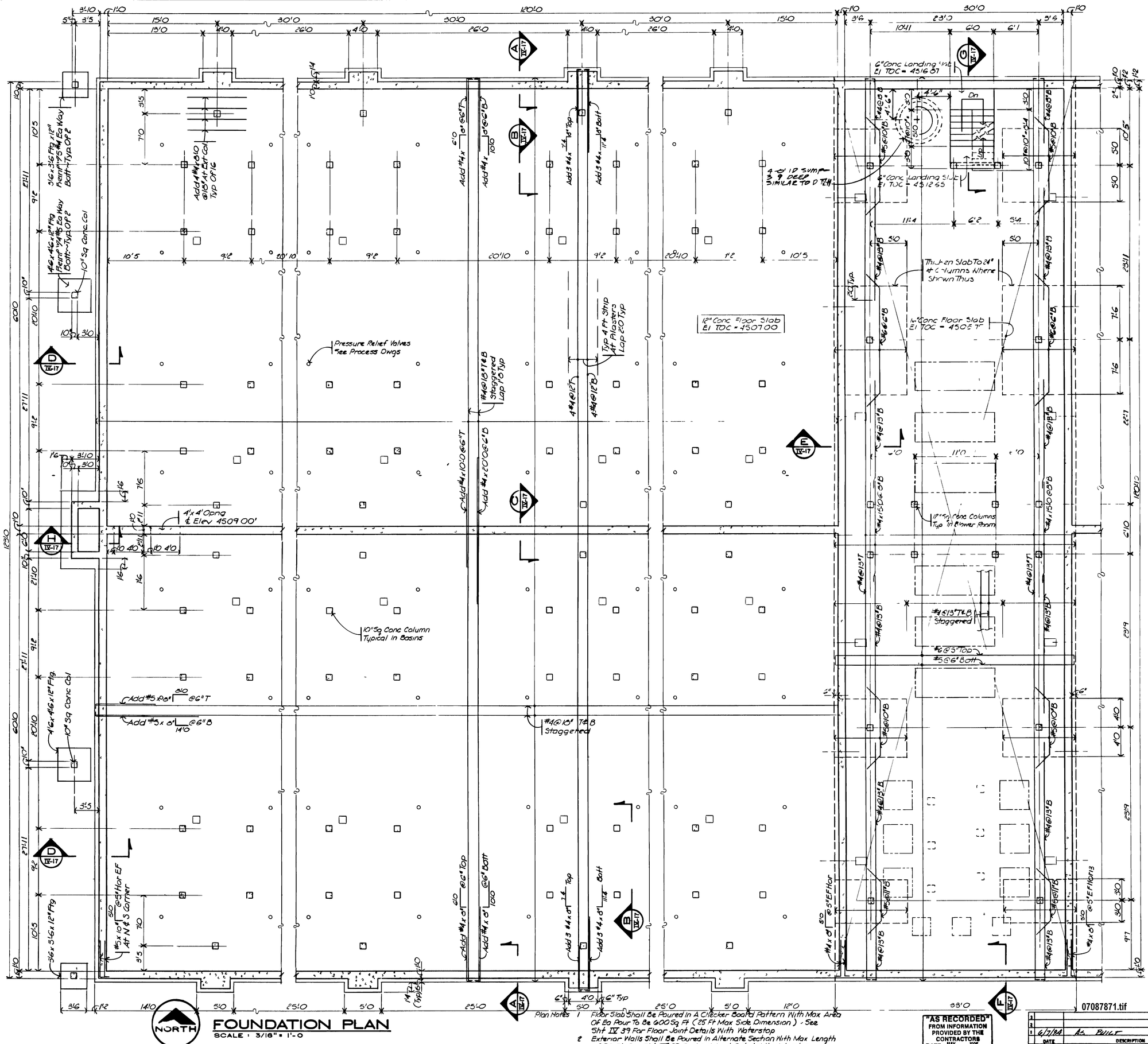
Specification Section	Description	Product Submitted	Current Submittal Number	Current Submittal Date	Date of WJE Review/Return	Submittal Due	No Exceptions Taken	Make Corrections Indicated	Amend and resubmit	Rejected - See Remarks	Info Only
00 65 36	Installer's Warranty for Concrete - 03 01 34					C					X
00 65 36	Installer's Warranty for Joint Sealant - 07 92 00					C					X
00 65 36	Manufacturer's Warranty for Joint Sealant - 07 92 00					C					X
01 70 20	Project Record Drawings					C					X
01 70 20	Project Record Specifications					C					X
03 01 01	Shop Drawings					P					
03 01 01	Product Data					P					X
03 01 01	Design Calculations					P					X
03 21 00	Corrosion Inhibiting Coating Material					P					
03 01 32	Discrete Galvanic Anode Product Data					P					
03 01 32	Contractor Certificate					P					X
03 01 32	Report for Galvanic Anode Installation					A					X
03 01 34	Formed Vertical and Overhead Replacement Material					P					
03 01 34	Aggregate Compliance with C33					P					
03 01 34	Batch Logs					A					X
03 21 00	Reinforcing Mill Certifications for Rebar					P					
03 21 00	ICC-ES or IAMPO-ES Report for Mechanical Couplers					P					
03 21 00	Product Data for Anchor Adhesive					P					
03 21 00	Carbon Equivalence Testing					P					
03 21 00	Welder Qualification Records					P					
03 21 00	Welding Procedure Specifications (WPS)					P					
03 21 00	Procedure Qualification Recort (PQR)					P					
07 92 00	Product Data					P					

KEY to "DUE" Column:
P = Prior to Start
A = As available
C = Closeout

Note: This list does not alleviate the Contractor and Subcontractors from submitting all items in accordance with the Contract Documents.

APPENDIX B

Existing Persigo WWTP Structure Drawings for Reference



FOUNDATION PLAN

SCALE : 3/16" = 1'-0

NORTH

Plan Notes
1 Floor Slab Shall Be Poured In A Checker Board Pattern With Max Area Of Ea Pour To Be 600 Sq Ft (25 Ft Max Side Dimension) - See Sht IV 39 For Floor Joint Details With Waterstop
2 Exterior Walls Shall Be Poured In Alternate Section With Max Length Of 50 Ft See Sht IV 39 For Wall Joint Detail With Waterstop

SECTION A IV-15

SECTION B IV-15

SECTION C IV-15

SECTION D IV-15

KEY MAP

"AS RECORDED"
FROM INFORMATION
PROVIDED BY THE
CONTRACTORS
DATE MAY 1985

07087871.tif

	DATE	DESCRIPTION	MADE	APPROV
3				
2				
1	6/7/84	As Built	DGJ	

REVISIONS

JAMES H. HASTINGS 1904

GRAND JUNCTION / MESA COUNTY, COLORADO
PERSIGO WASH WASTEWATER TREATMENT PLANT

SECTION IV STRUCTURAL

AERATION BASINS

FOUNDATION PLAN

HENNINGSON, DURHAM & RICHARDSON, INC.
ENGINEERS PLANNERS CONSULTANTS
DENVER COLORADO GRAND JUNCTION COLORADO

JOB 734510
DESIGNED RLS
DETAILED RNT
CHECKED JMH
APPROVED K HENRICHSEN
DATE
SHEET IV-15

DWG. 72 OF 191

ROOF FRAMING PLAN (BASIN CONTROL)

SCALE 3/16" = 1'-0

Notes
1. Roof Deck Shall Be 1 1/2" 22 Gage Wid Rib Steel Roof Deck ~ 2 Span Minimum (Smin 80 in³)
2. Refer To Mech & Process Sheets For Pipe Sleeves & Block Outs

KEY MAP

PLAN - WALKWAYS / TROUGHS / BASIN CONTROL FLOOR/PIPE GALLERY ROOF

SCALE : 3/16" = 1'-0

Notes
1. El Top Of Conc Slabs (10" Typ.) = 4525.00
2. Basin Control Floor Slab To Be 6" Conc Slab (El TOC=4525.00)

07087872.tif

	DATE	DESCRIPTION REVISIONS	MADE	APPROV
3				
2				
1	6/7/84	AS BUILT		

"AS RECORDED" FROM INFORMATION PROVIDED BY THE CONTRACTORS DATE MAY 1985

GRAND JUNCTION / MESA COUNTY, COLORADO

PERSIGO WASH WASTEWATER TREATMENT PLANT

SECTION IV STRUCTURAL

AERATION BASINS

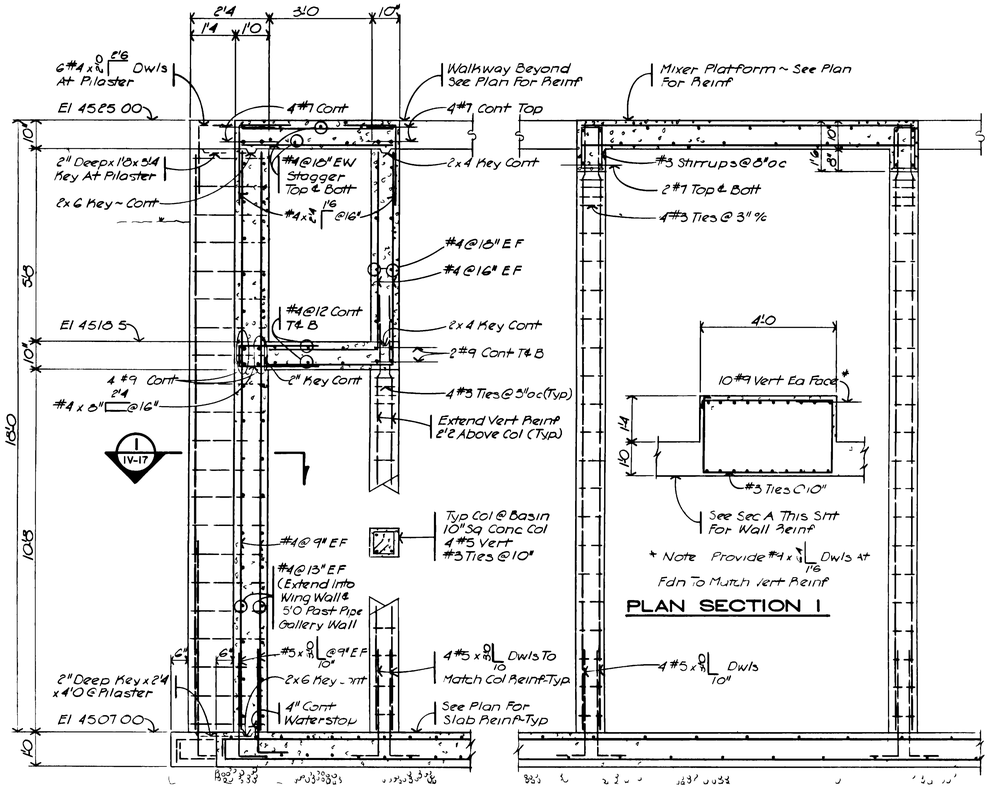
WALKWAY AND ROOF FRAMING PLANS

HENNINGSON, DURHAM & RICHARDSON, INC.
ENGINEERS PLANNERS CONSULTANTS
DENVER COLORADO GRAND JUNCTION COLORADO

JOB 734510 DESIGNED R.L.S. CHECKED J.M.H. APPROVED K. HENRICHSEN DATE DETAILED R.N.T.

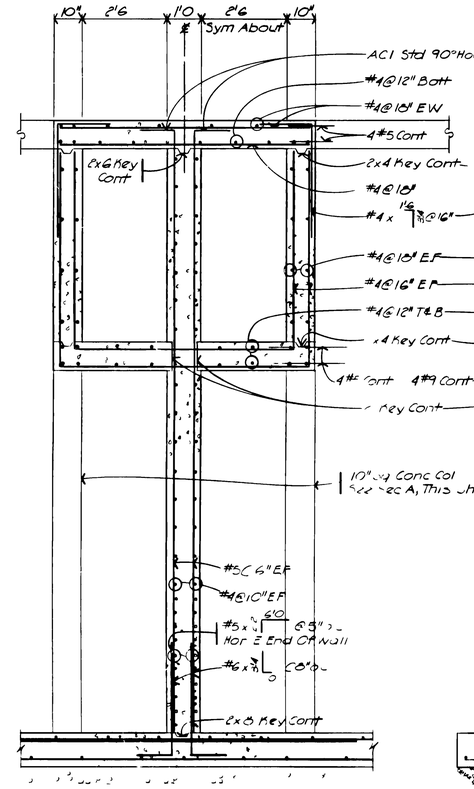
SHEET IV-16

DWG 73 OF 131

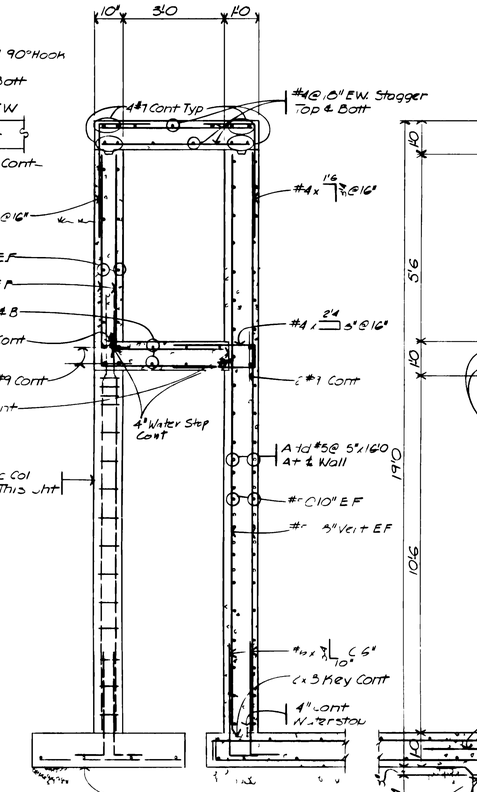


SECTION A
SCALE : 1/2"= 1'-0 (IV-17)

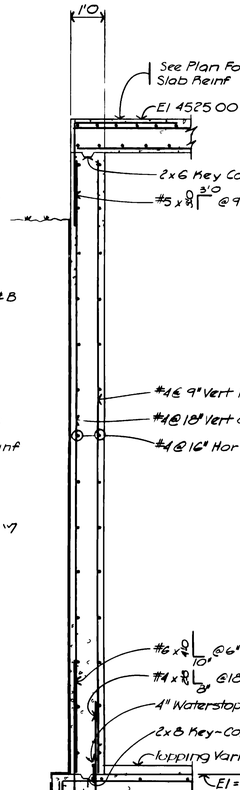
SECTION B
SCALE : 1/2"= 1'-0 (IV-17)



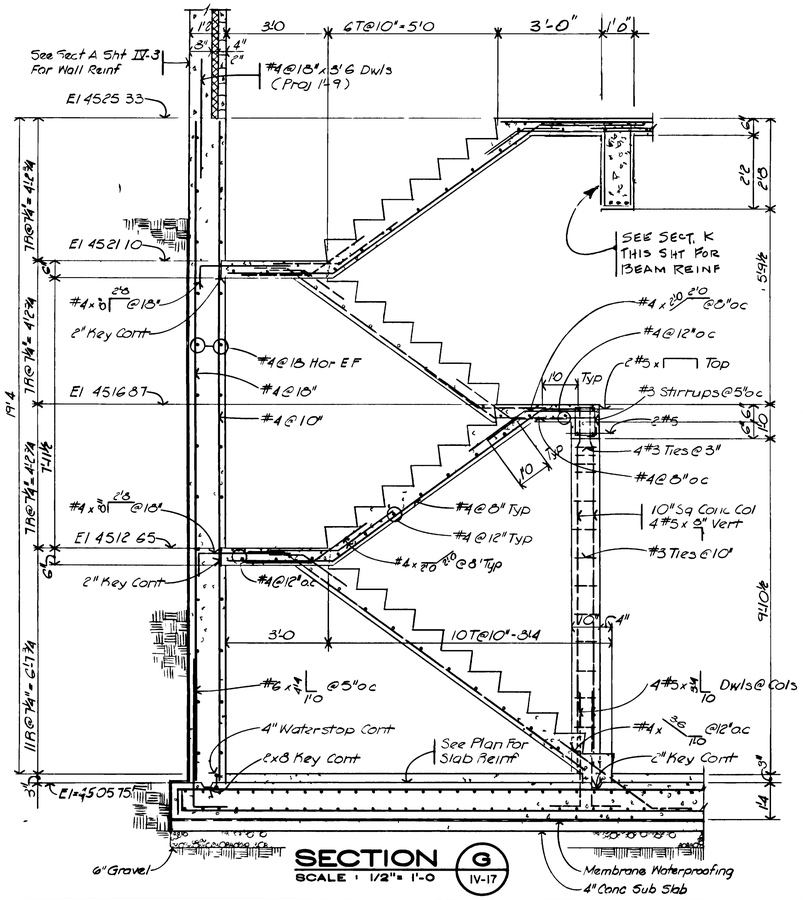
SECTION C
SCALE : 1/2"= 1'-0 (IV-17)



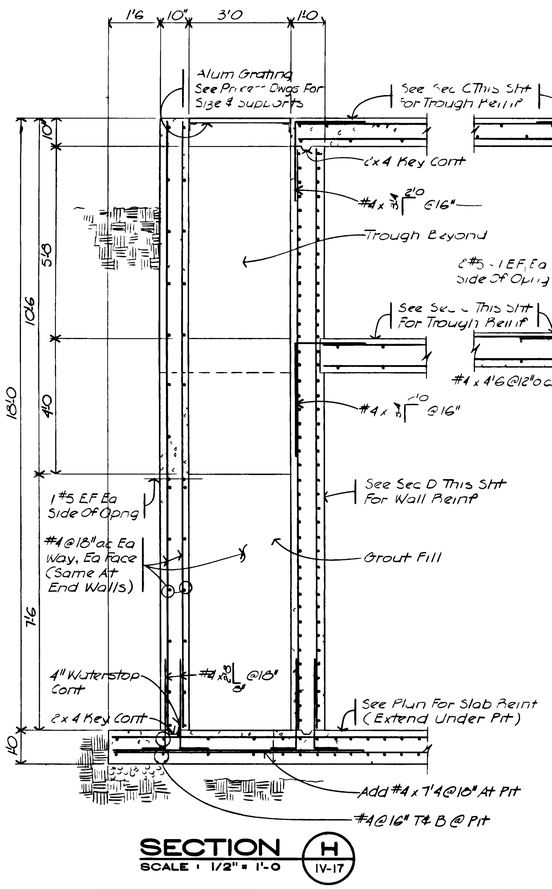
SECTION E
SCALE : 1/2"= 1'-0 (IV-17)



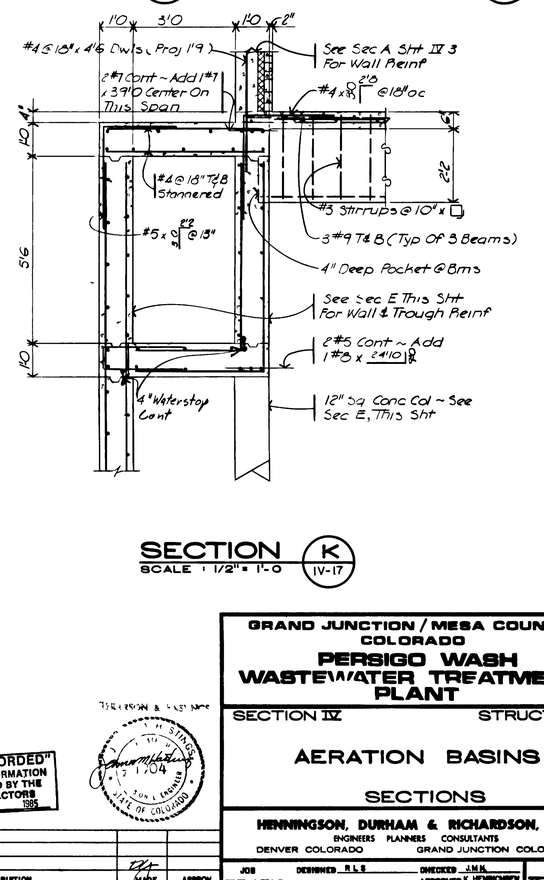
SECTION F
SCALE 1/2"= 1'-0 (IV-17)



SECTION G
SCALE : 1/2"= 1'-0 (IV-17)



SECTION J
SCALE 1/2"= 1'-0 (IV-17)



SECTION K
SCALE : 1/2"= 1'-0 (IV-17)

"AS RECORDED" FROM INFORMATION PROVIDED BY THE CONTRACTORS DATE MAY 1985

NO.	DATE	DESCRIPTION REVISIONS	MADE	APPROV
3				
2				
1	10/12/84	AS BUILT	TAT	

07087873.tif

GRAND JUNCTION / MESA COUNTY, COLORADO

PERSIGO WASH WASTEWATER TREATMENT PLANT

SECTION IV — STRUCTURAL

AERATION BASINS

SECTIONS

HENNINGSON, DURHAM & RICHARDSON, INC.
ENGINEERS PLANNERS CONSULTANTS
DENVER COLORADO — GRAND JUNCTION COLORADO

JOB	DESIGNED R L S	CHECKED J M K	SHEET
734510	DETAILED R M T	APPROVED K HENNINGSEN DATE NOV-1980	IV-17

DWG 71 OF 121

FOUNDATION & GROUND FLOOR FRAMING PLAN

SCALE 1/4 = 1'-0

NORTH

See Sheet IV 30 For Sludge Processing Unit Plan

CONSTRUCTION SCHEDULE "B" SEE SPECIFICATIONS

"AS RECORDED" FROM INFORMATION PROVIDED BY THE CONTRACTORS DATE MAY 1985

	DATE	DESCRIPTION	MADE	APPROV
1	6/7/84	AS BUILT		
		REVISIONS		

JAMES M. HASTINGS REGISTERED PROFESSIONAL ENGINEER 1904 STATE OF COLORADO

GRAND JUNCTION / MESA COUNTY, COLORADO

PERSIGO WASH WASTEWATER TREATMENT PLANT

SECTION IV — STRUCTURAL

AEROBIC DIGESTER
FOUNDATION & GROUND FLOOR PLAN

HENNINGSON, DURHAM & RICHARDSON, INC.
ENGINEERS PLANNERS CONSULTANTS
DENVER COLORADO — GRAND JUNCTION COLORADO

JOB 734510 | DESIGNED S.E.B | DETAILED S.E.B | CHECKED J.M.H | APPROVED K. HENRICHSEN | SHEET IV-35

DWG 92 OF 191

07087891.tif

WALKWAY FRAMING PLAN

SCALE 1/4"=1'-0

NORTH

Plan Notes:
1. Walkway Slabs & Struts To Be 10" Structural Slabs & Struts
2. Top Of Concrete Walkways Elevation = 42'-0 Typical
3. All Longitudinal Reinforcing In Interior Walkways & Struts To Have Lap Splices = 2 x (Davalopment Length) And No More Than 50% Of Reinforcing To Be Spliced @ One Location

CONSTRUCTION SCHEDULE "B" SEE SPECIFICATIONS

"AS RECORDED" FROM INFORMATION PROVIDED BY THE CONTRACTOR DATE MAY 1985

	DATE	DESCRIPTION REVISIONS	MADE	APPROV
3				
2				
1	6/12/84	AS BUILT	KPH	

GRAND JUNCTION / MESA COUNTY, COLORADO

PERSIGO WASH WASTEWATER TREATMENT PLANT

SECTION IV STRUCTURAL

AEROBIC DIGESTER

WALKWAY PLAN

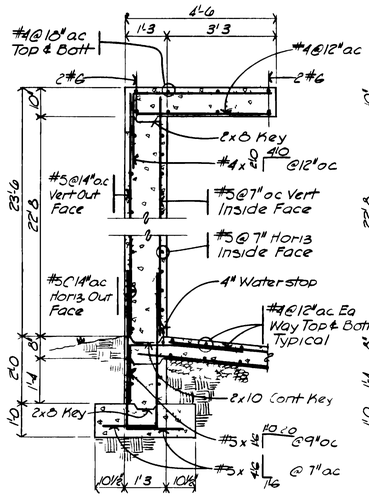
HENNINGSON, DURHAM & RICHARDSON, INC.
ENGINEERS PLANNERS CONSULTANTS
DENVER COLORADO GRAND JUNCTION COLORADO

JOB 734510 DESIGNED SEB CHECKED JMH APPROVED K HENRICHSEN DATE DETAILED SEB

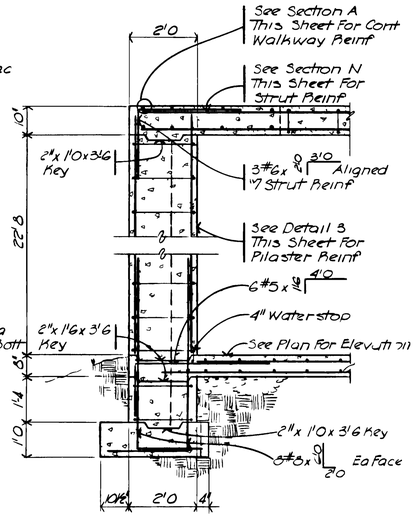
SHEET IV-36

DWG 93 OF 191

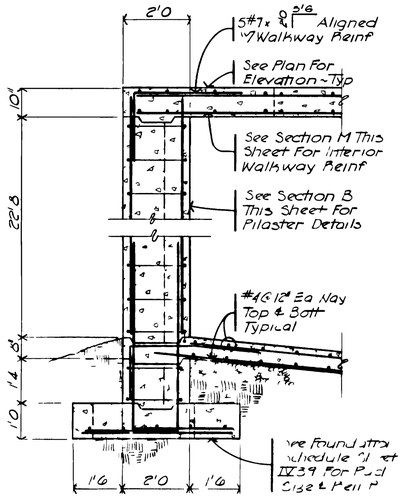
07087892.tif



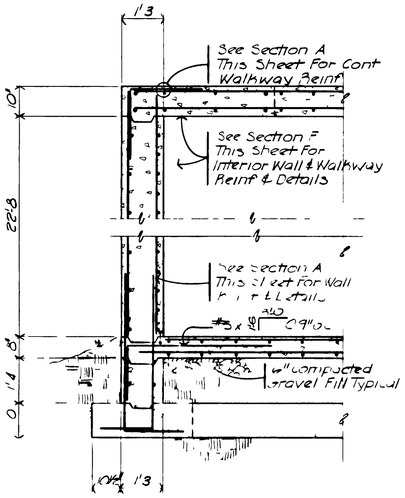
SECTION A
SCALE 1/2 = 1'-0
IV-37



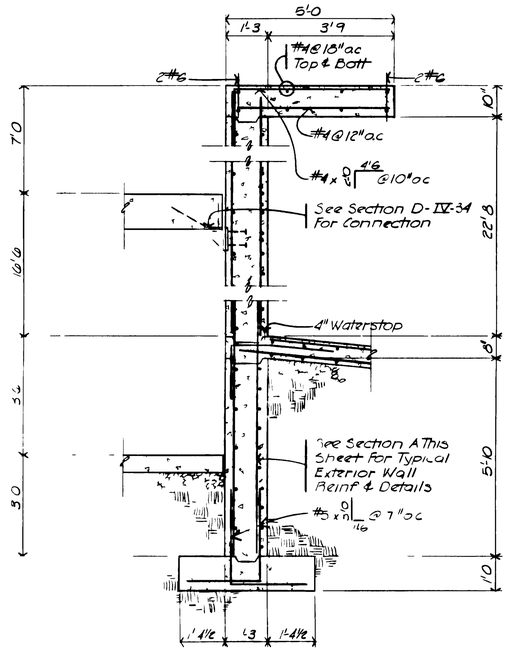
SECTION B
SCALE 1/2"=1'-0
IV-37



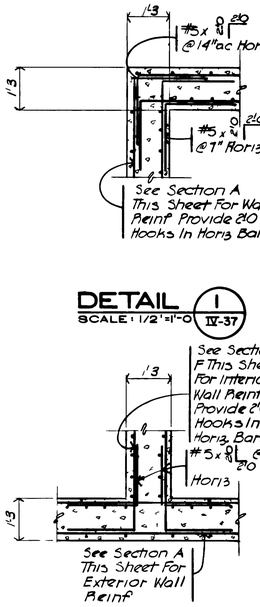
SECTION C
SCALE 1/2"=1'-0
IV-37



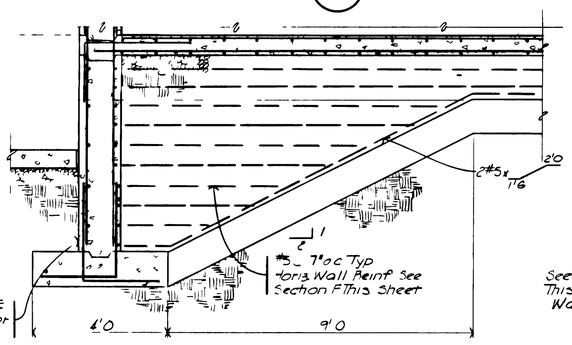
SECTION D
SCALE 1/2"=1'-0
IV-37



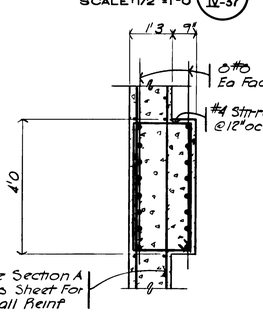
SECTION E
SCALE 1/2"=1'-0
IV-37

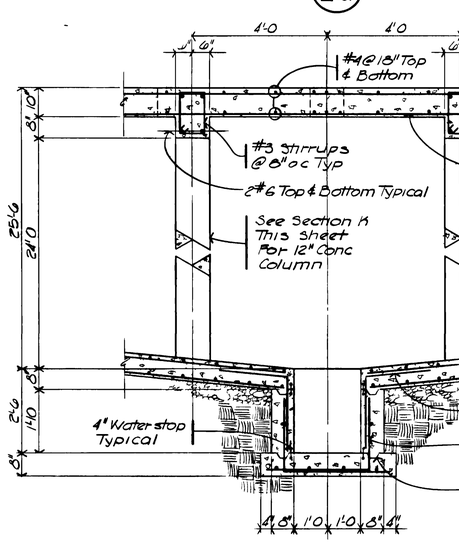


DETAIL 1
SCALE: 1/2"=1'-0
IV-37

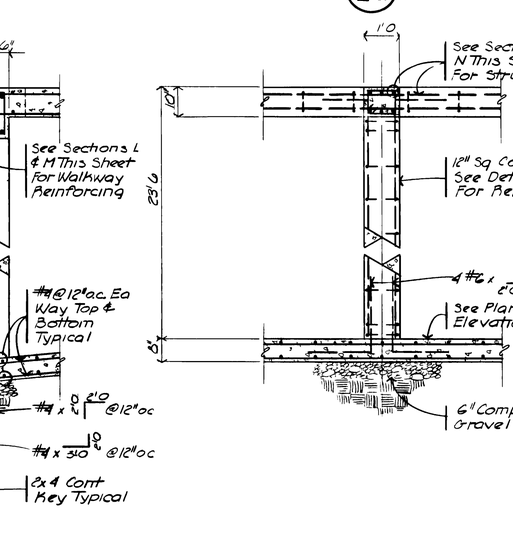


DETAIL 2
SCALE: 1/2"=1'-0
IV-37

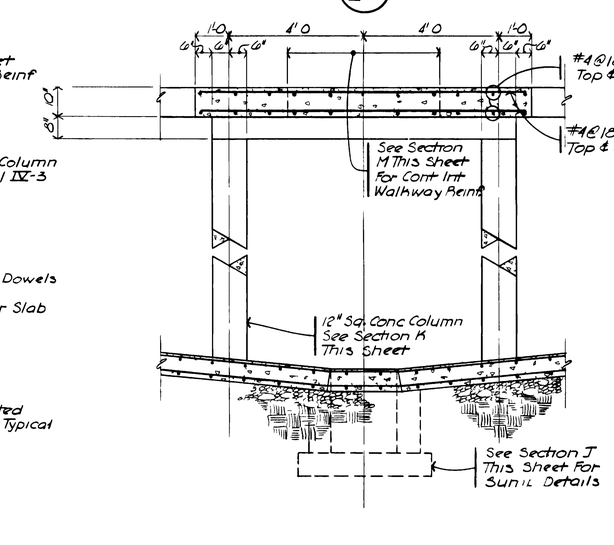




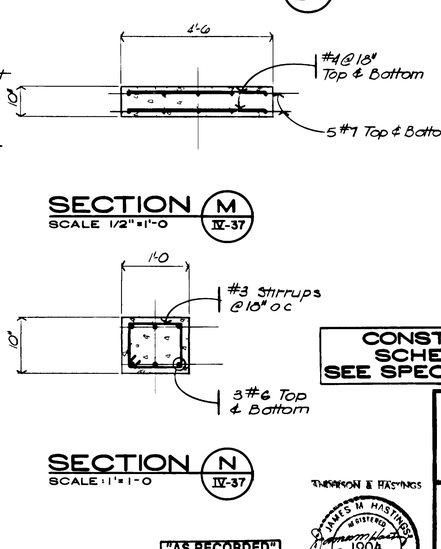
SECTION F
SCALE 1/2"=1'-0
IV-37



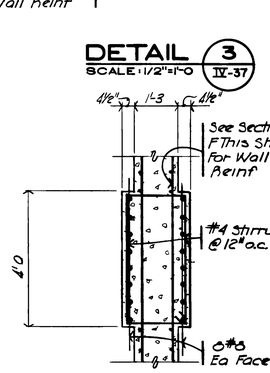
SECTION G
SCALE 1/2"=1'-0
IV-37



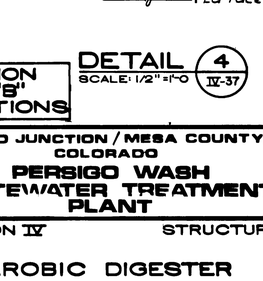
SECTION H
SCALE 1/2"=1'-0
IV-37



SECTION P
SCALE 1/2"=1'-0
IV-37



DETAIL 3
SCALE: 1/2"=1'-0
IV-37



SECTION J
SCALE 1/2"=1'-0
IV-37

SECTION K
SCALE 1/2"=1'-0
IV-37

SECTION L
SCALE 1/2"=1'-0
IV-37

SECTION M
SCALE 1/2"=1'-0
IV-37

SECTION N
SCALE 1"=1'-0
IV-37

CONSTRUCTION SCHEDULE "B" SEE SPECIFICATIONS

DETAIL 4
SCALE: 1/2"=1'-0
IV-37

"AS RECORDED" FROM INFORMATION PROVIDED BY THE CONTRACTOR
DATE MAY 1995

HENNINGSON & HASTINGS
JAMES M. HASTINGS REGISTERED 1904 PROFESSIONAL ENGINEER STATE OF COLORADO

3				
2				
1	6/1/84	AS Built	DM	
	DATE	DESCRIPTION REVISIONS	MADE	APPROV

GRAND JUNCTION / MESA COUNTY, COLORADO

PERSIGO WASH WASTEWATER TREATMENT PLANT

SECTION IV — STRUCTURAL

AEROBIC DIGESTER

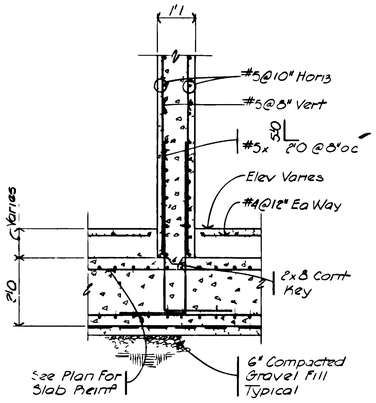
SECTIONS

HENNINGSON, DURHAM & RICHARDSON, INC.
ENGINEERS PLANNERS CONSULTANTS
DENVER COLORADO — GRAND JUNCTION COLORADO

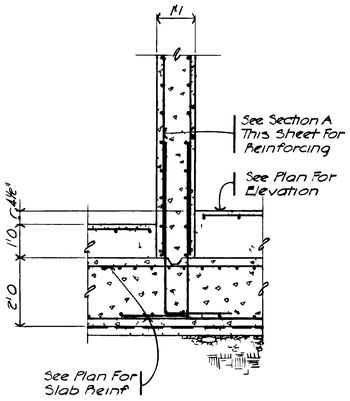
JOB 734510 — DESIGNED S.E.B. — CHECKED J.M.H. — APPROVED K. HENRICHSEN — DATE — DETAILED S.E.B./R.M.T. — SHEET IV-37

07087893.tif

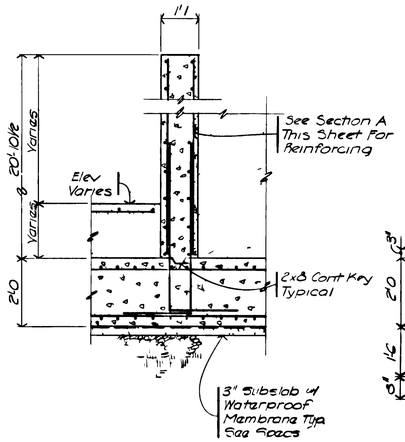
DWG 34 OF 121



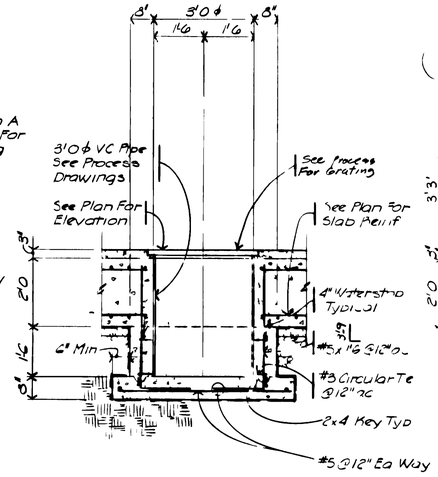
SECTION A
SCALE 1/2" = 1'-0 IV-11



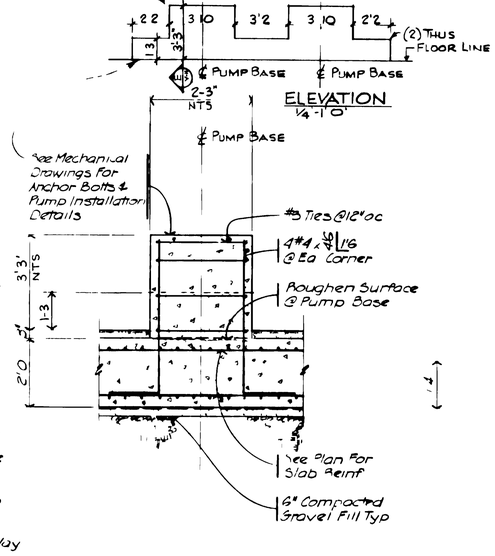
SECTION B
SCALE 1/2" = 1'-0 IV-11



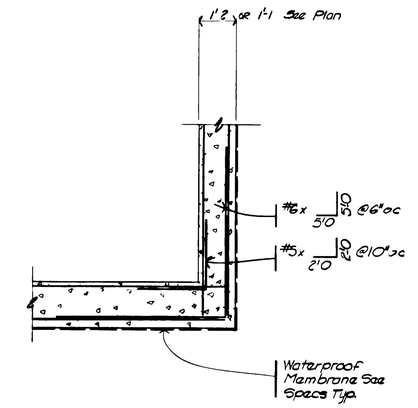
SECTION C
SCALE 1/2" = 1'-0 IV-11



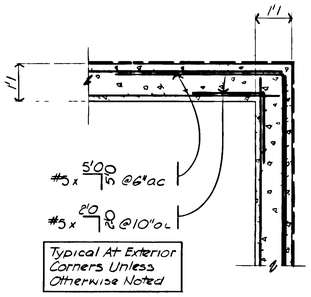
SECTION D
SCALE 1/2" = 1'-0 IV-11



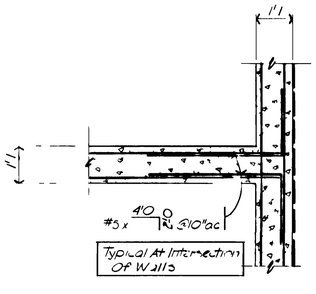
SECTION E
SCALE 1/2" = 1'-0 IV-11



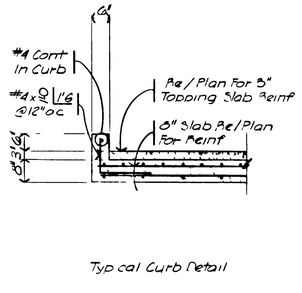
DETAIL I
SCALE 1/2" = 1'-0 IV-11



DETAIL 2
SCALE 1/2"=1'-0 IV-11

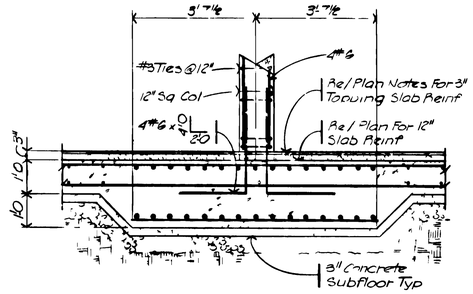


DETAIL 3
SCALE 1/2"=1'-0 IV-11

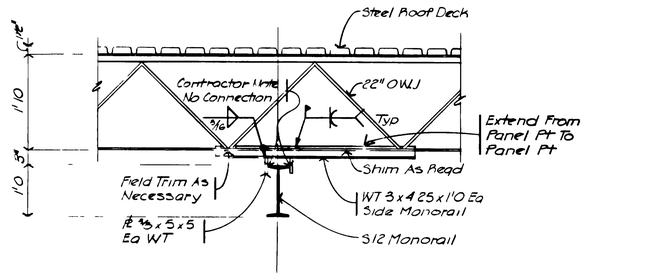


Typical Curb Detail

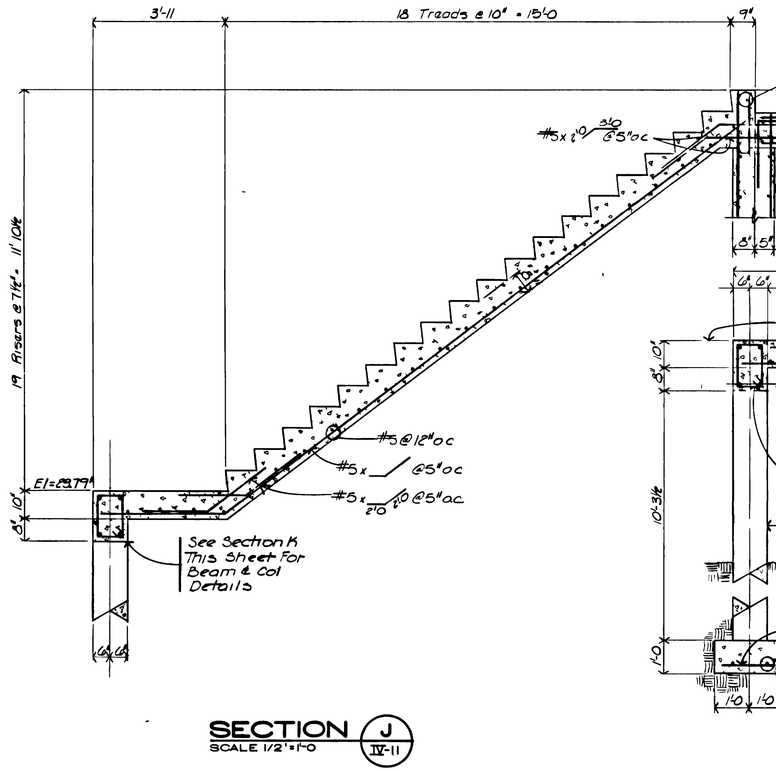
SECTION F
SCALE 1/2"= 1'-0 IV-11



SECTION G
SCALE 1/2" = 1'-0 IV-11

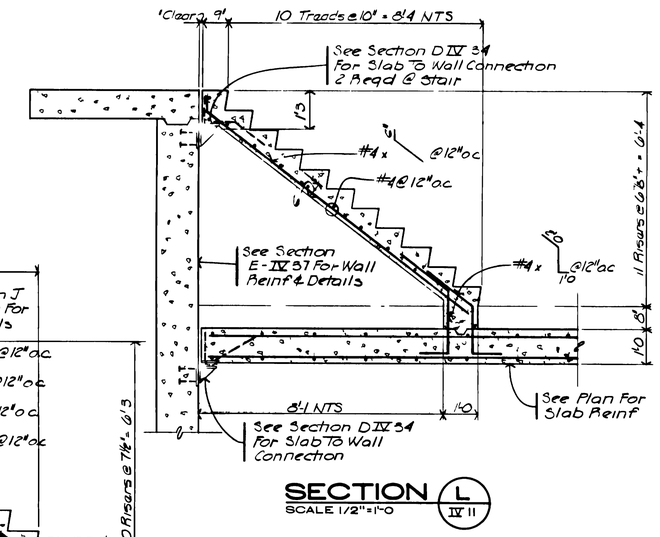


SECTION H
SCALE 3/4" = 1'-0 IV-11

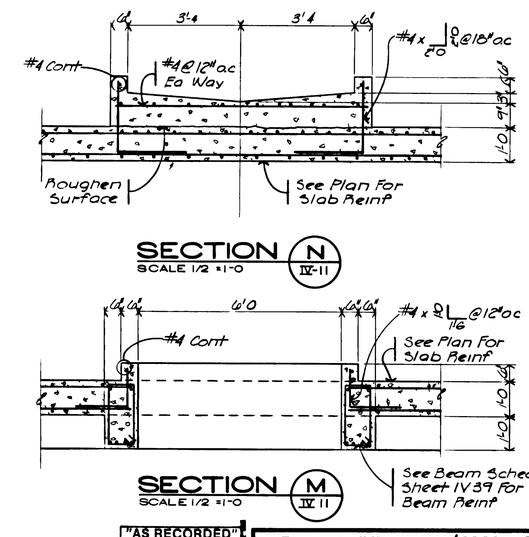


SECTION J
SCALE 1/2"=1'-0 IV-11

SECTION K
SCALE 1/2"=1'-0 IV-11



SECTION L
SCALE 1/2"=1'-0 IV 11



SECTION N
SCALE 1/2 =1'-0 IV-11

SECTION M
SCALE 1/2 =1'-0 IV 11

"AS RECORDED" FROM INFORMATION PROVIDED BY THE CONTRACTOR DATE MAY 1995

ANDERSON & HASTINGS

JAMES M. HASTINGS REGISTERED PROFESSIONAL ENGINEER 1904 STATE OF COLORADO

3				
2				
1	6/1/95	AS BUILT	CM	
	DATE	DESCRIPTION REVISIONS	MADE	APPROV

07087867.tif

GRAND JUNCTION / MESA COUNTY, COLORADO

PERSIGO WASH WASTEWATER TREATMENT PLANT

SECTION IV STRUCTURAL

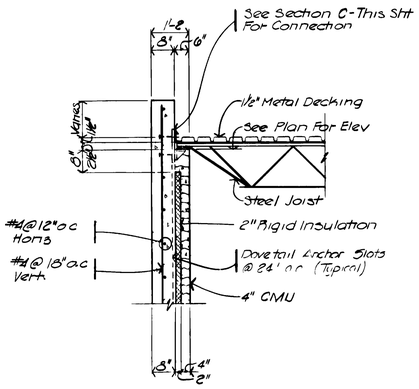
RAW SEWAGE PUMP STATION

SECTIONS

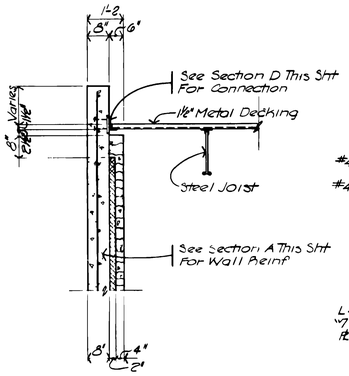
HENNINGSON, DURHAM & RICHARDSON, INC.
ENGINEERS PLANNERS CONSULTANTS
DENVER COLORADO GRAND JUNCTION COLORADO

JOB	DESIGNED SEB	CHECKED JMH	SHEET
734510	DETAILED SEB / RHT	APPROVED K HENRICHSEN DATE	IV-11

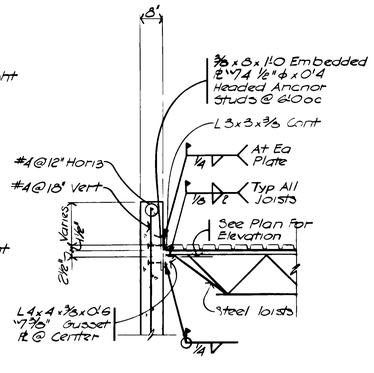
Note Reference Architectural Drawings For Chamfers, Reglets And False Joints



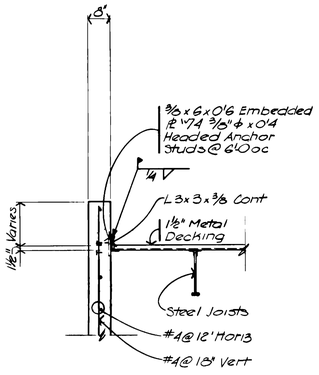
SECTION A
SCALE : 1/2"=1'-0 IV-3



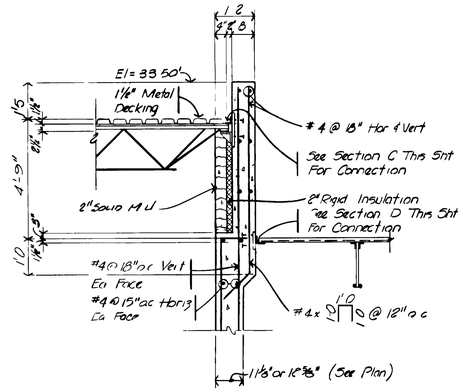
SECTION B
SCALE : 1/2"=1'-0 IV-3



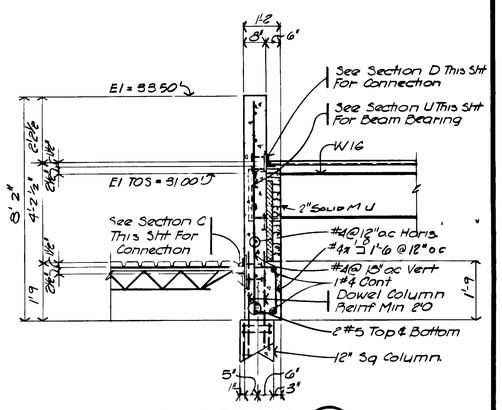
SECTION C
SCALE : 1/2"=1'-0 IV-3



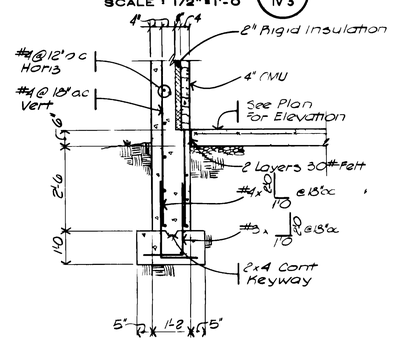
SECTION D
SCALE : 1/2"=1'-0 IV-3



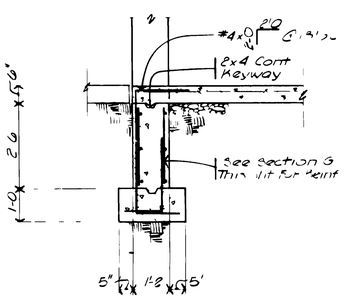
SECTION E
SCALE : 1/2"=1'-0 IV-3



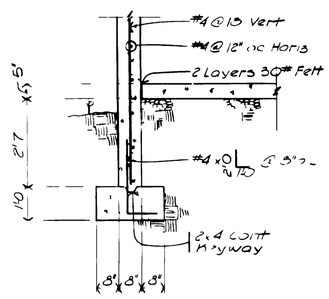
SECTION F
SCALE : 1/2"=1'-0 IV-3



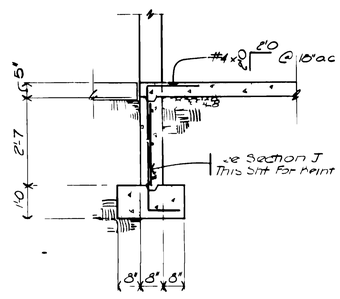
SECTION G
SCALE 1/2"=1'-0 IV-3



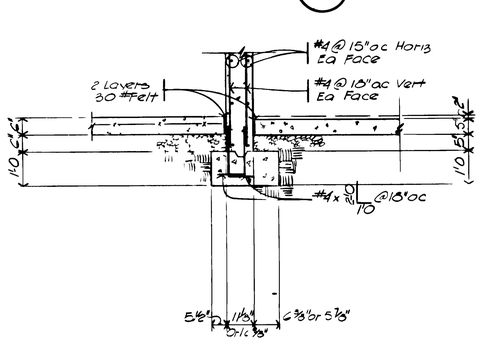
SECTION H
SCALE : 1/2"=1'-0 IV-3



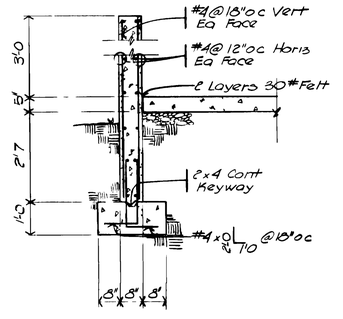
SECTION J
SCALE : 1/2"=1'-0 IV-3



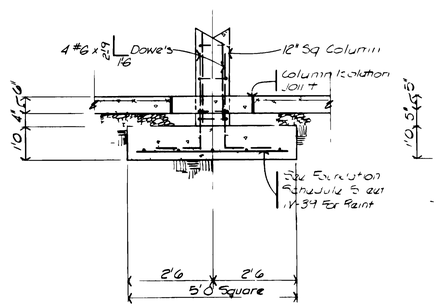
SECTION K
SCALE : 1/2"=1'-0 IV-3



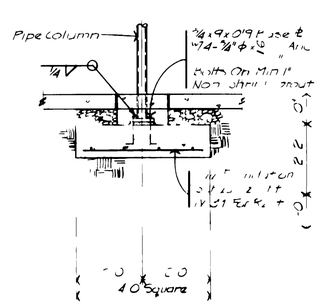
SECTION L
SCALE : 1/2"=1'-0 IV-3



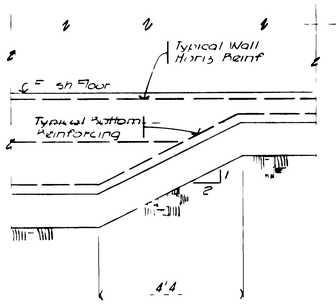
SECTION M
SCALE : 1/2"=1'-0 IV-3



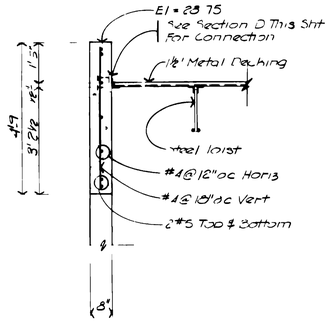
SECTION N
SCALE 1/2"=1'-0 IV-3



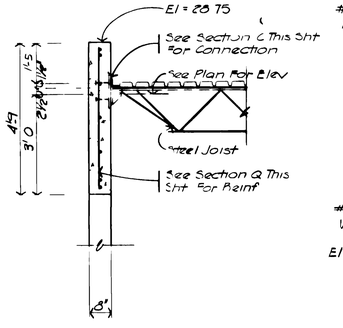
SECTION O
SCALE 1/2 = 1'-0 IV-3



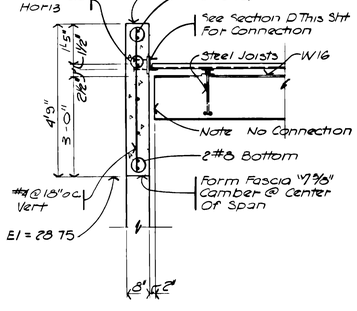
SECTION P
SCALE 1/2 = 1'-0 IV-3



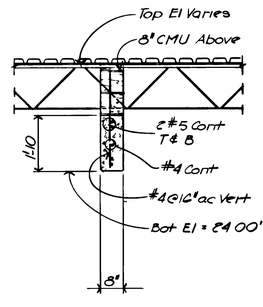
SECTION Q
SCALE : 1/2 = 1'-0 IV-3



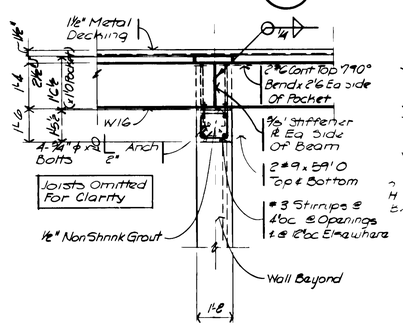
SECTION R
SCALE 1/2"=1'-0 IV-3



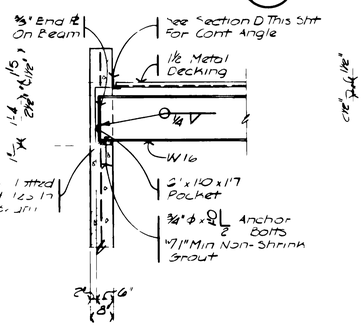
SECTION S
SCALE : 1/2"=1'-0 IV-3



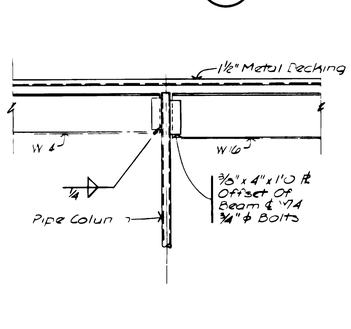
SECTION W
SCALE : 1/2"=1'-0 IV-3



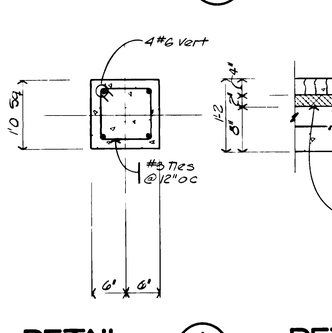
SECTION T
SCALE : 1/2"=1'-0 IV-3



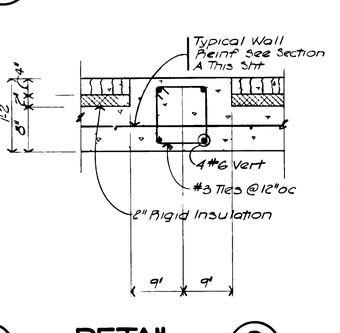
SECTION U
SCALE : 1/2"=1'-0 IV-3



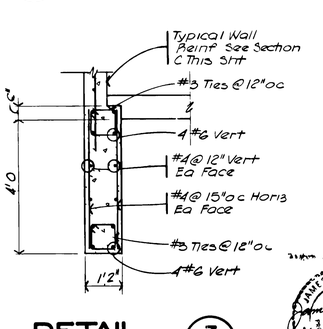
SECTION V
SCALE : 1/2"=1'-0 IV-3



DETAIL 1
SCALE 1"=1'-0 IV-3



DETAIL 2
SCALE 1"=1'-0 IV-3



DETAIL 3
SCALE 1/2"=1'-0 IV-3

"AS RECORDED" FROM INFORMATION PROVIDED BY THE CONTRACTOR DATE MAY 1985

3					
2					
1	4/17/84	AS BUILT	DCH		
	DATE	DESCRIPTION REVISIONS	MADE	APPROV	

07087859.tif

GRAND JUNCTION / MESA COUNTY, COLORADO

PERSIGO WASH WASTEWATER TREATMENT PLANT

SECTION IV STRUCTURAL

OPERATION BUILDING

SECTIONS

HENNINGSON DURHAM & RICHARDSON, INC.
ENGINEERS PLANNERS CONSULTANTS
DENVER COLORADO GRAND JUNCTION COLORADO

JOB 734510 DESIGNED S E B DETAILED S E B CHECKED J M H APPROVED K HENRICHSEN DATE

SHEET IV - 3

APPENDIX C

Project Specific Specifications
(Aeration Basin & Anerobic Digester repairs)

PERSIGO WASTE WATER TREATMENT PLANT
Aeration Basin Repairs
Project Specific Specifications

2145 River Road
Grand Junction, Colorado 81505

November 16, 2020 - For Bid and Construction
WJE No. 2019.3776

Prepared for:
City of Grand Junction
Public Works
333 West Avenue, Bldg C
Grand Junction, Colorado 81501

Prepared by:
Wiss, Janney, Elstner Associates, Inc.
3609 South Wadsworth Boulevard, Suite 400
Lakewood, Colorado 80235
303.914.4300 tel | 303.914.3000 fax

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 00 01 10

TABLE OF CONTENTS

END OF SECTION

INSTALLER'S WARRANTY FOR CONCRETE AND CONCRETE REPLACMENTS

Installer: _____

Address: _____

Owner: _____

Owner Address: _____

Project Address: _____

Building Name: _____

Area of Work: _____

Substantial Completion Date: _____

Warranty Period: ___ years

Expiration Date: _____

AND WHEREAS Concrete Installer has contracted, either directly with Owner or indirectly as subcontractor, to warrant said Work against faulty or defective materials and workmanship for designated Warranty Period,

NOW THEREFORE Concrete Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period it will, at its own cost and expense, make or cause to be made such repairs to or replacement of said Work as are necessary to correct faulty and defective Work and warrants against the following.

1. Components of the concrete that does not comply with requirements; that do not maintain general durability; or that deteriorate in a manner not clearly specified as an inherent quality of the material for the application indicated, regardless of whether the Work was previously accepted by Owner.

2. Delamination of the cementitious material from the substrate concrete or delamination within the material itself.

3. Surface defects, including but not limited to: blisters; curling; delamination; dusting; popouts; scaling (including mortar flaking); spalling.

4. Cracking. Including, but not limited to, those due to inadequate thickness or improperly cut or placed control joints.

5. Damage by exposure to foreseeable weather.

Warranty is made subject to the following terms and conditions:

1. Specifically excluded from Warranty are damages to Work and other parts of the building, and to building contents, caused by:
   a. lightning;
   b. fire;
   c. activity adjacent to Work by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner's Representative.

2. When Work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Concrete Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
3. Concrete Installer is responsible for damage to Work covered by Warranty but is not liable for consequential damages to building, pedestrians or vehicles using the Work.
4. During Warranty Period, if Owner allows alteration of Work by anyone other than Concrete Installer, including cutting, patching, and maintenance, Warranty shall become null and void on date of said alterations, but only to extent said alterations affect Work covered by Warranty. If Owner engages Concrete Installer to perform said alterations, Warranty shall not become null and void unless Concrete Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate Work, thereby reasonably justifying limitation or termination of Warranty.
5. Owner will promptly notify Concrete Installer of observed, known, defects, or deterioration and will afford reasonable opportunity for Concrete Installer to inspect Work and to examine evidence of such defects, or deterioration. Concrete Installer shall inspect defect, or deterioration within 72 hours of notification.
6. If permanent repair or replacement of warranted condition cannot be made immediately, due to weather conditions, availability of appropriate labor or materials, building occupancy, etc., Concrete Installer must make, or cause to be made, immediate temporary repairs to prevent any further damage, deterioration, or unsafe conditions. Permanent repair or replacement of warranted condition shall be scheduled as soon thereafter as practical, and with Owner's consent and approval.
7. If Owner notifies Concrete Installer of warranted condition that requires immediate attention to prevent potential injury or damage, and Concrete Installer cannot or does not promptly inspect and repair same, either permanently or temporarily, then Owner may make, or cause to be made, such temporary repairs as may be essential and Concrete Installer will reimburse Owner for cost of such repairs. Such action will not relieve Concrete Installer of its obligation to perform any necessary permanent repairs, and Warranty shall remain in full force and effect for remaining portion of its original term.
9. Concrete Installer shall provide equipment, labor, and material required to remedy warranted conditions, including repair or replacement of damage to other work resulting therefrom, and removal and replacement of other work required to access warranted condition. Additional required work will be at Concrete Installer’s sole expense for full term of Warranty. Warranty includes removal and replacement of concrete and sealants.
10. Warranty is recognized to be only Warranty of Concrete Installer on said Work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of Concrete failure. Specifically, Warranty shall not operate to relieve Concrete Installer of responsibility for performance of original Work according to requirements of Contract Documents, regardless of whether Contract was directly with Owner or with Owner’s General Contractor.

IN WITNESS THEREOF, and intending to be legally bound hereby, Concrete Installer has caused this document to be executed by undersigned, duly-authorized officer.

By: _____ Corporate Seal:
(Signature of Concrete Installer)

_____
(Name)

_____
(Date)

Notary Public Seal:

Subscribed and sworn before me this _____day of _____, _____

My commission expires _____

01 00 00

GENERAL

PART 1 GENERAL

1.1 PROJECT SPECIFIC REQUIREMENTS

A. The Standard Specifications for Road and Bridge Construction, as well as the Standard Specifications for Construction of Underground Utilities Water Lines, Sanitary Sewers, Storm Drains, Underdrains and Irrigation Systems do not apply to this project. Any references to those documents in the contract shall be replaced by the requirements of the project specific documents.

B. Standard Details for Construction of Streets, Trails, Storm Drains and Utilities do not apply to this project. Any references to those documents in the contract shall be replaced by the requirements of the project specific documents.

C. Project specific requirements shall take precedence over general conditions or standard documents.

D. Warranty period for specific Work items are not intended to supplement the general Contractor's Warranty and Guarantee.

1.2 REFERENCES

A. References to applicable standards shall be the latest edition of each unless otherwise noted.

1.3 DEFINITIONS

A. The definitions here shall supplement, or replace, those found in the City of Grand Junction General Contract Conditions.
   1. As-Built Documents: See Project Record Documents.
   2. Owner: See City.
   3. Project Record Documents: Contract documents marked by the Contractor to identify changes that were made during construction.
   4. Request for Information (also known as RFI): A question or inquiry about the Work submitted by the Contractor for clarification by the Owner or Engineer.

1.4 ADMINISTRATIVE

A. Requests for Information (RFI): Contractor shall submit RFIs to the Engineer for any condition which is believed to be at variance with the Construction Documents, or for situations where it is unclear what the Construction Documents are implementing. RFIs shall be submitted in writing to the Engineer and shall include a location, date requested, date required and indicate which repair item or item(s) are impacted by the request. Allow a minimum of 3 working days for review by Engineer.

B. Maintain at least one copy of each referenced standard, this Project Manual (Specifications), Drawings and/or Figures at the job site. In addition, maintain copies of all site visit reports (SVR) and Sketches (SKs) issued by the Engineer during Construction.

C. Provide a project superintendent at the Site a minimum of eight hours per day during the progress of the Work. The superintendent shall be literate and fluent in English.

D. Photograph existing conditions that are important to the construction or that deviate substantially from the Contract Documents; significant conditions that will be concealed by the Work; finish surfaces that might be misconstrued as damage caused by removal or other Work operations; and immediate follow-up when on-site events result in construction damage or loss. Photographs shall be of sufficient quality as to depict the condition being photographed. Provide photographs to Owner or Engineer upon request, either during project or after completion.

1.5 TEMPORARY FACILITIES AND CONTROLS

A. Comply with Owner's limitations and restrictions for Site use and accessibility.
   1. Comply with all security procedures.

B. Project has special requirements for coordinating Work because of the following conditions:
   1. Owner will occupy premises outside of Work area during construction period.
      a. Cooperate with Owner to minimize conflicts and facilitate Owner usage.
      b. Perform Work to avoid interference with Owner's day-to-day operations. Notify Owner's Representative at least 72 hours in advance of activities that will affect Owner's operations.
      c. Maintain vehicular, pedestrian, and emergency and normal access to portions of facility that are in use. Keep entrances and exits clear of stored materials and construction equipment.
      d. Short interruptions in access may be permitted if approved in advance in writing by the Owner's Representative.
      e. Schedule deliveries to minimize interruptions.
      f. Do not disturb Site outside of Work area.
      g. Do not interrupt utilities serving facilities occupied by Owner or others unless permitted and then only after arranging to provide temporary utility services according to requirements indicated.
      h. Notify Owner not less than 7 days in advance of proposed utility interruptions.
      i. Do not proceed with utility interruptions without Owner's written permission.
   2. Residential nature of building and neighborhood.
   3. Office tenant needs.

C. Staging:
   1. Staging areas must be coordinated with Owner prior to mobilization.
   2. Confine materials and equipment to the staging and work areas. Contractor assumes full responsibility for the protection and safekeeping of items stored on site.
   3. Do not unreasonably encumber Site with materials or equipment.
   4. Do not load Project structure with weight that will endanger Project structure.

D. Parking: Construction personnel shall park on-site in areas designated by the Owner's Representative.

E. Water Service: Use of Owner's existing water service will be permitted.
   1. Provide connections and extensions of service as required for construction operations.
   2. Provide additional water as necessary.

F. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel at location designated by Owner's Representative.

1. Provide disposable supplies, including toilet tissue, paper towels, and paper cups. Maintain adequate supply. Provide covered waste containers for disposal of used material.
2. Service toilets at least twice weekly.
3. Provide wash facilities supplied with potable water at convenient locations for personnel who handle materials that require clean up. Supply cleaning compounds appropriate for each type of material handled. Dispose of drainage properly.
    a. Provide safety showers, eyewash fountains, and similar facilities for convenience, safety, and sanitation of personnel.
4. Comply with public authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

G. Electric Power Service: Use of Owner's existing electric 120V electric outlets will be permitted. Any power requirements above existing 120V outlets will need to be provided.
1. As necessary, provide additional electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations. Do not overload Owner's service.
2. Comply with NECA 200 and NFPA 70.
3. Maintain temporary service in safe condition and utilize in safe manner.

H. Use of Existing Stairs and Elevators: Use of Owner's existing stairs and elevators will be permitted, as long as stairs and elevators are cleaned and maintained in condition acceptable to Owner's Representative.
1. Coordinate daily usage with Owner's Representative and with requirements for facility operations.
2. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs, elevator cars, and entrance doors and frame, and to maintain means of egress.
3. At Substantial Completion, restore stairs and elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.

I. Lighting: Owner will provide existing lighting at existing locations.
1. Provide additional lighting, as necessary, with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
2. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

J. Provide insulation or temporary heating as necessary for curing, drying, and protection of installed construction.
1. Select equipment that will not have harmful effect on completed installations or elements being installed.
2. Maintain temporary heating on 24-hour basis until no longer needed.
3. Unless noted otherwise, insulation is considered incidental to construction and will not be paid for separately.
4. Unless otherwise specified, temporary heating will not be considered part of Work and will be paid as additional Work item. Notify Owner's Representative in advance of need for temporary heating and estimated added cost. Do not proceed with temporary heating until authorized in writing by Owner's Representative.

K. Snow removal: The contractor shall be required to remove snow from the work area.

L. Equipment:
1. Direct equipment exhaust away from occupied spaces and vent equipment operating within structure to outside.

2. Operate equipment at noise levels conforming to requirements of city, state, and federal laws and codes, and Owner limitations.

M. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of public authorities having jurisdiction. Construction debris shall be removed in a manner that avoids overloading adjacent structural members.

N. Protection:
1. Limit access to work areas.
2. Contractor shall provide protective barriers, fences, etc. to ensure the safety of pedestrians and vehicular traffic during the Work. All barriers and fences shall comply with local, state, and federal regulations and laws.
3. Provide adequate signage to direct pedestrian and vehicular traffic around the area under construction.
4. Prevent construction debris and other materials from coming into contact with pedestrians, motor vehicles, building, and other surfaces that could be harmed by such contact.
5. Existing Drains:
   a. Verify that drains in or near Work area are open and free flowing prior to start of Work.
   b. Lawfully remove construction effluent from Site. Do not allow construction debris to flow into existing drains or sewer systems.
   c. Rout or replace clogged drain lines at completion of Work.
6. Confine dust, debris and fumes to Work area and prevent from entering areas outside of the Work area.
7. Protect finished surfaces against damage. Minimize traffic on finished roof surfaces and do not use for material storage.
8. Contractor shall be responsible for maintaining the water tightness of the areas of the structure being worked on during the course of the work. Providing temporary protection of the existing construction or structure from the weather until removed portions are completely replaced with new construction. The costs of damage and repairs shall be made at no cost to the Owner.
9. Maintain all protection in operable condition for the full duration of the project.

O. Temporary Fencing:
1. Tree and Plant Protection: Install temporary fencing located as indicated or outside drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.
2. Site Enclosure Fence: Before construction operations begin, provide Site enclosure fence in manner that will prevent people and animals from easily entering Site except by entrance gates.

P. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241. Coordinate with Owner's safety team.
1. Provide portable, UL-rated fire extinguishers with class and extinguishing agent as required by locations and classes of fire exposures.
2. Prohibit smoking on Site.
3. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of public authorities having jurisdiction.

4. Store combustible materials in approved safety containers and enclosures, away from building if possible.
5. Develop and supervise overall fire-prevention and -protection program for personnel at Site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

PART 2 PRODUCTS

2.1 GENERAL

A. The products specified are believed to have properties adequate for successful completion of the Work. If the Contractor has found these products to be unacceptable or has had difficulty using these materials, the Contractor shall notify the Architect/Engineer in writing, and provide a request for substitution of material for which the Contractor has had successful experience.

B. No product substitutions will be allowed unless otherwise noted. Engineer's approval must be obtained for all substitutions prior to being awarded the project. Submit requested substitutions with bid form.

2.2 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Site in original containers and packaging with seals unbroken, labeled with manufacturer’s name, product brand name and type, date of manufacture, lot number, directions for storing, and complete manufacturer’s written instructions.

B. Keep materials dry and do not allow materials to be exposed to moisture during transportation, storage, handling, or installation. Reject and remove from Site new materials which have been exposed to moisture to their detriment.

C. Store and handle materials in accordance with manufacturer’s written instructions, safety requirements, and all applicable laws and regulations. Remove from Site, and replace at no cost to Owner, any materials that are damaged or otherwise negatively affected by not being stored or handled in accordance with manufacturer’s written instructions.

D. Store materials in original, undamaged containers and packaging in clean, dry, location on raised platforms and protected from weather, within temperature range required by manufacturer. Protect stored materials from direct sunlight and sources of ignition. Manufacturer’s standard packaging and covering alone is not considered adequate weather protection.

E. Locate materials in a secure location approved by Owner’s Representative

F. Conspicuously mark damaged or opened containers, containers with contaminated materials, damaged materials, and materials that cannot be used within stated shelf life and remove from Site as soon as possible. Replace discarded materials in a timely manner at no cost to Owner.

G. Limit stored materials on structures so as to preclude damage to materials and structures.

H. Maintain copies of all applicable Safety Data Sheets (SDS) with materials in storage area, such that they are available for ready reference on Site.

PART 3 EXECUTION

3.1 DISCOVERY, FIELD VERIFICATION AND CHANGES IN WORK

A. Contractor shall verify all quantities. Quantities shown are for estimating purposes only.

B. Do not scale drawings. The Contractor shall field verify the existing dimensions and existing conditions prior to starting the work. Dimensions of the new construction shall be adjusted as necessary to fit the existing conditions. The Engineer shall be notified in writing of any significant deviations from the dimensions or conditions shown on these drawings.

C. During rehabilitation work, existing conditions may be encountered which are not known or are at variance with the Contract Documents. Such conditions may interfere with the Work and may consist of damage or deterioration of the substrate or surrounding materials or mislocation of embedded elements such as reinforcing steel, which may interfere with proper execution of the Work. Promptly report to Engineer as a request for information any of these conditions.

3.2 EXAMINATION FOR MATERIAL COMPLIANCE

A. Examine substrates and conditions with Installer and manufacturer's representative, where appropriate, for compliance with requirements and for other conditions affecting installation or performance of the material.
   1. Verify dimensions so that proper installation of material for optimal performance is maintained.
   2. Ensure that work done by other trades is complete.
   3. Verify that areas and conditions under which Work is to be performed permit proper and timely completion of Work.
   4. Notify Engineer in writing of conditions which may adversely affect installation or performance of the material and recommend corrections.
   5. Do not proceed with Work until adverse conditions have been corrected and reviewed by Engineer.
   6. Commencing Work constitutes acceptance of Work surfaces and conditions.

3.3 CLEANING

A. Immediately clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

B. At the end of each workday, broom-clean Site and Work areas and place all items to be discarded in appropriate containers.

C. After completing Work:
   1. Clean all materials resulting from Work that are not intended to be part of the finished Work using appropriate cleaning agents and procedures. Exercise care to avoid damaging surfaces.
   2. Repair at no cost to Owner all items damaged during the Work.
   3. Remove and legally dispose of debris and surplus materials from Site.

3.4 PROTECTION

A. Take precautions to ensure safety of people (including building users, passers-by, and workers) and protection of property (including adjacent building elements, landscaping, and motor vehicles).
   1. Erect temporary protective canopies and walls, as necessary, at walkways and at points of pedestrian and vehicular access that must remain in service during Work.

B. Cover adjacent surfaces with materials that may be damaged.

C. Protect paving and sidewalks, and adjacent building areas from mechanical damage due to scaffolding and other equipment.

D. Prevent dust, debris, coating overspray/spatter, and other construction materials from coming into contact with pedestrians, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.

E. Limit access to Work areas.

F. Comply with manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products.

G. Assume responsibility for injury to persons or damage to property due to Work, and remedy at no cost to Owner.

H. Protect from damage, all elements of completed work and original construction to remain.

I. Protect Work during and after completion from contact with contaminating substances and from damage, so materials are without deterioration or damage at time of Substantial Completion.

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Administrative and procedural requirements for submitting shop drawings, product data, samples, and other submittals.

B. Reference the Schedule of Submittals for a summary of required submittals.

1.2 SUBMITTALS

A. General:
   1. Identification: Include a permanent label or title block on the submittal or cover sheet, with the following information.
      a. Project name.
      b. Date.
      c. Names of Engineer, Contractor, subcontractor, manufacturer, supplier, and firm or entity that prepared submittal, as appropriate.
      d. Identification information, such as the number and title of the appropriate Specification section, Drawing number and detail references, location(s) where product is to be installed, or other necessary information.
      e. Label each submittal with Specification section number followed by decimal point and then sequential number (e.g., 06100.01). On resubmittals, include alphabetic suffix after another decimal point (e.g., 06100.01.A).
      f. Provide space approximately 6 by 8 inches on or beside the label or title block for the Contractor's approval stamp and the action stamp of the Architect/Engineer.
   2. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.
   3. Submit one electronic copy of prints in PDF format. Prints shall have white background and dark lettering and line work. Prints will be returned electronically.

B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not use reproductions of the Contract Documents or standard printed data.
   1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
      a. Dimensions, including notation of those established by field measurement.
      b. Identification of products.
      c. Fabrication and installation drawings.
      d. Roughing-in and setting diagrams.
      e. Shopwork manufacturing instructions.
      f. Templates and patterns.
      g. Schedules.
      h. Notation of coordination requirements.
      i. Relationship to adjoining construction clearly indicated.
      j. Seal and signature of professional Engineer if specified.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8 1/2 by 11 inches but no larger than 30 by 42 inches.
3. Submit one electronic copy of prints in PDF format. Prints shall have white background and dark lettering and line work. Prints will be returned electronically.

C. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
   1. Clearly mark each copy of the submittal to show which products and options are applicable. Delete information which is not applicable. Supplement standard information with project-specific information.
   2. Include the following information, as applicable:
      a. Manufacturer's catalog cuts, product specifications, schematic drawings, installation instructions, and written recommendations.
      b. Compliance with referenced standards.
      c. Testing by recognized testing agency.
      d. Include manufacturer's literature including written instructions for evaluating, preparing, and treating substrate.
      e. Technical data including tested physical and performance properties
      f. Mixing and application or placement instructions.
   3. Include temperature ranges for storage and application of materials, and special cold-weather application requirements or limitations.
   4. Include Globally Harmonized System (GHS) Safety Data Sheets or, if not yet available, Material Safety Data Sheets. For information only.

D. Samples: Submit physical samples to illustrate functional and aesthetic characteristics of the product, for review of materials and workmanship, for compatibility with other elements, and for comparison with the actual installed elements.
   1. Samples shall be of sufficient size to show the general visual effect.
   2. Include sets of at least three samples that show the full range of color, pattern, texture, graining, and finish.
   3. Transmit samples that contain multiple, related components, such as accessories, together in one submittal package.
   4. Identification: Attach a label on an unexposed side of each sample that includes the following:
      a. Generic description of sample.
      b. Product name, name of manufacturer, and sample source.
      c. Number and title of appropriate Specification section.
   5. Samples for Initial Selection: Submit two full sets of units or sections of units from the supplier's product line, showing the full range of colors, textures, and patterns available. Architect/Engineer will retain one set and return one set with the options selected.
   6. Samples for Verification: Submit full-size units or samples of the size indicated, prepared from the same material to be used for the Work, cured and finished in the manner specified, and physically identical with material or product proposed for use, and that show the full range of color and texture variations expected.
      a. Submit the number of samples required by the Contractor plus one that will be retained by the Architect/Engineer. Mark up and retain one returned sample as a Project Record Document.
   7. Maintain approved samples at the Site, available for quality-control comparisons during construction. Samples may be used to determine final acceptance of construction associated with the sample.

E. Delegated Design:
   1. Where required by the Contract Documents, in addition to shop drawings, product data, and other required submittals, submit a statement, signed and sealed by responsible design professional, for each product and system specifically assigned to the Contractor to be designed or certified by a design professional.
      a. Indicate that products and systems comply with performance and design criteria in the Contract Documents.
      b. Include a list of codes, loads, and other factors used in performing these services, and signed and sealed design calculations where required.
      c. Electronic submittals in PDF format are preferred; however, print copies will be accepted. Submit number of prints needed by contractor plus two for retention by the Owner and Engineer.

1.3 SUBMITTAL PROCEDURE

A. Coordinate the preparation and processing of submittals with performance of construction activities.
   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals requiring concurrent review, and related activities that require sequential activity.
   2. Allow sufficient time for submittal and resubmittal review. Failure to provide sufficient time for submittal and resubmittal reviews will not be a basis for extension of the Contract Time.

B. Review Time:
   1. Allow five working days for the review of each submittal and resubmittal.
   2. Allow additional time if coordination with subsequent submittals is required. The Architect/Engineer will advise the Contractor when the submittal being processed must be delayed for coordination.
   3. Time for review shall commence when the Architect/Engineer receives the submittal.

C. Contractor Review:
   1. Review each submittal, coordinate with other Work, and check for compliance with the Contract Documents. Verify field dimensions and conditions. Identify variations from the Contract Documents and product or system limitations that may be detrimental to the successful performance of completed Work. Note corrections.
   2. Before submitting to the Architect/Engineer, stamp with a uniform approval stamp including the reviewer's name; the date of Contractor's approval; and a statement certifying that the submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
   3. Submittal Log: Maintain submittal log that lists submitted items per specification section. Record dates submitted, dates returned, and disposition of each item based on Architect/Engineer's review. Submit final log showing approved materials at Substantial Completion.

D. Transmittal: Package each submittal individually and appropriately for transmittal and handling.

E. Engineer Action:
   1. Engineer will not review submittals that are received from sources other than the Contractor or that do not bear the Contractor's approval stamp, and will return them without action to the Contractor.
   2. Engineer will not return submittals requested for information only.

3. Engineer will review each submittal for conformance with the design concept of the Project and compliance with the Contract Documents. Architect/Engineer will make marks to indicate corrections or modifications required, and stamp with an action stamp. The action stamp will include the reviewer's name, date of review, and required Contractor action. Contractor actions may include making corrections or modifications to the submittal or resubmitting the submittal, or both.

F. Resubmittals: Make resubmittals in the same form and number of copies as the initial submittal.
   1. Note the date and content of previous submittal.
   2. Note the date and content of the revision in the label or title block and clearly indicate the extent of the revision and changes made.
   3. Resubmit until the Engineer indicates that no resubmittal is required.
      a. No resubmittal is required when submittal is marked "No Exceptions Taken" or "Make Corrections Indicated".

G. Distribution: Furnish copies of the final submittals to the Site file, the record documents file, manufacturers, subcontractors, suppliers, fabricators, installers, public authorities having jurisdiction, and others as necessary for performance of construction activities. Show the distribution on the transmittal forms.

H. Use only the final submittals with the Architect/Engineer's action stamp, for construction.
   1. Only items marked "No Exceptions Taken" or "Make Corrections Indicated" shall be used for construction.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 40 00

QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Administrative and procedural requirements for quality assurance and quality control, testing, special inspections and mockups.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated, and do not relieve the Contractor of responsibility for compliance with requirements of the Contract Documents.
   1. Specified tests, inspections, and related actions performed by others do not limit the Contractor's other quality assurance and quality control procedures that facilitate compliance with requirements of the Contract Documents.
   2. Requirements for the Contractor to provide quality assurance and quality control services required by the Engineer, Owner, or public authorities having jurisdiction are not limited by provisions of this Section.

C. Related Sections:
   1. See sections in Divisions 2 through 32, and Drawings sheets for specific test and inspection requirements.

1.2 DEFINITIONS

A. Quality Assurance Services: Activities, actions, and procedures performed before and during the execution of the Work to guard against defects and deficiencies and substantiate that the proposed construction will comply with requirements.

B. Quality Control Services: Tests, inspections, procedures, and related actions during and after the execution of the Work to evaluate that the actual products incorporated into the Work and the completed construction comply with requirements.
   1. Services do not include contract enforcement activities performed by the Engineer, such as observations.

C. Testing Agency (also known as Third Party Testing Agency): Entity responsible for performing specified testing or special inspections in Divisions 02 through 32 and on the Contract Drawings.

D. Special Inspector: A qualified person employed or retained by an approved agency (such as the testing agency), and approved by the building official as having competence necessary to insect a particular type of construction requiring special inspection.

E. Special Inspection: Review of completed work or work in progress performed by the Special Inspector, or where specifically identified, by the Engineer. Items typically required by the governing building code.

1.3 COMPLIANCE CRITERIA

A. General: If compliance with two or more standards is specified and standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement.

B. Minimum Quantity or Quality Level: Quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements.

C. Refer uncertainties to the Engineer for a decision before proceeding.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 QUALITY CONTROL

A. Reference the Special Inspection Schedule on the Construction Drawings for special inspection requirements for this section.

B. Owner Responsibilities: The Owner will engage a qualified testing agency to perform all special inspections and select testing as explicitly identified in the Contract Documents.
   1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and descriptions of types of testing and inspecting they are engaged to perform.
   2. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to the Contractor.

C. Testing Agency/Special Inspector Responsibilities: Cooperate with the Engineer and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
   1. Determine location from which test samples will be taken and in which in-situ tests are conducted.
   2. Notify the Engineer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
   3. Conduct and interpret tests and inspections and state in each report whether tested and inspected Work complies with or deviates from requirements.
   4. Submit a certified written report of each test, inspection, and similar quality control service.
   5. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.
   6. Do not perform any duties of the Contractor.

D. Engineer Responsibilities: Engineer may perform some testing on completed on in-process work as noted in the Contract Documents.

E. Tests and inspections not explicitly assigned to the Owner or Engineer, and testing and inspecting requested by the Contractor and not required by the Contract Documents, are the Contractor’s

responsibility. Unless otherwise indicated, provide quality control services specified and those required by public authorities having jurisdiction, whether specified or not.

F. Coordination: Coordinate the sequence of activities to accommodate the required quality assurance and quality control services with a minimum of delay and to avoid the necessity of removing and replacing construction to accommodate testing and inspecting.
   1. Schedule times for tests, inspections, obtaining samples, and similar activities.
   2. Notify the testing agency sufficiently in advance of operations to permit assignment of personnel.

G. Associated Services: Cooperate with the Engineer and testing agencies performing required tests, inspections, and similar quality control services, and provide reasonable auxiliary services as requested. Provide the following:
   1. Submittals of concrete mix designs and other materials and products necessary for the testing agency to test and evaluate field work.
   2. Access to the Work.
   3. Incidental labor and facilities necessary to facilitate tests and inspections.
   4. Adequate quantities of representative samples of materials that require testing and inspecting. Assist the testing agency in obtaining samples.
   5. Facilities for storage and field curing of test samples.
   6. Security and protection for samples and for testing and inspecting equipment at Site.

H. Repair and Protection:
   1. On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
   2. Provide materials and comply with installation requirements specified in other sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
   3. Protect construction exposed by or for quality control services.
   4. Repair and protection are the Contractor’s responsibility, regardless of assignment of responsibility for quality control services.

END OF SECTION

SECTION 01 70 20

PROJECT CLOSEOUT

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Administrative and procedural requirements for contract closeout, including final cleaning; Substantial Completion and final completion procedures.

B. Related Sections:
   1. Divisions 02 through 32 sections for special cleaning and specific closeout requirements for Work in those sections, including warranties.

PART 2 PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 EXECUTION

3.1 PROJECT RECORD DOCUMENTS

A. During Work, maintain one set of Drawings and reviewed shop drawings, Specifications, WJE site visit reports, and product data for recording deviations of as-built construction from design information. Include addenda and Contract modifications.
   1. Accurately document and record changes and modifications as soon as possible after they occur, in understandable manner.
   2. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later. Record and check markup before enclosing concealed installations.
   3. Include:
      a. Dimensional changes.
      b. Revisions to Drawing details and details not on Drawings.
      c. Changes made by Change Order or Engineer's written orders or direction based on Site Visit Reports or Construction Observation Reports. Note Change Order numbers, Site Visit Report Item numbers or similar identification.
      d. Field records for variable and concealed conditions.
      e. Record information on Work that is shown only schematically or omitted from Drawings.
      f. Actual products and materials used.
         1) Include product data, specifically marked for Project, and cross-referenced to Specifications, Drawings, and Change Orders.
         2) Include names of manufacturer and Installer, and other information necessary to provide record of selections made.

3) Include significant changes in product delivered to Site and changes in manufacturer's written instructions for installation.

4. Mark record document most capable of showing actual physical conditions completely and accurately. Cross-reference on other record documents.
5. Mark record documents with erasable, red-colored media. Use other colors to distinguish between changes for different categories of Work at the same location.

B. Store Record Documents and samples in field apart from Contract Documents used for construction. Do not use Record Documents for construction purposes. Maintain Record Documents in good order and in clean, dry, legible condition, protected from deterioration and loss. Provide access to Record Documents for Engineer's reference during normal working hours.

C. Prepare final document markup in digital format for submission.
1. Incorporate changes and additional information previously marked on record prints. Erase, redraw, and add details and notations where applicable.
2. Refer questions to Engineer for resolution.
3. For new details and drawings, bind new sheets as necessary to appropriate document.
4. Identify and date each Record Drawing. Include names of project, Engineer, and Contractor, and designation "PROJECT RECORD DOCUMENT" in prominent location.
5. Organize PDF information into separate electronic files that correspond to each sheet of Drawings, report or item. Name each file with identification of item contained.

3.2 FINAL CLEANING

A. General: Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations. Return adjacent surfaces and areas to condition existing before Work began.

B. In areas disturbed by construction activities, complete the following cleaning operations before requesting inspection for certification of Substantial Completion. Clean each surface or unit to the condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions. Employ experienced workers or professional cleaners.
1. Remove tools, construction equipment, machinery, and surplus material from Site.
2. Clean Site, yard, and grounds, including landscaped areas, of rubbish, waste materials, litter, and other foreign substances.
   a. Broom clean paved areas. Remove petrochemical spills, stains, and other foreign deposits.
   b. Rake grounds that are neither planted nor paved to smooth, even-textured surface.
3. Clean exposed exterior and interior hard-surfaced finishes to dirt-free condition, free of stains, films, and similar foreign substances. Polish surfaces to achieve specified finish. Avoid disturbing natural weathering of exterior surfaces.
   a. Touchup and otherwise repair and restore marred exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that show evidence of repair or restoration.
      1) Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates.
4. Clean and restore transparent and reflective surfaces, such as mirrors and glass in doors and windows, to their original condition. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.

5. Remove labels that are not permanent.
6. Clean plumbing fixtures to sanitary condition, free of stains, including stains resulting from water exposure.
7. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
8. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
9. Sweep floors broom clean. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
10. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove paint and mortar droppings and other foreign substances.
11. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
    a. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter upon inspection.
12. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
13. Leave Project clean and ready for occupancy.

END OF SECTION

SECTION 03 01 34

CONCRETE REPAIRS - PREPACKAGED MATERIALS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Supply and placement of prepackaged concrete repair materials, including formwork, batching procedures, placement procedures, finishes, curing and protection.

1.2 PRICES

A. Where identified as such on the Bid-Form, perform Work on unit price basis. Unit prices below also include concrete removal, surface preparation of steel and concrete surfaces, and installation of supplemental reinforcing, prior to placement.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of fly ash, silica fume, and other pozzolans, or slag cement.

B. Testing Agency: Third party testing agency qualified to perform the testing specified. Refer to Specification Section 01 40 00 for additional requirements.

C. Batch: either of the following,
   1. A quantity of material mixed at one time or in one continuous process;
   2. to weigh or volumetrically measure and introduce into the mixer the ingredients for a quantity of material

D. Mixture: the assembled, blended comingled ingredients of the concrete repair material or the proportions of its assembly.

E. Trowel Applied: Also referred to as drypack, hand application or hand troweling, is a method of placing a semi-rigid or stiff, low-slump, repair material.

1.4 QUALITY ASSURANCE

A. Contractor Qualifications: Experienced firm that has successfully completed concrete repair work similar in material, design, and extent to that indicated for the Project. Must have successful construction with specified materials in local area in use for minimum of five years.
   1. Employ foreman with minimum five years of experience as foreman on similar projects, who is fluent in English, to be on Site at all times during the Work. Do not change foremen during the course of the Project except for reasons beyond the control of Contractor; inform Owner and Engineer in advance of any changes.

B. Mockups: Construct mockups to demonstrate construction procedures, quality of Work, and aesthetic effects.
   1. Use personnel, equipment, materials, and procedures proposed for use on Project.
   2. Construct mockups on existing members under same weather conditions expected during Work.

3. Provide access to mockup locations during work and after to allow for completion of observations and testing.
4. Engineer will observe the following conditions prior to the Contractors work proceeding on mockup (hold points). Provide Owner and Engineer with a schedule for mockup activities at least one week prior to start of mockup work. Clearly define sequence of work including required Engineer hold point observations. **Mockup shall be coordinated and staffed to allow for hold point observations to be completed during back to back work days, afternoon of one day to morning of next.** Group all mockups such that visits for different repair types are prepared and ready for review during the same visits. Additional visits to review hold points may be charged to the Contractor, or withheld from payment.
    a. Engineer Hold Point Visit 1:
        1) Concrete and steel surface preparation work.
        2) Prepared and cleaned concrete removal areas including prepared concrete and steel surfaces (prior to coating)
        3) Steel coating application.
    b. Engineer Hold Point Visit 2:
        1) Completed concrete and steel surface preparation, including completed steel coating installation
        2) Installation of concrete repair material
            a) Batching
            b) Testing
            c) Finishing
        3) Installation of curing and protection measures
5. Coordinate performance of, or perform, quality control measures and testing as required by this section; including, but not limited to(see Quality Control for Responsible Entity):
    a. Reinforcing inspections
    b. Fresh or plastic concrete repair material testing.
6. If Engineer or Owner determines mockup does not comply with requirements, modify mockup or construct new mockup until mockup is approved. Remove and replace mockups that are not approved.
7. Approved mockups shall be maintained in undisturbed condition throughout Project as basis for acceptance of completed work and may become part of completed Work if undisturbed at time of Substantial Completion.
8. Do not proceed with repair Work until mockups have been approved by Engineer and Owner.

PART 2 PRODUCTS

2.1 FORM MATERIALS

A. Form Panels: Plywood, lumber, metal, plastic, or another material capable of producing final product as specified here-in.
    1. Use panels that will provide continuous, true, and smooth repair surfaces.
    2. Furnish panels in largest practicable sizes to minimize number of joints.
    3. Do not use rust-stained, steel, form-facing material.
    4. Use form-facing material capable of producing smooth, uniform texture on concrete. Do not use form-facing materials with raised grain, torn surfaces, worn edges, dents, or other defects that will impair texture of concrete surface.

B. Accessories:

1. Chamfer Strips: Wood, metal, PVC, or rubber strips.
2. Form Ties: Factory-fabricated; removable or snap-off metal or glass-fiber-reinforced plastic form ties; designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
    a. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of the exposed concrete repair surface.
    b. Furnish ties that, when removed, will leave holes not larger than 1 inch in diameter in the concrete repair surface.
3. Form-Release Agent: Commercially-formulated form-release agent that will not bond with, stain, or adversely affect the concrete repair surface and will not impair subsequent treatments of the surface. Form-release agent shall have a rust inhibitor for steel form-facing materials.

2.2 PREPACKAGED CONCRETE REPAIR MATERIALS

A. **Formed and Poured Repairs**
1. Pour or pump pre-blended aggregate and mortar or neat mortar extended with aggregate per manufacturer's recommendations during batching: Use product specifically intended for this application, for which the Contractor has had proven successful experience installing. Use one of the following, or approved equal:
    a. MasterEmaco S 466 manufactured by BASF Construction Chemicals, LLC.
        1) Material shall be placed at SCC consistency per manufactures instructions.
    b. Sikacrete 211 SCC Plus manufactured by Sika Corporation.

B. Do not use materials that contain added gypsum.

C. Provide all like materials with the same manufacturers lot number.

D. Aggregates added to prepackaged repair materials (batched):
1. From single source with documented record of at least ten years of satisfactory service using similar aggregates and cementitious materials in similar applications and service conditions.
2. Conform to ASTM C33, Class 4S
3. Uniformly graded; 3/8-inch nominal maximum size.

E. Testing of concrete repair material(s), in final batched project condition, shall confirm the following properties:
1. 28-day Compressive Strength (ASTM C39).
    a. 4,000 pounds per square inch, minimum. This strength shall be considered the minimum specified compressive strength, regardless of the proprietary repair material manufacturers published compressive strength data.
2. Bond Strength (Per ASTM C1583): 175 pounds per square inch, minimum. This strength shall be considered the minimum specified bond strength, regardless of the proprietary repair material manufacturers published strength data.

2.3 CURING MATERIALS

A. Moisture-Retaining Cover: ASTM C171, white burlap-polyethylene sheet.

B. Membrane-Forming Curing Compound **(vertical and overhead repairs only)**: ASTM C309, Type 2; VOCs less than legal limits. Silicate materials shall not be used.

C. Water: Potable.

PART 3 EXECUTION

3.1 GENERAL

A. Follow the requirements of these specifications and the prepackaged repair material manufacturers written instructions, whichever is more stringent as determined by the Engineer. If a conflict is identified between these specifications and the manufacturers written instructions, notify the Engineer prior to performing Work and Engineer will determine which requirements apply.

3.2 FORMWORK

A. Design, erect, shore, brace, and maintain formwork to support vertical, lateral, static, dynamic, and construction loads that might be applied prior concrete repair reaching 75 percent of their specified minimum compressive strength.

B. Construct formwork so concrete repairs are of size, shape, alignment, elevation, and position indicated and tight enough to prevent loss of material.
   1. Ensure flatness and smoothness as required for finish type per Section 3.7
   2. Chamfer exterior corners and edges of permanently exposed concrete to match existing, if chamfered.

C. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement. Do not use form release agents containing waxes, oils, silicones or other resins that may inhibit adhesion of coatings.

D. Provide temporary openings for cleanouts, venting, and inspection ports (witness holes) where the interior area of the formwork is inaccessible. Close openings with panels or dowels tightly fitted to forms and securely braced to prevent loss of material.

3.3 BATCHING AND MIXING

A. Ensure that all materials have been stored and pre-conditioned to proper temperatures as required by the pre-packaged repair material manufacturer.

B. Batch materials by weight on basis of whole bags of prepackaged repair material, NEVER USE PARTIAL BAGS.

C. Mix materials in appropriate mixer (drum or paddle type) as specifically required by the prepackaged repair material manufacturer. Provide sufficient number or size of mixer(s) so that placement operations will proceed uninterrupted at each placement location.

D. Ensure that all mixer elements are cleaned of all materials from previous batch, and mixer components have been pre-wetted or charged prior to batching.

E. Mix ingredients to uniform consistency with mixing times per the manufactures recommendations or instructions.

F. Compile a Batch Log for each batch of material. A sample batch log containing the minimum information required is attached to this Section.

G. Cold-Weather: Protect material from physical damage or reduced strength due to frost, freezing, or low temperatures.
   1. When the air temperature has fallen or is expected to fall below 40 degrees F, uniformly heat water, aggregates, and cement (prepackaged materials) before mixing to obtain a mixture temperature of not less than 50 degrees F and not more than 80 degrees F at the point of placement; no single component shall be less than 40 degrees F or more than 90 degrees F prior to mixing. Mix water and aggregates together before adding cement. Do not add cement if the temperature of the water/aggregate mixture exceeds 70 degrees F.
   2. Do not use frozen materials or materials containing ice or snow.
   3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators.

3.4 PLACEMENT (GENERAL)

A. Follow the requirements of these specifications and the manufacturers written instructions, whichever is more stringent as determined by the Engineer. If a conflict is identified between these specifications and the manufacturers written instructions, notify the Engineer prior to performing Work and Engineer will determine which requirements apply.

B. For repair areas where material will be cast against, and bonded to, existing concrete surfaces, wet existing surface to saturated surface-dry condition at least 1 hour prior to placement. Maintain surfaces at this condition until placement. If forms are filled with water prior to placement to achieve this condition, ensure that standing or flowing water is removed and surfaces are allowed to dry to saturated, surface-dry condition.

C. Do not allow material to fall a vertical distance greater than 4 feet from the point of discharge to final position.

D. Do not allow material to disturb or displace reinforcing bars or other embedded items.

E. Place material at a rate so that the material is plastic and flows readily into corners of forms or openings and into spaces fully around reinforcing bars.

F. Place material continuously until the repair volume or section is completed, with no cold or construction joints unless explicitly approved in writing by Engineer prior to placement.

G. Dispose of material that has partially set prior to placement or that has been contaminated by foreign material.

H. Cold Weather Placement: Protect material from physical damage or reduced strength due to frost, freezing, or low temperatures.

I. Hot-Weather Placement: Protect material from physical damage or reduced strength due to rapid evaporation or overheating of concrete. Do not allow the temperature of the material at the time of placement to exceed 90 degrees F, or as required by the concrete repair material manufacturer. When hot-weather conditions exist, use one or more of the following procedures:
   1. Place material at night or early in morning when ambient air temperatures are lower.
   2. Cool ingredients before mixing to maintain the material temperature below required at the time of placement. Chilled mixing water or chopped ice may be used to control the temperature; include the water equivalent of the ice in the mixing water quantity.
   3. Cover repair areas with water-soaked burlap so the formwork, concrete substrate and steel temperature does not exceed the ambient air temperature.

4. Provide windbreaks or sunshades, or both.

3.5 FORM AND POUR PLACEMENT

A. Place material as near as possible to its final position to avoid segregation due to re-handling or flowing.

B. If conventional repair materials are used (non-SCC), consolidate material with mechanical vibrating equipment, so that the material is thoroughly worked around reinforcement and other embedded items and into corners.
   1. Use internal vibrators with minimum speed of 7,000 vibrations per minute and that are sufficiently narrow to fit into spaces between reinforcing bars, formwork, and existing concrete. Have extra vibrators at the Site in case a vibrator does not work.
   2. Do not use vibrators to transport repair material.
   3. Insert and withdraw vibrators vertically at uniformly spaced locations no farther apart than the visible effectiveness of the vibrator.
   4. At each insertion, limit the duration of the vibration to the time necessary to consolidate the material without causing constituents to segregate.

C. For form and pour applications on vertical and overhead surfaces:
   1. Ensure sufficient placement holes to adequately fill and consolidate repair area. A grid pattern may facilitate complete filling.
   2. Provide adequate internal and external vibration to ensure adequate consolidation.
   3. Place vent pipes or holes and observation tubes to ensure complete filling of repair area.

3.6 FINISHING EXPOSED SURFACES (NON-FORMED)

A. Do not wet concrete surfaces or add cement prior to or during finishing.

B. Do not use finishing aids of any kind, or any other product added during finishing.

C. Do not apply a trowel finish.

D. Default finish types shall be as follows, unless otherwise noted on the construction documents:
   1. Float finish: all surfaces to receive a waterproofing or coating. Any surface not otherwise described.
   2. Broom finish: all exterior surfaces subject to vehicular and pedestrian traffic.

E. Finish Type Definitions:
   1. Float finish: Consolidate the surface with a power-driven float or by hand floating if the area is small or inaccessible to a power driven float (troweling machines with float blades or pans slipped over trowel blades may be used; trowel machines with normal trowel blades or combination blades shall not be used). Re-straighten, cut down high spots, and fill low spots. Repeat float passes and re-straightening until the surface is left with uniform, smooth, granular texture.
   2. Broom Finish: After applying float finish, apply broom finish by drawing a broom across the surface to give the surface a coarse-scored texture. Broom Finish shall be applied perpendicular to traffic flow on top surfaces subjected to vehicular or pedestrian traffic.

F. The finished surface flatness shall be such that the measured gaps between the repair (and adjacent) surface and an unleveled, freestanding, 10-foot-long straightedge, resting on two high spots and placed anywhere on the surface, does not exceed 1/4 inch.

G. Edge of repair shall be flush with adjacent concrete surface with 1/8-inch tolerance.

H. Hot-Weather Conditions: Fog the surface with water if hot, dry, or windy conditions cause moisture loss approaching 0.2 pounds per square foot per hour (estimated per ACI 305R chart) before or during finishing operations.

3.7 FINISHING FORMED SURFACES

A. Provide surface finish 2.0 (SF-2.0) unless otherwise specified, at concrete surfaces exposed to public view, to those to be covered with another material applied to the concrete.

B. Edge of repair shall be flush with adjacent concrete surface with 1/8-inch tolerance.

C. Do not apply rubbed finish.

D. Surface Finish Type Definitions:
   1. Surface Finish-2.0 (SF-2.0): Repair voids larger than 3/4-inch wide or 1/2-inch deep. Repair or patch all form tie holes and similar construction related blemishes. Limit abrupt (over 1-inch or less) or gradual (5-foot straight edge) concrete repair surface irregularities to 1/4-inch (ACI 117 Class B).
   2. Surface Finish-3.0 (SF-3.0): Repair voids larger than 3/4-inch wide or 1/2-inch deep. Repair or patch all form tie holes and similar construction related blemishes. Limit abrupt (over 1-inch or less) or gradual (5-foot straight edge) concrete repair surface irregularities to 1/8-inch (ACI 117 Class A).

3.8 JOINTS

A. Provide control joints at locations to match existing joints, or as shown on drawings. Do not damage reinforcing at control joint locations. Do not provide additional construction or control joints unless approved by engineer in advance.

B. Construction Joints:
   1. Do not install construction joints.

C. Control Joints:
   1. Construct joints true to line with faces perpendicular to the surface plane of the repair.
   2. Provide tooled control joints, as default unless adjacent construction uses sawcut joints.
   3. If sawcut joints are necessary, sawcut as soon as possible without damaging surface of repair. In no instance shall this occur after the repair material is expected to reach 1,500 psi. Sawcut joints at least 1/3 of slab depth or 1 inch, whichever is greater. Do not damage reinforcing with sawcut.

D. Isolation Joints:
   1. Do not install isolation joints.

3.9 CURING AND PROTECTION

A. General:
   1. Curing method shall be applied within 30 minutes of material finishing.
   2. Curing period shall be seven days. Maintain material in a moist condition for at least seven days after placing.
   3. Curing method shall be as noted below:

a. Unformed Top Surfaces: Moisture retaining cover (first three days minimum), curing compound acceptable thereafter, install within 30 minutes of removing cover.
b. Unformed Vertical and Overhead Surfaces: Curing compound
c. Formed surfaces: Formwork, as specified in Section 2.1, shall meet requirements of curing for these elements. If formwork is removed prior to full curing period, install curing compound within 30 minutes of removing formwork.

B. Curing Methods:
1. Moisture-retaining cover
a. Place cover in widest practicable width, with sides and ends lapped at least 12 inches.
b. Seal sides and ends of cover by holding down with soil, concrete pieces, or some other weight, or by using waterproof tape or adhesive.
c. Immediately repair holes or tears in cover during curing period, using cover material and waterproof tape.
d. Re-wet repair surface as necessary to maintain in moist condition.
2. Curing compound
a. Apply curing compound uniformly in a continuous operation by power spray or roller according to manufacturer's written instructions and recommended coverage rate.
b. Recoat areas subjected to heavy rainfall within three hours after initial application.
c. Maintain continuity of compound and repair damage during curing period.

C. Cold Weather Protection: Provide protection such as blankets, heated blankets, insulation, enclosures, and/or heaters to keep concrete protected from cold temperatures and frost.
1. Protection methods shall be installed immediately following installation of curing method.
2. Maintain concrete repair material above 55 degrees F until it has reached 3,500 psi based on field cured concrete cylinders, manufactures test data (if testing is for cubes, value shall be 4,250 psi),or seven days, whichever is less.

3.10 REMOVAL OF FORMWORK

A. Formwork, for sides of beams, slabs, walls, columns, and similar parts of the Work, that does not support the weight of the structure or concrete, may be removed after curing at not less than 24 hours, provided concrete is hard enough not to be damaged by form-removal operations.

3.11 QUALITY CONTROL

A. Sampling and testing of fresh repair material shall be performed by the Testing Agency retained by the Owner in accordance with the special inspection schedule.
1. Take test sample from point of discharge onto final structure according to ASTM C172. Take additional samples at other locations only if directed by Engineer.
2. Fresh repair material tests shall include:
a. Unit weight (ASTM C138)
b. Slump (ASTM C143) or Spread (ASTM C1611)
c. Temperature (ASTM C1064)

B. The Contractor shall visually review, and mechanically sound using a chain or hammer, each repair area for defects after curing and protection. In addition to the requirements of this document, the following additional items shall constitute non-conformance of the repair Work or material:
1. Delaminations.
2. Voids, spalls, air bubbles, honeycomb, rock pockets, and form-tie voids, more than 2 percent of the repair surface area, or those which compromise strength.

3. Crazing and cracks in excess of 0.010 inch wide, and any that penetrate to the depth of reinforcement or completely through section. Notify Engineer immediately of cracks that penetrate completely thought the cross section.
4. Latent defects or those not on exposed surfaces that affect concrete's durability and structural performance as determined by Engineer.
5. Surface finish meets specified requirements.
6. Offsets at perimeter exceeding those specified.

3.12 NON-CONFORMING WORK OR MATERIALS:

A. If tests or observations indicate that the material, or Work, is not in conformance with the Construction Documents, at no cost to Owner, or Engineer, either:
   1. Perform additional testing acceptable to Engineer to verify conformance with the Construction Documents.
   2. Remove and replace material or Work.
   3. Repair or replace non-conforming Work or materials using alternate repair approved by Owner and Engineer.
   4. Provide an extended warranty for the repairs as deemed acceptable to the Owner and Engineer.

B. Perform additional inspection and testing, at no cost to the Owner, to determine compliance of replaced, or additional corrective Work.

C. Additional time and expenses for Engineer resulting from non-conforming Work or material may be back-charged to the Contractor, or withheld from payment to the Contractor at the Owners option.

END OF SECTION

Project

Project Name:

Project Number:

Date:

Mixer/Batching Team Name(s):

Repair Application (Form-and-pump overhead, top surface, top surface rapid-set, etc.):

Mixer Type:

Prepackaged Repair Material Information

Name:

Lot #:

Minimum WT or Volume of Water:

Maximum WT or Volume of Water

Admix volume required:

Aggregate

Name/Description:

Manufacturer or Supplier:

Size (in):

Batch #	Time	Ambient Air Temp	Prepackaged Material Temp	Prepackaged Material Weight (bag wt.)	Prepackaged Material Admixture Volume	Aggregate Weight	Aggregate Moisture Condition (SSD, etc.)	Water Weight or Volume	Mixing Time	Final Mixture Temp	Notes (batch where testing was performed, etc.)

SECTION 03 21 00

REINFORCING STEEL

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Coating existing reinforcing bars and embedded steel with corrosion-inhibiting material.
   2. Supply, fabrication, and installation of new epoxy-coated reinforcement.
   3. Supply, fabrication, and installation of new adhesive anchored (epoxy or other) reinforcement.
   4. Supply and installation of supplemental mechanical anchors.

1.2 UNIT PRICES

A. Perform the following Work on unit price basis:
   1. Coating of existing reinforcing bars shall be included in concrete repair cost.
   2. Supply and installation of adhesive anchored epoxy-coated steel reinforcing shall be included in concrete repair cost.

1.3 SUBMITTALS

A. Material Test Reports:
   1. Mill test reports for steel reinforcement, including adequate information on chemical and physical properties to demonstrate conformance with specified standard.

B. Submit the following prior to the start of work:
   1. Material information including material test reports and certifications for:
      a. Reinforcing bars
      b. Adhesive

C. Submit the following as available during the work:
   1. Special Inspection Reports (for information only)

1.4 QUALITY ASSURANCE

A. Mockup shall be in accordance with section 03 01 34 including demonstrating adequacy of concrete removal and surface preparation procedures.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Avoid damaging reinforcing coating.
   1. Use padded or nonmetallic slings and straps when transporting.
   2. Handle bundled and individual bars in manner which will prevent excessive sagging of bars that may damage coating.
   3. Do not drop or drag bundled or individual bars.
   4. Do not expose to moisture.
   5. If, in the opinion of Architect/Engineer, coated bars have been extensively damaged, bars will be rejected.

1.6 PROJECT CONDITIONS

A. Notify Architect/Engineer and Owner's Representative of embedded electrical conduit encountered in removal areas.
   1. Contractor is not responsible for damage to electrical conduits embedded in concrete. Owner will pay for necessary electrical repairs. However, Contractor shall take reasonable efforts to avoid damage to existing embedded electrical conduit.
   2. Unless otherwise directed, remove abandoned conduit and wires in removal area.

PART 2 PRODUCTS

2.1 MATERIALS

A. Corrosion-Inhibiting Coating Materials: Use material specifically intended for reinforcing steel embedded in concrete. Use one of the following or approved equal:
   1. Cementitious Coating:
      a. Sika Armatec 110 EpoCem supplied by Sika Corporation.
      b. MasterEmaco P 124 supplied by BASF Construction Chemicals, LLC.
   2. Epoxy: Sikadur 32 Hi-Mod supplied by Sika Corporation.
   3. Zinc-rich
      a. Sika Armatec -10 ZR supplied by Sika Corporation
      b. Steel Primer: MasterProtect P 8100 AP supplied by BASF Construction Chemicals, LLC.

B. Reinforcing Bars: ASTM A615, Grade 60; epoxy-coated. Sizes as shown on Drawings.
   1. Epoxy Coating: ASTM A775/ASTM A884
      a. Coating material: Powdered epoxy resin conforming to ASTM A775/ASTM A884.
      b. Fusion-bonded protective coating of powdered epoxy resin applied by electrostatic spray method or electrostatic fluidized-bed method, to form uniform, smooth film with thickness after curing of at least 7 mils, measured in accordance with ASTM A775/ASTM A884.
      c. Coated reinforcing shall be free of slivers, visible holes, voids, contamination, cracks, and other defects, with less than 1 percent of coating damaged in given length of bar.
      d. Continuity and flexibility of coating shall be checked in accordance with ASTM A775/ASTM A884. and shall meet requirements described therein.
      e. Repair Material: Liquid, two-part, epoxy repair coating; conforming with ASTM A775/ASTM A884. compatible with and suitable for repairing damaged epoxy coating; inert in concrete; supplied by epoxy resin manufacturer.

C. Supplemental mechanical anchors
   1. Helical anchors shall be stainless steel, between 8mm and 10mm in diameter. Use one of the following, or approved equal:
      a. DryFix anchors manufactured by Helifix.
      b. Stitch Tie manufactured by CTP Anchors
      c. Heli-Tie manufactured by Simpson Strong-Tie.

D. Adhesive for Dowels, Anchors and Reinforcing Bars (Adhesive):
   1. Adhesive: Use one of the following or approved equal:
      a. HIT-RE 500 V3 epoxy adhesive supplied by Hilti, Inc.
      b. Pure 110+ epoxy adhesive supplied by Dewalt.

2.2 REINFORCEMENT ACCESSORIES

A. Bar Supports: CRSI Manual of Standard Practice; Steel wire, plastic, or precast concrete.
   1. Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcing in place. Support welded wire fabric with slab bolsters.
   2. Metal chairs and supports shall be coated with epoxy, plastic, or other inert dielectric polymer coating.
   3. For concrete surfaces exposed to view, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports where legs of wire bar supports contact forms.

B. Tie Wire: 16 gauge minimum:
   1. Plastic-coated ties for epoxy coated reinforcing

2.3 FABRICATION

A. Fabricate and detail steel reinforcement to shapes and dimensions shown on Drawings, in accordance with and within fabricating tolerances shown in CRSI Manual of Standard Practice.

B. Bends and hooks shall conform to standard hook dimensions in CRSI Manual of Standard Practice unless otherwise shown on Drawings.

C. Do not bent or straightened reinforcing bars in manner that will injure coating. Reduce rate of bending as necessary to minimize cracking or debonding of coating. Remove debonded coating and promptly patch areas with visible cracking or debonded coating after bending. Hairline cracks, 0.003 inches or less in width, at base of deformation do not need to be patched and will not be cause for rejection.

PART 3 EXECUTION

3.1 EXISTING STEEL PREPARATION (REINFORCING AND EMBEDMENTS)

A. Leave existing reinforcing in place unless otherwise directed by Engineer.

B. Notify Engineer of reinforcing bars that are incorrectly located or have less than 1/2 inch of concrete cover; are damaged or fractured; or have lost more than ten percent of their original cross-sectional area at any point. Engineer will determine remedial action.
   1. Measure reinforcing section loss in accordance with ACI 364.14T.

C. Prepare exposed steel surfaces to SSPC-SP 6/NACE No. 3 finish, commercial blast cleaning, including exposed reinforcement and steel embedments. Exercise care to prepare undersides of reinforcing bars.

D. Clean steel surfaces with dry, oil-free compressed-air jet.

E. Inspect prepared steel surfaces and clean remaining contaminants.

F. Apply **two** coats of corrosion-inhibiting material on exposed steel surfaces.
   1. Batch, mix, and apply material according to recommendations of material supplier.
      a. Minimum dry film thickness: 10 to 12 mils.
   2. Exercise care to coat difficult-to-reach surfaces, such as undersides of reinforcing bars.

3. Minimize spillage on concrete surfaces. Remove materials that will act as bond breaker by chipping or other means.
4. Inspect coated steel surfaces and apply additional coats to uncoated or thinly-coated areas.

3.2 INSTALLATION OF ADHESIVE ANCHORED ITEMS

A. Remove unsound concrete at reinforcing locations prior to anchoring.

B. Drill, clean and install adhesive and reinforcing in accordance with adhesive material manufacture's requirements, and those listed below. If a conflict exists between the requirements of these specifications and the adhesive manufacturer, notify Engineer and request direction.

C. Drill holes as required by adhesive manufacturer for application shown on drawings.
1. Locate existing reinforcement using non-destructive methods and position holes to avoid existing reinforcement.
2. Do not damage existing reinforcement.
3. Make hole diameter as recommended by adhesive manufacturer for application shown on drawings.

D. Clean holes as required by adhesive manufacturer for application shown on drawings.

E. Inject adhesive into hole based on adhesive manufacturers requirements for application shown on drawings. The method of installation is intended to achieve 100 percent filling of the annular space between the embedded item and the drilled hole.

F. Promptly remove excess adhesive.

3.3 PLACING REINFORCEMENT

A. General: Comply with CRSI Manual of Standard Practice and Drawings for placement of reinforcement.

B. Bar spacing, concrete cover, and bar splices shall conform to Drawings and CRSI Manual of Standard Practice, unless otherwise noted on drawings.

C. Accurately position, support, and secure reinforcement to prevent displacement during concrete placement. Locate and support reinforcement with bar supports to maintain specified minimum concrete cover. Wire dowels securely in place before depositing concrete.

D. Place welded wire reinforcing in conformance with CRSI Manual of Standard Practice.
1. Place welded wire reinforcing in longest practicable lengths on bar supports spaced to minimize sagging.
2. Lap edges and ends of adjoining sheets at least one mesh space plus two inches. Offset laps of adjoining sheets to prevent continuous laps in either direction.

E. Place reinforcement continuous between expansion and control joints. Stop reinforcement at expansion joints. Make half of reinforcement discontinuous at control joints unless noted otherwise.

F. Unless permitted by Engineer, do not bend reinforcing bars embedded in hardened concrete.

G. Bend tie wires and turn ends toward inside of concrete section, away from exposed concrete surfaces.

H. During concrete placement, protect reinforcement from damage from transporting or pumping equipment with runways or other means.

I. Before placing concrete, clean reinforcement of loose rust and mill scale, earth, ice, dust, and other foreign materials that would reduce bond to concrete.

J. Allow Engineer at least 24 hours to inspect condition and placement of reinforcing prior to completing formwork and ordering concrete.

K. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.

L. Do not weld reinforcement unless specifically approved by Engineer.

M. Unless epoxy coated reinforcing is specified, coat new bars in accordance with the requirements for existing reinforcing.

3.4 PATCHING OF DAMAGED EPOXY COATING OF REINFORCING

A. Promptly patch sheared ends, areas of coating damage, and contact areas for hangers or couplers in conformance with ASTM D3963/D3963M and epoxy-resin manufacturer's recommendations, before detrimental oxidation occurs.
   1. Areas to be patched shall be clean and free of rust and other surface contaminants.

END OF SECTION

PERSIGO WASTE WATER TREATMENT PLANT
Aerobic Digester Repairs
Project Specific Specifications

2145 River Road
Grand Junction, Colorado 81505

November 16, 2020 - For Bid and Construction
WJE No. 2019.3776

Prepared for:
City of Grand Junction
Public Works
333 West Avenue, Bldg C
Grand Junction, Colorado 81501

Prepared by:
Wiss, Janney, Elstner Associates, Inc.
3609 South Wadsworth Boulevard, Suite 400
Lakewood, Colorado 80235
303.914.4300 tel | 303.914.3000 fax

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 00 01 10

TABLE OF CONTENTS

END OF SECTION

INSTALLER'S WARRANTY FOR CONCRETE AND CONCRETE REPLACMENTS

Installer: _____

Address: _____

Owner: _____

Owner Address: _____

Project Address: _____

Building Name: _____

Area of Work: _____

Substantial Completion Date: _____

Warranty Period: ___ years

Expiration Date: _____

AND WHEREAS Concrete Installer has contracted, either directly with Owner or indirectly as subcontractor, to warrant said Work against faulty or defective materials and workmanship for designated Warranty Period,

NOW THEREFORE Concrete Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period it will, at its own cost and expense, make or cause to be made such repairs to or replacement of said Work as are necessary to correct faulty and defective Work and warrants against the following.

1. Components of the concrete that does not comply with requirements; that do not maintain general durability; or that deteriorate in a manner not clearly specified as an inherent quality of the material for the application indicated, regardless of whether the Work was previously accepted by Owner.

2. Delamination of the cementitious material from the substrate concrete or delamination within the material itself.

3. Surface defects, including but not limited to: blisters; curling; delamination; dusting; popouts; scaling (including mortar flaking); spalling.

4. Cracking. Including, but not limited to, those due to inadequate thickness or improperly cut or placed control joints.

5. Damage by exposure to foreseeable weather.

Warranty is made subject to the following terms and conditions:

1. Specifically excluded from Warranty are damages to Work and other parts of the building, and to building contents, caused by:
   a. lightning;
   b. fire;
   c. activity adjacent to Work by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner's Representative.

2. When Work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Concrete Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
3. Concrete Installer is responsible for damage to Work covered by Warranty but is not liable for consequential damages to building, pedestrians or vehicles using the Work.
4. During Warranty Period, if Owner allows alteration of Work by anyone other than Concrete Installer, including cutting, patching, and maintenance, Warranty shall become null and void on date of said alterations, but only to extent said alterations affect Work covered by Warranty. If Owner engages Concrete Installer to perform said alterations, Warranty shall not become null and void unless Concrete Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate Work, thereby reasonably justifying limitation or termination of Warranty.
5. Owner will promptly notify Concrete Installer of observed, known, defects, or deterioration and will afford reasonable opportunity for Concrete Installer to inspect Work and to examine evidence of such defects, or deterioration. Concrete Installer shall inspect defect, or deterioration within 72 hours of notification.
6. If permanent repair or replacement of warranted condition cannot be made immediately, due to weather conditions, availability of appropriate labor or materials, building occupancy, etc., Concrete Installer must make, or cause to be made, immediate temporary repairs to prevent any further damage, deterioration, or unsafe conditions. Permanent repair or replacement of warranted condition shall be scheduled as soon thereafter as practical, and with Owner's consent and approval.
7. If Owner notifies Concrete Installer of warranted condition that requires immediate attention to prevent potential injury or damage, and Concrete Installer cannot or does not promptly inspect and repair same, either permanently or temporarily, then Owner may make, or cause to be made, such temporary repairs as may be essential and Concrete Installer will reimburse Owner for cost of such repairs. Such action will not relieve Concrete Installer of its obligation to perform any necessary permanent repairs, and Warranty shall remain in full force and effect for remaining portion of its original term.
9. Concrete Installer shall provide equipment, labor, and material required to remedy warranted conditions, including repair or replacement of damage to other work resulting therefrom, and removal and replacement of other work required to access warranted condition. Additional required work will be at Concrete Installer’s sole expense for full term of Warranty. Warranty includes removal and replacement of concrete and sealants.
10. Warranty is recognized to be only Warranty of Concrete Installer on said Work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of Concrete failure. Specifically, Warranty shall not operate to relieve Concrete Installer of responsibility for performance of original Work according to requirements of Contract Documents, regardless of whether Contract was directly with Owner or with Owner’s General Contractor.

IN WITNESS THEREOF, and intending to be legally bound hereby, Concrete Installer has caused this document to be executed by undersigned, duly-authorized officer.

By: _____ Corporate Seal:
(Signature of Concrete Installer)

_____
(Name)

_____
(Date)

Notary Public Seal:

Subscribed and sworn before me this _____day of _____, _____

My commission expires _____

INSTALLER'S WARRANTY FOR JOINT SEALANT

Sealant Installer: _____

Sealant Installer Address: _____

Owner: _____

Owner Address: _____

Project Address: _____

Building Name: _____

Area of Work: _____

Substantial Completion Date: _____

Warranty Period: _____years

Expiration Date: _____

AND WHEREAS Sealant Installer has contracted, either directly with Owner or indirectly as subcontractor, to warrant said Work against leaks and faulty or defective materials and workmanship for designated Warranty Period,

NOW THEREFORE Sealant Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period it will, at its own cost and expense, make or cause to be made such repairs to or replacement of said Work as are necessary to correct faulty and defective Work and as are necessary to maintain said Work in watertight condition, and warrants against the following.

1. Components of sealant system that do not comply with requirements; that do not remain watertight; that fail in adhesion, cohesion, or general durability; or that deteriorate in a manner not clearly specified by submitted sealant manufacturer's data as an inherent quality of the material for the application indicated, regardless of whether the Work was previously accepted by Owner.
2. Damage by exposure to foreseeable weather; and damage by intrusion of foreseeable wind-borne moisture.

Warranty is made subject to the following terms and conditions:

1. Specifically excluded from Warranty are damages to Work and other parts of the building, and to building contents, caused by:
    a. lightning;
    b. fire;
    c. failure of sealant substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
    d. activity adjacent to sealant Work by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner's Representative.
    e. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.
    f. Excessive joint movement caused by structural settlement or errors attributable to design or construction, resulting in stresses in sealant exceeding sealant manufacturer's written specifications for sealant elongation or compression.

2. When Work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Sealant Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
3. Sealant Installer is responsible for damage to Work covered by Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of Work.
4. During Warranty Period, if Owner allows alteration of Work by anyone other than Sealant Installer, including cutting, patching, and maintenance, Warranty shall become null and void on date of said alterations, but only to extent said alterations affect Work covered by Warranty. If Owner engages Sealant Installer to perform said alterations, Warranty shall not become null and void unless Sealant Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate Work, thereby reasonably justifying limitation or termination of Warranty.
5. Owner will promptly notify Sealant Installer of observed, known, or suspected leaks, defects, or deterioration and will afford reasonable opportunity for Sealant Installer to inspect Work and to examine evidence of such leaks, defects, or deterioration. Sealant Installer shall inspect leak, defect, or deterioration within 24 hours of notification.
6. If permanent repair or replacement of warranted condition cannot be made immediately, due to weather conditions, availability of appropriate labor or materials, building occupancy, etc., Sealant Installer must make, or cause to be made, immediate temporary repairs to prevent any further damage, deterioration, or unsafe conditions. Permanent repair or replacement of warranted condition shall be scheduled as soon thereafter as practical, and with Owner's consent and approval.
7. If Owner notifies Sealant Installer of warranted condition that requires immediate attention to prevent potential injury or damage, and Sealant Installer cannot or does not promptly inspect and repair same, either permanently or temporarily, then Owner may make, or cause to be made, such temporary repairs as may be essential and Sealant Installer will reimburse Owner for cost of such repairs. Such action will not relieve Sealant Installer of its obligation to perform any necessary permanent repairs, and Warranty shall remain in full force and effect for remaining portion of its original term.
9. Sealant Installer shall provide equipment, labor, and material required to remedy warranted conditions, including repair or replacement of damage to other work resulting therefrom, and removal and replacement of other work required to access warranted condition. Additional required work will be at Sealant Installer’s sole expense for full term of Warranty. Warranty includes removal and replacement of sealant-backer material and sealant.
10. Warranty is recognized to be only Warranty of Sealant Installer on said Work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of sealant failure. Specifically, Warranty shall not operate to relieve Sealant Installer of responsibility for performance of original Work according to requirements of Contract Documents, regardless of whether Contract was directly with Owner or with Owner’s General Contractor.

IN WITNESS THEREOF, and intending to be legally bound hereby, Sealant Installer has caused this document to be executed by undersigned, duly-authorized officer.

By: _____ Corporate Seal:
(Signature of Sealant Installer)

_____
(Name)

_____
(Date)

Notary Public Seal:

Subscribed and sworn before me this _____day of _____, _____

My commission expires _____

01 00 00

GENERAL

PART 1 GENERAL

1.1 PROJECT SPECIFIC REQUIREMENTS

A. The Standard Specifications for Road and Bridge Construction, as well as the Standard Specifications for Construction of Underground Utilities Water Lines, Sanitary Sewers, Storm Drains, Underdrains and Irrigation Systems do not apply to this project. Any references to those documents in the contract shall be replaced by the requirements of the project specific documents.

B. Standard Details for Construction of Streets, Trails, Storm Drains and Utilities do not apply to this project. Any references to those documents in the contract shall be replaced by the requirements of the project specific documents.

C. Project specific requirements shall take precedence over general conditions or standard documents.

D. Warranty period for specific Work items are not intended to supplement the general Contractor's Warranty and Guarantee.

1.2 REFERENCES

A. References to applicable standards shall be the latest edition of each unless otherwise noted.

1.3 DEFINITIONS

A. The definitions here shall supplement, or replace, those found in the City of Grand Junction General Contract Conditions.
   1. As-Built Documents: See Project Record Documents.
   2. Owner: See City.
   3. Project Record Documents: Contract documents marked by the Contractor to identify changes that were made during construction.
   4. Request for Information (also known as RFI): A question or inquiry about the Work submitted by the Contractor for clarification by the Owner or Engineer.

1.4 ADMINISTRATIVE

A. Requests for Information (RFI): Contractor shall submit RFIs to the Engineer for any condition which is believed to be at variance with the Construction Documents, or for situations where it is unclear what the Construction Documents are implementing. RFIs shall be submitted in writing to the Engineer and shall include a location, date requested, date required and indicate which repair item or item(s) are impacted by the request. Allow a minimum of 3 working days for review by Engineer.

B. Maintain at least one copy of each referenced standard, this Project Manual (Specifications), Drawings and/or Figures at the job site. In addition, maintain copies of all site visit reports (SVR) and Sketches (SKs) issued by the Engineer during Construction.

C. Provide a project superintendent at the Site a minimum of eight hours per day during the progress of the Work. The superintendent shall be literate and fluent in English.

D. Photograph existing conditions that are important to the construction or that deviate substantially from the Contract Documents; significant conditions that will be concealed by the Work; finish surfaces that might be misconstrued as damage caused by removal or other Work operations; and immediate follow-up when on-site events result in construction damage or loss. Photographs shall be of sufficient quality as to depict the condition being photographed. Provide photographs to Owner or Engineer upon request, either during project or after completion.

1.5 TEMPORARY FACILITIES AND CONTROLS

A. Comply with Owner's limitations and restrictions for Site use and accessibility.
   1. Comply with all security procedures.

B. Project has special requirements for coordinating Work because of the following conditions:
   1. Owner will occupy premises outside of Work area during construction period.
      a. Cooperate with Owner to minimize conflicts and facilitate Owner usage.
      b. Perform Work to avoid interference with Owner's day-to-day operations. Notify Owner's Representative at least 72 hours in advance of activities that will affect Owner's operations.
      c. Maintain vehicular, pedestrian, and emergency and normal access to portions of facility that are in use. Keep entrances and exits clear of stored materials and construction equipment.
      d. Short interruptions in access may be permitted if approved in advance in writing by the Owner's Representative.
      e. Schedule deliveries to minimize interruptions.
      f. Do not disturb Site outside of Work area.
      g. Do not interrupt utilities serving facilities occupied by Owner or others unless permitted and then only after arranging to provide temporary utility services according to requirements indicated.
      h. Notify Owner not less than 7 days in advance of proposed utility interruptions.
      i. Do not proceed with utility interruptions without Owner's written permission.
   2. Residential nature of building and neighborhood.
   3. Office tenant needs.

C. Staging:
   1. Staging areas must be coordinated with Owner prior to mobilization.
   2. Confine materials and equipment to the staging and work areas. Contractor assumes full responsibility for the protection and safekeeping of items stored on site.
   3. Do not unreasonably encumber Site with materials or equipment.
   4. Do not load Project structure with weight that will endanger Project structure.

D. Parking: Construction personnel shall park on-site in areas designated by the Owner's Representative.

E. Water Service: Use of Owner's existing water service will be permitted.
   1. Provide connections and extensions of service as required for construction operations.
   2. Provide additional water as necessary.

F. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel at location designated by Owner's Representative.

1. Provide disposable supplies, including toilet tissue, paper towels, and paper cups. Maintain adequate supply. Provide covered waste containers for disposal of used material.
2. Service toilets at least twice weekly.
3. Provide wash facilities supplied with potable water at convenient locations for personnel who handle materials that require clean up. Supply cleaning compounds appropriate for each type of material handled. Dispose of drainage properly.
    a. Provide safety showers, eyewash fountains, and similar facilities for convenience, safety, and sanitation of personnel.
4. Comply with public authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

G. Electric Power Service: Use of Owner's existing electric 120V electric outlets will be permitted. Any power requirements above existing 120V outlets will need to be provided.
1. As necessary, provide additional electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations. Do not overload Owner's service.
2. Comply with NECA 200 and NFPA 70.
3. Maintain temporary service in safe condition and utilize in safe manner.

H. Use of Existing Stairs and Elevators: Use of Owner's existing stairs and elevators will be permitted, as long as stairs and elevators are cleaned and maintained in condition acceptable to Owner's Representative.
1. Coordinate daily usage with Owner's Representative and with requirements for facility operations.
2. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs, elevator cars, and entrance doors and frame, and to maintain means of egress.
3. At Substantial Completion, restore stairs and elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.

I. Lighting: Owner will provide existing lighting at existing locations.
1. Provide additional lighting, as necessary, with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
2. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

J. Provide insulation or temporary heating as necessary for curing, drying, and protection of installed construction.
1. Select equipment that will not have harmful effect on completed installations or elements being installed.
2. Maintain temporary heating on 24-hour basis until no longer needed.
3. Unless noted otherwise, insulation is considered incidental to construction and will not be paid for separately.
4. Unless otherwise specified, temporary heating will not be considered part of Work and will be paid as additional Work item. Notify Owner's Representative in advance of need for temporary heating and estimated added cost. Do not proceed with temporary heating until authorized in writing by Owner's Representative.

K. Snow removal: The contractor shall be required to remove snow from the work area.

L. Equipment:
1. Direct equipment exhaust away from occupied spaces and vent equipment operating within structure to outside.

2. Operate equipment at noise levels conforming to requirements of city, state, and federal laws and codes, and Owner limitations.

M. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of public authorities having jurisdiction. Construction debris shall be removed in a manner that avoids overloading adjacent structural members.

N. Protection:
1. Limit access to work areas.
2. Contractor shall provide protective barriers, fences, etc. to ensure the safety of pedestrians and vehicular traffic during the Work. All barriers and fences shall comply with local, state, and federal regulations and laws.
3. Provide adequate signage to direct pedestrian and vehicular traffic around the area under construction.
4. Prevent construction debris and other materials from coming into contact with pedestrians, motor vehicles, building, and other surfaces that could be harmed by such contact.
5. Existing Drains:
   a. Verify that drains in or near Work area are open and free flowing prior to start of Work.
   b. Lawfully remove construction effluent from Site. Do not allow construction debris to flow into existing drains or sewer systems.
   c. Rout or replace clogged drain lines at completion of Work.
6. Confine dust, debris and fumes to Work area and prevent from entering areas outside of the Work area.
7. Protect finished surfaces against damage. Minimize traffic on finished roof surfaces and do not use for material storage.
8. Contractor shall be responsible for maintaining the water tightness of the areas of the structure being worked on during the course of the work. Providing temporary protection of the existing construction or structure from the weather until removed portions are completely replaced with new construction. The costs of damage and repairs shall be made at no cost to the Owner.
9. Maintain all protection in operable condition for the full duration of the project.

O. Temporary Fencing:
1. Tree and Plant Protection: Install temporary fencing located as indicated or outside drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.
2. Site Enclosure Fence: Before construction operations begin, provide Site enclosure fence in manner that will prevent people and animals from easily entering Site except by entrance gates.

P. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241. Coordinate with Owner's safety team.
1. Provide portable, UL-rated fire extinguishers with class and extinguishing agent as required by locations and classes of fire exposures.
2. Prohibit smoking on Site.
3. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of public authorities having jurisdiction.

4. Store combustible materials in approved safety containers and enclosures, away from building if possible.
5. Develop and supervise overall fire-prevention and -protection program for personnel at Site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

PART 2 PRODUCTS

2.1 GENERAL

A. The products specified are believed to have properties adequate for successful completion of the Work. If the Contractor has found these products to be unacceptable or has had difficulty using these materials, the Contractor shall notify the Architect/Engineer in writing, and provide a request for substitution of material for which the Contractor has had successful experience.

B. No product substitutions will be allowed unless otherwise noted. Engineer's approval must be obtained for all substitutions prior to being awarded the project. Submit requested substitutions with bid form.

2.2 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Site in original containers and packaging with seals unbroken, labeled with manufacturer’s name, product brand name and type, date of manufacture, lot number, directions for storing, and complete manufacturer’s written instructions.

B. Keep materials dry and do not allow materials to be exposed to moisture during transportation, storage, handling, or installation. Reject and remove from Site new materials which have been exposed to moisture to their detriment.

C. Store and handle materials in accordance with manufacturer’s written instructions, safety requirements, and all applicable laws and regulations. Remove from Site, and replace at no cost to Owner, any materials that are damaged or otherwise negatively affected by not being stored or handled in accordance with manufacturer’s written instructions.

D. Store materials in original, undamaged containers and packaging in clean, dry, location on raised platforms and protected from weather, within temperature range required by manufacturer. Protect stored materials from direct sunlight and sources of ignition. Manufacturer’s standard packaging and covering alone is not considered adequate weather protection.

E. Locate materials in a secure location approved by Owner’s Representative

F. Conspicuously mark damaged or opened containers, containers with contaminated materials, damaged materials, and materials that cannot be used within stated shelf life and remove from Site as soon as possible. Replace discarded materials in a timely manner at no cost to Owner.

G. Limit stored materials on structures so as to preclude damage to materials and structures.

H. Maintain copies of all applicable Safety Data Sheets (SDS) with materials in storage area, such that they are available for ready reference on Site.

PART 3 EXECUTION

3.1 DISCOVERY, FIELD VERIFICATION AND CHANGES IN WORK

A. Contractor shall verify all quantities. Quantities shown are for estimating purposes only.

B. Do not scale drawings. The Contractor shall field verify the existing dimensions and existing conditions prior to starting the work. Dimensions of the new construction shall be adjusted as necessary to fit the existing conditions. The Engineer shall be notified in writing of any significant deviations from the dimensions or conditions shown on these drawings.

C. During rehabilitation work, existing conditions may be encountered which are not known or are at variance with the Contract Documents. Such conditions may interfere with the Work and may consist of damage or deterioration of the substrate or surrounding materials or mislocation of embedded elements such as reinforcing steel, which may interfere with proper execution of the Work. Promptly report to Engineer as a request for information any of these conditions.

3.2 EXAMINATION FOR MATERIAL COMPLIANCE

A. Examine substrates and conditions with Installer and manufacturer's representative, where appropriate, for compliance with requirements and for other conditions affecting installation or performance of the material.
   1. Verify dimensions so that proper installation of material for optimal performance is maintained.
   2. Ensure that work done by other trades is complete.
   3. Verify that areas and conditions under which Work is to be performed permit proper and timely completion of Work.
   4. Notify Engineer in writing of conditions which may adversely affect installation or performance of the material and recommend corrections.
   5. Do not proceed with Work until adverse conditions have been corrected and reviewed by Engineer.
   6. Commencing Work constitutes acceptance of Work surfaces and conditions.

3.3 CLEANING

A. Immediately clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

B. At the end of each workday, broom-clean Site and Work areas and place all items to be discarded in appropriate containers.

C. After completing Work:
   1. Clean all materials resulting from Work that are not intended to be part of the finished Work using appropriate cleaning agents and procedures. Exercise care to avoid damaging surfaces.
   2. Repair at no cost to Owner all items damaged during the Work.
   3. Remove and legally dispose of debris and surplus materials from Site.

3.4 PROTECTION

A. Take precautions to ensure safety of people (including building users, passers-by, and workers) and protection of property (including adjacent building elements, landscaping, and motor vehicles).
   1. Erect temporary protective canopies and walls, as necessary, at walkways and at points of pedestrian and vehicular access that must remain in service during Work.

B. Cover adjacent surfaces with materials that may be damaged.

C. Protect paving and sidewalks, and adjacent building areas from mechanical damage due to scaffolding and other equipment.

D. Prevent dust, debris, coating overspray/spatter, and other construction materials from coming into contact with pedestrians, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.

E. Limit access to Work areas.

F. Comply with manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products.

G. Assume responsibility for injury to persons or damage to property due to Work, and remedy at no cost to Owner.

H. Protect from damage, all elements of completed work and original construction to remain.

I. Protect Work during and after completion from contact with contaminating substances and from damage, so materials are without deterioration or damage at time of Substantial Completion.

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Administrative and procedural requirements for submitting shop drawings, product data, samples, and other submittals.

B. Reference the Schedule of Submittals for a summary of required submittals.

1.2 SUBMITTALS

A. General:
   1. Identification: Include a permanent label or title block on the submittal or cover sheet, with the following information.
      a. Project name.
      b. Date.
      c. Names of Engineer, Contractor, subcontractor, manufacturer, supplier, and firm or entity that prepared submittal, as appropriate.
      d. Identification information, such as the number and title of the appropriate Specification section, Drawing number and detail references, location(s) where product is to be installed, or other necessary information.
      e. Label each submittal with Specification section number followed by decimal point and then sequential number (e.g., 06100.01). On resubmittals, include alphabetic suffix after another decimal point (e.g., 06100.01.A).
      f. Provide space approximately 6 by 8 inches on or beside the label or title block for the Contractor's approval stamp and the action stamp of the Architect/Engineer.
   2. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.
   3. Submit one electronic copy of prints in PDF format. Prints shall have white background and dark lettering and line work. Prints will be returned electronically.

B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not use reproductions of the Contract Documents or standard printed data.
   1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
      a. Dimensions, including notation of those established by field measurement.
      b. Identification of products.
      c. Fabrication and installation drawings.
      d. Roughing-in and setting diagrams.
      e. Shopwork manufacturing instructions.
      f. Templates and patterns.
      g. Schedules.
      h. Notation of coordination requirements.
      i. Relationship to adjoining construction clearly indicated.
      j. Seal and signature of professional Engineer if specified.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8 1/2 by 11 inches but no larger than 30 by 42 inches.
3. Submit one electronic copy of prints in PDF format. Prints shall have white background and dark lettering and line work. Prints will be returned electronically.

C. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
   1. Clearly mark each copy of the submittal to show which products and options are applicable. Delete information which is not applicable. Supplement standard information with project-specific information.
   2. Include the following information, as applicable:
      a. Manufacturer's catalog cuts, product specifications, schematic drawings, installation instructions, and written recommendations.
      b. Compliance with referenced standards.
      c. Testing by recognized testing agency.
      d. Include manufacturer's literature including written instructions for evaluating, preparing, and treating substrate.
      e. Technical data including tested physical and performance properties
      f. Mixing and application or placement instructions.
   3. Include temperature ranges for storage and application of materials, and special cold-weather application requirements or limitations.
   4. Include Globally Harmonized System (GHS) Safety Data Sheets or, if not yet available, Material Safety Data Sheets. For information only.

D. Samples: Submit physical samples to illustrate functional and aesthetic characteristics of the product, for review of materials and workmanship, for compatibility with other elements, and for comparison with the actual installed elements.
   1. Samples shall be of sufficient size to show the general visual effect.
   2. Include sets of at least three samples that show the full range of color, pattern, texture, graining, and finish.
   3. Transmit samples that contain multiple, related components, such as accessories, together in one submittal package.
   4. Identification: Attach a label on an unexposed side of each sample that includes the following:
      a. Generic description of sample.
      b. Product name, name of manufacturer, and sample source.
      c. Number and title of appropriate Specification section.
   5. Samples for Initial Selection: Submit two full sets of units or sections of units from the supplier's product line, showing the full range of colors, textures, and patterns available. Architect/Engineer will retain one set and return one set with the options selected.
   6. Samples for Verification: Submit full-size units or samples of the size indicated, prepared from the same material to be used for the Work, cured and finished in the manner specified, and physically identical with material or product proposed for use, and that show the full range of color and texture variations expected.
      a. Submit the number of samples required by the Contractor plus one that will be retained by the Architect/Engineer. Mark up and retain one returned sample as a Project Record Document.
   7. Maintain approved samples at the Site, available for quality-control comparisons during construction. Samples may be used to determine final acceptance of construction associated with the sample.

E. Delegated Design:
   1. Where required by the Contract Documents, in addition to shop drawings, product data, and other required submittals, submit a statement, signed and sealed by responsible design professional, for each product and system specifically assigned to the Contractor to be designed or certified by a design professional.
      a. Indicate that products and systems comply with performance and design criteria in the Contract Documents.
      b. Include a list of codes, loads, and other factors used in performing these services, and signed and sealed design calculations where required.
      c. Electronic submittals in PDF format are preferred; however, print copies will be accepted. Submit number of prints needed by contractor plus two for retention by the Owner and Engineer.

1.3 SUBMITTAL PROCEDURE

A. Coordinate the preparation and processing of submittals with performance of construction activities.
   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals requiring concurrent review, and related activities that require sequential activity.
   2. Allow sufficient time for submittal and resubmittal review. Failure to provide sufficient time for submittal and resubmittal reviews will not be a basis for extension of the Contract Time.

B. Review Time:
   1. Allow five working days for the review of each submittal and resubmittal.
   2. Allow additional time if coordination with subsequent submittals is required. The Architect/Engineer will advise the Contractor when the submittal being processed must be delayed for coordination.
   3. Time for review shall commence when the Architect/Engineer receives the submittal.

C. Contractor Review:
   1. Review each submittal, coordinate with other Work, and check for compliance with the Contract Documents. Verify field dimensions and conditions. Identify variations from the Contract Documents and product or system limitations that may be detrimental to the successful performance of completed Work. Note corrections.
   2. Before submitting to the Architect/Engineer, stamp with a uniform approval stamp including the reviewer's name; the date of Contractor's approval; and a statement certifying that the submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
   3. Submittal Log: Maintain submittal log that lists submitted items per specification section. Record dates submitted, dates returned, and disposition of each item based on Architect/Engineer's review. Submit final log showing approved materials at Substantial Completion.

D. Transmittal: Package each submittal individually and appropriately for transmittal and handling.

E. Engineer Action:
   1. Engineer will not review submittals that are received from sources other than the Contractor or that do not bear the Contractor's approval stamp, and will return them without action to the Contractor.
   2. Engineer will not return submittals requested for information only.

3. Engineer will review each submittal for conformance with the design concept of the Project and compliance with the Contract Documents. Architect/Engineer will make marks to indicate corrections or modifications required, and stamp with an action stamp. The action stamp will include the reviewer's name, date of review, and required Contractor action. Contractor actions may include making corrections or modifications to the submittal or resubmitting the submittal, or both.

F. Resubmittals: Make resubmittals in the same form and number of copies as the initial submittal.
   1. Note the date and content of previous submittal.
   2. Note the date and content of the revision in the label or title block and clearly indicate the extent of the revision and changes made.
   3. Resubmit until the Engineer indicates that no resubmittal is required.
      a. No resubmittal is required when submittal is marked "No Exceptions Taken" or "Make Corrections Indicated".

G. Distribution: Furnish copies of the final submittals to the Site file, the record documents file, manufacturers, subcontractors, suppliers, fabricators, installers, public authorities having jurisdiction, and others as necessary for performance of construction activities. Show the distribution on the transmittal forms.

H. Use only the final submittals with the Architect/Engineer's action stamp, for construction.
   1. Only items marked "No Exceptions Taken" or "Make Corrections Indicated" shall be used for construction.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 40 00

QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Administrative and procedural requirements for quality assurance and quality control, testing, special inspections and mockups.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated, and do not relieve the Contractor of responsibility for compliance with requirements of the Contract Documents.
   1. Specified tests, inspections, and related actions performed by others do not limit the Contractor's other quality assurance and quality control procedures that facilitate compliance with requirements of the Contract Documents.
   2. Requirements for the Contractor to provide quality assurance and quality control services required by the Engineer, Owner, or public authorities having jurisdiction are not limited by provisions of this Section.

C. Related Sections:
   1. See sections in Divisions 2 through 32, and Drawings sheets for specific test and inspection requirements.

1.2 DEFINITIONS

A. Quality Assurance Services: Activities, actions, and procedures performed before and during the execution of the Work to guard against defects and deficiencies and substantiate that the proposed construction will comply with requirements.

B. Quality Control Services: Tests, inspections, procedures, and related actions during and after the execution of the Work to evaluate that the actual products incorporated into the Work and the completed construction comply with requirements.
   1. Services do not include contract enforcement activities performed by the Engineer, such as observations.

C. Testing Agency (also known as Third Party Testing Agency): Entity responsible for performing specified testing or special inspections in Divisions 02 through 32 and on the Contract Drawings.

D. Special Inspector: A qualified person employed or retained by an approved agency (such as the testing agency), and approved by the building official as having competence necessary to insect a particular type of construction requiring special inspection.

E. Special Inspection: Review of completed work or work in progress performed by the Special Inspector, or where specifically identified, by the Engineer. Items typically required by the governing building code.

1.3 COMPLIANCE CRITERIA

A. General: If compliance with two or more standards is specified and standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement.

B. Minimum Quantity or Quality Level: Quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements.

C. Refer uncertainties to the Engineer for a decision before proceeding.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 QUALITY CONTROL

A. Reference the Special Inspection Schedule on the Construction Drawings for special inspection requirements for this section.

B. Owner Responsibilities: The Owner will engage a qualified testing agency to perform all special inspections and select testing as explicitly identified in the Contract Documents.
   1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and descriptions of types of testing and inspecting they are engaged to perform.
   2. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to the Contractor.

C. Testing Agency/Special Inspector Responsibilities: Cooperate with the Engineer and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
   1. Determine location from which test samples will be taken and in which in-situ tests are conducted.
   2. Notify the Engineer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
   3. Conduct and interpret tests and inspections and state in each report whether tested and inspected Work complies with or deviates from requirements.
   4. Submit a certified written report of each test, inspection, and similar quality control service.
   5. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.
   6. Do not perform any duties of the Contractor.

D. Engineer Responsibilities: Engineer may perform some testing on completed on in-process work as noted in the Contract Documents.

E. Tests and inspections not explicitly assigned to the Owner or Engineer, and testing and inspecting requested by the Contractor and not required by the Contract Documents, are the Contractor's

responsibility. Unless otherwise indicated, provide quality control services specified and those required by public authorities having jurisdiction, whether specified or not.

F. Coordination: Coordinate the sequence of activities to accommodate the required quality assurance and quality control services with a minimum of delay and to avoid the necessity of removing and replacing construction to accommodate testing and inspecting.
   1. Schedule times for tests, inspections, obtaining samples, and similar activities.
   2. Notify the testing agency sufficiently in advance of operations to permit assignment of personnel.

G. Associated Services: Cooperate with the Engineer and testing agencies performing required tests, inspections, and similar quality control services, and provide reasonable auxiliary services as requested. Provide the following:
   1. Submittals of concrete mix designs and other materials and products necessary for the testing agency to test and evaluate field work.
   2. Access to the Work.
   3. Incidental labor and facilities necessary to facilitate tests and inspections.
   4. Adequate quantities of representative samples of materials that require testing and inspecting. Assist the testing agency in obtaining samples.
   5. Facilities for storage and field curing of test samples.
   6. Security and protection for samples and for testing and inspecting equipment at Site.

H. Repair and Protection:
   1. On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
   2. Provide materials and comply with installation requirements specified in other sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
   3. Protect construction exposed by or for quality control services.
   4. Repair and protection are the Contractor's responsibility, regardless of assignment of responsibility for quality control services.

END OF SECTION

SECTION 01 70 20

PROJECT CLOSEOUT

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Administrative and procedural requirements for contract closeout, including final cleaning; Substantial Completion and final completion procedures.

B. Related Sections:
   1. Divisions 02 through 32 sections for special cleaning and specific closeout requirements for Work in those sections, including warranties.

PART 2 PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 EXECUTION

3.1 PROJECT RECORD DOCUMENTS

A. During Work, maintain one set of Drawings and reviewed shop drawings, Specifications, WJE site visit reports, and product data for recording deviations of as-built construction from design information. Include addenda and Contract modifications.
   1. Accurately document and record changes and modifications as soon as possible after they occur, in understandable manner.
   2. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later. Record and check markup before enclosing concealed installations.
   3. Include:
      a. Dimensional changes.
      b. Revisions to Drawing details and details not on Drawings.
      c. Changes made by Change Order or Engineer's written orders or direction based on Site Visit Reports or Construction Observation Reports. Note Change Order numbers, Site Visit Report Item numbers or similar identification.
      d. Field records for variable and concealed conditions.
      e. Record information on Work that is shown only schematically or omitted from Drawings.
      f. Actual products and materials used.
         1) Include product data, specifically marked for Project, and cross-referenced to Specifications, Drawings, and Change Orders.
         2) Include names of manufacturer and Installer, and other information necessary to provide record of selections made.

3) Include significant changes in product delivered to Site and changes in manufacturer's written instructions for installation.

4. Mark record document most capable of showing actual physical conditions completely and accurately. Cross-reference on other record documents.
5. Mark record documents with erasable, red-colored media. Use other colors to distinguish between changes for different categories of Work at the same location.

B. Store Record Documents and samples in field apart from Contract Documents used for construction. Do not use Record Documents for construction purposes. Maintain Record Documents in good order and in clean, dry, legible condition, protected from deterioration and loss. Provide access to Record Documents for Engineer's reference during normal working hours.

C. Prepare final document markup in digital format for submission.
1. Incorporate changes and additional information previously marked on record prints. Erase, redraw, and add details and notations where applicable.
2. Refer questions to Engineer for resolution.
3. For new details and drawings, bind new sheets as necessary to appropriate document.
4. Identify and date each Record Drawing. Include names of project, Engineer, and Contractor, and designation "PROJECT RECORD DOCUMENT" in prominent location.
5. Organize PDF information into separate electronic files that correspond to each sheet of Drawings, report or item. Name each file with identification of item contained.

3.2 FINAL CLEANING

A. General: Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations. Return adjacent surfaces and areas to condition existing before Work began.

B. In areas disturbed by construction activities, complete the following cleaning operations before requesting inspection for certification of Substantial Completion. Clean each surface or unit to the condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions. Employ experienced workers or professional cleaners.
1. Remove tools, construction equipment, machinery, and surplus material from Site.
2. Clean Site, yard, and grounds, including landscaped areas, of rubbish, waste materials, litter, and other foreign substances.
   a. Broom clean paved areas. Remove petrochemical spills, stains, and other foreign deposits.
   b. Rake grounds that are neither planted nor paved to smooth, even-textured surface.
3. Clean exposed exterior and interior hard-surfaced finishes to dirt-free condition, free of stains, films, and similar foreign substances. Polish surfaces to achieve specified finish. Avoid disturbing natural weathering of exterior surfaces.
   a. Touchup and otherwise repair and restore marred exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that show evidence of repair or restoration.
      1) Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates.
4. Clean and restore transparent and reflective surfaces, such as mirrors and glass in doors and windows, to their original condition. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.

5. Remove labels that are not permanent.
6. Clean plumbing fixtures to sanitary condition, free of stains, including stains resulting from water exposure.
7. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
8. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
9. Sweep floors broom clean. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
10. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove paint and mortar droppings and other foreign substances.
11. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
    a. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter upon inspection.
12. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
13. Leave Project clean and ready for occupancy.

END OF SECTION

SECTION 03 01 01

SHORING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Supply, installation, and removal of temporary shoring to support stairs vertically during concrete repairs.

1.2 PRICES

A. Perform the following Work on unit price basis:
   1. Design of shoring, developing shoring procedures, preparing shoring submittals, and providing and installing shoring. Payment based on number of locations where shoring is installed OR shoring units installed.

1.3 COORDINATION

A. Coordinate with Owner's Representative and with other trades to ensure that shoring does not interfere with Owner use of Site or Work of other trades.

1.4 PROJECT CONDITIONS

A. Comply with Owner's limitations and restrictions for Site use and accessibility.

PART 2 PRODUCTS

2.1 MANUFACTURED ASSEMBLIES

A. Design Criteria:
   1. Structure dead load per dimensions provided on original drawings and verified in field by contractor.
   2. All loads shall be accounted for in accordance with ASCE 37, including but not limited to dead, construction, and live.
   3. Provide a minimum factor of safety of 2.0.
   4. Consider removal of loads from member and transfer of loads into structure below, without overloading structural members.
   5. Detail shoring to avoid interference with Owner operations.
   6. Consider shoring stiffness relative to stiffness of members being shored.

B. Shoring: Steel posts, steel frames, or other steel assemblies with sufficient capacity to support calculated shoring loads at spacing and positioning shown on shop drawings.
   1. Adjustable through positive means, such as screw jacks, to achieve tight fit to structure above and below and to compensate for elastic shortening of shores during loading and service.
   2. Use undamaged components, including bracing, supplied by shoring manufacturer.

2.2 ACCESSORIES

A. Spreaders:
   1. At bottom of shores: 4x4 timber cribbing, 2x wood bearing pads, or other material; with sufficient bearing area and length to distribute shoring reactions into supporting structural element below.
   2. At top of shores: Timber or steel spreader beams or wood bearing pads; to fully support member being shored without damage to member surface.

B. Shims: Wood or steel; at bearing points above shores to ensure tight contact with shored member.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements and other conditions affecting installation or performance of shoring Work.
   1. Notify Engineer in writing of conditions which may adversely affect installation or performance of shoring Work, and recommend corrections.
   2. Do not proceed with shoring Work until adverse conditions have been corrected and reviewed by Engineer.
   3. Commencing shoring Work constitutes acceptance of Work surfaces and conditions.

3.2 INSTALLATION

A. Install shoring in accordance with manufacturer's recommendations and approved shop drawings. Installed assembly shall be of such quality that assembly will support imposed loads without excessive settlement or deflection.
   1. Position to avoid interference with Owner operations.
   2. Install plumb and square. Install cross-bracing recommended by shoring manufacturer and shoring designer to prevent buckling failure of individual members and overall shoring stability failure. Extend shoring above and below level of repair work as required by shoring design.
   3. Install spreader beams or bearing pads and shims as necessary, and adjust shores to ensure tight, uniform fit against structural element to be supported. Minimize differential loading of vertical shoring members.
   4. Install timber cribbing wood or wood bearing pads as necessary to distribute loads into supporting elements. If more than one layer of cribbing is required, install each successive layer perpendicular to preceding layer.
   5. If shoring is to be placed on coated or finished surface, protect surface from damage with plywood, plastic sheets, or other means.

B. All shoring shall be installed snug-tight.

C. Protect shores from damage from construction activities, Owner use of facility, and other causes.

D. Check shores daily and adjust as necessary to maintain snug condition or design preload, plumbness, and full effectiveness.

E. Modify and adjust shoring as required to meet conditions of work and to ensure Project safety.

3.3 REMOVAL OF SHORES

A. Remove shores when compressive strength of repair concrete reaches 75 percent of its specified 28-day required strength. Contractor may elect to have additional concrete strength tests performed at their own expense, to confirm when repair material meets removal requirements.

B. Store shoring materials in approved storage area at Site, such that materials do not interfere with Owner's continued use of facility. Promptly remove shoring materials from Site when no longer needed for work.

END OF SECTION

SECTION 03 01 32

DISCRETE GALVANIC ANODES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Supply and installation of discrete galvanic anodes embedded in concrete repairs or encapsulated in concrete encasements.

1.2 PRICES

A. Cost of installation of anodes shall be included in the concrete repair unit cost.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: Certified by anode manufacturer as trained and approved for anode installation.

PART 2 PRODUCTS

2.1 MATERIALS

A. Source Limitations: Obtain materials through one source from single manufacturer.

B. Discrete Galvanic Anodes in Concrete Repairs: Alkali activated, Type IA, consisting of zinc in compliance with ASTM B418, Type I, with at least 100 g of zinc metal; encased in highly alkaline cementitious shell with pH of 14 or greater; specifically intended for application. Unit shall contain no added sulfate, chloride, bromide, or other constituents that are corrosive to reinforcing steel per ACI Guideline 222R-01. Anodes shall be supplied with integral tie wires for tying to reinforcing steel.
   1. Anode shall provide minimum ten-year service life in similar environment.
   2. Use one of the following or approved equal:
      a. Galvashield XP2 by Vector Corrosion Technologies.
      b. Sika FerroGard -670 by Sika Corporation.

C. Conductive embedding mortar: Use one of the following low resistivity embedding mortar products, or approved equal:
   1. Galvashield Embedding Mortar by Vector Corrosion Technologies.
   2. SikaRepair 222 or 223 by Sika Corporation.

PART 3 EXECUTION

3.1 INSTALLATION OF DISCRETE GALVANIC ANODES IN CONCRETE REPAIRS

A. Remove unsound concrete and prepare concrete and steel surfaces as specified.
   1. Remove sufficient concrete at anode locations to permit anode installation.

2. Leave 2 inches of uncoated steel at anode connections, or as recommended by anode manufacturer.

B. Install anodes in accordance with recommendations of anode manufacturer.
   1. Install anodes along the perimeter of the concrete removal area at 12 maximum on center, as recommended by anode manufacturer. Notify Engineer of required anode spacing.
   2. Position anodes as close to perimeter of concrete removal area as possible. Locate at intersections of bars if possible.
   3. Position anodes to provide at least 1 inch of clear cover. If necessary, position anodes next to or underneath reinforcing bars.
   4. Provide sufficient clearance between anodes and existing concrete substrate to allow repair material to encase anode.
   5. Electrically connect anodes to clean reinforcing bars as close as possible to edge of removal area.
      a. Wrap anode wires around reinforcing bar and twist tight to allow little or no free movement.
      b. At bar intersections, secure to both bars.
      c. Position tie wires at least 1 inch from surfaces.

C. Confirm electrical continuity of reinforcing steel in removal area and of anodes with reinforcing steel by measuring DC resistance.
   1. Resistance shall be less than 1 ohm.
   2. If continuity of reinforcing steel is not acceptable, add additional steel tie wires until continuity is acceptable.
   3. If continuity of anode to reinforcing steel is not acceptable, modify wrapping of anode tie wires until acceptable.

D. Encapsulate anodes in conductive mortar and fill gaps between anodes and concrete substrate with conductive mortar as recommended by anode manufacturer.
   1. Completely encapsulate anode with at least 1/2 inch of mortar.
   2. Fill gap between anode and concrete substrate over area with minimum diameter of 4 inches.

E. Install concrete repair per 03 01 34, exercising care to avoid disturbing anodes.

END OF SECTION

SECTION 03 01 34

CONCRETE REPAIRS - PREPACKAGED MATERIALS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Supply and placement of prepackaged concrete repair materials, including formwork, batching procedures, placement procedures, finishes, curing and protection.

1.2 PRICES

A. Where identified as such on the Bid Form, perform Work on unit price basis. Unit prices below include concrete removal, surface preparation of steel and concrete surfaces, and installation of supplemental reinforcing, prior to placement:
   1. Overhead-surface repair, partial depth. Payment based on surface area of removal area from one surface and average depth of 4 inches.

B. In no case shall the cost of repair exceed the full-depth unit cost.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of fly ash, silica fume, and other pozzolans, or slag cement.

B. Testing Agency: Third party testing agency qualified to perform the testing specified. Refer to Specification Section 01 40 00 for additional requirements.

C. Batch: Either of the following:
   1. A quantity of material mixed at one time or in one continuous process;
   2. To weigh or volumetrically measure and introduce into the mixer the ingredients for a quantity of material.

D. Mixture: The assembled, blended comingled ingredients of the concrete repair material or the proportions of its assembly.

1.4 QUALITY ASSURANCE

A. Contractor Qualifications: Experienced firm that has successfully completed concrete repair work similar in material, design, and extent to that indicated for the Project. Must have successful construction with specified materials in local area in use for minimum of five years.
   1. Employ foreman with minimum five years of experience as foreman on similar projects, who is fluent in English, to be on Site at all times during the Work. Do not change foremen during the course of the Project except for reasons beyond the control of Contractor; inform Owner and Engineer in advance of any changes.

B. Mockups: Construct mockups to demonstrate construction procedures, quality of Work, and aesthetic effects.
   1. Mockup and Quality Testing shall be completed in full prior to proceeding with Work. If the Contractor wishes to proceed with Work prior to completion, they may proceed at their

own risk. Any revisions or additional Work as a result of proceeding shall be the sole responsibility of the Contractor and no other party.

2. Construct mockups with at least:
   a. Overhead-surface (soffit): 5 square feet
3. Mockup locations will be selected by Engineer after schedule and work sequence is submitted by contractor.
4. Use personnel, equipment, materials, and procedures proposed for use on Project.
5. Construct mockups on existing members under same weather conditions expected during Work.
6. Provide access to mockup locations during work and after to allow for completion of observations and testing.
7. Engineer will observe the following conditions prior to the Contractors work proceeding on mockup (hold points). Provide Owner and Engineer with a schedule for mockup activities at least one week prior to start of mockup work. Clearly define sequence of work including required Engineer hold point observations. **Mockup shall be coordinated and staffed to allow for hold point observations to be completed during back to back work days, afternoon of one day to morning of next.** Group all mockups such that visits for different repair types are prepared and ready for review during the same visits. Additional visits to review hold points may be charged to the Contractor, or withheld from payment. Allow Engineer 24 hours to observe work at each hold point, complete all work indicated prior to Engineer Visit.
   a. Engineer Hold Point Visit 1:
      1) Concrete and steel surface preparation work.
      2) Prepared and cleaned concrete removal areas including prepared concrete and steel surfaces (prior to coating)
      3) Steel coating application.
   b. Engineer Hold Point Visit 2:
      1) Completed concrete and steel surface preparation, including completed steel coating installation.
      2) Installation of concrete repair material
         a) Batching
         b) Testing
         c) Finishing
      3) Installation of curing and protection measures
8. Coordinate performance of, or perform, quality control measures and testing as required by this section; including, but not limited to (see Quality Control for Responsible Entity):
   a. Reinforcing inspections
   b. Fresh or plastic concrete repair material testing
   c. Compressive strength testing
   d. Pull-off testing.
      1) Testing shall be at one location for overhead mockup type in conformance with the requirements of this section.
      2) Testing shall include one test site in mock-up repair area and an additional test site immediately adjacent to mock-up in sound, undisturbed original substrate concrete (control test). The control test area shall have the top surface prepared to remove the top 1/8 to 1/4-inch concrete paste and prepare the surface for epoxy.
9. If Engineer or Owner determines mockup does not comply with requirements, modify mockup or construct new mockup until mockup is approved. Remove and replace mockups that are not approved.

10. Approved mockups shall be maintained in undisturbed condition throughout Project as basis for acceptance of completed work and may become part of completed Work if undisturbed at time of Substantial Completion.
11. Do not proceed with repair Work until mockups have been approved by Engineer and Owner.

PART 2 PRODUCTS

2.1 FORM MATERIALS

A. Form Panels: Plywood, lumber, metal, plastic, or another material capable of producing final product as specified here-in.
   1. Use panels that will provide continuous, true, and smooth repair surfaces.
   2. Furnish panels in largest practicable sizes to minimize number of joints.
   3. Do not use rust-stained, steel, form-facing material.
   4. Use form-facing material capable of producing smooth, uniform texture on concrete. Do not use form-facing materials with raised grain, torn surfaces, worn edges, dents, or other defects that will impair texture of concrete surface.

B. Accessories:
   1. Chamfer Strips: Wood, metal, PVC, or rubber strips.
   2. Form-Release Agent: Commercially-formulated form-release agent that will not bond with, stain, or adversely affect the concrete repair surface and will not impair subsequent treatments of the surface. Form-release agent shall have a rust inhibitor for steel form-facing materials.

2.2 PREPACKAGED CONCRETE REPAIR MATERIALS

A. **Formed Vertical and Overhead Repairs**
   1. Pour or pump pre-blended aggregate and mortar or neat mortar extended with aggregate per manufacturer's recommendations during batching: Use product specifically intended for this application, for which the Contractor has had proven successful experience installing. Use one of the following, or approved equal:
      a. MasterEmaco S 440 manufactured by BASF Construction Chemicals, LLC.
      b. Sikacrete 211 SCC Plus manufactured by Sika Corporation.
   2. Pump with pre-placed aggregate (neat mortar pumped): Use product specifically intended for this application, for which the Contractor has had proven successful experience installing. Use one of the following, or approved equal:
      a. SikaQuick FNP manufactured by Sika Corporation.

B. Do not use materials that contain added gypsum.

C. Provide all like materials with the same manufacturers lot number.

D. Aggregates for preplacement:
   1. From single source with documented record of at least ten years of satisfactory service using similar aggregates and cementitious materials in similar applications and service conditions.
   2. Coarse aggregate should be clean crushed stone or natural gravel, free of surface dust and fines.
   3. Conform to ASTM C33, Class 4S, except for grading.

4. Grading shall be in accordance with the table below.

Sieve Size (in)	1 1/2	1	3/4	1/2	3/8
Percent Passing	95 to 100	40 to 80	25 to 40	0 to 10	0 to 2

Source: ACI 304.1R-92, Table 2.1, Grade 1 for 1/2-inch minimum size coarse aggregate.

E. Testing of concrete repair material(s), in final batched project condition, shall confirm the following properties:
   1. 28-day Compressive Strength (ASTM C39).
      a. 4,000 pounds per square inch, minimum. This strength shall be considered the minimum specified compressive strength, regardless of the proprietary repair material manufacturers published compressive strength data.
   2. Bond Strength (Per ASTM C1583): 175 pounds per square inch, minimum. This strength shall be considered the minimum specified bond strength, regardless of the proprietary repair material manufacturers published strength data.

2.3 CURING MATERIALS

A. Membrane-Forming Curing Compound **(vertical and overhead repairs only)**: ASTM C309, Type 2; VOCs less than legal limits. Silicate materials shall not be used.

B. Water: Potable.

PART 3 EXECUTION

3.1 GENERAL

A. Follow the requirements of these specifications and the prepackaged repair material manufacturer's written instructions, whichever is more stringent as determined by the Engineer. If a conflict is identified between these specifications and the manufacturer's written instructions, notify the Engineer prior to performing Work and Engineer will determine which requirements apply.

3.2 FORMWORK

A. Design, erect, shore, brace, and maintain formwork to support vertical, lateral, static, dynamic, and construction loads that might be applied prior concrete repair reaching 75 percent of their specified minimum compressive strength. For form and pump applications formwork should be capable of supporting a pumped material pressure of at least 15 psi.

B. Construct formwork so concrete repairs are of size, shape, alignment, elevation, and position indicated and tight enough to prevent loss of material.
   1. Ensure flatness and smoothness as required for finish type per Section 3.7.
   2. Chamfer exterior corners and edges of permanently exposed concrete to match existing, if chamfered.

C. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

D. Provide temporary openings for cleanouts, venting, and inspection ports (witness holes) where the interior area of the formwork is inaccessible. Close openings with panels or dowels tightly fitted to forms and securely braced to prevent loss of material.

3.3 BATCHING AND MIXING

A. Ensure that all materials have been stored and pre-conditioned to proper temperatures as required by the prepackaged repair material manufacturer.

B. Batch materials by weight on basis of whole bags of prepackaged repair material, NEVER USE PARTIAL BAGS.

C. Mix materials in appropriate mixer (drum or paddle type) as specifically required by the prepackaged repair material manufacturer. Provide sufficient number or size of mixer(s) so that placement operations will proceed uninterrupted at each placement location.

D. Ensure that all mixer elements are cleaned of all materials from previous batch, and mixer components have been pre-wetted or charged prior to batching.

E. Mix ingredients to uniform consistency with mixing times per the manufacturer's recommendations or instructions.

F. Compile a Batch Log for each batch of material. A sample batch log containing the minimum information required is attached to this Section.

G. Cold-Weather: Protect material from physical damage or reduced strength due to frost, freezing, or low temperatures.
   1. When the air temperature has fallen or is expected to fall below 40 degrees F, uniformly heat water, aggregates, and cement (prepackaged materials) before mixing to obtain a mixture temperature of not less than 50 degrees F and not more than 80 degrees F at the point of placement; no single component shall be less than 40 degrees F or more than 90 degrees F prior to mixing. Mix water and aggregates together before adding cement. Do not add cement if the temperature of the water/aggregate mixture exceeds 70 degrees F.
   2. Do not use frozen materials or materials containing ice or snow.
   3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators.

3.4 PLACEMENT (GENERAL)

A. For repair areas where material will be cast against, and bonded to, existing concrete surfaces, wet existing surface to saturated surface-dry condition at least 1 hour prior to placement. Maintain surfaces at this condition until placement. If forms are filled with water prior to placement to achieve this condition, ensure that standing or flowing water is removed and surfaces are allowed to dry to saturated, surface-dry condition.

B. Do not allow material to fall a vertical distance greater than 4 feet from the point of discharge to final position.

C. Do not allow material to disturb or displace reinforcing bars or other embedded items.

D. Place material at a rate so that the material is plastic and flows readily into corners of forms or openings and into spaces fully around reinforcing bars.

E. Place material continuously until the repair volume or section is completed, with no cold or construction joints unless explicitly approved in writing by Engineer prior to placement.

F. Dispose of material that has partially set prior to placement or that has been contaminated by foreign material.

G. Cold-Weather Placement: Protect material from physical damage or reduced strength due to frost, freezing, or low temperatures.

H. Hot-Weather Placement: Protect material from physical damage or reduced strength due to rapid evaporation or overheating of concrete. Do not allow the temperature of the material at the time of placement to exceed 90 degrees F, or as required by the concrete repair material manufacturer. When hot-weather conditions exist, use one or more of the following procedures:
   1. Place material at night or early in morning when ambient air temperatures are lower.
   2. Cool ingredients before mixing to maintain the material temperature below required at the time of placement. Chilled mixing water or chopped ice may be used to control the temperature; include the water equivalent of the ice in the mixing water quantity.
   3. Cover repair areas with water-soaked burlap so the formwork, concrete substrate and steel temperature does not exceed the ambient air temperature.
   4. Provide windbreaks or sunshades, or both.

3.5 FORM AND POUR PLACEMENT

A. Place material as near as possible to its final position to avoid segregation due to re-handling or flowing.

B. If conventional repair materials are used (non-SCC), consolidate material with mechanical vibrating equipment, so that the material is thoroughly worked around reinforcement and other embedded items and into corners.
   1. Use internal vibrators with a minimum speed of 7,000 vibrations per minute and that are sufficiently narrow to fit into spaces between reinforcing bars, formwork, and existing concrete. Have extra vibrators at the Site in case a vibrator does not work.
   2. Do not use vibrators to transport repair material.
   3. Insert and withdraw vibrators vertically at uniformly spaced locations no farther apart than the visible effectiveness of the vibrator.
   4. At each insertion, limit the duration of the vibration to the time necessary to consolidate the material without causing constituents to segregate.

C. For core and pour applications on vertical and overhead surfaces:
   1. Ensure sufficient placement holes to adequately fill and consolidate repair area. A grid pattern may facilitate complete filling.
   2. Provide adequate internal and external vibration to ensure adequate consolidation.
   3. Place vent pipes or holes and observation tubes to ensure complete filling of repair area.

3.6 FORM AND PUMP PLACEMENT

A. Install bulkheads as necessary to facilitate placement in large repair areas to ensure manageable placement volumes.

B. Place inlet pipes, vent pipes and observation tubes to ensure complete filling of repair area and that material is deposited as close as possible to its final position. A grid pattern may facilitate complete filling.

C. Start placement at low points for vertical repairs and work to high points with appropriate venting provided. Ensure port-to-port travel is achieved.

D. Once complete filling is achieved, maintain light pressure (on the order of 10psi) on the formwork from the pump for 5 minutes to prevent sagging and to displace water and air from repair.

E. For preplaced aggregate installations:
   1. Do not drop aggregate more than 5-feet into forms.
   2. Externally vibrate forms as necessary to aid in consolidation as necessary.

3.7 FINISHING FORMED SURFACES

A. Provide surface finish 2.0 (SF-2.0) unless otherwise specified, at concrete surfaces exposed to public view.

B. Edge of repair shall be flush with adjacent concrete surface with 1/8-inch tolerance.

C. Do not apply a rubbed finish.

D. Surface Finish Type Definitions:
   1. Surface Finish-2.0 (SF-2.0): Repair voids larger than 3/4-inch wide or 1/2-inch deep. Repair or patch all form tie holes and similar construction related blemishes. Limit abrupt (over 1-inch or less) or gradual (5-foot straight edge) concrete repair surface irregularities to 1/4-inch (ACI 117 Class B).

3.8 CURING AND PROTECTION

A. General:
   1. Curing method shall be applied within 30 minutes of material finishing.
   2. Curing period shall be seven days. Maintain material in a moist condition for at least seven days after placing.
   3. Curing method shall be as noted below:
      a. Unformed Vertical and Overhead Surfaces: Curing compound
      b. Formed surfaces: Formwork, as specified in Section 2.1, shall meet requirements of curing for these elements. If formwork is removed prior to full curing period, install curing compound within 30 minutes of removing formwork.

B. Curing Methods:
   1. Curing compound
      a. Apply curing compound uniformly in a continuous operation by power spray or roller according to manufacturer's written instructions and recommended coverage rate.
      b. Recoat areas subjected to heavy rainfall within three hours after initial application.
      c. Maintain continuity of compound and repair damage during curing period.

C. Cold Weather Protection: Provide protection such as blankets, heated blankets, insulation, enclosures, and/or heaters to keep concrete protected from cold temperatures and frost.
   1. Protection methods shall be installed immediately following installation of curing method.
   2. Maintain concrete repair material above 55 degrees F until it has reached 3,500 psi based on field cured concrete cylinders, manufacturer’s test data (if testing is for cubes, value shall be 4,250 psi), or seven days, whichever is less.

3.9 REMOVAL OF FORMWORK

A. Structural Elements: Leave formwork for beam soffits, joists, slabs, and other structural elements that support the weight of concrete in place for seven days, or until concrete repair material has

achieved at least 75 percent of specified 28-day compressive strength based on filed cured cylinders. Remove forms only if shoring has been arranged to permit removal of forms without loosening or disturbing shoring.

3.10 QUALITY CONTROL

A. Sampling and testing of fresh repair material shall be performed by the Testing Agency retained by the Owner according to the following requirements:
   1. Take test sample from point of discharge onto final structure according to ASTM C172. Take additional samples at other locations only if directed by Engineer.
   2. Fresh repair material tests shall include:
      a. Unit weight (ASTM C138)
      b. Slump (ASTM C143) or Spread (ASTM C1611)
      c. Temperature (ASTM C1064)
      d. Fabrication of compressive strength specimens (as defined below)
   3. Fabrication of compressive strength specimens shall be cubes or 4 by 8-inch cylinders based on the following
      a. Cubes shall be fabricated for repairs consisting of entirely neat mortars, those which do not contain coarse aggregate, in their final installed condition. Repair materials used for pre-placed aggregate shall not be cubes. Fabrication of cubes shall be modified per ASTM C1107 when using materials with fluid consistency.
      b. Cylinders shall be fabricated for aggregate extended mortars, or concrete, and repair locations which include the use of pre-placed aggregate. Pre-placed aggregate samples shall be fabricated in a manner similar to the concrete repair placement.

B. Material Compressive Strength Testing.
   1. Testing shall be performed by Testing Agency retained by Owner.
   2. A strength test shall be considered three 4 by 8-inch cylinders or three cubes.
   3. Compressive strength sample fabrication shall include adequate numbers of samples such that testing can be performed as noted blow.

Compressive Strength Testing Ages and Quantity

Curing Method	Standard Cured	Field Cured	TOTAL
Strength Test Age(s)	28 days	3 days	
Total Number of Cylinders or Cubes to be cast and tested	3	3	**6**

      a. Additional strength tests at earlier ages may be performed at the Contractors option.
      b. All confirmations of in-situ strength for stripping of forms or removal of shoring shall be based on field-cured specimens cast at the Contractors discretion/option and shall be in addition to those minimums shown.
      c. Standard-cured (lab-cured):
         1) Store specimens at the Site for at least 16 hours at a temperature of 60 to 80 degrees F. Provide a temperature-controlled box or other enclosure if necessary.
         2) After at least 16 hours, but not more than 30 hours, transport the specimens to the laboratory and air cure at 73 degrees F and 100 percent relative humidity.
      d. Field-cured: Cure in the vicinity of the area that they represent and in the same manner as the repair material.
   4. Conformance Requirements: Material testing is satisfactory if the average of the 28-day standard-cured compressive-strength tests equals, or exceeds, the specified 28-day compressive strength and no test value is more than 500 pounds per square inch less than

the specified 28-day strength. Strength tests confirming 28-day strength are acceptable at earlier ages.

a. If the Contractor has elected to reduce lap lengths based on using a higher compressive strength material, test results shall be provided confirming that the strength meets the strength shown for lap lengths used. i.e. if lap lengths for 8,000 psi material are used, strength tests must confirm that 8,000 psi is achieved for the material

C. Pull-off Strength Testing:

1. Testing shall be performed by the Testing Agency retained by the Owner or Engineer in general conformance with ASTM C1583. Assistance shall be provide by the Contractor for select activities as noted below.
2. Each test site shall consist of 3 cored pull-off tests.
3. Contractor is responsible for providing surface preparation, including, but not limited to grinding surface prior to coring, coring, and drying/cleaning at each of the pull-off test site(s). Contact Engineer for specific requirements.
4. Contractor is responsible for repairing all test sites after completion of testing, regardless of results.
5. Conformance Requirements: Test is satisfactory if average of pull-off strength meets the minimum requirement, and no individual test value is less than 75 percent of the minimum requirement. The following additional requirements shall be considered for a satisfactory result:
   a. Required minimum pull-off strength may be reduced based on control testing of parent material. If 90 percent of the control test strength result (0.9*control strength) is less than the specified strength minimum, the minimum specified strength shall be reduced to 90 percent of the control test strength result (new project minimum = 0.9*control strength).
   b. Test shall be considered a pass, regardless of the strength value, if the failure plane represented by the test is deep in the parent material, and, no evidence of improper or inadequate surface preparation is present, such as microfracturing or bruising of the parent material.
   c. If evidence of poor consolidation of repair material, microfracturing or bruising of parent material, improper or inadequate cleaning of parent material, or other items indicating placement of repair material or surface preparation does not conform with the requirements of the Construction Documents are observed, the test location may be considered non-satisfactory, or evidence of non-conforming Work/Materials. Review for these conditions shall be made visually at each test location. If initial visual review indicates these issues are likely to be present, further review using limited petrography on partial or full-depth concrete core samples may be recommended. If recommended, and the Contractor does not wish to pay for extraction of core samples and a limited petrographic review, the test result in question shall be treated as non-satisfactory, or non-conforming Work.

D. The Contractor shall visually review, and mechanically sound using a chain or hammer, each repair area for defects after curing and protection. In addition to the requirements of this document, the following additional items shall constitute non-conformance of the repair Work or material:

1. Delaminations.
2. Voids, spalls, air bubbles, honeycomb, rock pockets, and form-tie voids, more than 2 percent of the repair surface area, or those which compromise strength.

3. Crazing and cracks in excess of 0.010 inch wide, and any that penetrate to the depth of reinforcement or completely through section. Notify Engineer immediately of cracks that penetrate completely thought the cross section.
4. Latent defects or those not on exposed surfaces that affect concrete's durability and structural performance as determined by Engineer.
5. Surface finish meets specified requirements.
6. Offsets at perimeter exceeding those specified.

3.11 NON-CONFORMING WORK OR MATERIALS:

A. If tests or observations indicate that the material, or Work, is not in conformance with the Construction Documents, at no cost to Owner, or Engineer, either:
   1. Perform additional testing acceptable to Engineer to verify conformance with the Construction Documents.
   2. Remove and replace material or Work.
   3. Repair or replace non-conforming Work or materials using alternate repair approved by Owner and Engineer.
   4. Provide an extended warranty for the repairs as deemed acceptable to the Owner and Engineer.

B. Perform additional inspection and testing, at no cost to the Owner, to determine compliance of replaced, or additional corrective Work.

C. Additional time and expenses for Engineer resulting from non-conforming Work or material may be back-charged to the Contractor, or withheld from payment to the Contractor at the Owners option.

END OF SECTION

Project

Project Name:

Project Number:

Date:

Mixer/Batching Team Name(s):

Repair Application (Form-and-pump overhead, top surface, top surface rapid-set, etc.):

Mixer Type:

Prepackaged Repair Material Information

Name:

Lot #:

Minimum WT or Volume of Water:

Maximum WT or Volume of Water

Admix volume required:

Aggregate

Name/Description:

Manufacturer or Supplier:

Size (in):

Batch #	Time	Ambient Air Temp	Prepackaged Material Temp	Prepackaged Material Weight (bag wt.)	Prepackaged Material Admixture Volume	Aggregate Weight	Aggregate Moisture Condition (SSD, etc.)	Water Weight or Volume	Mixing Time	Final Mixture Temp	Notes (batch where testing was performed, etc.)

SECTION 03 21 00

REINFORCING STEEL

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Coating existing reinforcing bars and embedded steel with corrosion-inhibiting material.
   2. Supply, fabrication, and installation of new reinforcement.
   3. Supply, fabrication, and installation of new adhesive anchored (epoxy or other) reinforcement.
   4. Supply and installation of mechanical reinforcing couplers.
   5. Welding of reinforcing.

1.2 PRICES

A. Perform the following Work on unit price basis:
   1. Supply, fabrication, and installation of new reinforcement. Payment shall be included in concrete replacement cost.
   2. Coating of existing reinforcing bars shall be included in concrete replacement cost.
   3. Supply and installation of adhesive anchored steel reinforcing and dowels, welding of reinforcing and installation of mechanical couplers shall be included in concrete replacement cost.

1.3 QUALITY ASSURANCE

A. Qualifications for Installer of Adhesive Anchored Items: Experienced individual with current ACI-CRSI certification as Adhesive Anchor Installer.
   1. Applicable only for anchors in horizontal or upwardly inclined orientations.

B. Mockup shall be in accordance with section 03 01 34, including demonstrating adequacy of concrete removal and surface preparation procedures.

C. Welding:
   1. Welders shall be certified and poses current welder qualification records for the welds specified.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Avoid damaging reinforcing coating.
   1. Use padded or nonmetallic slings and straps when transporting.
   2. Handle bundled and individual bars in manner which will prevent excessive sagging of bars that may damage coating.
   3. Do not drop or drag bundled or individual bars.
   4. Do not expose to moisture.
   5. If, in the opinion of Architect/Engineer, coated bars have been extensively damaged, bars will be rejected.

PART 2 PRODUCTS

2.1 MATERIALS

A. Corrosion-Inhibiting Coating Materials: Use material specifically intended for reinforcing steel embedded in concrete. Use one of the following or approved equal:
   1. Cementitious Coating: Sika Armatec 110 EpoCem supplied by Sika Corporation.
   2. Epoxy: Sikadur 32 Hi-Mod supplied by Sika Corporation.
   3. Zinc-rich Steel Primer: MasterProtect P 8100 AP supplied by BASF Construction Chemicals, LLC.

B. Reinforcing Bars: ASTM A615, Grade 60. Sizes as shown on Drawings.

C. Reinforcing Bars to be welded: ASTM A706, Grade 60; epoxy-coated. Sizes as shown on Drawings.

D. Supplemental mechanical anchors
   1. Helical anchors shall be stainless steel, between 8mm and 10mm in diameter. Use one of the following, or approved equal:
      a. DryFix anchors manufactured by Helifix.
      b. Stitch Tie manufactured by CTP Anchors
      c. Heli-Tie manufactured by Simpson Strong-Tie.
   2. Screw anchors shall be stainless steel or galvanized, 3/8-inch in diameter unless noted otherwise. Use one of the following, or approved equal:
      a. Tapcon screw anchors manufactured by Tapcon.

E. Adhesive for Dowels, Anchors and Reinforcing Bars (Adhesive Anchors):
   1. Adhesive: Use one of the following or approved equal:
      a. HIT-RE 500 V3 epoxy adhesive supplied by Hilti, Inc.
      b. Pure 110+ epoxy adhesive supplied by Dewalt.
      c. Set-3G epoxy adhesive supplied by Simpson Strong-tie.

2.2 REINFORCEMENT ACCESSORIES

A. Bar Supports: CRSI Manual of Standard Practice; Steel wire, plastic, or precast concrete.
   1. Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcing in place. Support welded wire fabric with slab bolsters.
   2. For concrete surfaces exposed to view, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports where legs of wire bar supports contact forms.

B. Tie Wire: 16 gauge minimum:
   1. Corrosion resistant.

C. Bar Couplers shall be capable of developing 125% of yield strength of reinforcing being coupled as demonstrated through IBCO testing. Finish to match reinforcing finish. Use one of the following or approved equal:
   1. Bar-lock by Dayton Superior.

2.3 FABRICATION

A. Fabricate and detail steel reinforcement to shapes and dimensions shown on Drawings, in accordance with and within fabricating tolerances shown in CRSI Manual of Standard Practice.

B. Bends and hooks shall conform to standard hook dimensions in CRSI Manual of Standard Practice unless otherwise shown on Drawings.

2.4 WELDING

A. Welding electrodes shall 70 ksi minimum ultimate strength low-hydrogen filler metal.

B. Touch up Primer: Zinc-rich primer.

PART 3 EXECUTION

3.1 EXISTING STEEL PREPARATION (REINFORCING AND EMBEDMENTS)

A. Leave existing reinforcing in place unless otherwise directed by Engineer.

B. Notify Engineer of reinforcing bars that are incorrectly located or have less than 1/2 inch of concrete cover; are damaged or fractured; or have lost more than ten percent of their original cross-sectional area at any point. Engineer will determine remedial action.
   1. Measure reinforcing section loss in accordance with ACI 364.14T.

C. Prepare exposed steel surfaces to SSPC-SP 6/NACE No. 3 finish, commercial blast cleaning, including exposed reinforcement and steel embedments. Exercise care to prepare undersides of reinforcing bars.

D. Clean steel surfaces with dry, oil-free compressed-air jet.

E. Inspect prepared steel surfaces and clean remaining contaminants.

F. Apply **two** coats of corrosion-inhibiting material on exposed steel surfaces.
   1. Batch, mix, and apply material according to recommendations of material supplier.
      a. Minimum dry film thickness: 10 to 12 mils.
   2. Exercise care to coat difficult-to-reach surfaces, such as undersides of reinforcing bars.
   3. Minimize spillage on concrete surfaces. Remove materials that will act as bond breaker by chipping or other means.
   4. Inspect coated steel surfaces and apply additional coats to uncoated or thinly-coated areas.

3.2 INSTALLATION OF ADHESIVE ANCHORED ITEMS

A. Remove unsound concrete at reinforcing locations per Section 03 01 31.

B. Drill, clean and install adhesive and reinforcing in accordance with adhesive material manufacture's requirements, and those listed below. If a conflict exists between the requirements of these specifications and the adhesive manufacturer, notify Engineer and request direction.

C. Drill holes as required by adhesive manufacturer for application shown on drawings.

1. Locate existing reinforcement using non-destructive methods and position holes to avoid existing reinforcement.
2. Do not damage existing reinforcement.
3. Make hole diameter as recommended by adhesive manufacturer for application shown on drawings.

D. Clean holes as required by adhesive manufacturer for application shown on drawings.

E. Inject adhesive into hole based on adhesive manufacturers requirements for application shown on drawings. The method of installation is intended to achieve 100 percent filling of the annular space between the embedded item and the drilled hole.

F. Promptly remove excess adhesive.

3.3 PLACING REINFORCEMENT

A. General: Comply with CRSI Manual of Standard Practice and Drawings for placement of reinforcement.

B. Bar spacing, concrete cover, and bar splices shall conform to Drawings and CRSI Manual of Standard Practice, unless otherwise noted on drawings.

C. Accurately position, support, and secure reinforcement to prevent displacement during concrete placement. Locate and support reinforcement with bar supports to maintain specified minimum concrete cover. Wire dowels securely in place before depositing concrete.

D. Place reinforcement continuous between expansion and control joints. Stop reinforcement at expansion joints. Make half of reinforcement discontinuous at control joints unless noted otherwise.

E. Unless permitted by Engineer, do not bend reinforcing bars embedded in hardened concrete.

F. Bend tie wires and turn ends toward inside of concrete section, away from exposed concrete surfaces.

G. During concrete placement, protect reinforcement from damage from transporting or pumping equipment with runways or other means.

H. Before placing concrete, clean reinforcement of loose rust and mill scale, earth, ice, dust, and other foreign materials that would reduce bond to concrete.

I. Allow Engineer at least 24 hours to inspect condition and placement of reinforcing prior to completing formwork and ordering concrete.

J. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.

K. Do not weld reinforcement unless specifically approved by Engineer.

L. Coat new bars in accordance with the requirements for existing reinforcing.

3.4 WELDING OF REINFORCING

A. All welding shall comply with the requirements of AWS D1.4.

B. Welds shall be the size, type and length specified on the drawings. All welds shall be continuous unless otherwise specified.

C. Remove coatings and corrosion from existing surfaces to be welded by grinding or abrasive blasting. At a minimum the steel surfaces shall be prepared in accordance with SSPC-SP 3: Power tool cleaning.

D. After welding is complete, clean surfaces of reinforcing to remove slag and other contaminants to achieve a minimum surface consistent with SSPC-SP 3: Power tool cleaning.

3.5 QUALITY CONTROL

A. Reference the Special Inspection Schedule on sheet 2.0 for special inspection requirements for this section.

END OF SECTION

SECTION 07 92 00

JOINT SEALANTS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Surface preparation and installation of sealant in joints.

B. Payment to be based on linear feet of sealant installed.

1.2 QUALITY ASSURANCE

A. Installer Qualifications: Experienced firm that has successfully completed sealant work similar in material, design, and extent to that indicated for Project; that is approved, authorized, or licensed by sealant manufacturer to install sealant; and that is eligible to receive sealant manufacturer's warranty. Must have successful installations of specified materials in local area in use for minimum of five years.
   1. Employ foreman with minimum five years of experience as foreman on similar projects, to be on Site at all times during Work. Do not change foremen during the course of the Project except for reasons beyond the control of the Installer; inform Engineer in advance of any changes.

1.3 PROJECT CONDITIONS

A. Environmental Limitations: Install sealant when existing and forecast weather conditions permit sealant to be installed according to sealant manufacturer's written instructions and warranty requirements.
   1. Do not install sealant when ambient or substrate temperatures are below 40 degrees F or are expected to fall below 40 degrees F in next 12 hours.
   2. Do not proceed with installation during inclement weather except for temporary work necessary to protect building interior and installed materials. Remove temporary work and Work that becomes moisture damaged.

1.4 WARRANTY

A. Manufacturer's Warranty:
   1. Written warranty, signed by sealant manufacturer.
   2. Warranty Period: 5 years from date of Substantial Completion.

B. Installer's Warranty:
   1. Completed warranty form signed by sealant Installer. Warranty form included in section 00 65 36.
   2. Warranty Period: 5 years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 ELASTOMERIC JOINT SEALANTS

A. General:
   1. Comply with ASTM C920 and other requirements indicated.
   2. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing on similar projects, mockups and preconstruction testing for Project, and field experience.
   3. Select products based on mockups, preconstruction testing, and sealant manufacturer's previous testing and experience.
   4. Source Limitations: Obtain each type of joint sealant through one source from single manufacturer.
   5. Colors of Exposed Joint Sealants: Selected and approved in writing by Owner's Representative, from sealant manufacturer's full range.

B. Single-Component, Non-sag, Silicone Sealants:
   1. 790 Silicone Building Sealant manufactured by Dow Corning Corporation.
   2. 890 NST manufactured by Pecora Corporation.
   3. SCS2700 SilPruf LM manufactured by Momentive Performance Materials Inc.

2.2 AUXILIARY MATERIALS

A. General: Sealant-backer materials, primers, surface cleaners, masking tape, and other materials recommended by sealant manufacturer, that are non-staining and compatible with substrates; based on mockups, preconstruction testing, and sealant manufacturer's previous testing and experience.

PART 3 EXECUTION

3.1 SURFACE PREPARATION

A. Remove existing sealant and other foreign material from joints.

B. Repair damaged or deteriorated substrate surfaces according to sealant manufacturer's written instructions, as detailed and as approved by Engineer.

C. Clean joint substrates immediately before installing sealant, to comply with sealant manufacturer's written instructions based on mockups and preconstruction testing.
   1. Remove from substrate foreign material that could interfere with adhesion of sealant, including dirt, dust, existing sealant, oil, grease, and surface coatings.
   2. Provide dry substrate; prevent wetting of substrate prior to sealant installation.
   3. Clean porous substrates, such as concrete, masonry, stone, wood, by brushing, grinding, blast-cleaning, mechanical-abrading, or combination of methods to produce clean, sound substrate capable of developing optimum bond with sealant. Remove laitance and form-release agents from concrete. Remove loose particles remaining after cleaning operations by vacuuming or blowing out joints with oil-free, compressed air.
   4. Clean nonporous surfaces, such as metal, with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of sealant.

3.2 INSTALLATION OF SEALANT

A. General: Comply with these documents and sealant manufacturer's written installation instructions for products and applications indicated, based on mockups and preconstruction testing. Notify Engineer of discrepancies between these documents and manufacturers typical details, written recommendations or instructions. Engineer shall determine which apply.

B. Joint Priming: Prime all porous joint substrates. Prime additional substrates where recommended in writing by sealant manufacturer, based on mockups and preconstruction testing. Apply primer to comply with sealant manufacturer's written instructions.
   1. Confine primer to areas of sealant bond; do not allow spillage or migration onto adjoining surfaces.
   2. Limit priming to areas that will be covered with sealant in same day. Unless recommended otherwise by sealant manufacturer, reprime areas exposed for more than 24 hours.

C. Install sealant backer and position to produce cross-sectional shape and proper depth of installed sealant.
   1. Use properly-sized backer. Do not use multiple-backer units or braided-backer units to accommodate wide joints.
   2. Install backer with device that will provide consistent depth between substrate surface and outer surface of backer.
   3. Do not leave gaps between ends of sealant backers.
   4. Do not stretch, twist, puncture, or tear sealant backers.
   5. Remove wet backers and replace with dry materials.

D. Install bond-breaker tape at back of designated joints.

E. Install sealant immediately after installing backer material; to produce uniform, cross-sectional shape and depth; to directly contact and fully wet joint sides and backer material; and to completely fill recesses in joint configuration.
   1. Non-sag sealants
      a. Install sealant with the recess specified on the details.
      b. Immediately after sealant application and before skinning or curing begins, tool joint with slightly concave surface, compressing sealant into joint to form smooth, uniform sealant bead; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint. Do not use tooling agent.

3.3 QUALITY CONTROL

A. At completion of Project, observe installed sealant for damage or deterioration. If damage or deterioration occurs, neatly cut out and remove damaged or deteriorated sealant, prepare and prime surfaces, and install new sealant. Replace sealant immediately so new sealant is indistinguishable from original Work.

END OF SECTION

APPENDIX D

Construction Drawings
(Aeration Basin & Anerobic Digester repairs)

PROJECT NO. F0010-F001051

WJE PROJECT NO. 2019.3776.2

PERSIGO WASTE WATER TREATMENT PLANT

AERATION BASIN REPAIRS

Owner: City of Grand Junction
Grand Junction, Colorado

Owners Representative: Kirsten Armbruster
970.244.1421
kirstena@gjcity.org

Engineer-of-Record: Wiss, Janney, Elstner Associates, Inc. (WJE)
3609 South Wadsworth Boulevard, Suite 400
Lakewood, Colorado 80232

Engineer-of-Record Representative: Mr. Terry McGovern, PE
303.914.4300
tmcgovern@wje.com

Project Address: Persigo Wastewater Treatment Plant
2145 River Road
Grand Junction, Colorado 81505

AERATION BASIN REPAIR SCOPE

The repairs at the Aeration Basin include, but are not limited to, repair of deteriorated concrete at existing aluminum guardrail posts. Repairs will include removal of incipiently spalled concrete, as well as sound concrete, to prepare the surface to receive a concrete repair. The concrete repair will be anchored to adjacent sound concrete with new reinforcing.

SPECIAL CONSIDERATIONS

The Aeration Basin will remain in-service during the repairs. As such no access inside the basins will be allowed. All work must be performed from the existing platforms and walkways. All debris larger than a golf ball shall be contained and collected to prevent it from entering the fluid. The fluid level within the basins will fluctuate. Guardrail posts may be removed at the contractor's option. All removed posts shall be stored, protected and re-installed in-kind. Notify engineer of this choice and cast post with repair. If damage occurs, contractor shall provide and install new post at no cost to Owner.

DRAWING SUBMITTALS

None.

REQUIRED MOCKUP SUMMARY

A mockup is required to be performed at two Keyed Note 1-1 repair types and a single Keyed Note 1-2 repair type. One Keyed Note 1-1 repair will be at a relatively "severe" distress condition, and the second at a more "moderate" distress location.

GENERAL NOTES

A. Drawings and associated Specifications (referred to in general as the Construction Documents) apply only to the specific project identified in Titleblock, and shall not be used for any other purpose without specific written consent of Engineer, Engineer's sub-consultants, and Owner. Any unauthorized use of Engineer's work product shall be at user's sole risk and user shall indemnify Engineer against any liability or legal exposure related to the unauthorized use.

B. Drawings and Specifications are complementary, are to be taken as a whole, and should include sufficient information necessary for the execution and completion of the work in a manner consistent with the design intent. In the absence of explicit or reasonably inferable information on drawings or in specifications, promptly seek clarification from Engineer as a request for information.

C. Contractor is solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Work. Engineer has no such responsibilities beyond its own employees.

D. In an emergency affecting safety of persons or property, act to prevent or stop further damage, injury, or loss.

E. If a hazardous material or substance not addressed in the Construction Documents is encountered, immediately stop work in affected area and notify Owner and Engineer of the condition.

F. Temporarily relocate and restore existing equipment and appurtenances (whether or not shown on the drawings) that obstruct access to portions of the Work. Notify and coordinate with Owner prior to doing so.

G. Develop, implement, erect, and maintain safeguards to prevent damage, injury, or loss resulting from the work to (a) workers, occupants, passers-by, and other persons; (b) in-progress work, materials, and equipment under care, custody, and control of the contractor (whether on or off site); and (c) other property at the site or adjacent thereto not designated as part of the work for removal, relocation, or replacement. In the event of damage, injury, or loss, promptly notify Engineer and Owner and present proposed remedy. All damage to these elements must be repaired to the satisfaction of the Owner.

H. Promptly correct work rejected by Engineer or failing to conform to requirements of the Construction Documents. Associated costs (including additional testing or inspections, cost of uncovering and correction, and compensation for Engineer's services and expenses made necessary thereby) shall be the Contractor's responsibility.

I. Dimensions, quantities, and geometries provided for existing construction are based on original drawings and limited field documentation by Engineer. Field verify applicable information prior to submitting a bid, ordering materials, or otherwise committing resources to the Work. Provided dimensions take precedence over scaled dimensions. Dimensions of the new construction shall be adjusted as necessary to fit the existing conditions. The Engineer shall be notified in writing of any significant deviations from the dimensions or conditions shown on these drawings.

J. Drawings illustrate the completed work with elements in their final intended positions. Provide shoring, bracing, support, and sequence work as required to maintain the structural integrity of new or existing construction during the work.

K. Contractor is solely responsible for, and shall have sole control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the work. Engineer has no such responsibilities. Specific instruction that may be given in Construction Documents concerning construction means, methods, techniques, sequences, or procedures shall not relieve contractor of its responsibility for control and coordination.

L. Provide labor, materials, equipment, supervision, and coordination directly and incidentally necessary to perform the work in accordance with Construction Documents.

M. Promptly report to Engineer as a request for information known or suspected errors, inconsistencies, or omissions within or between Construction Documents, as well as known or suspected variance of the Construction Documents from existing conditions. Await direction from Engineer prior to proceeding with Work. For bidding purposes only, and unless otherwise directed by Engineer, the more stringent requirement or better quality shall take precedence as determined by Engineer.

N. Activities or duties of Engineer, or tests, inspections, or approvals required or performed by third parties shall not relieve Contractor of its obligation to perform the Work in accordance with Construction Documents.

O. Secure and pay for all permits, fees, licenses, and inspections by government agencies necessary for proper and compliant execution and completion of the work. Contractor shall be properly licensed to perform the specified Work.

P. Comply with and give notices required by laws, statutes, ordinances, codes, rules and regulations, and lawful orders of authorities having jurisdiction applicable to the Work.

Q. The Work will be performed at an occupied and operational facility. Coordinate construction activities and procedures with Owner to (a) maintain unobstructed existing means of egress from facility; (b) comply with facility's existing security procedures and requirements; and (c) provide not less than 48 hours advance notice to and gain approval from Owner prior to construction activities that will disrupt normal use of facility (including exceptional noise and/or vibrations, uncontrolled dust, obtrusive odors, or interruptions of utilities). Work not coordinated and approved in advance that disrupts the normal use of the facility may be stopped until proper coordination and approval is achieved. Contractor shall be responsible for any costs incurred as a consequence of stoppage.

R. Coordinate locations of on-site storage of materials and equipment with Owner so as to not unreasonably encumber facility or site. Do not allow construction materials, equipment, or procedures to overload or exceed the structural capacity of existing construction to remain, partially completed work, or completed work. Make inspections and/or perform analyses and tests necessary to verify that existing elements have adequate capacity to support proposed construction loads.

BUILDING CODES AND LOADS

A. Original Building Code Under Which the Structures were Constructed: Not Specified
   1. Original Construction Documents prepared by Henningson, Durham and Richardson (HDR), Inc. dated June 1984, are available for review from Owner's Representative.

B. Current Building Code and Basis for Repair Work: The 2018 International Existing Building Code (IEBC), as adopted by the Mesa County Building Inspection Department, shall serve as the Governing Building Code for the Work.

C. LIVE LOADS (per original design):
   1. Corridors and Walkways 100psf
   2. Stairs 100psf

INSPECTIONS AND OBSERVATIONS

A. Observations are performed by the Engineer, or licensed design professional.

B. Special Inspections shall be performed by a qualified Testing Agency or Special Inspector. Additional inspections may be performed by the local building authority.

C. All construction shall be subject to review (observation) by the Engineer before it is concealed from view. Coordinate expected review items with the Engineer prior to the start of construction. Provide reasonable notification to the Engineer to allow for such review as the Work proceeds, 48 hours minimum unless noted otherwise.

D. Contractor to pay for and provide access for all inspections and observations, regardless of the entity retaining such services.

MATERIAL PROPERTIES

A. Original Construction
   1. Concrete Compressive Strength (f'c) 5000 psi at 28 days using normal weight aggregate.
   2. No. 4 and larger reinforcing steel ASTM A615-76a Grade 40, No 3 stirrups and ties may be Grade 40.
   3. All original structural steel: A36.

A. Repair Construction
   1. Minimum concrete compressive Strength (f'c) 5000 psi at 28 days using normal weight aggregate.
   2. All reinforcing steel shall be A615 Grade 60 unless specifically noted otherwise.

Keyed Note Schedule

Callout	Plan Hatch/Symbol	Name	Unit	Total Estimated Quantity	Description	Reference Specification Section(s)	Reference Detail(s)
1-1	NONE	Corner Post Concrete Repair	EA	42	Remove and replace deteriorated (cracked, spalled or incipiently spalled) concrete at corner guardrail post. Do not damage post. Post shall be re-secured in new concrete repair material.	03 01 34 03 21 00	1/1.2 2/1.2 3/1.2
1-2	NONE	Center Post Concrete Repair	EA	21	Remove and replace deteriorated (cracked, spalled or incipiently spalled) concrete at center guardrail post. Do not damage post. Post shall be re-secured in new concrete repair material. Similar condition occurs at gate valves where concrete distress is occurring at post-installed anchors opposed to guardrail posts.	03 01 34 03 21 00	1/1.2 2/1.2 4/1.2

Special Inspection Schedule

Verification and Inspection	Frequency	Inspector	Reference Standard(s)
Concrete Construction, Including Concrete Repairs (IBC Table 1705.3)			
Inspection of Reinforcing Steel Preparation and Placement	Prior to Each Placement	Special Inspector	ACI 318: CH 20, 25.2, 25.3, 26.6.1-26.6.3
Verifying use of Approved Repair Material	With Fresh Material Testing	Special Inspector	ACI 318 CH 19, 26.4.3, 26.4.4
Fresh Cementitious Material Testing	Once Each Placement Shift	Special Inspector	ASTM C172, ASTM C31, AND ACI 318: 26.5, 26.12
Inspection for Installation and Maintenance of Specified Curing Temperature and Techniques	At each visit for other reasons	Special Inspector	ACI 318: 26.5.3-26.5.5
Mixing, Conveying, Depositing and Curing Concrete or Repair Materials	Once Each Placement Shift	Special Inspector	ACI 318: 26.5.2, 26.5.3

Notes:
1. Reference ACI 318 2014 Edition for Special Inspection Requirements.
2. Concrete inspections shall apply to all pre-packaged repair materials, site batched cementious repair materials and ready-mix concrete delivered to the site.
3. All special inspections shall be performed by a qualified Testing Agency or Special Inspector Retained by the Owner.
4. All reports shall be provided DIRECTLY to the Contractor, Owner and Engineer, for information only.

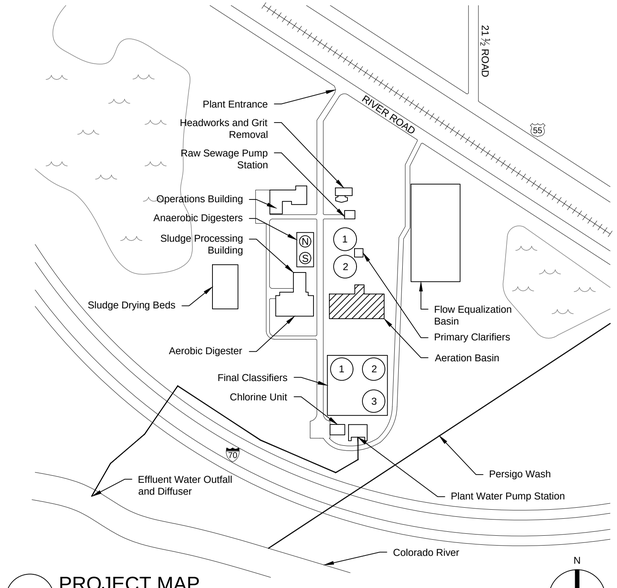
ABBREVIATIONS:

CIP	CAST-IN-PLACE
CL	CENTER LINE
CLR	CLEAR
CONC	CONCRETE
CONT	CONTINUOUS
EL	ELEVATION
(E)	EXISTING
FV	FIELD VERIFY
HORIZ	HORIZONTAL
MAX	MAXIMUM
MIN	MINIMUM
(N)	NEW
NTS	NOT TO SCALE
OC	ON CENTER
RE	REFERENCE
REQ'D	REQUIRED
SIM	SIMILAR
SF	SQUARE FEET
TEMP	TEMPORARY
TYP	TYPICAL
VERT	VERTICAL
w/	WITH

INDEX TO DRAWINGS:

SYMBOLS LEGEND:

- EXISTING DRAIN
- EXISTING PIPE PENETRATION
- SURFACE GRATE
- GATE VALVE
- 110V CONDUIT
- PIPE
- SUPPORT CABLE



1 PROJECT MAP
SCALE: NTS

DESCRIPTION	DATE
REVISION 1	
REVISION 2	
REVISION 3	
REVISION 4	

DRAWN BY BRS/CRS DATE 11/16/20
DESIGNED BY AGL/TMM DATE 11/16/20
CHECKED BY SWF/CJL DATE 11/16/20
APPROVED BY TMM DATE 11/16/20

SCALES:
AS NOTED
0 1/2" 1" 2"
THIS SHEET PLOTS FULL SIZE AT 22x34 (INCHES)

CITY OF Grand Junction COLORADO

WJE
Wiss, Janney, Elstner Associates, Inc.
Engineers, Architects, Materials Scientists
3609 S. Wadsworth Boulevard, Suite 400
Lakewood, Colorado 80235

AERATION BASIN
COVER SHEET

1.0

PROJECT NO. F0010-F001051

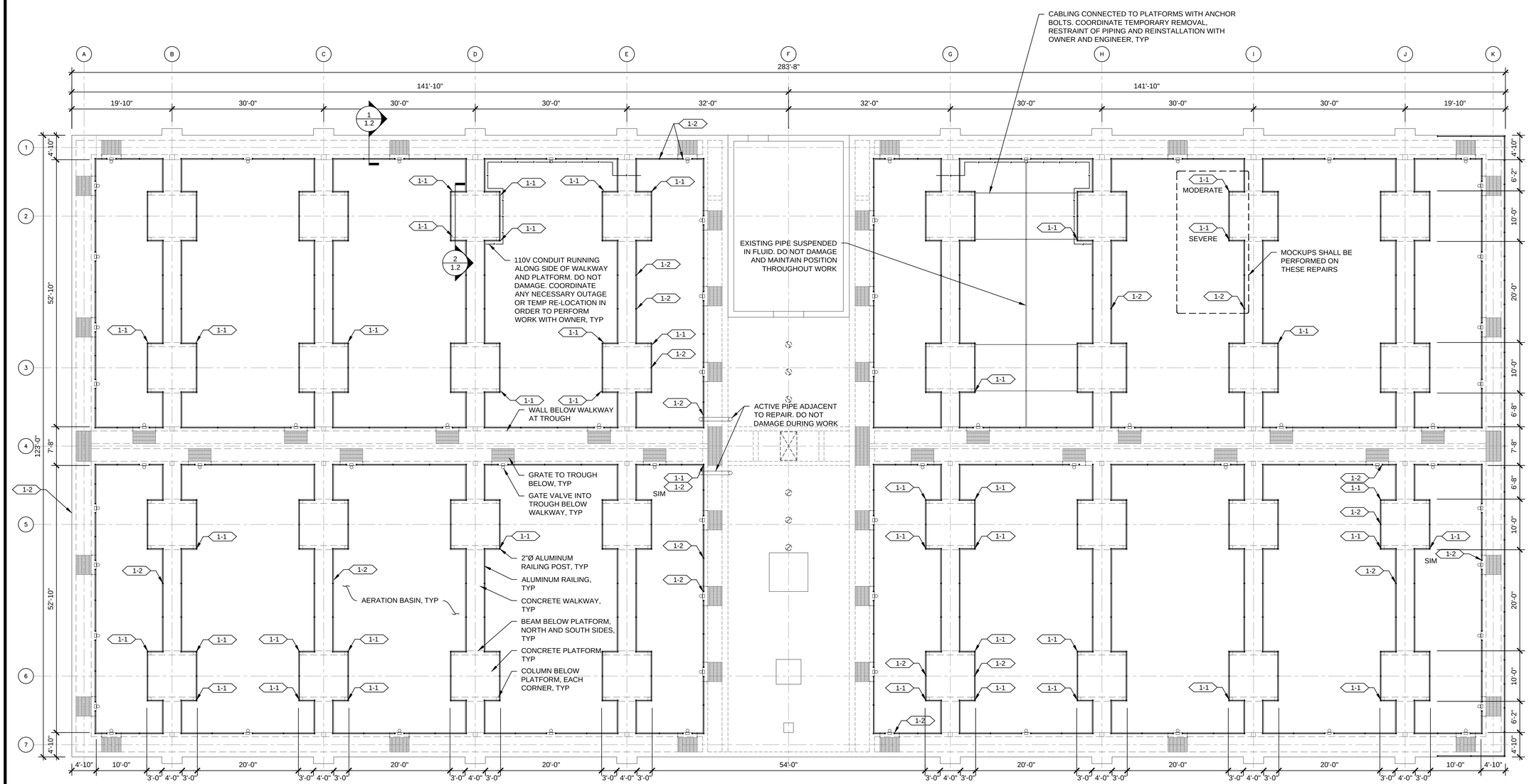
WJE PROJECT NO. 2019.3776.2

Keyed Note Summary			
Callout	**Plan Hatch/Symbol**	**Name**	**Total Estimated Quantity (This Sheet)**
1-1	None	Corner Post Concrete Repair	42 EA
1-2	None	Center Post Concrete Repair	21 EA
NOTE: SEE KEYED NOTE SCHEDULE ON 1.0.			

KEYED NOTE LEGEND

KEYNOTE CALLOUT: RE: KEYED NOTE SCHEDULE ON SHEET 1.0 FOR ALL SPECIFIC REPAIR INFORMATION

#-# ARROW DESIGNATES APPROXIMATE LOCATION OR AREA OF REPAIR TO BE PERFORMED



1 Aeration Basin Walkway Plan

SCALE: 3/32" = 1'-0"

N

PLAN NOTES:

1. ALL WALKWAYS AND PLATFORMS CONSIST OF 10 INCH THICK CONCRETE SLAB. REFERENCE ORIGINAL DRAWING SHEET IV-16 FOR ADDITIONAL INFORMATION, INCLUDING REINFORCING.

DESCRIPTION	DATE
REVISION 1	
REVISION 2	
REVISION 3	
REVISION 4	

DRAWN BY BRS/CRS DATE 11/16/20

DESIGNED BY AGL/TMM DATE 11/16/20

CHECKED BY SWF/CJL DATE 11/16/20

APPROVED BY TMM DATE 11/16/20

SCALES: AS NOTED

0 1/2" 1" 2"

THIS SHEET PLOTS FULL SIZE AT 22x34 (INCHES)

CITY OF Grand Junction COLORADO

WJE

Wiss, Janney, Elstner Associates, Inc.
Engineers, Architects, Materials Scientists
3609 S. Wadsworth Boulevard, Suite 400
Lakewood, Colorado 80235

AERATION BASIN WALKWAY PLAN

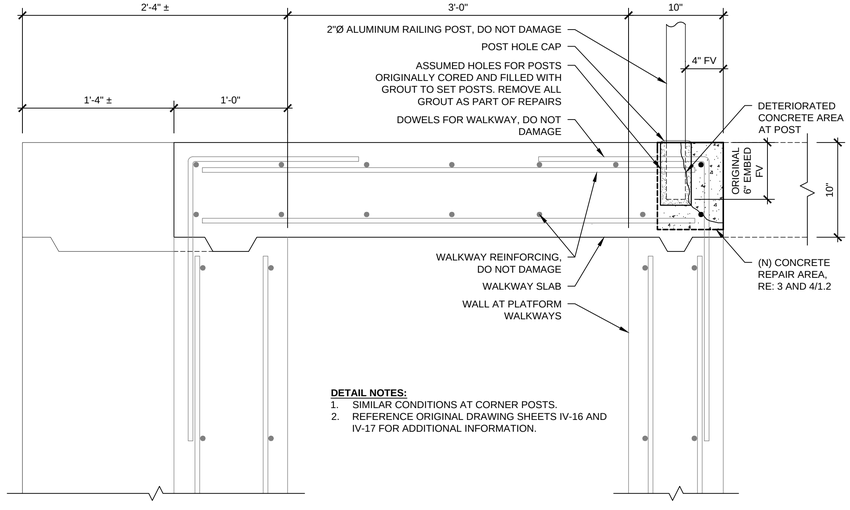
1.1

PROJECT NO. F0010-F001051
WJE PROJECT NO. 2019.3776.2

TYPICAL CONCRETE REPAIR NOTES:

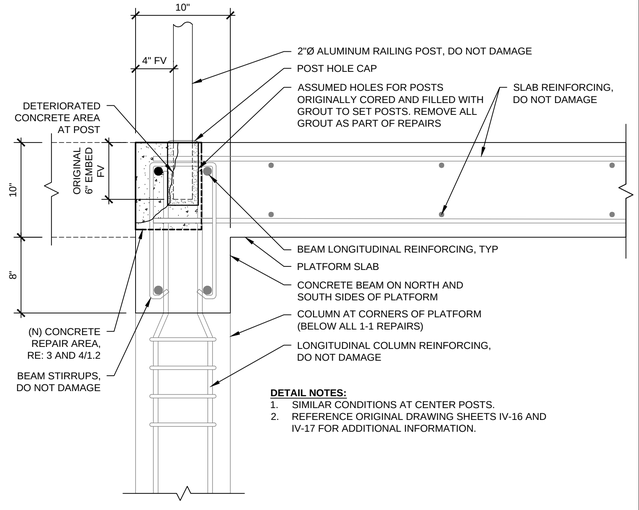
THESE NOTES SHALL APPLY TO ALL CONCRETE REPAIR WORK UNLESS NOTED OTHERWISE ON SPECIFIC DETAILS. THESE NOTES SERVE TO SUPPLEMENT THE SPECIFICATION SECTIONS 03 01 34 AND 03 21 00. REFERENCE THE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

1. SOUND AND MARK ALL REPAIR AREAS ON CONCRETE SURFACE. NOTIFY ENGINEER AND OWNER OF ANY ADDITIONAL DISTRESSED LOCATIONS. AWAIT APPROVAL PRIOR TO PROCEEDING WITH CONCRETE REMOVAL AT ADDITIONAL LOCATIONS.
2. NOTIFY ENGINEER OF LOCATIONS WHERE EXTENT OF DETERIORATION OR SUSPECT EXISTING CONSTRUCTION INDICATES THAT SHORING MAY BE NECESSARY.
3. REMOVE ALL LOOSE CONCRETE FROM THE DETERIORATED AREA.
4. CONCRETE REMOVAL AREAS:
   - 4.A. MAKE A SAWCUT AROUND THE ENTIRE PERIMETER OF THE REPAIR AREA. SHAPE SHALL BE RECTANGULAR IN PLAN AND ELEVATION, AND SHALL AVOID RE-ENTRANT CORNERS.
   - 4.B. EXTEND REMOVAL AND REPLACEMENT AT LEAST 1 INCHES BEYOND EDGE OF UNSOUND CONCRETE.
   - 4.C. THE CUT SHALL BE MADE TO A DEPTH OF 3/4 INCHES, IF POSSIBLE. IF THERE ARE AREAS AROUND THE PERIMETER OF THE DETERIORATED AREAS WHERE STEEL REINFORCING IS CLOSER TO THE SURFACE THAN NOTED SAWCUT DEPTH, THEN NO SAW CUT SHALL BE MADE IN THOSE AREAS. INSTEAD OF A SAWCUT, THE PERIMETER OF THE AREA SHALL BE CAREFULLY CHIPPED AWAY WITH A LIGHT DUTY CHIPPING HAMMER TO ACHIEVE AS CLOSE TO A SMOOTH UNIFORM EDGE AS POSSIBLE (I.E. SIMULATE A SAWCUT PERIMETER).
5. CONCRETE REMOVAL PROCEDURE:
   - 5.A. REMOVE UNSOUND AND CONCRETE AND, AS NECESSARY, SOUND CONCRETE USING EITHER 15-LB CHIPPING HAMMER (DETAIL WORK ADJACENT TO AND BENEATH REINFORCING STEEL AND POSTS) OR 30-LB CHIPPING HAMMER (REMOVAL OF CONCRETE AT REPAIR AREAS).
   - 5.B. MINIMUM REMOVAL DEPTH AS SHOWN ON DRAWINGS. AVOID ABRUPT CHANGES IN DEPTH OF REMOVAL.
   - 5.C. CLEARANCE AROUND REINFORCING BARS OF AT LEAST 3/4 INCHES.
   - 5.D. TAKE CARE NOT TO EXCESSIVELY VIBRATE THE EXPOSED REINFORCING WITH THE CHIPPING HAMMER, IN ORDER TO AVOID FRACTURING ANY OF THE CONCRETE THAT IS BONDED TO THE REINFORCEMENT OUTSIDE THE PERIMETER OF THE REPAIR.
   - 5.E. PROVIDE CONCRETE SURFACE PROFILE AS SPECIFIED OR INDICATED ON THE DRAWINGS. SURFACE PROFILES SHALL BE AS DEFINED ICRI 310.2R, AND JUDGED BASED ON COMPARISON TO PROFILE CHIPS SUPPLIED BY ICRI. UNLESS NOTED OTHERWISE, CSP 7, MIN SHALL BE PROVIDED.
   - 5.F. LIMIT CHIPPING HAMMER SIZE AND IMPACT ANGLE TO MINIMIZE DAMAGE TO SOUND CONCRETE. IMPACT ANGLE SHALL BE NO MORE THAN 60° TO SURFACE.
6. REMOVE MICROFRACTURED OR BRUISED CONCRETE BY ABRASIVE BLASTING THE EXPOSED CONCRETE SURFACES WITHIN THE AREA OF THE REMOVAL. BE SURE TO ABRASIVE BLAST THE VERTICAL SAWCUT EDGES AROUND THE PERIMETER.
7. PER SSPC SP6, COMMERCIAL BLAST CLEAN THE EXPOSED REINFORCING STEEL BY ABRASIVE BLASTING TO REMOVE ALL RUST SCALE FROM ALL STEEL REINFORCING BARS AND EMBEDDED ITEMS. EXERCISE CARE TO PREPARE UNDERSIDES OF REINFORCING BARS.
   - 7.A. NOTIFY ENGINEER OF REINFORCING BARS THAT HAVE LESS THAN 1/2 INCH OF CONCRETE COVER.
8. CAREFULLY INSPECT THE EXPOSED STEEL REINFORCING BARS FOR LOSS OF SECTION DUE TO CORROSION. THE INSPECTION SHOULD TAKE PLACE AFTER ABRASIVE BLASTING OF THE STEEL REINFORCING. ANY STEEL REINFORCING WITH MORE THAN 10 PERCENT LOSS OF SECTION SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR POSSIBLE FURTHER REMEDIAL ACTION.
9. INSTALL SUPPLEMENTAL MECHANICAL ANCHORS AND/OR REINFORCING BAR AT ANY REPAIR AREA (OR PORTION OF THE REPAIR AREA) IN WHICH THE EXISTING OR NEW REINFORCING IS NOT COMPLETELY ENCAPSULATED WITHIN THE NEW REPAIR MATERIAL, AS FOLLOWS.
   - 9.A. INSTALL HELICAL ANCHORS PER MANUFACTURER'S INSTRUCTIONS
   - 9.B. ANCHORS SHALL BE INSTALLED AT THE FOLLOWING MINIMUM FREQUENCIES, WHICHEVER IS GREATER:
     - 9.B.1. TWO (2) ANCHORS PER ONE (1) SQUARE FOOT OF REPAIR AREAS, UNIFORMLY SPACED.
     - 9.B.2. TWO (2) ANCHORS PER REPAIR AREA, UNIFORMLY SPACED
   - 9.C. ANCHORS SHALL BE INSTALLED TO MANUFACTURER SPECIFIED MINIMUM EMBEDMENT, OR 1 1/2-INCHES, WHICHEVER IS GREATER.
   - 9.D. AFTER BEING INSTALLED, THE ANCHORS SHALL BE :
     - 9.D.1. BENT INTO AN "L" SHAPE SUCH THAT 1/2 INCH CLEAR IS PROVIDED BETWEEN THE ANCHOR AND THE EXISTING CONCRETE MATERIAL.
     - 9.D.2. THE TAIL OF THE "L" SHALL BE A MINIMUM OF 1-INCH LONG.
     - 9.D.3. CLEAR COVER FROM THE OUTER EDGE OF THE ANCHOR TO THE FACE OF THE REPAIR SHALL BE 1-INCH MINIMUM.
10. IMMEDIATELY CLEAN THE ENTIRE AREA OF THE REPAIR WITH HIGH PRESSURE, OIL FREE, COMPRESSED AIR.
11. IMMEDIATELY COAT ALL EXPOSED STEEL REINFORCING WITH TWO COATS OF CORROSION - INHIBITING COATING OR EPOXY. TAKE CARE NOT TO GET ANY OF THE COATING ON THE SURROUNDING CONCRETE SURFACES.
12. AS SOON AS THE COATING HAS CURED (AS RECOMMENDED BY MANUFACTURER), FORM AND PLACE THE CONCRETE REPAIR MATERIAL TO RESTORE THE PROFILE OF THE EXISTING SECTION. ENSURE THAT REPAIR AREAS ARE CLEAN AND PROPERLY CONDITIONED PRIOR TO STARTING PLACEMENT. IF SPECIFIED BY THE ENGINEER, BUILD-OUT THE FORM WORK TO ACHIEVE AT LEAST 1 INCH OF COVER OVER THE EXPOSED REINFORCING STEEL.
13. PLACE MATERIAL TO ACHIEVE PROPER CONSOLIDATION.
14. WET CURE FOR 7 DAYS OR UNTIL MATERIAL HAS ACHIEVED 75 PERCENT OF IT'S REQUIRED 28-DAY COMPRESSIVE STRENGTH; OR LONGER IF SPECIFIED BY MANUFACTURER FOR PROPRIETY MATERIALS.
15. PROTECT REPLACEMENT MATERIAL FROM WEATHER AND MAINTAIN ABOVE 55° F FOR A MINIMUM OF 7 DAYS.
16. REMOVE THE FORMS AFTER CONCRETE HAS REACHED 75 PERCENT OF REQUIRED STRENGTH. CAREFULLY INSPECT THE REPAIR FOR IMPROPER CONSOLIDATION, CRACKING AROUND THE PERIMETER, OR DEBONDING OF NEW CONCRETE. IF THESE CONDITIONS EXIST, NOTIFY THE ENGINEER FOR POSSIBLE REMEDIAL ACTION OR REPLACEMENT OF THE REPAIR.
17. SOUND REPAIR AREAS TO CONFIRM INTEGRITY. DELAMINATED AND/OR DISTRESSED AREAS MUST BE REMOVED AND REPAIRED.
18. IF REQUIRED, REMOVE SHORING WHEN CONCRETE HAS REACHED MINIMUM REQUIRED STRENGTH.



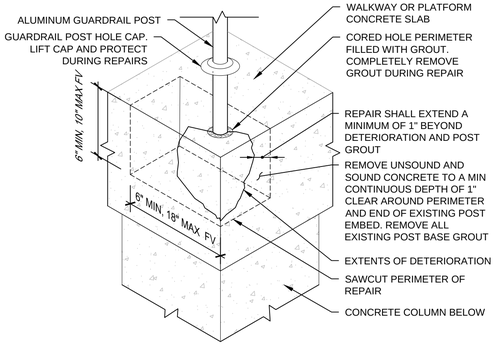
DETAIL NOTES:
1. SIMILAR CONDITIONS AT CORNER POSTS.
2. REFERENCE ORIGINAL DRAWING SHEETS IV-16 AND IV-17 FOR ADDITIONAL INFORMATION.

1 Typical Walkway Section
SCALE: 1-1/2" = 1'-0"

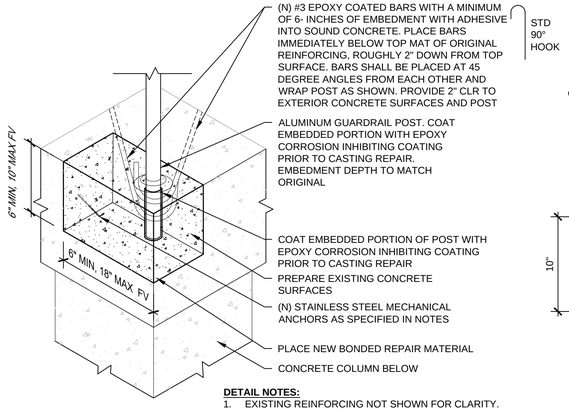


DETAIL NOTES:
1. SIMILAR CONDITIONS AT CENTER POSTS.
2. REFERENCE ORIGINAL DRAWING SHEETS IV-16 AND IV-17 FOR ADDITIONAL INFORMATION.

2 Typical Platform Section
SCALE: 1-1/2" = 1'-0"

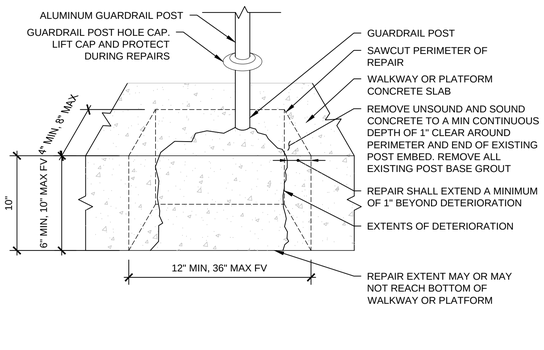


3A - DEMO

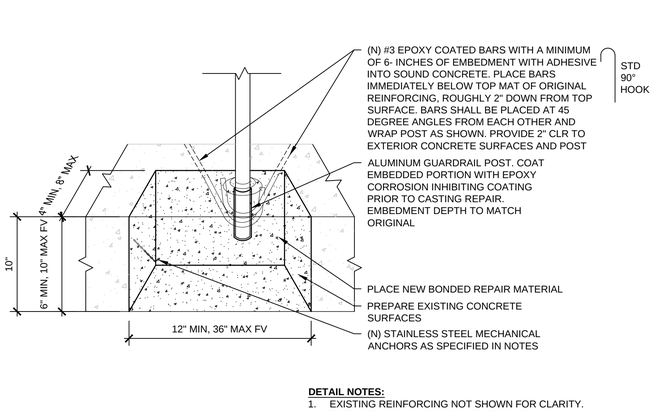


DETAIL NOTES:
1. EXISTING REINFORCING NOT SHOWN FOR CLARITY. PREPARE AND COAT EXPOSED REINFORCING
2. REFERENCE ORIGINAL DRAWING IV-16 AND IV-17 FOR ADDITIONAL INFORMATION.
3. POSTS ARE TYPICALLY SETBACK 4-INCHES FROM EACH FACE.

3B - REBUILD



4A - DEMO



DETAIL NOTES:
1. EXISTING REINFORCING NOT SHOWN FOR CLARITY. PREPARE AND COAT EXPOSED REINFORCING
2. REFERENCE ORIGINAL DRAWING IV-16 AND IV-17 FOR ADDITIONAL INFORMATION.
3. POSTS ARE TYPICALLY SETBACK 4-INCHES FROM EACH FACE.

4B - REBUILD

3 Concrete Repair at Corner Post 1-1
SCALE: 1-1/2" = 1'-0"

4 Concrete Repair at Center Post 1-2
SCALE: 1-1/2" = 1'-0"

DESCRIPTION	DATE
REVISION 1	
REVISION 2	
REVISION 3	
REVISION 4	

DRAWN BY BRS/CRS DATE 11/16/20
DESIGNED BY AGL/TMM DATE 11/16/20
CHECKED BY SWF/CJL DATE 11/16/20
APPROVED BY TMM DATE 11/16/20

SCALES: AS NOTED
0 1/2" 1" 2"
THIS SHEET PLOTS FULL SIZE AT 22x34 (INCHES)

CITY OF Grand Junction COLORADO

WJE
Wiss, Janney, Elstner Associates, Inc.
Engineers, Architects, Materials Scientists
3609 S. Wadsworth Boulevard, Suite 400
Lakewood, Colorado 80235

AERATION BASIN REPAIR DETAILS

1.2

PROJECT NO. F0010-F001051
WJE PROJECT NO. 2019.3776.2

PERSIGO WASTE WATER TREATMENT PLANT

AEROBIC DIGESTER REPAIRS

Owner: City of Grand Junction
Grand Junction, Colorado

Owners Representative: Kirsten Armbruster
970.244.1421
kirstena@gjcity.org

Engineer-of-Record: Wiss, Janney, Elstner Associates, Inc. (WJE)
3609 South Wadsworth Boulevard, Suite 400
Lakewood, Colorado 80232

Engineer-of-Record Representative: Mr. Terry McGovern, PE
303.914.4300
tmcgovern@wje.com

Project Address: Persigo Wastewater Treatment Plant
2145 River Road
Grand Junction, Colorado 81505

AEROBIC DIGESTER REPAIR SCOPE

The repairs at the Aerobic Digester include, but are not limited to, repair of deteriorated concrete soffit and installation of supplemental reinforcing steel at two existing stairwells. Shoring may be required to be installed as part of the repairs. Repairs will include removal of incipiently spalled concrete, as well as sound concrete, to prepare the surface to receive concrete repair. The concrete repair will be anchored to adjacent sound concrete with new reinforcing.

SPECIAL CONSIDERATIONS

The Aerobic Digester will remain in-service during the repairs. If closure of the stairs is required to perform the concrete or sealant repairs, Contractor shall coordinate with and obtain Owner's approval at least 7 days in advance.

DRAWING SUBMITTALS

None.

REQUIRED MOCKUP SUMMARY

A mockup will be required for Keyed 2-1. Pull testing to be performed per the Quality Control Testing summary shown on this page.

GENERAL NOTES

A. Drawings and associated Specifications (referred to in general as the Construction Documents) apply only to the specific project identified in Titleblock, and shall not be used for any other purpose without specific written consent of Engineer, Engineer's sub-consultants, and Owner. Any unauthorized use of Engineer's work product shall be at user's sole risk and user shall indemnify Engineer against any liability or legal exposure related to the unauthorized use.
B. Drawings and Specifications are complementary, are to be taken as a whole, and should include sufficient information necessary for the execution and completion of the work in a manner consistent with the design intent. In the absence of explicit or reasonably inferable information on drawings or in specifications, promptly seek clarification from Engineer as a request for information.
C. Contractor is solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Work. Engineer has no such responsibilities beyond its own employees.
D. In an emergency affecting safety of persons or property, act to prevent or stop further damage, injury, or loss.
E. If a hazardous material or substance not addressed in the Construction Documents is encountered, immediately stop work in affected area and notify Owner and Engineer of the condition.
F. Temporarily relocate and restore existing equipment and appurtenances (whether or not shown on the drawings) that obstruct access to portions of the Work. Notify and coordinate with Owner prior to doing so.
G. Develop, implement, erect, and maintain safeguards to prevent damage, injury, or loss resulting from the work to (a) workers, occupants, passers-by, and other persons; (b) in-progress work, materials, and equipment under care, custody, and control of the contractor (whether on or off site); and (c) other property at the site or adjacent thereto not designated as part of the work for removal, relocation, or replacement. In the event of damage, injury, or loss, promptly notify Engineer and Owner and present proposed remedy. All damage to these elements must be repaired to the satisfaction of the Owner.
H. Promptly correct work rejected by Engineer or failing to conform to requirements of the Construction Documents. Associated costs (including additional testing or inspections, cost of uncovering and correction, and compensation for Engineer's services and expenses made necessary thereby) shall be the Contractor's responsibility.
I. Dimensions, quantities, and geometries provided for existing construction are based on original drawings and limited field documentation by Engineer. Field verify applicable information prior to submitting a bid, ordering materials, or otherwise committing resources to the Work. Provided dimensions take precedence over scaled dimensions. Dimensions of the new construction shall be adjusted as necessary to fit the existing conditions. The Engineer shall be notified in writing of any significant deviations from the dimensions or conditions shown on these drawings.
J. Drawings illustrate the completed work with elements in their final intended positions. Provide shoring, bracing, support, and sequence work as required to maintain the structural integrity of new or existing construction during the work.
K. Contractor is solely responsible for, and shall have sole control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the work. Engineer has no such responsibilities. Specific instruction that may be given in Construction Documents concerning construction means, methods, techniques, sequences, or procedures shall not relieve contractor of its responsibility for control and coordination.
L. Provide labor, materials, equipment, supervision, and coordination directly and incidentally necessary to perform the work in accordance with Construction Documents.
M. Promptly report to Engineer as a request for information known or suspected errors, inconsistencies, or omissions within or between Construction Documents, as well as known or suspected variance of the Construction Documents from existing conditions. Await direction from Engineer prior to proceeding with Work. For bidding purposes only, and unless otherwise directed by Engineer, the more stringent requirement or better quality shall take precedence as determined by Engineer.
N. Activities or duties of Engineer, or tests, inspections, or approvals required or performed by third parties shall not relieve Contractor of its obligation to perform the Work in accordance with Construction Documents.
O. Secure and pay for all permits, fees, licenses, and inspections by government agencies necessary for proper and compliant execution and completion of the work. Contractor shall be properly licensed to perform the specified Work.
P. Comply with and give notices required by laws, statutes, ordinances, codes, rules and regulations, and lawful orders of authorities having jurisdiction applicable to the Work.
Q. The Work will be performed at an occupied and operational facility. Coordinate construction activities and procedures with Owner to (a) maintain unobstructed existing means of egress from facility; (b) comply with facility's existing security procedures and requirements; and (c) provide not less than 48 hours advance notice to and gain approval from Owner prior to construction activities that will disrupt normal use of facility (including exceptional noise and/or vibrations, uncontrolled dust, obtrusive odors, or interruptions of utilities). Work not coordinated and approved in advance that disrupts the normal use of the facility may be stopped until proper coordination and approval is achieved. Contractor shall be responsible for any costs incurred as a consequence of stoppage.
R. Coordinate locations of on-site storage of materials and equipment with Owner so as to not unreasonably encumber facility or site. Do not allow construction materials, equipment, or procedures to overload or exceed the structural capacity of existing construction to remain, partially completed work, or completed work. Make inspections and/or perform analyses and tests necessary to verify that existing elements have adequate capacity to support proposed construction loads.

BUILDING CODES AND LOADS

A. Original Building Code Under Which the Structures were Constructed: Not Specified
   1. Original Construction Documents prepared by Henningson, Durham and Richardson (HDR), Inc. dated June 1984, are available for review from Owner's Representative.
B. Current Building Code and Basis for Repair Work: The 2018 International Existing Building Code (IEBC), as adopted by the Mesa County Building Inspection Department, shall serve as the Governing Building Code for the Work.
C. LIVE LOADS (per original design):
   1. Corridors and Walkways 100psf
   2. Stairs 100psf

INSPECTIONS AND OBSERVATIONS

A. Observations are performed by the Engineer, or licensed design professional.
B. Special Inspections shall be performed by a qualified Testing Agency or Special Inspector. Additional inspections may be performed by the local building authority.
C. All construction shall be subject to review (observation) by the Engineer before it is concealed from view. Coordinate expected review items with the Engineer prior to the start of construction. Provide reasonable notification to the Engineer to allow for such review as the Work proceeds, 48 hours minimum unless noted otherwise.
D. Contractor to pay for and provide access for all inspections and observations, regardless of the entity retaining such services.

MATERIAL PROPERTIES

A. Original Construction
   1. Concrete Compressive Strength (f'c) 5000 psi at 28 days using normal weight aggregate.
   2. No. 4 and larger reinforcing steel ASTM A615-76a Grade 40, No 3 stirrups and ties may be Grade 40.
   3. All original structural steel: A36.
A. Repair Construction
   1. Minimum concrete compressive Strength (f'c) 5000 psi at 28 days using normal weight aggregate.
   2. All reinforcing steel shall be A615 Grade 60 unless specifically noted otherwise.

SHORING

A. Reference Section 03 01 01 for additional requirements.
B. Shoring shall be designed by a Professional Engineer licensed in Colorado.
C. Design Loads (Each Location, Ultimate)
   1. Dead Load: Self Weight
   2. Construction Live Load: 20psf

Keyed Note Schedule

Callout	Plan Hatch/Symbol	Name	Unit	Total Estimated Quantity	Description	Reference Specification Section(s)	Reference Detail(s)
2-1		Partial Depth Concrete Repair at Soffit	SF	98	Remove and replace deteriorated and/or delaminated concrete on concrete soffit include discrete galvanic anodes at perimeter of repair. Number adjacent to keyed note indicates the estimated area of replacement. Assume 4 inch repair depth. Prior to proceeding with concrete repairs, sound surface of concrete and notify Engineer and Owner of revised repair quantity prior to proceeding with removal if it exceeds 10 percent more than specified.	03 01 32 03 01 34 03 21 00	1/2.3
2-2	None	New Sealant Joint	LF	47	Remove existing sealant and backing materials and install new joint sealant at ¾" maximum width. Number adjacent to keyed note indicates the estimated linear feet of repair.	07 92 00	2/2.3
2-3	None	Temporary Shoring	Lump Sum	N/A	Install temporary shoring at locations indicated on the drawings. Shoring is only required under specific conditions which may be experienced during completion of the repairs. Shoring shall be designed by a licensed engineer in the state of Colorado	03 01 01	3/2.2

Special Inspection Schedule

Verification and Inspection	Frequency	Inspector	Reference Standard(s)
Concrete Construction, Including Concrete Repairs (IBC Table 1705.3)			
Inspection of Reinforcing Steel Preparation and Placement	Prior to Each Placement	Special Inspector	ACI 318: CH 20, 25.2, 25.3, 26.6.1-26.6.3
Verifying use of Required Design Mix or Approved Repair Material	With Fresh Material Testing	Special Inspector	ACI 318 CH 19, 26.4.3, 26.4.4
Fresh Cementitious Material Testing	Once Each Placement Shift	Special Inspector	ASTM C172, ASTM C31, AND ACI 318: 26.5, 26.12
Inspection for Installation and Maintenance of Specified Curing Temperature and Techniques	At each visit for other reasons	Special Inspector	ACI 318: 26.5.3-26.5.5
Compression Strength Testing	Once Each Placement Shift	Special Inspector	ACI 318: 26.12
Mixing, Conveying, Depositing and Curing Concrete or Repair Materials	Once Each Placement Shift	Special Inspector	ACI 318: 26.5.2, 26.5.3
Verify weldability of reinforcing bars other than ASTM A706	Prior to start of welding	Special Inspector	AWS D1.4 AND ACI 318: 26.6.4
Inspect single-pass fillet welds, maximum 5/16"	Prior to Each Placement	Special Inspector	AWS D1.4 AND ACI 318: 26.6.4
Inspect all other welds	Prior to Each Placement	Special Inspector	AWS D1.4 AND ACI 318: 26.6.4

Notes:
1. Reference ACI 318 2014 Edition for Special Inspection Requirements.
2. Concrete inspections shall apply to all pre-packaged repair materials, site batched cementious repair materials and ready-mix concrete delivered to the site.
3. All special inspections shall be performed by a qualified Testing Agency or Special Inspector Retained by the Owner.
4. All reports shall be provided DIRECTLY to the Owner, Contractor, and Engineer, for information only.

Quality Control Testing Summary

Item or Test	Keyed Note(s)	Frequency	Reference Specification Section(s)	Reference Standard(s)
Cementitious Material Replacment Bond Strength Testing (Puck Pull-off)	2-1	At Mockup	03 01 34	ASTM C1583

Notes:
1. This testing shall be performed by the Testing Agency or Engineer, with assistance from the Contractor as noted in the Specification Sections.

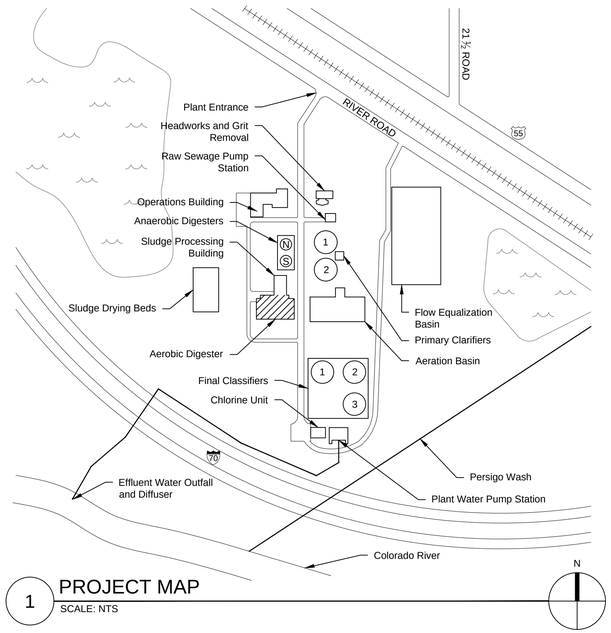
ABBREVIATIONS:

CLR	CLEAR
(E)	EXISTING
FV	FIELD VERIFY
LF	LINEAL FEET
MAX	MAXIMUM
MIN	MINIMUM
(N)	NEW
RE	REFERENCE
SOG	SLAB-ON-GROUND
SIM	SIMILAR
SF	SQUARE FEET
TYP	TYPICAL
w/	WITH

INDEX TO DRAWINGS:

SYMBOLS LEGEND:

EXISTING FULL HEIGHT WALL



1 PROJECT MAP
SCALE: NTS

REVISION	DESCRIPTION	DATE
1		
2		
3		
4		

DRAWN BY BRS/CRS DATE 11/16/20
DESIGNED BY AGL/TMM DATE 11/16/20
CHECKED BY SWF/CFL DATE 11/16/20
APPROVED BY TMM DATE 11/16/20

SCALES: AS NOTED
0 1/2" 1" 2"
THIS SHEET PLOTS FULL SIZE AT 22x34 (INCHES)

CITY OF Grand Junction COLORADO

WJE
Wiss, Janney, Elstner Associates, Inc.
Engineers, Architects, Materials Scientists
3609 S. Wadsworth Boulevard, Suite 400
Lakewood, Colorado 80235

AEROBIC DIGESTER COVER SHEET

2.0

PROJECT NO. F0010-F001051

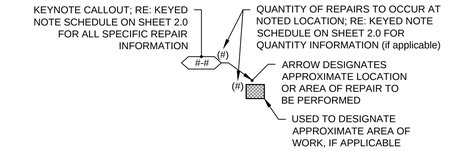
WJE PROJECT NO. 2019.3776.2

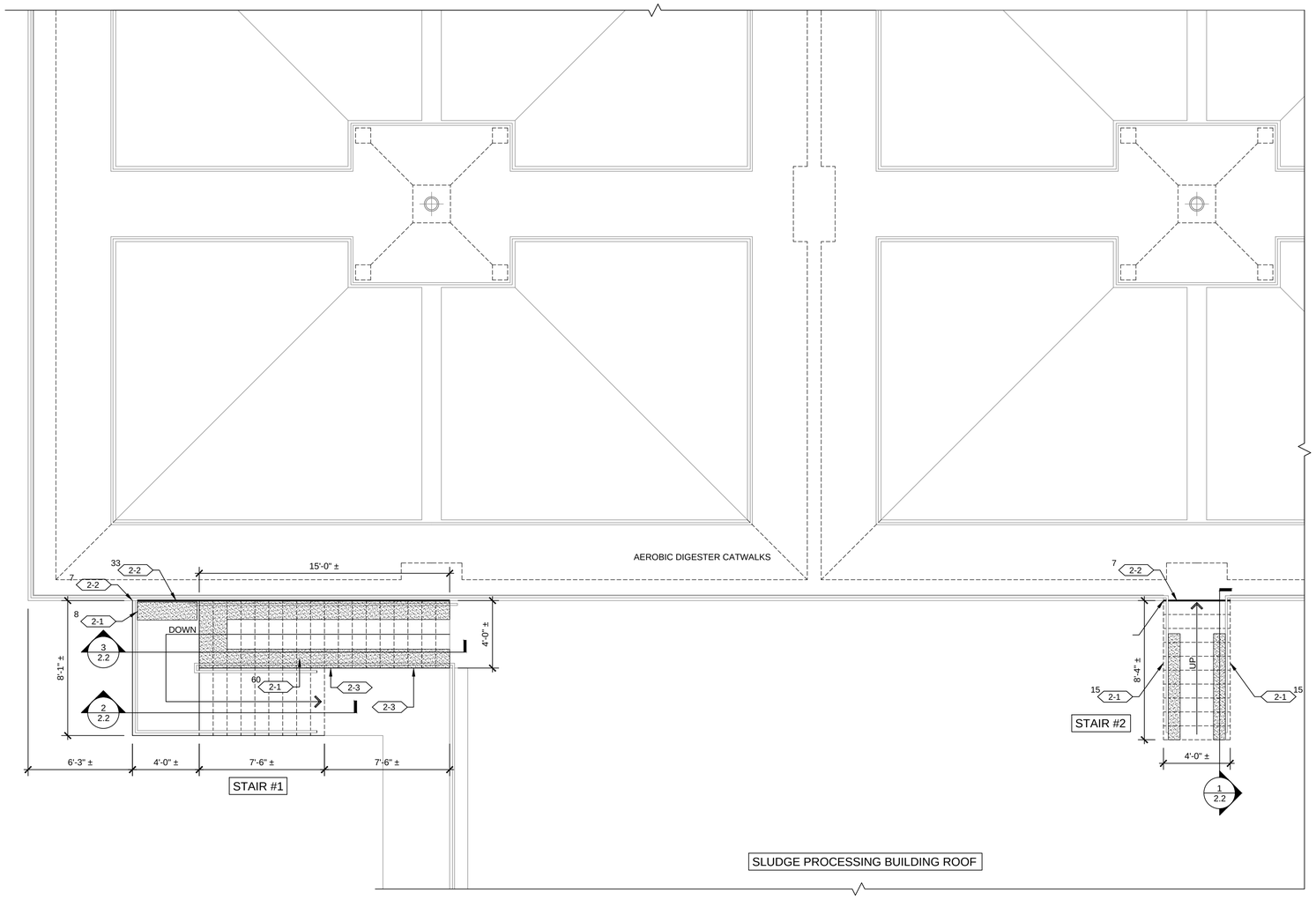
Keyed Note Summary

Callout	Plan Hatch/Symbol	Name	Total Estimated Quantity (This Sheet)
2-1		Partial Depth Concrete Repair at Soffit	98
2-2	None	New Sealant Joint	47
2-3	None	Temporary Shoring	Lump Sum

NOTE: SEE KEYED NOTE SCHEDULE ON 2.0.

KEYED NOTE LEGEND





1 Aerobic Digester Stair Soffit Plan

SCALE: 1/4" = 1'-0"

PLAN NOTES:

1. REFERENCE ORIGINAL DRAWING IV-35 AND IV-36 FOR ADDITIONAL INFORMATION.

N

DESCRIPTION	DATE
REVISION 1	
REVISION 2	
REVISION 3	
REVISION 4	

DRAWN BY BRS/CRS DATE 11/16/20

DESIGNED BY AGL/TMM DATE 11/16/20

CHECKED BY SWF/CFL DATE 11/16/20

APPROVED BY TMM DATE 11/16/20

SCALES: AS NOTED

0 1/2" 1" 2"

THIS SHEET PLOTS FULL SIZE AT 22x34 (INCHES)

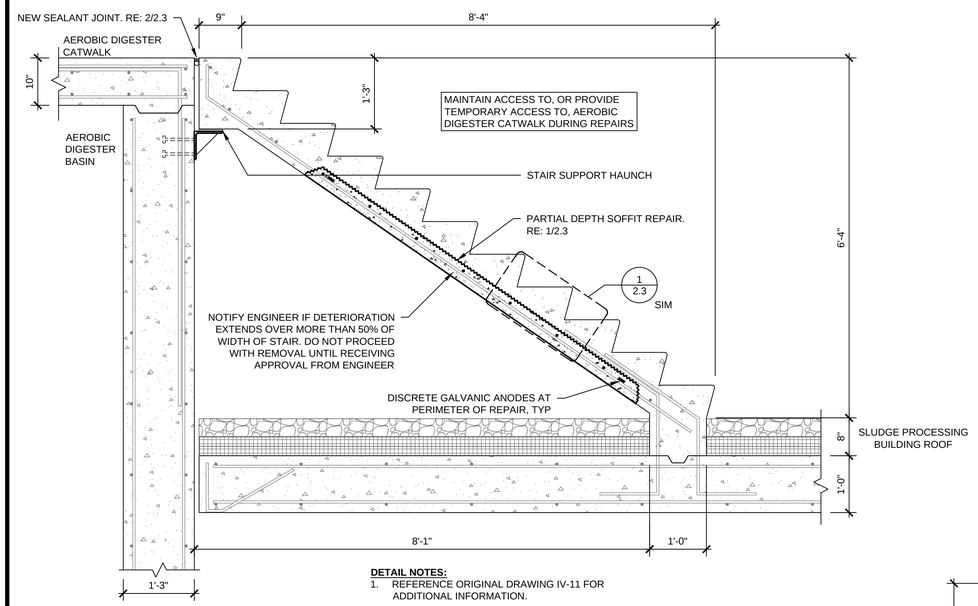
CITY OF Grand Junction COLORADO

Wiss, Janney, Elstner Associates, Inc.
Engineers, Architects, Materials Scientists
3609 S. Wadsworth Boulevard, Suite 400
Lakewood, Colorado 80235

AEROBIC DIGESTER STAIR PLAN

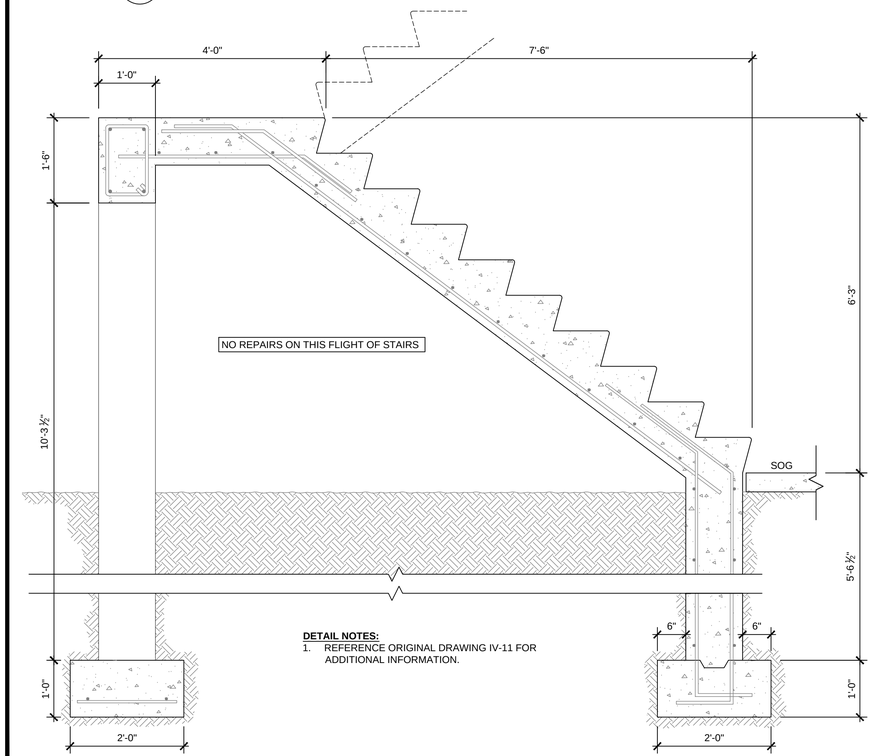
PROJECT NO. F0010-F001051

WJE PROJECT NO. 2019.3776.2



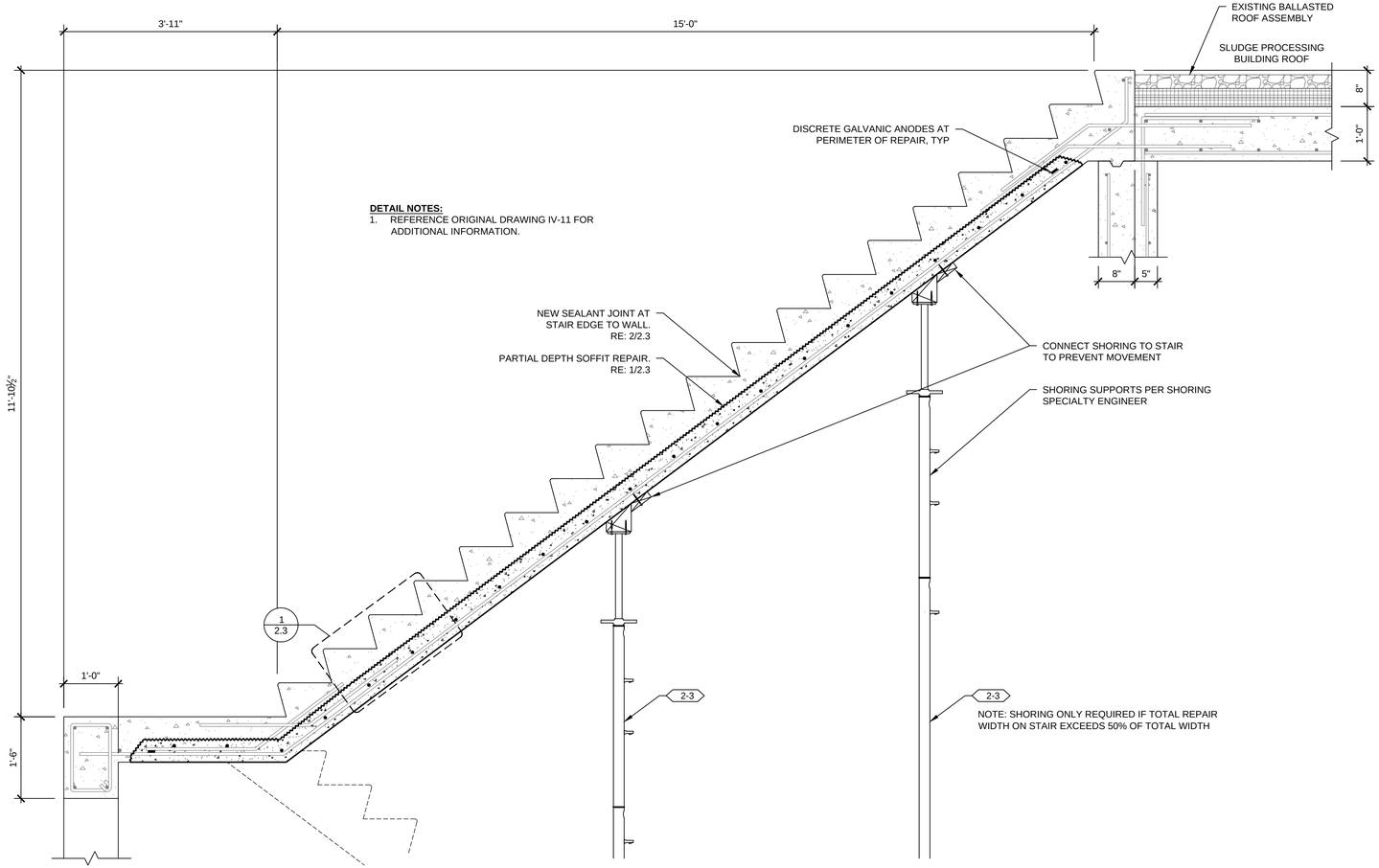
DETAIL NOTES:
1. REFERENCE ORIGINAL DRAWING IV-11 FOR ADDITIONAL INFORMATION.

1 Stair #2 Section
SCALE: 3/4" = 1'-0"



DETAIL NOTES:
1. REFERENCE ORIGINAL DRAWING IV-11 FOR ADDITIONAL INFORMATION.

2 Stair #1 Lower Flight Section
SCALE: 3/4" = 1'-0"



DETAIL NOTES:
1. REFERENCE ORIGINAL DRAWING IV-11 FOR ADDITIONAL INFORMATION.

3 Stair #1 Upper Flight Section
SCALE: 3/4" = 1'-0"

DESCRIPTION	DATE
REVISION 1	
REVISION 2	
REVISION 3	
REVISION 4	

DRAWN BY BRS/CRS DATE 11/16/20
DESIGNED BY AGL/TMM DATE 11/16/20
CHECKED BY SWF/CFL DATE 11/16/20
APPROVED BY TMM DATE 11/16/20

SCALES: AS NOTED

0 1/2" 1" 2"

THIS SHEET PLOTS FULL SIZE AT 22x34 (INCHES)

CITY OF Grand Junction COLORADO

WJE

Wiss, Janney, Elstner Associates, Inc.
Engineers, Architects, Materials Scientists
3609 S. Wadsworth Boulevard, Suite 400
Lakewood, Colorado 80235

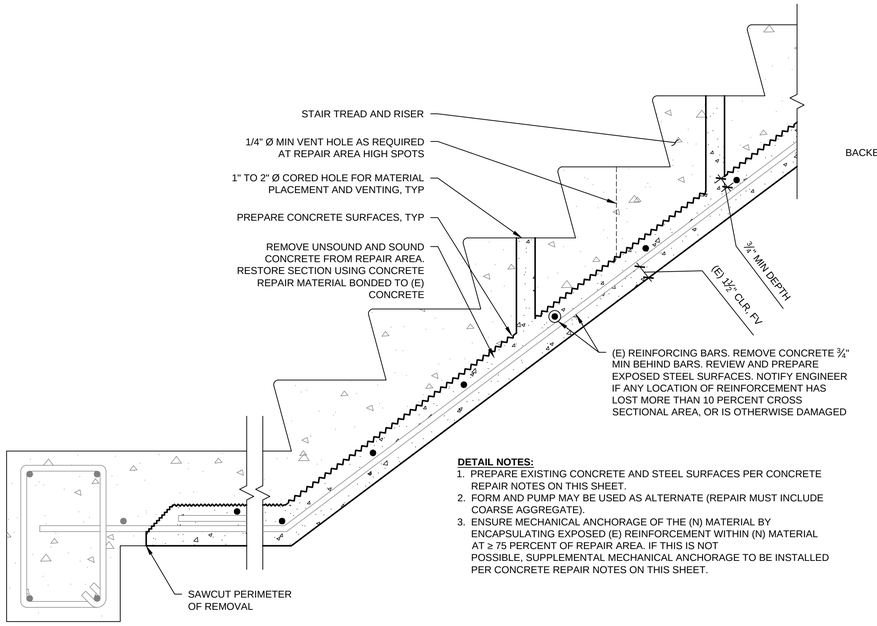
AEROBIC DIGESTER STAIR SECTIONS

2.2

TYPICAL CONCRETE REPAIR NOTES:

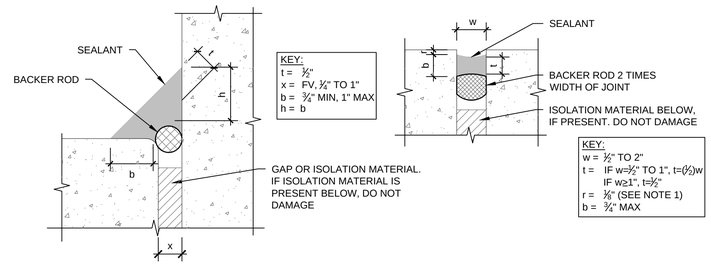
THESE NOTES SHALL APPLY TO ALL CONCRETE REPAIR WORK UNLESS NOTED OTHERWISE ON SPECIFIC DETAILS. THESE NOTES SERVE TO SUPPLEMENT THE SPECIFICATION SECTIONS 03 01 34 AND 03 21 00. REFERENCE THE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

1. SOUND AND MARK ALL REPAIR AREAS ON CONCRETE SURFACE. NOTIFY ENGINEER AND OWNER OF ANY ADDITIONAL DISTRESSED LOCATIONS. AWAIT APPROVAL PRIOR TO PROCEEDING WITH CONCRETE REMOVAL AT ADDITIONAL LOCATIONS.
2. NOTIFY ENGINEER OF LOCATIONS WHERE EXTENT OF DETERIORATION OR SUSPECT EXISTING CONSTRUCTION INDICATES THAT SHORING MAY BE NECESSARY.
3. REMOVE ALL LOOSE CONCRETE FROM THE DETERIORATED AREA.
4. CONCRETE REMOVAL AREAS:
   - 4.A. MAKE A SAWCUT AROUND THE ENTIRE PERIMETER OF THE REPAIR AREA. SHAPE SHALL BE RECTANGULAR IN PLAN AND ELEVATION, AND SHALL AVOID RE-ENTRANT CORNERS.
   - 4.B. EXTEND REMOVAL AND REPLACEMENT AT LEAST 1 INCHES BEYOND EDGE OF UNSOUND CONCRETE.
   - 4.C. THE CUT SHALL BE MADE TO A DEPTH OF 3/4 INCHES, IF POSSIBLE. IF THERE ARE AREAS AROUND THE PERIMETER OF THE DETERIORATED AREAS WHERE STEEL REINFORCING IS CLOSER TO THE SURFACE THAN NOTED SAWCUT DEPTH, THEN NO SAW CUT SHALL BE MADE IN THOSE AREAS. INSTEAD OF A SAWCUT, THE PERIMETER OF THE AREA SHALL BE CAREFULLY CHIPPED AWAY WITH A LIGHT DUTY CHIPPING HAMMER TO ACHIEVE AS CLOSE TO A SMOOTH UNIFORM EDGE AS POSSIBLE (I.E. SIMULATE A SAWCUT PERIMETER).
5. CONCRETE REMOVAL PROCEDURE:
   - 5.A. REMOVE UNSOUND AND CONCRETE AND, AS NECESSARY, SOUND CONCRETE USING EITHER 15-LB CHIPPING HAMMER (DETAIL WORK ADJACENT TO AND BENEATH REINFORCING STEEL AND POSTS) OR 30-LB CHIPPING HAMMER (REMOVAL OF CONCRETE AT REPAIR AREAS).
   - 5.B. MINIMUM REMOVAL DEPTH AS SHOWN ON DRAWINGS. AVOID ABRUPT CHANGES IN DEPTH OF REMOVAL.
   - 5.C. CLEARANCE AROUND REINFORCING BARS OF AT LEAST 3/4 INCHES.
   - 5.D. TAKE CARE NOT TO EXCESSIVELY VIBRATE THE EXPOSED REINFORCING WITH THE CHIPPING HAMMER, IN ORDER TO AVOID FRACTURING ANY OF THE CONCRETE THAT IS BONDED TO THE REINFORCEMENT OUTSIDE THE PERIMETER OF THE REPAIR.
   - 5.E. PROVIDE CONCRETE SURFACE PROFILE AS SPECIFIED OR INDICATED ON THE DRAWINGS. SURFACE PROFILES SHALL BE AS DEFINED ICRI 310.2R, AND JUDGED BASED ON COMPARISON TO PROFILE CHIPS SUPPLIED BY ICRI. UNLESS NOTED OTHERWISE, CSP 7, MIN SHALL BE PROVIDED.
   - 5.F. LIMIT CHIPPING HAMMER SIZE AND IMPACT ANGLE TO MINIMIZE DAMAGE TO SOUND CONCRETE. IMPACT ANGLE SHALL BE NO MORE THAN 60° TO SURFACE.
6. REMOVE MICROFRACTURED OR BRUISED CONCRETE BY ABRASIVE BLASTING THE EXPOSED CONCRETE SURFACES WITHIN THE AREA OF THE REMOVAL. BE SURE TO ABRASIVE BLAST THE VERTICAL SAWCUT EDGES AROUND THE PERIMETER.
7. PER SSPC SP6, COMMERCIAL BLAST CLEAN THE EXPOSED REINFORCING STEEL BY ABRASIVE BLASTING TO REMOVE ALL RUST SCALE FROM ALL STEEL REINFORCING BARS AND EMBEDDED ITEMS. EXERCISE CARE TO PREPARE UNDERSIDES OF REINFORCING BARS.
   - 7.A. NOTIFY ENGINEER OF REINFORCING BARS THAT HAVE LESS THAN 1/2 INCH OF CONCRETE COVER.
8. CAREFULLY INSPECT THE EXPOSED STEEL REINFORCING BARS FOR LOSS OF SECTION DUE TO CORROSION. THE INSPECTION SHOULD TAKE PLACE AFTER ABRASIVE BLASTING OF THE STEEL REINFORCING. ANY STEEL REINFORCING WITH MORE THAN 10 PERCENT LOSS OF SECTION SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR POSSIBLE FURTHER REMEDIAL ACTION.
9. INSTALL SUPPLEMENTAL MECHANICAL ANCHORS AND/OR REINFORCING BAR AT ANY REPAIR AREA (OR PORTION OF THE REPAIR AREA) IN WHICH THE EXISTING OR NEW REINFORCING IS NOT COMPLETELY ENCAPSULATED WITHIN THE NEW REPAIR MATERIAL, AS FOLLOWS.
   - 9.A. INSTALL HELICAL ANCHORS PER MANUFACTURER'S INSTRUCTIONS
   - 9.B. ANCHORS SHALL BE INSTALLED AT THE FOLLOWING MINIMUM FREQUENCIES, WHICHEVER IS GREATER:
     - 9.B.1. TWO (2) ANCHORS PER ONE (1) SQUARE FOOT OF REPAIR AREAS, UNIFORMLY SPACED.
     - 9.B.2. TWO (2) ANCHORS PER REPAIR AREA, UNIFORMLY SPACED
   - 9.C. ANCHORS SHALL BE INSTALLED TO MANUFACTURER SPECIFIED MINIMUM EMBEDMENT, OR 1 1/2-INCHES, WHICHEVER IS GREATER.
   - 9.D. AFTER BEING INSTALLED, THE ANCHORS SHALL BE :
     - 9.D.1. BENT INTO AN "L" SHAPE SUCH THAT 1/2 INCH CLEAR IS PROVIDED BETWEEN THE ANCHOR AND THE EXISTING CONCRETE MATERIAL.
     - 9.D.2. THE TAIL OF THE "L" SHALL BE A MINIMUM OF 1-INCH LONG.
     - 9.D.3. CLEAR COVER FROM THE OUTER EDGE OF THE ANCHOR TO THE FACE OF THE REPAIR SHALL BE 1-INCH MINIMUM.
10. IMMEDIATELY CLEAN THE ENTIRE AREA OF THE REPAIR WITH HIGH PRESSURE, OIL FREE, COMPRESSED AIR.
11. IMMEDIATELY COAT ALL EXPOSED STEEL REINFORCING WITH TWO COATS OF CORROSION - INHIBITING COATING OR EPOXY. TAKE CARE NOT TO GET ANY OF THE COATING ON THE SURROUNDING CONCRETE SURFACES.
12. AS SOON AS THE COATING HAS CURED (AS RECOMMENDED BY MANUFACTURER), FORM AND PLACE THE CONCRETE REPAIR MATERIAL TO RESTORE THE PROFILE OF THE EXISTING SECTION. ENSURE THAT REPAIR AREAS ARE CLEAN AND PROPERLY CONDITIONED PRIOR TO STARTING PLACEMENT. IF SPECIFIED BY THE ENGINEER, BUILD-OUT THE FORM WORK TO ACHIEVE AT LEAST 1 INCH OF COVER OVER THE EXPOSED REINFORCING STEEL.
13. PLACE MATERIAL TO ACHIEVE PROPER CONSOLIDATION.
14. WET CURE FOR 7 DAYS OR UNTIL MATERIAL HAS ACHIEVED 75 PERCENT OF IT'S REQUIRED 28-DAY COMPRESSIVE STRENGTH; OR LONGER IF SPECIFIED BY MANUFACTURER FOR PROPRIETY MATERIALS.
15. PROTECT REPLACEMENT MATERIAL FROM WEATHER AND MAINTAIN ABOVE 55° F FOR A MINIMUM OF 7 DAYS.
16. REMOVE THE FORMS AFTER CONCRETE HAS REACHED 75 PERCENT OF REQUIRED STRENGTH. CAREFULLY INSPECT THE REPAIR FOR IMPROPER CONSOLIDATION, CRACKING AROUND THE PERIMETER, OR DEBONDING OF NEW CONCRETE. IF THESE CONDITIONS EXIST, NOTIFY THE ENGINEER FOR POSSIBLE REMEDIAL ACTION OR REPLACEMENT OF THE REPAIR.
17. SOUND REPAIR AREAS TO CONFIRM INTEGRITY. DELAMINATED AND/OR DISTRESSED AREAS MUST BE REMOVED AND REPAIRED.
18. IF REQUIRED, REMOVE SHORING WHEN CONCRETE HAS REACHED MINIMUM REQUIRED STRENGTH.



DETAIL NOTES:
1. PREPARE EXISTING CONCRETE AND STEEL SURFACES PER CONCRETE REPAIR NOTES ON THIS SHEET.
2. FORM AND PUMP MAY BE USED AS ALTERNATE (REPAIR MUST INCLUDE COARSE AGGREGATE).
3. ENSURE MECHANICAL ANCHORAGE OF THE (N) MATERIAL BY ENCAPSULATING EXPOSED (E) REINFORCEMENT WITHIN (N) MATERIAL AT ≥ 75 PERCENT OF REPAIR AREA. IF THIS IS NOT POSSIBLE, SUPPLEMENTAL MECHANICAL ANCHORAGE TO BE INSTALLED PER CONCRETE REPAIR NOTES ON THIS SHEET.

1 Soffit Repair 2-1
SCALE: 1-1/2" = 1'-0"



DETAIL NOTES:
THESE NOTES SHALL APPLY TO ALL SEALANT JOINT WORK UNLESS NOTED OTHERWISE ON A SPECIFIC DETAIL. THESE NOTES SERVE TO SUPPLEMENT THE SPECIFICATIONS. REFERENCE SPECIFICATION SECTION 07 92 00 FOR ADDITIONAL INFORMATION.

1. ABBREVIATIONS: w = JOINT WIDTH, h = SEALANT HEIGHT, t = SEALANT THICKNESS, r = RECESS OF JOINT, b = BOND LINE, AND x = JOINT GAP.
2. REMOVE ALL GROUT, SEALANT, BACKER ROD, BOND BREAKER TAPE, ETC. IN JOINT.
3. SLIGHTLY GRIND THE CONCRETE SURFACES WITHIN THE JOINT WITH A GRINDING WHEEL HAVING A PROFILE APPROXIMATELY THE SAME AS THE JOINT.
4. PROVIDE PROPER JOINT DEPTH PER DETAILS.
5. CLEAN STEEL OF RUST AND PROVIDE STEEL SURFACE EQUAL TO SSPC SP3, POWER TOOL CLEANING.
6. AFTER GRINDING, CLEAN DEBRIS FROM THE JOINT USING A STIFF BRUSH AND OIL-FREE COMPRESSED AIR. VACUUM THE JOINT AND SURFACES WITHIN 6 INCHES OF JOINT.
7. INSTALL PRIMER ON ALL SURFACES. POROUS SURFACES SHALL BE PRIMED REGARDLESS OF MANUFACTURER RECOMMENDATIONS TO EXCLUDE PRIMER.
8. INSTALL BACKER ROD WHERE INDICATED AND SEALANT PER MANUFACTURER'S WRITTEN RECOMMENDATIONS AND THESE DOCUMENTS.
9. CONFIRM REQUIREMENTS OF SEALANT MANUFACTURER PRIOR TO SUBMITTING BID. NOTIFY ENGINEER OF DISCREPANCIES BETWEEN THESE DOCUMENTS AND MANUFACTURERS TYPICAL DETAILS, WRITTEN RECOMMENDATIONS, OR INSTRUCTIONS. ENGINEER SHALL DETERMINE WHICH APPLY.

2 Sealant Profiles 2-2
SCALE: 6" = 1'-0"

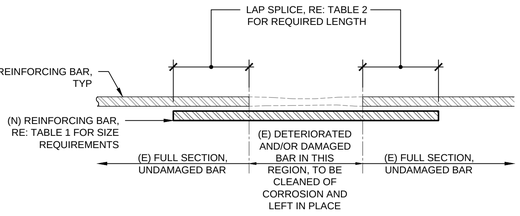


TABLE 1 - SUPPLEMENTAL BAR SIZE REQUIREMENTS

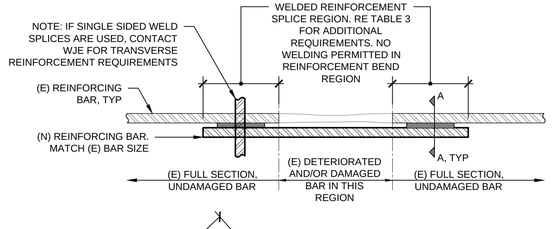
SIZE OF BAR TO BE SUPPLEMENTED W/ ADDITIONAL BAR	SUPPLEMENTAL BAR SIZE FOR 10%-25% SECTION LOSS	SUPPLEMENTAL BAR SIZE FOR 25%-50% SECTION LOSS	SUPPLEMENTAL BAR SIZE FOR >50% SECTION LOSS
#4	#3	#3	#4
#5	#3	#4	#5
#6	#3	#5	#6

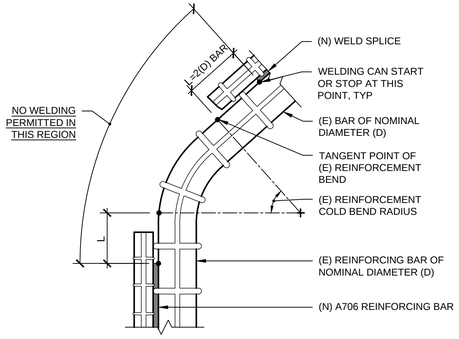
TABLE 2 - LAP LENGTH REQUIREMENTS FOR SUPPLEMENTAL BAR

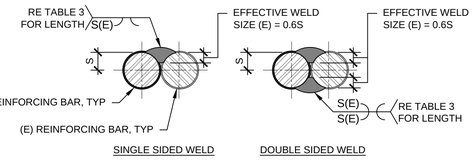
SUPPLEMENTAL BAR SIZE	REQUIRED LAP LENGTH (INCHES)
#3	12
#4	16
#5	25
#6	30

DETAIL NOTES:
1. INFORMATION PROVIDED WITHIN THIS DETAIL ASSUMES THAT NEW REINFORCING BARS WILL HAVE A MINIMUM CLEAR COVER OF 1½". CONTRACTOR TO NOTIFY ENGINEER IF CLEAR COVER OF NEW BAR WILL BE LESS THAN 1½".
2. LAP LENGTHS ASSUME 5,000 PSI REPLACEMENT MATERIAL.
3. SPLICES OF BARS MAY BE MADE WITH MECHANICAL COUPLERS PROVIDED COUPLER HAS 1½" CLEAR COVER.
4. WELDED SPLICES MAY BE MADE IN ACCORDANCE WITH 4/2.3.

3 Lap Splice Information
SCALE: 1-1/2" = 1'-0"







SECTION A-A

TABLE 3 - REINFORCEMENT SPLICE REQUIREMENTS

NEW BAR SIZE	SINGLE SIDED LAP WELD LENGTH (in)	DOUBLE SIDED LAP WELD LENGTH (in)
#3	4.0	2.5
#4	5.5	3.0
#5	6.5*	3.5*
#6	7.5*	4.0*

* PRIOR TO WELDING CONTACT WJE IF BAR SIZE IS LARGER THAN A #4.

DETAIL NOTES:
1. REFERENCE SPECIFICATION SECTION 03 21 00 FOR ADDITIONAL REQUIREMENTS.
2. CARBON EQUIVALENCE TESTING OF EXISTING REINFORCING SHALL BE PERFORMED PRIOR TO WELDING.
3. ALL NEW REINFORCING TO BE WELDED SHALL BE A706, GRADE 60.
4. ALL WELDING OF REINFORCEMENT SHALL COMPLY WITH AWS D1.4.
5. ALL WELDS SHALL BE PERFORMED USING 70 KSI MINIMUM ULTIMATE STRENGTH LOW HYDROGEN FILLER METAL AND SHALL BE THE TYPE AND SIZE SHOWN ON THE DRAWINGS AND OF THE LENGTH SPECIFIED IN THE TABLE ABOVE. ALL WELDS SHALL BE CONTINUOUS.
6. REMOVE COATING AND/OR CORROSION FROM EXISTING SURFACES TO BE WELDED IN ACCORDANCE WITH AWS D1.4. DO NOT BURN OFF COATINGS WITH WELDING ELECTRODE. AFTER WELDING IS COMPLETE, CLEAN SURFACES TO REMOVE CUTTING OILS, RUST, SLAG AND OTHER CONTAMINANTS TO ACHIEVE A SURFACE CONSISTENT WITH SSPC-SP 3: POWER TOOL CLEANING. COAT PER SPECIFICATIONS.
7. ALL FIELD WELDING SHALL COMPLY WITH THE ABOVE-REFERENCED STANDARD FOR WELDING PROCEDURE SPECIFICATIONS (WPS'S), PROCEDURE QUALIFICATION RECORDS (PQR'S), WELDER QUALIFICATION RECORDS, TOLERANCES, APPEARANCE, QUALITY OF WELDS AND METHODS USED IN CORRECTING WELDING WORK, UNLESS NOTED OTHERWISE.
8. EACH WELD SHALL BE VISUALLY INSPECTED BY SPECIAL INSPECTOR PRIOR TO INSTALLATION OF FORMWORK.

4 Welded Splice Information
SCALE: 1-1/2" = 1'-0"

DESCRIPTION	DATE
REVISION 1	
REVISION 2	
REVISION 3	
REVISION 4	

DRAWN BY BRS/CRS DATE 11/16/20
DESIGNED BY AGL/TMM DATE 11/16/20
CHECKED BY SWF/CFL DATE 11/16/20
APPROVED BY TMM DATE 11/16/20

SCALES: AS NOTED
0 1/2" 1" 2"
THIS SHEET PLOTS FULL SIZE AT 22x34 (INCHES)

CITY OF Grand Junction COLORADO

WJE
Wiss, Janney, Elstner Associates, Inc.
Engineers, Architects, Materials Scientists
3609 S. Wadsworth Boulevard, Suite 400
Lakewood, Colorado 80235

AEROBIC DIGESTER REPAIR DETAILS