CITY OF GRAND JUNCTION, COLORADO

****

CONTRACT

This CONTRACT made and entered into this 3rd day of October 2022 by and between the **City of Grand Junction, Colorado,** a government entity in the County of Mesa, State of Colorado, hereinafter in the Contract Documents referred to as the "Owner" and **Glacier Construction Co., Inc.** hereinafter in the Contract Documents referred to as the "Contractor."

WITNESSETH:

WHEREAS, the Owner advertised that sealed Bids would be received for furnishing all labor, tools, supplies, equipment, materials, and everything necessary and required for the Project described by the Contract Documents and known as **Odor Control Improvements Project IFB-5096-22-DD.**

WHEREAS, the Contract has been awarded to the above-named Contractor by the Owner, and said Contractor is now ready, willing and able to perform the Work specified in the Notice of Award, in accordance with the Contract Documents.

NOW, THEREFORE, in consideration of the compensation to be paid the Contractor, the mutual covenants hereinafter set forth and subject to the terms hereinafter stated, it is mutually covenanted and agreed as follows:

ARTICLE 1

Contract Documents: It is agreed by the parties hereto that the following list of instruments, drawings, and documents which are attached hereto, bound herewith, or incorporated herein by reference constitute and shall be referred to either as the "Contract Documents" or the "Contract", and all of said instruments, drawings, and documents taken together as a whole constitute the Contract between the parties hereto, and they are fully a part of this agreement as if they were set out verbatim and in full herein:

The order of contract document governance shall be as follows:

a. The body of this contract agreement
b. Solicitation Documents for the Project including all addenda; **Odor Control Improvements Project IFB-5096-22-DD**
c. Notice of Award
d. Contractors Response to the Solicitation

e. Work Change Requests (directing that changed work be performed);
f. Field Orders
g. Change Orders.

ARTICLE 2

Definitions: The clauses provided in the Solicitation apply to the terms used in the Contract and all the Contract Documents.

ARTICLE 3

Contract Work: The Contractor agrees to furnish all labor, tools, supplies, equipment, materials, and all that is necessary and required to complete the tasks associated with the Work described, set forth, shown, and included in the Contract Documents as indicated in the Solicitation Document.

ARTICLE 4

Contract Time and Liquidated Damages: Time is of the essence with respect to this Contract. The Contractor hereby agrees to commence Work under the Contract on or before the date specified in the Solicitation from the Owner, and to achieve Substantial Completion and Final Completion of the Work within the time or times specified in the Solicitation. In the event the Work is not completed in the times set forth and as agreed upon, the Contractor further agrees to pay Liquidated Damages to the Owner as set forth in the Solicitation. The Contractor acknowledges and recognizes the delays, expenses and difficulties involved in proving in a legal proceeding the actual losses suffered by the Owner if the work is not completed on time. Accordingly, instead of requiring any such proof, the Owner and the Contractor agree that as Liquidated Damages for delay, but not as a penalty, the Contractor shall pay to the Owner the amounts specified in the Solicitation.

ARTICLE 5

Contract Price and Payment Procedures: The Contractor shall accept as full and complete compensation for the performance and completion of all of the Work specified in the Contract Documents, the sum of **Four Million, Nine Hundred, Ninety-Seven Thousand and 00/100 Dollars ($4,997,000.00).** If this Contract contains unit price pay items, the Contract Price shall be adjusted in accordance with the actual quantities of items completed and accepted by the Owner at the unit prices quoted in the Solicitation Response. The amount of the Contract Price is and has heretofore been appropriated by the Grand Junction City Council for the use and benefit of this Project. The Contract Price shall not be modified except by Change Order or other written directive of the Owner. The Owner shall not issue a Change Order or other written directive which requires additional work to be performed, which work causes the aggregate amount payable under this Contract to exceed the amount appropriated for this Project, unless and until the Owner provides Contractor written assurance that lawful appropriations to cover the costs of the additional work have been made.

Unless otherwise provided in the Solicitation, monthly partial payments shall be made as the Work progresses. Applications for partial and Final Payment shall be prepared by the Contractor and approved by the Owner in accordance with the Solicitation.

Upon Final Completion of the Work under the Contract and before the Contractor shall receive final payment, the Owner shall publish at least twice in a newspaper of general circulation published in the County a notice that: 1. the Owner has accepted such Work as completed according to the Contract Documents; 2. the Contractor is entitled to final payment therefore; 3. thirty days after the first publication, specifying the exact date, the Owner shall pay the full balance due under the Contract; and 4. persons having claims for labor, materials, team hire, sustenance, provisions, provender, or other supplies used or consumed by the Contractor or a subcontractor shall file a verified statement of the amount due and unpaid on account of such claim prior to the date specified for such payment. Nothing herein shall be construed as relieving the Contractor and the Sureties on the Contractor's Bonds from any claim or claims for work or labor done or materials or supplies furnished in the execution of the Contract.

ARTICLE 6

Bonds: The Contractor shall furnish currently herewith the Bonds required by the Contract Documents; such Bonds being attached hereto. The Performance Bond shall be in an amount not less than one hundred percent (100%) of the Contract Price set forth in Article 5. The Payment Bond shall be in an amount not less than one hundred (100%) of the Contract Price set forth in Article 5.

ARTICLE 7

Contract Binding: The Owner and the Contractor each binds itself, its partners, successors, assigns and legal representatives to the other party hereto in respect to all covenants, agreements and obligations contained in the Contract Documents. The Contract Documents constitute the entire agreement between the Owner and Contractor and may only be altered, amended or repealed by a duly executed written instrument. Neither the Owner nor the Contractor shall, without the prior written consent of the other, assign or sublet in whole or in part its interest under any of the Contract Documents and specifically, the Contractor shall not assign any moneys due or to become due without the prior written consent of the Owner.

ARTICLE 8

Severability: If any part, portion or provision of the Contract shall be found or declared null, void or unenforceable for any reason whatsoever by any court of competent jurisdiction or any governmental agency having the authority thereover, only such part, portion or provision shall be affected thereby and all other parts, portions and provisions of the Contract shall remain in full force and effect.

IN WITNESS WHEREOF, City of Grand Junction, Colorado, has caused this Contract to be subscribed and sealed and attested in its behalf; and the Contractor has signed this Contract the day and the year first mentioned herein.

The Contract is executed in two counterparts.

CITY OF GRAND JUNCTION, COLORADO

DocuSigned by:

By: Duane Hoff Jr. 10/4/2022

Duane Hoff Jr. Contract Administrator Date

GLACIER CONSTRUCTION CO., INC.

DocuSigned by:

By: 10/3/2022

Randy Wamboganss President Date

Purchasing Division

Invitation for Bid

IFB-5096-22-DD

Odor Control Improvements Project

Responses Due:

October 12, 2022 Prior to 10:00 am

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)

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

Purchasing Representative:
Dolly Daniels, Senior Buyer
dollyd@gjcity.org
970-256-4048

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

Invitation for Bids

Table of Contents

1. Instructions to Bidders

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

1.1. Purpose: The City of Grand Junction is soliciting competitive bids from qualified and interested companies for all labor, equipment, and materials required for Odor Control Improvement. All dimensions and scope of work should be verified by Contractors prior to submission of bids.

IFB Questions:

Dolly Daniels; Senior Buyer
dollyd@gjcity.org

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

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

1.3. Prequalification Requirement: Contractors submitting bids over $500,000 must be pre-qualified in accordance with the City's *"Contractors Prequalification Application*". All bids received by the specified time will be opened, but the City will reject bids over $500,000 from contractors who have not been prequalified. Application forms for prequalification are available by clicking the **Application Link** Call 970-256-4082 for additional information. Due to the time required to process applications, *all applications must be submitted no later than the application due date stated in the solicitation document.* Contractors may view their approved pre-qualified categories by clicking the Pre-Qualification List Link.

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

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

1.6. Submission: ***Each bid shall be submitted in electronic format only, and only through the Rocky Mountain E-Purchasing website (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**)

Bid Opening, IFB-5096-22-DD, Odor Control Improvement Projects
Wednesday, October 12, 2022, 10:00 AM (MDT)

Please join my meeting from your computer, tablet, or smartphone
https://meet.goto.com/888588045

You can also dial in using your phone.
United States +1 (312) 757-3121

Access Code: 888-588-045

Join from a video-conferencing room or system.
Meeting ID: 888-588-045
Dial in or type: 67.217.95.2 or inroomlink.goto.com
Or dial directly: 888-588-045@67.217.95.2 or 67-217-95.2##888588045

1.7. Modification and Withdrawal of Bids Before Opening. Bids may be modified or withdrawn by an appropriate document stating such, duly executed and submitted to the place where Bids are to be submitted at any time prior to Bid Opening.

1.8. Printed Form for Price Bid: All Price Bids must be made upon the Price Bid Schedule attached and should give the amounts both in words and in figures and must be signed and acknowledged by the bidder.

The Offeror shall specify a unit price in figures for each pay item for which a quantity is given and shall provide the products (in numbers) of the respective unit prices and quantities in the Extended Amount column. The total Bid price shall be equal to the sum of all extended amount prices. When an item in the Price Bid Schedule provides a choice to be made by the Offeror, Offeror's choice shall be indicated in accordance with the specifications for that particular item and thereafter no further choice shall be permitted.

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

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

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

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

All names must be typed or printed below the signature.

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

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

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

1.10. Contract Documents: The complete IFB and bidder's response compose the Contract Documents. Copies of bid documents can be obtained from the City Purchasing website, https://co-grandjunction.civicplus.com/501/Purchasing-Bids .

1.11. Additional Documents: The July 2010 edition of the "City Standard Contract Documents for Capital Improvements Construction", Plans, Specifications and other Bid Documents are available for review or download on the Purchasing Bids page at https://co-grandjunction.civicplus.com/501/Purchasing-Bids.

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

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

a. Examine the *Contract Documents* thoroughly.

b. Visit the site to familiarize themselves with local conditions that may in any manner affect cost, progress, or performance of the Work;

c. Become familiar with federal, state, and local laws, ordinances, rules, and regulations that may in any manner affect cost, progress or performance of the Work.

d. Study and carefully correlate Bidder's observations with the *Contract Documents*, and;

e. Notify the Purchasing Agent of all conflicts, errors, ambiguities or discrepancies in or among the *Contract Documents* within the designated inquiry period.

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

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

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

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

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

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

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

1.17. Sales and Use Taxes: The Contractor and all Subcontractors are required to obtain exemption certificates from the Colorado Department of Revenue for sales and use taxes in accordance with the provisions of the General Contract Conditions. Bids shall reflect this method of accounting for sales and use taxes on materials, fixtures and equipment.

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

1.19. Exceptions and Substitutions: Bidders taking exception to the specifications and/or scope of work shall do so at their own risk. The Owner reserves the right to accept or reject any or all substitutions or alternatives. When offering substitutions and/or alternatives, Bidder must state these exceptions in the section pertaining to that area. Exception/substitution, if accepted, must meet or exceed the stated intent and/or specifications and/or scope of work. The absence of such a list shall indicate that the Bidder has not taken exceptions, and if awarded a contract, shall hold the Bidder responsible to perform in strict accordance with the specifications and/or scope of work contained herein.

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

1.21. Disqualification of Bidders: A Bid will not be accepted from, nor shall a Contract be awarded to, any person, firm, or corporation that is in arrears to the Owner, upon debt or contract, or that has defaulted, as surety or otherwise, upon any obligation to the Owner, or that is deemed irresponsible or unreliable.

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

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

a. More than one Bid is submitted for the same Work from an individual, firm, or corporation under the same or different name; and

b. Evidence of collusion among Bidders. Any participant in such collusion shall not receive recognition as a Bidder for any future work of the Owner until such participant has been reinstated as a qualified bidder.

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

2. General Contract Conditions for Construction Projects

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

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

2.3. Execution, Correlation, Intent, and Interpretations: The Contract Documents shall be signed by the Owner (City) and Contractor. City will provide the contract. By executing the contract, the Contractor represents that he/she has visited the site, familiarized himself with the local conditions under which the Work is to be performed, and correlated his observations with the requirements of the Contract Documents. The Contract Documents are complementary, and what is required by 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 ensure the proper implementation of the intent of the Contract Documents, he will have authority to require the Contractor to stop the work or any portion, or to require special inspection or testing of the work, whether or not such work can be then be fabricated, installed, or completed. The Owner will not be

responsible for the acts or omissions of the Contractor, and sub-Contractor, or any of their agents or employees, or any other persons performing any of the work.

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

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

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

2.8. Quantities of Work and Unit Price: Materials or quantities stated as unit price items in the Bid are supplied only to give an indication of the general scope of the Work, and are as such, estimates only. The Owner does not expressly or by implication agree that the actual amount of Work or material will correspond therewith and reserves the right after award to increase or decrease the quantity of any unit item of the Work without a change in the unit price except as set forth in Article VIII, Section 70 of the *General Contract Conditions*. The City also reserves the right to make changes in the Work (including the right to delete any bid item in its entirety or add additional bid items) as set forth in Article VIII, Sections 69 through 71 of the *General Contract Conditions*.

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

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

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

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

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

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

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

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

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

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

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

2.19. Time: Time is of the essence with respect to the time of completion of the Project and any other milestones or deadline which are part of the Contract. It will be necessary for each Bidder to satisfy the City of its ability to complete the Work within the Contract Time set forth in the Contract Documents. The Contract Time is the period of time allotted in the Contract Documents for completion of the work. The date of commencement of the work is the date established in a Notice to Proceed. If there is no Notice to Proceed, it shall be the date of the Contract or such other date as may be established therein, or as established as entered on the Bid Form. The Date of Final Completion of the work is the date certified by the Owner when all construction, and all other work associated to

include, but not be limited to: testing, QA/QC, receipt of required reports and/or forms, grant requirements (if applicable), punch list items, clean-up, receipt of drawings and/or as-builts, etc., is fully complete, and in accordance with the Contract Documents.

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

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

2.22. Bid Bond: Each Bid shall as a guaranty of good faith on the part of the Bidder be accompanied by a Bid Guaranty consisting of: a certified or cashier's check drawn on an approved national bank or trust company in the state of Colorado, and made payable without condition to the City; or a **Bid Bond** written by an approved corporate surety in favor of the City. The amount of the Bid Guaranty shall not be less than 5% of the total Bid amount. Once a Bid is accepted and a 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 **$350.00** 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 workers without authorization or otherwise violate the provisions of the Federal Immigration Reform and Control Act of 1986 and/or the immigration compliance requirements of State of Colorado C.R.S. § 8-17.5-101, *et.seq.* (House Bill 06-1343).

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

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

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

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

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

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

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

a. Submission of the Bid on forms other than those supplied by the City;

b. Alteration, interlineation, erasure, or partial detachment of any part of the forms which are supplied herein;

c. Inclusion of unauthorized additions conditional or alternate Bids or irregularities of any kind which may tend to make the Bid incomplete, indefinite, or ambiguous as to its meaning;

d. Failure to acknowledge receipt of any or all issued Addenda;

e. Failure to provide a unit price or a lump sum price, as appropriate, for each pay item listed except in the case of authorized alternative pay items;

f. Failure to list the names of Subcontractors used in the Bid preparation as may be required in the Solicitation Documents;

g. Submission of a Bid that, in the opinion of the Owner, is unbalanced so that each item does not reasonably carry its own proportion of cost or which contains inadequate or unreasonable prices for any item;

h. Tying of the Bid with any other bid or contract; and

i. Failure to calculate Bid prices as described herein.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

2.60.1. "Public project" is defined as:

(a) any construction, alteration, repair, demolition, or improvement of any land, building, structure, facility, road, highway, bridge, or other public improvement suitable for and intended for use in the promotion of the public health, welfare, or safety and any maintenance programs for the upkeep of such projects

(b) for which appropriate or expenditure of moneys may be reasonably expected to be $500,000.00 or more in the aggregate for any fiscal year

(c) except any project that receives federal moneys.

3. Statement of Work

3.1. GENERAL: The City of Grand Junction is soliciting competitive bid from qualitied and interested companies for all labor, equipment, and materials required for the Odor Control Improvements Project.

3.2. PROJECT DESCRIPTION: There are three components of work on this project. One is installing a fully functional odor scrubber with Biotrickling Filter and Carbon Absorber Units set on concrete pads. The second part is installing an air jumper across the Persigo Wash near 2169 River Road (39.112355, -108.651119). This will allow the foul air to cross the Persigo Wash where the sanitary sewer enters into a siphon and crossed under the wash. The third component of the project is to build an Odor Scrubber on the Persigo WWTP which will have two Biotrickling filters. There will be an epoxy coating needed to be installed on the existing Parshall Flume.

3.3. SPECIAL CONDITIONS & PROVISIONS:

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

3.3.2 QUESTIONS REGUARDING SOLICIATION PROCESS/SCOPE OF WORK:
Toby Thieman, Project Engineer
City of Grand Junction
TobyT@gjcity.org

3.3.3 Project Manager: The Project Manager for the Project is Toby Thieman, Project Engineer, who can be reached at (970)-712-2757. 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: Toby Thieman, Project Manager
250 North Fifth Street
Grand Junction, CO 81501

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

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

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

- minimum 5 years of relevant work experience in similar construction

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

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

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

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

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

3.3.9 Contract: A binding contract shall consist of: (1) the IFB and any amendments thereto, (2) Additional Documents as stated in Section 1.10, (3) the bidder's response (bid) to the IFB, (4) clarification of the bid, if any, and (5) the City's Purchasing Department's acceptance of the bid by "Notice of Award" or by "Purchase Order". All Exhibits and Attachments included In the IFB shall be incorporated into the contract by reference.

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

contained therein.

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

3.3.10 Time of Completion: The scheduled time of Completion for the Project is 180 Calendar Days from the starting date specified in the Notice to Proceed.

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

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

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

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

3.3.13 Permits: The following permits are required for the Project and will be obtained by the City at no cost to the Contractor:

CDPHE -

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:

CDOT – right of way permit

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

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

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

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

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

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

- Traffic Control Plans
- Project Schedule

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

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

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

3.3.26 Existing Utilities and Structures: Utilities at the Persigo Wash and WWTP 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.

Utilities at the Dos Rios Location were potholed (attached appendix A)

3.3.27 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.

3.3.28 Survey: The Contractor shall give the City survey crew a minimum of 72 hours' notice for all requested survey.

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

- Piping of open ditch
- Storm inlet relocation
- Shoulder widening
- Sign removal and relocation

3.3.30 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.

3.3.31 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: *Dos Rios Odor Reducer* includes adding a manhole to existing active sewer main line, laying 580' of Ø12" PVC pipe containing sewer gas to connect biotrickling filter and carbon absorber with water tap and Ø4" PVC return line to sewer. A portion of both the supply air and return bio will be horizontally bored. Also constructed will be a 13' deep sump. *Persigo Air Siphon* includes concrete coring into existing concrete collector at either side of the Persigo Wash with surface preparation to ensure new epoxy coating covers newly exposed concrete and bonds well to existing epoxy. *Persigo WWTP Odor reducer* includes a fully functioning dual biotrickling filter system with monitoring systems. Sewer bypass pumping will be required to allow work on the Parshall Flume and modifications to existing manhole. Construction of concrete pads as needed with extensive hand digging & potholing due to existing underground utilities and severity of impacts if damaged. All work, bypass pumping and accessibility will be approved before any changes are made to the flow of the sanitary sewer.

3.5. Attachments:

Attachment A: Project Manual
Attachment B: Estimated Sanitary Sewer Flows
Attachment C: Construction Drawings

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

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

3.7. IFB TENTATIVE TIME SCHEDULE:

Invitation For Bids available	July 20, 2022
Mandatory Pre-Bid Meeting	August 10, 2022
Pre-Qualification Application Deadline	August 31, 2022
Inquiry deadline, no questions after this date	September 14, 2022
Addendum Posted	September 28, 2022

Submittal deadline for proposals		October 12, 2022
City Council Approval		October 26, 2022
Notice of Award & Contract execution		November 9, 2022
Bonding & Insurance Cert due		November 16, 2022
Preconstruction meeting		November 29, 2022
Work begins no later than		December 5, 2022
Final Completion		June 8, 2023
Holidays:	Christmas	December 25, 2022
	New Year's	January 2, 2023
	MLK Day	January 16, 2023
	President's Day	February 20, 2023
	Memorial Day	May 29, 2023

4. Contractor's Bid Form

Bid Date: _____

Project: IFB-5096-22-DD "Odor Control Improvements"

Bidding Company: _____

Name of Authorized Agent: _____

Email _____

Telephone_____ **Address**_____

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

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

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

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

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

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

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

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

State number of Addenda received: _____.

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

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

Company: _____

Authorized Signature: _____

Title: _____

Price Bid Schedule: Odor Control Improvements

Bid for Dos Rios Odor Biotrickling Filter complete operating system:

Bid Subtotal $_____

Written: _____dollars

Bid for Air Siphon across Persigo Wash complete functional system:

Bid Subtotal $_____

Written: _____dollars

Bid for Persigo WWTP Biotrickling Filter complete operating system:

Bid Subtotal $_____

Written: _____dollars

Total Lump Sum Amount: $_____

Written: _____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.

Attachments

Attachment A: Project Technical Specifications

N:\Landproj\2020 Persigo Odor Control\Files from Kurt - Study and Design Phase\2021.08.20 20W23045 Grand Junction Persigo Technical Specs.pdf

Attachment B: Influent Flows

9.0 MGD estimated for Persigo WWTP Odor Scrubber
9.0 MGD estimated for Receptor at Air Siphon

Attachment C: Drawings Set

Dos Rios - 2021_08_20_GJPBD_Bid Set_22x34.pdf

CITY OF Grand Junction COLORADO

Purchasing Division

ADDENDUM NO. 1

DATE: **July 18, 2022**
FROM: **City of Grand Junction Purchasing Division**
TO: **All Offerors**
RE: **IFB-5096-22-DD Odor Control Improvement Projects**

Offerors responding to the above referenced solicitation are hereby instructed that the requirements have been clarified, modified, superseded and supplemented as to this date as hereinafter described.

Please make note of the following clarifications:

1. Correction to Specification and Contract Document 2021.08.20 titled Grand Junction Persigo Technical Specification: Page 539 of 597 Section B Dos Rios RTU Panel (See Below)

1. Manufacturer:
   a. Siemens SIMATIC S7-1500
2. Components: The PLCs shall consist of the following basic components:
   a. Power supply module properly sized for the I/O load.
   b. Chassis with capacity for modules, including spares, as detailed in the plans.
   c. Processor module with sufficient memory for the application. Processors shall be the same model for all provided PLCs.
   d. Ethernet communication module.
   e. I/O modules as required for the application.

B. Dos Rios RTU Panel Parker system with Voice Of The Machine Software
1. Manufacturer:
   a. ~~Samsara IG41 Industrial Gateway~~
2. Components: Provide the following components:
   a. Provide ~~Samsara IG~~ license registered to the City of Grand Junction.
   b. DIN rail power supply.
   c. I/O modules as required for the application.
   d. LTE antenna.

C. Features:
1. Each PLC shall be installed with a minimum of 25% spare I/O points of each type utilized in its I/O structure.
2. The PLCs shall be capable of and shall be configured to provide stand-alone operation in the event of a communications link failure.
3. The necessary interface cables, communications cables, power cables, bus extension cables, modular card slot fillers, and other ancillary parts shall be furnished and installed as integral parts of the control system.
4. Nameplates shall be provided for each module, device, and other equipment with appropriate data such as the equipment number, rating, serial number, and manufacturer.

D. Spare Parts:
1. The Contractor shall furnish the Owner the following spare replacement parts:
   a. One (1) processor module of each type
   b. One (1) I/O modules of each type
   c. One (1) communication module of each type

PART 3 - EXECUTION

3.1 GENERAL

A. The Contractor shall utilize personnel who are skilled and experienced in the installation, setup, and configuration of the PLCs being furnished under this contract.

B. Any PLC furnished as part of a vendor supplied equipment package shall be accessible for future program monitoring and revisions. If password protection of any kind is implemented, the vendor or Contractor shall supply all passwords or other security information to the Owner and the Engineer.

C. The Contractor shall furnish the Owner final as-built copies of documented PLC programs for vendor supplied equipment packages, on electronic media, suitable for future troubleshooting or modifications by others.

D. All components and assemblies shall be installed in accordance with the manufacturer's installation instructions.

The original solicitation for the project noted above is amended as noted.

All other conditions of subject remain the same.

Respectfully,

Dolly Daniels, Senior Buyer
City of Grand Junction, Colorado

CITY OF Grand Junction COLORADO

Purchasing Division

ADDENDUM NO. 2

DATE: **July 19, 2022**
FROM: **City of Grand Junction Purchasing Division**
TO: **All Offerors**
RE: **IFB-5096-22-DD Odor Control Improvement Projects**

Offerors responding to the above referenced solicitation are hereby instructed that the requirements have been clarified, modified, superseded and supplemented as to this date as hereinafter described.

Please make note of the following clarifications:

1. Correction to the Solicitation Section 3.7 IFB Tentative Time Schedule as follows:

Invitation For Bids available on or about		July 20, 2022	
Mandatory Pre-Bid Meeting		~~August 10, 2022~~	August 3, 2022
Pre-Qualification Application Deadline		~~August 31, 2022~~	August 10, 2022
Inquiry deadline, no questions after this date		~~September 14, 2022~~	August 10, 2022
Addendum Posted		~~September 28, 2022~~	August 12, 2022
Submittal deadline for proposals		~~October 12, 2022~~	August 23, 2022
City Council Approval		~~October 26, 2022~~	September 7, 2022
Notice of Award & Contract execution		~~November 9, 2022~~	September 8, 2022
Bonding & Insurance Cert due		~~November 16, 2022~~	September 15, 2022
Preconstruction meeting		~~November 29, 2022~~	TBD
Work begins no later than		~~December 5, 2022~~	October 15, 2022
Final Completion		~~June 8, 2023~~	April 15, 2023
Holidays:	Christmas	December 26, 2022	
	New Year's	January 2, 2023	
	MLK Day	January 16, 2023	
	President's Day	February 20, 2023	
	~~Memorial Day~~	~~May 29, 2023~~	

The original solicitation for the project noted above is amended as noted.

All other conditions of subject remain the same.

Respectfully,

Dolly Daniels, Senior Buyer
City of Grand Junction, Colorado

Please note that solicitations issued prior to September 07, 2016 can be found here: http://legacy.rockymountainbidsystem.com

Addendum Description

All tentative time schedule dates for this solicitation have changed. SEE ADDENDUM 2. (There is no attachment for this Addendum 3.)

Notice Modifications

Notice Information	From Value	To Value
Question Acceptance Deadline	9/14/22 2:00 PM MST/MDT	8/10/22 2:00 PM MST/MDT
Closing Date	10/12/22 10:00 AM MST/MDT	8/23/22 10:00 AM MST/MDT
Pre-Bidding Events	Prebid Conference	Prebid Conference
	Mandatory	Mandatory
	8/10/22 10:00 AM MST/MDT	**8/3/22 10:00 AM MST/MDT**
	Persigo Waste Water Treatment Plant Training Room 2145 River Road Grand Junction, CO 81505	Persigo Waste Water Treatment Plant Training Room 2145 River Road Grand Junction, CO 81505
	Mandatory Pre-Bid Meeting: Prospective bidders are required to attend a mandatory pre-bid meeting on August 10, 2022 at 10:00 am. Meeting location shall be at the Persigo Waste Water Treatment Plant, Training 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). **NOTE: Bidders that arrive more than 10 minutes late to the meeting shall lnot be eligible to submit a bid response to this solicitiation process for this project**.	**Mandatory Pre-Bid Meeting: Prospective bidders are required to attend a mandatory pre-bid meeting on August 3, 2022 at 10:00 am. Meeting location shall be at the Persigo Waste Water Treatment Plant, Training 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). NOTE: Bidders that arrive more than 10 minutes late to the meeting shall lnot be eligible to submit a bid response to this solicitiation process for this project.**

Category Modifications

Added Categories
No Categories Added

Removed Categories
No Categories Removed

CITY OF Grand Junction COLORADO

Purchasing Division

ADDENDUM NO. 4

DATE: **July 27, 2022**
FROM: **City of Grand Junction Purchasing Division**
TO: **All Offerors**
RE: **IFB-5096-22-DD Odor Control Improvement Projects**

Offerors responding to the above referenced solicitation are hereby instructed that the requirements have been clarified, modified, superseded and supplemented as to this date as hereinafter described.

Please make note of the following clarifications:

1. Q. Requesting pre-approval to allow EcoVerde to be named as an approved manufacturer for Specification Section 443131 Biological Odor Control System and Specification Section 443116 Carbon Odor Control System.
   A. EcoVerde has been evaluated and determined to be an approved manufacturer.

2. Q. Are there any other milestones other than final completion?
   A. No, there are no other milestones.

3. Q. Please confirm that project does not have any Wage Rate/Prevailing Wage requirements.
   A. There are no Wage Rate/Prevailing Wage requirements.

4. Q. Please confirm American Iron & Steel procurement policy does not pertain to this project.
   A. American Iron & Steel procurement policy does not pertain to this project.

5. Q. Please provide a Geotech Report.
   A. See Attached.

6. Q. Is an engineer's estimate available?
   A. Engineer estimate is not available.

The original solicitation for the project noted above is amended as noted.

All other conditions of subject remain the same.

Respectfully,

Dolly Daniels, Senior Buyer
City of Grand Junction, Colorado

Geotechnical Investigation Report
Odor Improvements Project
City of Grand Junction, Colorado

RockSol Project No. 599.27
May 19, 2021

Prepared for:

City of Grand Junction
333 West Avenue, Building C
Grand Junction, Colorado, 81501

Attention: Kurt Carson, PE

Prepared by:

RockSol Consulting Group, Inc.
12076 Grant Street
Thornton, Colorado 80241
(303) 962-9300

Geotechnical Investigation Report
Odor Improvements Project
City of Grand Junction, Colorado

RockSol Project No. 599.27
May 19, 2021

Prepared for:

City of Grand Junction
333 West Avenue, Building C
Grand Junction, Colorado, 81501

Attention: Kurt Carson, PE

Prepared by:

RockSol Consulting Group, Inc.
12076 Grant Street
Thornton, Colorado 80241
(303) 962-9300

COLORADO REGISTERED
DONALD GORDON HUNT
35249
5-19-21
PROFESSIONAL ENGINEER

Callen Hecker, P.E.
Civil Engineer Associate

Ryan Lepro
Engineering Geologist

Donald G. Hunt, P.E.
Senior Geotechnical Engineer

Table of Contents

ATTACHMENTS

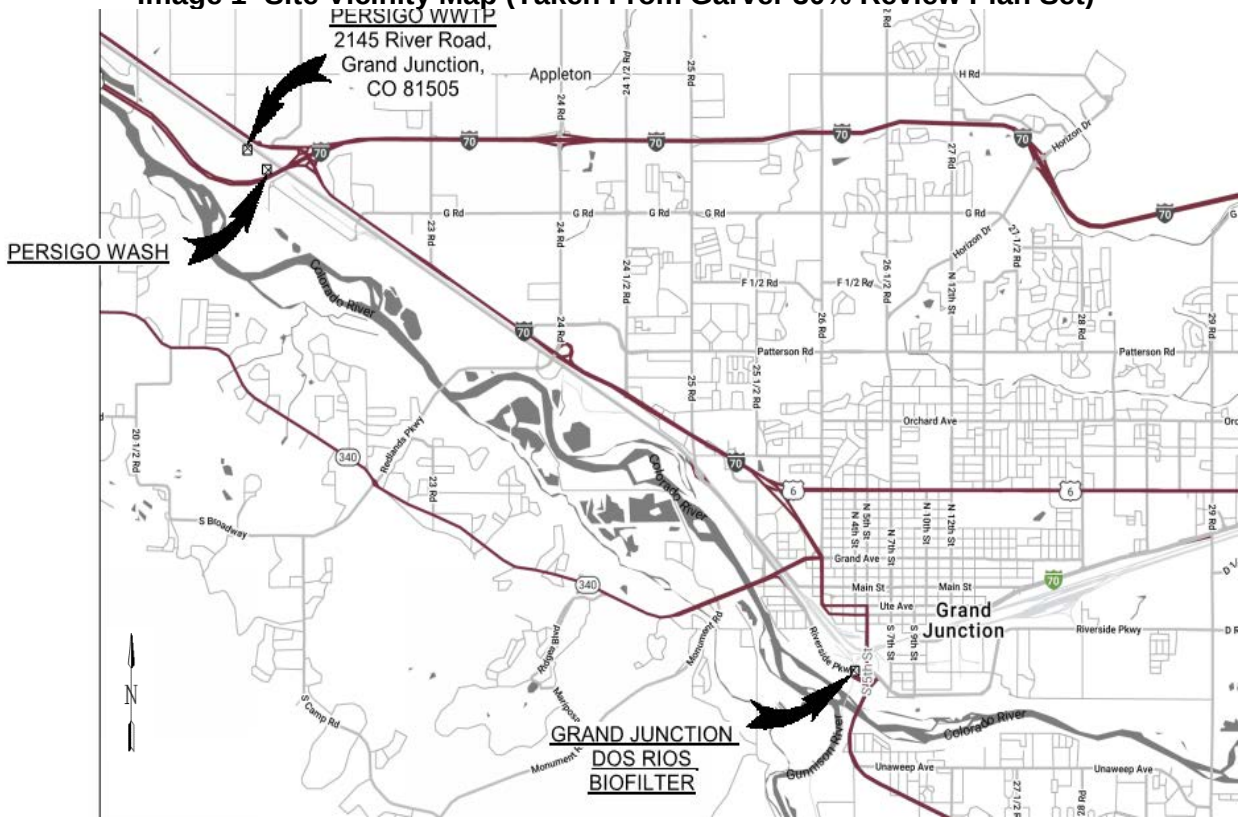
1.0 PROJECT PURPOSE AND DESCRIPTION

This report documents the Geotechnical Investigation performed by RockSol Consulting Group, Inc. (RockSol) to assist with design of proposed improvements to aid with odor control for existing City of Grand Junction wastewater infrastructure. For this investigation RockSol has designated two locations for proposed improvements, identified as Site One and Site Two.

Site One includes a proposed 40-foot by 50-foot Bio-Trickling Filter pad site at the Persigo Wastewater Treatment Plant (WWTP) located just north of the existing Headworks Building. Also included at this location are two concrete foundations to support a 24-inch aerial pipe spanning across Persigo Wash (See Image 1).

Site Two is labeled as the “Dos Rios” area in Image 1 and is located north of the US 50/Riverside Parkway On-Ramp. Site Two includes a 20-foot by 23-foot Bio-Trickling Filter pad site as well as a new 12-inch Duct to tie the new Bio-Filter into existing wastewater infrastructure. Two alternatives have been proposed for the new 12 inch duct line; however, the scope of this report will only include investigations for Alternative 2, which is the west location that will connect to a Manhole at the gore of Riverside Parkway Off-Ramp/US 50 (See Appendix A for 30% Design Layouts prepared and provided by Garver Consultants).

Image 1- Site Vicinity Map (Taken From Garver 30% Review Plan Set)



The scope of work for this geotechnical investigation included:

- Formulating a drilling pattern and performing the necessary subsurface investigation. Collecting samples as required.
- Performing appropriate laboratory tests and analyzing the data to determine strength, allowable bearing capacity, and corrosivity of foundation material.
- Evaluating potential geologic hazards at the site.

- Providing recommendations for foundation type and subgrade preparation.
- Providing recommendations for bearing capacity for recommended foundations.
- Providing recommendations for lateral earth pressures, where needed.
- Providing recommendations for pavement sections (flexible and rigid pavement types).
- Providing recommendations for drainage, grading, and general earthwork.
- Providing seismic site class in accordance with the 2018 International Building Code (IBC)
- Preparing a Geotechnical Investigation Report summarizing the subsurface conditions encountered, the results of the laboratory testing, geological hazards, pavement design recommendations, geotechnical parameters for foundation design, and earthwork recommendations.

2.0 PROJECT SITE CONDITIONS

2.1 Site One

The site consists of two different areas in the vicinity of the City of Grand Junction Persigo Wastewater Treatment Facility (WWTF) located just south of River Road (See Image 2). The first area is the proposed location of a Bio-Trickling Filter Pad (designated as Bio-Trickling Filter No.1) and the second area is the proposed location of an aerial pipe crossing over Persigo Wash. Directly to the south, the Colorado River flows approximately 1000 feet away from the Persigo WWTF locale whole the north and east edges of the site are surrounded by industrial and commercial developments. Topography of the general area consists of flat to mild slopes trending toward the river. See Appendix A for more details on layout of the proposed improvements.

Image 2- Site Map—Site One (Google Maps)

2.2 Site Two

Site Two is in the downtown area of Grand Junction and is due south of the Union Pacific Train Yard. The overall condition of the area is considered commercial/industrial. Furthermore, the

Colorado River flows a few hundred feet to the south. The existing conditions of the site is landscaped and engineered for drainage. Included in this location is a second proposed Bio-Trickling Filter Pad (designated as Bio-Trickling Filter No.2) anticipated to be installed in open space between the Riverside Parkway On-Ramp, South 4th Street, and South 5th Street (See Image 3). Additionally, a new 12 Inch duct line is proposed to run from an existing manhole to the southeast of the area (designated as Manhole No.1), to the new Bio-Trickling Filter, and then to the southwest of the pad to another existing manhole (designated as Manhole No.2). See Appendix A for the proposed layout of these improvements.

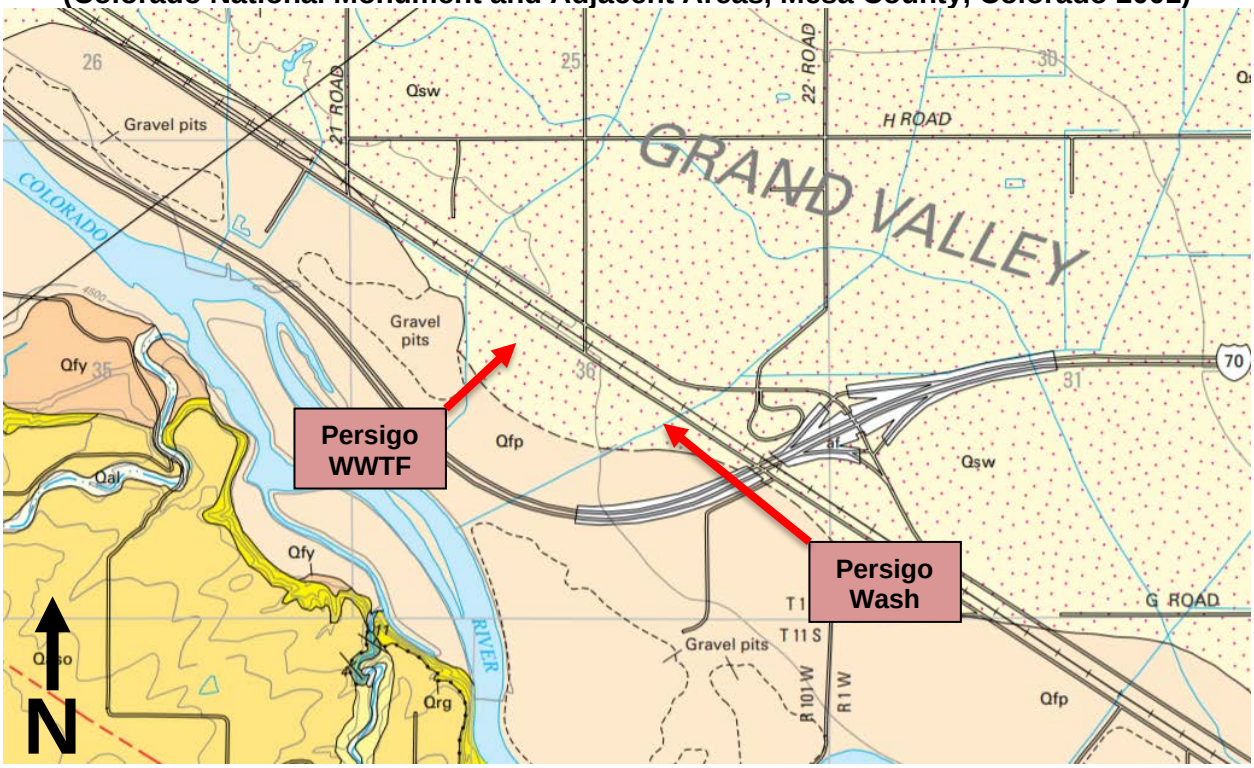
Image 3- Site Map—Site Two (Google Maps)

3.0 GEOLOGICAL CONDITIONS

3.1 Geologic Setting—Site One

Based on information presented in the United States Geological Survey (USGS) Geologic Map (See Image 4, *Site Geology Map*) of Colorado National Monument and Adjacent Areas, Mesa County, Colorado, dated 2001, the Persigo Wastewater Treatment Facility spreads two different classifications of surficial deposits. Sheetwash Deposits (Qsw) and Flood-Plain and Stream-Channel Deposits (Qfp) are both mapped at the project site. Sheetwash generally consists of light-gray sandy clay and silty clay deposited on very gentle slopes north of the Colorado River, derived from Mancos Shale. Conversely, the flood-plain deposits consist of chiefly gravel in a sand matrix. The materials identified by the USGS mapping were generally consistent with native soils encountered during our geotechnical investigation.

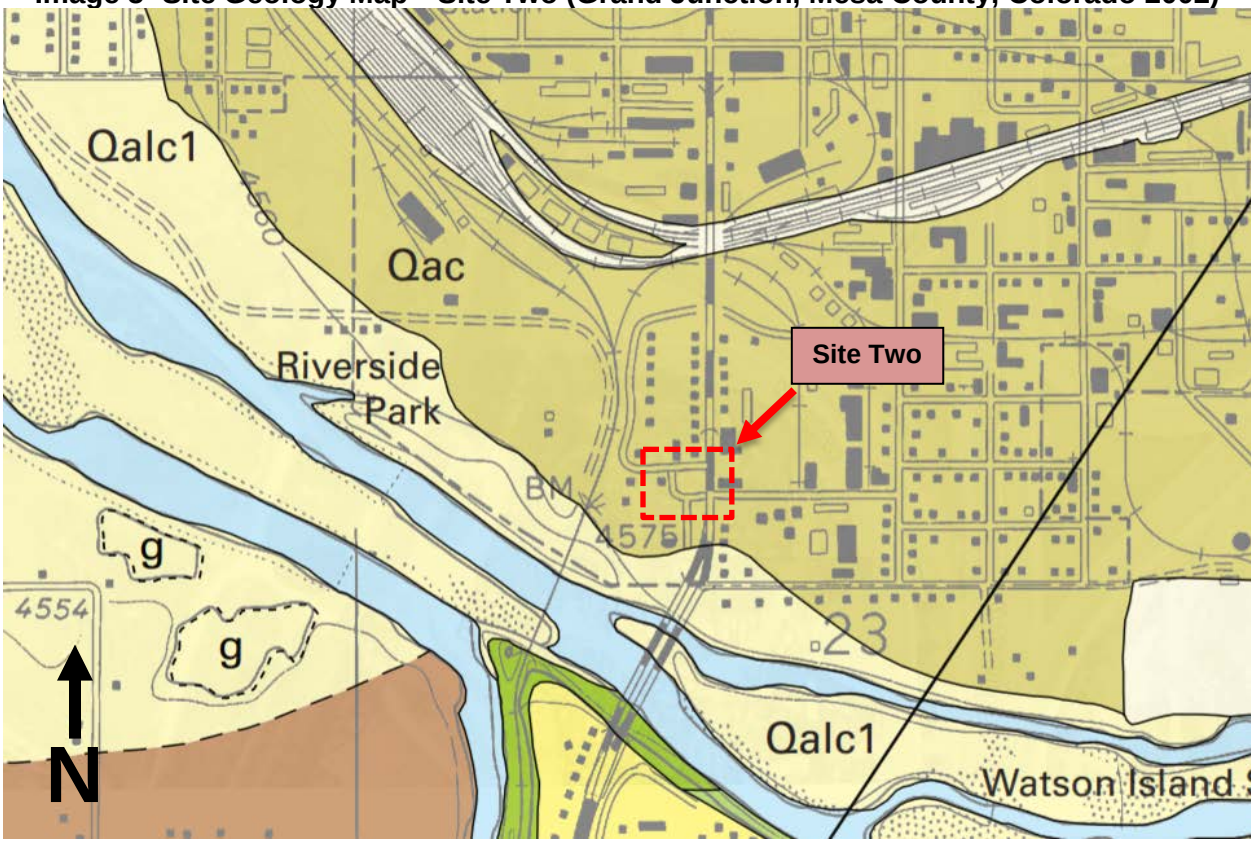
Image 4- Site Geology Map—Site One
(Colorado National Monument and Adjacent Areas, Mesa County, Colorado 2001)



3.2 Geologic Setting—Site Two

The United States Geological Survey (USGS) Geologic Map (See Image 5, *Site Geology Map*) of the Grand Junction Quadrangle, Mesa County, Colorado, by Roger B. Scott, Paul E. Carrara, William C. Hood, and Kyle E. Murray, dated 2002, indicates interbedded layers/deposits of alluvium and colluvium (Qac) soils are mapped at or near the surface within project Site Two. Alluvium generally consists of silt, sand and gravels and the colluvium generally consists of sandy silt, silty to clayey sand, and sandy clay. The materials identified by the USGS mapping were generally consistent with native soils encountered during our geotechnical investigation.

Image 5- Site Geology Map—Site Two (Grand Junction, Mesa County, Colorado 2002)



3.3 Geologic Hazards Discussion

Based on our laboratory results and understanding of the site geologic conditions, expansive soils were not encountered at this site that would impact the proposed development. Native clays with low bearing resistance have been identified and they present a risk of potential settlement for heavily loaded structural elements.

Due to the topography of Sites One and Two, slope instability is not considered a site geologic hazard; however, site excavations must consider potential shoring and stabilization requirements due to soft, very moist to wet clay soils and groundwater noted at depths varying between 8 feet and 12 feet below existing grades.

Due to the proximity of the Colorado River to both sites, flooding may pose a risk to structures and infrastructure within and adjacent to flood plains. In addition, scour conditions may pose a risk to the Persigo Wash slope banks during high intensity flows and flood events.

4.0 SUBSURFACE EXPLORATION SUMMARY

For this investigation, on February 25, 2021, RockSol drilled a total of 7 boreholes identified as Boreholes B-1 through B-7, respectively (See Appendix A).

Boreholes B-1 through B-4 were drilled at Site One. Boreholes B-1 and B-2 were drilled for the foundation recommendations of Bio-Filter Pad Number 1. Borehole B-1 was drilled to a depth of 27 feet after encountering very hard sedimentary bedrock. Boreholes B-3 and B-4 were drilled on both sides of Persigo Wash for the foundation study of the aerial pipe crossing.

Boreholes B-5 through B-7 were drilled at Site Two. Borehole B-5 was drilled for the foundation study of Bio-Filter Pad Number 2. Boreholes B-6 and B-7 were drilled for the west alternative of the 12" Duct location.

Boreholes were advanced with a CME 55 track mounted drill rig using 6.25-inch outside diameter hollow stem auger and 5.25-inch outside diameter ODEX drilling methods at Borehole Locations B-1 and B-5. The boreholes were logged in the field by a representative of RockSol with the depth to groundwater, if encountered, noted at the time of drilling. The boreholes were backfilled at the completion of drilling.

Subsurface materials were sampled and resistance of the soil to penetration of the sampler was performed using modified California barrel and standard split spoon samplers. Penetration Tests were performed using an automatic lift system and a hammer weighing 140 pounds falling 30 inches. The modified California barrel sampler has an outside diameter of approximately 2.5 inches and an inside diameter of 2 inches. The standard split spoon sampler used had an outside diameter of 2 inches and an inside diameter of 1⅜-inches. Brass tube liners were used with the modified California barrel sampler. Brass tube liners are not used with the standard split spoon sampler.

The standard split spoon sampling method is the Standard Penetration Test (SPT) described by ASTM Method D-1586. The modified California Barrel sampling method is similar to the SPT test with the difference being the sampler dimensions and the number of 6-inch intervals driven with the hammer per ASTM D3550. It is RockSol's experience that blow counts obtained with the modified California sampler tend to be slightly greater than a standard split spoon sampler.

Penetration resistance values (blow counts) were recorded for each sampling event. Blow counts, when properly evaluated, indicate the relative density or consistency of the soils. Depths at which the samples were taken, the type of sampler used, and the blow counts that were obtained are shown on the Borehole Logs (See Appendix B).

Each borehole location was surveyed by the City of Grand Junction and ground surface elevation and location (easting and northing) was provided to RockSol.

5.0 LABORATORY TESTING

Soil samples retrieved from the borehole locations were examined by the project geotechnical engineer in the RockSol laboratory. The following laboratory tests were performed in accordance with the American Society for Testing and Materials (ASTM), American Association of State Highway and Transportation Officials (AASHTO), and current local practices:

- Natural Moisture Content (ASTM D-2216)
- Percent Passing No. 200 Sieve (ASTM D-1140)
- Liquid and Plastic Limits (ASTM D-4318)
- Dry Density (ASTM D-2937)
- Gradation (ASTM D 6913)
- Water-Soluble Sulfates (CDOT CP-L 2103)
- Water-Soluble Chloride Content (AASHTO T291-91)
- Standard Test Method for pH of Soils (ASTM D4972-01)
- Soil Resistivity (ASTM G187 - Soil Box)
- Soil Classification (ASTM D-2487, ASTM D-2488, and AASHTO M145)

- Swell Test (ASTM D-4546)
- Resistance Value (R-Value) (AASHTO T-190)

R-Values (Resistance Values) were tested by Cesare, Inc. All other laboratory tests were performed by RockSol. Laboratory test results are presented in Appendix C and are also summarized on the Borehole Logs presented in Appendix B.

6.0 SUBGRADE CHARACTERIZATION

Laboratory test results were used to characterize the engineering properties of the subsurface material encountered. For soil classification, RockSol conducted sieve analyses and Atterberg Limits tests. Swell tests were used to determine the swell or consolidation characteristics of the subsurface materials. Lab testing was also performed on selected samples to determine the water-soluble sulfate content of subsurface materials to assist with cement type recommendations.

6.1 Site One, Bio-Filter Pad Number 1 Subsurface Conditions

Boreholes B-1 and B-2 were drilled to investigate the existing conditions for Bio-Filter Pad Number 1. Subsurface conditions generally consisted of approximately 10 to 12 feet of soft silty to sandy clay overlying a layer of dense to very dense gravelly sand with cobbles. Borehole B-1 was drilled into sedimentary bedrock, which was encountered at a depth of 26 feet below the existing surface grade. The bedrock encountered consisted of gray to dark gray, very hard claystone and shale.

The sedimentary bedrock encountered is believed to be Mancos Shale, identified beneath the native overburden soils in the Grand Valley region, and is anticipated to remain at a relatively constant elevation beneath the project location. Groundwater was encountered at the time of drilling at a depth of 12 feet below existing grade at Borehole B-1 and 8 feet below existing grade at Borehole B-2 (See Table 6A below for elevation summaries for Boreholes B-1 and B-2).

6.2 Site One, Aerial Pipe Crossing Subsurface Conditions

Boreholes B-3 and B-4 were drilled on either side of the Persigo Wash, which will be spanned with the proposed pipeline. Subsurface conditions generally consisted of approximately 17 feet to 18 feet of very loose to loose silty to clayey sand and soft to stiff sandy to silty clay overlying dense to very dense gravelly sand with cobbles. Bedrock was not encountered in Boreholes B-3 and B-4. Groundwater was noted in both boreholes at approximate depths of 9.5 feet (Borehole B-3) and 17 feet (Borehole B-4) below existing grades. The boreholes were drilled to a maximum depth of approximately 20 feet below existing grades into the gravelly sand with cobbles layer.

6.3 Site Two, Bio-Filter Pad Number 2 Subsurface Conditions

Borehole B-5 was drilled for Bio-Filter Pad Number 2 on the southeast corner of the anticipated new pad footprint. Native soil consisting of loose clayey sand was encountered to an approximate depth of 10 feet below grade overlying a medium dense to very dense gravelly sand with cobble layer (cobble diameters of approximately 8 to 10 inches). ODEX drilling was performed through the gravelly sand and cobble layer into sedimentary bedrock encountered at an approximate depth of 19 feet below existing grade. The sedimentary bedrock encountered consisted of gray to dark gray, very hard claystone and shale, as described in Section 6.1. Groundwater was encountered during drilling operations at an approximate depth of 10 feet below existing grade (See Table 6A for the summary of bedrock and groundwater elevations).

6.4 Site Two, Proposed 12 Inch Duct Subsurface Conditions

Boreholes B-6 and B-7 were taken for the subsurface investigation for the proposed new 12" Duct. B-6 was drilled at the toe of the existing embankment and B-7 was drilled in the gore area between the Riverside Drive Off Ramp and South 5th Street (See Appendix A). Fill was encountered in the upper 3 feet and generally consisted of medium dense clayey sand overlying native soils that consist of very stiff to hard sandy clay and medium dense to very dense silty to clayey sand with gravel and cobbles. Black organic material was noted within the bulk sample obtained from an approximate depth ranging from 2 to 5 feet below the existing grade.

Table 6A - Approximate Ground Surface and Groundwater Elevations

Borehole No.	Ground Surface Elevation (ft)	Borehole Bottom Elevation (ft)	Groundwater Depth (ft)	Groundwater Elevation (ft)	Bedrock Elevation (ft)
B-1	4518.3	4491.0	12.0	4506.3	4492.3
B-2	4518.4	4498.9	8.0	4510.4	--
B-3	4523.1	4503.6	9.5	4513.6	--
B-4	4522.8	4502.3	17.0	4505.8	--
B-5	4566.2	4545.7	10.0	4556.2	4547.2
B-6	4568.2	4555.7	10.0	4,558.2	--
B-7	4569.1	4553.6	9.0	4,560.1	--

6.5 Subgrade Bulk Soil Classifications

Subgrade bulk samples were obtained at each borehole at various depths and were classified according to AASHTO M145 procedures. A summary of the subgrade bulk soil classifications is presented in Table 6B.

Table 6B – Subgrade Bulk Soil Classification Summary

Borehole Location	Depth (feet)	AASHTO Classification
B-1	0 - 5'	A-6 (12)
B-2	0 - 5'	A-6 (12)
B-3	0 - 5'	A-4
B-4	0 - 5'	A-4
B-5	0 - 5'	A-6
B-5	14 - 19'	A-1-a
B-6	0 - 2'	A-4
B-6	2 - 5'	A-4
B-7	0 - 4'	A-4

6.6 Swell/Consolidation Potential of Subgrade Soils

Based on swell test results and plasticity index (PI) testing, the subgrade soils encountered within the upper 10 feet of the existing surface elevation exhibit nil to low swell potential and low to moderate consolidation potential (-0.3 percent to -3.5 percent consolidation). Six swell/consolidation tests were performed on samples obtained from Boreholes B-1 to B-5 at approximate depths of 3 feet, 7 feet, and 8 feet below existing grades.

Based on consolidation and penetration data obtained from the boreholes drilled, special mitigation is recommended for design and construction of shallow foundation systems being considered (See Section 8.0 Geotechnical Analysis and Recommendations) due to settlement potential and constructability. Recommended mitigation consists of over excavation and replacement with CDOT Class 1 Structure Backfill material.

6.7 Cement Type/Sulfate Resistance Discussion

The City of Grand Junction uses the 2018 International Building Code (IBC 2018) for development of concrete resistance parameters. The IBC 2018 references the American Concrete Institute (ACI) for such parameters. Cementitious material requirements for concrete in contact with site soils or groundwater are based on the percentage of water-soluble sulfate in either soil or groundwater that will be in contact with concrete constructed for this project. Mix design requirements for concrete exposed to water-soluble sulfates in soils or water is considered by the ACI as shown in Table 6D and in the Building Code Requirements for Structural Concrete (ACI 318-14) (ACI Tables 19.3.1.1 & 19.3.2.1).

Table 6D - Requirements to for Concrete by Sulfate Exposure Class

Exposure Class	Water-soluble sulfate (SO_4), in dry soil, percent	Water Cementitious Ratio, maximum	Cementitious Material Requirements (ASTM C150)	Minimum Compressive Strength (psi)
S0	0.00 to <0.10	Not Applicable	No Restriction	2500
S1	0.10 to < 0.20	0.50	Type II	4000
S2	0.20 to 2.0	0.45	Type V	4500
S3	2.01 or greater	0.45	Type V plus pozzolan	4500

The concentration of water-soluble sulfates measured in soil samples obtained from RockSol's exploratory boreholes varied from 0.00 percent to 1.02 percent (See Appendix B and C). Based on the results of the water-soluble sulfate testing, Exposure Class S2 is recommended for concrete in contact with subgrade materials for the project. For Exposure Class S2, Type V cement is recommended. A compressive concrete strength of 4,500 psi is also recommended for the S2 Exposure Class.

6.8 Corrosion Resistance Discussion

To determine the existing corrosivity conditions of the in-situ soil, water- soluble sulfate, chloride content, pH and electrical resistivity tests were performed and compared to *Table 1 - Guidelines for Selection of Corrosion Resistance Levels* as presented in the *CDOT Pipe Materials Selection Guide,* dated April 30, 2015. Table 6E summarizes the accumulated data.

Table 6E - Corrosion Resistance Summary

Borehole Location	Sample Depth (ft)	Water-Soluble Chloride (%)	Water-Soluble Sulfate (% by weight)	pH	CR Level
B-2	0 - 5'	0.12	**0.96**	8.51	CR4
B-5	0 - 5'	0.04	**0.24**	8.06	CR3
B-6	2 - 5'	0.02	**0.18**	7.85	CR2

Additional testing at each location may be performed to provide structure specific corrosion resistance recommendations. In Table 6E, we have used "bold" text to identify the test result variable that is contributing to the Corrosion Resistance Level above 0. It should be noted that the presence of sulfates in the soils are the driving factor for increase in Corrosion Resistance Level and based on the available data.

Due to elevated sulfate content, careful consideration for material type should be accounted for when selecting construction materials and it should be noted that there is higher potential for metallic materials to experience corrosion.

In addition, electrical resistivity analyses were performed in the RockSol laboratory using the soil box method (ASTM G-187). The test results were referenced against *Table 2 – Minimum Pipe Thickness For Metal Pipes Based On The Resistivity And pH Of The Adjacent Soil* as presented in the *CDOT Pipe Materials Selection Guide,* effective April 30, 2015. See Table 6F below for recommendations. Additional testing should be performed to provide structure specific recommendations.

Table 6F - Minimum Thickness Recommendations for Metal Pipes

Borehole No.	Sample Depth (ft)	Saturated Resistivity (ohm-cm) at Moisture Content (%)	pH	Minimum Required Gauge Thickness for Metal Pipe Material
B-2	0 - 5	1,400 Ohm-cm @ 5.6%	8.51	18-gauge Polymer Coated
B-5	0 - 5	2,500 Ohm-cm @ 9.8%	8.06	18-gauge Aluminized Type 2
B-6	2 - 5	2,800 Ohm-cm @ 8.9%	7.85	18-gauge Aluminized Type 2

7.0 SEISMICITY DISCUSSION

The City of Grand Junction uses the 2018 International Building Code (IBC-2018) for development of seismic design parameters. The IBC-2018 references the American Society of Civil Engineers 7-16 (ASCE 7-16) seismic design code. Seismic design parameters were obtained from the United States Geological Survey (USGS) Earthquake Design Maps using the 2018 International Building Code specifications which reference ASCE 7-16. Values were obtained using the USGS site: https://seismicmaps.org.

7.1 Seismic Design Parameters

Based on the Standard Penetration Resistance encountered for the onsite subsurface conditions, it is our opinion that the Bio-Filter Pads at both Site One and Site Two meet criteria for Seismic Site Class D. Shear wave velocity testing was not performed by RockSol. The IBC classifies water treatment facilities and wastewater treatment facilities as Risk Category III structures (per Table 1604.5 of the *IBC-2018)*. Interpolated values for Peak Ground Acceleration Coefficient (PGA), Spectral Acceleration Coefficient at Period 0.2 sec (S_s), and Spectral Acceleration Coefficient at Period 1.0 sec (S_1) were obtained using the latitude and longitude for the site. The seismic acceleration coefficients obtained (data based on 0.05-degree grid spacing) are presented in Table 7A

Table 7A – Seismic Acceleration Coefficients (IBC 2018)

Location	Peak Ground Acceleration (PGA)	Spectral Acceleration Coefficient - S_s (Period 0.2 sec)	Spectral Acceleration Coefficient - S_1 (Period 1.0 sec)
Bio-Filter Pad No. 1 (Latitude°/Longitude°) (39° 6’ 54.82" N/ 108° 39' 25.14 "W)	0.129	0.235	0.065
Bio-Filter Pad No. 2 (Latitude°/Longitude°) (39° 3’ 28.72" N/ 108° 33' 54.89 "W)	0.130	0.237	0.065

The acceleration coefficients are then used to obtain Site Factors F_a, and F_v based on the defined Site Class as shown in Tables 1613.2.3(1) and 1613.2.3(2) of the *IBC-2018*. A summary of the Site Factor values obtained are shown in Table 7B.

Table 7B – Seismic Site Factor Values

Location	F_{pga} (at zero-period on acceleration spectrum)	F_a (for short period range of acceleration spectrum)	F_v (for long period range of acceleration spectrum)
Bio-Filter Pad No. 1	1.542	1.6	2.4
Bio-Filter Pad No. 2	1.539	1.6	2.4

Table 7C summarizes the Seismic Zone determination and horizontal response spectral Acceleration Coefficients (S_{D1}) and (S_{DS}) obtained for the proposed structures. Seismic Performance Zone determination is based on the value of the horizontal response spectral Acceleration Coefficient at 1.0 Seconds, S_{D1}, as determined by *Eq. 16-39* of the IBC-2018 and the horizontal response spectral Acceleration Coefficient at 0.2 Seconds, S_{DS}, as determined by *Eq. 16-38.* Values for S_1 and F_v are presented in Tables 7A and 7B, shown above. The seismic performance zone was determined *IBC-2018* Tables 1613.2.5(1) and (2). Seismic Design output sheets are summarized in Appendix F.

Table 7C – Seismic Performance Zone

Location	Acceleration Coefficient at 1.0 seconds (S_{D1})	Acceleration Coefficient at 0.2 seconds (S_{DS})	Seismic Design Category (1)
Bio-Filter Pad No. 1	0.105	0.251	B
Bio-Filter Pad No. 2	0.105	0.253	B

Note (1): Seismic Design Category B (for Risk Category III) is assigned when
$0.067g \leq S_{D1} < 0.133g$ *and* $0.167g \leq S_{DS} < 0.330g$

8.0 GEOTECHNICAL ANALYSIS AND RECOMMENDATIONS

A 40-foot by 50-foot Bio-Trickling Filter Pad (anticipated weight of 45,000 lbs) is proposed just north of the existing Headworks Building at the Persigo WWTP and two concrete foundations to support a 24-inch aerial pipe spanning across Persigo Wash. In addition, a 20-foot by 23-foot Bio-Trickling Filter Pad (anticipated weight of 6,000 lbs and 2,000 lbs carbon) is proposed at the "Dos Rios" area located north of the US 50/Riverside Parkway On-Ramp. A new 12-inch Duct to tie the new Bio-Filter into existing wastewater infrastructure is also proposed at the Dos Rios area (See Appendix A for 30% Design Layouts prepared and provided by Garver Consultants). A brief discussion of anticipated soil conditions at the 12-inch Duct bore location under Riverside Parkway Ramp is presented in Section 8.4.

Our boreholes encountered relatively soft to loose, compressible soils to depths on the order of 11 feet at Persigo WWTP, 18 feet at the Persigo Wash crossing, and 10 feet at the Dos Rios site. As a result of the soft to loose soil conditions, shallow foundation systems require limited allowable bearing pressures and consideration of supporting subgrade soil improvement. A discussion of shallow foundation geotechnical parameters is presented in Sections 8.1 and 8.2.

As an alternative to shallow foundation systems, a deep foundation alternative using helical piers is feasible. The helical piers would be required to bear on and into the deep, underlying

sand/gravel/cobble layer that is present at each site. The advantage of the helical pier system is the relative ease of installation and with little to no waste soil generated. This system does require special structural design. A discussion of helical pier geotechnical parameters is presented in Section 8.3.

8.1 Shallow Foundation System (Persigo WWTP Filter Pad)

Due to the presence of soft clay soils, a very low allowable bearing pressure for shallow foundations is recommended at the proposed Persigo WWTP Filter Pad site to limit potential settlement. For the existing site soils, a maximum allowable bearing pressure of 750 pounds per square foot (psf) is recommended.

Ground improvement is recommended to achieve a service bearing resistance greater than 750 psf at this site. At a minimum, RockSol recommends ground improvement consisting of overexcavation of subgrade soils to a minimum depth of 2 feet below the bottom of shallow foundations (footings) and replacement with at least 2-feet of a material meeting CDOT Class 1 Structure Backfill requirements. The Class 1 Structure Backfill material shall also extend a minimum of 2 feet horizontally beyond the limits of the footing perimeter.

Placement of the backfill material should be in horizonal lifts with a maximum lift thickness of 6 inches. Compaction of each lift with vibratory methods using lightweight equipment is recommended.

With two feet (vertically) of Structural Backfill materials, RockSol considers an allowable bearing resistance of 1.0 ksf appropriate. If greater allowable bearing resistance is required, additional thickness of replaced subgrade soil is required and RockSol should be contacted to provide additional recommendations.

Allowable bearing resistance is estimated to correspond to a total settlement of less than 1-inch. The bottom of the pad should be a minimum of 3 feet below finished grade for frost considerations.

A representative of the geotechnical engineer should observe all foundation excavations prior to placement of the subgrade improvement material.

8.2 Shallow Foundation System (Persigo Wash Crossing and Dos Rios Filter Pad)

Due to the presence of loose to very loose sand soils, a low allowable bearing pressure for shallow foundations is recommended at the proposed Persigo Wash Crossing and Dos Rios Filter Pad sites to limit potential settlement. For the existing site soils, a maximum allowable bearing pressure of 1,000 pounds per square foot (psf) is recommended.

Ground improvement is recommended to achieve a service bearing resistance greater than 1,000 psf at both sites, if required. At a minimum, RockSol recommends ground improvement consisting of overexcavation of subgrade soils to a minimum depth of 2 feet below the bottom of shallow foundations (footings) and replacement with at least 2-feet of a material meeting CDOT Class 1 Structure Backfill requirements. The Class 1 Structure Backfill material shall also extend a minimum of 2 feet horizontally beyond the limits of the footing or pad perimeter.

Placement of the backfill material should be in horizonal lifts with a maximum lift thickness of 6 inches. Compaction of each lift with vibratory methods using lightweight equipment is recommended.

With two feet (vertically) of Structural Backfill materials, RockSol considers an allowable bearing resistance of 1.5 ksf appropriate. If greater allowable bearing resistance is required, additional

thickness of replaced subgrade soil is required and RockSol should be contacted to provide additional recommendations.

Allowable bearing resistance is estimated to correspond to a total settlement of less than 1-inch. The bottom of all footings shall be a minimum of 3 feet below finished grade for frost considerations.

A representative of the geotechnical engineer should observe all foundation excavations prior to placement of the subgrade improvement material.

8.3 Helical Pier Foundation System

Helical piers are a feasible alternative to shallow foundations, especially if greater bearing resistance is required. The helical piers would need to bear in the dense gravelly sand with cobble layer encountered in our boreholes. The depth to the sand/gravel/cobble layer may vary slightly across each site (See Table 8.1) and therefore some allowance for variations in the total length of the helical piers must be considered.

Table 8.1 - Approximate Groundwater and Sand, Gravel, Cobble Layer Elevations

Site Location	Borehole No.	Ground Surface Elevation (ft)	Groundwater Elevation (ft)	Approximate Sand, Gravel,Cobble Layer Elevation (ft)
Persigo WWTP	B-1	4,518.3	4,506.3	4,506
	B-2	4,518.4	4,510.4	4,507
Persigo Wash Crossing	B-3	4,523.1	4,513.6	4,505
	B-4	4,522.8	4,505.8	4,505
Dos Rios	B-5	4,566.2	4,556.2	4,555
	B-6	4,568.2	4,558.2	4,563
	B-7	4,569.1	4,560.1	4,562

For helical pier capacity estimating, RockSol recommends the bearing stratum of gravelly sand with cobbles be modeled as a cohesionless material at all three structure locations. A summary of minimum helical pier requirements for each of the three structure locations is presented below.

Persigo WWTP Site

The structure pad at this site will support a 45-kip load. Based on the subsurface conditions encountered at this site the following parameters were used to estimate the minimum number of helical piers required to support the proposed pad and structure load.

Persigo WWTP Helical Pier Input Parameter	Value
Undrained Shear Strength of Bearing Soil	0 psf
Friction Angle of Bearing Soil	40 degrees
Total Unit Weight of Bearing Soil	140 pcf
Total Unit Weight of Overburden Soil	115 pcf
Depth to Water Table	8 feet
Depth to Helical Plate	12 feet
Foundation Load	45 kips
Helical Plate Diameter	10 inches
Number of Plates	1
Projected Plate Area	0.51 square feet
Helical Shaft Size	2¼ inch square bar

Using the input parameters shown above, the following output values were obtained.

Persigo WWTP Output Parameter	Value
Soil Overburden Pressure	1130.4 psf
Bearing Capacity Factor, Nq	64
Bearing Capacity Factor, Nc	75
Ultimate Theoretical Capacity	37 kips
Allowable Capacity	19 kips
Estimated Helical Installation Torque	3364 foot-pounds
Maximum Allowable Torque	11500 foot-pounds
Minimum Required Piers	3 piers

RockSol anticipates that a single plate for each helical pier will be needed with a minimum plate diameter of 10-inches recommended. The minimum number of piers is listed for bearing requirements. Final structural design may require additional piers to satisfy other structural design requirements.

Persigo Wash Crossing Site

The structure pads at this site will support lightly loaded pipes over Persigo Wash. For loading RockSol has assumed a conservative load of 5 kips for each pad. Based on the subsurface conditions encountered at this site the following parameters were used to estimate the minimum number of helical piers required to support the proposed pad and structure load.

Persigo Wash Crossing Site Helical Pier Input Parameter	Value
Undrained Shear Strength of Bearing Soil	0 psf
Friction Angle of Bearing Soil	40 degrees
Total Unit Weight of Bearing Soil	140 pcf
Total Unit Weight of Overburden Soil	115 pcf
Depth to Water Table	9 feet
Depth to Helical Plate	18 feet
Foundation Load	5 kips
Helical Plate Diameter	8 inches
Number of Plates	1
Projected Plate Area	0.328 square feet
Helical Shaft Size	1¾ inch square bar

Using the input parameters shown above, the following output values were obtained.

Persigo Wash Crossing Site Output Parameter	Value
Soil Overburden Pressure	1508.4 psf
Bearing Capacity Factor, Nq	64
Bearing Capacity Factor, Nc	75
Ultimate Theoretical Capacity	32 kips
Allowable Capacity	16 kips
Estimated Helical Installation Torque	3176 foot-pounds
Maximum Allowable Torque	5500 foot-pounds
Minimum Required Piers	1 pier

RockSol anticipates that a single plate for each helical pier will be needed with a minimum plate diameter of 8-inches recommended. The minimum number of piers is listed for bearing requirements. Final structural design may require additional piers to satisfy other structural design requirements.

Dos Rios Site

The structure pad at this site will support a total load of 8 kips. Based on the subsurface conditions encountered at this site the following parameters were used to estimate the minimum number of helical piers required to support the proposed pad and structure load.

Dos Rios Site Helical Pier Input Parameter	Value
Undrained Shear Strength of Bearing Soil	0 psf
Friction Angle of Bearing Soil	40 degrees
Total Unit Weight of Bearing Soil	140 pcf
Total Unit Weight of Overburden Soil	125 pcf
Depth to Water Table	10 feet
Depth to Helical Plate	11 feet
Foundation Load	8 kips
Helical Plate Diameter	8 inches
Number of Plates	1
Projected Plate Area	0.328 square feet
Helical Shaft Size	1¾ inch square bar

Using the input parameters shown above, the following output values were obtained.

Dos Rios Site Output Parameter	Value
Soil Overburden Pressure	1312.6 psf
Bearing Capacity Factor, Nq	64
Bearing Capacity Factor, Nc	75
Ultimate Theoretical Capacity	28 kips
Allowable Capacity	14 kips
Estimated Helical Installation Torque	2764 foot-pounds
Maximum Allowable Torque	5500 foot-pounds
Minimum Required Piers	1 pier

RockSol anticipates that a single plate for each helical pier will be needed with a minimum plate diameter of 8-inches recommended. The minimum number of piers is listed for bearing requirements. Final structural design may require additional piers to satisfy other structural design requirements.

8.4 12” Duct Subsurface Soil Conditions Discussion

A new 12-inch Duct to tie the new Bio-Filter into existing wastewater infrastructure is proposed at the Dos Rios area (See Appendix A for 30% Design Layouts prepared and provided by Garver Consultants). A bore and jack operation is proposed to construct the new Duct under the existing Riverside Parkway Ramp. Borehole B-6 was located at the base of the ramp and Borehole B-7 located to the south to provide information about the type of materials that may be encountered. General subsurface information for Boreholes B-6 and B-7 is presented in Section 6.4 of this report. Of particular note is the presence of a very stiff to hard layer of sandy clay noted in both boreholes overlying a dense gravelly sand layer that contains cobbles. Above elevation 4560 feet the gravelly sand layer appears to have fewer cobbles and below elevation 4560 feet the presence of cobbles increases. Groundwater was encountered between elevations 4558 to 4560 feet.

9.0 PAVEMENT DESIGN RECOMMENDATIONS

New, relatively short access roads are planned where the City of Grand Junction will be installing two new of Bio-Filter Systems. The first site is at Persigo Water Treatment Facility where the

access road is proposed to run from the plant entrance north of the existing Headworks building approximately 60 feet east to the Bio-Filter pad. The second site is north of the Riverside Parkway/US 50 on ramp where the access road is proposed to run from 4th Street approximately 140 feet east to the Bio-Filter pad.

Pavement thickness evaluation for development of flexible and rigid pavement design recommendations within the City of Grand Junction right of way was performed in accordance with *Chapter 29.32 – Pavements and Truck Routes* (April 21, 2004) in the City of Grand Junction Transportation Engineering Design Standards (TEDS), *AASHTO Guide for the Design of Pavements* (1993 with the 1998 update for rigid pavement), *Guideline for the Design and Use of Asphalt Pavements for Colorado Roadways* (January, 2006) published by the Colorado Asphalt Pavement Association (CAPA).

9.1 Traffic Loading

The average daily traffic (ADT) for each site was estimated to be one H20 AASHTO classified truck per day which was supplied to RockSol by Garver Consultants. This data along with an annual growth factor of 1% was used to estimate the number of 18-kip equivalent single axle loads (ESALs) for flexible and rigid pavements in accordance with TEDS Subsection 29.32.030. Pavement design 18k ESALs calculations for flexible and rigid pavements are available in Appendix E.

9.2 Pavement Subgrade Characterization

Subgrade samples were obtained from each site and were tested for AASHTO soil classification. The subgrade soils tested in the top four feet classified as A-4 and A-6 AASHTO soil types (See Table 6B) with group indices from 0 to 12. RockSol assigned two R-Value tests based on the results of the soil classifications and are shown in Table 9A.

Table 9A - R-Value Summary

Sample Type	Borehole(s) at Sample Depths And AASHTO Classification	R-Value	Resilient Modulus, (psi) (see Note 1)
Individual	B-2 at 2’ ---- A-6 (12)	13	3,904
Individual	B-5 at 3’ ---- A-6 (2)	11	3,729

Note 1. CAPA *Guideline for the Design and Use of Asphalt Pavements for Colorado Roadways* equation 3-2 as shown in the January 2006 edition.

A conservative R-Value of 10 was used for the subgrade support for the pavement designs at Sites 1 and 2. Using CAPA’s equation, the subgrade resilient modulus value of 3,562 psi was determined.

9.3 Pavement Section Recommendations

A structural coefficient of 0.44 was used for new HMA and 0.12 was used for Class 6 ABC.

Pavement thickness evaluations for development of flexible and rigid design recommendations conformed to the minimum design standards set forth in Chapter 29 of TEDS and Mesa County Standard Specifications for Road and Bridge Construction.

For the pavement designs, RockSol is providing pavement thickness recommendations based on AASHTO 1993 for construction of new flexible pavements along with AASHTO 1998 for construction of new rigid pavements.

Based on the 30-year traffic loads, the AASHTO 1998 equation does not allow for calculation of a thickness less than 7 inches. AASHTO and Mesa County Standards Specifications for Road

and Bridge Construction do not recommend using less than 6 inches of PCCP for the reconstruction of any roadway.

A summary of the recommended flexible pavement thickness along with the reconditioning thickness is presented in Table 9B and the flexible pavement design is included in Appendix F. The rigid pavement design information is included in Appendix G.

Table 9B – Pavement Section in Recommendations

Roadway	HMA Thickness (inches)	PCCP Thickness (inches)	ABC Thickness (inches)	Reconditioning Thickness (inches)
Site 1: Persigo WWTF	4.5	6.0	6.0	6.0
Site 2: Riverside/US 50	4.5	6.0	6.0	6.0

HMA or PCCP pavement shall consist of CDOT approved mix designs. The new HMA should consist of CDOT grading SX(75) PG 64-22 placed in two lifts. The first lift (bottom) should be 2.5 inches thick, and the second lift (top) should be 2.0 inches thick. If PCCP is selected, CDOT Class P mix should be used. Approximately 150 pounds per cubic yard of steel fibers should be used in lieu of dowel and tie bars. The panel dimensions should be 12' x 12'.

9.4 Base Preparation (Prior to Pavement Construction)

Prior to construction of new pavements on base materials, the underlying base should be properly prepared by removal of all organic matter (topsoil), debris, loose material, and any deleterious material identified by the Project Engineer followed by scarification, moisture conditioning and recompacting. The minimum depth of scarification, moisture conditioning and re-compaction in all cases shall be 6 inches. Cobbles greater than 6 inches in diameter, if encountered, should be removed from the scarification zone.

Prior to pavement section construction, base proof rolling with pneumatic tire equipment shall be performed using a minimum axle load of 18 kips per axle after specified subgrade compaction has been obtained. Areas found to be weak and those areas which exhibit soft spots, non-uniform deflection or excessive deflection as determined by the project engineer shall be ripped, scarified, wetted or dried if necessary, and re-compacted to the requirements for density and moisture. Complete coverage of the proof roller will be required.

All pavement base preparation, including final proof-rolling, pavement materials, and pavement construction shall conform to the latest edition of the Colorado Department of Transportation (CDOT) Standard Specifications for Road and Bridge Construction as stated in Subsection 5.1.1 of Mesa County Standards and Specifications for Road and Bridge Construction. At a minimum, roadway base moisture conditioning and compaction should meet the compaction specifications outlined in Subsection 5.1.5 of Mesa County Standards and Specifications for Road and Bridge Construction and restated in Table 9C.

Table 9C –Roadway Base Compaction Specifications

AASHTO Classification	Minimum Relative Compaction (Percentage of MDD), %	Moisture Content (Deviation from OMC)
A-1, A-2-4, A-2-5, A-3	95% of AASHTO T99	-3 to +3
A-2-6, A-2-7	95% of AASHTO T99	-2 to +2
A-4, A-5, A-6 and A-7	95% of AASHTO T99	-2 to +2

MDD = Maximum Dry Density; OMC = Optimum Moisture Content

Based on the results of our field and laboratory tests, A-1-a, A-1-b, A-4 and A-6 soils are anticipated to be encountered at existing pavement subgrade elevations within the project limits.

10.0 EARTHWORK

Materials used to construct structure backfill and aggregate base course materials should meet the material and moisture density control requirements specified in Article IV of the Mesa County Standard Specifications for Road and Bridge Construction and City of Grand Junction Transportation Engineering Design Standards (current editions).

Prior to construction of new concrete flatwork or asphalt surfaces on subgrade soils, the underlying subgrade should be properly prepared by removal of all organic matter (topsoil), debris, loose material, and any deleterious material followed by scarification, moisture conditioning and recompaction. The minimum depth of scarification, moisture conditioning and re-compaction in all cases shall be 6 inches. Cobbles greater than 6 inches in diameter, if encountered, should be removed from the scarification zone.

Broken concrete, broken asphalt, or other solid materials more than 6 inches in greatest dimension shall not be placed within subgrade areas supporting concrete flatwork and pavement structures. Material excavated from utility trenches may be used for backfilling provided it does not contain unsuitable material or particles larger than 3 inches. Unsuitable material includes, but is limited to, topsoil, vegetation, brush, sod, trash, and other deleterious substances.

11.0 OTHER DESIGN AND CONSTRUCTION CONSIDERATIONS

Proper construction practices, in accordance with City of Grand Junction Transportation Engineering Design Standards and Mesa County Standard Specifications for Road and Bridge Construction (current editions), should be followed during site preparation, structure and earthwork excavations for the suitable long-term performance of the proposed improvements. Excavation support should be provided to maintain onsite safety and the stability of excavations and slopes. Excavations shall be constructed in accordance with local, state and federal regulations including OSHA guidelines. The contractor must provide a competent person to determine compliance with OSHA excavation requirements. For preliminary planning, existing fill material and native soils may be considered as OSHA Type C soils.

Surface drainage patterns may be altered during construction and local landscape irrigation (if any) must be controlled to prevent excessive moisture infiltration into the subgrade soils during and after construction. Environmentally contaminated material, if encountered, should be characterized and removed under the direction of the project environmental consultant. Design and construction plans should be reviewed, and onsite construction should be observed by the professional engineers.

12.0 LIMITATIONS

This geotechnical investigation was conducted in general accordance with the scope of work. RockSol's geotechnical practices are similar to those used in Colorado with similar soil conditions and based on our understanding of the proposed work. This report has been prepared for use by the City of Grand Junction for the project described in this report. The report is based on our exploratory boreholes and does not consider variations in the subsurface conditions that may exist between boreholes. Additional investigation is required to address such variation. If during construction activities, materials or water conditions appear to be different from those described herein, RockSol should be advised at once so that a re-evaluation of the recommendations presented in this report can be made. RockSol is not responsible for liability associated with interpretation of subsurface data by others.

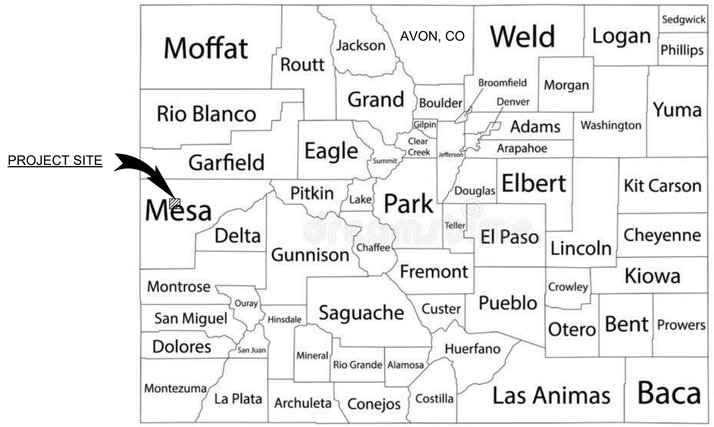
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

CITY OF Grand Junction COLORADO

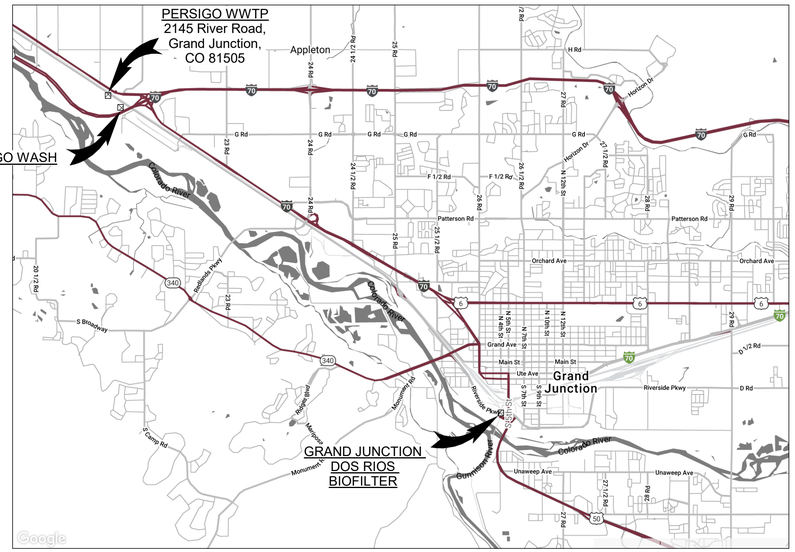
CITY OF GRAND JUNCTION

PROJECT NO. 20W23045

30% REVIEW - NOT FOR CONSTRUCTION



AREA MAP
NO SCALE



VICINITY MAP
NO SCALE

GARVER PROJECT NO. 20W23045

JAN. 2021

GARVER
One Denver Technology Center
5251 DTC Parkway, Suite 420
Greenwood Village, CO 80111
Phone: 303-721-6932

REGISTRATION NO.
20171218008

30% REVIEW - NOT FOR CONSTRUCTION

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RICHARD G. HUGGINS, PE # 52412, ON JANUARY 2021. IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, OR PERMITTING PURPOSES.

REV	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

COVER

JOB NO.: 20W23045
DATE: JAN. 2021
DESIGNED BY: RGH
DRAWN BY: EGB

BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER
01-G001

SHEET NUMBER **001**

Revit File: BIM 360://20W23045 - Grand Junction Persigo Biotrickling Des/20W23045 GJPBD.rvt
Plot Date: 1/4/2021 12:10:54 PM

NOTE: Plan modified by RockSol to show approximate Borehole Locations.

GARVER

REGISTRATION NO.
20171218008

30% REVIEW - NOT FOR CONSTRUCTION

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RICHARD C. HUGGINS, PE # 52412, ON JANUARY 2021. IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, OR PERMITTING PURPOSES.

REV.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
CITY OF Grand Junction COLORADO
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

SITE PLAN

JOB NO.: 20W23045
DATE: JAN. 2021
DESIGNED BY: TNP
DRAWN BY: TNP

BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER
10-C101

SHEET NUMBER
007

File: L:\2020\20W23045 - Grand Junction Persigo Biotrickling Des\Drawings\GJPBD-10-C101-SI.dwg Last Save: 1/4/2021 1:42 PM Last saved by: TNPipher
Last plotted by: Pipher, Tanner N. Plot Style: ---- Plot Scale: 1:1 Plot Date: 1/4/2021 2:30 PM Plotter used: ----

NOTE: Plan modified by RockSol to show approximate Borehole Locations.

REGISTRATION NO.
20171218008

30% REVIEW - NOT FOR CONSTRUCTION

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RICHARD C. HUGGINS, PE # 52412, ON JANUARY 2021. IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, OR PERMITTING PURPOSES.

REV.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction COLORADO

GRAND JUNCTION
ODOR CONTROL IMPROVEMENTS

SITE PLAN

JOB NO.: 20W23045
DATE: JAN. 2021
DESIGNED BY: TNP
DRAWN BY: TNP

BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER
20-C101

SHEET NUMBER 015

File: L:\2020\20W23045 - Grand Junction Persigo Biotrickling Des\Drawings\GJPBD-20-C101-SI.dwg Last Save: 1/4/2021 1:28 PM Last saved by: TNPipher
Last plotted by: Pipher, Tanner N. Plot Style: ---- Plot Scale: 1:1 Plot Date: 1/4/2021 2:31 PM Plotter used: ----

NOTE: Plan modified by RockSol to show approximate Borehole Locations.

GARVER

REGISTRATION NO.
20171218008

30% REVIEW - NOT FOR CONSTRUCTION

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RICHARD C. HUGGINS, PE # 52412, ON JANUARY 2021. IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, OR PERMITTING PURPOSES.

REV.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
City of Grand Junction Colorado

GRAND JUNCTION
ODOR CONTROL IMPROVEMENTS

SITE PLAN

JOB NO.: 20W23045
DATE: JAN. 2021
DESIGNED BY: TNP
DRAWN BY: TNP

BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER
30-C101

SHEET NUMBER 016

APPENDIX A

30% REVIEW PLAN SET – GRAND JUNCTION ODOR CONTROL IMPROVEMENTS PREPARED BY GARVER (JANUARY 2021)

RockSol Consulting Group, Inc.

LEGEND

CLIENT City of Grand Junction
PROJECT NAME Grand Junction Odor Control Improvements Project
PROJECT NUMBER 599.27
PROJECT LOCATION Grand Junction, Colorado

LITHOLOGY

- Fill - SAND, gravelly
- Fill - SAND, clayey to silty
- LANDSCAPE GRAVEL
- Native - SAND
- Native - SAND, clayey
- Native - CLAY
- Native - CLAY, sandy
- Native - SILT, sandy
- Native - GRAVEL
- Bedrock - SHALE/CLAYSTONE

SAMPLE TYPE

- Bulk Sample (Auger Cuttings)
- MODIFIED CALIFORNIA SAMPLER
  2.5" O.D. AND 2" I.D.
  WITH BRASS LINERS INCLUDED
- SPLIT SPOON SAMPLER
  2" O.D. AND 1 3/8" I.D.
  NO LINERS

Fines Content indicates amount of material, by weight, passing the US No 200 Sieve (%)

15/12 Indicates 15 blows of a 140 pound hammer falling 30 inches was required to drive the sampler 12 inches.

50/11 Indicates 50 blows of a 140 pound hammer falling 30 inches was required to drive the sampler 11 inches.

5,5,5 Indicates 5 blows, 5 blows, 5 blows of a 140 pound hammer falling 30 inches was required to drive the sampler 18 inches.

GROUND WATER LEVEL 1ST DEPTH

RockSol Consulting Group, Inc.

BORING : B-1

CLIENT City of Grand Junction
PROJECT NAME Grand Junction Odor Control Improvements Project
PROJECT NUMBER 599.27
PROJECT LOCATION Grand Junction, Colorado
DATE STARTED 2/25/21 **COMPLETED** 2/25/21
GROUND ELEVATION 4518.3 ft **STATION NO.**
DRILLING CONTRACTOR DA Smith Drilling
NORTH 52895.4 **EAST** 65063.8
DRILLING METHOD Hollow Stem Auger/ ODEX **HOLE SIZE** 8.0"
BORING LOCATION: S.E. corner, Persigo Biotrickling Filter Pad
LOGGED BY Compton **HAMMER TYPE** Automatic
GROUND WATER LEVELS:
NOTES
▼ **WATER DEPTH** 12.0 ft on 2/25/21

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
4518.3	0		(Native) CLAY, moist, brown, soft	BULK			1.02			33	19	14	91.4
			Approximate Bulk Depth 0-5 Liquid Limit= 33 Plastic Limit= 19 Plasticity Index= 14 Fines Content= 91.4 Sulfate= 1.02										
4513.3	5		(native) CLAY, sandy, very moist, brown, soft										
				MC	2/12	-1.5		90.7	27.1				
4508.3	10												
			(Native) SAND, gravelly with cobbles, wet, brown, dense	SS	50/4		0.43						
4503.3	15												
4498.3	20												
			Approximate Bulk Depth 22' Liquid Limit= NP Plastic Limit= NP Plasticity Index= NP Fines Content= 2.2	BULK						NP	NP	NP	2.2
4493.3	25		(Beddrock) SHALE/CLAYSTONE, slightly silty to sandy in parts, moist, dark gray, very hard	BULK									
				SS	50/4								
			Bottom of hole at 27.3 feet.										

RockSol Consulting Group, Inc.

BORING : B-2

CLIENT City of Grand Junction
PROJECT NAME Grand Junction Odor Control Improvements Project
PROJECT NUMBER 599.27
PROJECT LOCATION Grand Junction, Colorado
DATE STARTED 2/25/21 **COMPLETED** 2/25/21
GROUND ELEVATION 4518.4 ft **STATION NO.**
DRILLING CONTRACTOR DA Smith Drilling
NORTH 52927.8 **EAST** 65018.6
DRILLING METHOD Hollow Stem Auger **HOLE SIZE** 8.0"
BORING LOCATION: N.W. corner, Persigo Biotrickling Filter Pad
LOGGED BY Compton **HAMMER TYPE** Automatic
GROUND WATER LEVELS:
NOTES
WATER DEPTH 8.0 ft on 2/25/21

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
4518.4	0		(Native) CLAY, with sand, moist to very moist, brown, soft **Approximate Bulk Depth 0-5** Liquid Limit= 32 Plastic Limit= 16 Plasticity Index= 16 Fines Content= 85.1 Sulfate= 0.96	BULK			0.96			32	16	16	85.1
				MC	3/12	-3.5		94.8	25.6				
4513.4	5		(Native) CLAY, sandy, wet, brown and gray, soft										
				MC	2/12	-0.5		92.0	34.3				
4508.4	10		(Native) GRAVEL, with sand and cobbles, wet, medium dense										
			(Native) SAND, gravelly with clay, wet, brown, medium dense to dense	SS	8/18/25					17	16	1	13.6
4503.4	15		(Native) GRAVEL, with cobbles, wet, dense										
			(Native) SAND, clayey with gravel, wet, dense										
				SS	26/32/37		0.18						
			Bottom of hole at 19.5 feet.										

RockSol Consulting Group, Inc.

BORING : B-3

CLIENT City of Grand Junction
PROJECT NAME Grand Junction Odor Control Improvements Project
PROJECT NUMBER 599.27
PROJECT LOCATION Grand Junction, Colorado
DATE STARTED 2/25/21 **COMPLETED** 2/25/21
GROUND ELEVATION 4523.1 ft **STATION NO.**
DRILLING CONTRACTOR DA Smith Drilling
NORTH 52227.6 **EAST** 66652.9
DRILLING METHOD Hollow Stem Auger **HOLE SIZE** 8.0"
BORING LOCATION: Air Jumper site, west side Persigo Wash
LOGGED BY B. Duff **HAMMER TYPE** Automatic
GROUND WATER LEVELS:
NOTES
▼ **WATER DEPTH** 9.5 ft on 2/25/21

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
4523.1	0		(Native) CLAY, sandy, moist to slightly moist, brown, medium stiff, rock fragments in parts	BULK			0.22			25	17	8	65.5
			(Native) SAND, clayey with gravel, slightly moist, light brown, loose	MC	8/12	-1.3		112.7	12.5				
4518.1	5		**Approximate Bulk Depth 0-5** Liquid Limit= 25 Plastic Limit= 17 Plasticity Index= 8 Fines Content= 65.5 Sulfate= 0.22										
			(Native) SAND, clayey, wet, brown, loose	MC	4/12			100.5	25.5				
4513.1	10												
			(Native) CLAY, sandy, wet, brown, soft	SS	1/1/1								
4508.1	15												
			(Native) GRAVEL, sandy, wet, dense	SS	15/25/30								
			Bottom of hole at 19.5 feet.										

LOG - STANDARD 599.27_ODOR IMPROVEMENT PROJECT_GRAND JUNCTION.GPJ 3/16/21

RockSol Consulting Group, Inc.

BORING : B-4

CLIENT City of Grand Junction
PROJECT NAME Grand Junction Odor Control Improvements Project
PROJECT NUMBER 599.27
PROJECT LOCATION Grand Junction, Colorado
DATE STARTED 2/25/21 **COMPLETED** 2/25/21
GROUND ELEVATION 4522.8 ft **STATION NO.**
DRILLING CONTRACTOR DA Smith Drilling
NORTH 52179.9 **EAST** 66727.9
DRILLING METHOD Hollow Stem Auger **HOLE SIZE** 8.0"
BORING LOCATION: Air Jumper site, east side of Persigo Wash
LOGGED BY Compton **HAMMER TYPE** Automatic
GROUND WATER LEVELS:
NOTES
WATER DEPTH 17.0 ft on 2/25/21

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
4522.8	0		(Native) SILT, sandy with trace gravel, moist, brown, stiff **Approximate Bulk Depth 0-5** Liquid Limit= NP Plastic Limit= NP Plasticity Index= NP Fines Content= 62.0 Sulfate= 0.01	BULK			0.01			NP	NP	NP	62.0
				MC	13/12	-0.7		95.7	11.4				
4517.8	5		(Native) SAND, clayey, wet, brown, very loose										
								92.4	23.8				
4512.8	10												
				SS	1/1/1		0.00						36.9
4507.8	15		(Native) SAND, clayey with cobbles, wet, brown, dense										
				SS	19/23/27								
4502.8	20		Bottom of hole at 20.5 feet.										

LOG - STANDARD 599.27_ODOR IMPROVEMENT PROJECT_GRAND JUNCTION.GPJ 3/15/21

RockSol Consulting Group, Inc.

BORING : B-5

CLIENT City of Grand Junction
PROJECT NAME Grand Junction Odor Control Improvements Project
PROJECT NUMBER 599.27
PROJECT LOCATION Grand Junction, Colorado
DATE STARTED 2/25/21 **COMPLETED** 2/25/21
GROUND ELEVATION 4566.2 ft **STATION NO.**
DRILLING CONTRACTOR DA Smith Drilling
NORTH 32403.4 **EAST** 91051.4
DRILLING METHOD Hollow Stem Auger/ ODEX **HOLE SIZE** 8.0"
BORING LOCATION: Southeast corner of pad site, Site #2
LOGGED BY B. Duff **HAMMER TYPE** Automatic
GROUND WATER LEVELS:
NOTES
▼ **WATER DEPTH** 10.0 ft on 2/25/21

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
4566.2	0		(Native) SAND, clayey, moist, brown, loose	BULK			0.24			34	21	13	40.4
			Approximate Bulk Depth 0-5 Liquid Limit= 34 Plastic Limit= 21 Plasticity Index= 13 Fines Content= 40.4 Sulfate= 0.24										
				MC	9/12	-0.3		103.0	21.8				
4561.2	5		(Native) SAND, clayey with gravel, very moist, brown, loose										
				MC	9/12								
4556.2	10		**Approximate Bulk Depth 10-14** Sulfate= 0.23	BULK			0.23						
			(Native) GRAVEL, sandy with cobbles, wet, brown										
			Approximate Bulk Depth 14-19 Liquid Limit= NP Plastic Limit= NP Plasticity Index= NP Fines Content= 4.9	BULK						NP	NP	NP	4.9
4551.2	15												
4546.2	20		(Bedrock) SHALE/CLAYSTONE, slightly silty, moist, gray to dark gray, very hard	SS	50/4/6								
			Bottom of hole at 20.5 feet.										

RockSol Consulting Group, Inc.

BORING : B-6

CLIENT City of Grand Junction
PROJECT NAME Grand Junction Odor Control Improvements Project
PROJECT NUMBER 599.27
PROJECT LOCATION Grand Junction, Colorado
DATE STARTED 2/25/21 **COMPLETED** 2/25/21
GROUND ELEVATION 4568.2 ft **STATION NO.**
DRILLING CONTRACTOR DA Smith Drilling
NORTH 32356.9 **EAST** 91086.2
DRILLING METHOD Hollow Stem Auger **HOLE SIZE** 8.0"
BORING LOCATION: Potential bore/jack location, site #2
LOGGED BY L. Basler **HAMMER TYPE** Automatic
GROUND WATER LEVELS:
NOTES
WATER DEPTH 10.0 ft on 2/25/21

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
4568.2	0.0		(Fill) SAND, clayey with gravel in parts, slightly moist, light brown to brown with black, medium dense	BULK						21	19	2	48.3
			Approximate Bulk Depth 0-2 Liquid Limit= 21 Plastic Limit= 19 Plasticity Index= 2 Fines Content= 48.3	MC	24/12								
4565.7	2.5			BULK			0.18	93.3	22.7	23	18	5	55.5
			(Native) CLAY, sandy, very moist, brown, very stiff to hard **Approximate Bulk Depth 2-5** Liquid Limit= 23 Plastic Limit= 18 Plasticity Index= 5 Fines Content= 55.5 Sulfate= 0.18										
4563.2	5.0		(Native) SAND, silty to clayey, gravelly with cobbles in parts, dense to very dense, very moist to wet										
4560.7	7.5			MC	32/12								
4558.2	10.0		▼										
4555.7	12.5		Bottom of hole at 12.5 feet.										

RockSol Consulting Group, Inc.

BORING : B-7

CLIENT City of Grand Junction
PROJECT NAME Grand Junction Odor Control Improvements Project
PROJECT NUMBER 599.27
PROJECT LOCATION Grand Junction, Colorado
DATE STARTED 2/25/21 **COMPLETED** 2/25/21
GROUND ELEVATION 4569.1 ft **STATION NO.**
DRILLING CONTRACTOR DA Smith Drilling
NORTH 32009.7 **EAST** 91226.3
DRILLING METHOD Hollow Stem Auger **HOLE SIZE** 8.0"
BORING LOCATION:
LOGGED BY L. Basler **HAMMER TYPE** Automatic
GROUND WATER LEVELS:
NOTES
WATER DEPTH 9.0 ft on 2/25/21

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
4569.1	0.0		Landscape gravel, approximately 6 inches thick	BULK			0.32			22	15	7	37.5
			(Fill) SAND, clayey, moist, brown, medium dense **Approximate Bulk Depth 0-4** Liquid Limit= 22 Plastic Limit= 15 Plasticity Index= 7 Fines Content= 37.5 Sulfate= 0.32										
4566.6	2.5		(Native) CLAY, sandy, moist, brown, hard										
4564.1	5.0			MC	36/12			111.6	14.7				
4561.6	7.5		(Native) SAND, silty to clayey with gravel and cobbles in parts, wet, brown, dense to very dense										
4559.1	10.0			SS	36/12		0.07						
4556.6	12.5												
4554.1	15.0			SS	24/26/28					NP	NP	NP	13.7
			Bottom of hole at 15.5 feet.										

LOG - STANDARD 599.27_ODOR IMPROVEMENT PROJECT_GRAND JUNCTION.GPJ 3/19/21

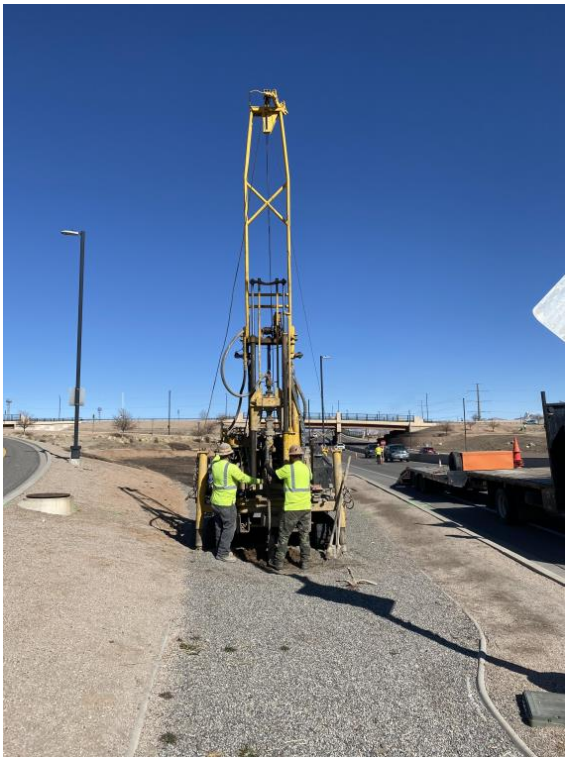
Borehole B-1
Site One Bio Filter Pad Number 1 SE

Borehole B-2
Site One Bio Filter Pad Number 2 NW

Borehole B-3 & B-4
General Location of Site One Aerial Pipe Crossing

Borehole B-5
Site Two Bio Filter Pad Number 2 (Dos Rios)

Borehole B-6
Site Two 12” Duct Toe of Embankment



Borehole B-7
Site Two 12” Duct near Manhole tie in

APPENDIX B

LEGEND AND INDIVIDUAL SOIL BOREHOLE LOGS

RockSol Consulting Group, Inc.

SUMMARY OF PHYSICAL & CHEMICAL TEST RESULTS

CLIENT City of Grand Junction

PROJECT NAME Grand Junction Odor Control Improvements Project

PROJECT NUMBER 599.27

PROJECT LOCATION Grand Junction, Colorado

Borehole	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	Swell Potential (%)	%<#200 Sieve	Classification		Water Content (%)	Dry Density (pcf)	Unconfined Compressive Strength (psi)	Sulfate (%)	Resistivity (ohm-cm)	pH	Chlorides (%)	Proctor S=Standard M=Modified		
							USCS	AASHTO								MDD	OMC	S/M
B-1	0-5	33	19	14		91	CL	A-6 (12)				1.02						
B-1	7				-1.5				27.1	90.7								
B-1	12											0.43						
B-1	22	NP	NP	NP		2	SP	A-1-b (0)										
B-2	0-5	32	16	16		85	CL	A-6 (12)				0.96	590 @ 15.3%	8.5	0.1212			
B-2	3				-3.5				25.6	94.8								
B-2	8				-0.5				34.3	92.0								
B-2	13	17	16	1		14	GM	A-1-a (0)										
B-2	18											0.18						
B-3	0-5	25	17	8		66	CL	A-4 (3)				0.22						
B-3	3				-1.3				12.5	112.7								
B-3	8								25.5	100.5								
B-4	0-5	NP	NP	NP		62	ML	A-4 (0)				0.01						
B-4	3				-0.7				11.4	95.7								
B-4	8								23.8	92.4								
B-4	13					37						0.00						
B-5	0-5	34	21	13		40	SC	A-6 (2)				0.24	1600 @ 21.3%	8.1	0.0363			
B-5	3				-0.3				21.8	103.0								
B-5	10-14											0.23						
B-5	14-19	NP	NP	NP		5	GP	A-1-a (0)										
B-6	0-2	21	19	2		48	SM	A-4 (0)										
B-6	2-5	23	18	5		56	CL-ML	A-4 (0)	22.7	93.3		0.18	1700 @ 15.4%	7.9	0.0180			
B-6	7																	
B-7	0-4	22	15	7		38	SC-SM	A-4 (0)				0.32						
B-7	4								14.7	111.6								
B-7	10											0.07		8.2	0.0516			
B-7	14	NP	NP	NP		14	SM	A-1-b (0)										

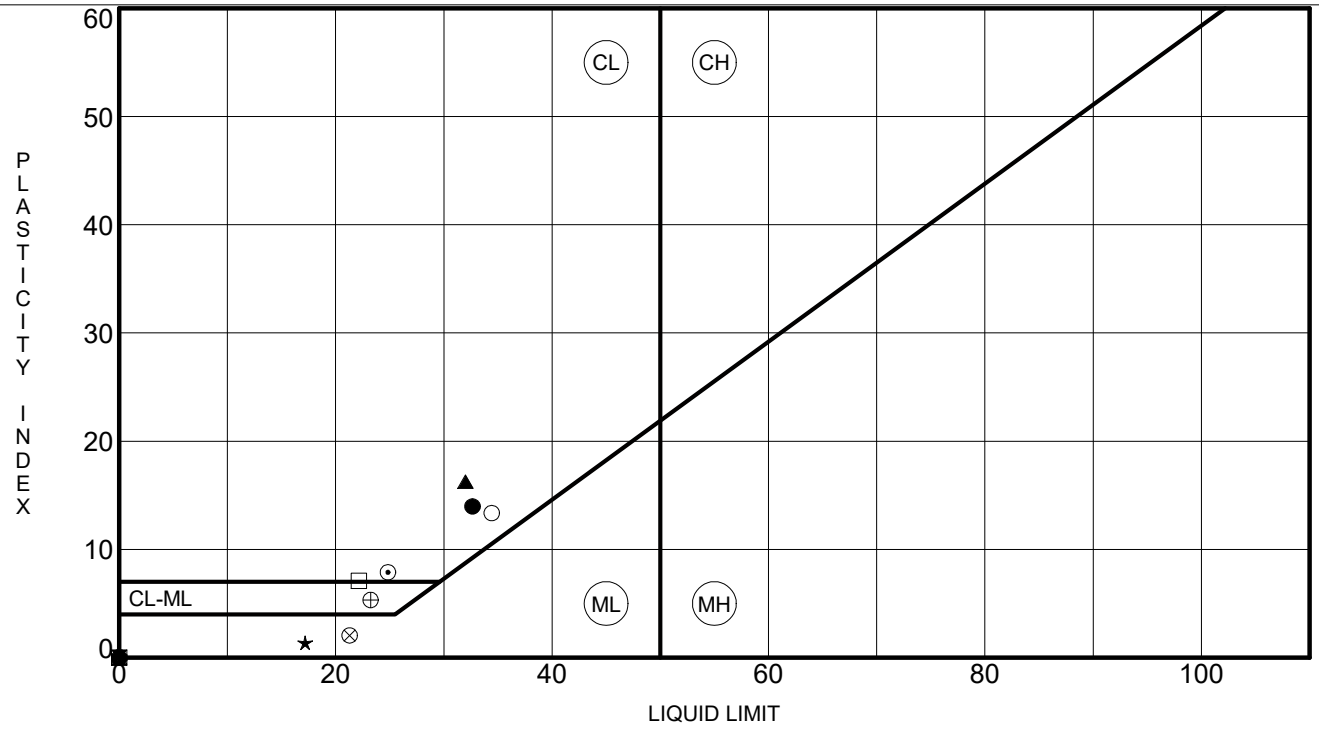
SUMMARY-STANDARD LANDSCAPE CDOT SPACING 599.27_ODOR IMPROVEMENT PROJECT_GRAND JUNCTION.GPJ 3/19/21

RockSol Consulting Group, Inc.

ATTERBERG LIMITS RESULTS
AASHTO T89 Method A/T90

CLIENT City of Grand Junction **PROJECT NAME** Grand Junction Odor Control Improvements Project

PROJECT NUMBER 599.27 **PROJECT LOCATION** Grand Junction, Colorado



	Specimen Identification		LL	PL	PI	Fines	Classification
●	B-1	0.0-5.0	33	19	14	91.4	LEAN CLAY (CL) (A-6)
⧓	B-1	22.0	NP	NP	NP	2.2	POORLY GRADED SAND with GRAVEL (SP) (A-1-b)
▲	B-2	0.0-5.0	32	16	16	85.1	LEAN CLAY (CL) (A-6)
★	B-2	13.0	17	16	1	13.6	SILTY GRAVEL with SAND (GM) (A-1-a)
⊙	B-3	0.0-5.0	25	17	8	65.5	SANDY LEAN CLAY (CL) (A-4)
✿	B-4	0.0-5.0	NP	NP	NP	62.0	SANDY SILT with GRAVEL (ML) (A-4)
○	B-5	0.0-5.0	34	21	13	40.4	CLAYEY SAND with GRAVEL (SC) (A-6)
△	B-5	14.0-19.0	NP	NP	NP	4.9	POORLY GRADED GRAVEL with SAND (GP) (A-1-a)
⊗	B-6	0.0-2.0	21	19	2	48.3	SILTY SAND (SM) (A-4)
⊕	B-6	2.0-5.0	23	18	5	55.5	SANDY SILTY CLAY (CL-ML) (A-4)
□	B-7	0.0-4.0	22	15	7	37.5	SILTY, CLAYEY SAND with GRAVEL (SC-SM) (A-4)
⊛	B-7	14.0	NP	NP	NP	13.7	SILTY SAND with GRAVEL (SM) (A-1-b)

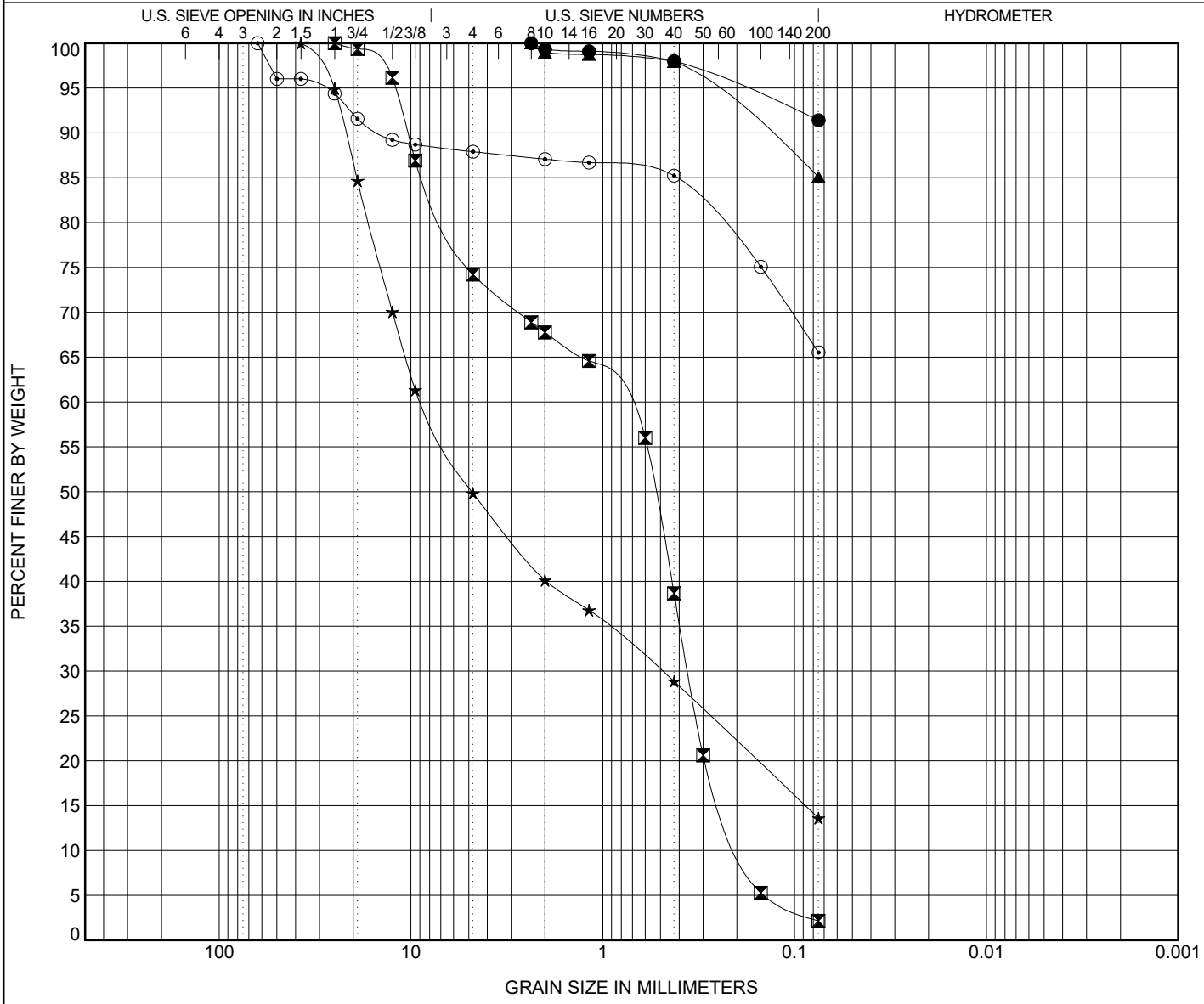
ATTERBERG LIMITS - STANDARD 599.27_ODOR IMPROVEMENT PROJECT_GRAND JUNCTION.GPJ ROCKSOL TEMPLATE.GDT 3/19/21

GRAIN SIZE DISTRIBUTION

Rocksol Consulting Group

CLIENT City of Grand Junction **PROJECT NAME** Grand Junction Odor Control Improvements Project

PROJECT NUMBER 599.27 **PROJECT LOCATION** Grand Junction, Colorado



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	B-1	0.0-5.0	LEAN CLAY (CL) (A-6)	33	19	14		
⊠	B-1	22.0	POORLY GRADED SAND with GRAVEL (SP) (A-1-b)	NP	NP	NP	0.85	4.42
▲	B-2	0.0-5.0	LEAN CLAY (CL) (A-6)	32	16	16		
★	B-2	13.0	SILTY GRAVEL with SAND (GM) (A-1-a)	17	16	1		
⊙	B-3	0.0-5.0	SANDY LEAN CLAY (CL) (A-4)	25	17	8		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Coarse Sand	%Fine Sand	%Silt	%Clay
●	B-1	0.0-5.0	2.36				0.7	1.3	6.6	91.4	
⊠	B-1	22.0	25	0.822	0.36	0.186	32.2	29.1	36.5	2.2	
▲	B-2	0.0-5.0	2.36				1.0	1.0	12.9	85.1	
★	B-2	13.0	37.5	8.767	0.492		59.9	11.3	15.3	13.6	
⊙	B-3	0.0-5.0	63				12.9	1.8	19.7	65.5	

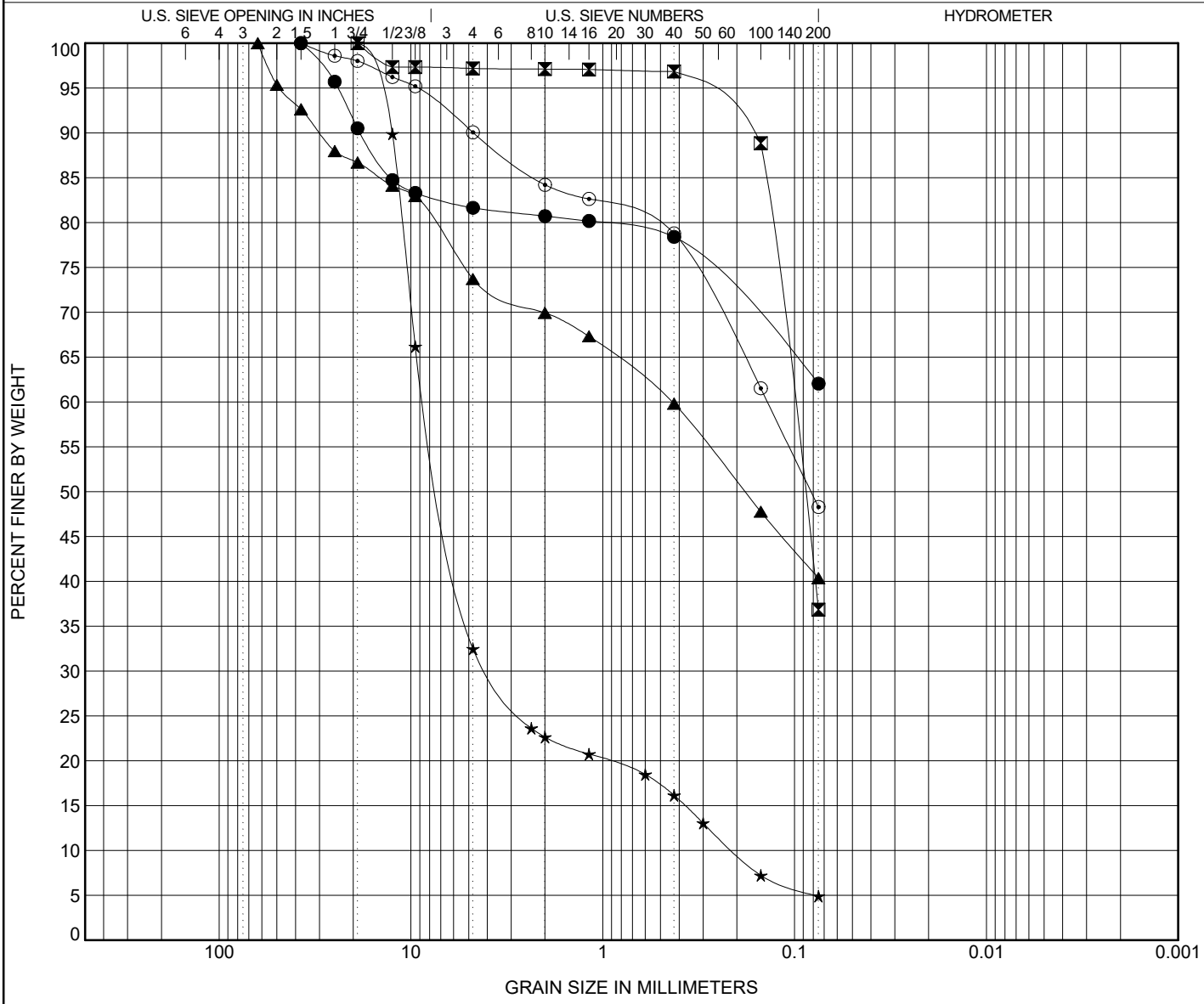
GRADATION - STANDARD 599.27_ODOR IMPROVEMENT PROJECT_GRAND JUNCTION.GPJ ROCKSOL TEMPLATE.GDT 3/19/21

GRAIN SIZE DISTRIBUTION

Rocksol Consulting Group

CLIENT City of Grand Junction **PROJECT NAME** Grand Junction Odor Control Improvements Project

PROJECT NUMBER 599.27 **PROJECT LOCATION** Grand Junction, Colorado



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	B-4	0.0-5.0	SANDY SILT with GRAVEL (ML) (A-4)	NP	NP	NP		
⊠	B-4	13.0	SAND, clayey					
▲	B-5	0.0-5.0	CLAYEY SAND with GRAVEL (SC) (A-6)	34	21	13		
★	B-5	14.0-19.0	POORLY GRADED GRAVEL with SAND (GP) (A-1-a)	NP	NP	NP	8.73	40.07
⊙	B-6	0.0-2.0	SILTY SAND (SM) (A-4)	21	19	2		

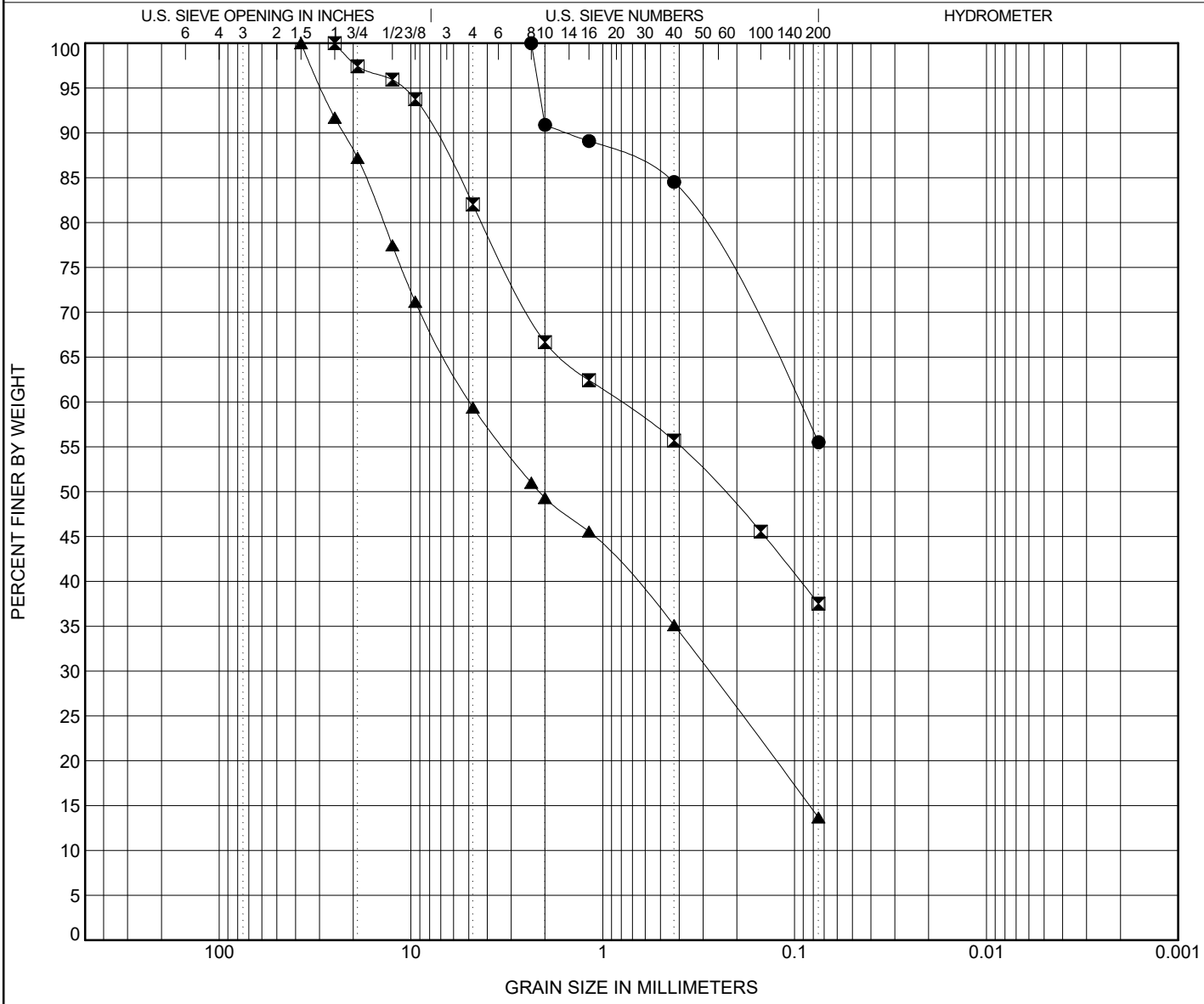
	Specimen Identification		D100	D60	D30	D10	%Gravel	%Coarse Sand	%Fine Sand	%Silt	%Clay
●	B-4	0.0-5.0	37.5				19.3	2.3	16.3	62.0	
⊠	B-4	13.0	19	0.102			2.9	0.3	60.0	36.9	
▲	B-5	0.0-5.0	63	0.436			30.1	10.1	19.4	40.4	
★	B-5	14.0-19.0	19	8.365	3.904	0.209	77.4	6.5	11.2	4.9	
⊙	B-6	0.0-2.0	37.5	0.138			15.8	5.4	30.5	48.3	

GRAIN SIZE DISTRIBUTION

Rocksol Consulting Group

CLIENT City of Grand Junction **PROJECT NAME** Grand Junction Odor Control Improvements Project

PROJECT NUMBER 599.27 **PROJECT LOCATION** Grand Junction, Colorado



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	B-6	2.0-5.0	SANDY SILTY CLAY (CL-ML) (A-4)	23	18	5		
⊠	B-7	0.0-4.0	SILTY, CLAYEY SAND with GRAVEL (SC-SM) (A-4)	22	15	7		
▲	B-7	14.0	SILTY SAND with GRAVEL (SM) (A-1-b)	NP	NP	NP		

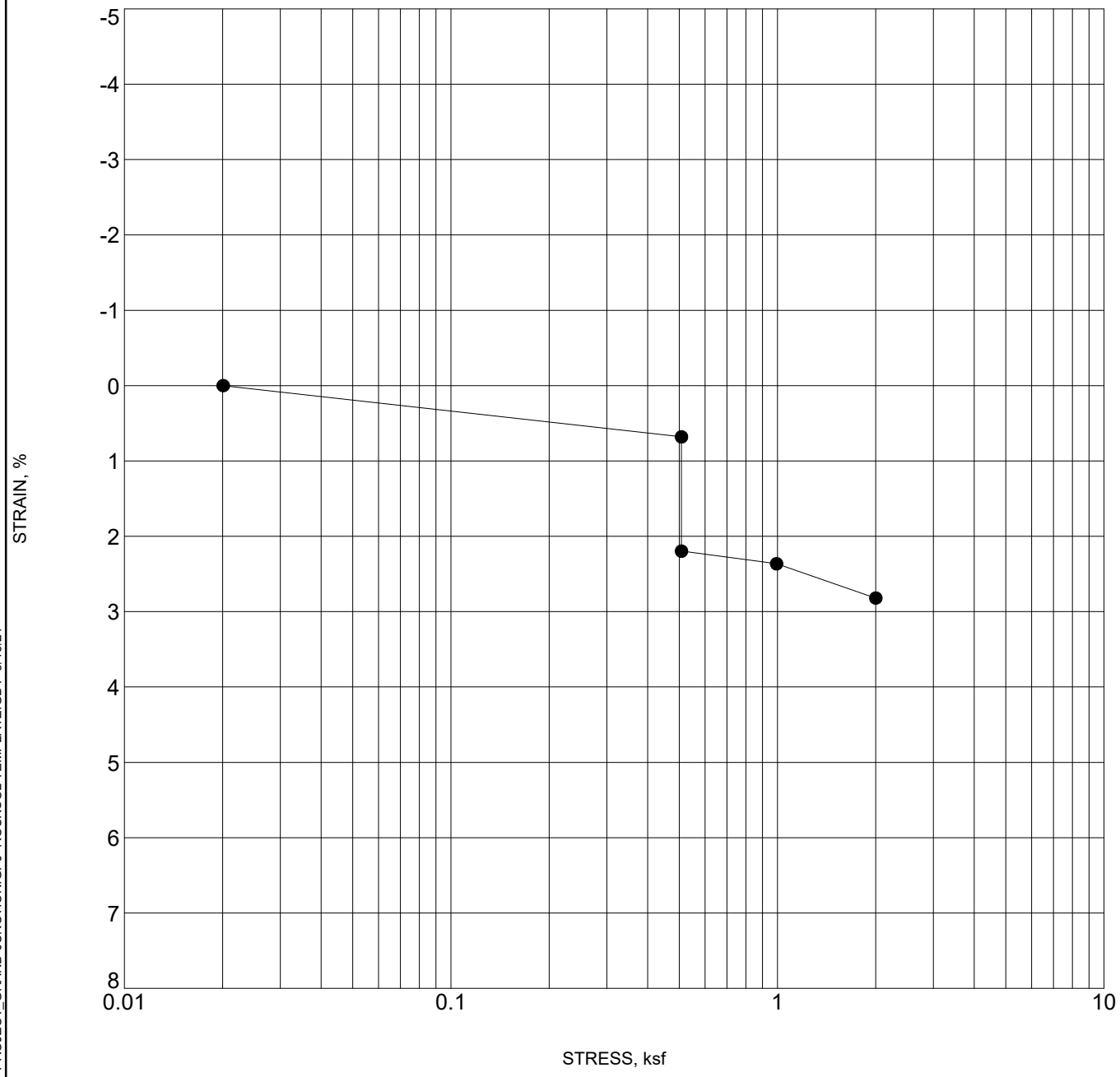
	Specimen Identification		D100	D60	D30	D10	%Gravel	%Coarse Sand	%Fine Sand	%Silt	%Clay
●	B-6	2.0-5.0	2.36	0.098			9.1	6.4	29.0	55.5	
⊠	B-7	0.0-4.0	25	0.817			33.3	11.0	18.2	37.5	
▲	B-7	14.0	37.5	4.921	0.281		50.7	14.2	21.5	13.7	

GRADATION - STANDARD 599.27_ODOR IMPROVEMENT PROJECT_GRAND JUNCTION.GPJ ROCKSOL TEMPLATE.GDT 3/19/21

RockSol Consulting Group, Inc.

SWELL - CONSOLIDATION TEST

CLIENT City of Grand Junction
PROJECT NAME Grand Junction Odor Control Improvements Project
PROJECT NUMBER 599.27
PROJECT LOCATION Grand Junction, Colorado



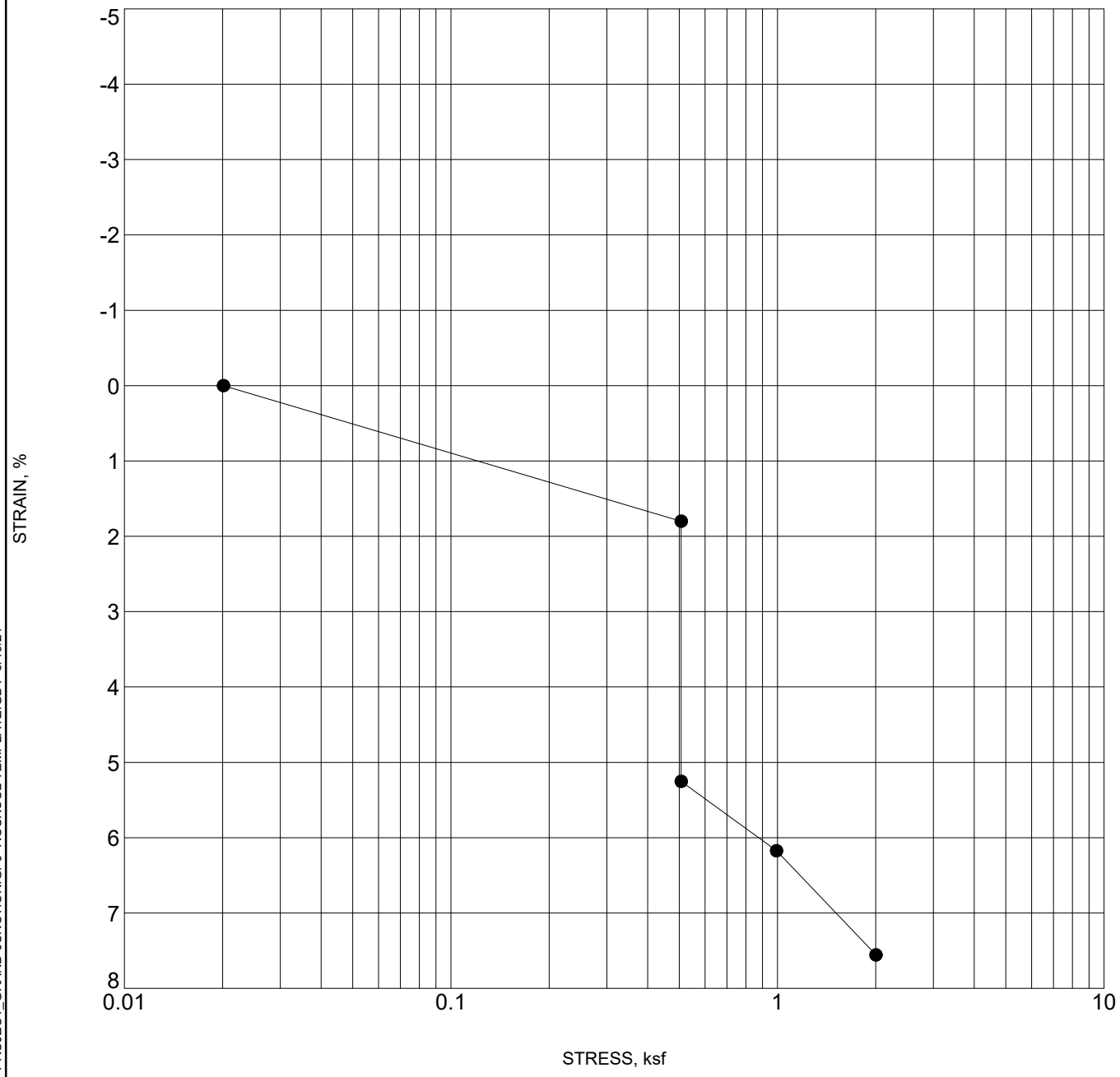
Specimen Identification	Classification	Swell/Consol. (%)	γ_d (pcf)	MC%
● **B-1** **7**	**CLAY, sandy**	**-1.5**	**90.7**	**27.1**

RockSol Consulting Group, Inc.

SWELL - CONSOLIDATION TEST

CLIENT City of Grand Junction **PROJECT NAME** Grand Junction Odor Control Improvements Project

PROJECT NUMBER 599.27 **PROJECT LOCATION** Grand Junction, Colorado

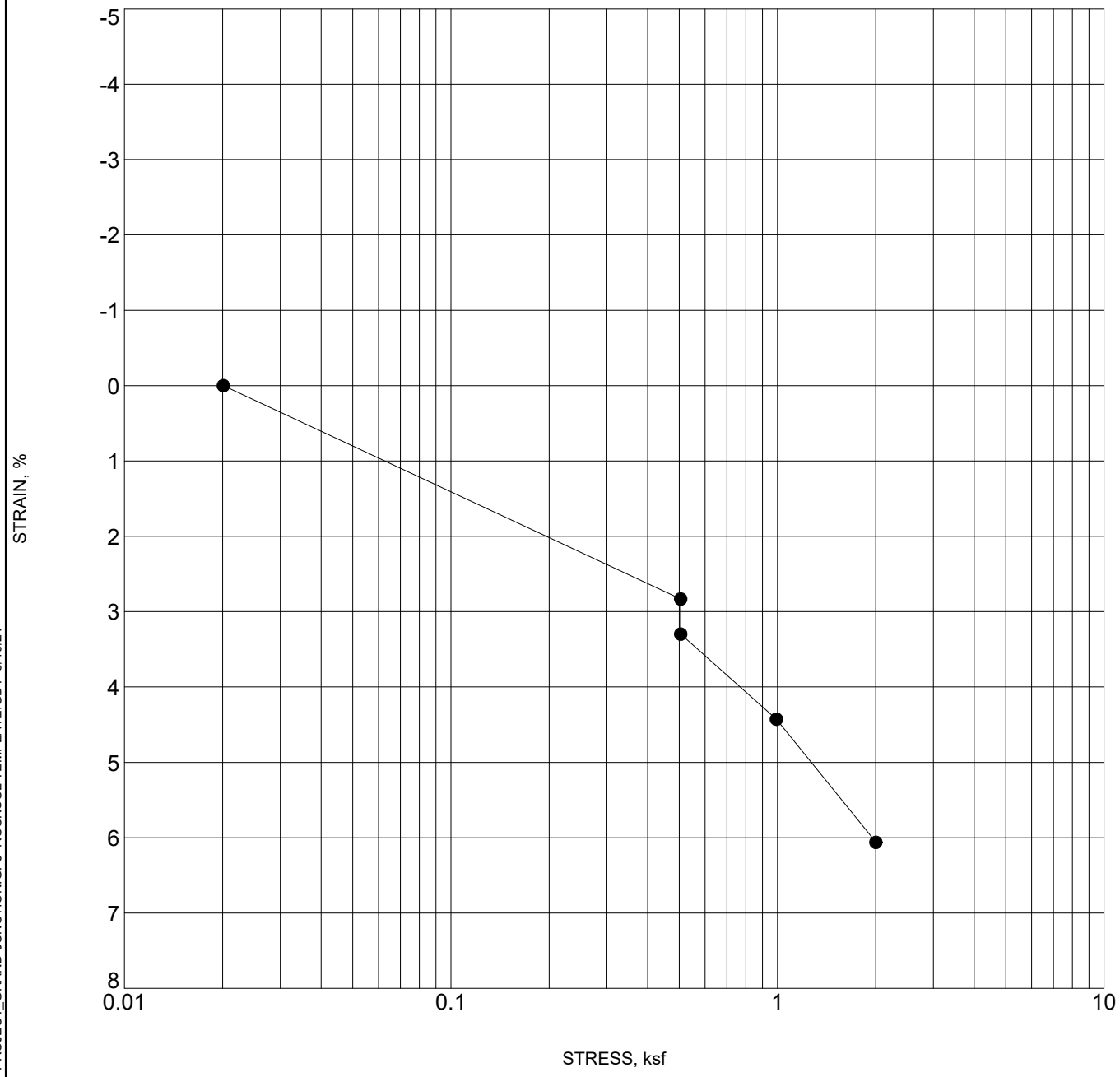


Specimen Identification	Classification	Swell/Consol. (%)	γ_d (pcf)	MC%
● B-2 3	**CLAY, with sand**	**-3.5**	**94.8**	**25.6**

RockSol Consulting Group, Inc.

SWELL - CONSOLIDATION TEST

CLIENT City of Grand Junction
PROJECT NAME Grand Junction Odor Control Improvements Project
PROJECT NUMBER 599.27
PROJECT LOCATION Grand Junction, Colorado



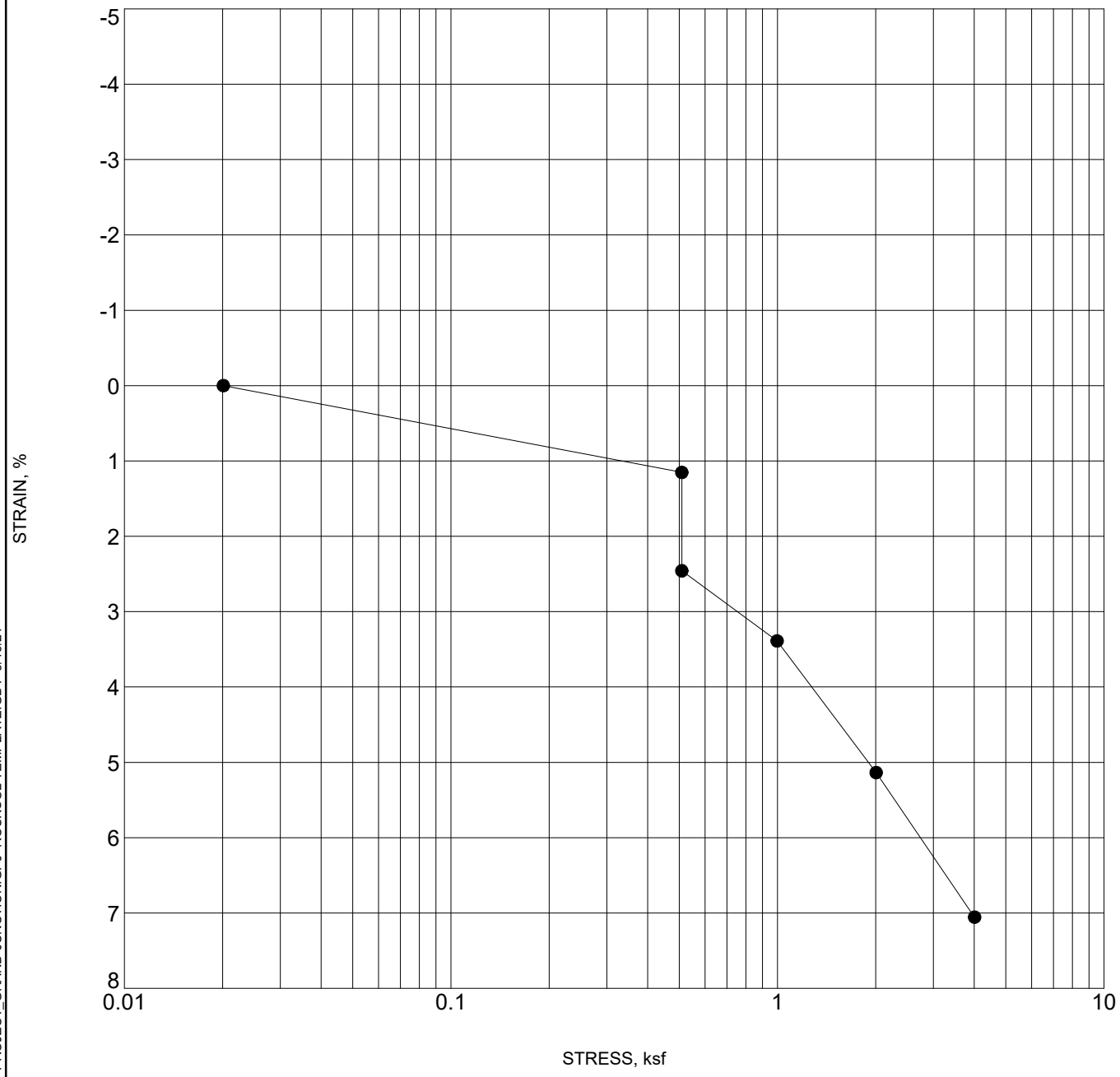
Specimen Identification		Classification	Swell/Consol. (%)	γ_d (pcf)	MC%
● **B-2**	**8**	**CLAY, sandy**	**-0.5**	**92.0**	**34.3**

RockSol Consulting Group, Inc.

SWELL - CONSOLIDATION TEST

CLIENT City of Grand Junction **PROJECT NAME** Grand Junction Odor Control Improvements Project

PROJECT NUMBER 599.27 **PROJECT LOCATION** Grand Junction, Colorado



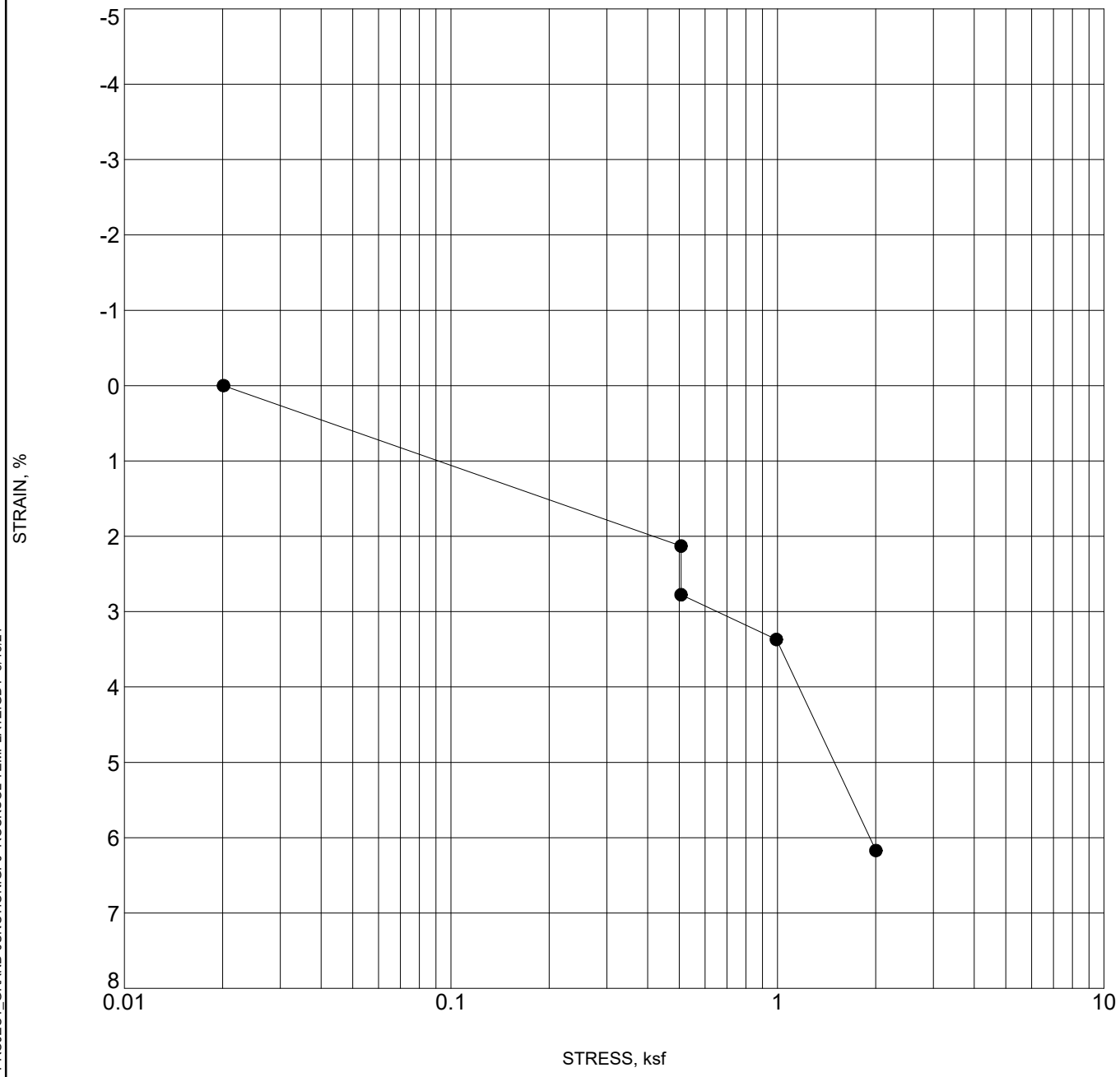
Specimen Identification	Classification	Swell/Consol. (%)	γ_d (pcf)	MC%
● B-3 3	**SAND, clayey with gravel**	**-1.3**	**112.7**	**12.5**

RockSol Consulting Group, Inc.

SWELL - CONSOLIDATION TEST

CLIENT City of Grand Junction **PROJECT NAME** Grand Junction Odor Control Improvements Project

PROJECT NUMBER 599.27 **PROJECT LOCATION** Grand Junction, Colorado



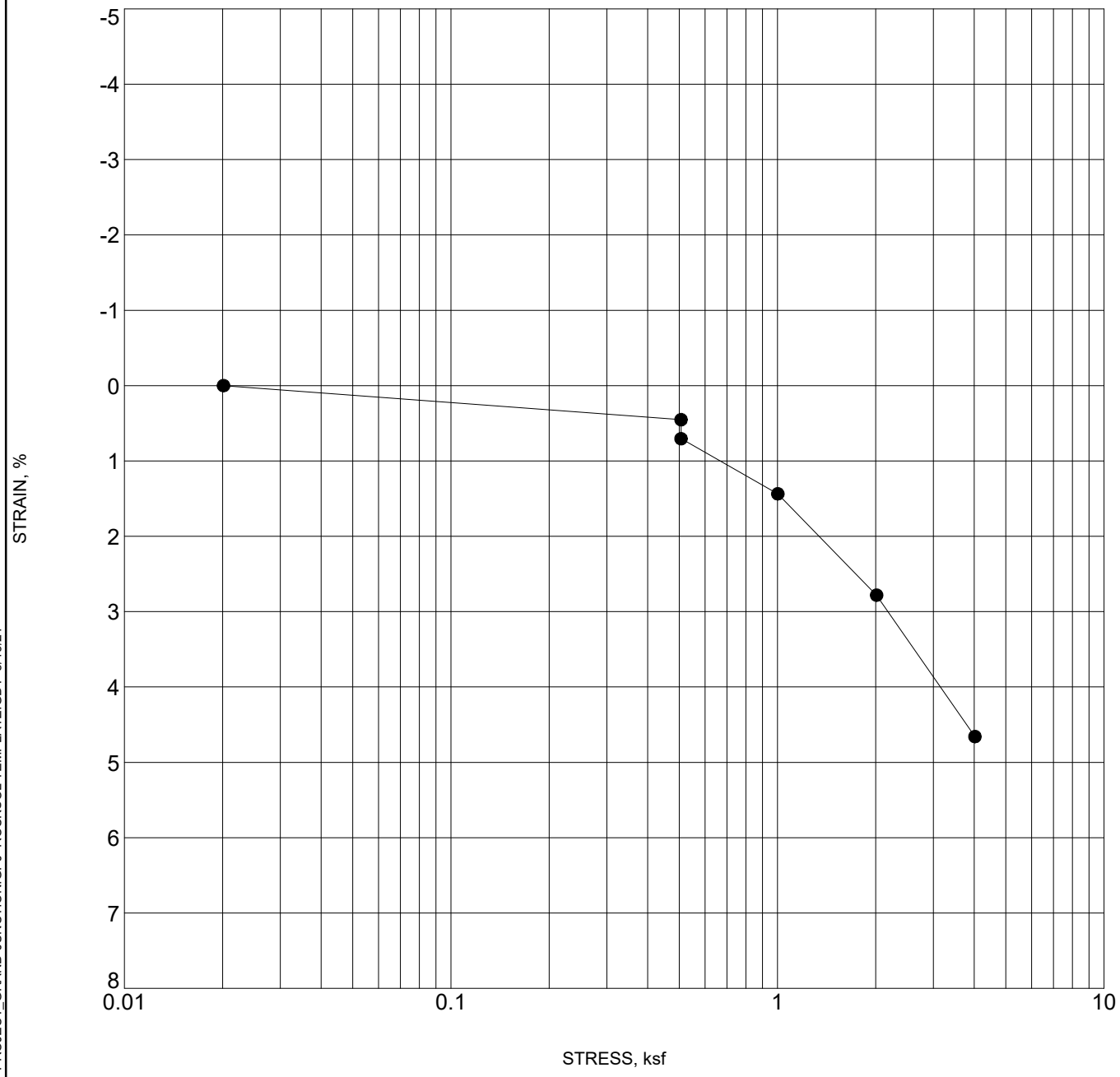
Specimen Identification	Classification	Swell/Consol. (%)	γ_d (pcf)	MC%
● B-4 3	**SILT, sandy with trace gravel**	**-0.7**	**95.7**	**11.4**

RockSol Consulting Group, Inc.

SWELL - CONSOLIDATION TEST

CLIENT City of Grand Junction **PROJECT NAME** Grand Junction Odor Control Improvements Project

PROJECT NUMBER 599.27 **PROJECT LOCATION** Grand Junction, Colorado



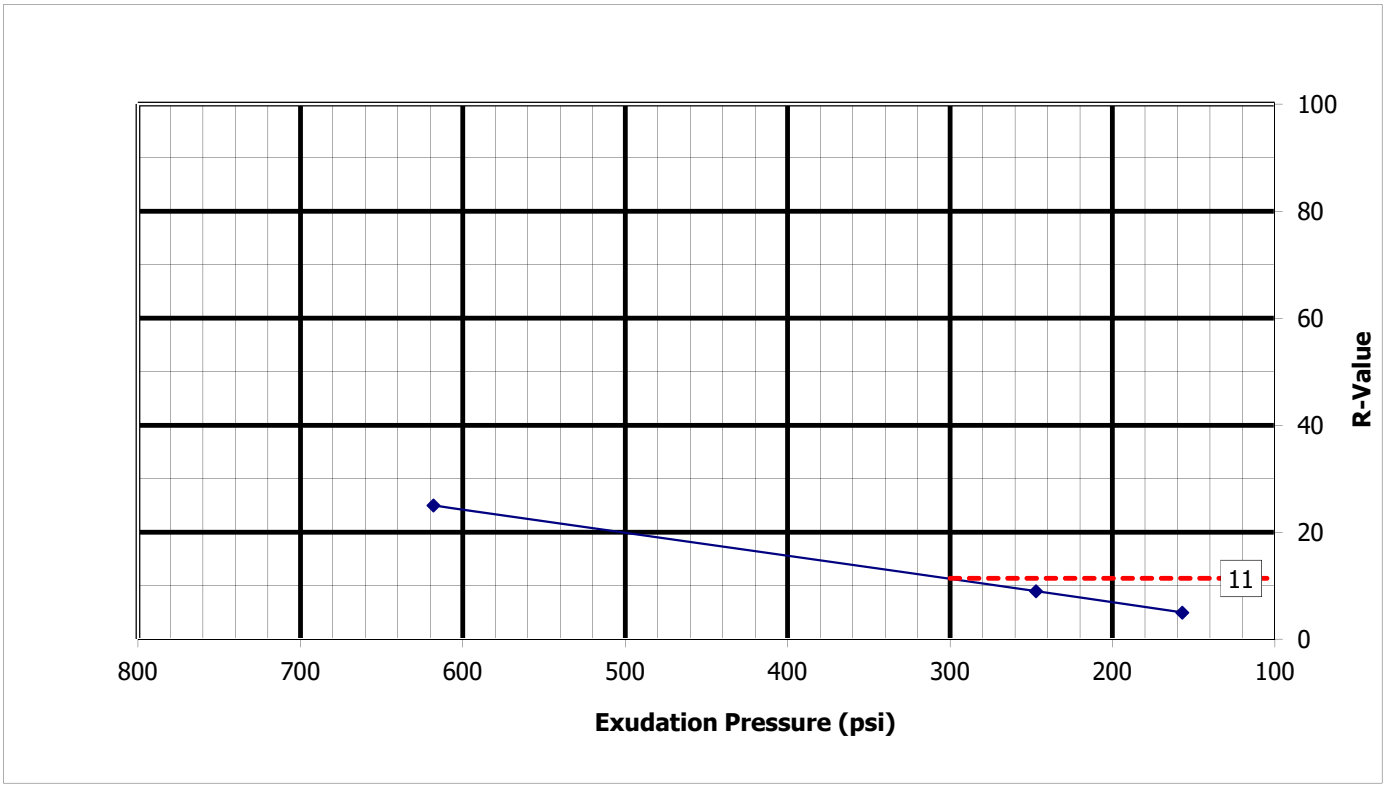
Specimen Identification	Classification	Swell/Consol. (%)	γ_d (pcf)	MC%
● **B-5 3**	**SAND, clayey**	**-0.3**	**103.0**	**21.8**

CESARE, INC.
Geotechnical Engineers & Construction Materials Consultants

AASHTO ACCREDITED

R-VALUE TEST GRAPH (AASHTO T190)

Project Number:	21.022, RockSol Consulting	Date:	3-Mar-21
Project Name:	Odor Improvement Project - City of Grand Junction (RockSol Project No. 599.27)	Technician:	J. Holiman
Lab ID Number:	212344	Reviewer:	G. Hoyos
Sample Location:	SE corner pad Site 1 Riverside and US 50; B-5 at 3'		
Visual Description:	CLAY, sandy, brown		



R-Value @ Exudation Pressure 300 psi: 11
Specification:

CDOT Pavement Design Manual, 2011.
Eq. 2.1 & 2.2, page 2-3.

$S_1 = [(R-5)/11.29]+3$ **S_1= 3.57**

$M_R = 10^{[(S_1+18.72)/6.24]}$ **M_R= 3,729**

M_R = Resilient Modulus, psi

S_1 = the Soil Support Value

R = the R-Value obtained

Test Specimen:	1	2	3
Moisture Content, %:	15.6	17.6	19.6
Expansion Pressure, psi:	0.45	0.36	0.06
Dry Density, pcf:	116.3	111.7	109.8
R-Value:	25	9	5
Exudation Pressure, psi:	618	247	157

Note: The R-Value is measured; the M_R is an approximation from correlation formulas.

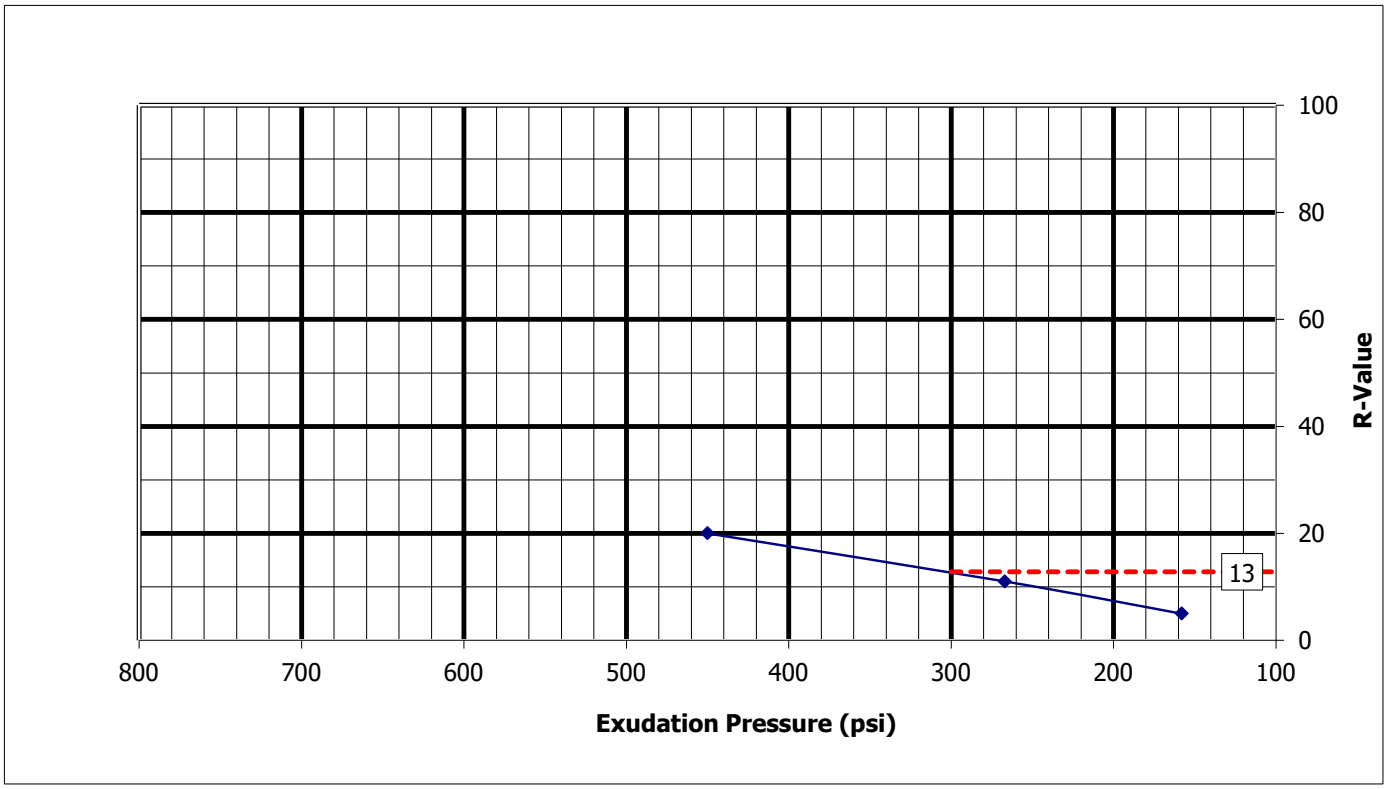
Corporate: 7108 South Alton Way, Building B • Centennial, Colorado 80112
Phone 303-220-0300 • www.cesareinc.com

CESARE, INC.
Geotechnical Engineers & Construction Materials Consultants

AASHTO ACCREDITED

R-VALUE TEST GRAPH (AASHTO T190)

Project Number:	21.022, RockSol Consulting	Date:	15-Mar-21
Project Name:	Odor Improvement Project - City of Grand Junction (RockSol Project No. 599.27)	Technician:	J. Holiman
Lab ID Number:	212345	Reviewer:	G. Hoyos
Sample Location:	NW corner pad Site 1 Persigo: B-2 at 2'		
Visual Description:	CLAY, sandy, brown		



R-Value @ Exudation Pressure 300 psi: **13**

Specification:

CDOT Pavement Design Manual, 2011.
Eq. 2.1 & 2.2, page 2-3.

$S_1 = [(R-5)/11.29]+3$ **S_1= 3.69**

$M_R = 10^{[(S_1+18.72)/6.24]}$ **M_R= 3,904**

M_R = Resilient Modulus, psi

S_1 = the Soil Support Value

R = the R-Value obtained

Test Specimen:	1	2	3
Moisture Content, %:	14.9	17.3	19.0
Expansion Pressure, psi:	0.33	0.15	-0.06
Dry Density, pcf:	113.1	111.9	110.6
R-Value:	20	11	5
Exudation Pressure, psi:	450	267	158

Note: The R-Value is measured; the M_R is an approximation from correlation formulas.

Corporate: 7108 South Alton Way, Building B • Centennial, Colorado 80112
Phone 303-220-0300 • www.cesareinc.com

APPENDIX D

SEISMIC DESIGN CRITERIA OUTPUT

Site One- Bio-Filter Pad No. 1

Persigo Water Treatment Plant, 2145 River Road, Grand Junction, CO 81505, USA

Latitude, Longitude: 39.1152279, -108.6569846

Date	3/4/2021, 11:32:13 AM
Design Code Reference Document	ASCE7-16
Risk Category	III
Site Class	D - Default (See Section 11.4.3)

Type	Value	Description
S_S	0.235	MCE_R ground motion. (for 0.2 second period)
S_1	0.065	MCE_R ground motion. (for 1.0s period)
S_{MS}	0.376	Site-modified spectral acceleration value
S_{M1}	0.157	Site-modified spectral acceleration value
S_{DS}	0.251	Numeric seismic design value at 0.2 second SA
S_{D1}	0.105	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	B	Seismic design category
F_a	1.6	Site amplification factor at 0.2 second
F_v	2.4	Site amplification factor at 1.0 second
PGA	0.129	MCE_G peak ground acceleration
F_{PGA}	1.542	Site amplification factor at PGA
PGA_M	0.199	Site modified peak ground acceleration
T_L	4	Long-period transition period in seconds
SsRT	0.235	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	0.249	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.5	Factored deterministic acceleration value. (0.2 second)
S1RT	0.065	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.07	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)
PGAd	0.5	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.946	Mapped value of the risk coefficient at short periods

Type	Value	Description
C_{R1}	0.932	Mapped value of the risk coefficient at a period of 1 s

DISCLAIMER

While the information presented on this website is believed to be correct, SEAOC /OSHPD and its sponsors and contributors assume no responsibility or liability for its accuracy. The material presented in this web application should not be used or relied upon for any specific application without competent examination and verification of its accuracy, suitability and applicability by engineers or other licensed professionals. SEAOC / OSHPD do not intend that the use of this information replace the sound judgment of such competent professionals, having experience and knowledge in the field of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the results of the seismic data provided by this website. Users of the information from this website assume all liability arising from such use. Use of the output of this website does not imply approval by the governing building code bodies responsible for building code approval and interpretation for the building site described by latitude/longitude location in the search results of this website.

Site Two- Bio-Filter Pad No. 2

Latitude, Longitude: 39.05797770, -108.56524734

Date	3/4/2021, 11:33:01 AM
Design Code Reference Document	ASCE7-16
Risk Category	III
Site Class	D - Default (See Section 11.4.3)

Type	Value	Description
S_S	0.237	MCE_R ground motion. (for 0.2 second period)
S_1	0.065	MCE_R ground motion. (for 1.0s period)
S_{MS}	0.379	Site-modified spectral acceleration value
S_{M1}	0.157	Site-modified spectral acceleration value
S_{DS}	0.253	Numeric seismic design value at 0.2 second SA
S_{D1}	0.105	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	B	Seismic design category
F_a	1.6	Site amplification factor at 0.2 second
F_v	2.4	Site amplification factor at 1.0 second
PGA	0.13	MCE_G peak ground acceleration
F_{PGA}	1.539	Site amplification factor at PGA
PGA_M	0.201	Site modified peak ground acceleration
T_L	4	Long-period transition period in seconds
SsRT	0.237	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	0.251	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.5	Factored deterministic acceleration value. (0.2 second)
S1RT	0.065	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.07	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)
PGAd	0.5	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.946	Mapped value of the risk coefficient at short periods
C_{R1}	0.932	Mapped value of the risk coefficient at a period of 1 s

DISCLAIMER

While the information presented on this website is believed to be correct, SEAOC /OSHPD and its sponsors and contributors assume no responsibility or liability for its accuracy. The material presented in this web application should not be used or relied upon for any specific application without competent examination and verification of its accuracy, suitability and applicability by engineers or other licensed professionals. SEAOC / OSHPD do not intend that the use of this information replace the sound judgment of such competent professionals, having experience and knowledge in the field of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the results of the seismic data provided by this website. Users of the information from this website assume all liability arising from such use. Use of the output of this website does not imply approval by the governing building code bodies responsible for building code approval and interpretation for the building site described by latitude/longitude location in the search results of this website.

APPENDIX E

FLEXIBLE AND RIGID 18K ESAL CALCULATIONS

FLEXIBLE ESAL CALCULATIONS

ADL = Average Daily Load

Design Period (in years) :	30
Growth Factor (as decimal):	0.01

Vehicle Classification	Base Year AADT (2-way)	Flexible ESAL Factors	Base Year ADL	Growth Factor	Design Year AADT (2 way)	Design ADL
Cars and pickups (Class 2 and 3)	0	0.0001	0	1.01	0	0
2 axle, 6 tire SU (Class 5)	2	0.864	2.5	1.01	3	2.592
3+ axle SU (Class 6)	1	2.499	11.6	1.01	1	2.499
3 axle TST (Class 7)	1	1.346	0.39	1.01	1	1.346
4 axle TST (Class 8)	0	2.793	0.51	1.01	0	0
5+ axle TST (Class 9)	0	2.322	16.95	1.01	0	0
Buses, trucks w/trailers (Class 4 and 10)	0	3.701	1.14	1.01	0	0
Twin trailers (Class 11, 12, and 13)	0	2.208	2.4	1.01	0	0
Total	4		35.49		5	6.437

Average ADL	20.9635
No. of days in design period	10950
Design lane factor	0.6
Cumulative design lane flexible ESAL	137,730

RIGID ESAL CALCULATIONS

ADL = Average Daily Load

Design Period (in years) :	30
Growth Factor (as decimal):	0.01

Vehicle Classification	Base Year AADT (2-way)	Rigid ESAL Factors	Base Year ADL	Growth Factor	Design Year AADT (2 way)	Design ADL
Cars and pickups (Class 2 and 3)	0	0.0002	0	1.01	0	0
2 axle, 6 tire SU (Class 5)	2	0.838	2.5	1.01	3	2.514
3+ axle SU (Class 6)	1	3.659	11.6	1.01	1	3.659
3 axle TST (Class 7)	1	1.63	0.39	1.01	1	1.63
4 axle TST (Class 8)	0	3.601	0.51	1.01	0	0
5+ axle TST (Class 9)	0	3.824	16.95	1.01	0	0
Buses, trucks w/trailers (Class 4 and 10)	0	4.804	1.14	1.01	0	0
Twin trailers (Class 11, 12, and 13)	0	2.467	2.4	1.01	0	0
Total	4		35.49		5	7.803

Average ADL	21.6465
No. of days in design period	10950
Design lane factor	0.6
Cumulative design lane flexible ESAL	142,218

APPENDIX F

PAVEMENT DESIGN OUTPUT SHEETS (FLEXIBLE PAVEMENT)

INITIAL VALUES

Initial Serviceability Index=	4.5
Final Serviceability Index=	2
Overall Standard Deviation, So=	0.44
Reliability, R (percent)=	75
Standard Normal Deviate (ZR)=	-0.674
Structural Coefficient of HMA=	0.44
Structural Coefficient of ABC=	0.12
Design Life ESALs=	140,000
R-Value=	**10**

INTERMEDIATE CALCULATIONS

Calculated Mr=	3562
Design Mr=	3562
Design Serviceability Loss (ΔPSI)=	2.5

FINAL CALCULATIONS

SN= **2.8670**

	Such That:	
$Log_{10}ESAL$	≤	**Thickness Equation**
5.1461	≤	5.1471

Full HMA:

Depth= **6.52** in

HMA over ABC:

Depth ABC=	**6**	in	
Depth HMA=	**4.88**	in	Use 5.0 inches

ESAL's = the number of Equivalent 18-kip axle loads for the appropriate design period

Mr = subgrade Resilient Modulus in pounds per square inch (psi)

THIS SHEET USES THE "OLD" CDOT R-VALUE TO RESILIENT MODULUS EQUATION

R-Value = 10

If Mr is based on R-Value ===> Mr = 3,562 psi For Pre-2015 CDOT Correlation

140,000 = Design Life ESALs

SN = 2.867 = Required SN when B equals (or slightly exceeds) A

$Log_{10}ESAL$ = A = 5.14613

Thickness Equation= B = 5.14706 with no drainage reduction

Design Mr = 3,562 psi

When A = B, ESAL's and SN agree, then calculate thickness

Take Calculated Thickness and round appropriately for design thickness

0.170041335	A	
3.87	B	
1118.077616	C	
1.378465166	D	
-0.02424708	E	
0.200000	F	Mr= 3,562 psi
3.87	G	
5.497822251	H	
-0.29656	I	

S_t= 3.44287

Exponent = 3.551742

Structural Coefficient of HMA = 0.44

Structural Coefficient of ABC = 0.12

Design Serviceability Loss (ΔPSI)= 2.5

Calculated thickness, inches = 6.52

FULL DEPTH HMA

Initial Serviceability Index= 4.5

Final Serviceability Index = 2.0

Overall Standard Deviation, So = 0.44

Reliability, R (percent) = 75

Standard Normal Deviate (ZR) = -0.674

(Use Table 1.4 from CDOT Pavement Design Manual)

Composite HMA over ABC

(using specified layer of ABC)

Inches of ABC = 6.0

Calculated Inches of HMA = 4.88

Table 1.4 Reliability and Standard Normal Deviate

Reliability, R (percent)	Standard Normal Deviate(Z_R)
50	0.000
60	-0.253
70	-0.524
75	-0.674
80	-0.841
85	-1.037
90	-1.282
91	-1.340
92	-1.405
93	-1.476
94	-1.555
95	-1.645
98	-2.054

APPENDIX G

PAVEMENT DESIGN OUTPUT SHEETS (RIGID PAVEMENT)

Rigid Pavement Design - Based on AASHTO Supplemental Guide

Reference: *LTPP DATA ANALYSIS - Phase I: Validation of Guidelines for k-Value Selection and Concrete Pavement Performance Prediction*

I. General

Agency: RockSol Consulting Group, Inc.
Street Address: 12076 Grant Street
City: Thornton
State: Colorado

Project Number: 599.27

ID: Odor Improvement Project

Description: Odor Improvement Project

Location: Grand Junction, CO

II. Design

Serviceability

Initial Serviceability, P1: 4.5
Terminal Serviceability, P2: 2.0

PCC Properties

28-day Mean Modulus of Rupture, $(S'_c)'$: 650 psi
Elastic Modulus of Slab, E_c: 3,400,000 psi
Poisson's Ratio for Concrete, m: 0.15

Base Properties

Elastic Modulus of Base, E_b: 20,000 psi
Design Thickness of Base, H_b: 6.0 in
Slab-Base Friction Factor, f: 1.4

Reliability and Standard Deviation

Reliability Level (R): 75.0 %
Overall Standard Deviation, S_0: 0.34

Climatic Properties

Mean Annual Wind Speed, WIND: 8.8 mph
Mean Annual Air Temperature, TEMP: 50.3 °F
Mean Annual Precipitation, PRECIP: 8.3 in

Subgrade k-Value

100 psi/in

Design ESALs

0.2 million

Pavement Type, Joint Spacing (L)

- (•) JPCP
- ( ) JRCP
- ( ) CRCP

Joint Spacing: 12.0 ft

JPCP

Effective Joint Spacing: 144 in

Edge Support

- (•) Conventional 12-ft wide traffic lane
- ( ) Conventional 12-ft wide traffic lane + tied PCC
- ( ) 2-ft widened slab w/conventional 12-ft traffic lane

Edge Support Factor: 1.00

Sensitivity Analysis

Slab Thickness used for Sensitivity Analysis: in

- ( ) Modulus of Rupture
- ( ) Elastic Modulus (Slab)
- (•) Elastic Modulus (Base)
- ( ) Base Thickness
- ( ) k-Value
- ( ) Joint Spacing
- ( ) Reliability
- ( ) Standard Deviation

Calculated Slab Thickness for Above Inputs: in

CITY OF Grand Junction COLORADO

Purchasing Division

ADDENDUM NO. 5

DATE: July 29, 2022
FROM: City of Grand Junction Purchasing Division
TO: All Offerors
RE: IFB-5096-22-DD Odor Control Improvement Projects

Offerors responding to the above referenced solicitation are hereby instructed that the requirements have been clarified, modified, superseded and supplemented as to this date as hereinafter described.

Please make note of the following clarifications:

1. The original issued Specification Dos Rios – 2021_08_20_GJPBD_Bid Set_22x34 was published with missing documents. It is being replaced with 2021_08_20_GJPBD_Bid set 22x34 which is inclusive of missing documents. Please see attached for correct Specification.

The original solicitation for the project noted above is amended as noted.

All other conditions of subject remain the same.

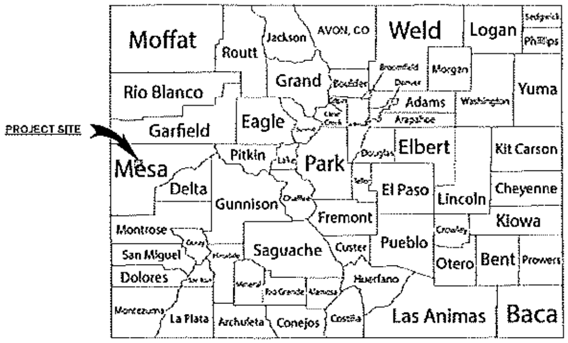
Respectfully,

Dolly Daniels

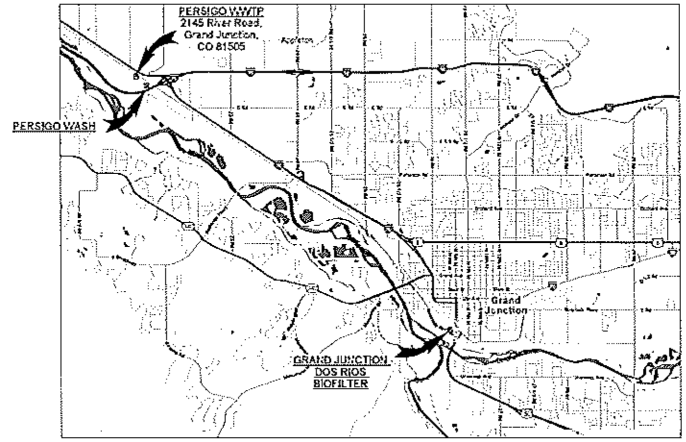
Dolly Daniels, Senior Buyer
City of Grand Junction, Colorado

PROJECT NO. 20W23045

BID SET



AREA MAP
NO SCALE



VICINITY MAP
NO SCALE

GARVER PROJECT NO. 20W23045

AUGUST 2021

GARVER

One Denver Technology Center
5251 DTC Parkway, Suite 420
Greenwood Village, CO 80111
Phone: 303-721-6932

REV.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO

GRAND JUNCTION
ODOR CONTROL IMPROVEMENTS

COVER

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: RGH
DRAWN BY: EGB

BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER
01-G001

SHEET NUMBER 001

SHEET NO.	DWG. NO.	DESCRIPTION
001	01-G001	COVER
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible] ABBREVIATIONS
004	01-G004	CIVIL NOTES AND LEGEND
005	01-G005	STRUCTURAL NOTES, LEGENDS, AND ABBREVIATIONS
006	01-G006	ELECTRICAL NOTES, LEGENDS, AND ABBREVIATIONS

10 - PERSIGO WASTEWATER TREATMENT PLANT		
SHEET NO.	DWG. NO.	DESCRIPTION
007	10-C101	PERSIGO WWTP EXISTING SITE PLAN
008	10-C102	PERSIGO WWTP PROPOSED SITE AND GRADING PLAN
009	10-C301	PERSIGO WWTP YARD PIPING PLAN
010	10-S101	PERSIGO WWTP ODOR CONTROL STRUCTURAL OVERALL PLAN
011	10-S102	PERSIGO WWTP ODOR CONTROL BTF STRUCTURAL PLAN I
012	10-S103	PERSIGO WWTP ODOR CONTROL BTF STRUCTURAL PLAN II
013	10-S301	PERSIGO WWTP ODOR CONTROL BTF STRUCTURAL SECTIONS I
014	10-S302	PERSIGO WWTP ODOR CONTROL BTF STRUCTURAL SECTIONS II
015	10-S401	PERSIGO WWTP ODOR CONTROL BTF STRUCTURAL DETAILS I
016	10-S402	PERSIGO WWTP ODOR CONTROL BTF STRUCTURAL DETAILS II
017	10-S403	PERSIGO WWTP ODOR CONTROL BTF STRUCTURAL DETAILS III
018	10-M101	PERSIGO WWTP ODOR CONTROL SYSTEM SCHEMATIC
019	10-M131	PERSIGO WWTP ODOR CONTROL BTF EQUIPMENT SITE PLAN
020	10-M132	PERSIGO WWTP ODOR CONTROL BTF EQUIPMENT PLAN
021	10-M133	PERSIGO WWTP MANHOLE PLAN AND SECTION
022	10-M134	PERSIGO WWTP HEADWORKS PARSHALL FLUME PLAN AND SECTION
023	10-M301	PERSIGO WWTP ODOR CONTROL SYSTEM SECTION AND ELEVATION I
024	10-M302	PERSIGO WWTP ODOR CONTROL SYSTEM SECTION AND ELEVATION II
025	10-E101	PERSIGO WWTP ODOR CONTROL ELECTRICAL SITE PLAN
026	10-E131	PERSIGO WWTP ODOR CONTROL ELECTRICAL POWER AND GROUNDING PLAN
027	10-E501	PERSIGO WWTP ODOR CONTROL ONELINE DIAGRAM

SHEET NO.	DWG. NO.	DESCRIPTION
028	20-C101	PERSIGO SIPHON WASH SITE PLAN
029	20-S101	PERSIGO SIPHON WASH STRUCTURAL OVERALL PLAN
030	20-S102	PERSIGO SIPHON WASH PIPE ENCASEMENT PLAN
031	20-S301	PERSIGO SIPHON WASH PIPE ENCASEMENT SECTIONS
032	20-S401	PERSIGO SIPHON WASH DETAILS

30 - DOS RIOS		
SHEET NO.	DWG. NO.	DESCRIPTION
033	30-C101	DOS RIOS EXISTING SITE PLAN
034	30-C102	DOS RIOS PROPOSED SITE PLAN
035	30-C301	DOS RIOS SUE INFORMATION PLAN
036	30-C302	DOS RIOS YARD PIPING PROFILES
037	30-C303	DOS RIOS YARD PIPING PROFILES I
038	30-C304	DOS RIOS YARD PIPING PROFILES II
039	30-S101	DOS RIOS ODOR CONTROL SCRUBBER FOUNDATION PLAN
040	30-S301	DOS RIOS ODOR CONTROL STRUCTURAL SECTIONS
041	30-M101	DOS RIOS FOUL AIR COLLECTION SYSTEM SCHEMATIC
042	30-M131	DOS RIOS ODOR CONTROL BTF EQUIPMENT PLAN
043	30-M301	DOS RIOS ODOR CONTROL SYSTEM SECTION AND ELEVATION I
044	30-M302	DOS RIOS ODOR CONTROL SYSTEM SECTION AND ELEVATION II
045	30-M303	DOS RIOS ODOR CONTROL SYSTEM SECTION AND ELEVATION III
046	30-E101	DOS RIOS ODOR CONTROL ELECTRICAL SITE PLAN
047	30-E131	DOS RIOS ODOR CONTROL ELECTRICAL POWER AND GROUNDING PLAN
048	30-E501	DOS RIOS ODOR CONTROL ONELINE DIAGRAM

99 - STANDARD DETAILS		
SHEET NO.	DWG. NO.	DESCRIPTION
049	99-C501	SITE CIVIL DETAILS I
050	99-C502	SITE CIVIL DETAILS II
051	99-C503	SITE CIVIL DETAILS III
052	99-C504	SITE CIVIL DETAILS IV
053	99-C505	SITE CIVIL DETAILS V
054	99-C506	SITE CIVIL DETAILS VI
055	99-S501	STRUCTURAL DETAILS I
056	99-S502	STRUCTURAL DETAILS II
057	99-S503	STRUCTURAL DETAILS III
058	99-S504	STRUCTURAL DETAILS IV
059	99-S505	STRUCTURAL DETAILS V
060	99-M501	MECHANICAL DETAILS I
061	99-M502	MECHANICAL DETAILS II
062	99-M503	MECHANICAL DETAILS III
063	99-E501	ELECTRICAL DETAILS I
064	99-E502	ELECTRICAL DETAILS II
065	99-E503	ELECTRICAL DETAILS III
066	99-E504	DOS RIOS RTU PANEL LAYOUT
067	99-E505	DOS RIOS RTU PANEL SCHEMATIC

DRAWING NUMBER

EXAMPLE:

70-M201

FACILITY AREA CODE — DISCIPLINE — PREDOMINATE VIEW OR ELEMENT

DRAWING NUMBER LEGEND

G – GENERAL	S - STRUCTURAL	120 – LOWER BASEMENT LEVEL	200 – ELEVATIONS
C - CIVIL	M - MECHANICAL	130 – GROUND LEVEL	300 – SECTIONS
X – DEMOLITION	E - ELECTRICAL	140 – SECOND OR UPPER LEVEL	400 – DETAILS
I – INSTRUMENTATION & CONTROL	T - TELECOMMUNICATIONS	150 – ROOF LEVEL	500 – DIAGRAMS OR SCHED
F – FIRE & LIFE SAFETY		160 – ADDITIONAL UPPER LEVELS	
A – ARCHITECTURAL			

(CIVIL EX. 100 – SITE PLANS 200 – GRADING & PAVING 300 – PIPING & PROFILES)

REV | DATE | DESCRIPTION | BY

CITY OF GRAND JUNCTION

GRAND JUNCTION, COLORADO

Grand Junction COLORADO

GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

INDEX OF DRAWINGS

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: RGH
DRAWN BY: EGB

BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER
01-G002

SHEET NUMBER **002**

Symbol	Description
1	CALLOUT DENOTES A CUT SECTION TYPICAL REFERENCE (THIS EXAMPLE OCCURS ON SHEET A101 REFERENCING SECTION No. 1 ON SHEET A201)
1 / A101 / A201	CALLOUT DENOTES AN ELEVATION REFERENCE (THIS EXAMPLE OCCURS ON SHEET A101 REFERENCING ELEVATION No. 1 ON SHEET A201)
1 / A101 / A401 TYP	CALLOUT DENOTES AN ENLARGED AREA TYPICAL REFERENCE (THIS EXAMPLE OCCURS ON SHEET A101 REFERENCING DETAIL No. 1 ON SHEET A401)
1 / 55-BM-301	CALLOUT DENOTES A STANDARD DETAIL REFERENCE
1	CALLOUT DENOTES A KEYED NOTE REFERENCE
2	CLOUDED REGION INDICATES A REVISED AREA
ROOM NAME / 101 / 150 SF	SYMBOL INDICATES A ROOM / AREA DESIGNATION WITH ROOM NUMBER AND SQUARE FOOTAGE
0	SYMBOL INDICATES A STRUCTURAL GRIDLINE OR DATUM
1ST FLOOR EL. 602.50	SYMBOL INDICATES A DATUM IN A SECTION OR ELEVATION

CJ	CONSTRUCTION JOINT
CKT	CIRCUIT
CL	CENTERLINE
CMU	CONCRETE MASONRY UNIT
COGEN	COMBINED HEAT AND POWER GENERATION
COL	COLUMN
CONT	CONTINUOUS
DIA	DIAMETER
EA	EXHAUST AIR, EXPANSION ANCHOR, EACH
EL, ELEV	ELEVATION
ELEC	ELECTRICAL
ENCL	ENCLOSURE
FA	FIRE ALARM
FFE	FINISHED FLOOR ELEVATION
FL	FLOW LINE
FLR	FLOOR
FRP	FIBERGLASS REINFORCED PLASTIC
FT	FEET, FOOT
GA	GAUGE, GAGE
GALV	GALVANIZED
GFI, GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GRND	GROUND
H, HT	HEIGHT
HOA	HAND-OFF-AUTOMATIC
HORIZ	HORIZONTAL
HP	HORSEPOWER, HEAT PUMP
HYD	HYDRANT
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
KVA	KILOVOLT-AMPERES
KW	KILOWATTS
LBS, #	POUNDS
LF	LINEAR FEET
MAX	MAXIMUM
N/A	NOT AVAILABLE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OFCI	OWNER FURNISHED
OH	OVERHEAD
OSHA	OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION
PD	PROCESS DRAIN
PIV	POST INDICATOR VALVE
PNL	PANEL
PRV	PRESSURE RELIEVE VALVE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
SHT	SHEET
SPEC	SPECIFICATIONS
SQ	SQUARE
STA	STATION
STD	STANDARD
SURF	SURFACE
SUSP	SUSPEND, SUSPENDED
T&B	TOP AND BOTTOM
THRU	THROUGH
TYP	TYPICAL
U/F	UNDER FLOOR
U/G	UNDER GROUND
U/S	UNDER SLAB
UL	UNDERWRITERS LABORATORIES, INC.
UNO	UNLESS NOTED OTHERWISE
V	VOLT, VALVE
VA	VOLT-AMPERE
VERT	VERTICAL
W	WATT, WIRE, WIDTH, WINDOW, WATER
W/	WITH
W/O	WITHOUT
WS	WATERSTOP
WT	WATERTIGHT, WEIGHT
XMFR	TRANSFORMER

REV. | DATE | DESCRIPTION | BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction COLORADO

GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

GENERAL CONVENTIONS AND ABBREVIATIONS

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: RGH
DRAWN BY: EGB

BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER
01-G003

SHEET NUMBER 003

SHALL BE 24". CROSS UNDER ALL WATER MAINS WHERE NOT POSSIBLE TO PROVIDE 18" CLEARANCE.

CONSTRUCTION PERIOD OR TEMPORARY FACILITIES PROVIDED.

5. CONTRACTOR IS RESPONSIBLE FOR ALL DEWATERING ACTIVITIES AND ASSOCIATED PERMITS REQUIRED FOR ALL EXCAVATIONS REQUIRED TO COMPLETE THE PROJECT.

6. APPROXIMATE LOCATIONS OF OVERHEAD POWER LINES MAY OR MAY NOT BE SHOWN ON PLANS. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR VERIFYING ALL LOCATIONS IN THE FIELD AND PLAN WORK IN THESE AREAS ACCORDINGLY.

7. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE DRAINAGE AND COMPLIANCE WITH ALL GOVERNMENTAL STORM WATER REGULATIONS AND PERMITS (SWPPP) AS REQUIRED. CONTRACTOR SHALL OBTAIN NOI FROM APPROPRIATE STATE BODY PRIOR TO ANY CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY PERMITS REQUIRED FOR WORK WITHIN STREAMS.

8. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO PROVIDE TRAFFIC CONTROL AND SIGNAGE FOR THE DURATION OF PROJECT AS REQUIRED BY THE NATIONAL MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES - PART VI, AND/OR ALL OTHER APPLICABLE GUIDELINES OF CDOT, COUNTY, CITY OR ANY OTHER AUTHORITIES HAVING JURISDICTION OVER THE PROJECT AREAS. ALL ROAD CLOSURE MUST BE APPROVED BY THE CITY OF GRAND JUNCTION TRAFFIC ENGINEER PRIOR TO ANY PUBLIC ROAD CLOSURES.

9. CONTRACTOR SHALL MAINTAIN TRAFFIC FLOW TO RESIDENCES AND BUSINESS WITH MINIMUM DISRUPTION OF ACCESS.

10. ALL STREETS AND DRIVEWAYS SHALL BE OPEN CUT UNLESS NOTED OTHERWISE.

11. ALL EXCAVATION BACKFILL OUTSIDE TRAFFIC WAYS SHALL BE COMPACTED TO MIN 95% STANDARD PROCTOR DENSITY TO PREVENT SETTLEMENT.

12. CONTRACTOR SHALL PROVIDE THEIR OWN SANITARY WASTE FACILITIES.

PAVING AND GRADING NOTES

1. ANY PAVEMENT DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED TO EQUAL OR BETTER CONDITION AT THE CONTRACTORS EXPENSE.

2. ANY DISTURBED AREAS NOT SPECIFICALLY DESIGNATED TO BE GRADED SHALL BE RESTORED TO EQUAL OR BETTER CONDITION AND SHALL BE GRADED TO DRAIN AS APPROVED BY THE ENGINEER.

3. FINAL PAVEMENT SURFACES SHALL NOT BE PLACED UNTIL ALL MAJOR CONSTRUCTION ACTIVES HAVE CONCLUDED.

4. ANY CHANGES TO FINAL GRADE ELEVATIONS AS SHOWN ON THE PLANS SHALL BE APPROVED BY THE ENGINEER.

5. ALL ASPHALT AND CONCRETE PAVING REMOVED AND REPLACED SHALL BE NEAT SAW CUT.

6. ALL OPEN CUT TRAFFIC WAYS (ROADS, PARKING LOTS, DRIVES, ETC.) AND ALL AREAS LYING WITHIN PRISM OF TRAFFIC WAYS, SHALL HAVE CRUSHED STONE BACKFILL COMPACTED WITH VIBRATORY COMPACTOR MAXIMUM 6" LIFTS AND COMPACTED TO MINIMUM 100%-98% MODIFIED PROCTOR DENSITY TO PREVENT SETTLEMENT FOR ITS ENTIRE TRENCH HEIGHT AND WIDTH. COMPACTED "PUG-MIX" SHALL BE USED AND MAINTAINED IN TOP 12" OF TRENCH HEIGHT AS REQUIRED TO PREVENT AGGREGATE LOSS DUE TO TRAFFIC.

CIVIL LEGEND NOTES

1. GRAY SCALED LINE TYPES AND SYMBOLS INDICATE EXISTING ITEMS. BOLD SCALED LINE TYPES AND SYMBOLS INDICATE PROPOSED ITEMS.
2. ADDITIONAL PROCESS LINES MAY BE DENOTED BY A LINE TYPE WITH THE FLOW STREAM IDENTIFIER.

UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGED UNDERGROUND FACILITIES.

S SHALL BE INSTALLED AS SHOWN ON DRAWINGS WITH ALL FITTINGS AND VALVES AS REQUIRED TO PROVIDE A FUNCTIONAL PIPELINE AS SPECIFIED.

8. ALL BURIED VALVES SHALL BE INSTALLED WITH VALVE BOX AS SPECIFIED.

9. ALL PIPELINE SHUTDOWNS SHALL BE COORDINATED WITH THE OPERATORS. A WRITTEN WORK PLAN SHALL BE SUBMITTED NO LESS THAN 21 DAYS IN ADVANCE AND APPROVED BY THE ENGINEER AND CITY 5 DAYS PRIOR TO ANY SHUTDOWNS. DEPENDING ON THE NATURE OF THE SHUTDOWN A GO NO GO DETERMINATION MAY BE REQUIRED 24 HOURS PRIOR TO ANY SHUTDOWN AT THE SOLE DISCRETION OF THE CITY.

10. ROCK SHALL BE UNDERCUT A MINIMUM OF 4" AND PIPE BEDDED IN STONE. NO SEPARATE PAY ITEM EXISTS FOR ROCK EXCAVATION. ALL EXCAVATION SHALL BE CONSIDERED TO BE UN-CLASSIFIED EXCAVATION AND SUBSIDIARY TO OTHER BID ITEMS.

11. ALL BYPASS PUMPING REQUIRED DURING THE PROJECT IS THE RESPONSIBILITY OF THE CONTRACTOR AND PUMPING SHALL BE HELD TO A MINIMUM. ROUND-THE-CLOCK BYPASS PUMPING SHALL BE MANNED CONTINUOUSLY WITH WORKERS AT THE CONTRACTOR'S EXPENSE. AT END OF EACH DAYLIGHT CONSTRUCTION PERIOD, EXISTING WATER WILL BE TEMPORARILY ROUTED TO NEW OR EXISTING PIPES WITH FITTINGS, PIPE, HOSE, OR OTHER APPURTENANCES AS REQUIRED SHALL BE BACKFILLED TO EXISTING GRADE. COST OF THIS WORK SHALL BE INCLUDED IN PIPE INSTALLATION UNLESS LISTED AS A SEPARATE BID ITEM. A WRITTEN BYPASS PLAN SHALL BE SUBMITTED 21 DAYS BEFORE BYPASS AND APPROVED BY THE ENGINEER AND CITY 5 DAYS PRIOR TO ANY BYPASS.

12. CONTRACTOR SHALL PREVENT STORM WATER AND DEBRIS FROM ENTERING PIPES AND MANHOLES AT ALL TIMES. ALL PIPES AND MANHOLES SHALL BE SECURELY PLUGGED AT THE END OF EACH DAY.

CIVIL LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
——C——	COMMUNICATION	— — TOS — —	TOE OF SLOPE
——CATV——	CABLE TV		TREE LINE
	EASEMENT LINE	——UGE——	UNDERGROUND ELECTRIC
——X——	FENCE	——UGT——	UNDERGROUND TELEPHONE
——FP——	FLOODPLAIN		WATER EDGE
——FI——	FLOODWAY	——W——	WATER LINE
	FLOWLINE	——WSL——	WATER SERVICE LINE
——G——	GAS LINE	——W1——	POTABLE WATER
——OHE——	OVERHEAD ELECTRIC	——W2——	NON-POTABLE WATER
——PD——	PROCESS DRAIN	——(A)——	INDICATES ABANDONED LINE
——PL——	PROPERTY LINE	——12"——	12" INDICATES SIZE OF LINE
——R/W——	RIGHT-OF-WAY		EXISTING PIPE TO BE ABANDONED
——SS——	SANITARY SEWER		EXISTING PIPE TO BE REMOVED
——SSL——	SEWER SERVICE LINE		SHRUB/BUSH
——SD——	STORM DRAIN		
——SF——	SILT FENCE		TREE
— — TOB — —	TOP OF BANK		

FOC FIBER OPTIC BOX
FOC FIBER OPTIC CABLE RISER/PEDESTAL
FIBER OPTIC MANHOLE
FIRE HYDRANT
FLARED END SECTION (FES)
GAS METER
GAS REGULATOR
GUY WIRE ANCHOR
IRRIGATION CONTROL VALVE
LIGHT POLE
MANHOLE
MONITORING WELL
PROCESS DRAIN MANHOLE
PROPERTY PIN
RIP RAP
SANITARY SEWER MANHOLE
SIGN
SLOPE DIRECTION INDICATOR
SPRINKLER HEAD
STORM DRAIN MANHOLE
SURVEY CONTROL POINT
TELEPHONE JUNCTION BOX
TELEPHONE MANHOLE
TELEPHONE PEDESTAL
CABLE TELEVISION PEDESTAL
UTILITY POLE
VALVE
WATER METER
YARD HYDRANT/SPIGOT

SYMBOL INDICATES NORTH DIRECTION

0 10 20 40 60
(IN FEET)
SYMBOL INDICATES A GRAPHICAL BAR SCALE

BC	BACK OF CURB	NWSL	NORMAL WATER SURFACE LEVEL
BLDG	BUILDING	OC	ON CENTER
BLK	BLOCK	OD	OUTSIDE DIAMETER
BM	BENCHMARK	OVF	OVERFLOW
BOT	BOTTOM	PC	POINT OF CURVE
CI	CAST IRON	PD	PROCESS DRAIN
CIP	CAST IRON PIPE	PE	PLAIN END
CJ	CONSTRUCTION JOINT	PI	POINT OF INTERSECTION
CL	CENTERLINE, CLASS	PL, PLS	PLATE, PLACES
CMU	CONCRETE MASONRY UNIT	PO	PUSH ON
CONC	CONCRETE	PP	POWER POLE
CONN	CONNECTION	PRC	POINT OF REVERSE CURVE
CONT	CONTINUOUS	PSI	POUNDS PER SQUARE INCH
CP	CONTROL POINT	PT	POINT OF TANGENT
DI	DUCTILE IRON	PVC	POLYVINYL CHLORIDE
DIA	DIAMETER	R, RAD	RADIUS
DIP	DUCTILE IRON PIPE	RCP	REINFORCED CONCRETE PIPE
EA	EACH	RED	REDUCER
EFF	EFFLUENT	REINF	REINFORCEMENT
EL, ELEV	ELEVATION	REQD	REQUIRED
ELEC	ELECTRICAL	RJ	RESTRAINED JOINT
EOP	EDGE OF PAVEMENT	ROW, R/W	RIGHT-OF-WAY
EQ	EQUAL	RP	RADIUS POINT
EX	EXISTING	RS	RESILIENT SEAT
EXP	EXPANSION	RT	RIGHT
FCJ	FLOOR CONSTRUCTION JOINT	S	SOUTH, SLUDGE
FES	FLARED END SECTION	SCH	SCHEDULE
FFE	FINISHED FLOOR ELEVATION	SD	STORM DRAIN
FH	FIRE HYDRANT	SDMH	STORM DRAIN MANHOLE
FG, FIN GR	FINISH GRADE	SE	SOUTHEAST
FL	FLOWLINE	SECT	SECTION
FLG	FLANGED	SF	SQUARE FEET
FRP	FIBERGLASS REINFORCED PIPE	SHT	SHEET
FT	FEET, FOOT	SPEC	SPECIFICATIONS
FTG	FOOTING	SQ	SQUARE
G	GUTTER	SS	SANITARY SEWER
GL	GAS LINE	STA	STATION
GR	GRADE	STD	STANDARD
GV	GATE VALVE	SW	SIDEWALK, SOUTHWEST
HORIZ	HORIZONTAL	T&B	TOP AND BOTTOM
HWY	HIGHWAY	TBM	TEMPORARY BENCHMARK
ID	INSIDE DIAMETER	TC	TIME CLOCK, TOP OF CURB
IN	INCHES	TEMP	TEMPORARY, TEMPERED
INF	INFLUENT	THK	THICKNESS
INV	INVERT	TOC	TOP OF CURB
JT	JOINT	TS	TOP OF SIDEWALK
LEN	LENGTH	TYP	TYPICAL
LF	LINEAR FEET	UNO	UNLESS NOTED OTHERWISE
LG	LONG	V	VOLT, VALVE
LIN	LINEAL, LINEAR	VERT	VERTICAL
LOC	LOCATION	VT	VENTILATOR
LT	LEFT	W	WIDTH, WATER
MANUF	MANUFACTURER	W/	WITH
MAX	MAXIMUM	W/O	WITHOUT
MGD	MILLION GALLONS PER DAY	WL	WATER LINE
MH	MANHOLE	WS	WATERSTOP
MIN	MINIMUM	WTM	WATER TRANSMISSION MAIN
MISC	MISCELLANEOUS	WWF	WELDED WIRE FABRIC
MJ	MECHANICAL JOINT	X	BY

COLORADO LICENSED PROFESSIONAL ENGINEER
Digitally Signed 08-20-2021

REV.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
City of Grand Junction Colorado
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

CIVIL NOTES AND LEGEND

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: CDG
DRAWN BY: OCC

BAR IS ONE INCH ON ORIGINAL DRAWING
0 ——— 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER
01-G004
SHEET NUMBER 004

GCPI +/- 0.18 (ENCLOSED BUILDINGS)

5. SEISMIC DESIGN PARAMETERS - 2018 IBC
IMPORTANCE FACTOR, I ——— 1.25
S_S ——— PERSIGO WWTP SITE—0.235g, DOS RIOS SITE—0.237g
S_1 ——— PERSIGO WWTP SITE—0.065g, DOS RIOS SITE—0.065g
SEISMIC DESIGN CATEGORY ——— B
DESIGN SPECTRAL ACCELERATIONS
S_{DS} ——— PERSIGO WWTP SITE—0.251g, DOS RIOS SITE—0.253g
S_{D1} ——— PERSIGO WWTP SITE—0.105g, DOS RIOS SITE—0.105g
RESPONSE MODIFICATION FACTOR, R ——— SEE INDIVIDUAL PLANS
BASIC SEISMIC FORCE RESISTING SYSTEM -- SEE INDIVIDUAL PLANS
SEISMIC RESPONSE COEFFICIENT, Cs ——— SEE INDIVIDUAL PLANS
ANALYSIS PROCEDURE ——— EQUIVALENT LATERAL FORCE

6. SNOW LOADS PARAMETERS - ASCE 7-16
GROUND SNOW LOAD, P_g ——— 30 PSF
IMPORTANCE FACTOR, I ——— 1.10
EXPOSURE FACTOR, C_e ——— 1.00
THERMAL FACTOR, C_t ——— 1.00

7. THE STRUCTURE SHOULD NOT BE CONSIDERED TO BE STABLE DURING CONSTRUCTION UNTIL ALL ELEMENTS ARE IN PLACE AND CONNECTED. THE CONTRACTOR IS RESPONSIBLE FOR DESIGNING ALL TEMPORARY CONSTRUCTION BRACING, AS REQUIRED.

8. CONSTRUCTION METHODS, PROCEDURES, AND SEQUENCES ARE THE CONTRACTOR'S RESPONSIBILITY. THE CONTRACTOR SHALL TAKE THE ALL NECESSARY MEANS TO MAINTAIN AND PROTECT THE STRUCTURAL INTEGRITY OF ALL CONSTRUCTION, NEW AND EXISTING, AT ALL STAGES.

9. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO ANY PERTINENT WORK. ALL EXISTING CONDITIONS AND DIMENSIONS SHALL BE NOTED ON THE SHOP DRAWINGS.

10. COORDINATE WITH THE ARCHITECTURAL, CIVIL, MECHANICAL, STRUCTURAL, AND ELECTRICAL DRAWINGS, AND VERIFY THE LOCATIONS AND SIZES OF THE CHASES, OPENINGS, INSERTS, SLEEVES, FINISHES, CONDUITS, DEPRESSIONS AND OTHER PROJECT REQUIREMENTS.

11. THE CONTRACTOR IS RESPONSIBLE FOR REVIEWING THE DRAWINGS AND EXISTING CONDITIONS TO DETERMINE WHERE OPENINGS ARE REQUIRED IN WALLS AND SLABS.

12. STANDARD DETAILS APPLY UNLESS INDICATED OTHERWISE ON SPECIFIC STRUCTURE DRAWINGS.

SPECIFICALLY SHOWN OR NOTED ON THE DRAWINGS.

10. PROVIDE FULL EMBEDMENT FOR ALL DOWELS. IF NOT OTHERWISE SPECIFIED, DOWEL SIZE AND SPACING SHALL BE THE SAME AS MAIN REINFORCING.

11. MECHANICAL EQUIPMENT PADS ON FLOOR SLABS SHALL BE 6" THICK AND REINFORCED WITH #4 @ 12" EW, UNO.

12. TREMIES REQUIRED ON ALL POURS DEEPER THAN 5 FEET.

13. PROVIDE A MINIMUM OF SEVEN (7) DAYS BETWEEN ADJACENT POURS. CONCRETE SHALL MEET OR EXCEED DESIGN COMPRESSIVE STRENGTH PRIOR TO PLACING ADJACENT POURS.

14. CONTRACTOR SHALL SUBMIT TO ENGINEER FOR APPROVAL A SCHEDULE AND SEQUENCE OF CONCRETE PLACEMENT. SEQUENCE SHALL INCLUDE PERMITTING CURE TIME BETWEEN PLACEMENTS AT ADJACENT PROPOSED PLACEMENTS.

15. WALKWAYS AND SIDEWALKS SHALL BE POURED WITH SLIGHT SLOPE AND NO LOW SPOTS SO THEY WILL DRAIN FREE. ALL SLOPES SHALL COMPLY WITH ADA REQUIREMENTS.

16. ALL CONSTRUCTION JOINTS SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE INCORPORATED INTO THE STRUCTURE. ADDITIONAL CONSTRUCTION JOINTS TO FACILITATE CONSTRUCTION SHALL BE LOCATED AND DETAILED ON THE SHOP DRAWINGS FOR REVIEW. UNLESS INDICATED OTHERWISE, ALL CONSTRUCTION JOINTS TO BE KEYED. HORIZONTAL CONSTRUCTION JOINTS SHALL NOT BE PERMITTED IN WALLS AND BEAMS, UNLESS SHOWN ON THE STRUCTURAL DRAWINGS.

17. SUBSTITUTION OF EXPANSION OR DRILLED AND GROUTED-IN ANCHORS FOR EMBEDDED ANCHORS SHOWN ON THE DRAWINGS WILL NOT BE PERMITTED UNLESS APPROVED BY ENGINEER.

18. USE MANUFACTURER'S CERTIFIED DRAWINGS AND SPECIFICATIONS FOR EQUIPMENT ANCHORAGE AND DETAILS. VERIFY EQUIPMENT SIZE AND WEIGHTS WITH ENGINEER PRIOR TO CONSTRUCTION OF ANY AND ALL EQUIPMENT PADS.

ABBREVIATIONS

ABBREV	DESCRIPTION
AL	ALUMINUM
ARCH	ARCHITECT, ARCHITECTURAL
BG	BACK GOUGE
CCJ	CRACK CONTROL JOINT
CJP	COMPLETE JOINT PENETRATION
EF	EACH FACE
EJ	EXPANSION JOINT
ES	EVENLY SPACED, EACH SIDE
EW	EACH WAY
EXST	EXISTING
EXT	EXTERIOR
FD	FLOOR DRAIN
FND	FOUNDATION
FS	FOOTING STEP, FAR SIDE
IJ	ISOLATION JOINT
INT	INTERIOR
KIP	1,000 POUNDS
KLF	KIPS PER LINEAR FOOT
KSF	KIPS PER SQUARE FOOT
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LSL	LONG SLOT
MECH	MECHANICAL
NS	NEAR SIDE
OH	OPPOSITE HAND
OVS	OVERSIZED

ABBREVIATIONS

ABBREV	DESCRIPTION
PCF	POUNDS PER CUBIC FOOT
PJP	PARTIAL JOINT PENETRATION
PLF	POUNDS PER LINEAR FOOT
SIM	SIMILAR
SSL	SHORT SLOT
STL	STEEL
TOB	TOP OF BEAM
TOC	TOP OF CONCRETE
TOF	TOP OF FOOTING
TOS	TOP OF STEEL
VCJ	VERTICAL CONSTRUCTION JOINT

STRUCTURAL STEEL NOTES:

1. UNLESS OTHERWISE SPECIFIED, HOT-ROLLED STEEL BUILDING MEMBERS USING W-SHAPES SHALL BE ASTM A992; M-, S-, AND C- SHAPES ASTM A36; SQUARE, RECTANGULAR & ROUND HSS SHAPES ASTM A 500 GRADE B; ANGLES AND MISCELLANEOUS STIFFENER PLATES ASTM A 36.

2. ALL SHEAR CONNECTIONS NOT DETAILED OR OTHERWISE NOTED SHALL BE STANDARD AISC WELDED OR AISC BOLTED CONNECTIONS AND SHALL HAVE SUFFICIENT CAPACITY TO SUPPORT THE END REACTION EQUAL TO ONE - HALF THE TOTAL UNIFORM CAPACITY SHOWN IN THE ALLOWABLE UNIFORM LOAD TABLES OF THE AISC ALLOWABLE STRESS DESIGN MANUAL - 14TH EDITION.

3. WELDING SHALL CONFORM WITH AWS D1.1 STRUCTURAL WELDING CODE.

4. ALL BOLTS FOR BEAM CONNECTIONS SHALL BE ASTM F593,TYPE 316 STAINLESS STEEL WITH A MINIMUM DIAMETER OF 1/2" UNO. ALL BOLTED CONNECTIONS SHALL BE BEARING TYPE CONNECTIONS UNLESS NOTED AS SLIP CRITICAL. WASHERS SHALL BE INSTALLED UNDER NUTS OF FASTENERS WHEN REQUIRED BY THE SPECIFICATION FOR STRUCTURAL JOINTS.

5. ALL ANCHOR RODS SHALL BE ASTM F593, TYPE 304 OR 316 STAINLESS STEEL UNO.

FOUNDATION NOTES:

1. DESIGN FOUNDATION BEARING PRESSURE PER GEOTECHNICAL REPORT.

2. FLOOR SLAB CONSTRUCTION JOINTS (C.J.) SHALL BE PLACED AS SHOWN ON FOUNDATION PLANS AND SUBMITTED TO ENGINEER FOR APPROVAL PRIOR TO CONCRETE PLACEMENT.

3. FLOOR SLAB ISOLATION JOINTS SHALL BE 30# FELT UNO.

4. CONCRETE FLOOR AND SLAB ON GRADE MAY BE PLACED IN LANES. SPACING OF JOINTS SHALL BE AS SHOWN ON THE FOUNDATION PLAN. WHEN LANE PLACEMENT IS USED, CONSTRUCTION JOINTS SHALL BE USED FOR THE JOINTS BETWEEN LANES. SAW CUT CRACK CONTROL JOINTS SHALL BE PROVIDED ACROSS EACH LANE AT SPACING SHOWN ON PLANS.

5. ALL CONCRETE CORNERS SHALL BE CHAMFERED 3/4" ON THE EXTERIOR EXPOSED CORNER.

6. COMPACTED GRANULAR FILL OR BASE COURSE ROCK AS INDICATED AND SPECIFIED.

7. ALL PRESSURE PIPING BENEATH SLABS SHALL BE CONCRETE ENCASED.

LEGEND:

Symbol	Meaning	Symbol	Meaning	Symbol	Meaning
℄	CENTERLINE	%	PERCENT	(waterstop symbol)	WATERSTOP
°	DEGREES	⅊	PLATE	(arrow symbol)	DIRECTION OF DECK SPAN
FL	FLANGE	±	PLUS / MINUS		
GL	GRIDLINE				

COLORADO LICENSED PROFESSIONAL ENGINEER 55460
Digitally Signed 08/20/2021

REV	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

STRUCTURAL NOTES, LEGENDS, AND ABBREVIATIONS

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: KAM
DRAWN BY: EGB

BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER
01-G005

SHEET NUMBER 005

SUPPORTING MEMBERS FOR THE INSTALLATION AND SHALL COORDINATE SUCH MEMBERS WITH ENGINEER.

ALL EQUIPMENT WITH SHOP DRAWINGS BEFORE STUBBING OF CONDUITS.

7. ALL SURFACE MOUNTED PANELS AND PANELBOARDS ON THE INTERIOR OF EXTERIOR WALLS OR IN OTHER LOCATIONS CONSIDERED DAMP OR WET SHALL BE MOUNTED SO AS TO MAINTAIN A 1/4" MINIMUM AIR SPACE BETWEEN THE ENCLOSURE AND THE WALL.

8. PULLBOXES, IF SHOWN ON THE PLANS, ARE SCHEMATIC IN NATURE. THE CONTRACTOR SHALL PROVIDE ADDITIONAL PULLBOXES WHERE REQUIRED TO MAKE A WORKABLE INSTALLATION.

9. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE DETAILS AND SPECIFICATIONS WHETHER OR NOT THEY ARE REFERENCED ON THE DRAWINGS.

10. ALL CONDUIT RUNS PASSING THROUGH EXPANSION JOINTS SHALL HAVE EXPANSION OR EXPANSION AND DEFLECTION TYPE FITTINGS. FOR LOCATIONS OF EXPANSION JOINTS, REFER TO THE STRUCTURAL DRAWINGS.

11. THE WIRING DIAGRAMS, QUANTITY AND SIZE OF WIRES AND CONDUITS REPRESENT A SUGGESTED ARRANGEMENT BASED UPON SELECTED STANDARD COMPONENTS OF ELECTRICAL EQUIPMENT. IF EQUIPMENT SUPPLIED BY THE MANUFACTURER HAS A LARGER LOAD THAN THE VALUE SHOWN OR INDICATED, THE CABLE, CONDUIT AND ELECTRICAL EQUIPMENT MAY BE ENLARGED AS REQUIRED TO ACCOMMODATE THE HIGHER LOADING. HOWEVER, THE BASIC SEQUENCE AND METHOD OF CONTROL MUST BE MAINTAINED AS INDICATED ON THE DRAWINGS AND/OR SPECIFICATIONS.

12. ALL MOTOR STARTER CONTROL POWER TRANSFORMERS SHALL BE SIZED TO PROVIDE SUFFICIENT VOLT-AMPERE CAPACITY FOR OPERATING ALL LOCAL AND REMOTE ELECTRICAL DEVICES ASSOCIATED WITH CONTROL OF THE MOTOR IN ADDITION TO THE STARTER COIL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL LOADING REQUIREMENTS FOR CONTROL POWER TRANSFORMERS.

13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING PROPERLY SIZED STARTER OVERLOADS FOR ALL EQUIPMENT INSTALLED.

14. MOTOR CONTROL CENTERS AND ALL FREE STANDING PANELS SHALL BE SET ON CONCRETE HOUSEKEEPING PADS WITH LEVELING CHANNELS EMBEDDED IN THE PAD.

15. IN GENERAL, SEPARATE POWER, CONTROL AND INSTRUMENTATION WIRING. PROVIDE SEPARATE CONDUIT, PULL AND JUNCTION BOXES. PROVIDE SUITABLE CABLE BARRIER WITHIN PULL OR JUNCTION BOXES WHERE SEPARATION OF WIRING IS NOT SHOWN ON THE DRAWINGS.

POWER TRANSFORMERS, STARTERS, THERMOSTATS, CONTROL STATIONS, AND OTHER ELECTRICAL ITEMS AS RELATED TO THE INSTALLATION OF THE MECHANICAL ... CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ... R ALL MECHANICAL MOTORS UNLESS THE EQUIPMENT IS FURNISHED WITH AN INTEGRAL DISCONNECT FROM THE MANUFACTURER. IN ADDITION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL CONDUIT, WIRING AND TERMINATIONS FOR ALL COMPONENTS AS MAY BE NECESSARY FOR THE MECHANICAL SYSTEMS.

20. ALL RECEPTACLES IN OUTDOOR AND ANTICIPATED WET AREAS SHALL BE GROUND FAULT CIRCUIT INTERRPUTER RECEPTACLES WITH WEATHERPROOF COVERS.

21. EQUIPMENT LOCKOUTS SHALL BE IN STRICT ACCORDANCE WITH OWNER'S REQUIREMENTS.

22. ALL CONDUITS SHALL HAVE A GROUNDING CONDUCTOR, SIZED PER NEC.

23. ALL LIGHTING FIXTURES INSTALLED IN INSULATED LOCATIONS SHALL BE RATED FOR SUCH INSTALLATION REGARDLESS OF THE FIXTURE SCHEDULE DESIGNATION.

24. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF NEW SERVICE INSTALLATIONS WITH OWNER, ENGINEER AND SERVICE UTILITY. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL ITEMS AS REQUIRED BY SERVICE UTILITY FOR NEW SERVICE CONNECTIONS.

25. UNLESS NOTED OTHERWISE, ALL CONTROL PANELS SHALL BE FABRICATED SUCH THAT ALL OPERATORS AND INDICATING DEVICES INDICATED ON THE SCHEMATICS BE LOCATED ON THE FRONT DOOR OR COVER OF THE PANEL. OPERATING AND INDICATING DEVICES SHALL BE VISIBLE AND OPERABLE WITHOUT HAVING TO OPEN THE CONTROL PANEL.

26. DUCT BANKS INDICATED ARE FOR REFERENCE ONLY; THE CONTRACTOR SHALL REVIEW PLAN SHEETS RELATED TO INDIVIDUAL STRUCTURES AND VERIFY CONDUITS THAT MAY BE REQUIRED. THE CONTRACTOR SHALL VERIFY NUMBER OF CONDUITS AS INDICATED IN THE DUCT BANK PRIOR TO INSTALLATION WITH THE ENGINEER. PROVIDE A SPARE CONDUIT, EQUAL IN SIZE TO THE LARGEST CONDUIT IN USE, FOR EACH SET OF FOUR USED CONDUITS IN EACH DUCT BANK.

27. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING HEAT TRACING FOR ALL EXPOSED WATER LINES TO BE INSTALLED UNDER THIS PROJECT. THE CONTRACTOR SHALL REVIEW OTHER SECTIONS OF THE PLANS AND SPECS AND PROVIDE SUITABLE HEAT TRACING COMPONENTS AS MAY BE REQUIRED, WHETHER INDICATED ON THE ELECTRICAL PLAN SHEETS OR NOT.

CGRS	PVC COATED GALVANIZED RIGID STEEL
COM	COMMON
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CRI	COLOR RENDERING INDEX
CS	CORD SET
CU	COEFFICIENT OF UTILIZATION
dB	DECIBEL
DDC	DIRECT DIGITAL CONTROL(S)
DEB	DIRECT EARTH BURIED
DISC	DISCONNECT
EC	EMPTY, EMEDDED CONDUIT
EF	EXHAUST FAN
EG	EQUIPMENT GROUND
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
ETM	ELAPSED TIME METER
FACP	FIRE ALARM CONTROL PANEL
FC	FAN COIL
FDS	FUSED DISCONNECT SWITCH
FLA	FULL LOAD AMPERES
FOC	FIBER OPTIC CABLE
FS	FLOAT SWITCH
FVNR	FULL VOLTAGE NON-REVERSING STARTER
FVR	FULL VOLTAGE REVERSING STARTER
GDT	GRAPHIC DISPLAY TERMINAL
GND	GROUND
GRS	GALVANIZED RIGID STEEL
HID	HIGH INTENSITY DISCHARGE
HR	HOUR
Hz	HERTZ
IDS	INTRUSION DETECTION SYSTEM
IG	ISOLATED GROUND
ISP	INDIVIDUALLY SHIELDED PAIR
JB	JUNCTION BOX
kVAR	KILOVOLT-AMPERE, REACTIVE
kWh	KILOWATT-HOUR
LA	LIGHTNING ARRESTER
LLF	LIGHT LOSS FACTOR
LO	LUGS ONLY
LOR	LOCAL-OFF-REMOTE
LRA	LOCKED ROTOR AMPERES
NFDS	NON-FUSED DISCONNECT SWITHC
NL	NIGHT LIGHT
NOTC	NORMALLY OPEN TIMED CLOSED
OHP	OVERHEAD PRIMARY
OHS	OVERHEAD SECONDARY
OL	OVERLOAD
PB	PUSH BUTTON
PEC	PHOTO ELECTRIC CELL
PF	POWER FACTOR
PFCC	POWER FACTOR CORRECTION CAPACITOR
PH, Ø	PHASE
PL	PILOT LIGHT
PMR	PHASE MONITOR RELAY
PTT	PUSH-TO-TEST
RECPT	RECEPTACLE
RLA	RUNNING LOAD AMPERES
RVAT	REDUCED VOLTAGE AUTO-TRANSFERMER STARTER
RVSS	REDUCED VOLTAGE SOFT STARTER
S	SECOND
SA	SURGE ARRESTER
SDBC	SOFT DRAWN BARE COPPER
SE	SERVICE ENTERANCE
SN	SOLID NEUTRAL
SSOL	SOLID STATE OVERLOAD RELAY
STP	SHIELDED TWISTED PAIR
SW	SWITCH
TC	TIME CLOCK
TD	TIME DELAY
TDD	TIME DELAY ON DE-ENERGIZATION
TDE	TIME DELAY ON ENERGIZATION
TEL	TELEPHONE
THD	TOTAL HARMONIC DISTORTION
UG	UNDERGROUND
UGE	UNDERGROUND ELECTRIC
UGP	UNDERGROUND PRIMARY
UGS	UNDERGROUND SECONDARY
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORIES, INC.
UTP	UNSHIELDED TWISTED PAIR
VFD	VARIABLE FREQUENCY DRIVE
VM	VOLT-METER
WH	WEATHER HEAD
WM	WATT METER
WP	WEATHERPROOF

EQUIPMENT LINE TYPES

- PROPOSED OR NEW EQUIPMENT
- EXISTING EQUIPMENT
- EQUIPMENT PACKAGE
- GROUND RING OR UNDERGROUND

GENERAL NOTES:

1. SOME SYMBOLS OR ABBREVIATIONS MAY APPEAR ON THIS SHEET BUT NOT BE UTILIZED ON THE PROJECT.
2. LIGHTING LEGEND SHOWS EXAMPLE IDENTIFIERS, REFER TO LIGHT FIXTURE SCHEDULE FOR SPECIFIC REQUIREMENTS.

LIGHTING, POWER & SYSTEM LEGEND

- 1x4 LED LIGHT FIXTURE
- LED LIGHT FIXTURE WITH EMERGENCY LIGHT (EL) BATTERY PACK, 1400 LUMENS MINIMUM FOR 2 LAMPS
- SWITCH, SINGLE POLE
- SWITCH, DOUBLE POLE
- SWITCH, THREE WAY
- SWITCH, FOUR WAY
- SWITCH, DIMMER
- OR — NON-FUSED DISCONNECT SWITCH, SIZE AS NOTED
- OR — COMBINATION DISCONNECT AND MOTOR STARTER, SIZE AS NOTED, FUSED TYPE SHOWN
- OR — FUSED DISCONNECT SWITCH, SIZE AS NOTED
- H1 — HANDHOLE, IDENTIFIER SHOWN, REFER TO HANDHOLE SCHEDULE FOR SIZE
- GROUND
- 20 AMP DUPLEX RECEPTACLE, MTD. 20" AFF TO BOTTOM, WITH #12 GROUND WIRE, "GFCI" INDICATES GROUND FAULT CIRCUIT INTERRUPTER, "WP" INDICATES WEATHERPROOF WHILE-IN-USE ENCLOSURE AND COVER, BOX INDICATES FLOOR OUTLET WITH RECESSED CAST JUNCTION BOX
- ELECTRICAL PANEL OR EQUIPMENT CABINET, SURFACE MOUNTED, 5'-6" TO TOP OF ENCLOSURE
- ELECTRICAL PANEL OR EQUIPMENT CABINET, RECESSED MOUNTED, 6'-6" TO TOP OF ENCLOSURE
- HOME RUN TO PANEL IN DEDICATED CONDUIT, RECEPTACLES AND EQUIPMENT SHALL HAVE DEDICATED GREEN GROUND WIRE. NUMBER OF ARROWS INDICATES NUMBER OF PHASE CONDUCTORS, LETTER(S) INDICATE NAME OF PANEL, NUMBER(S) INDICATE CIRCUIT NUMBERS
- DATA AND TELEPHONE DUAL OUTLET
- D1 — DUCT BANK, IDENTIFIER SHOWN, REFER TO DUCT BANK SCHEDULE FOR SIZE AND CONFIGURATION
- 100 kW — GENERATOR, RATINGS AS SHOWN
- GROUND ROD AND TEST WELL
- OR — OR — 3/4" x 10' COPPER CLAD GROUND ROD
- TRANSFORMER, RATINGS AS SHOWN
- 20A — FUSE, CURRENT LIMITING, AMPERE RATING AS SHOWN OR REQUIRED, "BFI" INDICATES "BLOWN FUSE INDICATOR" TYPE
- 20 HP — ELECTRIC MOTOR, HORSEPOWER AS SHOWN
- MOTOR STARTER, SIZE AS SHOWN OR REQUIRED, FVNR UNLESS NOTED
- 20A/3P — CIRCUIT BREAKER, TRIP RATING SHOWN, 3-POLE UNLESS NOTED OTHERWISE
- CAPACITOR, kVAR AS SHOWN
- AIRTERMINAL
- ELECTRICAL INSTRUMENT

CONTROL SCHEMATIC LEGEND

- WIRING WITHIN PANEL
- WIRING TO FIELD DEVICE
- PUSHBUTTON SWITCH, NORMALLY OPEN
- PUSHBUTTON SWITCH, NORMALLY CLOSED
- SELECTOR SWITCH, NUMBER OF POSITIONS AND CONTACTS AS SHOWN
- RELAY CONTACT, NORMALLY OPEN
- RELAY CONTACT, NORMALLY CLOSED
- ELECTRICAL CONNECTION
- SOLENOID
- TIME DELAY CONTACT, CLOSE ON ENERGIZATION
- TIME DELAY CONTACT, OPEN ON ENERGIZATION
- TIME DELAY CONTACT, OPEN ON DE-ENERGIZATION
- TIME DELAY CONTACT, CLOSE ON DE-ENERGIZATION
- LEVEL SWITCH
- ETM — ELAPSED TIME METER
- TERMINAL BLOCK
- GROUND CONNECTION TO ENCLOSURE GROUND BAR
- PRESSURE SWITCH
- LIMIT SWITCH CONTACT, NORMALLY OPEN
- LIMIT SWITCH CONTACT, NORMALLY CLOSED
- LIMIT SWITCH CONTACT, HELD OPEN
- LIMIT SWITCH CONTACT, HELD CLOSED
- RELAY COIL, "TR" INDICATES "TIMING RELAY"
- PILOT LIGHT; "A" INDICATES "AMBER LENS" "G" INDICATES "GREEN LENS" "R" INDICATES "RED LENS"

COLORADO LICENSED PROFESSIONAL ENGINEER 0055035

Digitally Signed 08.20.2021

REV	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
City of Grand Junction COLORADO
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

ELECTRICAL NOTES, LEGENDS, AND ABBREVIATIONS

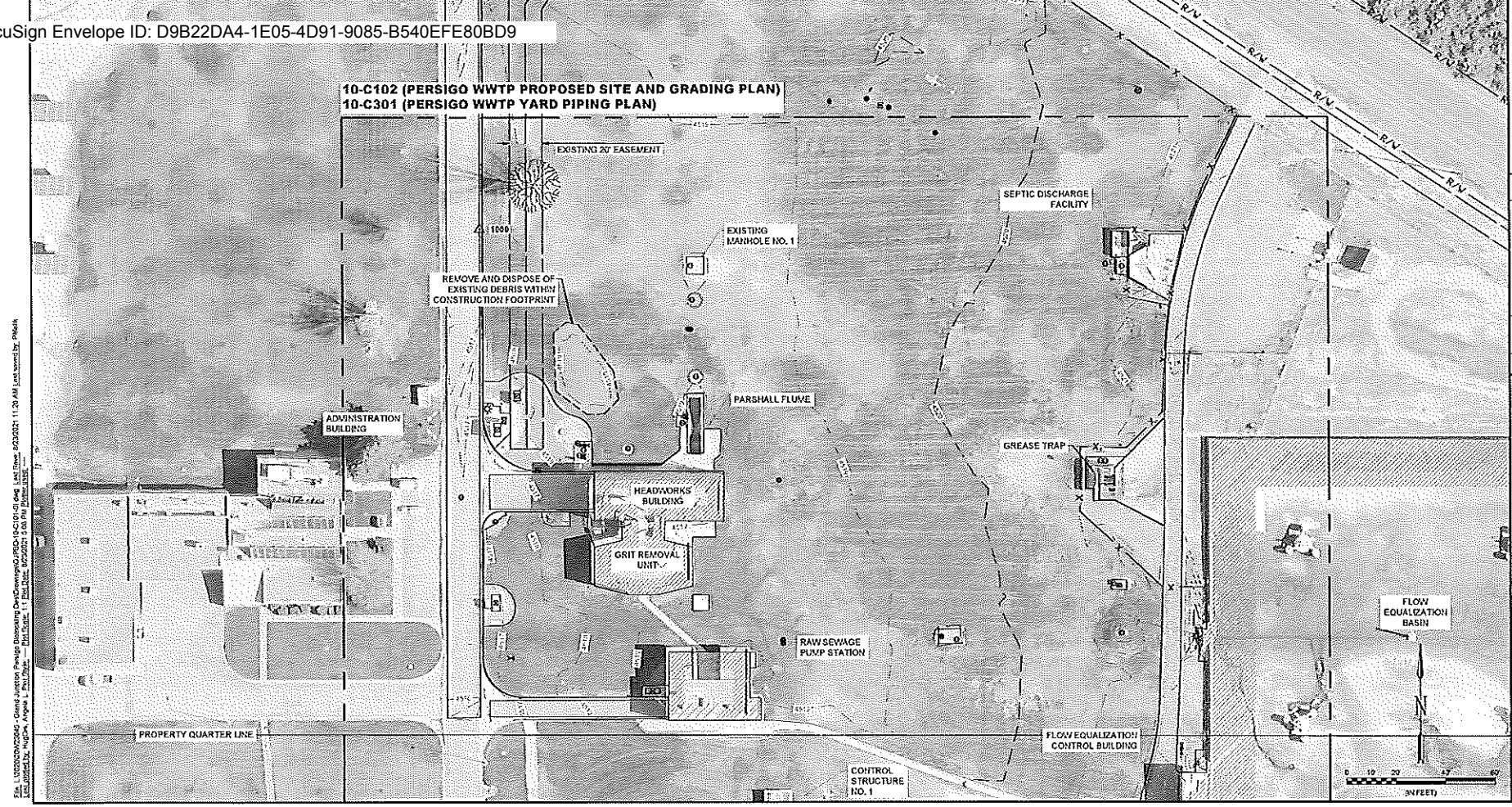
JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: SAH
DRAWN BY: SAH

BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER 01-G006

SHEET NUMBER 006

Revit File: BIM 360://20W23045 - Grand Junction Penalgo Biotrickling Dev/GJPBD - GENERAL.rvt
Plot Date: 8/20/2021 10:55:43 AM



CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction

GRAND JUNCTION
ODOR CONTROL IMPROVEMENTS

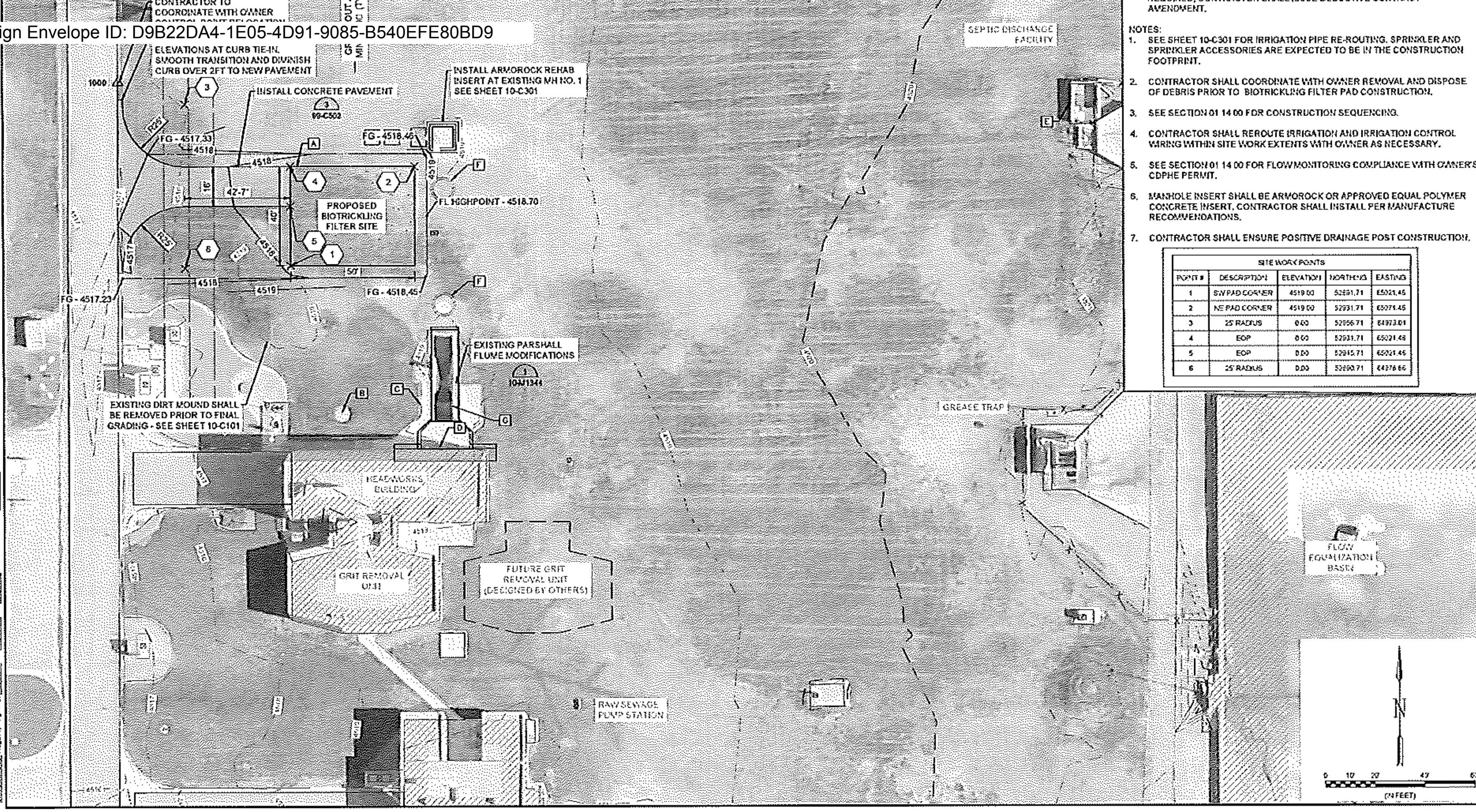
PERSIGO WWTP
EXISTING SITE PLAN

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: TNP
DRAWN BY: TNP

DRAWING NUMBER
10-C101

SHEET NUMBER 007

DocuSign Envelope ID: D9B22DA4-1E05-4D91-9085-B540EFE80BD9



AMENDMENT.

NOTES:

1. SEE SHEET 10-C301 FOR IRRIGATION PIPE RE-ROUTING. SPRINKLER AND SPRINKLER ACCESSORIES ARE EXPECTED TO BE IN THE CONSTRUCTION FOOTPRINT.
2. CONTRACTOR SHALL COORDINATE WITH OWNER REMOVAL AND DISPOSE OF DEBRIS PRIOR TO BIOTRICKLING FILTER PAD CONSTRUCTION.
3. SEE SECTION 01 14 00 FOR CONSTRUCTION SEQUENCING.
4. CONTRACTOR SHALL REROUTE IRRIGATION AND IRRIGATION CONTROL WIRING WITHIN SITE WORK EXTENTS WITH OWNER AS NECESSARY.
5. SEE SECTION 01 14 00 FOR FLOW MONITORING COMPLIANCE WITH OWNER'S CDPHE PERMIT.
6. MANHOLE INSERT SHALL BE ARMOROCK OR APPROVED EQUAL POLYMER CONCRETE INSERT. CONTRACTOR SHALL INSTALL PER MANUFACTURE RECOMMENDATIONS.
7. CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE POST CONSTRUCTION.

SITE WORK POINTS

POINT #	DESCRIPTION	ELEVATION	NORTHING	EASTING
1	SW PAD CORNER	4519.00	52931.71	65021.45
2	NE PAD CORNER	4519.00	52931.71	65071.45
3	25' RADIUS	0.00	52956.71	64973.01
4	EOP	0.00	52931.71	65021.45
5	EOP	0.00	52915.71	65021.45
6	25' RADIUS	0.00	52950.71	64978.66

REV	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

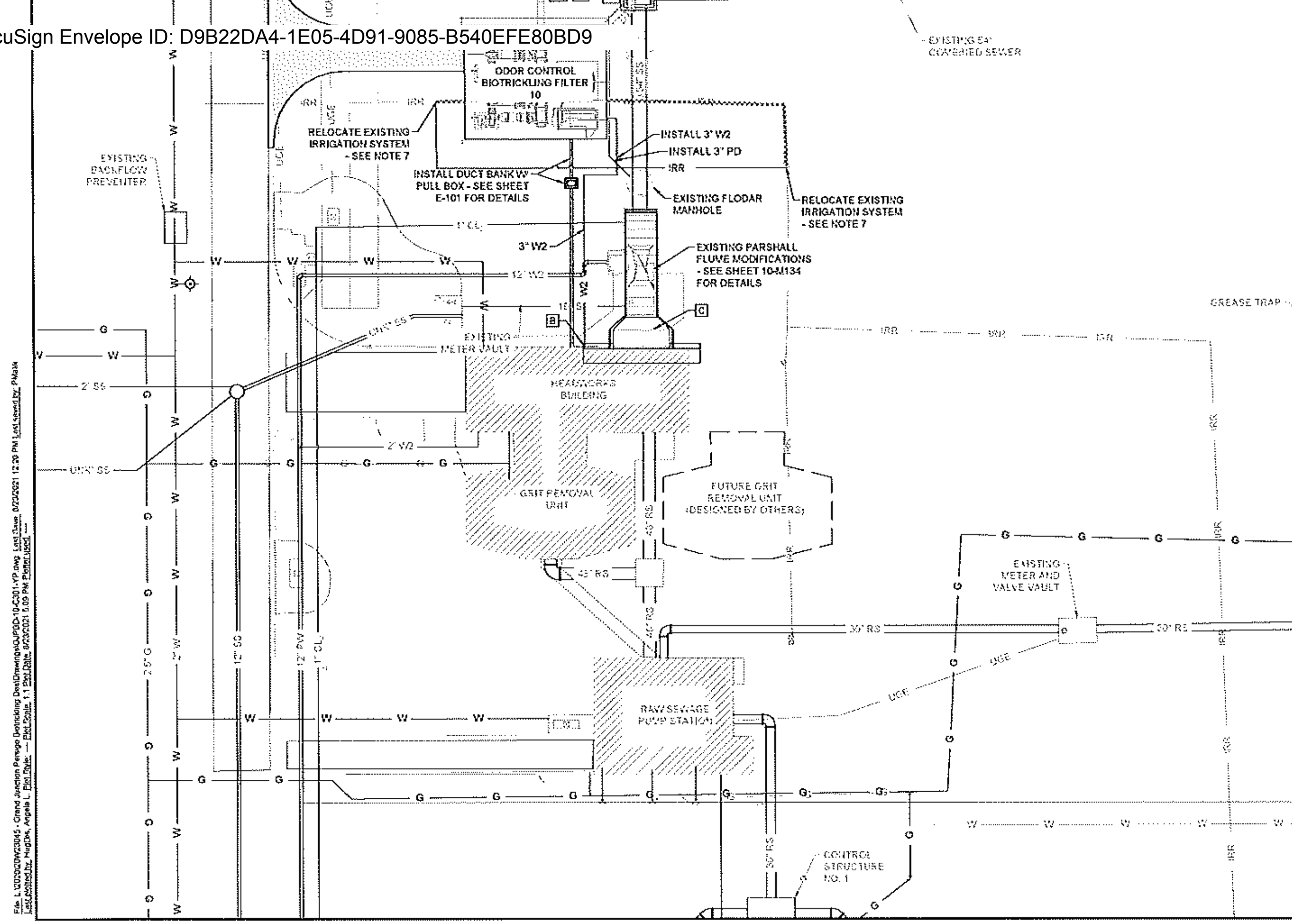
PERSIGO WWTP PROPOSED SITE AND GRADING PLAN

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: CDG
DRAWN BY: TNP

BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER
10-C102

SHEET NUMBER 008



KEY NOTES:

A. INSTALL ARMOROCK REHAB INSET OR APPROVED EQUAL POLYMER CONCRETE INSERT. INSERT SHALL BE INSTALLED PER MANUFACTURES RECOMMENDATIONS. SEE SECTION 33 39 13 FOR DETAILS.

B. TIE TO EXISTING PLANT WATER LINE IN HEADWORKS BUILDING. ALIGN WATER LINE THROUGH WALL, INSULATE/HEAT TRACE WHERE EXPOSED AND IMMEDIATELY TURN DOWN OUTSIDE STRUCTURE AND BURY ADJACENT TO DUCT BANK.

C. REMOVE EXISTING 48" SLIDE GATE AND REPLACE WITH NEW 48" GATE AND ACTUATOR PROVIDED BY OWNER.

NOTES:

1. EXISTING PIPING IS SHOWN BASED ON AVAILABLE RECORD DRAWINGS AND INFORMATION PROVIDED TO THE ENGINEER. CONTRACTOR SHALL FIELD VERIFY LOCATIONS AND DEPTHS OF ALL PERTINENT LINES PRIOR TO CONSTRUCTION.
2. PIPING ELEVATIONS ARE FOR CONTRACTORS BENEFIT. CONTRACTOR SHALL VERIFY ELEVATIONS IN FIELD.
3. ALL PIPES SHALL BE LAID AT A CONSTANT SLOPE BETWEEN THE ELEVATIONS GIVEN ON THESE PLANS. PIPELINES WITH NO ELEVATIONS GIVEN SHALL BE INSTALLED WITH MINIMUM 3' OF COVER OR AS REQUIRED TO AVOID CONFLICTS WITH EXISTING AND PROPOSED PIPING.
4. ALL BURIED VALVES SHALL HAVE VALVE BOX AS SPECIFIED.
5. CONTRACTOR SHALL INSTALL MJ SOLID SLEEVE AS NECESSARY TO MAKE CONNECTIONS TO EXISTING LINES.
6. CONTRACTOR SHALL COORDINATE WITH OWNER AND BE PREPARED TO HYDROEXCAVATE AND/OR HAND DIG TO PROTECT EXISTING UTILITIES THAT MAY OR MAY NOT BE REFLECTED BY THE DRAWINGS.
7. DURING IRRIGATION PIPE RELOCATION, CONTRACTOR SHALL REPLACE CONTROL WIRES, FITTINGS, VALVES, AND ALL APPURTENANCES NECESSARY FOR PROPER OPERATION OF IRRIGATION SYSTEM AND VERIFY OPERATION WITH OWNER.
8. SEE (1 / 99-C501) FOR PIPE TRENCH, BEDDING, AND BACKFILL DETAIL.
9. SEE (2 / 99-M502) FOR YARD HYDRANT DETAIL.
10. SEE (3 / 99-C506) FOR MANHOLE CORING DETAILS

REV.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO

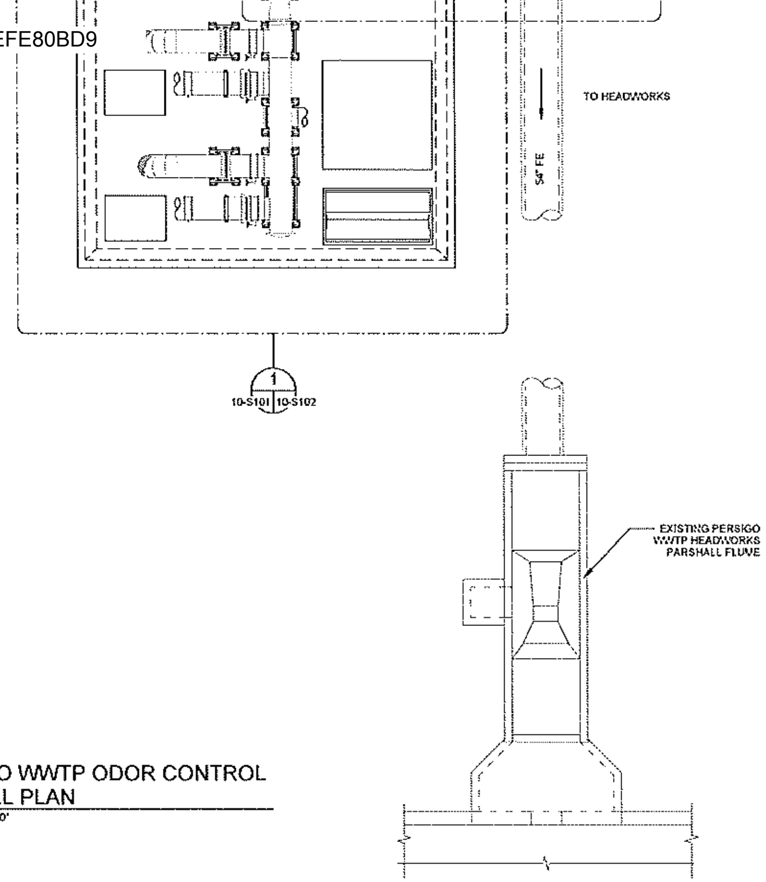
GRAND JUNCTION
ODOR CONTROL IMPROVEMENTS

PERSIGO WWTP
YARD PIPING PLAN

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: CDG
DRAWN BY: TNP

DRAWING NUMBER 10-C301

SHEET NUMBER 009



PROJECT NORTH

1
10-S101

PERSIGO WWTP ODOR CONTROL OVERALL PLAN

SCALE: 1/8" = 1'-0"

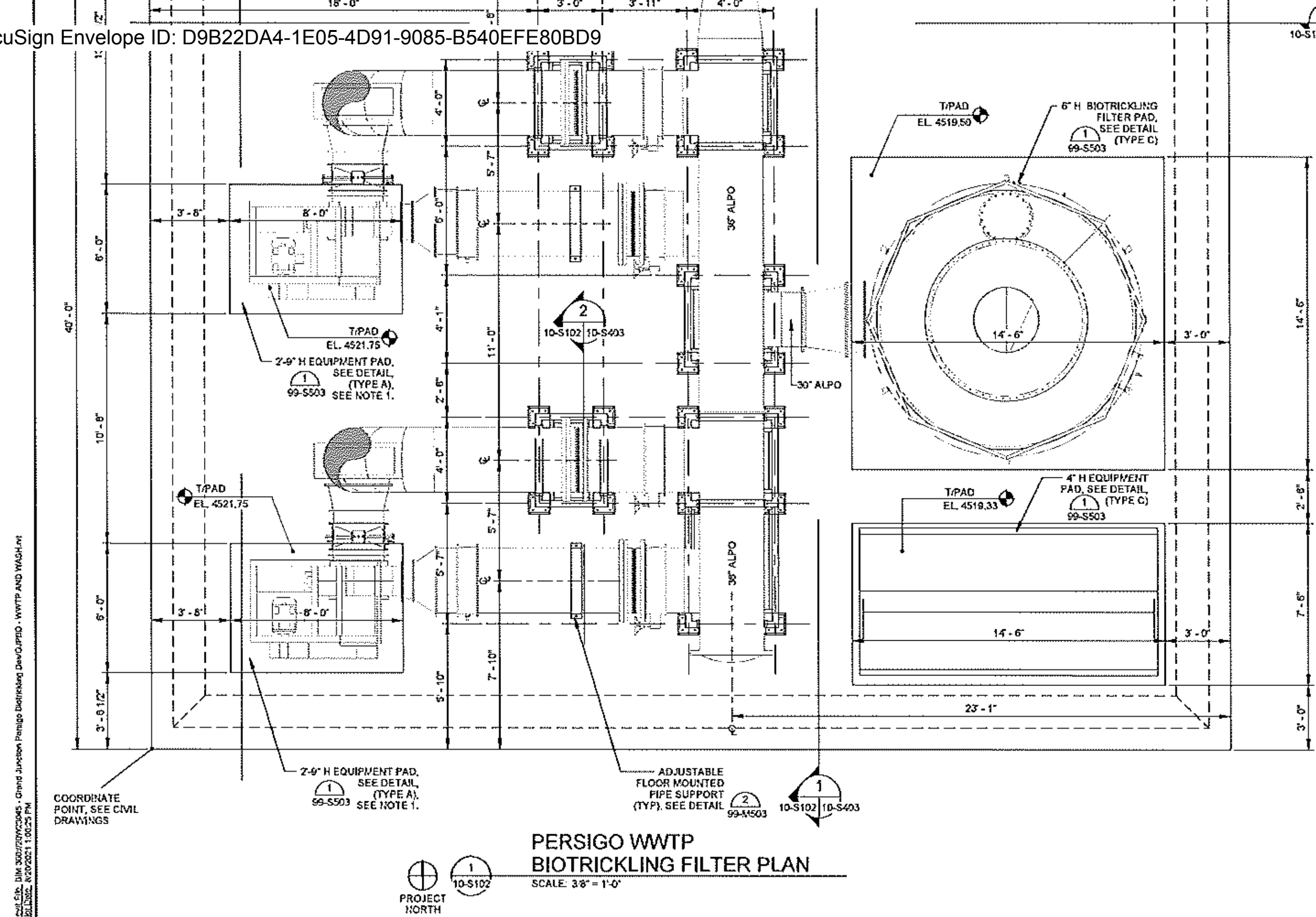
CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

PERSIGO WWTP ODOR CONTROL STRUCTURAL OVERALL PLAN

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: KAM
DRAWN BY: EGB

DRAWING NUMBER 10-S101

SHEET NUMBER 010



PERSIGO WWTP BIOTRICKLING FILTER PLAN

SCALE: 3/8" = 1'-0"

NOTES:

1. CONTRACTOR RESPONSIBLE FOR ACCOMMODATING AND VERIFYING FAN EQUIPMENT PAD DIMENSIONS WITH SELECTED MANUFACTURER AS NEEDED.
2. SEISMIC Cs = 0.156, R = 2, INVERTED PEDULUM SYSTEM.
3. PROVIDE LOCKS FOR ALL GATES, DOORS, AND ENCLOSURES AS REQUIRED BY THE OWNER. COORDINATE LOCK TYPE, KEYING, AND OTHER APPURTENANCES WITH THE OWNER. LOCKS SHALL BE COMPATIBLE WITH FLACON EB1 LOCK CYLINDERS.

Digitally Signed 08/20/2021

REV.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION

GRAND JUNCTION, COLORADO

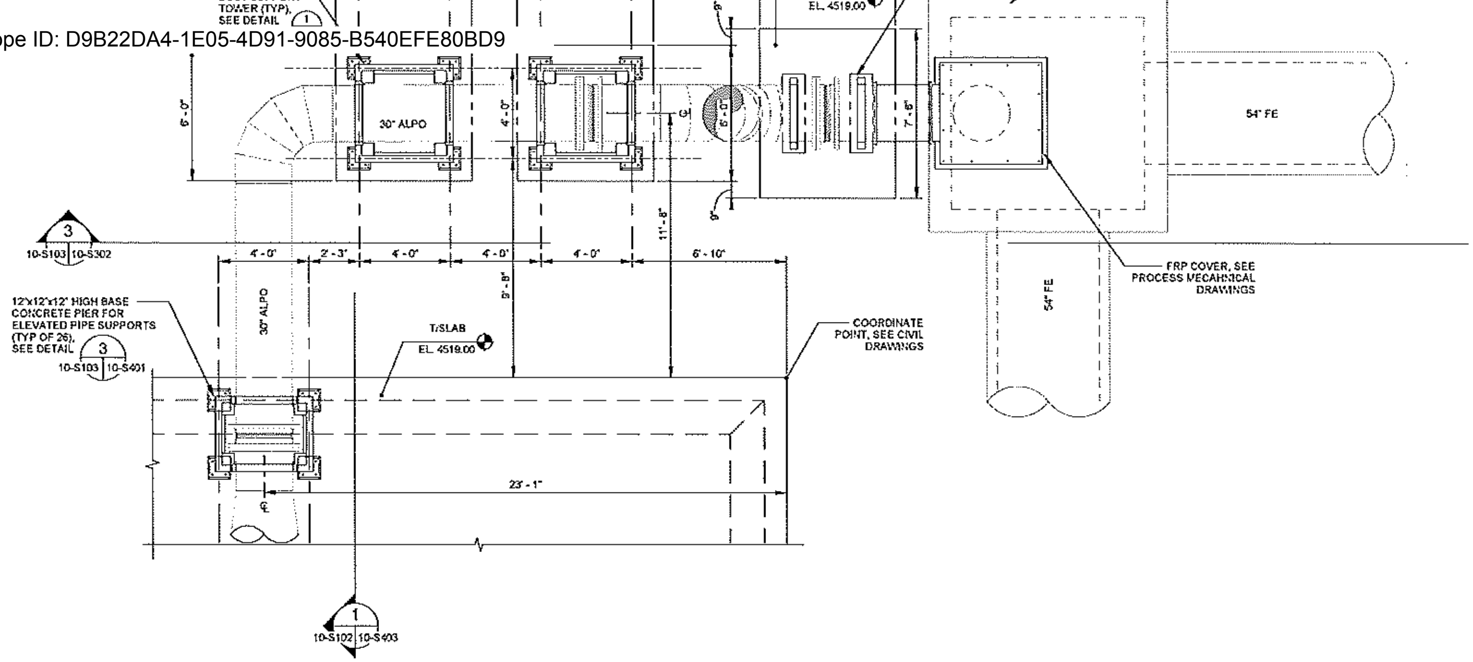
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

PERSIGO WWTP ODOR CONTROL BTF STRUCTURAL PLAN I

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: KAM
DRAWN BY: EGB

DRAWING NUMBER 10-S102

SHEET NUMBER 011



PERSIGO WWTP
BIOTRICKLING FILTER PLAN DETAIL

10-S101 | 10-S103 SCALE: 3/8" = 1'-0"

NOTES:

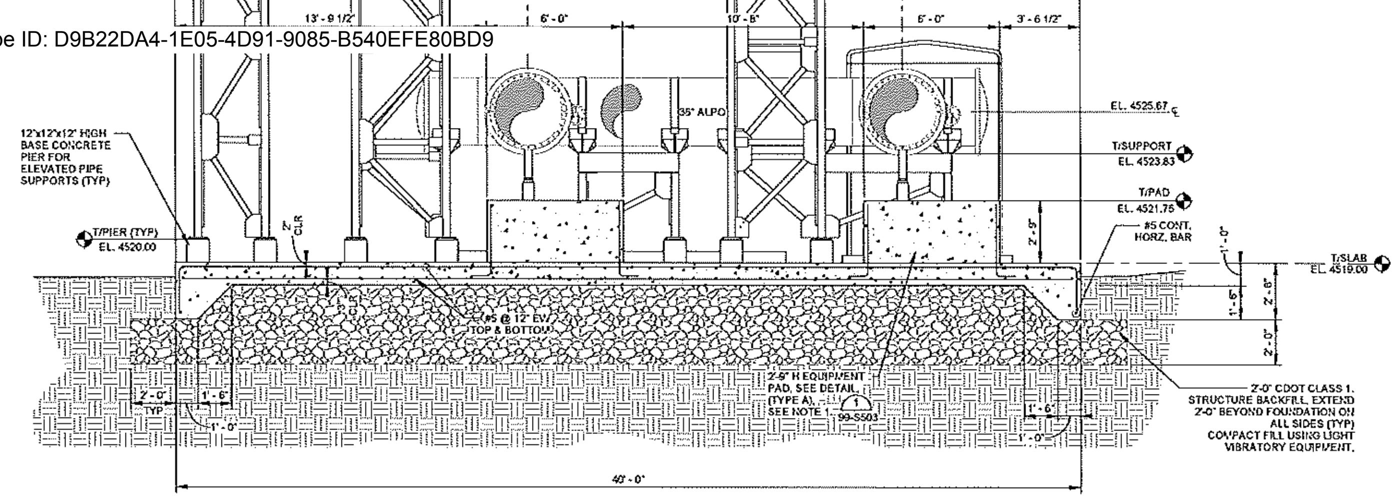
1. CONTRACTOR RESPONSIBLE FOR ACCOMMODATING AND VERIFYING FAN EQUIPMENT PAD DIMENSIONS WITH SELECTED MANUFACTURER AS NEEDED.
2. SEISMIC Cs = 0.156, R = 2, INVERTED PEDULUM SYSTEM.
3. PROVIDE LOCKS FOR ALL GATES, DOORS, AND ENCLOSURES AS REQUIRED BY THE OWNER. COORDINATE LOCK TYPE, KEYING, AND OTHER APPURTENANCES WITH THE OWNER. LOCKS SHALL BE COMPATIBLE WITH FLACON EB1 LOCK CYLINDERS.

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

PERSIGO WWTP ODOR CONTROL BTF STRUCTURAL PLAN II

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: KAU
DRAWN BY: EGB

DRAWING NUMBER 10-S103
SHEET NUMBER 012



PERSIGO WWTP BIOTRICKLING FILTER SECTION

1 — 10-S102 | 10-S301 — SCALE: 3/8" = 1'-0"

NOTES:

1. CONTRACTOR RESPONSIBLE FOR ACCOMMODATING AND VERIFYING FAN EQUIPMENT PAD DIMENSIONS WITH SELECTED MANUFACTURER AS NEEDED.
2. PIPE SADDLE STRAP BOLTS TO BE FINGER TIGHTENED ONLY TO ALLOW FOR AXIAL PIPE MOVEMENT. DO NOT OVER-TIGHTEN.
3. SEE MECHANICAL DRAWINGS FOR AIR PIPING LAYOUT AND DIMENSIONS.

Digitally Signed 08/20/2021

REV.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

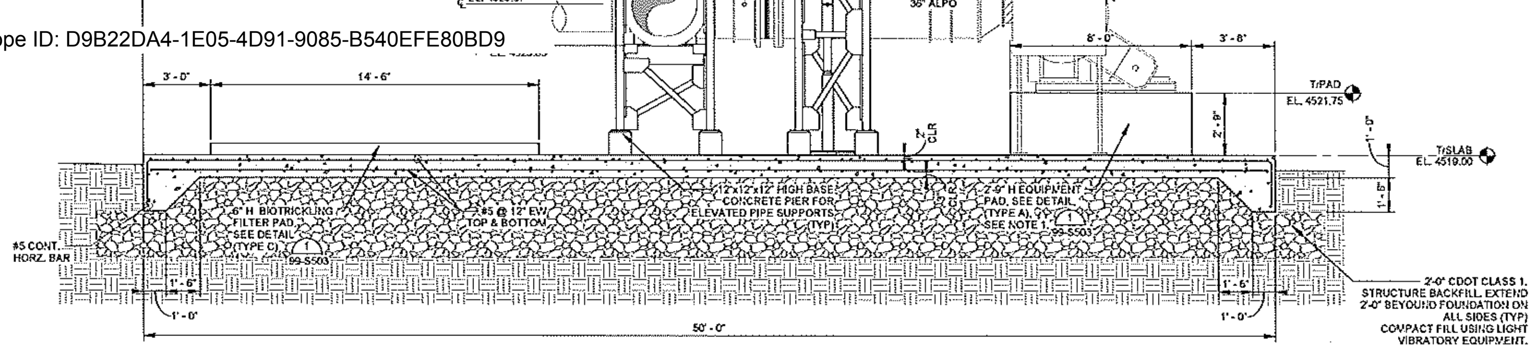
PERSIGO WWTP ODOR CONTROL BTF STRUCTURAL SECTIONS I

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: KAU
DRAWN BY: EGB

BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER 10-S301

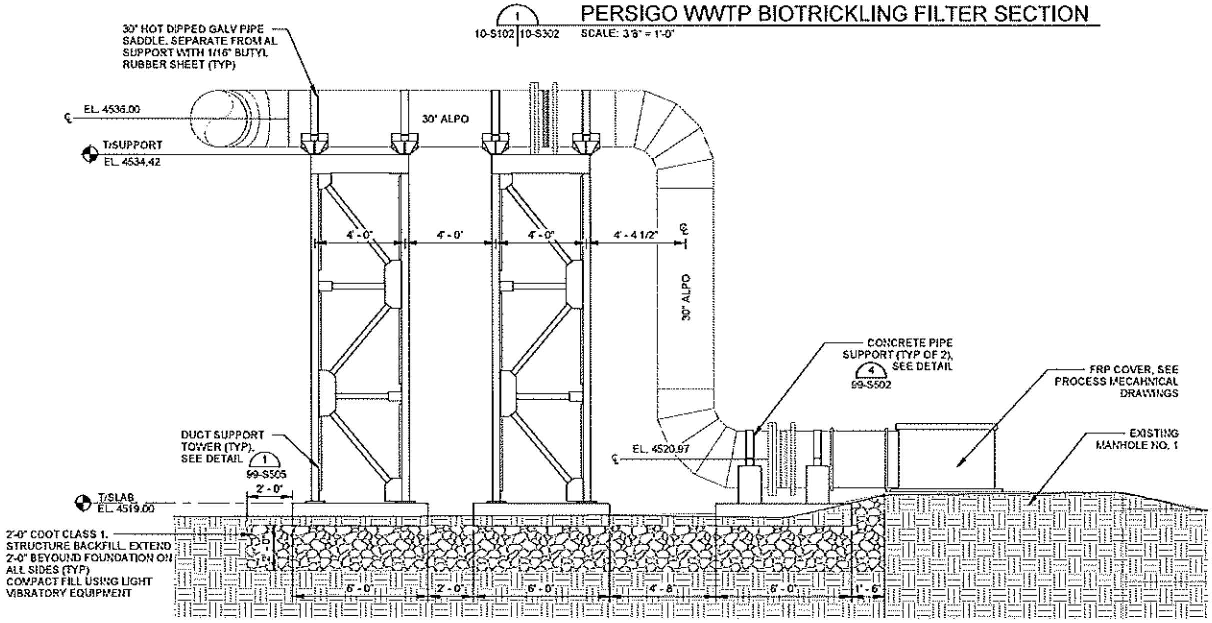
SHEET NUMBER 013



1 — 10-S102 | 10-S302

PERSIGO WWTP BIOTRICKLING FILTER SECTION

SCALE: 3/8" = 1'-0"



NOTES:

1. CONTRACTOR RESPONSIBLE FOR ACCOMMODATING AND VERIFYING FAN EQUIPMENT PAD DIMENSIONS WITH SELECTED MANUFACTURER AS NEEDED.
2. PIPE SADDLE STRAP BOLTS TO BE FINGER TIGHTENED ONLY TO ALLOW FOR AXIAL PIPE MOVEMENT. DO NOT OVER-TIGHTEN.
3. SEE MECHANICAL DRAWINGS FOR AIR PIPING LAYOUT AND DIMENSIONS.

3 — 10-S103 | 10-S302

SECTION

SCALE: 3/8" = 1'-0"

COLORADO LICENSED PROFESSIONAL ENGINEER 58450

Digitally Signed 08/20/2021

REV. | DATE | DESCRIPTION | BY

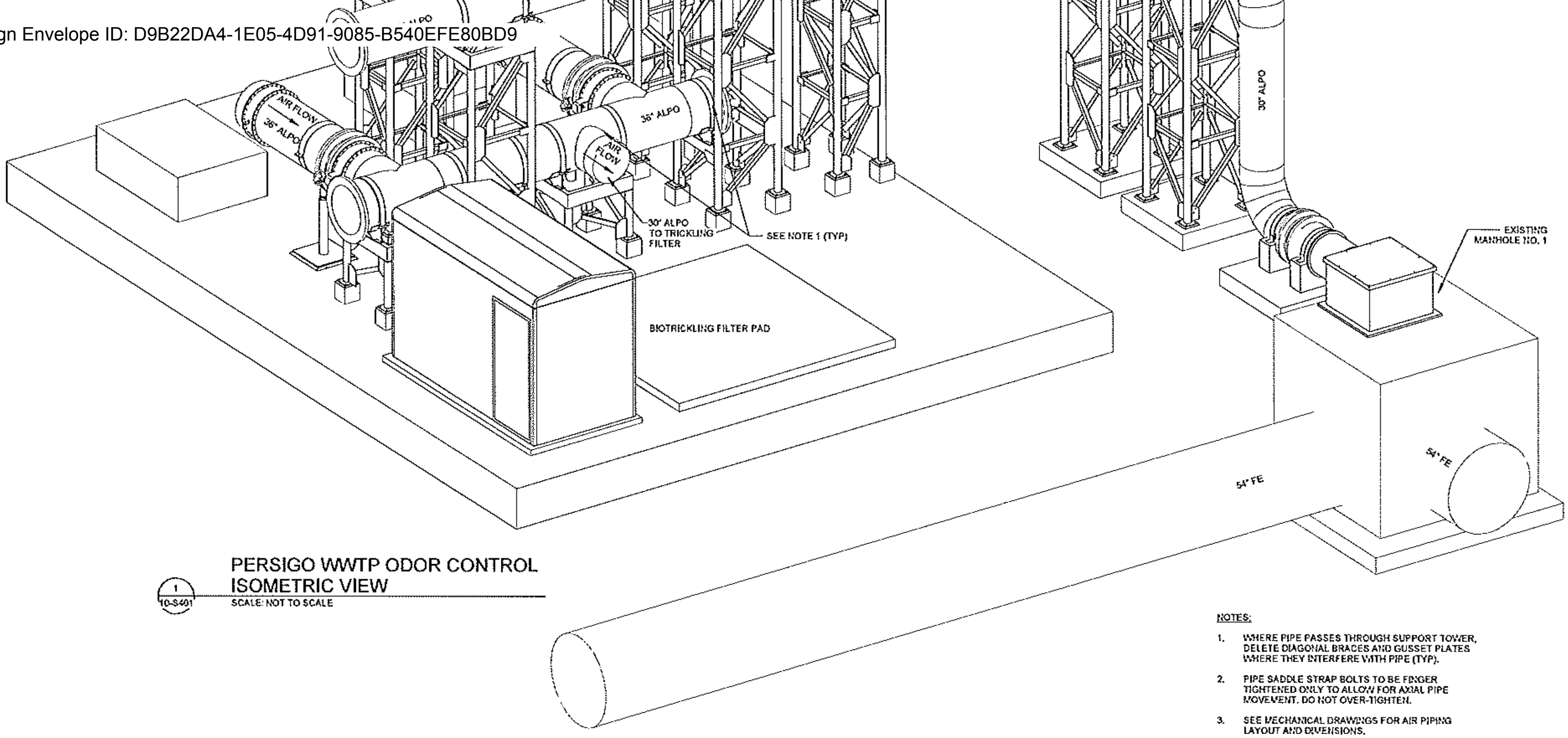
CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction COLORADO
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

PERSIGO WWTP ODOR CONTROL BTF STRUCTURAL SECTIONS II

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: KAM
DRAWN BY: EGB

DRAWING NUMBER 10-S302

SHEET NUMBER 014



PERSIGO WWTP ODOR CONTROL ISOMETRIC VIEW

1 / 10-S401

SCALE: NOT TO SCALE

NOTES:

1. WHERE PIPE PASSES THROUGH SUPPORT TOWER, DELETE DIAGONAL BRACES AND GUSSET PLATES WHERE THEY INTERFERE WITH PIPE (TYP).
2. PIPE SADDLE STRAP BOLTS TO BE FINGER TIGHTENED ONLY TO ALLOW FOR AXIAL PIPE MOVEMENT. DO NOT OVER-TIGHTEN.
3. SEE MECHANICAL DRAWINGS FOR AIR PIPING LAYOUT AND DIMENSIONS.

COLORADO LICENSED PROFESSIONAL ENGINEER 58460

Digitally Signed 08/20/2021

REV	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION

GRAND JUNCTION, COLORADO

Grand Junction COLORADO

GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

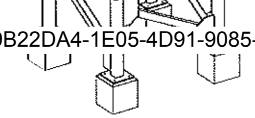
PERSIGO WWTP ODOR CONTROL BTF STRUCTURAL DETAILS I

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: KAM
DRAWN BY: EGB

BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER 10-S401

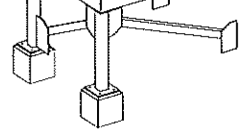
SHEET NUMBER 015



1 / 10-S402

TRUSSED TOWER TYPE 1

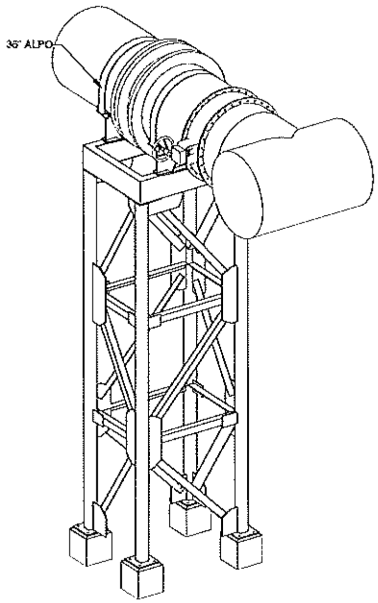
SCALE: NOT TO SCALE



2 / 10-S402

TRUSSED TOWER TYPE 2

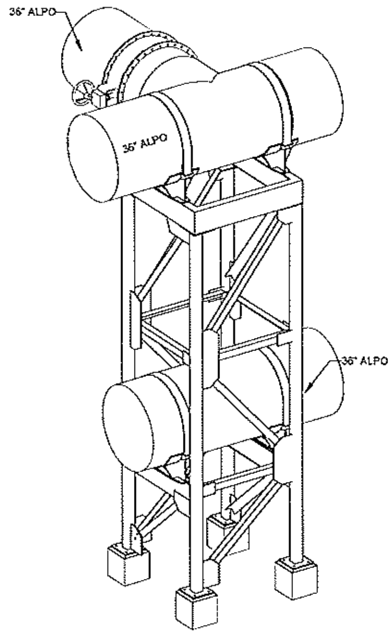
SCALE: NOT TO SCALE



3 / 10-S402

TRUSSED TOWER TYPE 3

SCALE: NOT TO SCALE



4 / 10-S402

TRUSSED TOWER TYPE 3A

SCALE: NOT TO SCALE

REV.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION

GRAND JUNCTION, COLORADO

GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

PERSIGO WWTP ODOR CONTROL BTF STRUCTURAL DETAILS II

JOB NO.: 20W23045

DATE: AUGUST 2021

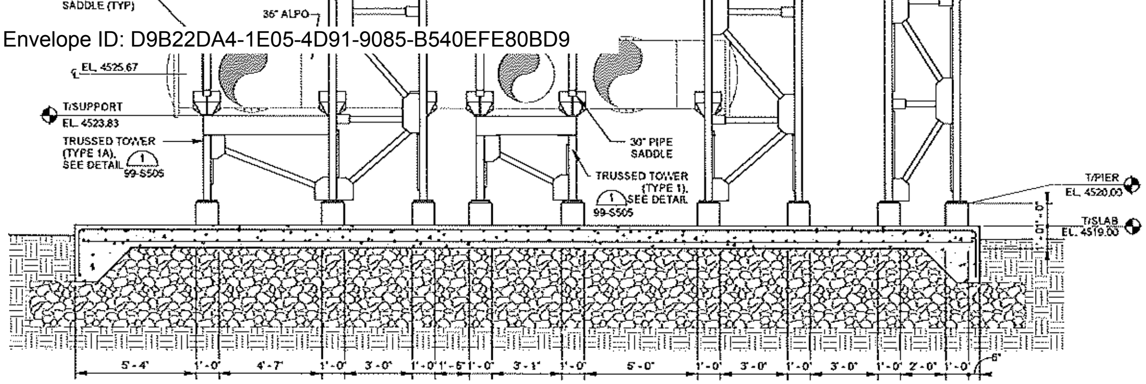
DESIGNED BY: KAM

DRAWN BY: EGB

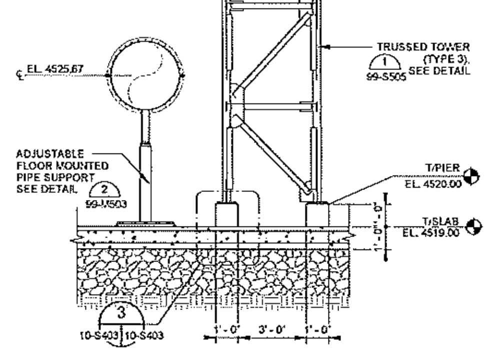
DRAWING NUMBER

10-S402

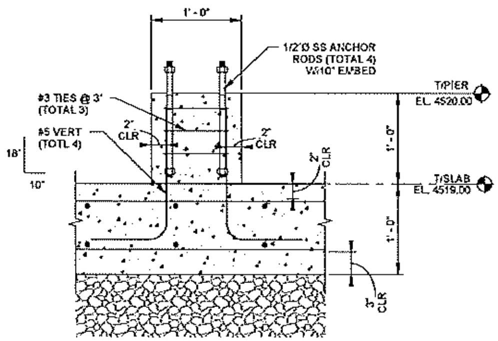
SHEET NUMBER 016



SECTION 1
10-S102 | 10-S403 SCALE: 3/8" = 1'-0"



TRUSSED TOWER TYPE 3 2
10-S102 | 10-S403 SCALE: 3/8" = 1'-0"



PIER DETAIL 3
10-S403 | 10-S403 SCALE: 1 1/2" = 1'-0"

REV | DATE | DESCRIPTION | BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction COLORADO
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

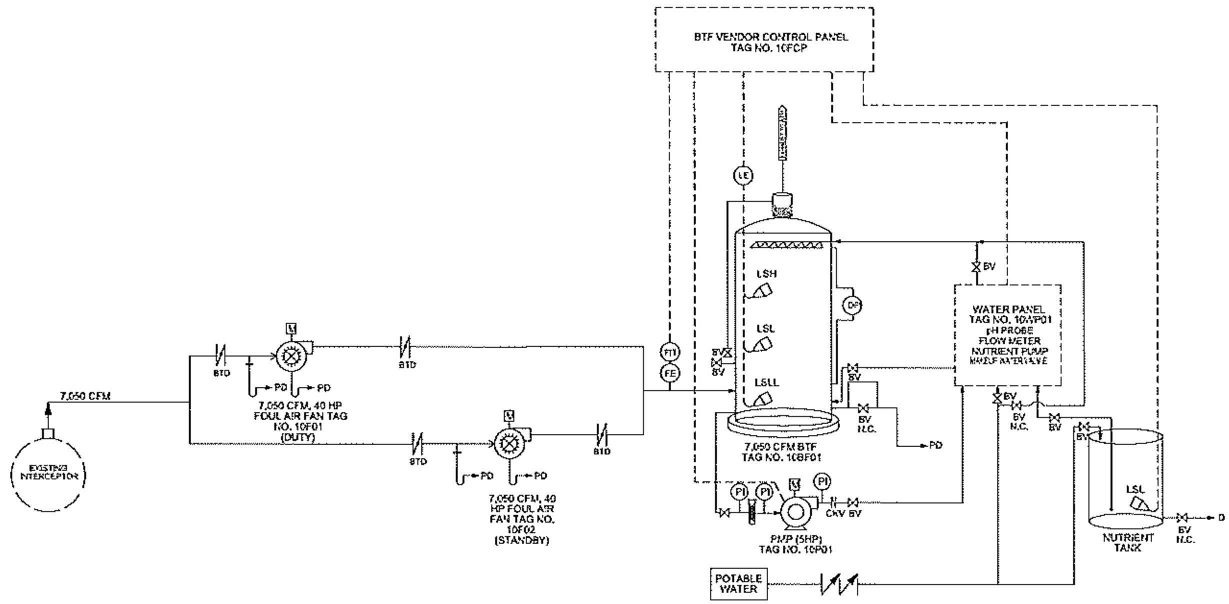
PERSIGO WWTP ODOR CONTROL BTF STRUCTURAL DETAILS III

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: KAM
DRAWN BY: EGB

DRAWING NUMBER
10-S403
SHEET NUMBER 017

CHECK VALVE

REDUCED PRESSURE ZONE BACKFLOW PREVENTER



PERSIGO WWTP ODOR CONTROL SYSTEM SCHEMATIC

PERKINS ENGINEERING CONSULTANTS, INC.

BY	DESCRIPTION	DATE	REV.

CITY OF GRAND JUNCTION

GRAND JUNCTION, COLORADO

Grand Junction

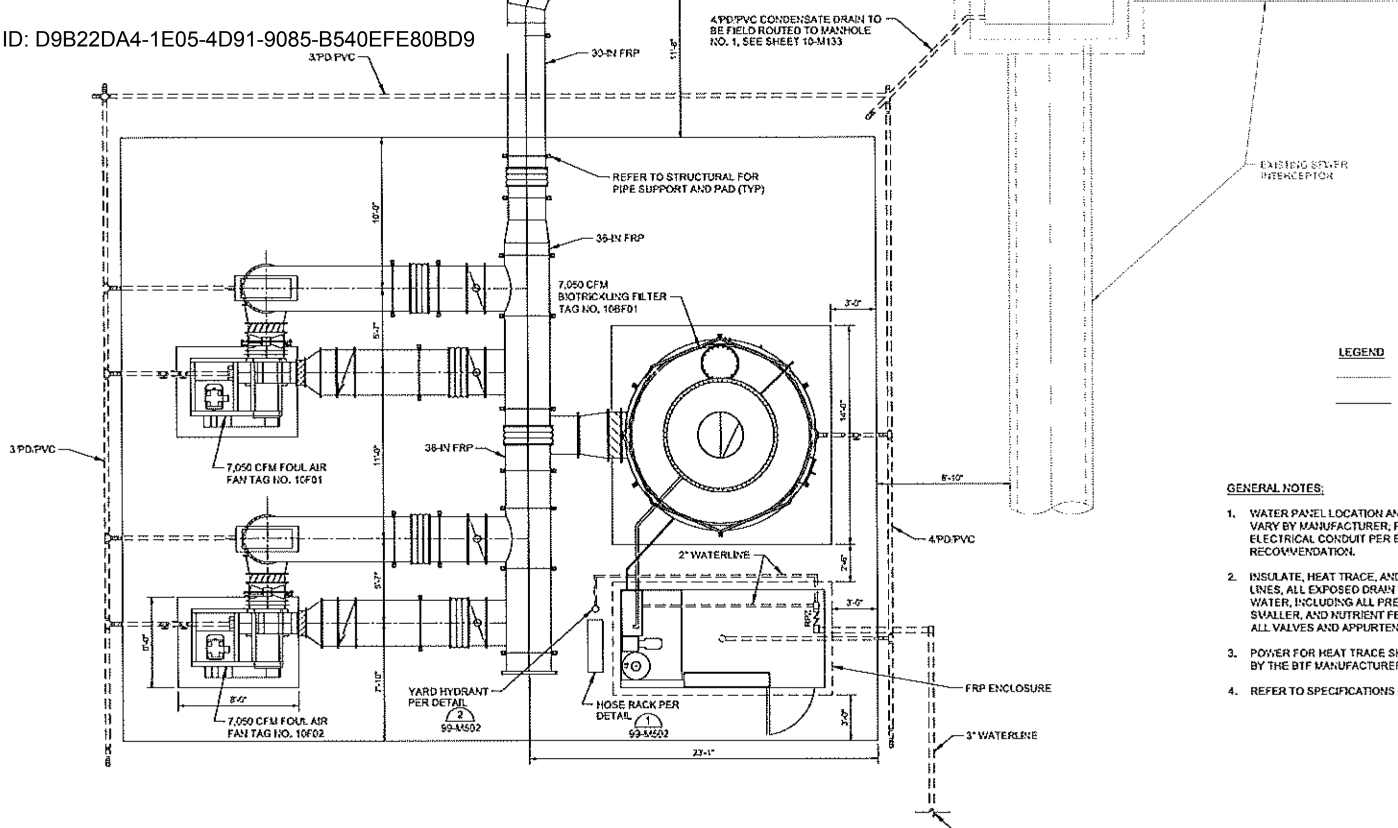
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

PERSIGO WWTP ODOR CONTROL SYSTEM SCHEMATIC

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: ABD
DRAWN BY: SRG

DRAWING NUMBER 10-M101

SHEET NUMBER 018



1 10-M131 TOP PLAN
SCALE: 1/4" = 1'-0"

LEGEND

EXISTING

PROPOSED

GENERAL NOTES:

1. WATER PANEL LOCATION AND ASSOCIATED PIPING CONFIGURATIONS VARY BY MANUFACTURER; FIELD ROUTE PROCESS PIPING AND ELECTRICAL CONDUIT PER EQUIPMENT MANUFACTURER'S RECOMMENDATION.
2. INSULATE, HEAT TRACE, AND ALUMINUM JACKET ALL EXPOSED WATER LINES, ALL EXPOSED DRAIN LINES THAT NORMALLY HAVE STANDING WATER, INCLUDING ALL PRESSURE LINES, 4-INCH IN DIAMETER AND SMALLER, AND NUTRIENT FEED LINES AND ACCESSORIES, INCLUDING ALL VALVES AND APPURTENANCES IN AFFECTED PIPES.
3. POWER FOR HEAT TRACE SHALL BE SUPPLIED BY THE PANEL PROVIDED BY THE BTF MANUFACTURER.
4. REFER TO SPECIFICATIONS FOR COATING REQUIREMENTS.

PERKINS ENGINEERING CONSULTANTS, INC.

REV.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO

GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

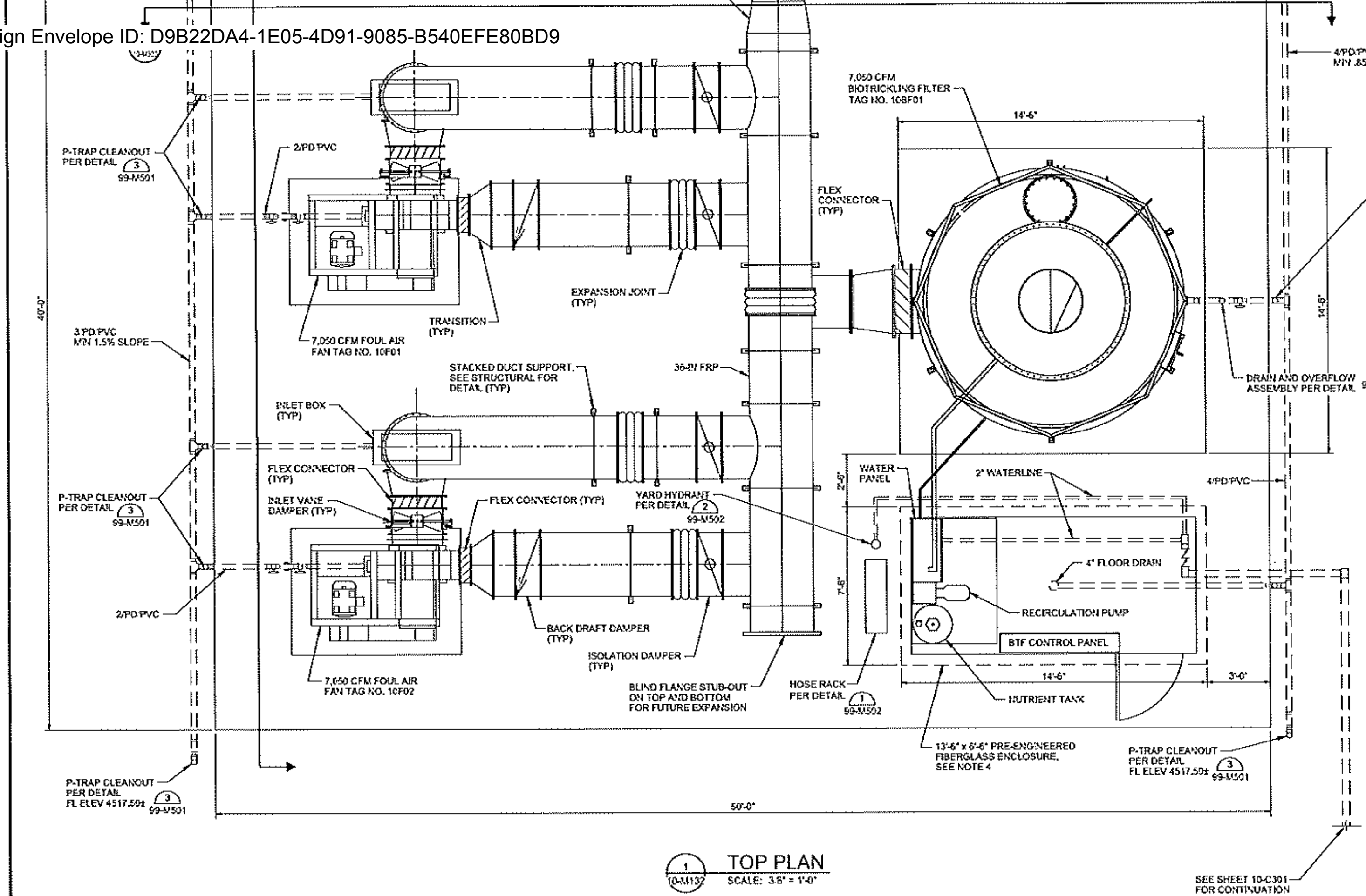
PERSIGO WWTP
ODOR CONTROL
BTF EQUIPMENT
SITE PLAN

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: ABD
DRAWN BY: SRG

BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER
10-M131

SHEET NUMBER 019



1 10-M132 TOP PLAN
SCALE: 3/8" = 1'-0"

GENERAL NOTES:

1. WATER PANEL LOCATION AND ASSOCIATED PIPING CONFIGURATIONS VARY BY MANUFACTURER; FIELD ROUTE PROCESS PIPING AND ELECTRICAL CONDUIT PER EQUIPMENT MANUFACTURER'S RECOMMENDATION.
2. INSULATE, HEAT TRACE, AND ALUMINUM JACKET ALL EXPOSED WATER LINES, ALL EXPOSED DRAIN LINES THAT NORMALLY HAVE STANDING WATER, INCLUDING ALL PRESSURE LINES, 4-INCH IN DIAMETER AND SMALLER, AND NUTRIENT FEED LINES AND ACCESSORIES, INCLUDING ALL VALVES AND APPURTENANCES IN AFFECTED PIPES.
3. POWER FOR HEAT TRACE SHALL BE SUPPLIED BY THE PANEL PROVIDED BY THE BTF MANUFACTURER. SEE SPECIFICATION SECTION 23 05 34.
4. CONTRACTOR SHALL COORDINATE WITH FRP ENCLOSURE MANUFACTURE AND CONNECT ENCLOSURE TO INCOMING ELECTRICAL POWER AND DISTRIBUTION PANEL.
5. REFER TO SPECIFICATIONS FOR COATING REQUIREMENTS.

COLORADO LICENSED PROFESSIONAL ENGINEER

REV.	DATE	DESCRIPTION	BY

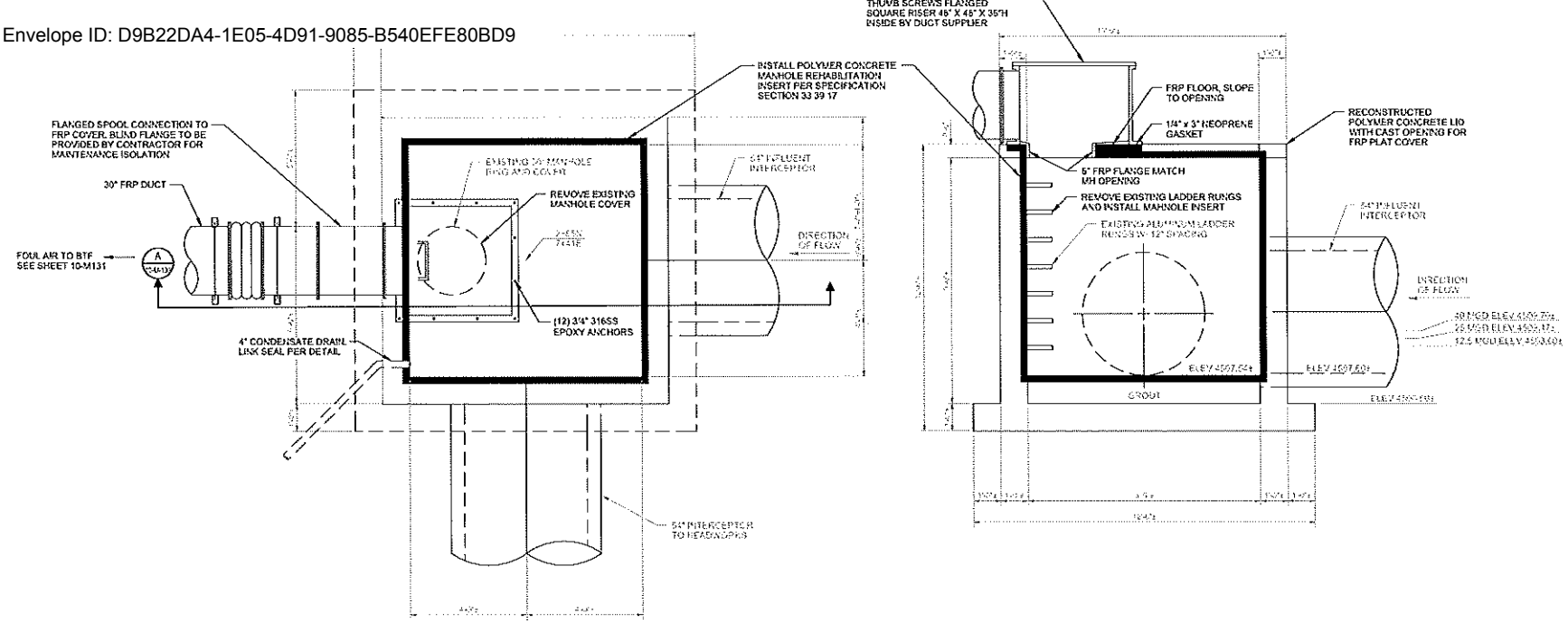
CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

PERSIGO WWTP
ODOR CONTROL
BTF EQUIPMENT PLAN

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: ABD
DRAWN BY: SRG

PERKINS ENGINEERING CONSULTANTS, INC.

DRAWING NUMBER
10-M132
SHEET NUMBER 020



1 / 10-M133 **TOP PLAN**
SCALE: 1/2" = 1'-0"

2 / 10-M133 **SECTION A**
SCALE: 1/2" = 1'-0"

LEGEND

EXISTING

PROPOSED

PERKINS ENGINEERING CONSULTANTS, INC.

COLORADO LICENSED ROBERT A. ANGELL 35223 PROFESSIONAL ENGINEER

REV.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction
GRAND JUNCTION
ODOR CONTROL IMPROVEMENTS

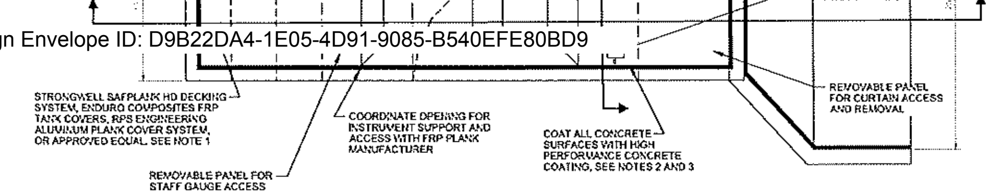
PERSIGO WWTP
MANHOLE
PLAN AND SECTION

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: ABD
DRAWN BY: SRG

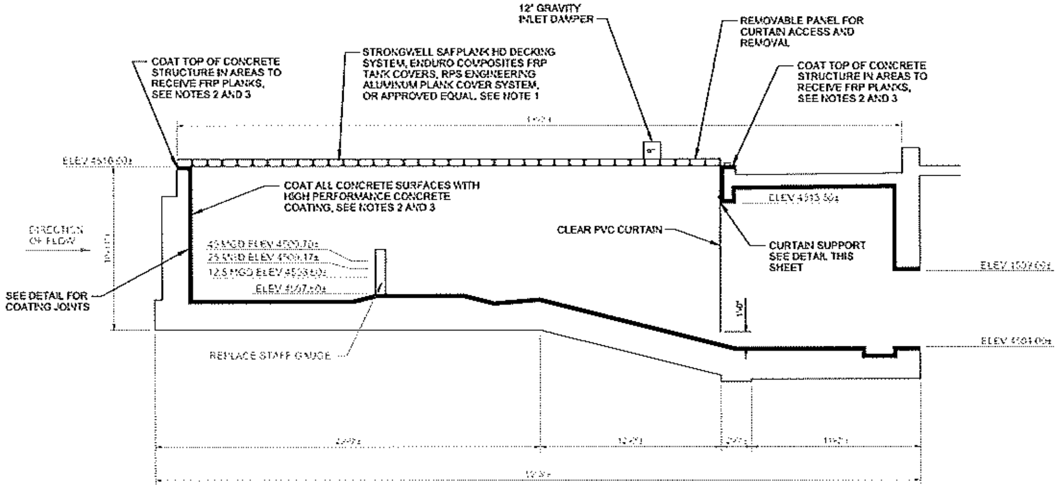
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY

DRAWING NUMBER
10-M133

SHEET NUMBER 021

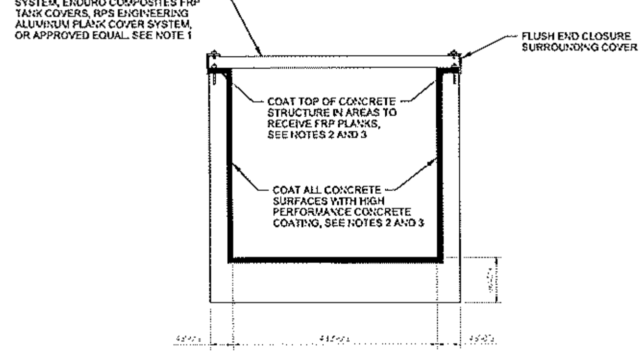


1 10-M134 TOP PLAN
SCALE: 1/4" = 1'-0"

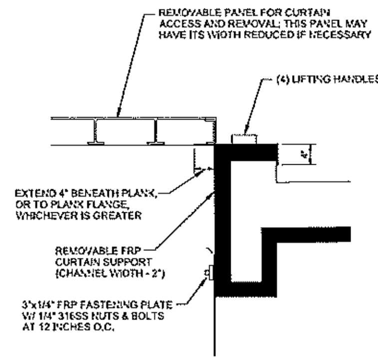


2 10-M134 SECTION A
SCALE: 1/4" = 1'-0"

LEGEND
EXISTING
PROPOSED



3 10-M134 SECTION B
NTS



CURTAIN SUPPORT DETAIL
NTS

PERKINS ENGINEERING CONSULTANTS, INC.

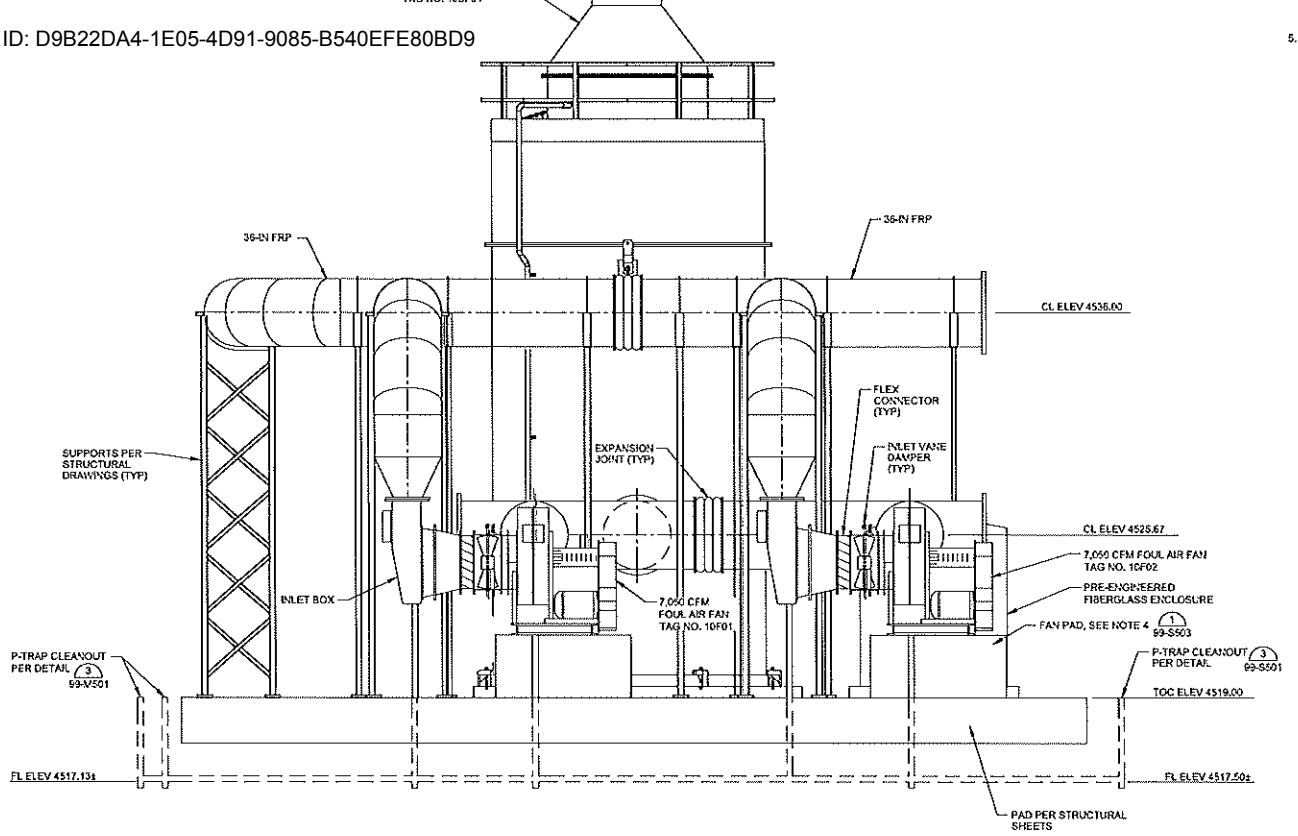
CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

PERSIGO WWTP HEADWORKS PARSHALL FLUME PLAN AND SECTION

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: ABD
DRAWN BY: SRG

DRAWING NUMBER 10-M134
SHEET NUMBER 022

5. REFER TO SPECIFICATIONS FOR COATING REQUIREMENTS.



(A) 10-M132 SECTION
SCALE: 3/8" = 1'-0"

PERKINS ENGINEERING CONSULTANTS, INC.

NO.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

PERSIGO WWTP ODOR CONTROL SYSTEM SECTION AND ELEVATION I

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: ABD
DRAWN BY: SRG

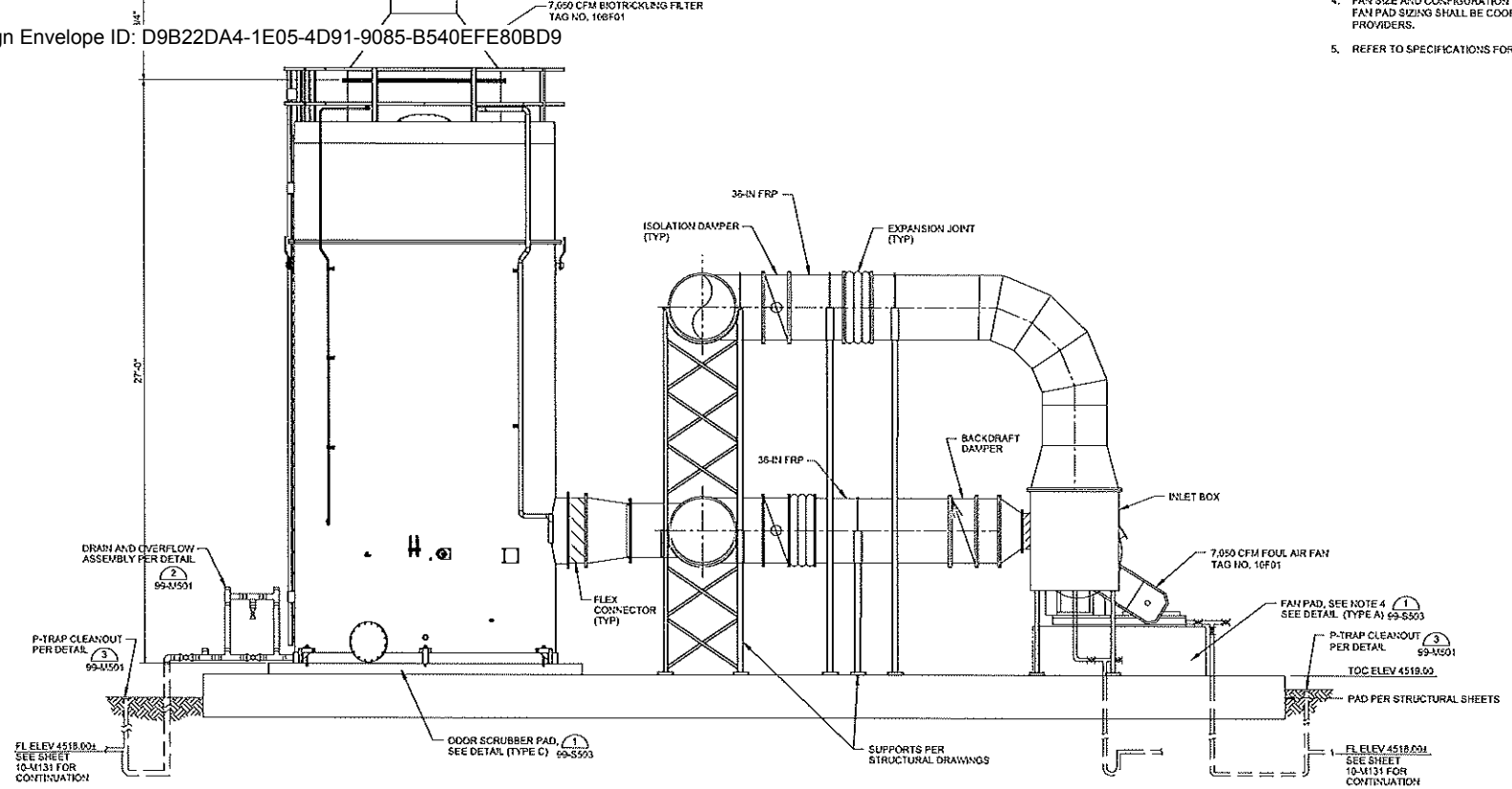
BAR IS 1 INCH ON ORIGINAL DRAWING
IF NOT 1 INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY

DRAWING NUMBER
10-M301

SHEET NUMBER 023

4. FAN SIZE AND CONFIGURATION VARIES PER MANUFACTURER. FAN PAD SIZING SHALL BE COORDINATED WITH EQUIPMENT PROVIDERS.

5. REFER TO SPECIFICATIONS FOR COATING REQUIREMENTS.



B 10-M132 SECTION
SCALE: 3/8" = 1'-0"

FERKINS ENGINEERING CONSULTANTS, INC.

COLORADO LICENSED JUSTIN A. ANGELL PROFESSIONAL ENGINEER

REV.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

PERSIGO WWTP ODOR CONTROL SYSTEM SECTION AND ELEVATION II

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: ABD
DRAWN BY: SRG

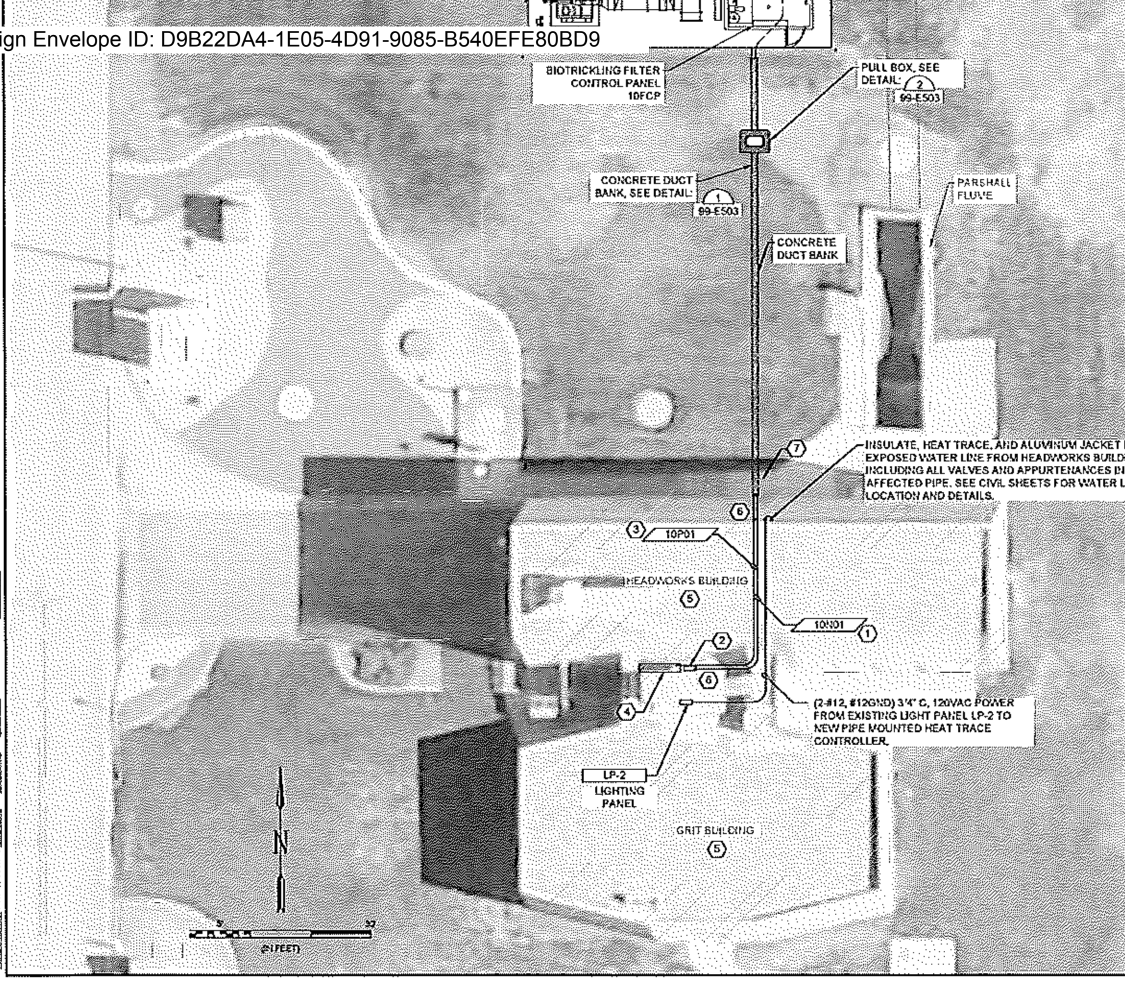
BAR IS 1" ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

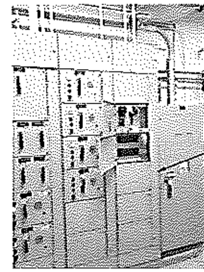
DRAWING NUMBER 10-M302

SHEET NUMBER 024

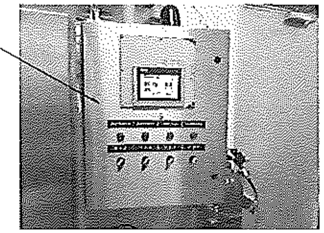
PUTTY.

(7) SAW CUT EXISTING CONCRETE WALKWAY FOR NEW DUCT BANK. REPAIR AS TO LOOK AS ORIGINAL.

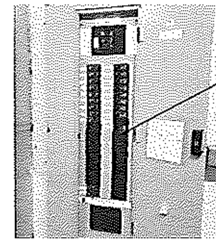




1 10-E101 PERSIGO WWTP MCC-2
SCALE: NONE



2 10-E101 PERSIGO WWTP SCADA CONTROL PANEL
SCALE: NONE



3 10-E101 PERSIGO WWTP LP-2 LIGHTING PANEL
SCALE: NONE

GENERAL NOTES:

1. FIELD LOCATE FINAL LOCATIONS OF ALL BELOW GRADE DUCT BANKS AND COORDINATE LOCATIONS WITH OTHER BURIED UTILITIES.
2. DUCT BANKS AND CONDUITS SHOWN INDICATE CONCEPTUAL ROUTING FOR ANTICIPATED ELECTRICAL CONDUCTORS. COORDINATE THE INSTALLATION AND LOCATIONS OF NEW DUCT BANKS AND CONDUITS WITH OWNER AND ENGINEER PRIOR TO CONSTRUCTION.
3. PROVIDE PULLBOXES AS REQUIRED FOR A WORKABLE INSTALLATION.
4. THE CONTRACTOR SHALL REFER TO ELECTRICAL DETAIL SHEETS FOR PULL BOX TYPE AND INSTALLATION DETAILS. THE CONTRACTOR SHALL REFER TO THE DETAIL "ELECTRICAL PULLBOX DETAILS" FOR ALL PULLBOXES. ALL PULLBOXES SHALL BE APPROPRIATELY SIZED BY THE CONTRACTOR AS REQUIRED BY THE NUMBER OF CONDUITS IN THE DUCT BANK FOR A WORKABLE INSTALLATION WITH MINIMUM SIZES AS INDICATED WITHIN THE DETAILS.
5. NUMEROUS UNDERGROUND UTILITIES EXIST THROUGHOUT THE PROJECT SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND MARKING ALL EXISTING UTILITIES PRIOR TO WORK. ADJUST DUCT BANK AS REQUIRED.
6. NEW FACILITIES/EQUIPMENT ARE SHOWN AS DARK/BOLD. EXISTING FACILITIES/EQUIPMENT ARE SHOWN AS LIGHT/FADED.

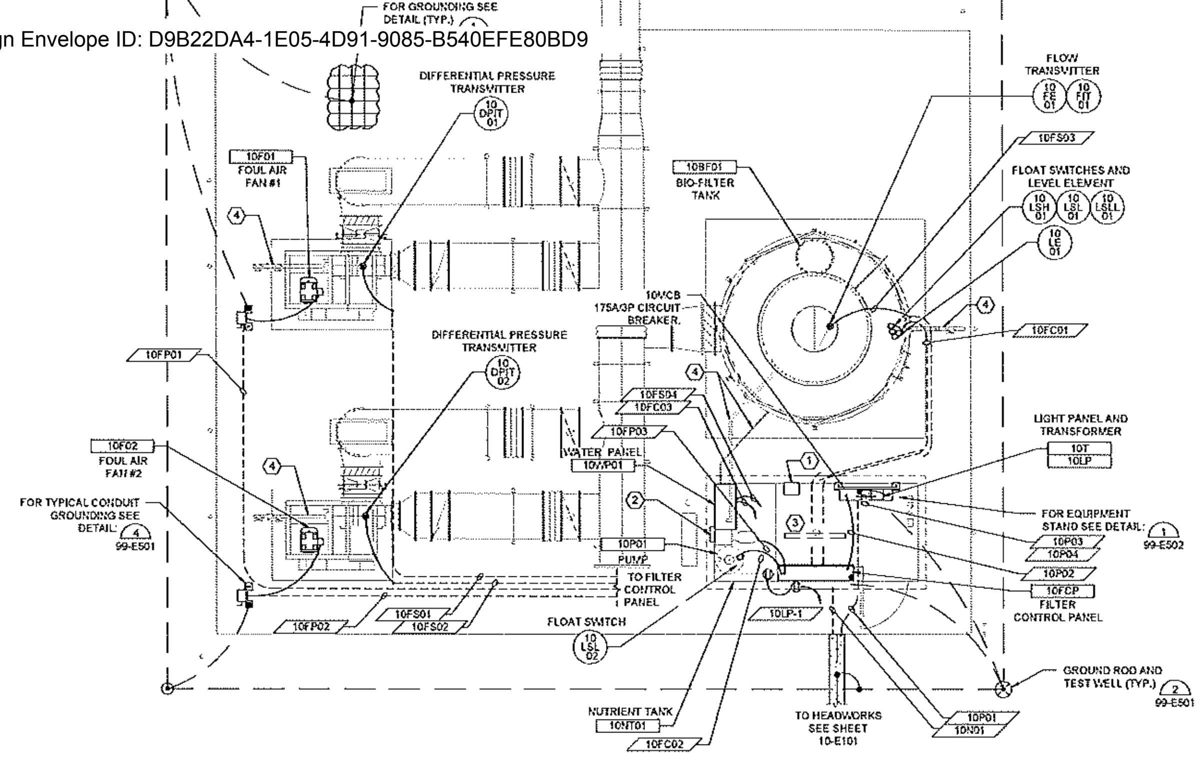
REV.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

PERSIGO WWTP ODOR CONTROL ELECTRICAL SITE PLAN

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: SAH
DRAWN BY: SAH

DRAWING NUMBER 10-E101
SHEET NUMBER 025



ODOR CONTROL ELECTRICAL POWER AND GROUNDING PLAN

PROJECT NORTH — 1 / 10-E131 — SCALE: ¼" = 1'-0"

4. VERIFY LOCATION OF ALL EQUIPMENT PRIOR TO INSTALLATION.
5. BELOW GRADE CONDUIT ROUTING AS SHOWN IS DIAGRAMMATIC IN NATURE AND SHOWN FOR REFERENCE ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING NUMBER OF REQUIRED CONDUITS AND PLACEMENT OF THESE CONDUITS. THE CONTRACTOR SHALL DEVELOP AND SUBMIT A BELOW GRADE CONDUIT ROUTING PLAN FOR REVIEW PRIOR TO INSTALLATION.
6. ALL POWER CIRCUITRY SHALL BE A MINIMUM 2-#12, #12 GND, 3/4" C.
7. ALL OUTDOOR RECEPTACLES TO BE GFCI WITH IN-USE WEATHERPROOF COVERS.
8. ALL AREAS WITHIN 3 FEET OF LEAKAGE SOURCES, INCLUDING FANS, DAMPERS, CONNECTIONS, PIPING, DUCT WORK, AND ODOR CONTROL VESSELS, SHALL BE CONSIDERED A CLASS 1, DIVISION 2 LOCATION.
9. CONTRACTOR SHALL STRICTLY ADHERE TO THE REQUIREMENTS IN NFPA 70, ARTICLE 500, HAZARDOUS (CLASSIFIED) LOCATIONS FOR ALL AREAS REFERENCED IN THE NOTE ABOVE. THIS INCLUDES PROVIDING SEAL FITTINGS ON CONDUITS AND CABLES ALONG WITH PROVIDING EXPLOSION PROOF EQUIPMENT, RATED FOR THE CLASSIFICATION REFERENCED ABOVE, IF LOCATED WITHIN THE HAZARDOUS AREA.
10. PROVIDE SUNSHADE FOR EXPOSED ELECTRICAL INSTRUMENTS AND PANELS.
11. INSULATE, HEAT TRACE, AND ALUMINUM JACKET ALL EXPOSED WATER LINES, ALL EXPOSED DRAIN LINES THAT NORMALLY HAVE STANDING WATER, INCLUDING ALL PRESSURE LINES, 4-INCH IN DIAMETER AND SMALLER, AND NUTRIENT FEED LINES AND ACCESSORIES, INCLUDING ALL VALVES AND APPURTENANCES IN AFFECTED PIPES.
12. POWER FOR HEAT TRACE SHALL BE SUPPLIED FROM LIGHT PANEL 10LP.

KEYED NOTES:

1. MAKE REQUIRED POWER CONNECTIONS FROM LIGHT PANEL 10LP TO SUPPLIED FRP ENCLOSURE 1500W HEATER (10LP-3).
2. MAKE REQUIRED POWER CONNECTIONS FROM LIGHT PANEL 10LP TO SUPPLIED FRP ENCLOSURE EXHAUST FAN (10LP-4).
3. MAKE REQUIRED POWER CONNECTIONS FROM LIGHT PANEL 10LP TO SUPPLIED FRP ENCLOSURE LIGHTING (10LP-5).
4. SEE GENERAL NOTE 11 AND 12.

REV.	DATE	DESCRIPTION	BY

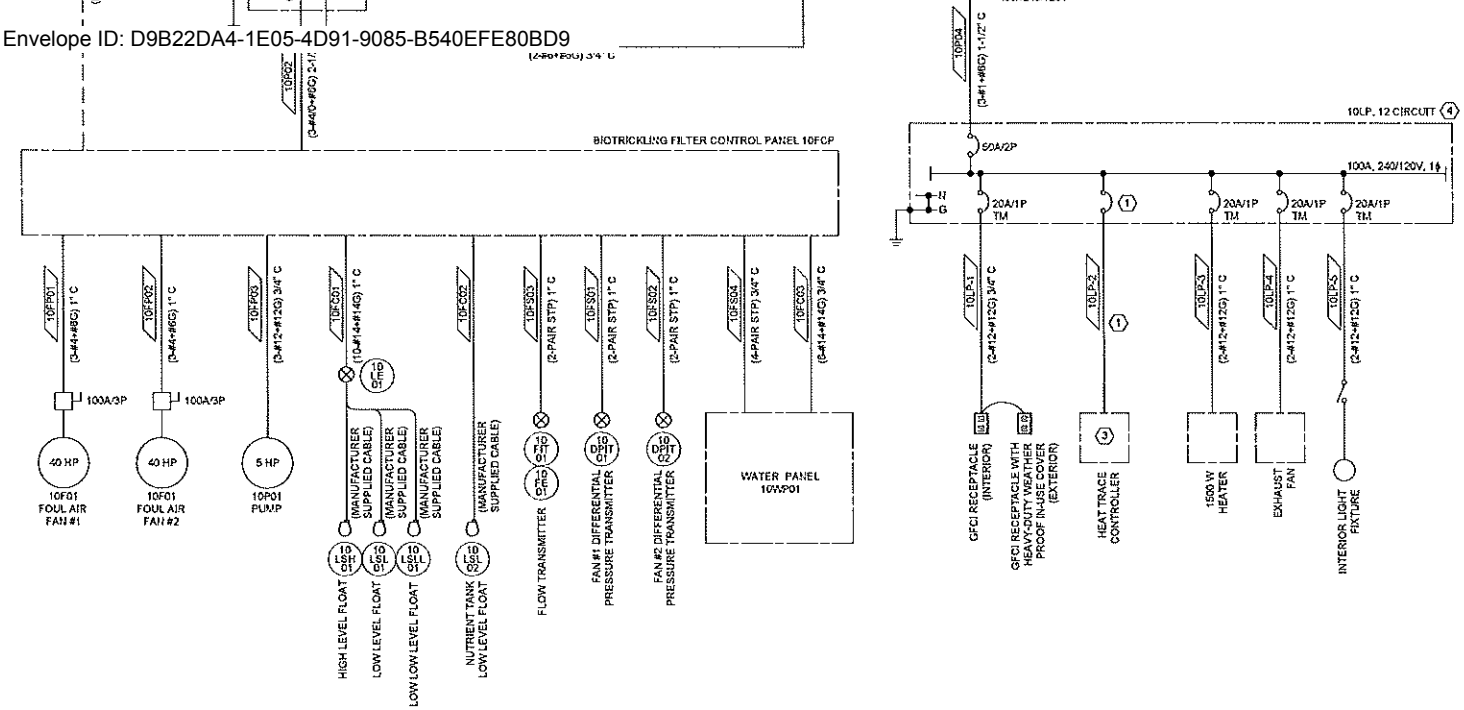
CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

PERSIGO WWTP ODOR CONTROL ELECTRICAL POWER AND GROUNDING PLAN

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: SAH
DRAWN BY: SAH

BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER 10-E131
SHEET NUMBER 026



1 10-E501 PERSIGO WWTP ODOR CONTROL ONELINE DIAGRAM
SCALE: NONE

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction
GRAND JUNCTION
ODOR CONTROL IMPROVEMENTS

PERSIGO WWTP
ODOR CONTROL
ONELINE DIAGRAM

JOB NO.: 20-W2304S
DATE: AUGUST 2021
DESIGNED BY: SAH
DRAWN BY: SAH

DRAWING NUMBER
10-E501

SHEET NUMBER 027

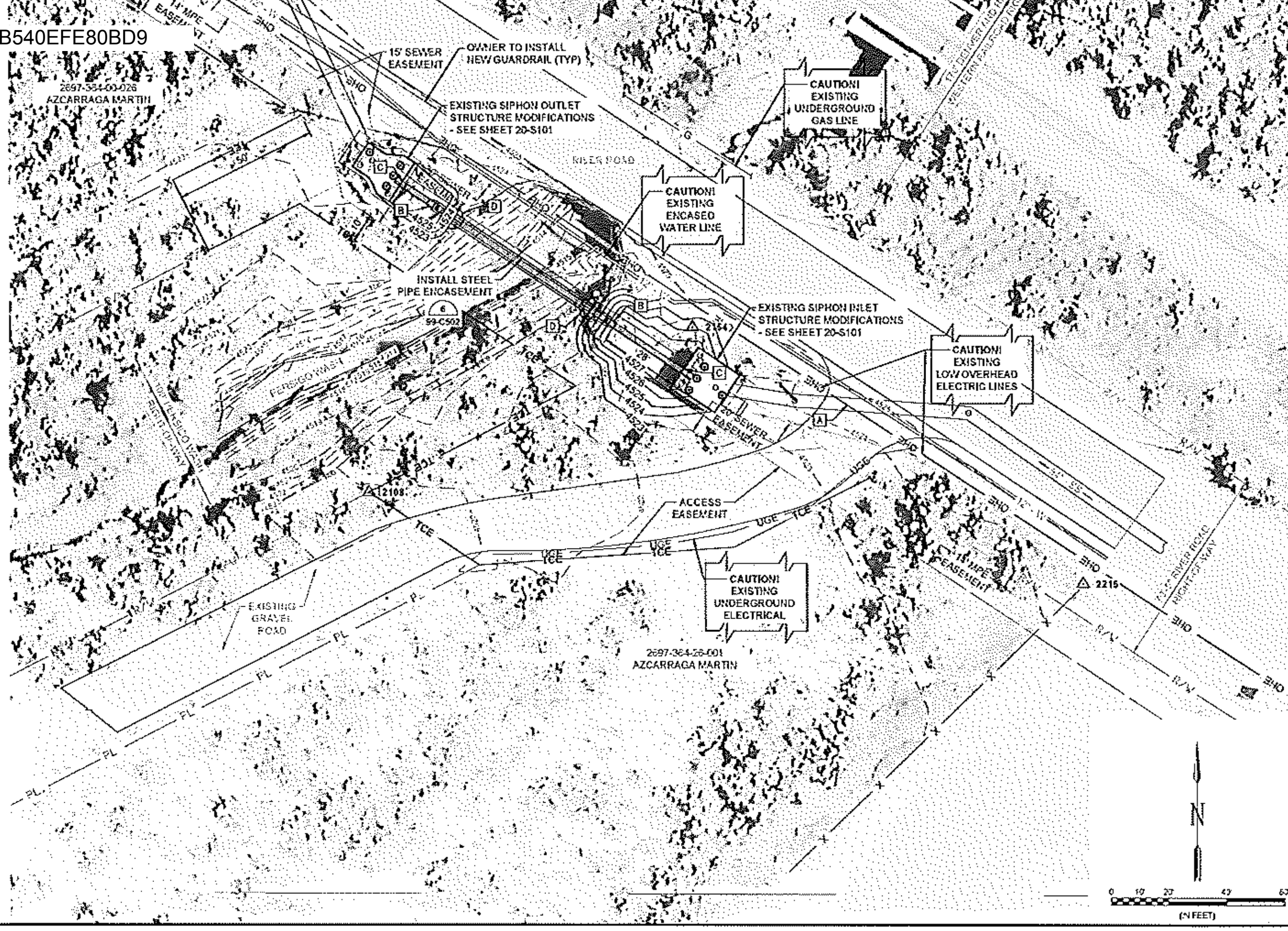
2. CONSTRUCTION ON SITE SHALL NOT IMPEDE ON RIVER ROAD TRAFFIC.

4. GUARDRAIL SHALL BE FIELD LOCATED AND SIZED BY OWNER. EXISTING WATER LINE SHALL BE IDENTIFIED AND MARKED PRIOR INTO INSTALLING GUARDRAIL.

5. CONTRACTOR MUST MAINTAIN GRAVEL ACCESS ROADS FOR USE BY PROPERTY OWNERS.

6. SEE 6/99-C502 FOR PIPE ENCASEMENT DETAILS

7. SEE SECTION 33 05 23.16 FOR PIPE ENCASEMENT SPECIFICATIONS



CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

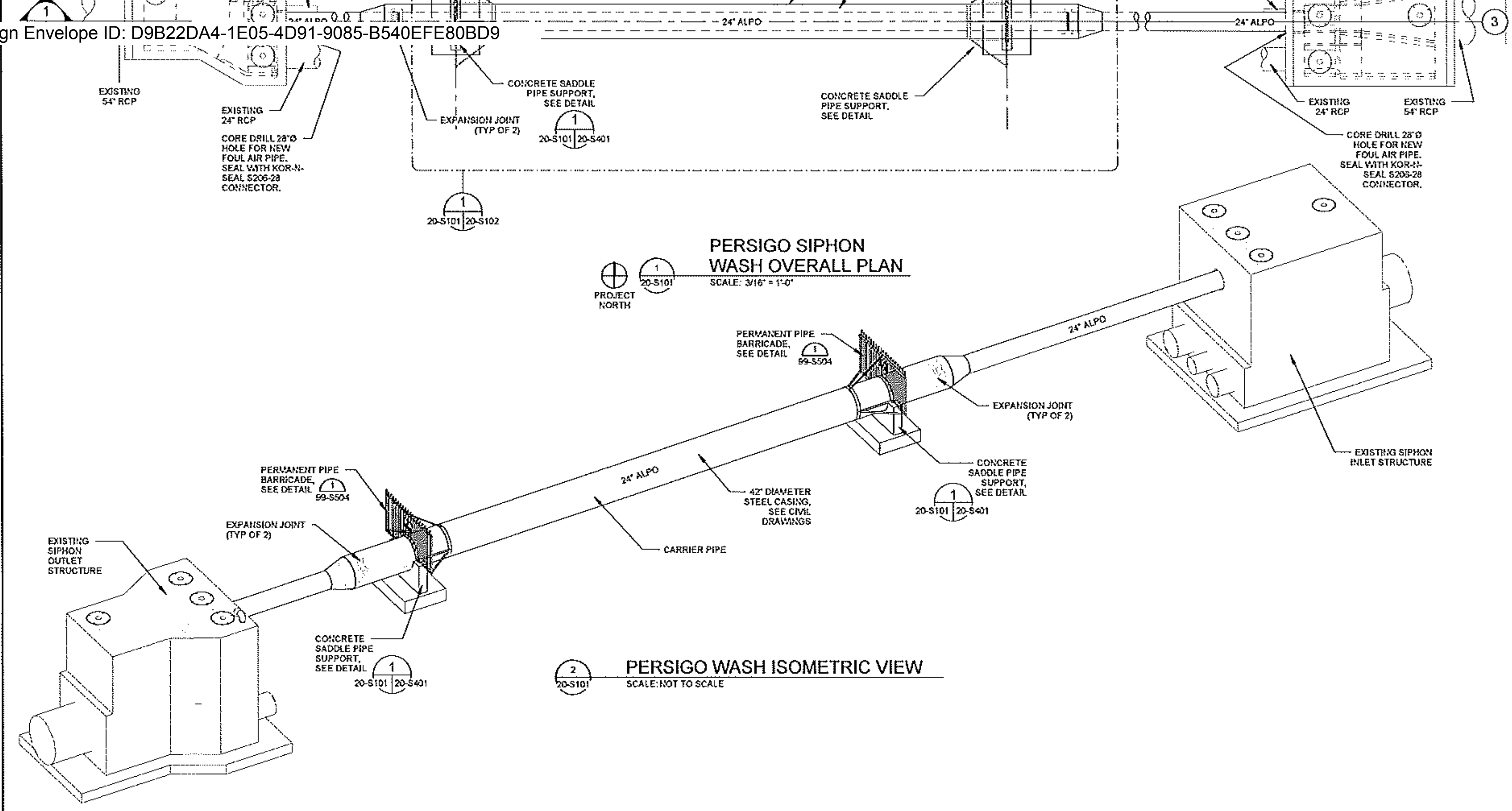
PERSIGO SIPHON WASH SITE PLAN

REV.	DATE	DESCRIPTION	BY

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: CDG
DRAWN BY: TNP

DRAWING NUMBER 20-C101

SHEET NUMBER 028



1 20-S101 PERSIGO SIPHON WASH OVERALL PLAN
SCALE: 3/16" = 1'-0"

2 20-S101 PERSIGO WASH ISOMETRIC VIEW
SCALE: NOT TO SCALE

COLORADO LICENSED PROFESSIONAL ENGINEER 58460
Digitally Signed 08/20/2021

REV	DATE	DESCRIPTION	BY

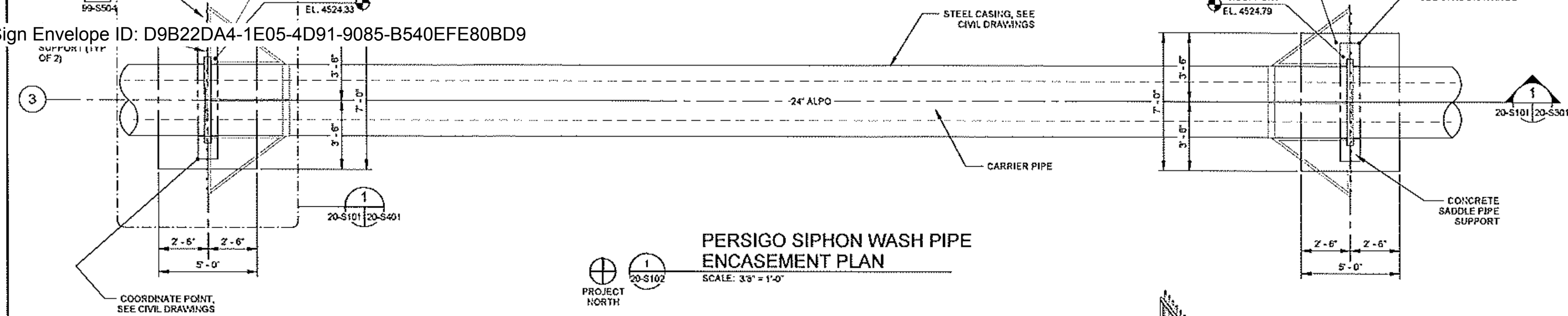
CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

PERSIGO SIPHON WASH STRUCTURAL OVERALL PLAN

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: KAM
DRAWN BY: EGB

BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

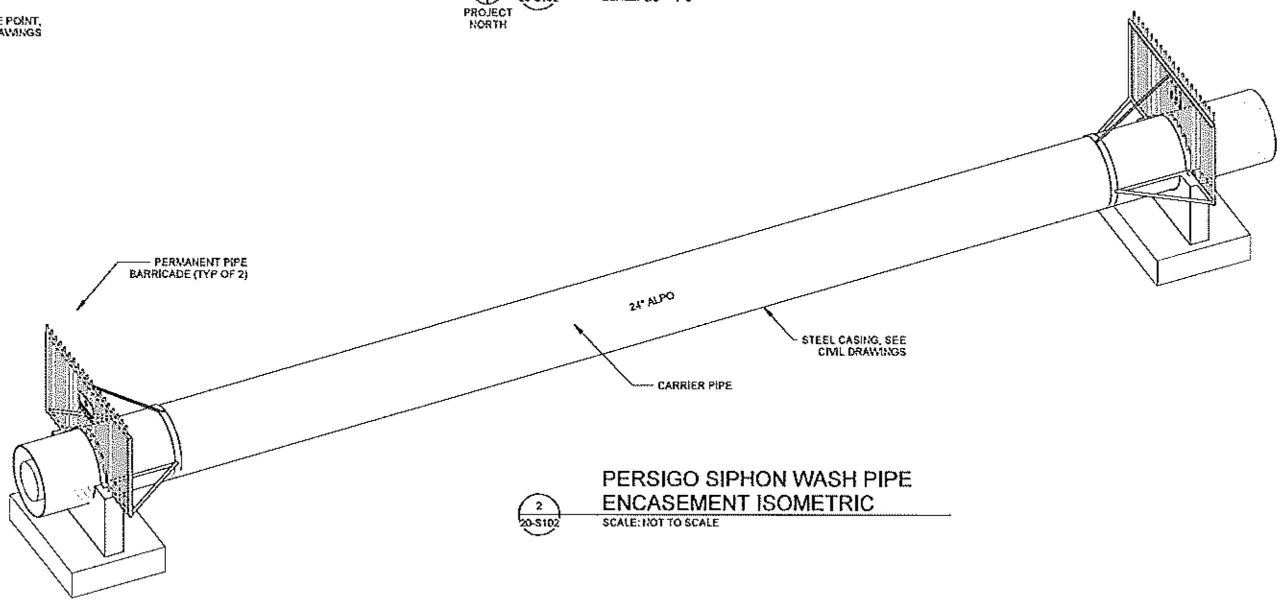
DRAWING NUMBER 20-S101
SHEET NUMBER 029



PERSIGO SIPHON WASH PIPE ENCASEMENT PLAN

1 / 20-S102

SCALE: 3/8" = 1'-0"



PERSIGO SIPHON WASH PIPE ENCASEMENT ISOMETRIC

2 / 20-S102

SCALE: NOT TO SCALE

Digitally Signed 08/20/2021

REV	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO

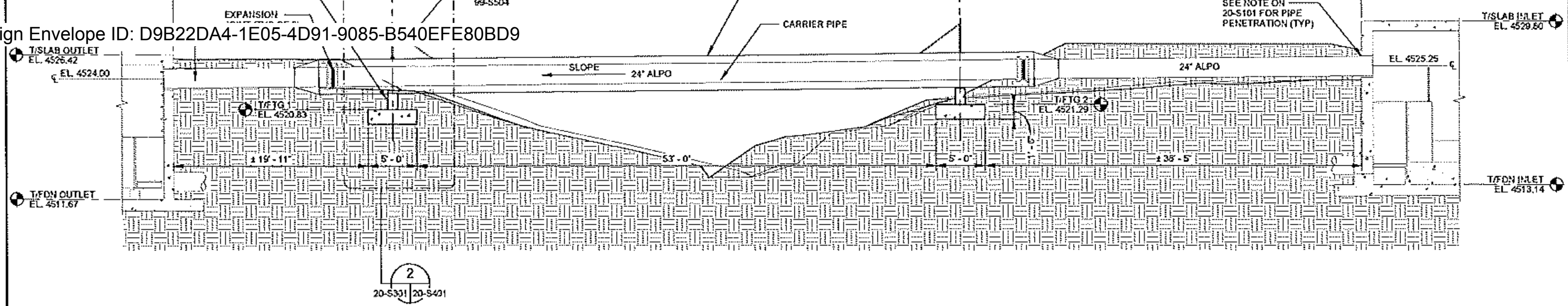
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

PERSIGO SIPHON WASH PIPE ENCASEMENT PLAN

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: KAM
DRAWN BY: EGB

DRAWING NUMBER **20-S102**

SHEET NUMBER **030**



1
20-S101 | 20-S301

PERSIGO WASH - PIPE BRIDGE SECTION

SCALE: 3/16" = 1'-0"

REV | DATE | DESCRIPTION | BY

CITY OF GRAND JUNCTION

GRAND JUNCTION, COLORADO

Grand Junction

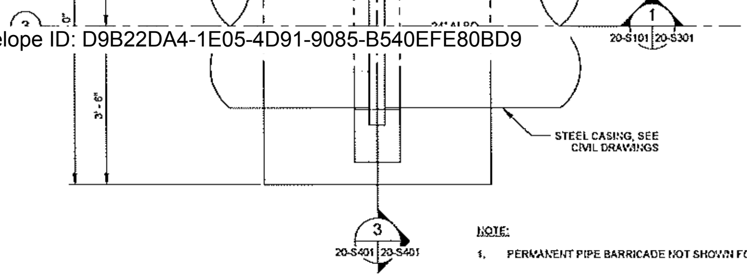
GRAND JUNCTION
ODOR CONTROL IMPROVEMENTS

PERSIGO SIPHON
WASH PIPE
ENCASEMENT
SECTIONS

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: KAM
DRAWN BY: EGB

DRAWING NUMBER
20-S301

SHEET NUMBER **031**

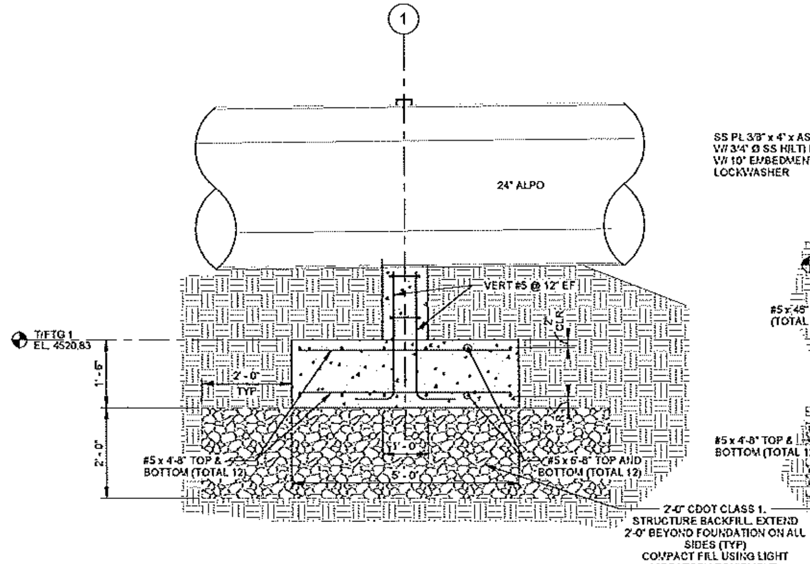


NOTE:

1. PERMANENT PIPE BARRICADE NOT SHOWN FOR CLARITY.

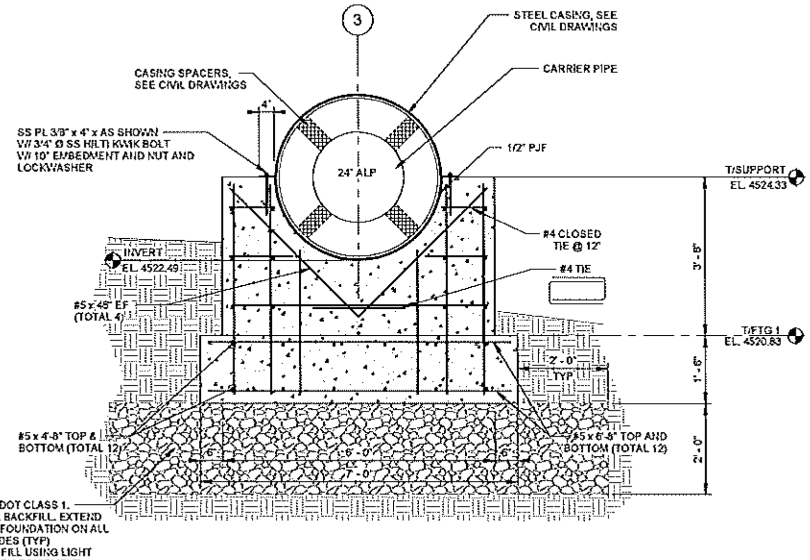
1 PIPE SUPPORT PLAN DETAIL

20-S101 | 20-S401 SCALE: 3/4" = 1'-0"



2 PIPE SUPPORT DETAIL

20-S301 | 20-S401 SCALE: 3/4" = 1'-0"



3 PIPE SUPPORT DETAIL

20-S401 | 20-S401 SCALE: 3/4" = 1'-0"

COLORADO LICENSED PROFESSIONAL ENGINEER 58460

Digitally Signed 08/20/2021

REV	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION

GRAND JUNCTION, COLORADO

Grand Junction

GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

PERSIGO SIPHON WASH DETAILS

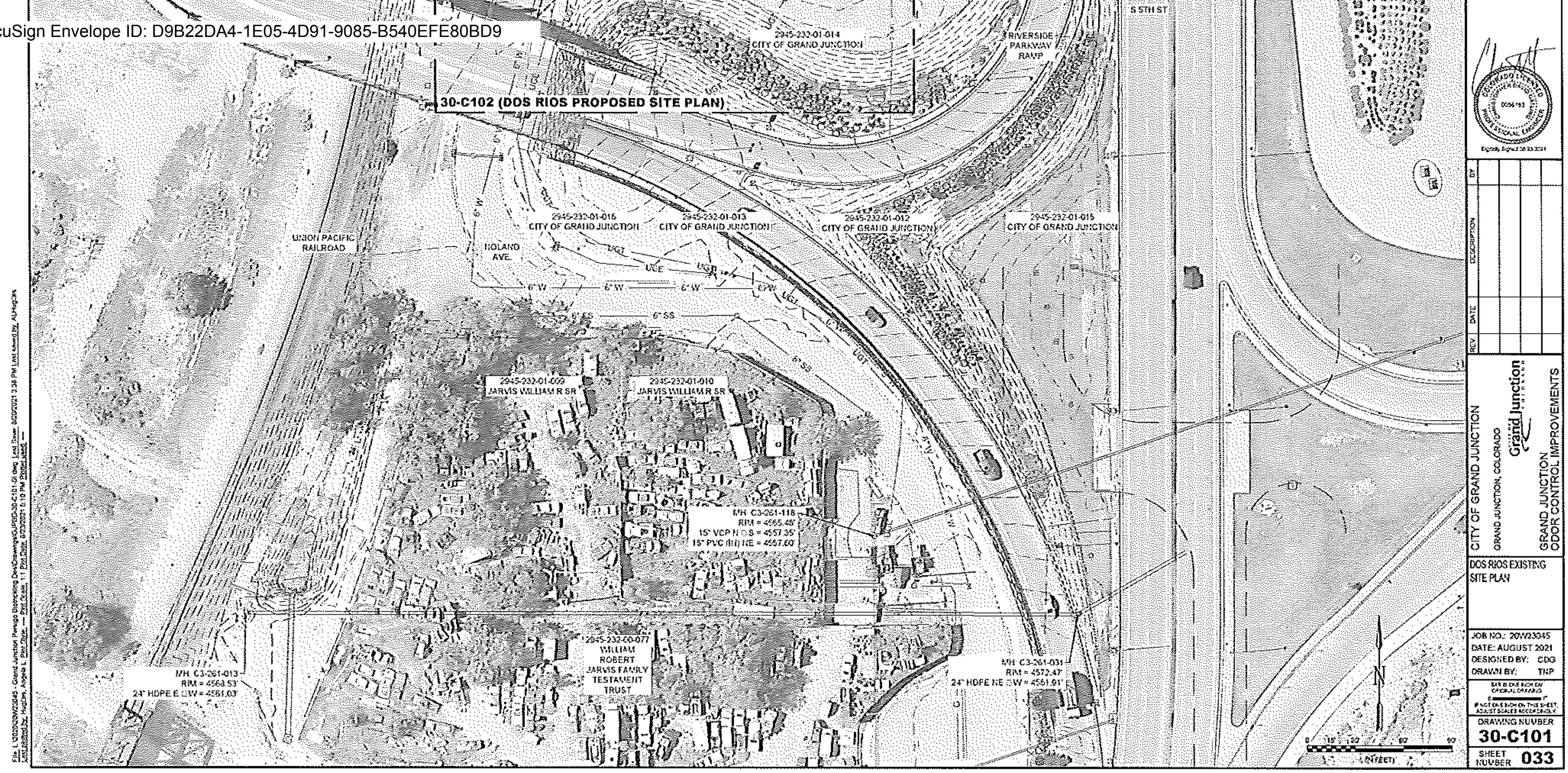
JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: XAM
DRAWN BY: EGB

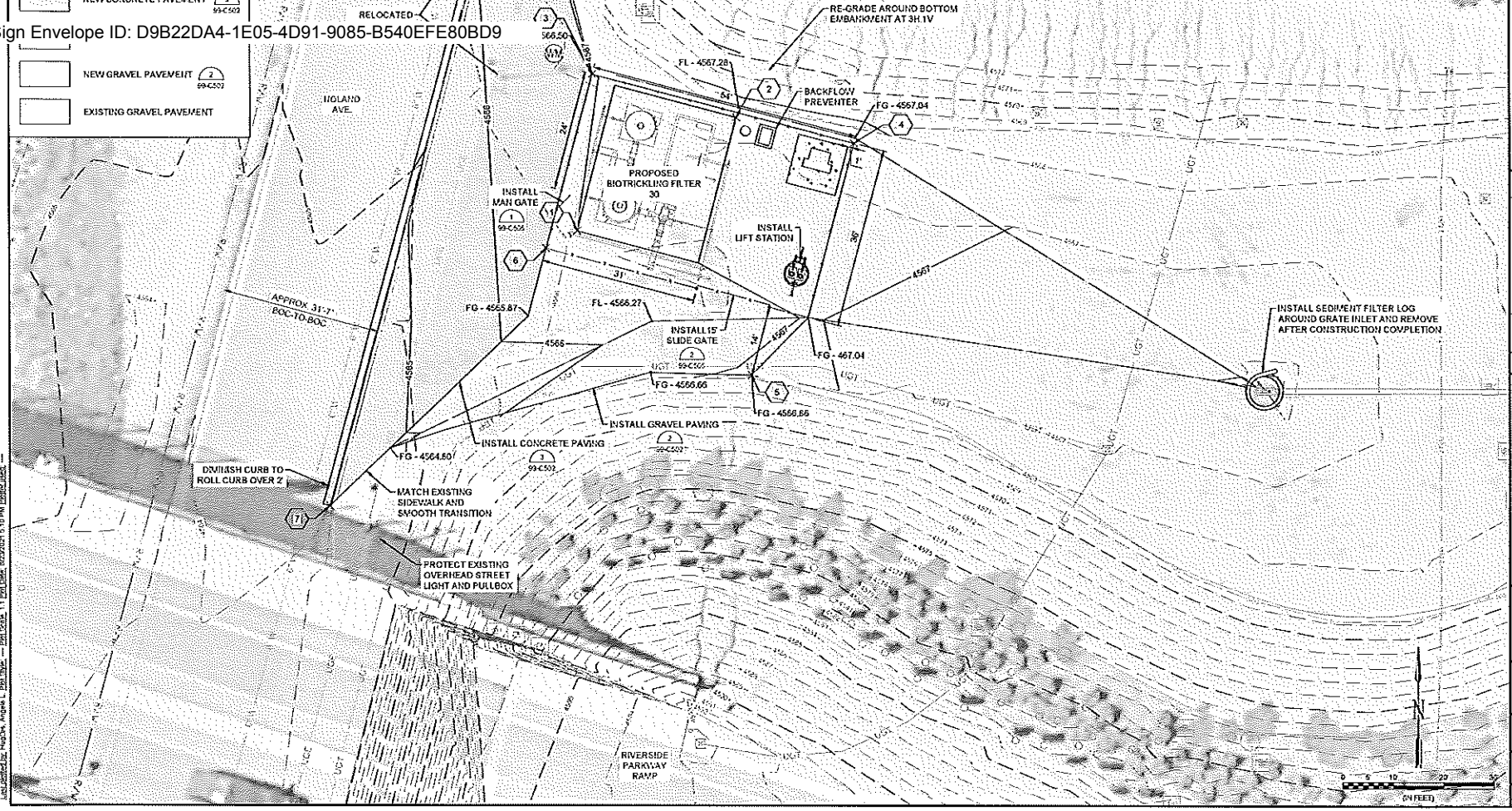
BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER 20-S401

SHEET NUMBER 032

Ref File: BIM 360/20W23045 - Grand Junction Persigo Distributing Dsn/CIPED - WWTP AND WASH.rvt
Plot Date: 8/20/2021 11:02:20 AM


30-C102 (DDS RIOS PROPOSED SITE PLAN)
S 5TH ST
2945-232-01-014
CITY OF GRAND JUNCTION
RIVERSIDE PARKWAY RAMP
2945-232-01-016
CITY OF GRAND JUNCTION
2945-232-01-013
CITY OF GRAND JUNCTION
2945-232-01-012
CITY OF GRAND JUNCTION
2945-232-01-015
CITY OF GRAND JUNCTION
UNION PACIFIC RAILROAD
ROLAND AVE.
2945-232-01-009
JARVIS WILLIAM R SR
2945-232-01-010
JARVIS WILLIAM R SR
MH C3-261-118
RIM = 4565.48'
15" VCP N DS = 4557.35'
15" PVC (IN) NE = 4557.60'
2945-232-00-077
WILLIAM ROBERT JARVIS FAMILY TESTAMENT TRUST
MH C3-261-013
RIM = 4563.53'
24" HDPE E DW = 4561.03'
MH C3-261-031
RIM = 4572.47'
24" HDPE NE DW = 4561.91'
N
0 15 30 60
(IN FEET)
REV
DATE
DESCRIPTION
BY
CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS
DDS RIOS EXISTING SITE PLAN
JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: CDG
DRAWN BY: TNP
DRAWING NUMBER
30-C101
SHEET NUMBER 033



CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO

GRAND JUNCTION
ODOR CONTROL IMPROVEMENTS

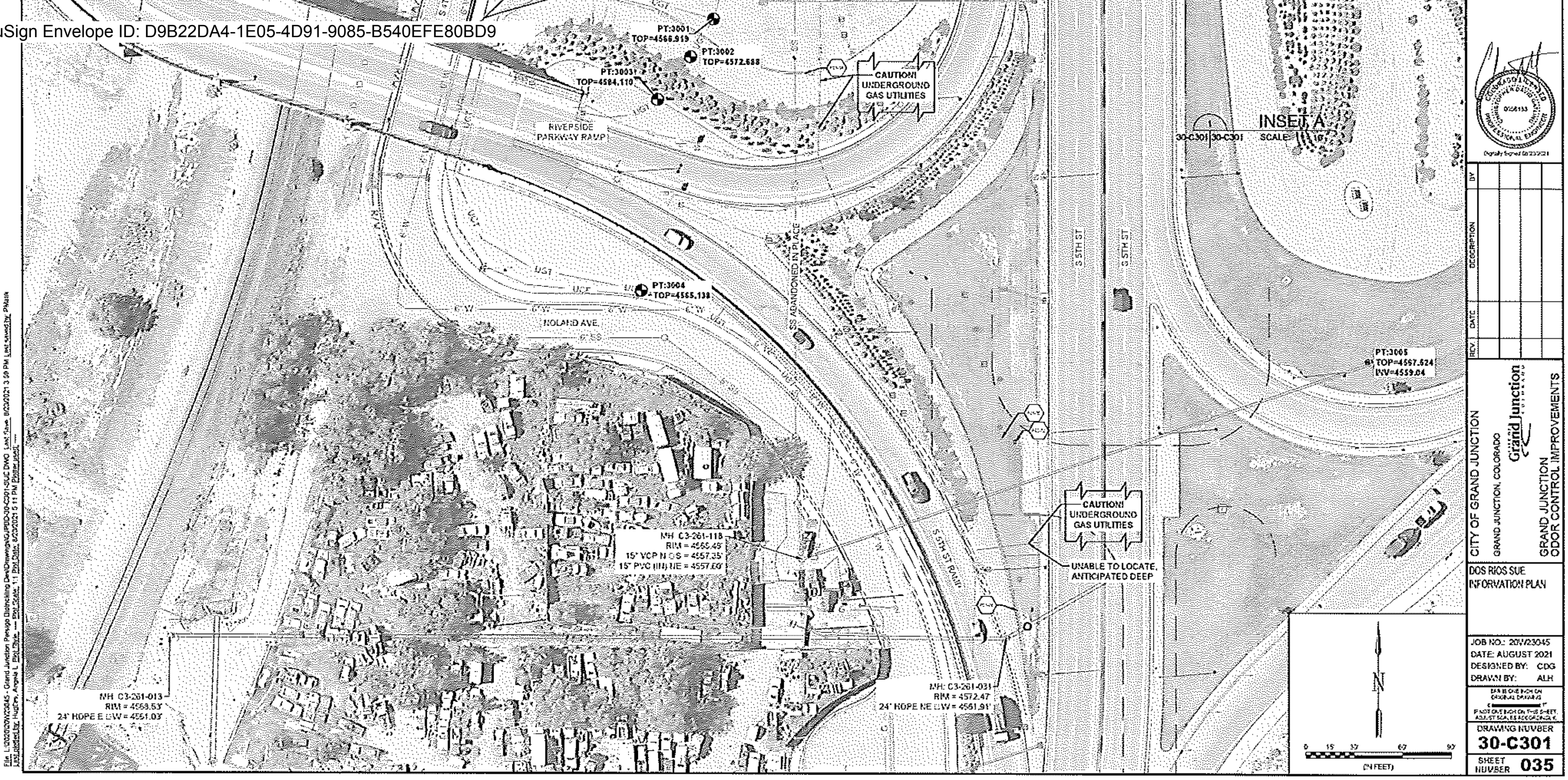
DOS RIOS PROPOSED
SITE PLAN

JOB NO.: 20-W23045
DATE: AUGUST 2021
DESIGNED BY: CDG
DRAWN BY: TNP

DRAWING NUMBER
30-C102

SHEET NUMBER 034

DocuSign Envelope ID: D9B22DA4-1E05-4D91-9085-B540EFE80BD9


PT:3001
TOP=4566.919
PT:3002
TOP=4572.688
PT:3003
TOP=4584.110
CAUTION!
UNDERGROUND
GAS UTILITIES
RIVERSIDE
PARKWAY RAMP
INSET A
30-C301
SCALE
SS ABANDONED IN PLACE
PT:3004
TOP=4565.138
NOLAND AVE.
S 5TH ST
PT:3005
TOP=4567.524
INV=4559.04
CAUTION!
UNDERGROUND
GAS UTILITIES
UNABLE TO LOCATE,
ANTICIPATED DEEP
MH C3-261-118
RIM = 4565.45'
15" VCP N OS = 4557.35'
15" PVC (IN) NE = 4557.60'
MH C3-261-013
RIM = 4568.53'
24" HDPE E BW = 4561.03'
MH C3-261-031
RIM = 4572.47'
24" HDPE NE BW = 4561.91'
S 5TH ST RAMP
(IN FEET)
REV
DATE
DESCRIPTION
BY
CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction
GRAND JUNCTION
ODOR CONTROL IMPROVEMENTS
DOS RIOS SUE
INFORMATION PLAN
JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: CDG
DRAWN BY: ALH
DRAWING NUMBER
30-C301
SHEET
NUMBER 035

[A] PIPING KEY NOTES

KEY NOTES:

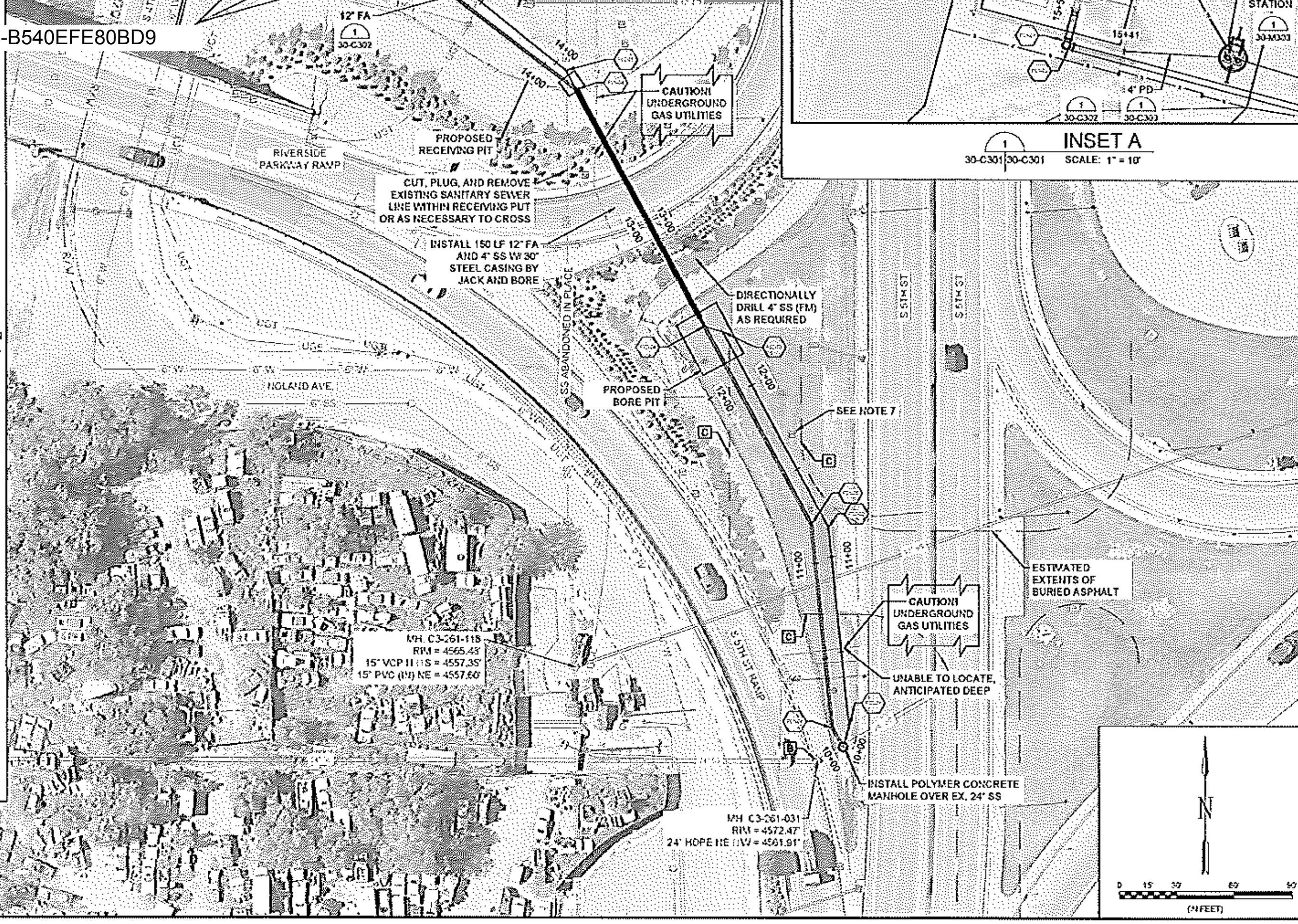
A. INSTALL WATER METER PER DETAIL

B. BID ALTERNATE NO. 1 LOCATION - SEE SECTION 00 00 20 SECTION 4. IF ALTERNATE IS SELECTED, CORE EXISTING MH C3-261-031 AND TIE FOUL AIR PIPE DIRECTLY, PROVIDING POSITIVE SLOPE AND MIN. 3' OF COVER, IN LIEU OF CONSTRUCTION OF A NEW DOGHOUSE MANHOLE. CONTRACTOR SHALL COAT EXISTING MH IN ACCORDANCE TO SECTION 09 96 40.

C. BURIED ASPHALT PAVEMENT APPROXIMATELY 4" THICK IS ANTICIPATED APPROXIMATELY 36" BELOW GRADE IN THE AREA SHOWN.

NOTES:

1. EXISTING PIPING IS SHOWN BASED ON AVAILABLE RECORD DRAWINGS AND INFORMATION PROVIDED TO THE ENGINEER. CONTRACTOR SHALL FIELD VERIFY LOCATIONS AND DEPTHS OF ALL PERTINENT LINES PRIOR TO CONSTRUCTION.
2. PIPING ELEVATIONS ARE FOR CONTRACTORS BENEFIT. CONTRACTOR SHALL VERIFY ELEVATIONS IN FIELD.
3. PRIOR TO INSTALLATION OF NEW PIPING, CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL PIPING OR UTILITIES (SHOWN OR NOT), INCLUDING THE EXISTING GAS LINE AND COMMUNICATIONS LINES. IF NECESSARY, VERTICAL AND HORIZONTAL ALIGNMENT OF NEW PIPING SHALL BE ADJUSTED IN COORDINATION WITH ENGINEER PRIOR TO BEGINNING CONSTRUCTION.
4. ALL PIPES SHALL BE LAID AT A CONSTANT SLOPE BETWEEN THE ELEVATIONS GIVEN ON THESE PLANS. PIPELINES WITH NO ELEVATIONS GIVEN SHALL BE INSTALLED WITH MINIMUM 3' OF COVER OR AS REQUIRED TO AVOID CONFLICTS WITH EXISTING AND PROPOSED PIPING.
5. ALL BURIED VALVES SHALL HAVE VALVE BOX AS SPECIFIED.
6. CONTRACTOR SHALL INSTALL MJ SOLID SLEEVE AS NECESSARY TO MAKE CONNECTIONS TO EXISTING LINES.
7. CONTRACTOR SHALL PROTECT, OR REPLACE IN KIND ANY IRRIGATION LINES OR APPURTENANCES DAMAGED OR REMOVED AS PART OF THE WORK. CONTROL VALVES AND SPRINKLERS ARE SHOWN WHERE THEY WERE SURVEYED, BUT THIS MAY NOT INCLUDE ALL FACILITIES. CONTRACTOR SHALL FIELD LOCATE.
8. PIPELINES TO BE BORED IN PLACE ACROSS RIVER SIDE PARKWAY MAY BE PLACED ALONG SAME ALIGNMENT AND IN SAME CASING PIPE WITH APPROPRIATE CASING SPACERS AND CARRIERS AS APPROVED BY ENGINEER.
9. THRUST AT FITTINGS SHALL BE RESISTED BY RESTRAINED JOINTS AS SPECIFIED AND AS REQUIRED TO RESIST THRUST. SEE 3/99-C503
10. SEE 1/99-C503 FOR PIPE TRENCH, BEDDING, AND BACKFILL DETAIL.
11. SEE 2/99-M502 FOR CLEANOUT DETAIL.
12. SEE 6/99-C502 FOR YARD HYDRANT DETAIL.
13. SEE 3/99-M502 FOR JACK AND BORE DETAIL.



CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

REV.	DATE	DESCRIPTION	BY

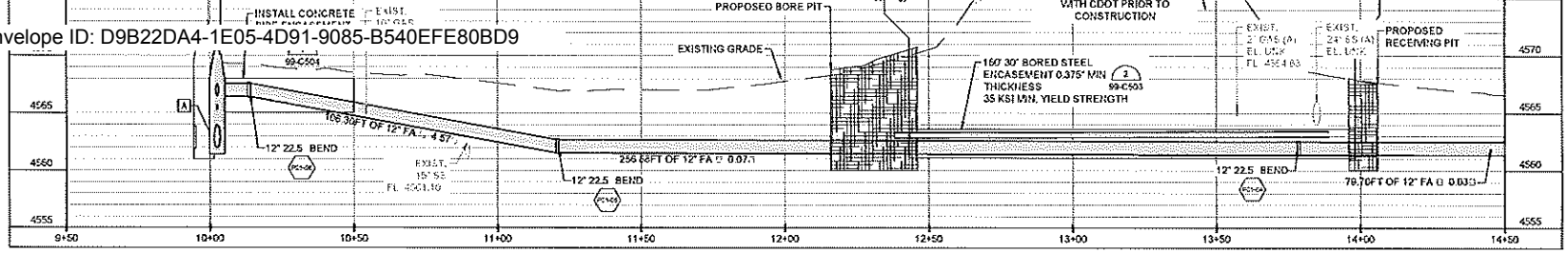
DOS RIOS YARD
PIPING PLAN

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: CDG
DRAWN BY: TNP

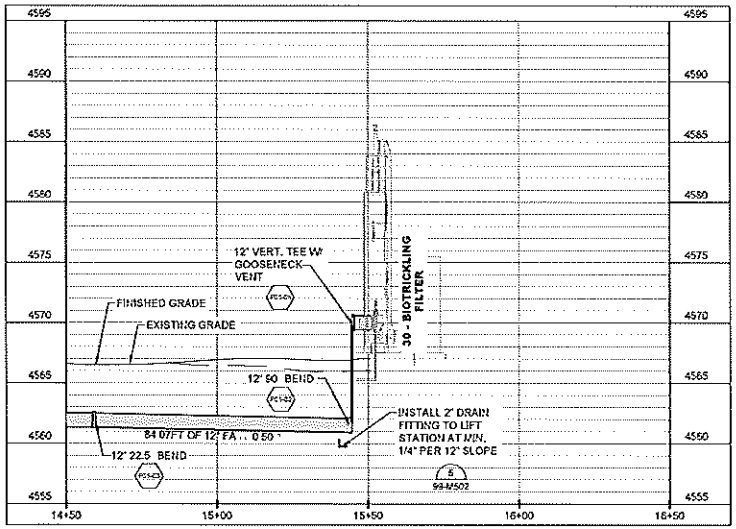
BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER **30-C302**

SHEET NUMBER **036**



1 30-C301 | 30-C302 12" FA SCALE: 1" = 20'



1 30-C301 | 30-C302 12" FA (CONT'D) SCALE: 1" = 20'

PIPING KEY NOTES:

A. MANHOLE NO. 1 SHALL BE CONSTRUCTED AS A DOGHOUSE STYLE POLYMER CONCRETE MANHOLE AND TIE-IN ELEVATIONS SHALL AVOID BACKING UP LINE DURING A SURCHARGING SEWER EVENT.

NOTES:

1. PIPING ELEVATIONS ARE FOR CONTRACTORS BENEFIT. CONTRACTOR SHALL VERIFY ELEVATIONS IN FIELD.
2. ENSURE NO LOCALIZED HIGH POINTS ARE INSTALLED WITHIN THE FOUL AIR DUCT. HIGH POINTS SHALL BE AT MANHOLE NO. 1 AND LOW POINT SHALL BE AT FITTING NO. P01-02.
3. SEE SECTION 33 05 23.16 FOR UTILITY PIPE JACKING.

BY | DESCRIPTION | DATE | REV.

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

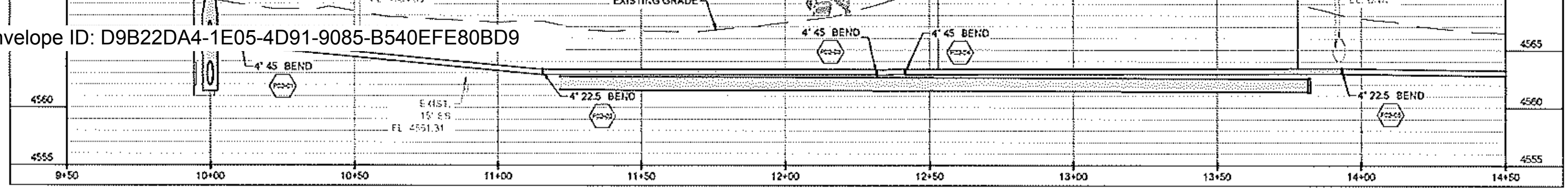
DOS RIOS YARD PIPING PROFILES I

JOB NO.: 207723045
DATE: AUGUST 2021
DESIGNED BY: CDG
DRAWN BY: TNP

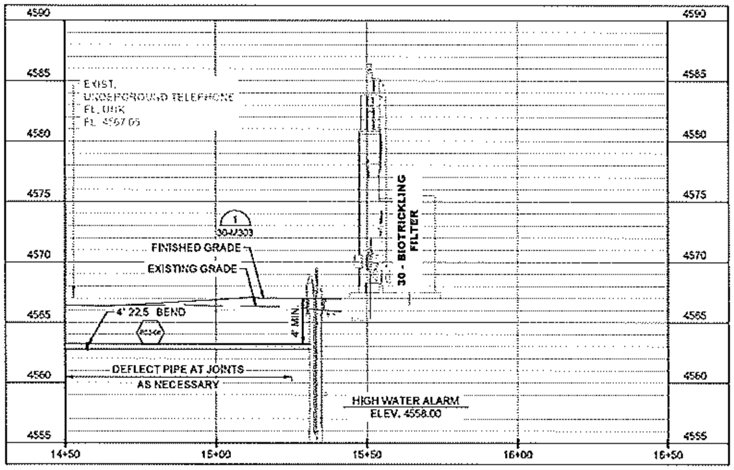
MARK OF ENDOW ON ORIGINAL DRAWING
IF NOT OF ENDOW ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DRAWING NUMBER 30-C303
SHEET NUMBER 037

File: L:\2020\207723045 - Grand Junction Foreign Distributing Dev\Drawings\GJFDD-30-C303.PS.DWG Last Save: 8/23/2021 10:04 AM Last saved by: OCConduite
Last plotted by: Hughes, Angela L Plot Style: — Plot Date: 8/23/2021 1:12 PM Plotter Limit: —



2 30-C301 | 30-C303 4" PD
SCALE: 1" = 20'



2 30-C301 | 30-C303 4" PD (CONT'D)
SCALE: 1" = 20'

PIPING KEY NOTES:

A. MANHOLE NO. 1 SHALL BE CONSTRUCTED AS A DOGHOUSE STYLE POLYMER CONCRETE MANHOLE AND TIE-IN ELEVATIONS SHALL AVOID BACKING UP LINE DURING A SURCHARGING SEWER EVENT.

NOTES:

1. PIPING ELEVATIONS ARE FOR CONTRACTORS BENEFIT, CONTRACTOR SHALL VERIFY ELEVATIONS IN FIELD.
2. ENSURE NO LOCALIZED HIGH POINTS ARE INSTALLED WITHIN THE FORCE MAIN. HIGH POINTS SHALL BE AT MANHOLE NO. 1
3. SEE SECTION 33 05 23.53 FOR HORIZONTAL DIRECTION DRILLING.

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO

GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

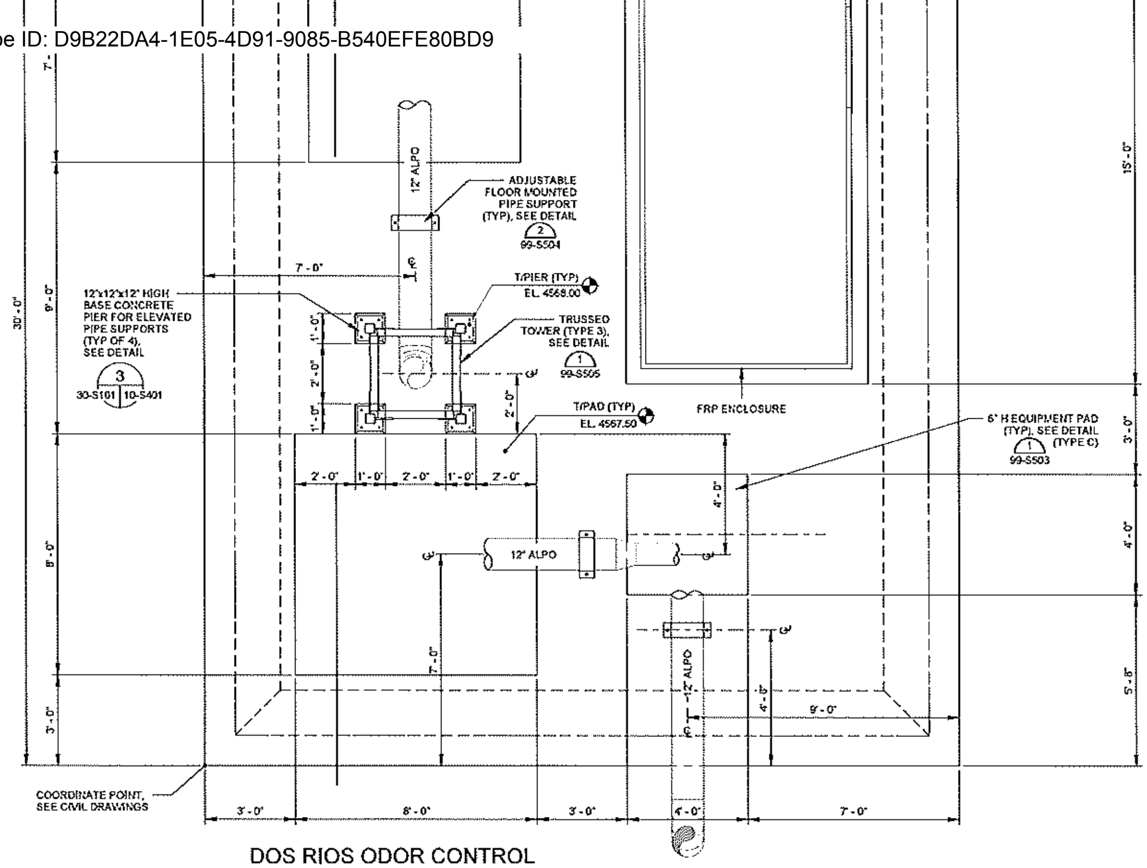
DOS RIOS YARD
PIPING PROFILES II

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: CDG
DRAWN BY: TNP

DRAWING NUMBER
30-C304

SHEET NUMBER 038

DocuSign Envelope ID: D9B22DA4-1E05-4D91-9085-B540EFE80BD9



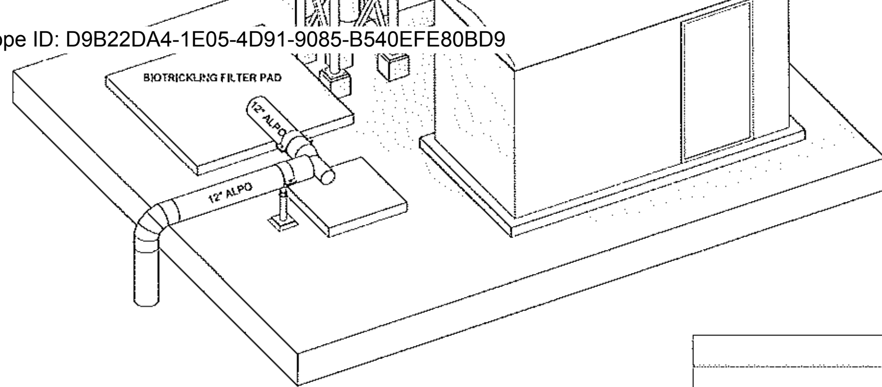
DOS RIOS ODOR CONTROL SCRUBBER FOUNDATION PLAN

1 30-S101

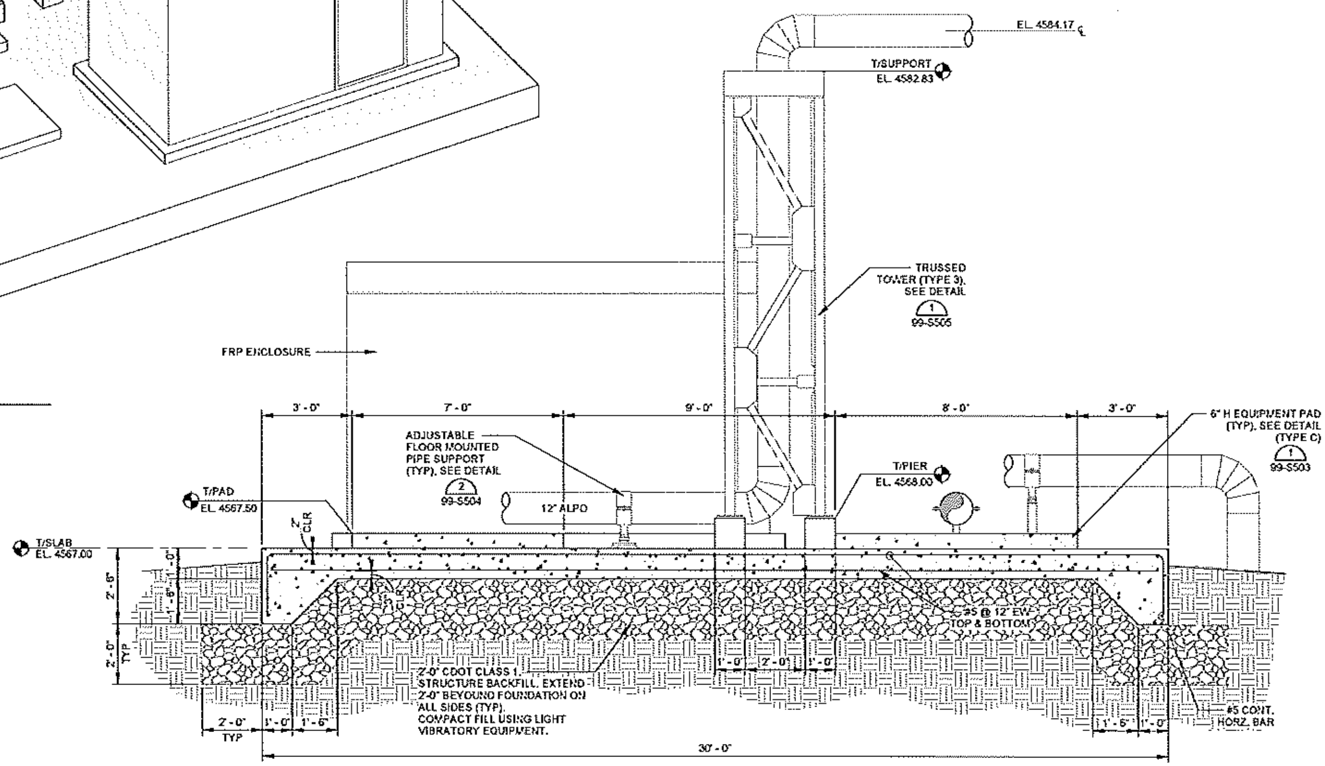
SCALE: 1/2" = 1'-0"

PROJECT NORTH

COLORADO LICENSED PROFESSIONAL ENGINEER 58460	Digitally Signed 08/20/2021
REV. / DATE / DESCRIPTION / BY	
CITY OF GRAND JUNCTION, GRAND JUNCTION, COLORADO	GRAND JUNCTION ODOR CONTROL IMPROVEMENTS
DOS RIOS ODOR CONTROL SCRUBBER FOUNDATION PLAN	
JOB NO.: 20W23045	
DATE: AUGUST 2021	
DESIGNED BY: KAM	
DRAWN BY: JAS	
DRAWING NUMBER	30-S101
SHEET NUMBER	039



2
30-S301
DOS RIOS ODOR CONTROL ISOMETRIC VIEW
SCALE: NOT TO SCALE



1
30-S101 | 30-S301
DOS RIOS SCRUBBER SECTION
SCALE: 1/2" = 1'-0"

Digitally Signed 08/20/2021

REV	DATE	DESCRIPTION	BY

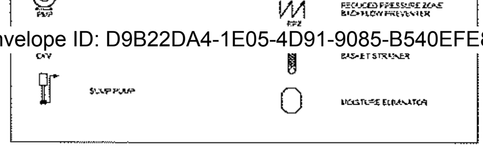
CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

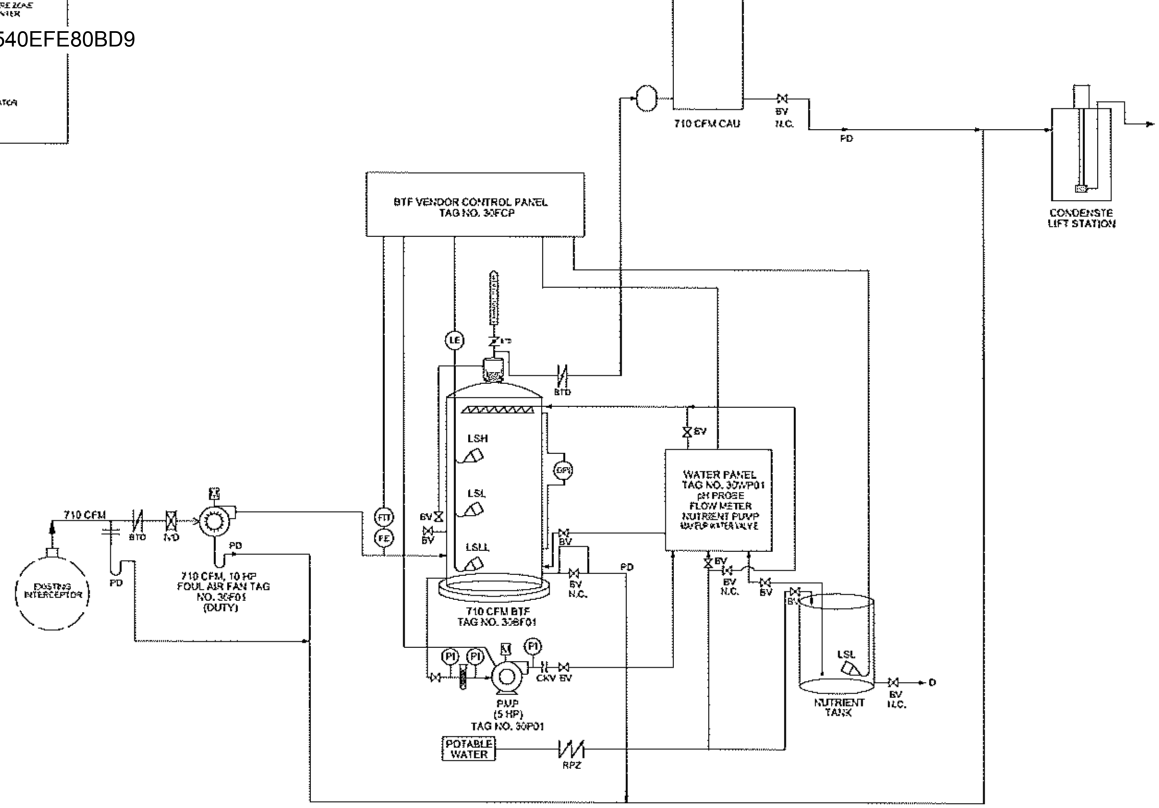
DOS RIOS ODOR CONTROL STRUCTURAL SECTIONS

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: KAM
DRAWN BY: JAS

BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER
30-S301
SHEET NUMBER 040





DOS RIOS ODOR CONTROL SYSTEM SCHEMATIC

PERKINS ENGINEERING CONSULTANTS, INC.

REV.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO

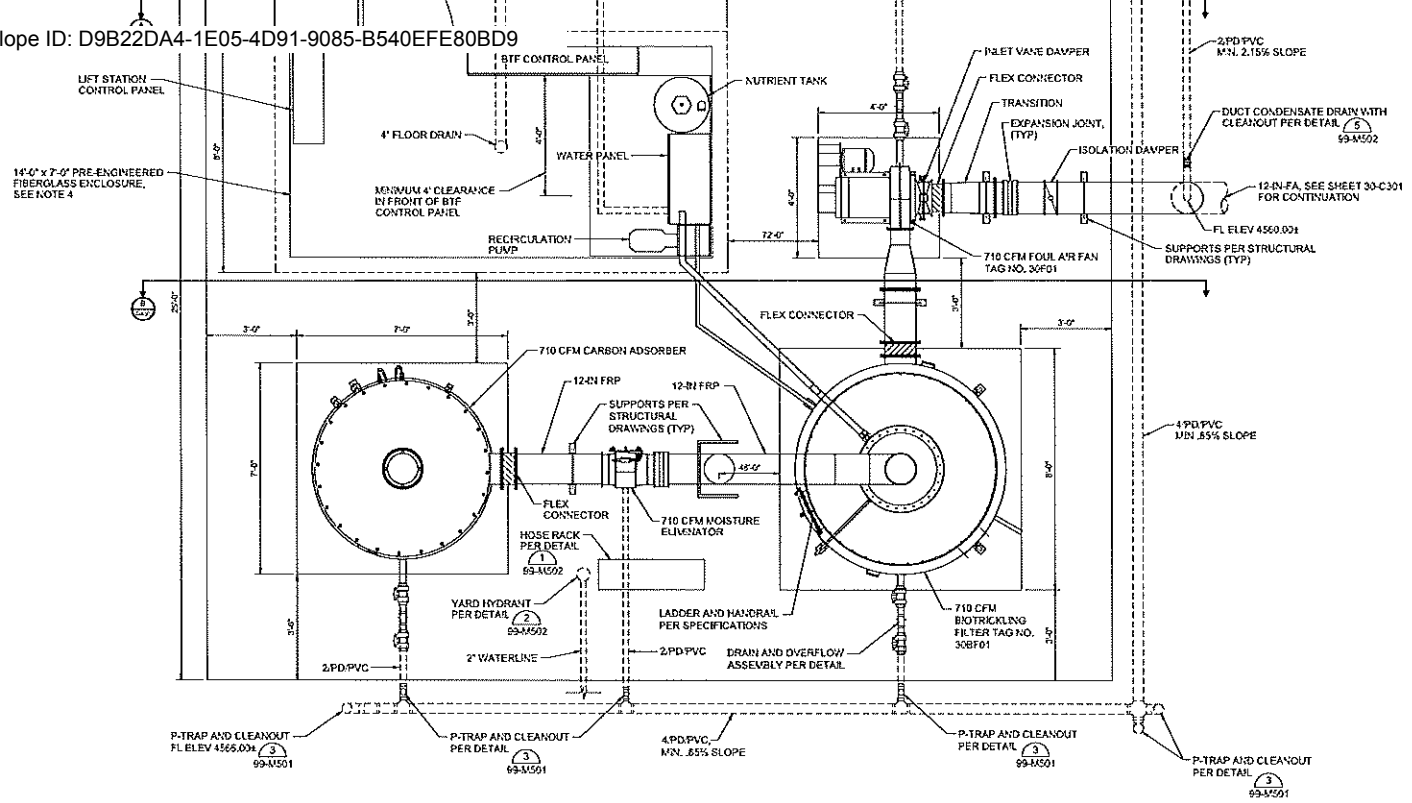
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

DOS RIOS FOUL AIR COLLECTION SYSTEM SCHEMATIC

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: ABD
DRAWN BY: SRG

DRAWING NUMBER 30-M101

SHEET NUMBER 041



1 30-M131 TOP PLAN
SCALE: 1/2" = 1'-0"

4. CONTRACTOR SHALL COORDINATE WITH FRP ENCLOSURE MANUFACTURE AND CONNECT ENCLOSURE TO INCOMING ELECTRICAL POWER AND DISTRIBUTION PANEL.
5. WATER SERVICE TO BIOTRICKLING FILTER SHALL BE POTABLE CITY WATER. SEE SHEET 30-C301 FOR WATERLINE CONTINUATION.
6. REFER TO SPECIFICATIONS FOR COATING REQUIREMENTS.

PERKINS ENGINEERING CONSULTANTS, INC.

BY	DESCRIPTION	DATE	REV.

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

OOS RIOS
ODOR CONTROL
BTF EQUIPMENT PLAN

JOB NO.: 20V23045
DATE: AUGUST 2021
DESIGNED BY: ABD
DRAWN BY: SRG

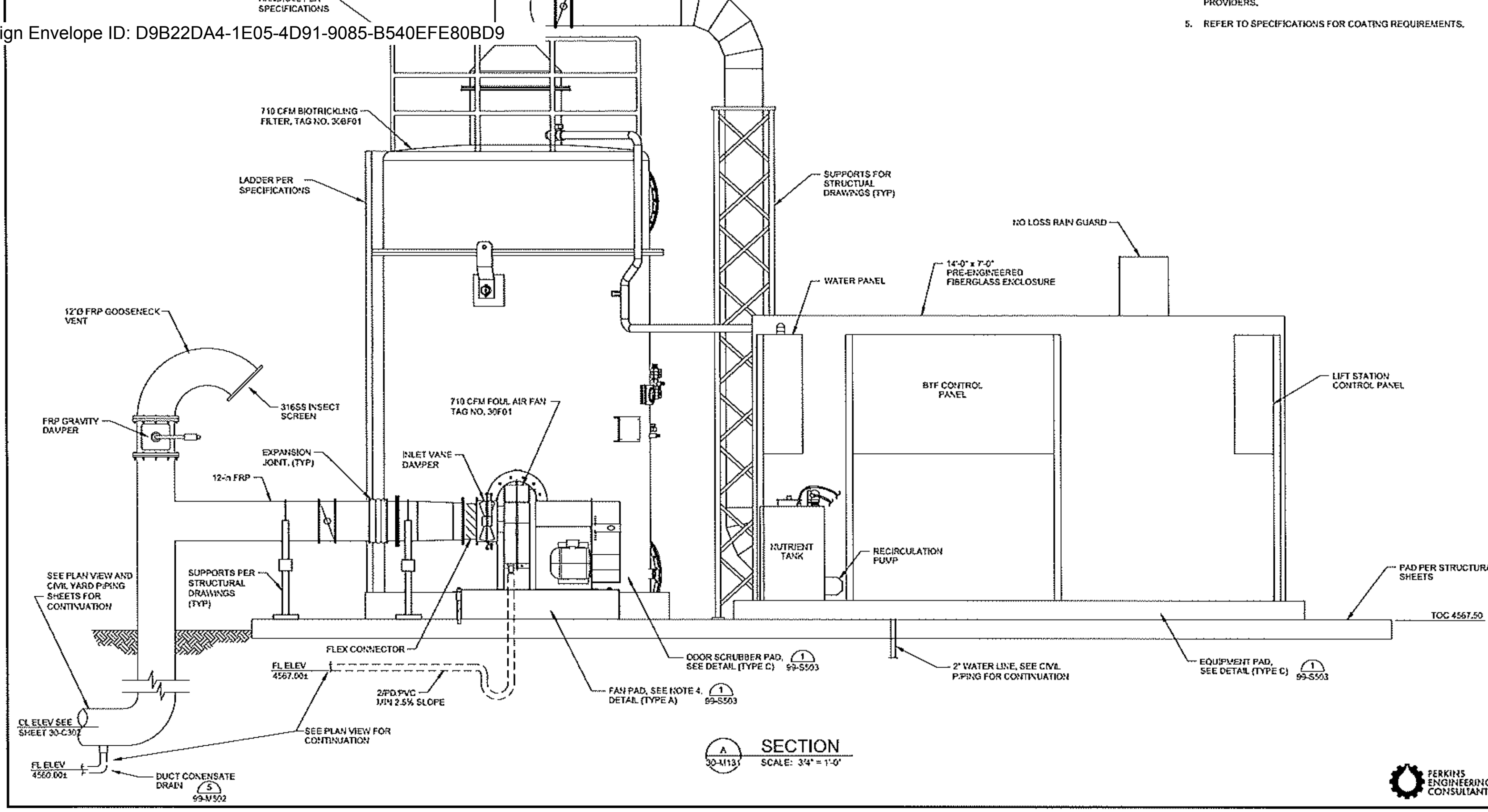
BAR IS 2 INCH ON ORIGINAL DRAWING
IF NOT 2" ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DRAWING NUMBER
30-M131

SHEET NUMBER 042

PROVIDERS.

5. REFER TO SPECIFICATIONS FOR COATING REQUIREMENTS.



A 30-M131 SECTION
SCALE: 3/4" = 1'-0"

PERKINS ENGINEERING CONSULTANTS, INC.

COLORADO LICENSED PROFESSIONAL ENGINEER (seal)

REV.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO

Grand Junction

GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

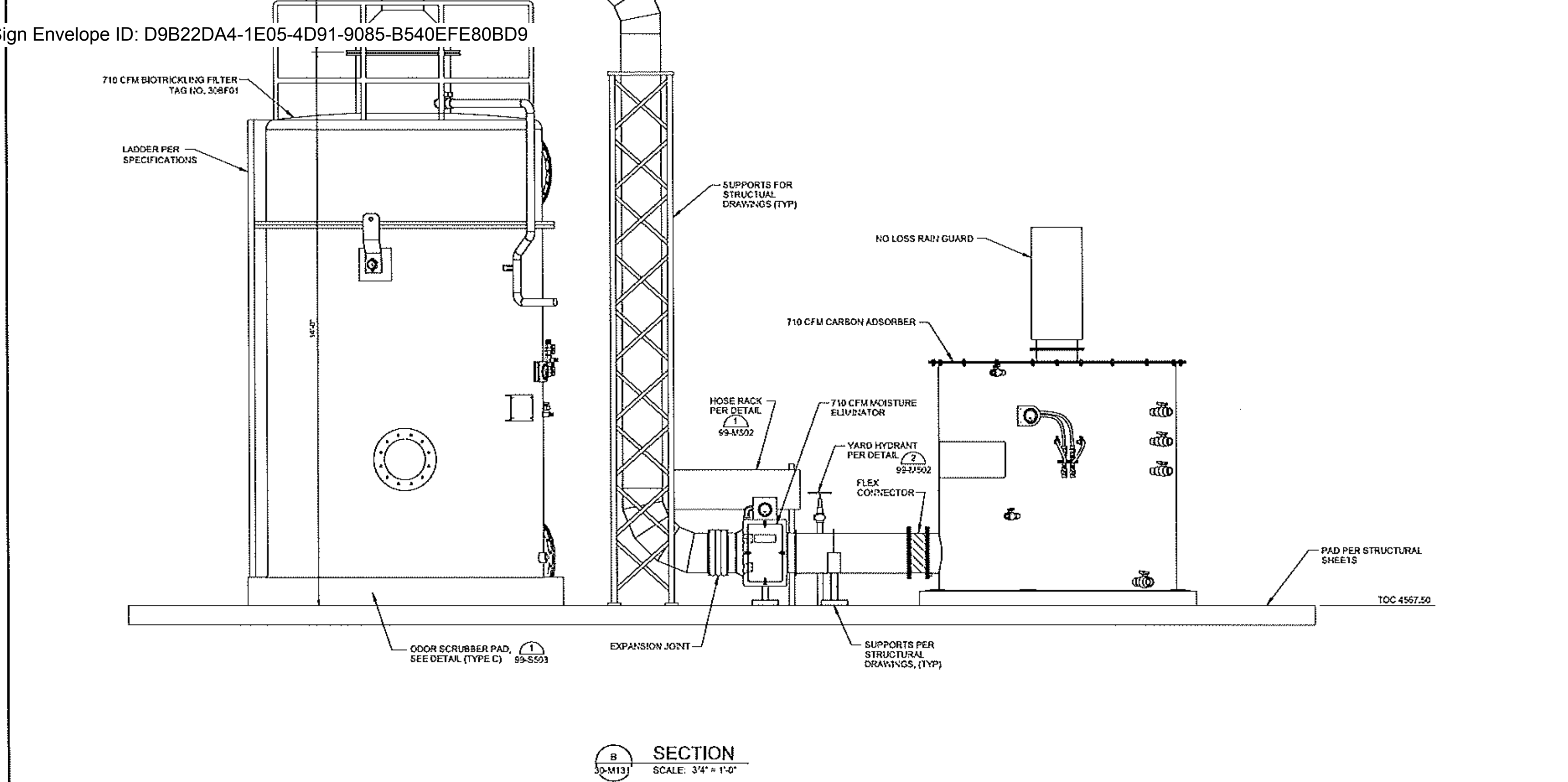
DOS RIOS ODOR CONTROL SYSTEM SECTION AND ELEVATION I

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: ABD
DRAWN BY: SRG

BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER 30-M301

SHEET NUMBER 043



B 30-M131 SECTION
SCALE: 3/4" = 1'-0"

PERKINS ENGINEERING CONSULTANTS, INC.

REV.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO

GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

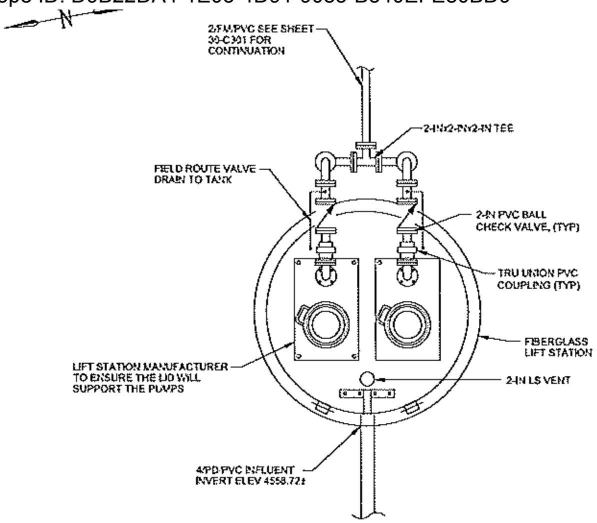
DOS RIOS ODOR CONTROL SYSTEM SECTION AND ELEVATION II

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: ABD
DRAWN BY: SRG

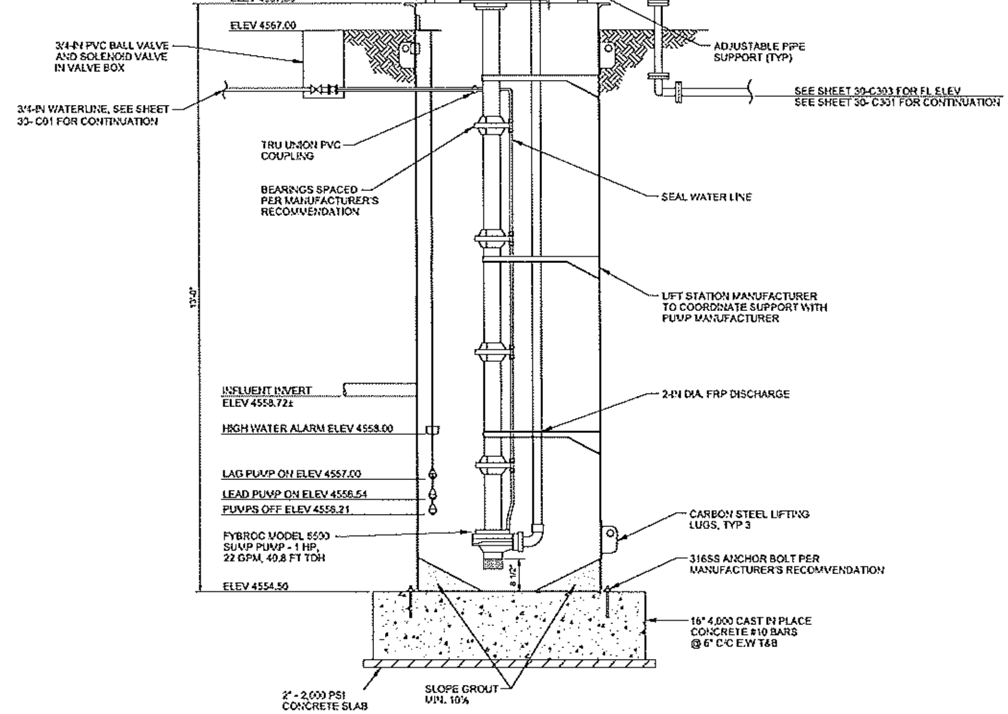
DRAWING NUMBER 30-M302

SHEET NUMBER 044

5. REFER TO SPECIFICATIONS FOR COATING REQUIREMENTS.



1 30-M303 LIFT STATION PLAN
SCALE: 3/4" = 1'-0"



2 30-M303 LIFT STATION SECTION
SCALE: 3/4" = 1'-0"

PERKINS ENGINEERING CONSULTANTS, INC.

REV.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

DOS RIOS ODOR CONTROL SYSTEM SECTION AND ELEVATION II

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: ABD
DRAWN BY: SRG

BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

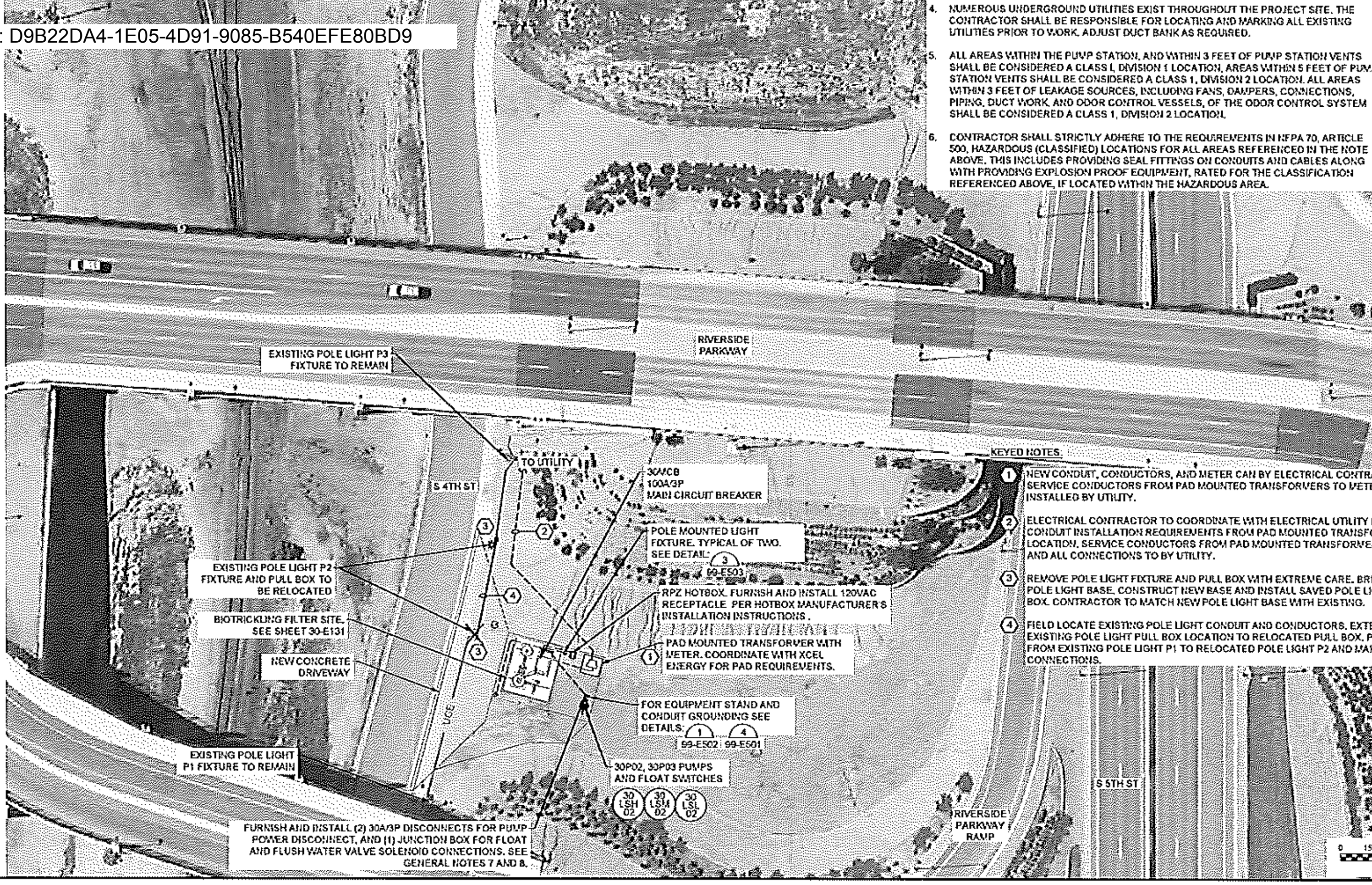
DRAWING NUMBER
30-M303

SHEET NUMBER 045

4. NUMEROUS UNDERGROUND UTILITIES EXIST THROUGHOUT THE PROJECT SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND MARKING ALL EXISTING UTILITIES PRIOR TO WORK. ADJUST DUCT BANK AS REQUIRED.

5. ALL AREAS WITHIN THE PUMP STATION, AND WITHIN 3 FEET OF PUMP STATION VENTS SHALL BE CONSIDERED A CLASS I, DIVISION 1 LOCATION. AREAS WITHIN 5 FEET OF PUMP STATION VENTS SHALL BE CONSIDERED A CLASS 1, DIVISION 2 LOCATION. ALL AREAS WITHIN 3 FEET OF LEAKAGE SOURCES, INCLUDING FANS, DAMPERS, CONNECTIONS, PIPING, DUCT WORK, AND ODOR CONTROL VESSELS, OF THE ODOR CONTROL SYSTEM SHALL BE CONSIDERED A CLASS 1, DIVISION 2 LOCATION.

6. CONTRACTOR SHALL STRICTLY ADHERE TO THE REQUIREMENTS IN NFPA 70, ARTICLE 500, HAZARDOUS (CLASSIFIED) LOCATIONS FOR ALL AREAS REFERENCED IN THE NOTE ABOVE. THIS INCLUDES PROVIDING SEAL FITTINGS ON CONDUITS AND CABLES ALONG WITH PROVIDING EXPLOSION PROOF EQUIPMENT, RATED FOR THE CLASSIFICATION REFERENCED ABOVE, IF LOCATED WITHIN THE HAZARDOUS AREA.



KEYED NOTES:

1. NEW CONDUIT, CONDUCTORS, AND METER CAN BY ELECTRICAL CONTRACTOR. METER AND SERVICE CONDUCTORS FROM PAD MOUNTED TRANSFORMERS TO METER CAN FURNISHED AND INSTALLED BY UTILITY.

2. ELECTRICAL CONTRACTOR TO COORDINATE WITH ELECTRICAL UTILITY FOR TRENCHING AND CONDUIT INSTALLATION REQUIREMENTS FROM PAD MOUNTED TRANSFORMER TO SERVICE LOCATION. SERVICE CONDUCTORS FROM PAD MOUNTED TRANSFORMER TO SERVICE LOCATION AND ALL CONNECTIONS TO BY UTILITY.

3. REMOVE POLE LIGHT FIXTURE AND PULL BOX WITH EXTREME CARE. BREAKOUT AND REMOVE POLE LIGHT BASE, CONSTRUCT NEW BASE AND INSTALL SAVED POLE LIGHT FIXTURE AND PULL BOX. CONTRACTOR TO MATCH NEW POLE LIGHT BASE WITH EXISTING.

4. FIELD LOCATE EXISTING POLE LIGHT CONDUIT AND CONDUCTORS. EXTEND NEW CONDUIT FROM EXISTING POLE LIGHT PULL BOX LOCATION TO RELOCATED PULL BOX. PULL NEW CONDUCTORS FROM EXISTING POLE LIGHT P1 TO RELOCATED POLE LIGHT P2 AND MAKE ALL REQUIRED CONNECTIONS.

REV.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

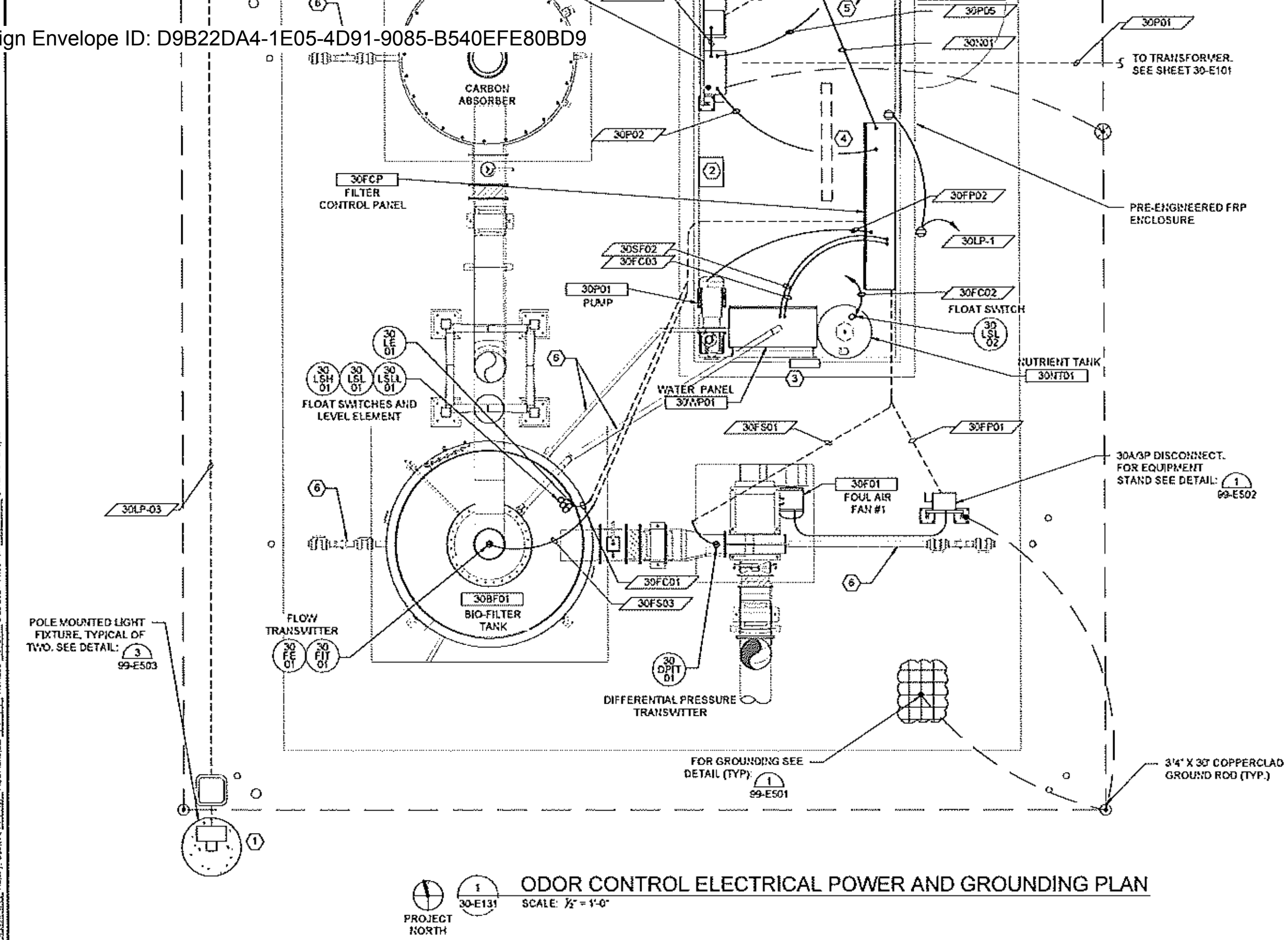
DOS RIOS ODOR CONTROL ELECTRICAL SITE PLAN

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: SAH
DRAWN BY: SAH

BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DRAWING NUMBER 30-E101

SHEET NUMBER 046



ODOR CONTROL ELECTRICAL POWER AND GROUNDING PLAN

1 30-E131 SCALE: ½" = 1'-0"

OTHER ITEMS AS NECESSARY FOR COMPLETE AND FUNCTIONAL ODOR CONTROL FILTER SYSTEM. THE CONTRACTOR SHALL REFER TO THE SPECIFICATIONS AND OTHER SECTIONS OF THE PLANS FOR ITEMS AS MAY BE REQUIRED.

3. CONTRACTOR SHALL COORDINATE CONDUIT, WIRE AND INTERCONNECTIONS AS REQUIRED BY EQUIPMENT SUPPLIER. NOT ALL CONNECTIONS SHOWN.
4. VERIFY LOCATION OF ALL EQUIPMENT PRIOR TO INSTALLATION.
5. BELOW GRADE CONDUIT ROUTING AS SHOWN IS DIAGRAMMATIC IN NATURE AND SHOWN FOR REFERENCE ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING NUMBER OF REQUIRED CONDUITS AND PLACEMENT OF THESE CONDUITS. THE CONTRACTOR SHALL DEVELOP AND SUBMIT A BELOW GRADE CONDUIT ROUTING PLAN FOR REVIEW PRIOR TO INSTALLATION.
6. ALL POWER CIRCUITRY SHALL BE A MINIMUM 2-#12, #12 GND.
7. ALL OUTDOOR RECEPTACLES TO BE GFCI WITH IN-USE WEATHERPROOF COVERS.
8. ALL AREAS WITHIN THE PUMP STATION, AND WITHIN 3 FEET OF PUMP STATION VENTS SHALL BE CONSIDERED A CLASS I, DIVISION 1 LOCATION; AREAS WITHIN 5 FEET OF PUMP STATION VENTS SHALL BE CONSIDERED A CLASS 1, DIVISION 2 LOCATION. ALL AREAS WITHIN 3 FEET OF LEAKAGE SOURCES, INCLUDING FANS, DAMPERS, CONNECTIONS, PIPING, DUCT WORK, AND ODOR CONTROL VESSELS, OF THE ODOR CONTROL SYSTEM SHALL BE CONSIDERED A CLASS 1, DIVISION 2 LOCATION.
9. CONTRACTOR SHALL STRICTLY ADHERE TO THE REQUIREMENTS IN NFPA 70, ARTICLE 500, HAZARDOUS (CLASSIFIED) LOCATIONS FOR ALL AREAS REFERENCED IN THE NOTE ABOVE. THIS INCLUDES PROVIDING SEAL FITTINGS ON CONDUITS AND CABLES ALONG WITH PROVIDING EXPLOSION PROOF EQUIPMENT, RATED FOR THE CLASSIFICATION REFERENCED ABOVE, IF LOCATED WITHIN THE HAZARDOUS AREA.
10. INSULATE, HEAT TRACE, AND ALUMINUM JACKET ALL EXPOSED WATER LINES, ALL EXPOSED DRAIN LINES THAT NORMALLY HAVE STANDING WATER, INCLUDING ALL PRESSURE LINES, 4-INCH IN DIAMETER AND SMALLER, AND NUTRIENT FEED LINES AND ACCESSORIES, INCLUDING ALL VALVES AND APPURTENANCES IN AFFECTED PIPES.
11. POWER FOR HEAT TRACE SHALL BE SUPPLIED FROM LIGHT PANEL 30LP.

KEYED NOTES:

(1) LITHONIA POLE MOUNTED LIGHT FIXTURE DSX0-LED-P6-4000K-T3M-MVOLT-SPA-PER-FAO-EGS AND PHOTOCELL DLL127F-1.5-JU OR EQUAL ON 20' POLE.

(2) MAKE REQUIRED POWER CONNECTIONS FROM LIGHT PANEL 30LP TO SUPPLIED FRP ENCLOSURE 1500W HEATER (30LP-4).

(3) MAKE REQUIRED POWER CONNECTIONS FROM LIGHT PANEL 30LP TO SUPPLIED FRP ENCLOSURE EXHAUST FAN (30LP-5).

(4) MAKE REQUIRED POWER CONNECTIONS FROM LIGHT PANEL 30LP TO SUPPLIED FRP ENCLOSURE LIGHTING (30LP-6).

(5) (2-#14, #14 GND, 4-#14 SPARE) 3/4" CONDUIT. HIGH LEVEL FLOAT SIGNAL FROM PUMP CONTROL PANEL TO RTU PANEL.

(6) SEE GENERAL NOTE 11 AND 12.

REV.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO

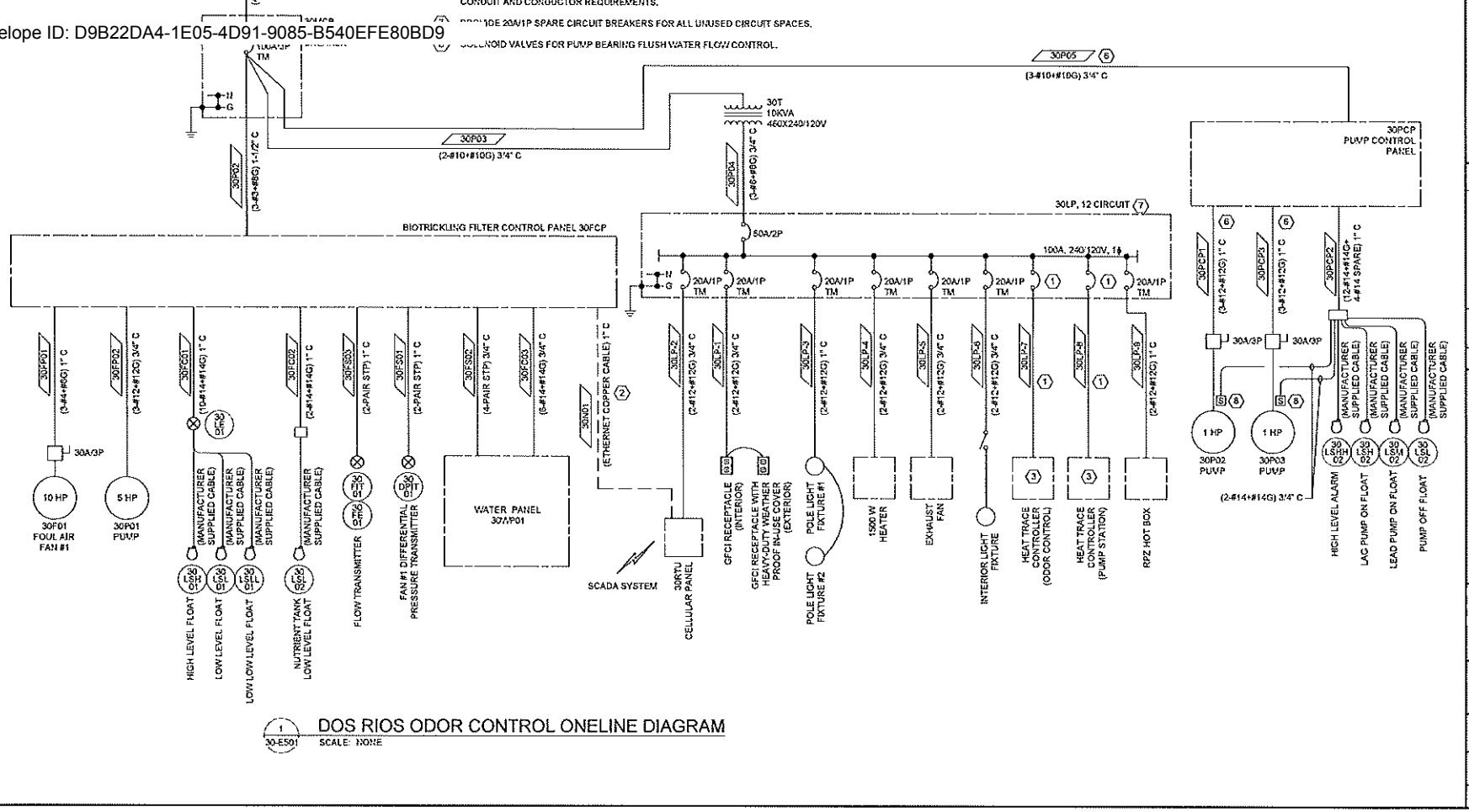
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

DOS RIOS ODOR CONTROL ELECTRICAL POWER AND GROUNDING PLAN

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: SAH
DRAWN BY: SAH

DRAWING NUMBER 30-E131

SHEET NUMBER 047



1 30-E501 DOS RIOS ODOR CONTROL ONELINE DIAGRAM
SCALE: NONE

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

DOS RIOS ODOR CONTROL ONELINE DIAGRAM

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: SAH
DRAWN BY: SAH

DRAWING NUMBER 30-E501
SHEET NUMBER 048

4. TEMPORARY COMPACTED PUG-MIX BACKFILL REQ'D UNTIL PAVEMENT PLACEMENT IS COMPLETE. ... CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY ASPHALT OR CONCRETE PATCHES WHEN NEEDED FOR PUBLIC SAFETY AND/OR CONVENIENCE.

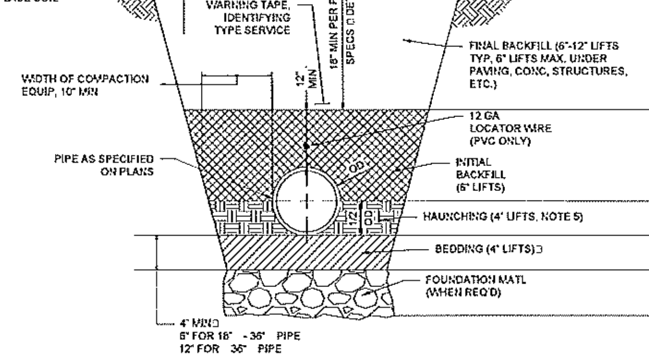
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SELECTING AND UTILIZE APPROPRIATE MEANS AND METHODS OF CONSTRUCTION TO ENSURE THAT THE ENTIRE AREAS UNDER THE HAUNCHES OF THE PIPE ARE FILLED WITH THE REQUIRED MATERIALS AND COMPACTED APPROPRIATELY.

6. ADDITIONAL AND/OR SPECIAL REQUIREMENTS MAY BE REQ'D BY THE PLANS, SPECIFICATIONS AND/OR CONTRACT DOCUMENTS.

7. TO THE EXTENT POSSIBLE, AS DETERMINED BY THE CONTRACTOR, TRENCH WALL SHORING METHODS SHALL BE USED IN PAVED AREAS TO MINIMIZE PAVING REPAIR REQUIREMENTS.

MATERIAL DESIGNATION/DESCRIPTOINS TABLE

DESIGNATION/ MATERIALS	DESCRIPTION
1	CRUSHED STONE, ASTM-D448 NO. 57 GRADATION
2	CRUSHED STONE, ASTM-D448 NO. 67 GRADATION.
3	SELECT EXCAVATED MAT'L REASONABLY DRY (WITHIN LIMITS REQ'D FOR COMPACTION) NO STONES □1" DIA.
4	EXCAVATED MAT'L REASONABLY DRY (WITHIN LIMITS REQ'D FOR COMPACTION) NO STONES □12" DIA.
5	SELECT TOPSOIL MAT'L TO SUPPORT VEGETATION, NO STONES OR ROCK ALLOWED
6	PAVEMENT MATCHING EXISTING PAVEMENT OR AS SPECIFIED ON THE PLANS
7	CDOT CLASS 4 AGGREGATE BASE COARSE

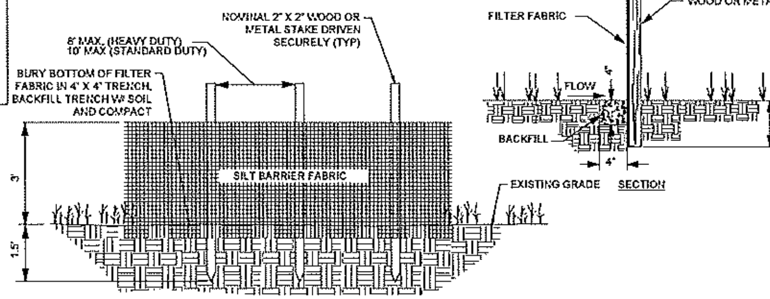


FINAL BACKFILL	4	4	4	4	4	4	7	7	7
INITIAL BACKFILL	3	3	□□1/2	3	3	□□1/2	1	3	□□1/2
HAUNCHING	2	3	□□1/2	2	3	□□1/2	2	3	□□1/2
BEDDING	2	1	2	2	1	2	2	1	2
FOUNDATION MAT'L	RIP-RAP OR CRUSHED STONE CLASS 1B (USCS IN ASTM D2487)								

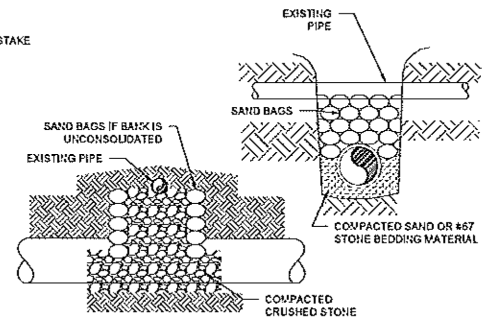
□ SEE NOTE 2
□□ SEE NOTE 4
□□□ LINES SMALLER THAN 18" SHALL BE NO.67 BEDDING, LINES 18" AND LARGER NO.67 OR NO.57 BEDDING.

NOTE: WHERE EXISTING LINES ARE DEEPER □ REMOVED FOR THE INSTALLATION OF NEW LINES. THE BEDDING MATERIALSHALL EXTEND TO THE FULL DEPTH AND WIDTH OF EXCAVATION.

1 / 99-C501 BEDDING AND BACKFILL FOR TRENCHES
SCALE: NONE



2 / 99-C-501 TYPICAL SILT FENCE
SCALE: NONE



TYPICAL METHOD OF PROTECTING UTILITIES OR OTHER PIPE CROSSINGS WHERE NOT LOCATED UNDER PAVING

3 / 99-C-501 EXISTING UTILITY PROTECTION
SCALE: NONE

REV.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

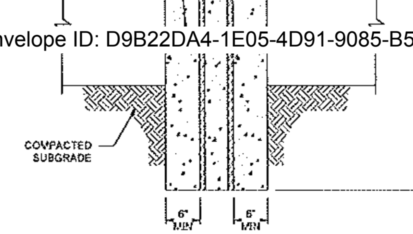
SITE CIVIL DETAILS I

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: CDG
DRAWN BY: TNP

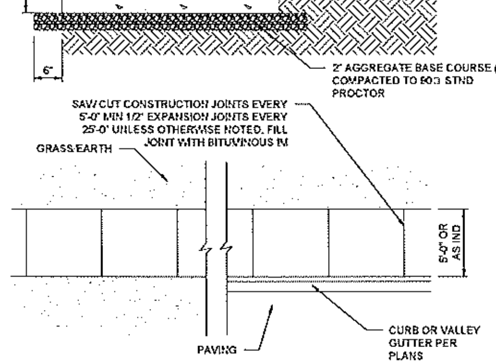
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER
99-C501

SHEET NUMBER 049



1 TYPICAL BOLLARD
99-C502 SCALE: NONE



4 TYPICAL SIDEWALK
99-C502 SCALE: NONE

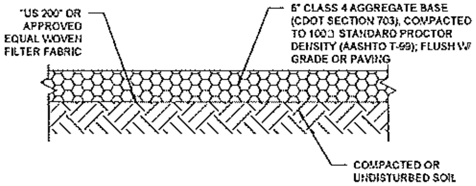
[illegible]												
BEARING AREA OF THRUST BLOCKS IN SQ. FT. (HORIZONTAL BENDS)						VOLUME OF THRUST BLOCK IN CU. FEET (VERTICAL BENDS)						
FITTING SIZE	PLUG TEE OR CAP	BEND ANGLE				FITTING SIZE	BEND ANGLE				ROD DIA	EMBED LENGTH
		90°	45°	22 1/2°	11 1/4°		90°	45°	22 1/2°	11 1/4°		
2,3 OR 4	1.9	2.7	1.6	0.7	0.4	2,3 OR 4	35.5	19.2	9.8	4.9	.50'	30"
6	5.0	7.0	4.3	2.3	1.1	6	125.0	57.2	29.0	14.7	.75'	30"
8	8.4	13.8	7.4	3.8	1.9	8	191.6	98.5	53.3	25.2	.75'	30"
12	20.5	29.0	15.7	4.5	4.0	12	387.1	209.5	158.8	53.7	1.0'	30"
16	35.7	52.4	27.3	13.6	7.0	16	872.8	354.0	185.8	94.2	1.0'	36"
18	44.9	63.4	34.3	17.5	19.8	18	844.7	457.2	233.1	117.3	1.0'	36"
24	72.4	113.6	62.0	32.0	15.4	24	1471.2	820.3	420.8	215.0	1.5'	36"

90 DEGREE BENDS SHALL ONLY BE USED ON AN EXCEPTION BASIS AND MUST EACH BE SPECIFICALLY APPROVED BY CITY.

THRUST BLOCK NOTES

1. CONCRETE FOR THRUST BLOCKS - CLASS 1 CONCRETE SHALL DEVELOP NOT LESS THAN 4000 PSI COMPRESSIVE STRENGTH AT 28 DAYS AND BE PLACED AGAINST UNDISTURBED SOIL.
2. ALL BENDS, BOTH HORIZONTAL AND VERTICAL, SHALL BE BACKED WITH CONCRETE. VERTICAL BENDS SHALL BE PLACED ON CONCRETE PADS WHERE BENDS TURN UP, OR LOADED WHERE BENDS TURN DOWN.
3. DOUBLE WRAP PIPE JOINTS IN 8 MIL "POLYETHLENE" BEFORE PLACING CONCRETE.
4. BEARING AREA SHOWN IN TABLE, IS BASED UPON A 2000 LB/SF. SOIL BEARING, AND UPON A PIPELINE PRESSURE OF 200 psi. PLUS 100 psi. WATER HAMMER. AREAS SHOWN SHALL BE ADJUSTED, SHOULD FIELD CONDITIONS VARY.
5. MJ RESTRAINTS ARE REQUIRED FOR ALL FITTINGS.
6. USE LONG-RADIUS FITTINGS WHEREVER POSSIBLE.
7. ALL BOLTS FOR FITTINGS SHALL BE 316 STAINLESS STEEL.
8. ALL DUCTILE IRON FITTINGS SHALL BE FUSION-BONDED EPOXY COATED INSIDE AND OUTSIDE IN ACCORDANCE WITH ANSI/AWWA C116/A21.16.
9. UNIT WEIGHT OF CONCRETE FOR VERTICAL THRUST BLOCKS IS 150 LBS/CU. FT.

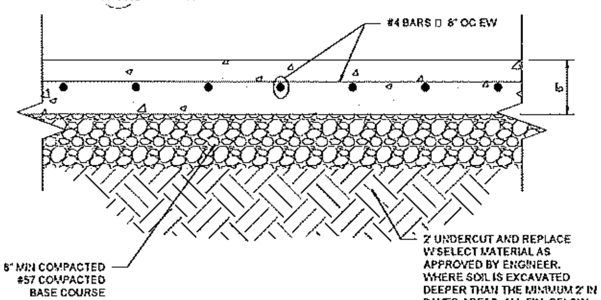
5 TYP. THRUST BLOCKING
99-C502 SCALE: NONE



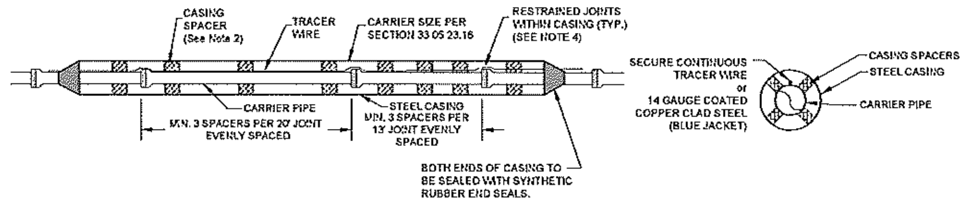
NOTE:

1. SLOPE AT 2.00% MINIMUM OR AS SHOWN IN DRAWINGS

2 GRAVEL PAVING AREAS
99-C502 SCALE: NONE



3 CONCRETE PAVEMENT
99-C502 SCALE: NONE



NOTES:

1. STEEL CASING SHALL BE CONSTRUCTED OF SPIRAL OR STRAIGHT WELDED STEEL WITH A MINIMUM DIAMETER AND THICKNESS AS SHOWN IN TABLE BELOW.
2. PROVIDE CASING SPACERS CONSTRUCTED OF STAINLESS STEEL WITH CLAMP PORTION OF POLYMER PLASTIC RUNNERS.
3. PROVIDE SYNTHETIC RUBBER END SEALS.
4. WHERE ENCASEMENTS ARE GREATER THAN 25 FEET IN LENGTH, SELF-RESTRAINING GASKETS OR BELL RESTRAINTS SHALL BE USED FOR ALL JOINTS INSIDE THE ENCASEMENT PIPE AND FOR THE FIRST JOINT IN EACH DIRECTION OUTSIDE THE ENCASEMENT PIPE.
5. BELL RESTRAINTS FOR SHALL BE SERIES 1700 RESTRAINT HARNESS BY EBAA IRON INC., OR APPROVED EQUAL.
6. DIRECT BURY STEEL ENCASEMENT SHALL BE DOUBLE POLY WRAPPED.
7. JACK AND BORE STEEL ENCASEMENT SHALL HAVE 17# HP MAGNESIUM ANODES CAD WELDED TO THE END OF THE ENCASEMENT PIPE.
8. EXCAVATION OF APPROACH PITS AND TRENCHES WITHIN RIGHT OF WAY OF STREET, ROAD OR HIGHWAY SHALL BE OF SUFFICIENT DISTANCE FROM PAVING TO PERMIT TRAFFIC TO PASS WITHOUT INTERFERENCE. TAMP BACKFILL FOR APPROACH PITS AND TRENCHES WITHIN RIGHT OF WAY IN LAYERS NOT GREATER THAN 6" THICK FOR ENTIRE LENGTH AND DEPTH OF TRENCH OR PIT. COMPACT BACKFILL TO 95% OF MAXIMUM DENSITY OBTAINED AT OPTIMUM MOISTURE AS DETERMINED BY AASHTO T 180-57, METHOD A. MECHANICAL TAMPERS MAY BE USED AFTER COVER OF 12-18" HAS BEEN OBTAINED OF TOP OF BARREL OF PIPE.

6 PIPE ENCASEMENT
99-C502 SCALE: NONE

REV	DATE	DESCRIPTION	BY

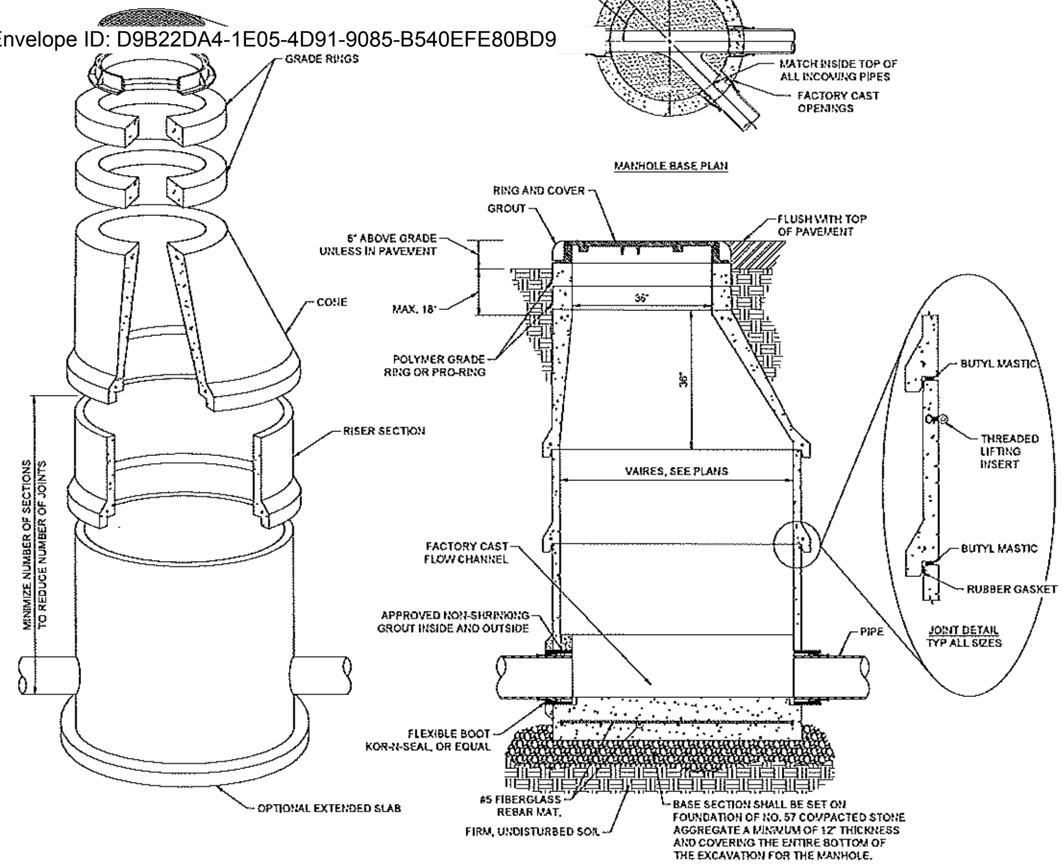
CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction COLORADO
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

SITE CIVIL DETAILS II

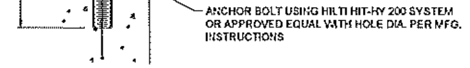
JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: CDG
DRAWN BY: TNP

BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

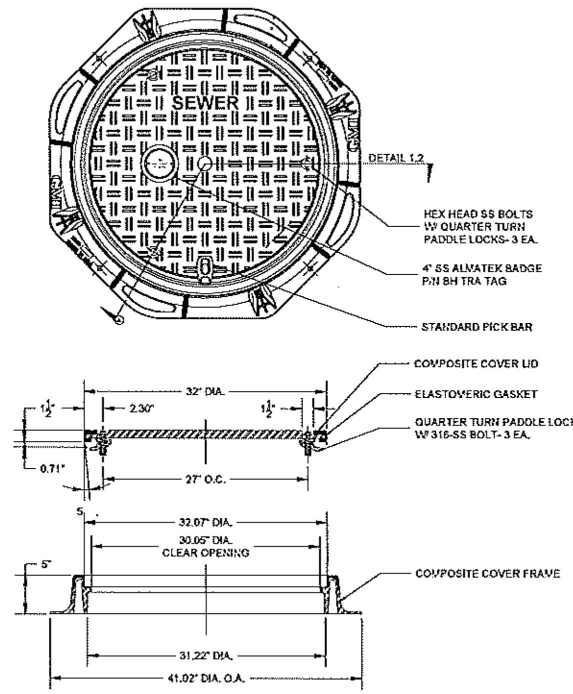
DRAWING NUMBER
99-C502
SHEET NUMBER 050



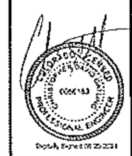
1 / 99-C503 TYPICAL POLYMER CONCRETE DOGHOUSE MANHOLE
SCALE: NONE



2 / 99-C503 BOLT FRAME TO CONCRETE MANHOLE
SCALE: NONE



3 / 99-C503 MANHOLE RING AND COVER DETAIL
SCALE: NONE



REV	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

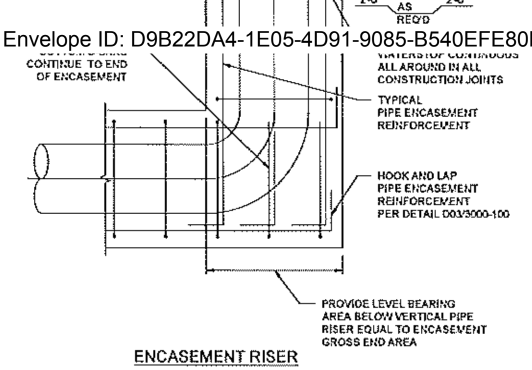
SITE CIVIL DETAILS III

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: BSC
DRAWN BY: CM

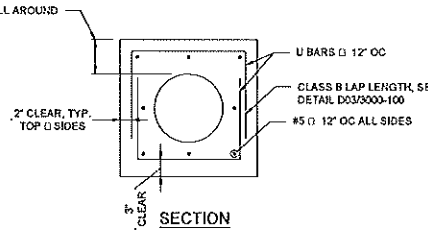
BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER 99-C503

SHEET NUMBER 051



ENCASEMENT RISER

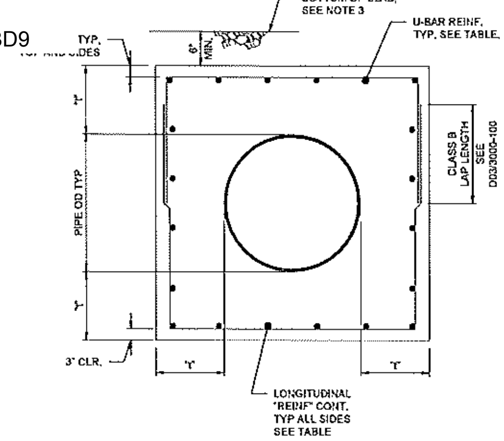


SECTION

NOTES:

1. SECTION APPLIES TO PIPE WITH DIAMETERS 18" AND SMALLER. FOR PIPES 20" AND LARGER, SEE DETAIL 2.
2. WHEN PIPE ENCASEMENT IS CLOSER THAN 6" TO THE ABOVE SLAB, SEE DETAIL 3.

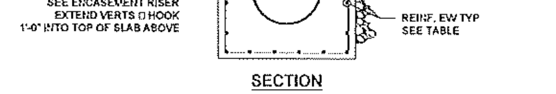
1 PIPE ENCASEMENT
SCALE: NOT TO SCALE



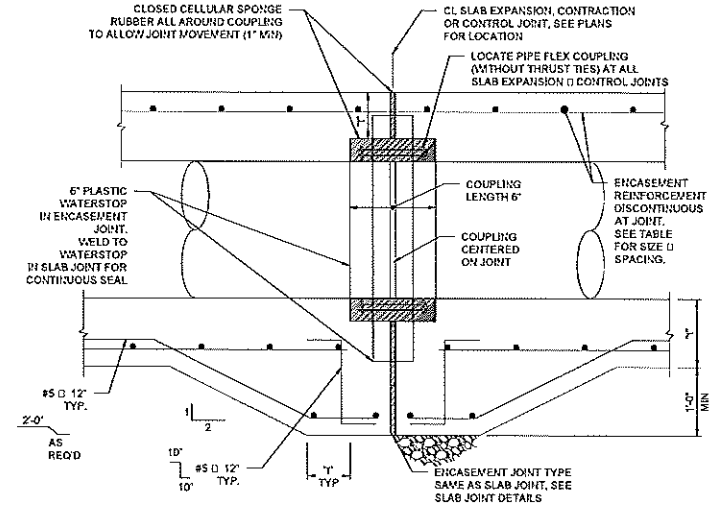
NOTES:

1. SECTION APPLIES TO PIPE WITH DIAMETERS 20" AND LARGER.
2. FOR ENCASEMENT AT PIPE RISER, SEE 1.
3. WHEN PIPE ENCASEMENT IS CLOSER THAN 6" TO SLAB ABOVE, TIE SLAB AND ENCASEMENT TOGETHER. SEE 3.

2 PIPE ENCASEMENT
SCALE: NOT TO SCALE



SECTION



JOINT DETAIL

NOTES:

1. TIE PIPE ENCASEMENT TO SLAB AS SHOWN WHEN DISTANCE BETWEEN PIPE ENCASEMENT AND BOTTOM OF SLAB IS LESS THAN 6".
2. 6" PLASTIC WS IN ENCASEMENT JOINTS. WELD TO WS IN SLAB JOINTS.

3 PIPE ENCASEMENT AT SLAB
SCALE: NOT TO SCALE

1 PIPE ENCASEMENT
99-C504 SCALE: NONE

REV.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO

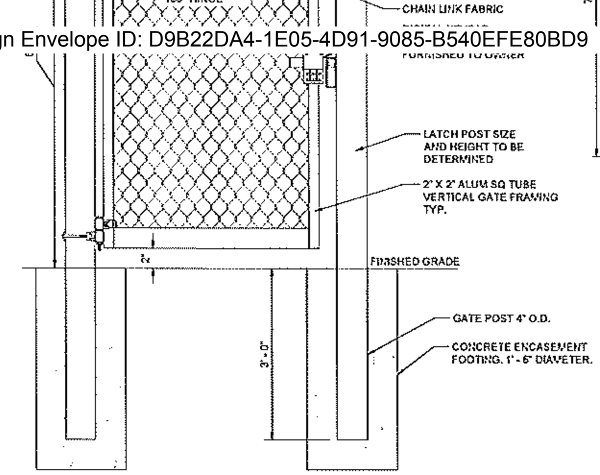
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

SITE CIVIL DETAILS IV

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: TNP
DRAWN BY: TNP

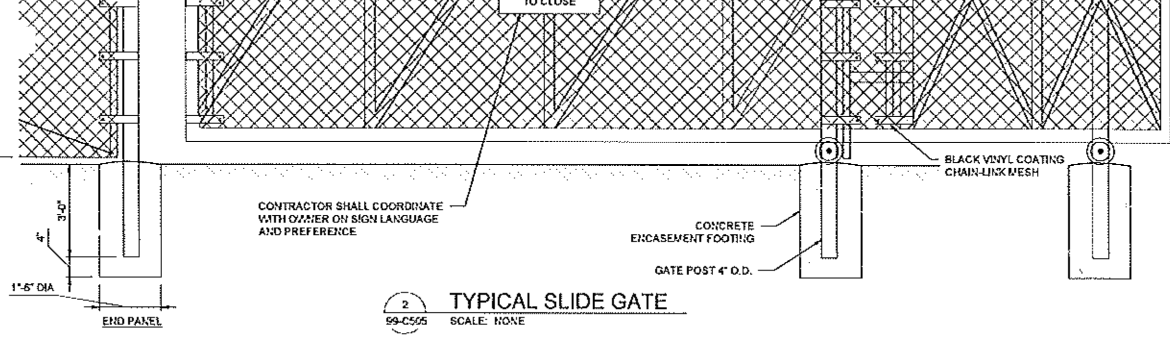
DRAWING NUMBER
99-C504

SHEET NUMBER 052



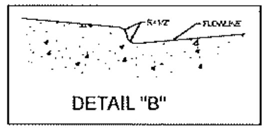
NOTES:
1. ALL GALVANIZED FITTINGS TO CONFORM TO ASTM A-153.
2. KEYPAD MAY BE MODIFIED TO GATE LATCH AT THE WRITTEN APPROVAL OF OWNER. APPROVAL MUST BE FORWARDED TO ENGINEER.
3. POST AND FRAME SIZES MAY REQUIRE MODIFICATION TO MEET SPECIFIC PROJECT REQUIREMENTS.

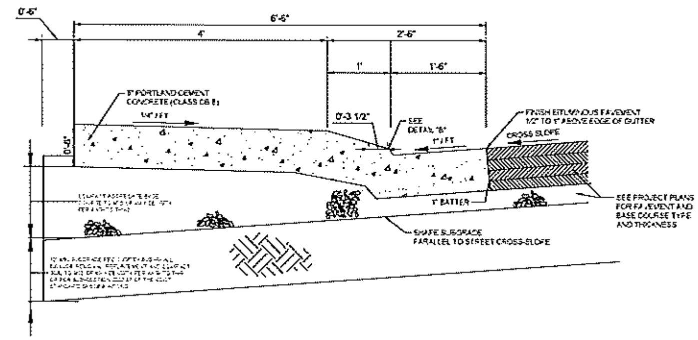
1 TYPICAL MAN GATE
99-C505 SCALE: NONE



2 TYPICAL SLIDE GATE
99-C505 SCALE: NONE

NOTES:
1. GATE FRAME TO BE SIZED TO NOT RUB OR HIT FOUL AIR PIPE OR CONCRETE PIPE SUPPORTS.
2. DROP ROD TO BE LOCKABLE TO PREVENT THE ROD FROM BEING REMOVED AND THE GATE OPENED WITHOUT FIRST REMOVING THE LOCK. ROD TO EMBED IN ABUTMENT WALL A MINIMUM OF 6".





3 DRIVE OVER CURB AND GUTTER
99-C505 SCALE: NONE

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction COLORADO
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

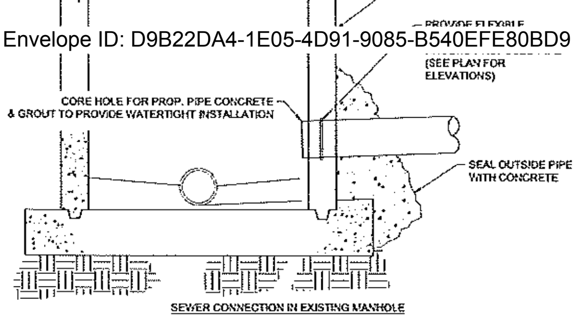
RCV	DATE	DESCRIPTION	BY

SITE CIVIL DETAILS V

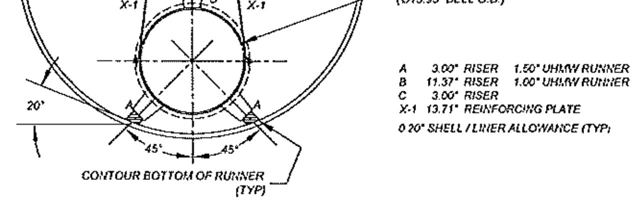
JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: TNP
DRAWN BY: TNP

BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

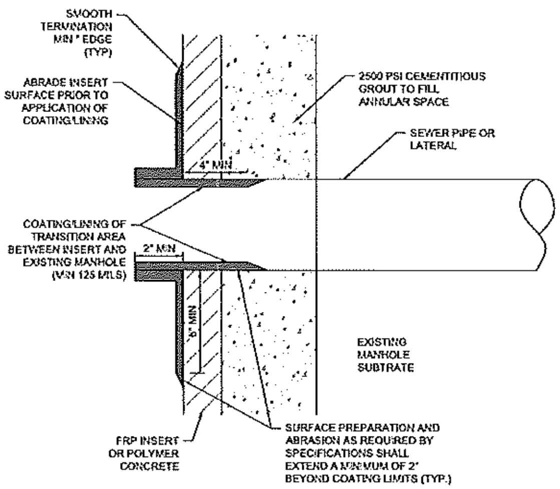
DRAWING NUMBER 99-C505
SHEET NUMBER 053



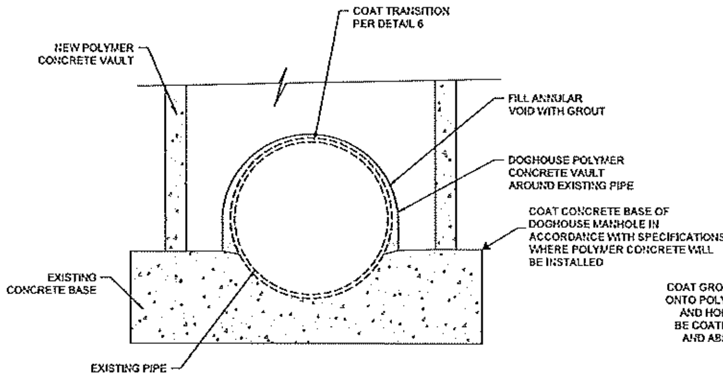
1 / 99-C506 MANHOLE CORING DETAILS
SCALE: NONE



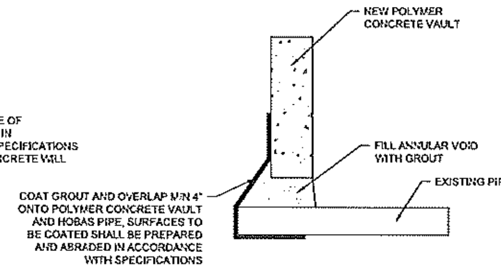
5 / 99-C506 DUAL CARRIER PIPE - ALTERNATE
SCALE: NONE



2 / 99-C506 MANHOLE ANNULAR TRANSITION
SCALE: NONE



3 / 99-C506 DOGHOUSE AROUND PIPE DETAIL
SCALE: NONE



4 / 99-C506 DOGHOUSE COATING SECTION
SCALE: NONE

REV.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

SITE CIVIL DETAILS VI

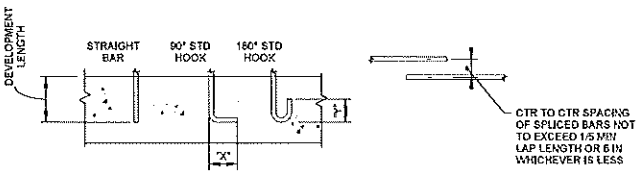
JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: TNP
DRAWN BY: TNP

BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER
99-C506

SHEET NUMBER 054

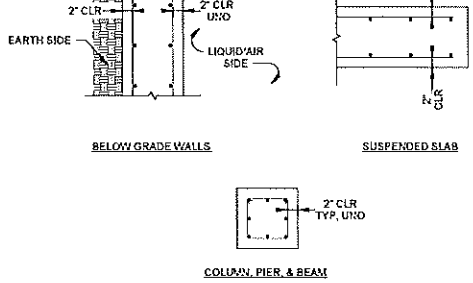
REINFORCING BARS IN COMPRESSION				
#4	0.5	10	15	HOOKED BARS SHALL NOT BE USED IN COMPRESSION
#5	0.625	12	19	
#6	0.75	14	23	
#7	0.875	17	26	
#8	1.0	19	30	
#9	1.125	22	34	
#10	1.25	24	38	
#11	1.375	27	42	



NOTES:

1. "TOP" BARS SHALL BE HORIZONTAL REINFORCEMENT PLACED SO THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE DEVELOPMENT LENGTH OR SPLICE.
2. CLEAR SPACING OR BARS BEING DEVELOPED OR SPLICED SHALL:
   A. NOT BE LESS THAN l_d, HAVE CLEAR COVER NOT LESS THAN d_b, AND STIRRUPS OR TIES THROUGHOUT l_d NOT LESS THAN THE CODE MINIMUM OR;
   B. CLEAR SPACING OF BARS BEING DEVELOPED OR SPLICED NOT LESS THAN $2d_b$ AND CLEAR COVER NOT LESS THAN d_b WHERE d_b = DIAMETER OF REINFORCING BAR AND l_d = DEVELOPMENT LENGTH.
3. ALL LAP SPLICES SHALL BE CLASS B UNO.

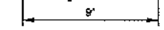
1 — STANDARD HOOK AND REINFORCING LAP SPLICE
99-S501
SCALE: NOT TO SCALE



NOTES:

1. SEE PLANS FOR PROPER REBAR ORIENTATION.

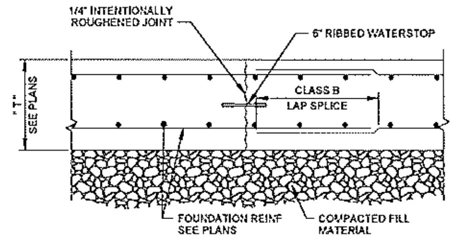
2 — STANDARD COVER FOR REINFORCING STEEL
99-S501
SCALE: NOT TO SCALE



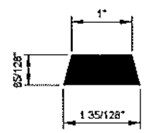
NOTE:

1. FLAT RIBBED PVC WATERSTOP TO BE USED IN NEW CONSTRUCTION OF NEW CONCRETE TO NEW CONCRETE.
2. WATERSTOPS SHALL BE GREENSTREAK OR APPROVED EQUAL

3 — FLAT RIBBED WATERSTOP DETAIL
99-S501
SCALE: NOT TO SCALE



5 — TYPICAL FOUNDATION CONSTRUCTION JOINT
99-S501
SCALE: NOT TO SCALE



TYPE A: NON-HYDROPHILIC WATERSTOP
1. SIZE: 3/4" X 1" X CONT.
2. REQUIRED HYDROSTATIC PRESSURE RESISTANCE: 20 PSI
3. SUPPLY TYPE A, AS NOTED.

TYPE B: HYDROPHILIC WATERSTOP
1. SIZE: 3/4" X 1" X CONT.
2. REQUIRED HYDROSTATIC PRESSURE RESISTANCE: 100 PSI
3. SUPPLY TYPE B, UNO

4 — STRIP TYPE WATERSTOP DETAIL
99-S501
SCALE: NOT TO SCALE

Digitally Signed 08/23/2021

REV	DATE	DESCRIPTION	BY

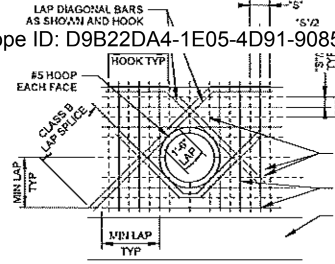
CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

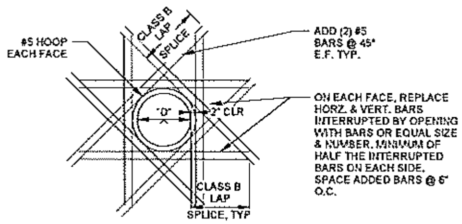
STRUCTURAL DETAILS I

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: KAM
DRAWN BY: EGB

DRAWING NUMBER 99-S501
SHEET NUMBER 055

Proj File: DM 300//20W23045 - Grand Junction ... WWTP AND WASH.rvt
Plot Date: 8/20/2021 11:06:29 AM



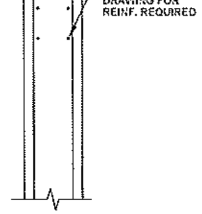


NOTES:

1. NUMBER OF ADDITIONAL REINFORCING BARS AT EACH SIDE OF OPENING SHALL EQUAL HALF THE NUMBER OF INTERRUPTED BARS IN EACH LAYER OF REINFORCING.
2. SIZE OF ADDITIONAL REINFORCING BARS TO EQUAL SIZE OF INTERRUPTED REINFORCING BARS.
3. PROVIDE STD HOOKS FOR BARS IF LAP LENGTH EXTENSION CANNOT BE OBTAINED AT JOINTS OR OTHER OBSTRUCTIONS. PLACE ADDITIONAL BARS IN SAME PLANES AS INTERRUPTED REINFORCING.
4. UNLESS NOTED OTHERWISE, SIZE OF DIAGONAL BARS SHALL BE THE SAME SIZE AS THE INTERRUPTED NORMAL REINFORCING LOCATE DIAGONALS IN EACH LAYER OF REINFORCING.
5. PLACE DIAGONAL BARS INSIDE NORMAL REINFORCING.
6. PROVIDE 2 DIAGONAL BARS EACH LAYER OR FACE, EACH WAY AS SHOWN. ALL REINFORCING TO CLEAR OPENING OR FLANGE COLLARS BY 2".

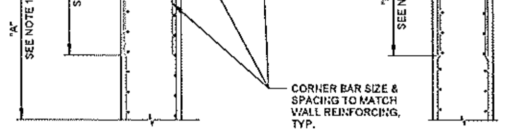
1 (99-S502) ADDITIONAL REINF. AT WALL OPENINGS

SCALE: NOT TO SCALE



2 (99-S502) STANDARD CHAMFER AT CONCRETE

SCALE: NOT TO SCALE



NOTES:

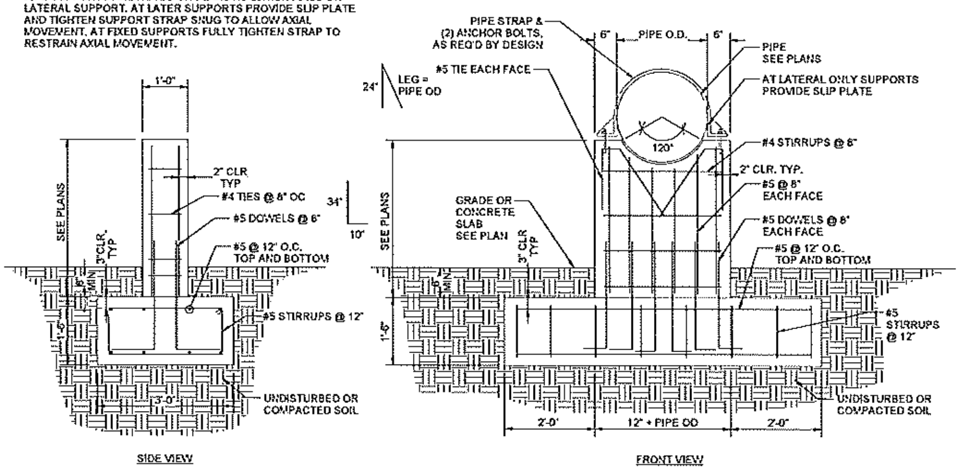
1. DIMENSION "A" = LENGTH OF WALL PARALLEL TO THE BAR LENGTH IN QUESTION.
2. UNLESS OTHERWISE NOTED ON THE DRAWINGS, DIMENSION "B" SHALL BE THE MINIMUM CLASS B LAP SPLICE LENGTH AS REQUIRED. IF BAR SIZES DIFFER, USE THE MINIMUM LAP LENGTH AS REQUIRED FOR THE SMALLER OF THE TWO BARS BEING SPLICED.
3. ALL GRADE BEAMS AND FOUNDATIONS SHALL ALSO HAVE CORNER BARS.

3 (99-S502) TYPICAL INTERSECTION REINF.

SCALE: NOT TO SCALE

NOTE:

PIPE SUPPORTS ARE NOTED ON PLANS AS EITHER FIXED OR LATERAL SUPPORT. AT LATER SUPPORTS PROVIDE SLIP PLATE AND TIGHTEN SUPPORT STRAP SNUG TO ALLOW AXIAL MOVEMENT. AT FIXED SUPPORTS FULLY TIGHTEN STRAP TO RESTRAIN AXIAL MOVEMENT.



4 (99-S502) PIPE SUPPORT PEDESTAL

SCALE: NOT TO SCALE

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

REV	DATE	DESCRIPTION	BY

STRUCTURAL DETAILS II

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: KAM
DRAWN BY: EGB

BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER 99-S502

SHEET NUMBER 056

Digitally Signed 08/20/2021

Xref File: BIM 360//20W23045 - Grand Junction Persigo Biotrickling OdorDUPID - WWTP AND WASH.rvt
Plot Date: 8/20/2021 11:30:51 AM

THICKNESS SEE PLANS

NOTES:

2. SEE TYPE B NOTES.

TYPE A

SUSPENDED SLAB OR SLAB ON GRADE, FOR THICKNESS, SEE PLANS

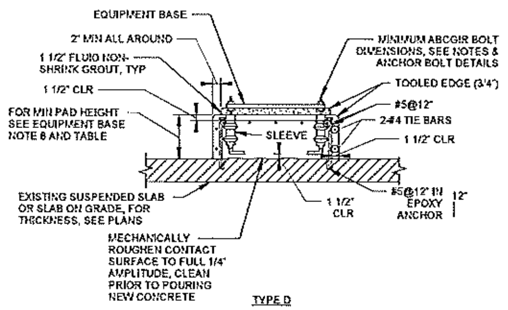
NOTES:

1. SEE EQUIPMENT BASE NOTES.
2. USE TYPE B BASE IN PLAVE OF TYPE A WHERE REQUIRED BY EQUIPMENT OR STUCTURE GEOMETRY. SEE NOTE 8.

TYPE B

1. SEE EQUIPMENT BASE NOTES.
2. ANCHOR EQUIPMENT TO CONCRETE USING SST CONCRETE ANCHORS OR ANCHOR BOLTS SPECIFIED
3. PAD SHALL BE 6" LARGER THAN EQUIPMENT ON ALL SIDES UNO OR AS REQUIRED BY EQUIP. MFG.

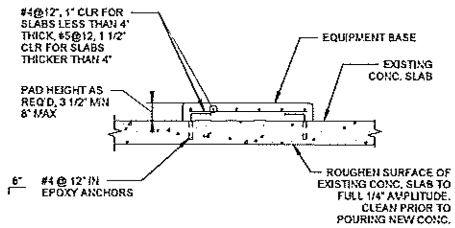
TYPE C



TYPE D

NOTES:

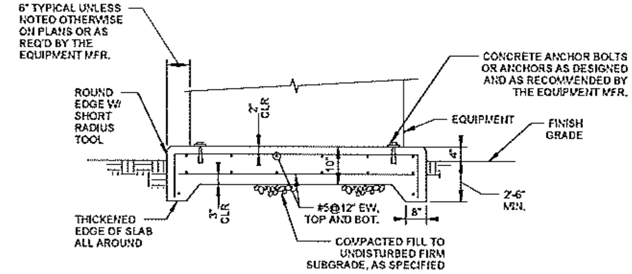
SEE EQUIPMENT BASE NOTES.



NOTES:

ANCHOR EQUIPMENT TO CONCRETE USING SST CONCRETE ANCHORS SPECIFIED

TYPE E



TYPE F

NOTES:

VERIFY PAD SIZE WITH EQUIPMENT MANUFACTURER PRIOR TO CONSTRUCTION.

EQUIPMENT BASE NOTES:

1. PAD SIZE SHALL BE MINIMUM INDICATED OR AS SHOWN ON THE PLANS. VERIFY ALL PAD SIZE REQUIREMENTS WITH SHOP DRAWINGS OF ACTUAL EQUIPMENT FURNISHED AND OBTAIN ENGINEER'S APPROVAL OF FINAL DIMENSIONS.
2. THE SIZE, NUMBER, TYPE, LOCATION, AND THREAD PROJECTION OF THE ANCHOR BOLTS SHALL BE DETERMINED BY THE EQUIPMENT MANUFACTURER, AND SHALL BE AS APPROVED BY THE ENGINEER. ANCHOR BOLTS SHALL BE HELD IN POSITION WITH A ONE PIECE TEMPLATE, MATCHING THE BASE PLATE, WHILE PAD IS BEING POURED.
3. ANCHOR BOLT A MINIMUM MOVEMENT OF 1/2" IN ALL DIRECTIONS. THE MINIMUM SLEEVE LENGTH SHALL BE 8 TIMES THE BOLT DIAMETER. SLEEVES SHALL BE FILLED WITH NON-SHRINK GROUT.
4. ANCHOR BOLT SLEEVES SHALL HAVE A MINIMUM INTERNAL DIAMETER 1" GREATER THAN BOLT DIAMETER AND A MAXIMUM INTERNAL DIAMETER 3" GREATER THAN ANCHOR BOLT DIAMETER. SLEEVES SHALL BE FILLED WITH NON-SHRINK GROUT.
5. EQUIPMENT BASES SHALL BE INSTALLED LEVEL UNLESS SPECIFIED OTHERWISE.
6. WEDGES OR SHIMS SHALL BE USED TO SUPPORT THE BASE WHILE THE NON-SHRINK GROUT IS PLACED. TEMPORARY LEVELING NUTS SHALL BE BACKED OFF. IF LEFT IN THE WEDGES OR SHIMS SHALL NOT BE EXPOSED TO VIEW.
7. HEIGHT OF PADS SHALL BE MINIMUM REQUIRED FOR ANCHOR BOLT CLEARANCE TO KEEP ANCHOR BOLT OUT OF SLAB (SEE TABLE BELOW). WHERE EQUIPMENT OR PIPING ELEVATION REQUIRE A PAD HEIGHT LESS THAN THE MINIMUM SHOW, USE TYPE B WITH BLOCKOUT.

AB DIA (IN.)	1/2	5/8	3/4	7/8	1	1 1/4	1 3/8	1 1/2	1 3/4	2
MIN PAD HT (IN.)	7	8 1/2	10	11	12 1/2	15	16 1/2	18	21	24

8. TYPE "D" PADS MAY BE SUBSTITUTED FOR TYPE "A" PADS FOR LOCATIONS APPROVED IN WRITING BY THE ENGINEER.
9. SEE ANCHOR BOLT AND BLOCKOUT DETAILS.

1 / 99-S503 EQUIPMENT BASE DETAIL

SCALE: NOT TO SCALE

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO

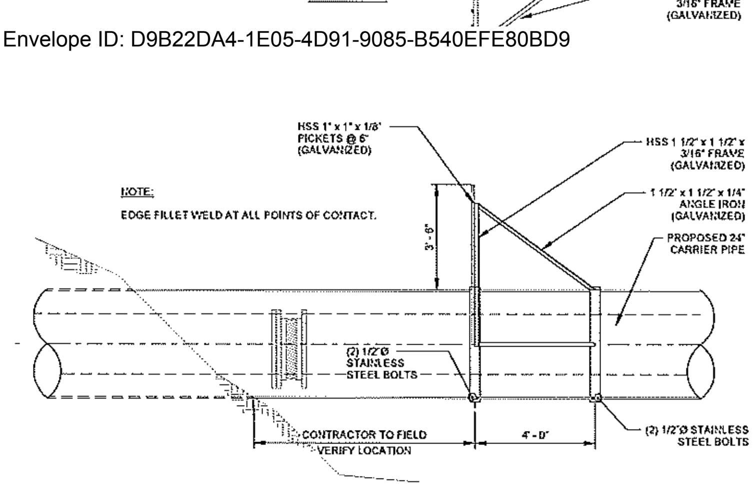
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

STRUCTURAL DETAILS III

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: KAM
DRAWN BY: EGB

DRAWING NUMBER 99-S503

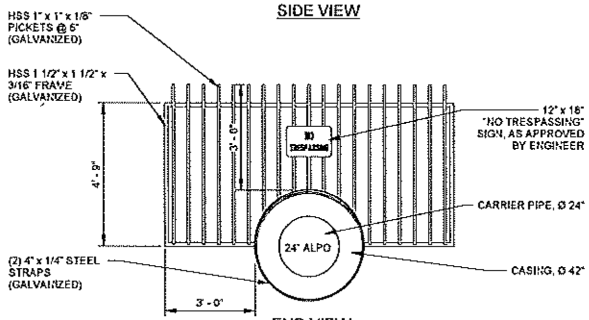
SHEET NUMBER 057



NOTE:

EDGE FILLET WELD AT ALL POINTS OF CONTACT.

SIDE VIEW



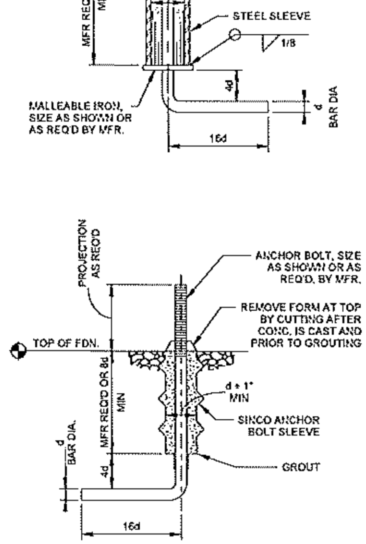
END VIEW

NOTES:

1. OTHER STYLE OF BARRICADES MAY BE USED WITH APPROVAL OF THE ENGINEER.
2. FRAME AND PICKETS ARE TO BE WELDED PRIOR TO GALVANIZING. USE 1/8" FILLET WELDS.
3. REPAIR GALVANIZED COATING DAMAGED BY WELDING USING SYSTEM COLD GALVANIZED COMPOUND, ZRC BY ZRC WORLDWIDE OR APPROVED EQUAL.

1 / 99-S504 PERMANENT PIPE BARRICADE DETAIL

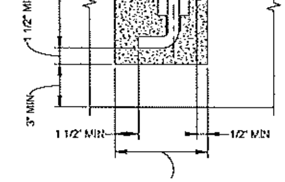
SCALE: NOT TO SCALE



MACHINERY ANCHOR BOLT DETAIL

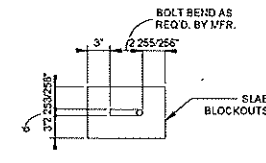
NOTES:

1. SINCO PRODUCTS INC. EAST HAMPTON, CT 1-800-243-6753.
2. REFER TO EQUIPMENT BASE NOTES.
3. 3d WHERE MANUFACTURER VERIFIES NO BOLT PULLOUT RESISTANCE REQUIRED.

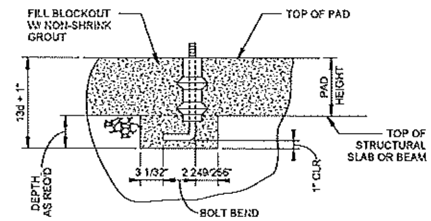


BLOCKOUT IN NEW CONC. OR CORED HOLE IN EXST. CONC. W/ DIA. REQ'D. FOR A MIN CLR. OF 1/2" ALL AROUND

ANCHOR BOLT BLOCKOUT



PLAN



ELEVATION

ANCHOR BOLT BLOCKOUT

2 / 99-S504 ANCHOR BOLT DETAIL

SCALE: NOT TO SCALE

REV	DATE	DESCRIPTION	BY

Digitally Signed 05/22/2021

CITY OF GRAND JUNCTION

GRAND JUNCTION, COLORADO

Grand Junction

GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

STRUCTURAL DETAILS IV

JOB NO.: 20W23045

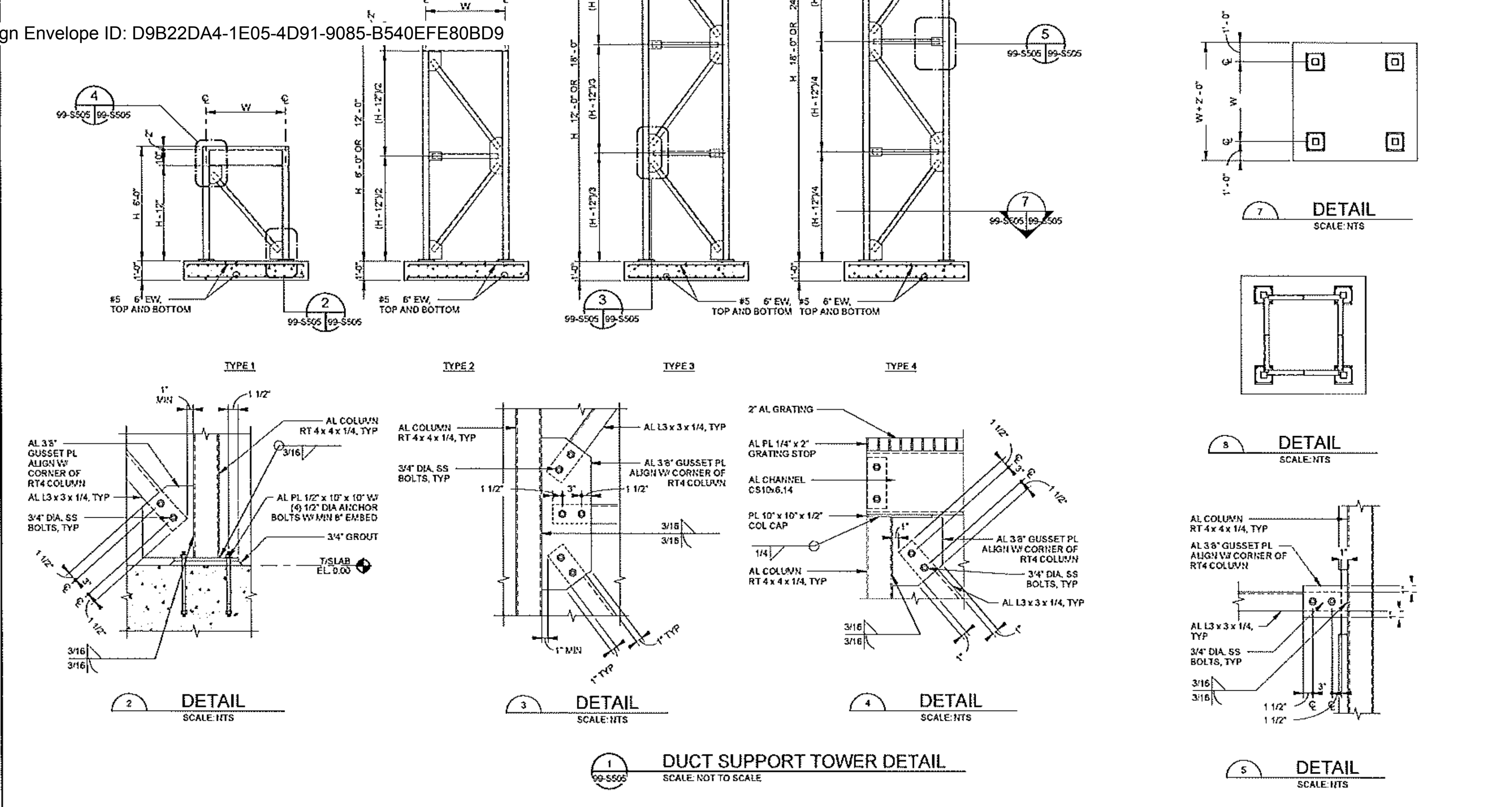
DATE: AUGUST 2021

DESIGNED BY: KAM

DRAWN BY: EGB

DRAWING NUMBER 99-S504

SHEET NUMBER 058

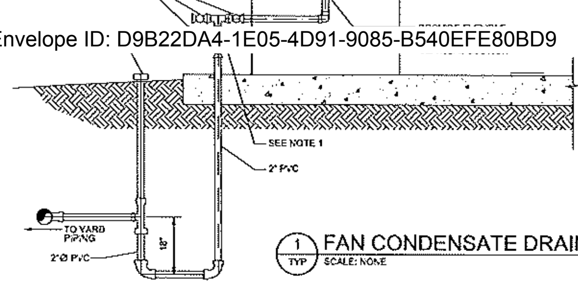


CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

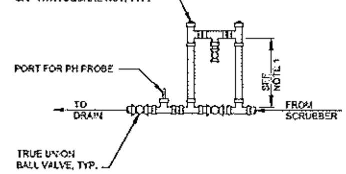
STRUCTURAL DETAIL V

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: KAM
DRAWN BY: EGB

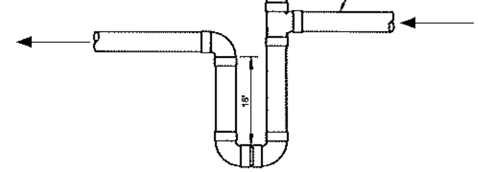
DRAWING NUMBER 99-S505
SHEET NUMBER 059



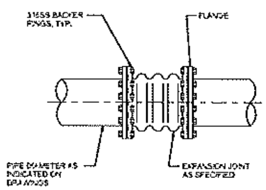
1 TYP FAN CONDENSATE DRAIN
SCALE: NONE



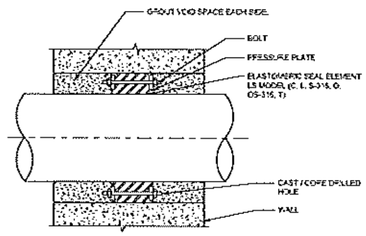
2 TYP DRAIN AND OVERFLOW ASSEMBLY
SCALE: NONE



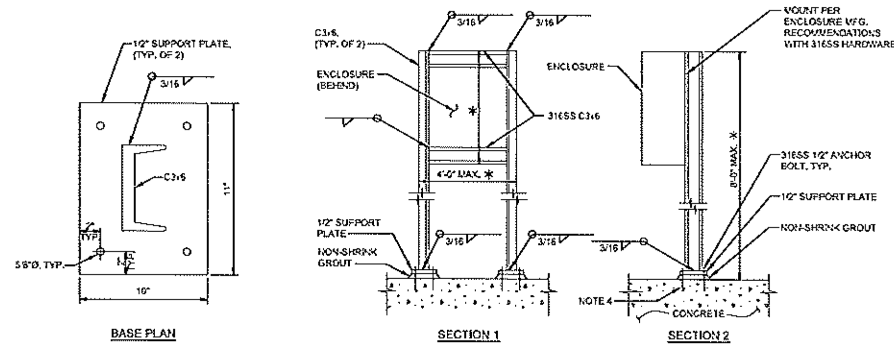
3 TYP P-TRAP WITH CLEANOUT
SCALE: NONE



4 TYP CIRCULAR EXPANSION JOINT
SCALE: NONE



5 10-M133 LINK SEAL WALL PENETRATION
SCALE: NONE



NOTE:

1. ALL HARDWARE SHALL BE 316SS USING EPOXY ANCHOR BOLTS.
2. USE WASHERS AND SPLIT-LOCK WASHERS UNDER ALL BOLTS AND NUTS.
3. COAT AS SPECIFIED.
4. ANCHOR BOLT DEPTHS AS REQUIRED FOR SIZE AND WEIGHT OF ENCLOSURE.
5. ALL PLATES AND STRUCTURAL SECTIONS SHALL BE 316 STAINLESS STEEL.

* COORDINATE FINAL DIMENSIONS WITH EQUIPMENT.

6 TYP WATER PANEL ENCLOSURE MOUNTING
SCALE: NONE

PERKINS ENGINEERING CONSULTANTS, INC.

REV.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction COLORADO
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

MECHANICAL DETAILS I

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: ABD
DRAWN BY: SRG

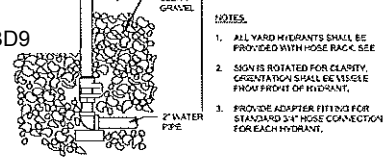
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER 99-M501
SHEET NUMBER 060

NOTES:

1. HOSE RACK SHALL BE FABRICATED FROM 3/16" ALUMINUM PLATE. ROUND ALL EDGES SMOOTH.
2. HOSE RACKS INSTALLED IN YARD LOCATIONS SHALL BE FREESTANDING EMBED IN A 4'-6" LONG x 2'-0" WIDE x 6" DEEP CONCRETE PAD WITH #5@12" EW CENTERED.
3. WALL MOUNTED HOSE RACKS ON MASONRY WALL SHALL BE FASTEN TO GROUTED CELLS.

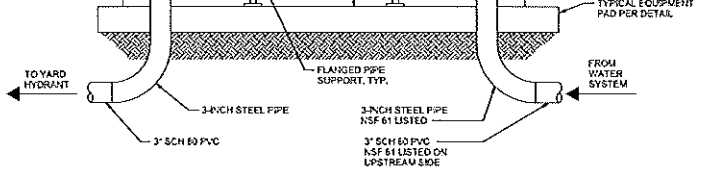
1 TYP HOSE RACK
SCALE: NONE



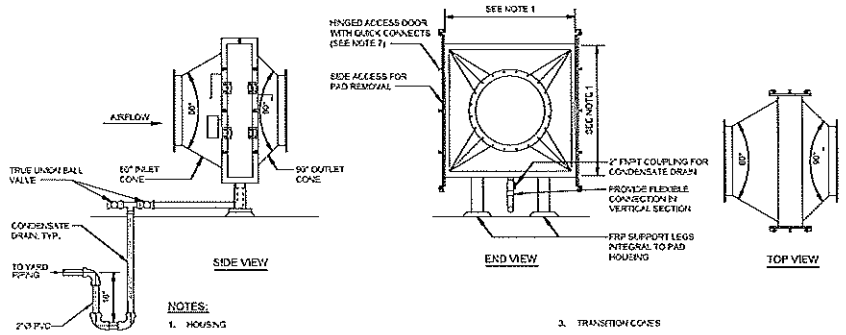
NOTES:

1. ALL YARD HYDRANTS SHALL BE PROVIDED WITH HOSE RACK. SEE
2. SIGN IS ROTATED FOR CLARITY. ORIENTATION SHALL BE VISIBLE FROM FRONT OF HYDRANT.
3. PROVIDE ADAPTER FITTING FOR STANDARD 2-1/4" HOSE CONNECTION FOR EACH HYDRANT.

2 TYP YARD HYDRANT
SCALE: NONE



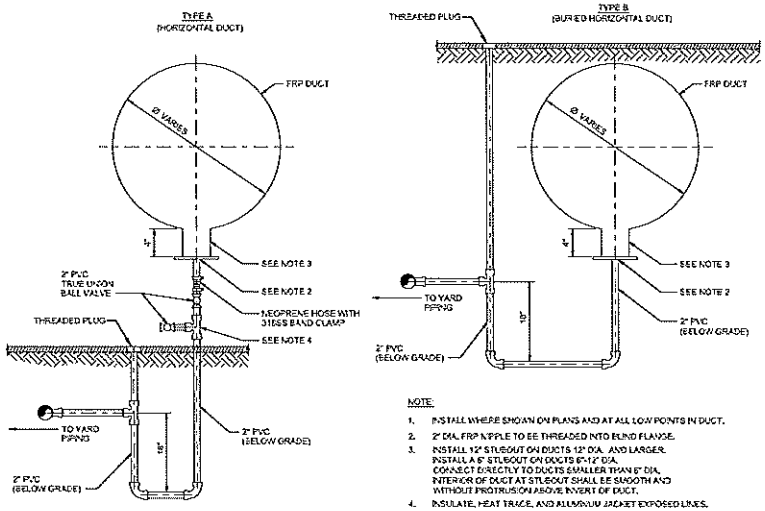
3 TYP BACKFLOW PREVENTER ASSEMBLY
SCALE: NONE



NOTES:

1. HOUSING
   - A. HOUSING SHALL BE SIZED TO PROVIDE A MAXIMUM VELOCITY OF 400 FEET PER MINUTE ACROSS THE MIST AND GREASE ELIMINATOR PADS.
   - B. HOUSING SHALL BE FRP WITH A MINIMUM 3/8" THICKNESS. PROVIDE A 100-MIL INTERNAL CORROSION BARRIER AND EXTERIOR GEL COAT WITH UV INHIBITOR.
   - C. HOUSING SHALL PROVIDE ACCESS TO THE MIST AND GREASE ELIMINATOR PADS VIA A GASKETED HINGED ACCESS DOOR AND USING QUICK CONNECTS (CLAMPS) TO SECURE THE DOOR IN PLACE. IF A HINGE IS NOT USED ALL FASTENERS SHALL BE QUICK DISCONNECT, BOLTED OR SCREWED DOOR ASSEMBLIES ARE NOT PERMITTED.
   - D. PROVIDE 316SS HARDWATER AND NEOPRENE GASKETS
2. MIST/GREASE ELIMINATOR PADS
   - A. MIST/GREASE PADS SHALL BE SECTIONED FOR EASE OF REMOVAL.
   - B. SYSTEM SHALL INCLUDE A 2" THICK 316SS MESH PAD FOLLOWED BY A 4" THICK POLYPROPYLENE MESH PAD WITH 1" 316SS ANGLES CONNECTED TO THE MESH PADS FOR SLIDING THE PADS INTO OUT OF THE HOUSING.
   - C. MIST/GREASE PADS SHALL BE REMOVABLE FROM ONE SIDE OF THE FILTER.
3. TRANSITION CONES
   - A. TRANSITION CONES SHALL BE FRP IN ACCORDANCE WITH ITEM 2.01.C OF THIS SECTION.
   - B. INLET TRANSITION CONE SHALL PROVIDE A MAXIMUM 60° TRANSITION FROM THE CONNECTED FRP DUCT TO THE HOUSING.
   - C. OUTLET TRANSITION CONE SHALL PROVIDE A MAXIMUM 90° TRANSITION FROM THE CONNECTED FRP DUCT TO THE HOUSING.
4. SUPPORTS
   - A. FRP SUPPORT LEGS INTEGRAL TO THE HOUSING SHALL BE PROVIDED TO ALLOW ACCESS AND REMOVAL OF THE MIST AND GREASE ELIMINATOR PADS AT FINISH FLOOR LEVEL.
5. ACCESSORIES
   - A. AN INTEGRAL SUMP BELOW THE AIR STREAM WITH A FNPT COUPLING SHALL BE PROVIDED AT THE LOWEST POINT OF THE SUMP FOR CONNECTION TO A CONDENSATE DRAIN.
   - B. ALL BOLTING SHALL INCLUDE 316SS HARDWARE AND A NEOPRENE GASKET AT THE FLANGES AND DOOR SEAL.
6. INSULATE, HEAT TRACE AND ALUMINUM JACKET ALL EXPOSED PIPE.

4 TYP PRE-FILTER DETAIL
SCALE: NONE



NOTE:

1. INSTALL WHERE SHOWN ON PLANS AND AT ALL LOW POINTS IN DUCT.
2. 2" DIA. FRP NIPPLE TO BE THREADED INTO BLIND FLANGE.
3. INSTALL 12" STUBOUT ON DUCTS 12" DIA. AND LARGER. INSTALL A 6" STUBOUT ON DUCTS 6"-12" DIA. CONNECT DIRECTLY TO DUCTS SMALLER THAN 6" DIA. INTERIOR OF DUCT AT STUBOUT SHALL BE SMOOTH AND WITHOUT PROTRUSION ABOVE INVERT OF DUCT.
4. INSULATE, HEAT TRACE, AND ALUMINUM JACKET EXPOSED LINES.

5 TYP DUCT CONDENSATE DRAIN
SCALE: NONE

PERKINS ENGINEERING CONSULTANTS, INC.

COLORADO LICENSED PERSON A. ABBOTT 35523 PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

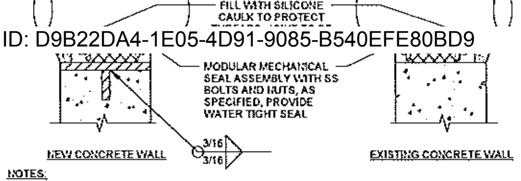
MECHANICAL DETAILS II

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: ABD
DRAWN BY: SRG

BAR IS 1 INCH ON ORIGINAL DRAWING
IF NOT 1 INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DRAWING NUMBER
99-M502

SHEET NUMBER
061



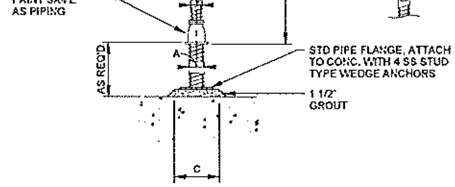
NOTES:

1. WHERE EXISTING CONCRETE STRUCTURE IS TO BE CORE DRILLED, THE CONTRACTOR SHALL ULTRASONIC TEST OR X-RAY THE AREA FOR EMBEDDED ITEMS BEFORE CORE DRILLING CAN PROCEED. IF EMBEDDED ITEMS ARE FOUND, NOTIFY THE ENGINEER IMMEDIATELY.
2. FOR NEW CONSTRUCTION, SLEEVES SHALL BE CAST INTO WALL. BLOCKOUTS AND SUBSEQUENT GROUTED IN SLEEVES WILL NOT BE PERMITTED UNLESS A KEYED WATERSTOP JOINT IS PROVIDED.
3. 6" DIAMETER SLEEVES AND SMALLER SHALL BE SCHEDULE 40 STEEL PIPE.
4. SLEEVES LARGER THAN 6" DIAMETER SHALL BE 1/4" THICK STEEL PIPE.
5. IN WALLS THICKER THAN 12", LINK SEAL SHALL BE INSTALLED AT BOTH ENDS OF THE WALL SLEEVE. SLEEVE DIAMETER SHALL BE PER LINK SEAL MANUFACTURER'S RECOMMENDATION.
6. SLEEVE SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.

(1) WALL PENETRATION SEAL

99-M503

SCALE: NOT TO SCALE



14"	4"	10-15/16"	18"	3"	16-1/4"	20-3/4"
16"	4"	12-3/8"	20"	3"	17-3/4"	22-1/4"
18"	6"	13-7/8"	22"	3-1/2"	19-1/2"	24"
20"	6"	15-3/8"	22"	3-1/2"	21"	25-1/2"
24"	6"	17-15/16"	24"	4"	23-3/4"	28-1/4"
30"	6"	21-5/16"	30"	4"	27"	31-1/2"
32"	6"	22-1/2"	30"	4"	28-1/4"	32-3/4"
36"	6"	24-1/2"	30"	4"	30-1/4"	34-3/4"

NOTES:

1. PROVIDE HALF ROUND RIGID INSULATION AND INSULATION PROTECTION SHIELD WHERE PIPING IS INSULATED.
2. PROVIDE NEOPRENE WAFFLE INSULATION PAD, SIMILAR TO MASON TYPE "W" OR KORFUND 40, UNDER SUPPORT FOOT WHEN PIPING IS ISOLATED OR SUPPORT IS ADJACENT TO MECHANICAL EQUIPMENT.
3. FOR BASE, HEIGHT AND FLANGE DIMENSIONS, SEE TABLE.
4. USE 2 1/2" SUPPORTS FOR PIPES LESS THAN 2 1/2" DIAMETER.

(2) ADJUSTABLE FLOOR MOUNTED PIPE SUPPORT

99-M503

SCALE: NOT TO SCALE

REV. | DATE | DESCRIPTION | BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO

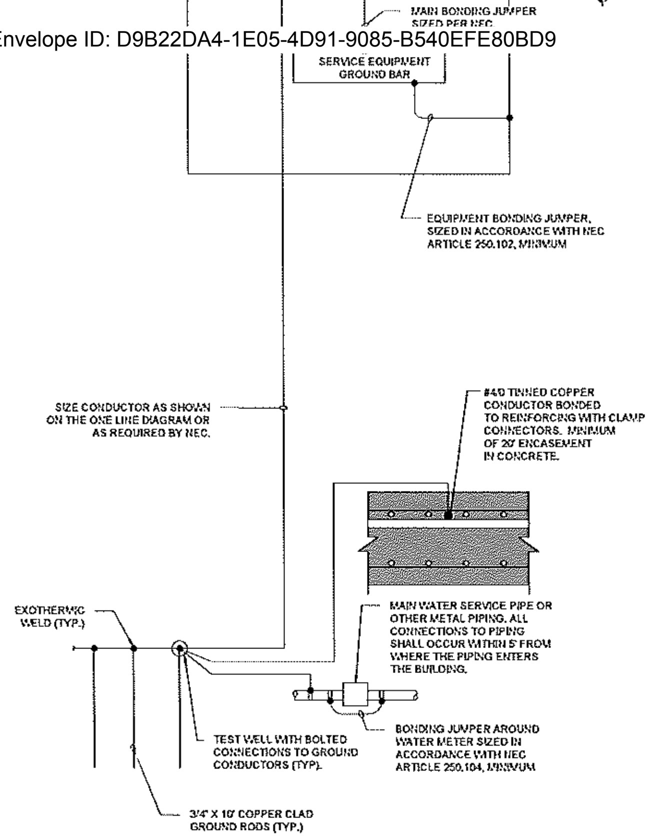
GRAND JUNCTION
ODOR CONTROL IMPROVEMENTS

MECHANICAL
DETAILS II

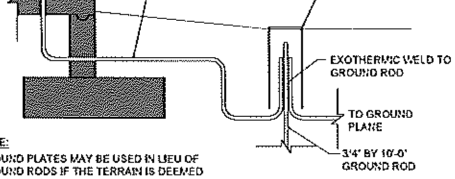
JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: KEC
DRAWN BY: EGB

DRAWING NUMBER
99-M503

SHEET NUMBER 062

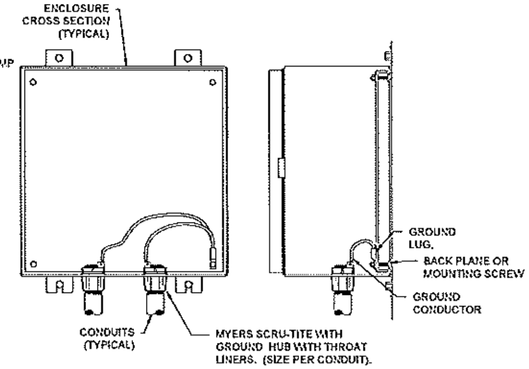


1 99-E501 GROUND BAR CONNECTION DETAIL
SCALE: NOT TO SCALE



NOTE:
GROUND PLATES MAY BE USED IN LIEU OF GROUND RODS IF THE TERRAIN IS DEEMED UNSUITABLE FOR RODS. ACCESS WELLS WILL STILL BE REQUIRED FOR EACH PLATE AND SHALL HAVE A SUITABLE DIAMETER FOR THE INSTALLED PLATE.

2 99-E501 GROUND ROD CONNECTION DETAIL
SCALE: NOT TO SCALE



NOTES:
1. ALL SERVICE, FEEDER AND CONTROL CONDUITS SHALL BE GROUNDED ON BOTH ENDS.

4 99-E501 CONDUIT GROUNDING DETAIL
SCALE: NOT TO SCALE

REV.	DATE	DESCRIPTION	BY

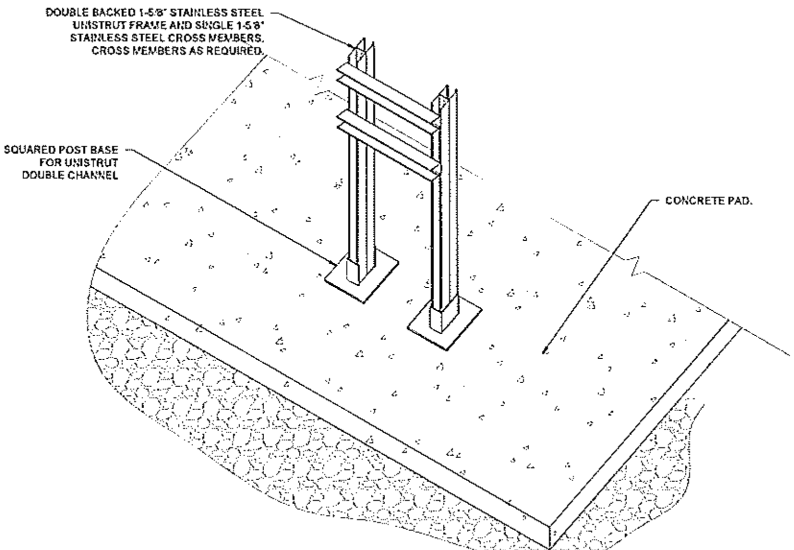
CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

ELECTRICAL DETAILS I

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: SAH
DRAWN BY: SAH

DRAWING NUMBER 99-E501
SHEET NUMBER 063

TYP. UNISTRUT STAND DETAIL (TOP VIEW)
99-E502 SCALE: NOT TO SCALE



1. ALL BOLTS, NUTS, WASHERS, ANCHORS, PLATES, AND OTHER MOUNTING STEMS SHALL BE CORROSION RESISTANT, STAINLESS STEEL.
2. UTILIZE 5/16" STAINLESS STEEL WEDGE ANCHORS AS REQUIRED.
3. OMIT PAD WHERE NOT SHOWN.

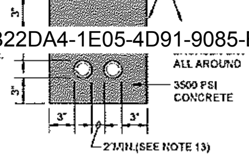
1 — 99-E502 UNISTRUT STAND DETAIL (TYP.)
SCALE: NOT TO SCALE

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
Grand Junction
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

ELECTRICAL DETAILS II

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: SAH
DRAWN BY: SAH

DRAWING NUMBER 99-E502
SHEET NUMBER 064

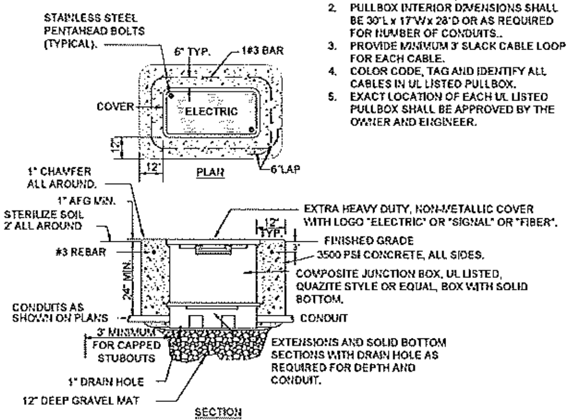


FINISHED GRADE OR CONCRETE PAD SURFACE AND BE CAPPED WATERTIGHT.

GROUND RODS AT ENDS OF ELECTRICAL DUCT AND CONNECT AND RING.

9. INSTALL CONDUCTORS AND CABLES AS NOTED ON DRAWINGS. INSTALL PULL ROPE IN ALL SPARE DUCTS.
10. MINIMUM COVER REQUIREMENT FOR DUCT BANKS UNDER ROADS, DRIVEWAYS AND PARKING LOTS SHALL BE 24".
11. MINIMUM COVER REQUIREMENTS FOR ELECTRICAL SECONDARY SERVICE DUCT BANKS SHALL BE 30".
12. MINIMUM COVER REQUIREMENTS FOR ELECTRICAL PRIMARY SERVICE DUCT BANKS SHALL BE 36".
13. VERTICAL AND HORIZONTAL DISTANCES BETWEEN CONDUITS SHALL BE 3" MINIMUM FOR DUCTS CONTAINING CIRCUITS OVER 600 VOLTS.
14. DUCT BANKS TO EXTEND BELOW FLOOR SLABS.

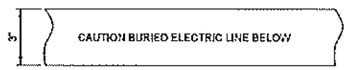
(1) 99-E503 CONCRETE ENCASED ELECTRICAL DUCT DETAIL
SCALE: NOT TO SCALE



NOTES:

1. UL LISTED PULLBOX AND EXTRA HEAVY-DUTY COVER SHALL BE DESIGNED FOR A TEST LOAD OF 33,750 LBS AND A DESIGN LOAD OF 22,500 LBS.
2. PULLBOX INTERIOR DIMENSIONS SHALL BE 30"L x 17"W x 28"D OR AS REQUIRED FOR NUMBER OF CONDUITS.
3. PROVIDE MINIMUM 3' SLACK CABLE LOOP FOR EACH CABLE.
4. COLOR CODE, TAG AND IDENTIFY ALL CABLES IN UL LISTED PULLBOX.
5. EXACT LOCATION OF EACH UL LISTED PULLBOX SHALL BE APPROVED BY THE OWNER AND ENGINEER.

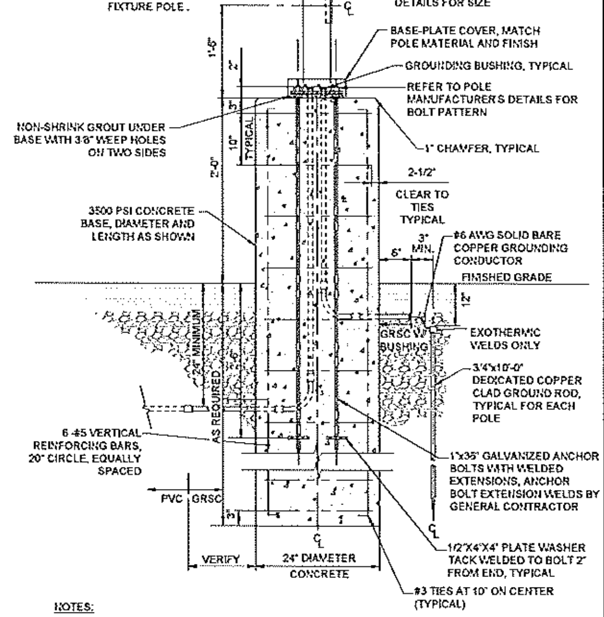
(2) 99-E503 ELECTRICAL PULLBOX DETAIL
SCALE: NOT TO SCALE



NOTES:

1. POWER MARKING TAPES SHALL BE DETECTABLE TYPE CONSTRUCTION WITH RED BACKGROUND AND BLACK LETTERING.
2. COMMUNICATION MARKING TAPES SHALL BE DETECTABLE TYPE CONSTRUCTION WITH ORANGE BACKGROUND AND BLACK LETTERING, "TELEPHONE LINE" OR "FIBER OPTIC LINE" RESPECTIVELY.
3. TAPE SHALL BE DETECTABLE, DURABLE, HIGHLY VISIBLE, RESISTANT TO ELEMENTS, MEETING AND/OR EXCEEDING ALL INDUSTRY STANDARDS.

(4) 99-E503 UNDERGROUND DETECTABLE WARNING TAPE DETAIL
SCALE: NOT TO SCALE



NOTES:

1. ALL HARDWARE SHALL BE STAINLESS STEEL.
2. CONSTRUCT FOUNDATION IN ACCORDANCE WITH POLE MANUFACTURERS GUIDELINES, INSTALLING BOLT TEMPLATE LEVELING UNIT, ANCHOR BOLTS, FULL BASE-PLATE BOLT COVER, AND ACCESSORIES FOR A COMPLETE INSTALLATION.
3. TIE ALL CONDUITS, POLE, EQUIPMENT GROUND AND ALL OTHER METAL EQUIPMENT AND GROUNDING LUGS TOGETHER USING #6 AWG SOLID BARE COPPER AND APPROVED GROUNDING CLAMPS AND CONNECT TO GROUND ROD SYSTEM.

(3) 99-E503 TYPICAL ELEVATED CONCRETE BASE DETAIL
SCALE: NOT TO SCALE

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO
GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

ELECTRICAL DETAILS II

JOB NO.: 20723045
DATE: AUGUST 2021
DESIGNED BY: SAH
DRAWN BY: SAH

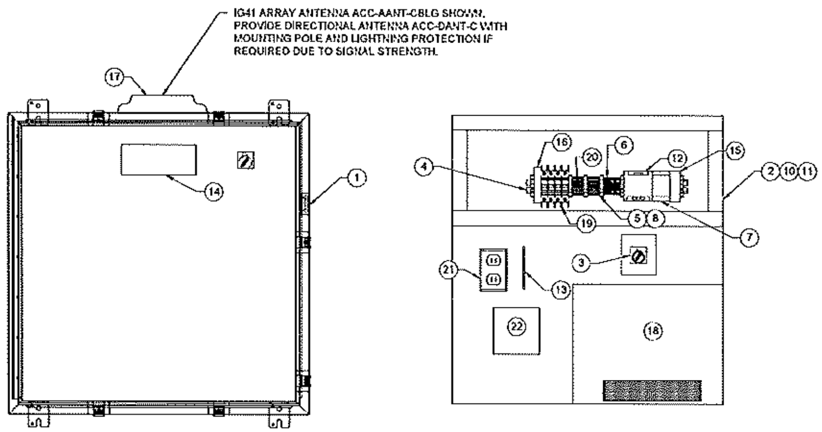
DRAWING NUMBER 99-E503
SHEET NUMBER 065

(9)	END COVER U74	PHOENIX CONTACT	3047028
(10)	WIRING DUCT, 1.5" X 2"	PANDUIT	F1.5X2LG6
	COVER, 1.5"	PANDUIT	C1.5LG6

(22)	SAMSARA IG41 W/ACC-IG-CDIO	SAMSARA	IG41/ACC-IG-CDIO

BILL OF MATERIAL NOTES:

1. THE FINISHED PANEL ASSEMBLY SHALL MEET UL-508 REQUIREMENTS.
2. GENERAL PANEL LAYOUT SHOWN. CONTRACTOR TO FURNISH AND INSTALL TERMINALS AND NECESSARY PARTS NOT LISTED AS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM.
3. THE BILL OF MATERIALS INCLUDES MANUFACTURER AND MODEL NUMBERS FOR INDICATION OF STANDARD QUALITIES OF EQUIPMENT ONLY. CONTRACTOR SHALL SUBMIT CUT SHEETS OF EQUIPMENT FOR ENGINEERS REVIEW PRIOR TO PURCHASE.
4. THE PANEL LAYOUT SHOWN PROVIDES THE CONTRACTOR WITH A GENERAL GUIDELINE WHEN BUILDING THE CONTROL PANELS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ENCLOSURE SIZE AND LAYOUT AS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM.
5. PROVIDE FUSED 120V POWER DISTRIBUTION BLOCK.
6. PROVIDE FUSED 24VDC+ AND 24VDC- POWER DISTRIBUTION BLOCK.
7. MAKE ALL FINAL CONNECTIONS PER MANUFACTURER'S INSTRUCTIONS.



1 / 99-E504 DOS RIOS RTU PANEL LAYOUT

SCALE: NONE

CITY OF GRAND JUNCTION

GRAND JUNCTION, COLORADO

GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

DOR RIOS RTU PANEL LAYOUT

JOB NO.: 20W23045

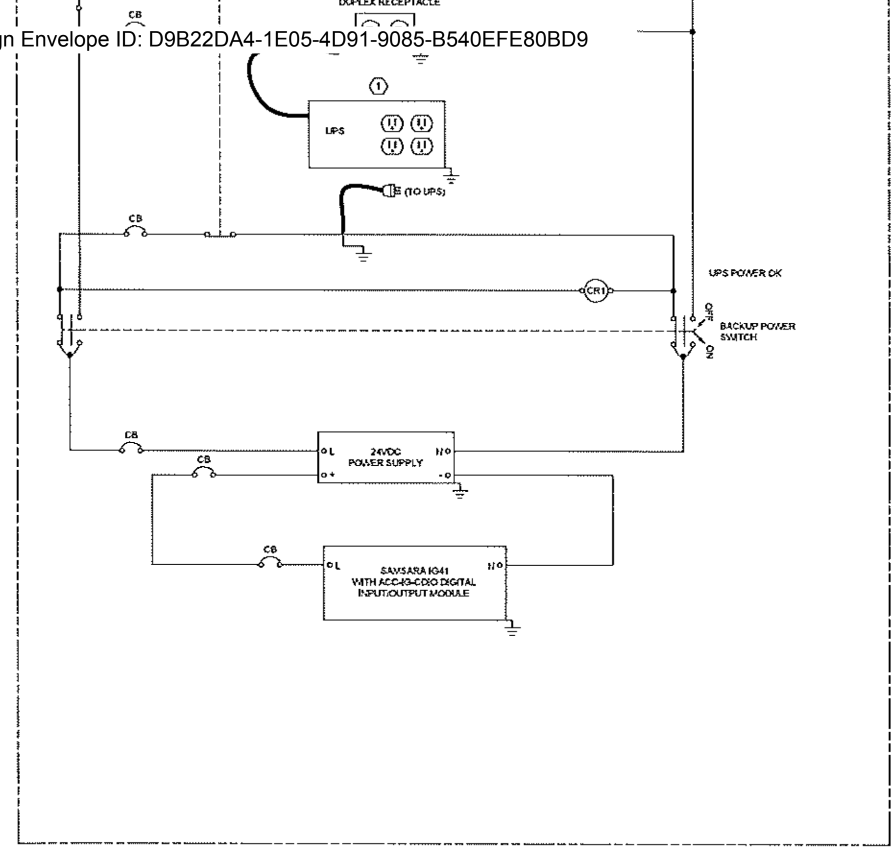
DATE: AUGUST 2021

DESIGNED BY: SAH

DRAWN BY: SAH

DRAWING NUMBER 99-E504

SHEET NUMBER 066



1 DOS RIOS RTU PANEL SCHEMATIC
99-E505 SCALE: NONE

GENERAL NOTES:

1. MAKE ALL FINAL CONNECTIONS PER MANUFACTURER'S INSTRUCTIONS.
2. NOT ALL DEVICES ARE SHOWN AND INCLUDED. PROVIDE ALL ITEMS AS REQUIRED FOR A COMPLETE INSTALLATION. SEE STRUCTURE ELECTRICAL SHEETS AND SPECIFICATIONS.

KEYED NOTES:

(1) COORDINATE WITH UPS MANUFACTURER REQUIREMENTS TO PROVIDE REQUIRED LINE AND LOAD POWER CONNECTIONS.

REV.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO

GRAND JUNCTION ODOR CONTROL IMPROVEMENTS

DOS RIOS RTU PANEL SCHEMATIC

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: SAH
DRAWN BY: SAH

BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER
99-E505

SHEET NUMBER 067

CITY OF Grand Junction COLORADO

Purchasing Division

ADDENDUM NO. 6

DATE: **August 5, 2022**
FROM: **City of Grand Junction Purchasing Division**
TO: **All Offerors**
RE: **IFB-5096-22-DD Odor Control Improvement Projects**

Offerors responding to the above referenced solicitation are hereby instructed that the requirements have been clarified, modified, superseded, and supplemented as to this date as hereinafter described.

Please make note of the following clarifications: (Following Mandatory Pre-Bid Meeting)

1. Q. Will we need to provide our own Bid Bond form?
   A. Bid Bond form will be the contractor's responsibility. Most Bond Surety Companies have a form and that is acceptable.

2. Q. In the Invitation to Bid, Pages 25-26 (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 Contractor's responsibility to ensure all forms/items are submitted).
   -Contractor's Bid Form
   -Price Bid Schedule
   - References
   -Manufacturer's Certificate of Authorizing for Contractor (**Could not locate Form**)
   A. *"Manufacturer's Certificate of Authorization for Contractor"* Form not required

3. Q. Are there any milestones other than completion?
   A. No

4. Q. Is 180 calendar days deemed as final completion?
   A. Yes, from "Notice to Proceed" scheduled as October 18th plus 180 days is final completion. Scheduled final completion is April 13th.

5. Q. What if required equipment/material purchases results in delays and the 180 days is overrun?
   A. Submit all information estimated timelines for material and equipment procurement with a schedule and plan to complete the work as close to 180 days or less if possible. If not possible in 180 calendar days, then as fast as possible with hard dates for estimated procurement of equipment and materials installed and operational.

6. Q. How are the Addendums acknowledged on the Contractor's Bid Form?

A. Wrote on the Bid Schedule that "Addendums 1 through 6 (or latest Addendum) are acknowledged under written out total bid. Include more Addendums as needed. Alternatively, a letter written on the Contractor's letter head stating the acknowledgement with signature and title of signer would be adequate.

7. Q. In the solicitation, it states no equipment to be provided by the city, however, in the drawings it says there is. Which is correct?
   A. Correction, no equipment will be provided by the city.
      Drawing Number 10-C301
      Drawing Sheet #009
      Note "C"
      Contractor will eliminate the installation of the 48" gate replacement at the Headworks building. This work will be completed under the portion of the Persigo WWTP Expansion.
      See Attached page with strike through.

8. Q. Are the flowrates and/or measurements available?
   A. This information is being researched and will be addressed in a forthcoming Addendum.

9. Q. Please clarify traffic control operations and times required by CDOT.
   A. CDOT times for lane closures are 9:00 pm through 1:00 pm Monday through Friday unless a variance is approved from CDOT.

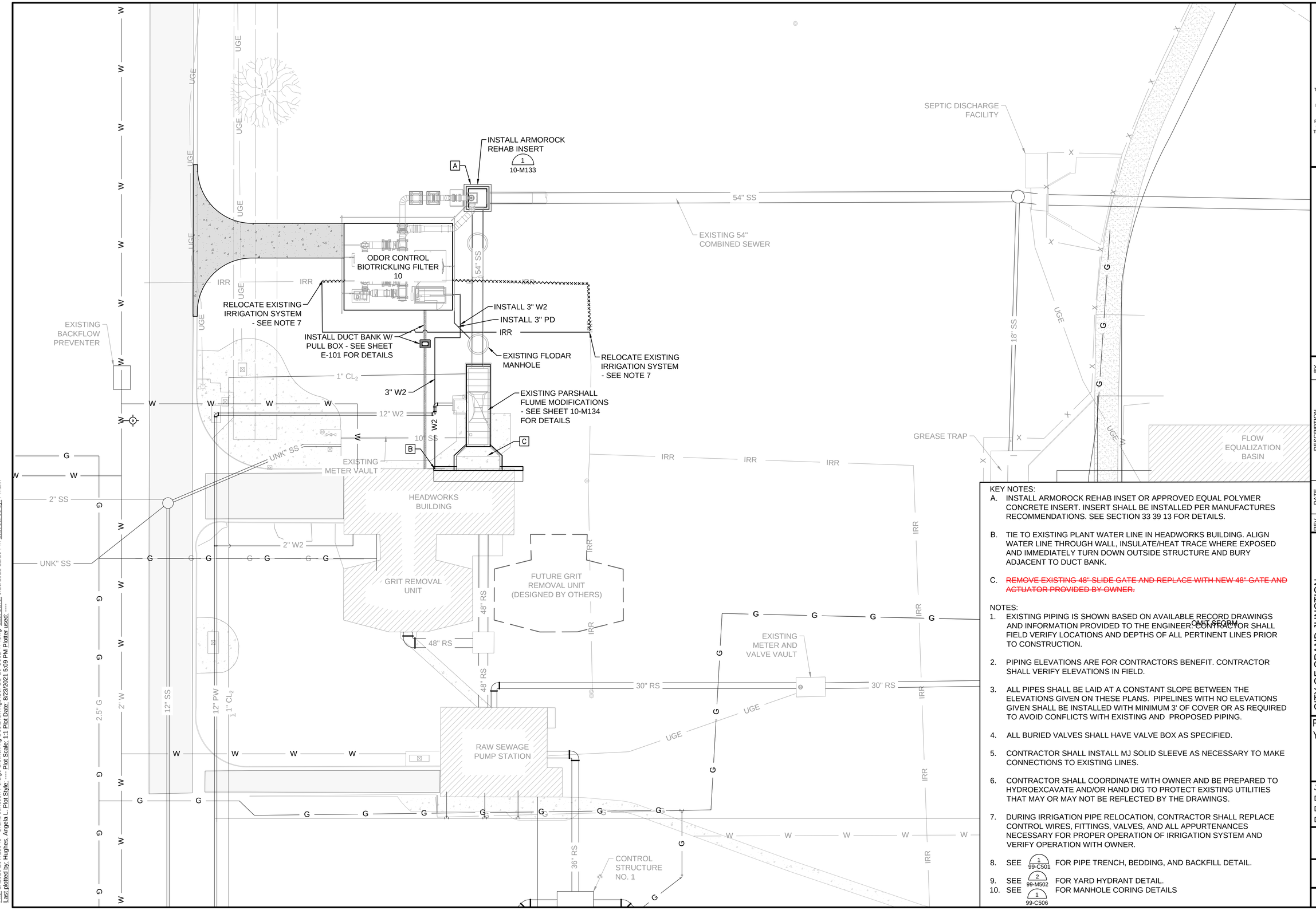
10. Q. What will the working hours be? Is weekend or night work authorized?
    A. 7:00 am to 4:00 pm Monday through Friday. Additional hours and dares allowed and anticipated with prior approval and discussion.

The original solicitation for the project noted above is amended as noted.

All other conditions of subject remain the same.

Respectfully,

Dolly Daniels, Senior Buyer
City of Grand Junction, Colorado



KEY NOTES:

A. INSTALL ARMOROCK REHAB INSET OR APPROVED EQUAL POLYMER CONCRETE INSERT. INSERT SHALL BE INSTALLED PER MANUFACTURES RECOMMENDATIONS. SEE SECTION 33 39 13 FOR DETAILS.

B. TIE TO EXISTING PLANT WATER LINE IN HEADWORKS BUILDING. ALIGN WATER LINE THROUGH WALL, INSULATE/HEAT TRACE WHERE EXPOSED AND IMMEDIATELY TURN DOWN OUTSIDE STRUCTURE AND BURY ADJACENT TO DUCT BANK.

C. ~~REMOVE EXISTING 48" SLIDE GATE AND REPLACE WITH NEW 48" GATE AND ACTUATOR PROVIDED BY OWNER.~~

NOTES:

1. EXISTING PIPING IS SHOWN BASED ON AVAILABLE RECORD DRAWINGS AND INFORMATION PROVIDED TO THE ENGINEER. CONTRACTOR SHALL FIELD VERIFY LOCATIONS AND DEPTHS OF ALL PERTINENT LINES PRIOR TO CONSTRUCTION.
2. PIPING ELEVATIONS ARE FOR CONTRACTORS BENEFIT. CONTRACTOR SHALL VERIFY ELEVATIONS IN FIELD.
3. ALL PIPES SHALL BE LAID AT A CONSTANT SLOPE BETWEEN THE ELEVATIONS GIVEN ON THESE PLANS. PIPELINES WITH NO ELEVATIONS GIVEN SHALL BE INSTALLED WITH MINIMUM 3' OF COVER OR AS REQUIRED TO AVOID CONFLICTS WITH EXISTING AND PROPOSED PIPING.
4. ALL BURIED VALVES SHALL HAVE VALVE BOX AS SPECIFIED.
5. CONTRACTOR SHALL INSTALL MJ SOLID SLEEVE AS NECESSARY TO MAKE CONNECTIONS TO EXISTING LINES.
6. CONTRACTOR SHALL COORDINATE WITH OWNER AND BE PREPARED TO HYDROEXCAVATE AND/OR HAND DIG TO PROTECT EXISTING UTILITIES THAT MAY OR MAY NOT BE REFLECTED BY THE DRAWINGS.
7. DURING IRRIGATION PIPE RELOCATION, CONTRACTOR SHALL REPLACE CONTROL WIRES, FITTINGS, VALVES, AND ALL APPURTENANCES NECESSARY FOR PROPER OPERATION OF IRRIGATION SYSTEM AND VERIFY OPERATION WITH OWNER.
8. SEE 1 / 99-C501 FOR PIPE TRENCH, BEDDING, AND BACKFILL DETAIL.
9. SEE 2 / 99-M502 FOR YARD HYDRANT DETAIL.
10. SEE 1 / 99-C506 FOR MANHOLE CORING DETAILS

REGISTRATION NO.
20171218008

COLORADO LICENSED
CHRISTOPHER DAVID GATLIN
0056183
PROFESSIONAL ENGINEER

Digitally Signed 08/23/2021

REV.	DATE	DESCRIPTION	BY

CITY OF GRAND JUNCTION
GRAND JUNCTION, COLORADO

GRAND JUNCTION
ODOR CONTROL IMPROVEMENTS

OMIT SEQRM

PERSIGO WWTP
YARD PIPING PLAN

JOB NO.: 20W23045
DATE: AUGUST 2021
DESIGNED BY: CDG
DRAWN BY: TNP

BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER
10-C301

SHEET NUMBER 009

CITY OF Grand Junction COLORADO

Purchasing Division

ADDENDUM NO. 7

DATE: **August 11, 2022**
FROM: **City of Grand Junction Purchasing Division**
TO: **All Offerors**
RE: **IFB-5096-22-DD Odor Control Improvement Projects**

Offerors responding to the above referenced solicitation are hereby instructed that the requirements have been clarified, modified, superseded, and supplemented as to this date as hereinafter described.

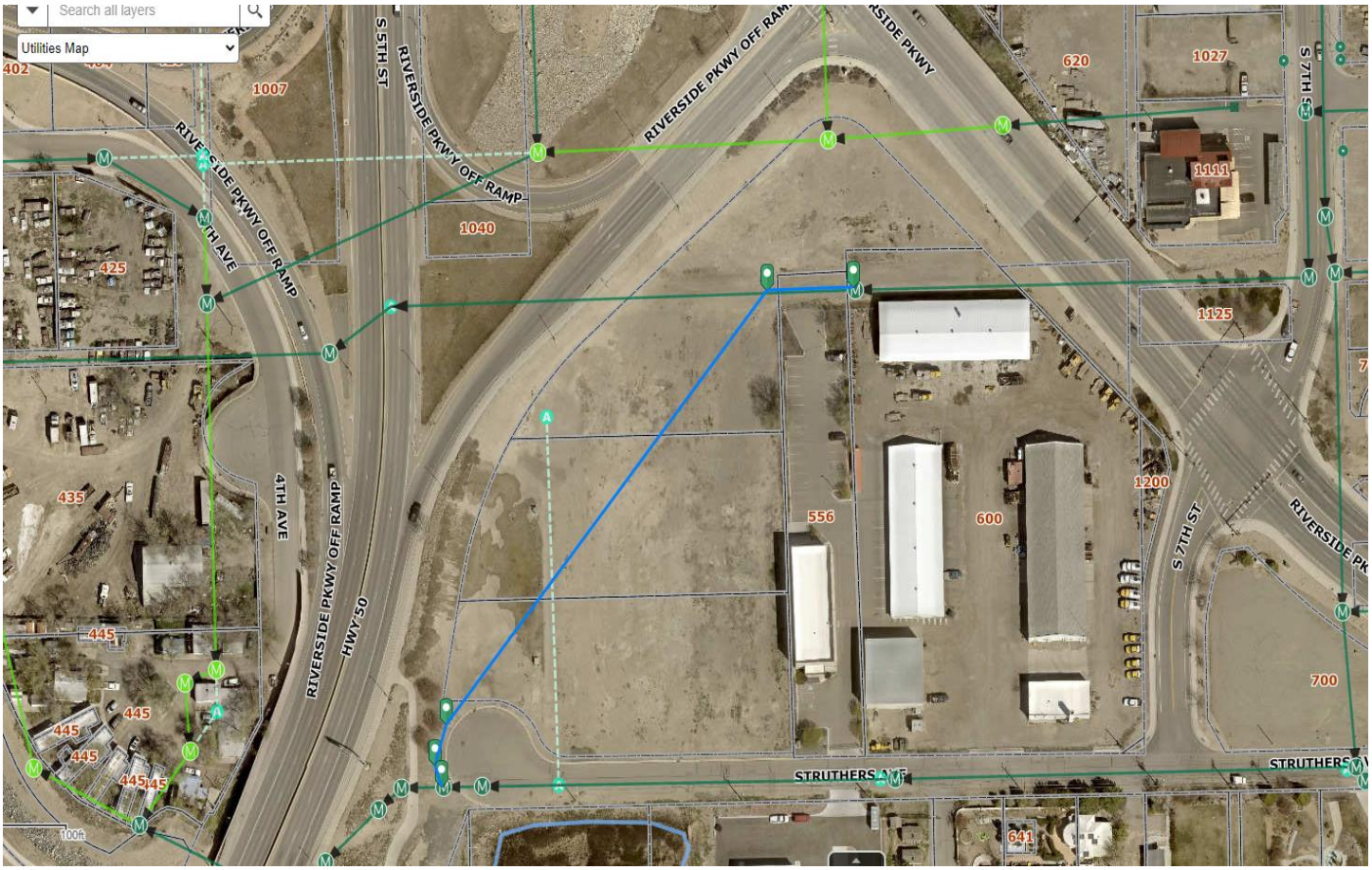
Please make note of the following clarifications: (Following Mandatory Pre-Bid Meeting)

1. Revised Tentative Time Schedule per Solicitation Section 3.7

Invitation for Bids Available on or About	July 20, 2022		
Mandatory Pre-Bid Meeting	~~August 10, 2022~~	August 3, 2022	
Pre-Qualification Application Deadline	~~August 31, 2022~~	August 10, 2022	
Inquiry Deadline, No Questions after this Date	~~September 14, 2022~~	August 10, 2022	
Addendum Posted	~~September 28, 2022~~	August 12, 2022	
Submittal Deadline for Proposals	~~October 12, 2022~~	~~August 23, 2022~~	September 7, 2022
City Council Approval	~~October 26, 2022~~	~~September 7, 2022~~	September 21, 2022
Notice of Award and Contract Execution	~~November 9, 2022~~	~~September 8, 2022~~	September 22, 2022
Bonding and Insurance Cert Due	~~November 16, 2022~~	~~September 15, 2022~~	October 4, 2022
Preconstruction Meeting	~~November 29, 2022~~	~~TBD~~	October 10, 2022
Work Begins No Later Than	~~December 5, 2022~~	October 15, 2022	
Final Completion	~~June 8, 2023~~	April 15, 2023	
Christmas Day (Observed)	December 26, 2022		
New Years (Observed)	January 2, 2023		
MLK Day	January 16, 2023		
President's Day	February 20, 2023		

A. 1.) Flowrates for the Persigo WWTP at the 54" main are AVERAGED at just under 9 million gallons per day. 3 million gallons per day at low flow time of 3:00 am. 15 million gallons per day at peak (non-storm event) times 10:00 am & 9:30 pm. In a storm event inflows can reach as high as 30 million gallons per day flowrate temporarily and flows can be temporarily bypassed into the FE basins while adapting for more bypass pumping.

2.) At the Dos Rios site, the estimated flow rate will be 3 million gallons per day with a bypass receiving manhole 680' away. (See Below)



The original solicitation for the project noted above is amended as noted.

All other conditions of subject remain the same.

Respectfully,

Dolly Daniels, Senior Buyer
City of Grand Junction, Colorado

NOTICE OF AWARD

Date: October 3, 2022

Company: Glacier Construction Co., Inc.

Project: Odor Control Improvements Project IFB-5096-22-DD

You have been awarded the City of Grand Junction Odor Control Improvements Project IFB-5096-22-DD for a total price of **$4,997,000.00**.

Please notify Toby Thieman City of Grand Junction Public Works Project Engineer at 970-244-1559 or tobyt@gjcity.org for project scheduling and return to the City Purchasing Division an acknowledged copy of this Notice of Award, signed Contract, Payment & Performance Bonds, and Insurance Certificate, as per the contract documents.

CITY OF GRAND JUNCTION, COLORADO

DocuSigned by:
Duane Hoff Jr.
9F789E7D50F14BC...
Duane Hoff Jr. Contract Administrator

SUPPLIER ACKNOWLEDGEMENT

Receipt of this Notice to Award is hereby acknowledged:

Company: Glacier Construction Co., Inc.

By: DocuSigned by:
0EEFC010E4A346A...

Title: President

Date: 10/3/2022

4. Contractor's Bid Form

Bid Date: September 7, 2022

Project: IFB-5096-22-DD "Odor Control Improvements"

Bidding Company: Glacier Construction Co., Inc.

Name of Authorized Agent: Randall L Wambsganss

Email rw@gcci.com

Telephone 303-221-5383 **Address** 9801 East Easter Avenue

City Centennial **State** Colorado **Zip** 80112

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

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

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

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

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

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

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

State number of Addenda received: 1 - 7

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: Glacier Construction Co., Inc.

Authorized Signature:

Title: Randall L Wambsganss, President

Price Bid Schedule: Odor Control Improvements

Bid for Dos Rios Odor Biotrickling Filter complete operating system:

Bid Subtotal $ 2,805,000.00

Written: Two Million, Eight Hundred-Five Thousand Dollars and Zero Cents dollars

Bid for Air Siphon across Persigo Wash complete functional system:

Bid Subtotal $ 529,000.00

Written: Five Hundred Twenty-Nine Thousand Dollars and Zero Cents dollars

Bid for Persigo WWTP Biotrickling Filter complete operating system:

Bid Subtotal $ 1,663,000.00

Written: One Million, Six Hundred Sixty-Three Thousand Dollars and Zero Cents dollars

Total Lump Sum Amount: $ 4,997,000.00

Written: Four Million, Nine Hundred Ninety-Seven Thousand Dollars and Zero Cents 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
Sturgeon Electric	Electrical Scope	20%
National Coatings, Inc.	Painting & Coatings	24%
BTC Trenchless	30" Bore & Casing	19%
Sunbelt Pump Solutions	Bypass Pumping	13%

The above named 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.

GLACIER CONSTRUCTION CO

9801 East Easter Avenue • Centennial, Colorado 80112
Phone (303) 221-5383 • Fax (303) 221-5385 • rw@gcci.com

City of Grand Junction
Dolly Daniels
Senior Buyer
333 West Avenue C
Grand Junction, Colorado 81501

Dear Dolly,

Glacier Construction Co., Inc. (Glacier) 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 join Bid each party thereto certified 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.

Sincerely,

Randall L Wambsganss
President
Glacier Construction Co.
9801 East Easter Avenue
Centennial, Colorado 80112

THE AMERICAN INSTITUTE OF ARCHITECTS

AIA Document A310

Bid Bond

KNOW ALL MEN BY THESE PRESENTS, THAT WE Glacier Construction Co., Inc.
9801 East Easter Avenue, Centennial, CO 80112
as Principal, hereinafter called the Principal, and Hartford Fire Insurance Company
One Hartford Plaza, Hartford, CT 06155-0001
a corporation duly organized under the laws of the State of CT
as Surety, hereinafter called the Surety, are held and firmly bound unto City of Grand Junction, Colorado
333 West Avenue C, Grand Junction, CO 81501
as Obligee, hereinafter called the Obligee, in the sum of Five Percent of Amount Bid
Dollars ($ 5%),
for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for Odor Control Improvements Project, Grand Junction, Colorado;
IFB-5096-22-DD

NOW, THEREFORE, if the Obligee shall accept the bid of the Principal and the Principal shall enter into a Contract with the Obligee in accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and materials furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such bond or bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the Obligee may in good faith contract with another party to perform the Work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed and sealed this 7th day of September , 2022

By: _____ (Witness)
Rebecca Jackson, Vice President

Glacier Construction Co., Inc. (Principal) (Seal)
By: _____ (Title)
Randall L. Wambsganss President

By: _____ (Witness)
Kelly Martinez

Hartford Fire Insurance Company (Surety) (Seal)
By: _____
Attorney-in-Fact Amy Coonts

IMA
1705 17th Street, Suite 100
Denver, CO 80202
(303) 534-4567

POWER OF ATTORNEY

Direct Inquiries/Claims to:
THE HARTFORD
BOND, T-11
One Hartford Plaza
Hartford, Connecticut 06155
Bond.Claims@thehartford.com
call: **888-266-3488** *or fax:* **860-757-5835**

KNOW ALL PERSONS BY THESE PRESENTS THAT:

Agency Name: IMA INC
Agency Code: 34-340140

- [X] **Hartford Fire Insurance Company**, a corporation duly organized under the laws of the State of Connecticut
- [X] **Hartford Casualty Insurance Company**, a corporation duly organized under the laws of the State of Indiana
- [X] **Hartford Accident and Indemnity Company**, a corporation duly organized under the laws of the State of Connecticut
- [ ] **Hartford Underwriters Insurance Company**, a corporation duly organized under the laws of the State of Connecticut
- [ ] **Twin City Fire Insurance Company**, a corporation duly organized under the laws of the State of Indiana
- [ ] **Hartford Insurance Company of Illinois**, a corporation duly organized under the laws of the State of Illinois
- [ ] **Hartford Insurance Company of the Midwest**, a corporation duly organized under the laws of the State of Indiana
- [ ] **Hartford Insurance Company of the Southeast,** a corporation duly organized under the laws of the State of Florida

having their home office in Hartford, Connecticut, (hereinafter collectively referred to as the "Companies") do hereby make, constitute and appoint, ***up to the amount of*** Unlimited :

Jennifer L. Clampert, Amy Coonts, David Dondlinger, Sarah Finn, Michael Lischer Jr., Nicole L. McCollam, Lindsey Minutillo, Kristen Moore, Brandi J. Tetley, Danielle Waring of DENVER, Colorado

their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign its name as surety(ies) only as delineated above by ☒, and to execute, seal and acknowledge any and all bonds, undertakings, contracts and other written instruments in the nature thereof, on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

In Witness Whereof, and as authorized by a Resolution of the Board of Directors of the Companies on May 23, 2016 the Companies have caused these presents to be signed by its Assistant Vice President and its corporate seals to be hereto affixed, duly attested by its Assistant Secretary. Further, pursuant to Resolution of the Board of Directors of the Companies, the Companies hereby unambiguously affirm that they are and will be bound by any mechanically applied signatures applied to this Power of Attorney.

Shelby Wiggins

Shelby Wiggins, Assistant Secretary

Joelle L. LaPierre

Joelle L. LaPierre, Assistant Vice President

STATE OF FLORIDA
COUNTY OF SEMINOLE } **ss.** Lake Mary

On this 20th day of May, 2021, before me personally came Joelle LaPierre, to me known, who being by me duly sworn, did depose and say: that (s)he resides in Seminole County, State of Florida; that (s)he is the Assistant Vice President of the Companies, the corporations described in and which executed the above instrument; that (s)he knows the seals of the said corporations; that the seals affixed to the said instrument are such corporate seals; that they were so affixed by authority of the Boards of Directors of said corporations and that (s)he signed his/her name thereto by like authority.

Jessica Ciccone

Jessica Ciccone
My Commission HH 122280
Expires June 20, 2025

I, the undersigned, Assistant Vice President of the Companies, DO HEREBY CERTIFY that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is still in full force effective as of September 7, 2022.

Signed and sealed in Lake Mary, Florida.

Keith Dozois

Keith D. Dozois, Assistant Vice President

Business Insurance
Employee Benefits
Auto
Home

SURETY BOND DIGITAL SEAL
The Hartford Financial Services Group, Inc.

To Our Valued Partners:

In efforts of continuing business during the pendency of the COVID-19 pandemic, The Hartford has authorized its Attorneys-in-Fact to affix the electronic corporate seal in a digital format, in lieu of its traditional raised seal to any bond document issued on its behalf by any such Attorney-in-Fact.

The Hartford agrees and affirms that the digital corporate seal affixed to any bond document is equivalent to its raised corporate seal had it been affixed to the bond document itself.

Effective this 30th day of March, 2020.

The Hartford

Shelby Wiggins

Shelby Wiggins, Assistant Secretary

The Hartford Financial Services Group, Inc.
P.O. Box 958461
Lake Mary, FL 32795

P: 888-656-0817
F: 877-257-2166

www.thehartford.com/bond
www.thehartford.com
www.facebook.com/thehartford
www.twitter.com/thehartford

9801 East Easter Avenue • Centennial, Colorado 80112
Phone (303) 221-5383 • Fax (303) 221-5385 • rw@gcci.com

Glacier Construction Co., Inc. hereby authorizes Randall L. Wambsganss to sign any and all corporate documents on behalf of Glacier Construction Co., Inc.

Dated this 7th day of September, 2022

BY: Randall L. Wambsganss (SEAL)

TITLE: President

ATTEST: _____

TITLE: Rebecca Jackson, Vice President

ADDRESS: 9801 East Easter Avenue
Centennial, Colorado 80112

STATE OF INCORPORATION: Colorado

GLACIER CONSTRUCTION CO., INC. CORPORATE SEAL 1997 COLORADO

(State of Colorado)

(County of Arapahoe)

The foregoing release was subscribed and sworn to before me this 7th day of September, 2022, by Randall L. Wambsganss, as President of Glacier Construction Co., Inc.

_____
(Notary Public Signature)

My Commission Expires: 02-23-26

AMANDA LEONE MAUL
~~NOTARY PUBLIC~~
STATE OF COLORADO
NOTARY ID 20104005317
MY COMMISSION EXPIRES FEBRUARY 23, 2026

Project References

Reference Number	Project Name	Bid Amount	Final Contract Amount	Notice of Award	Notice to Proceed	Scheduled Completion Date	Actual Completion Date	Change Order Summary	Brief Project Description	Project Manager	Superintendent	Project Enigneer	Owner	Engineer
2693	Lone Tree Creek Water Reuse Facility	$28,850,000.00	$29,910,374.00	5/24/2006	6/6/2006	6/5/2008	6/15/2009	8/$1,060,374	construction of a new greenfield 12 MGD wastewater treatment plant and modification of an existing plant to process solids from the new plant. The new plant construction included a headworks and raw sewage pumping facility, biological nutrient removal reactors, secondary clarifiers, blower facility, RAS and WAS pumping facility, advanced water treatment facility (including surge basins, filter feed basins, overflow basins, tertiary clarifiers, filters, eight chemical feed systems, and filter feed, backwash, recycle, and reuse pumps, and disinfection), sludge dewatering facility, and extensive yard pipe and electrical ductbank work. Modification of the existing membrane bioreactor facilities and maintenance building was completed to process solids from the new plant.	Rolin Sayler*	Mike Stephenson	Alex Rader*/ Matt Crozier*/ Mark Holtmann*	Arapahoe County Water & Wastewater Authority; 13031 E. Caley Rd Centennial, CO 80111; Gary Atkin (303) 791-4830	Richard P. Arber Associates (now Hatch-Mott MacDonald); 198 Union Blvd, Suite 200 Lakewood, CO 80228; Bill Veydovec (303) 831-4700
2925	Farmers Korner North Plant	$26,797,600.00	$26,757,953.00	6/11/2009	7/3/2009	10/31/2011	7/27/2012	6/-$39,647	4 MGD expansion of an existing wastewater treatment facility in Breckenridge, Colorado. The new plant construction includes a headworks and grit removal facility, extensive yard pipe, electrical ductbanks, several yard and Palmer-Bowlus flume structures, a secondary clarifier, intermediate pump station, RAS/WAS pumps, high rate flocculation/sedimentation basins, dual media filters, odor control equipment, blowers and ductworks, electrical, instrumentation and controls, and site paving and drainage system.	Rolin Sayler*/ Brian Doerr*	William Quante/ Aaron Karraker/ Matt Crozier*/ Alex Rader*	Brian Doerr*/ Ryan Tedford*/ Matt Crozier*/ Alex Rader*	Upper Blue Sanitation District; 1605 Airport Rd Breckenridge, CO 80424; Greg Brown (970) 453-2723	Carollo Engineers; 320 Interlocken Pkwy, Suite 300 Broomfield, CO 80021; Stephen Grooters (303) 635-1220
1150	St. Vrain Phase 1 Treatment Facility Expansion	$24,124,620.00	$31,702,644.00	5/18/2011	7/13/2011	2/13/2013	6/30/2015	7/$7,578,204	Construction of two 3 MGD oxidation ditches with jet aeration and mixing system; Construction two 100' diameter secondary clarifiers with associated sludge handling facilities; Construct new UV disinfection facility; Construct solids handling facilities using autothermal thermophilic aerobic digestion (ATAD); Renovate and expand existing operations building; Construct miscellaneous site improvements including a new vehicle storage building, new solids storage building, emergency power system, site piping, instrumentation and controls, and electrical work.	Abram Karraker/ Mike Gordon*/ Rolin Sayler*	Mike Stephenson/ Aaron Karraker/ Mark Holtmann*	Matt Mawhiney*/ Matt Crozier*/ Paul Smith*	St. Vrain Sanitation District; 11307 Business Park Cir Firestone, CO 80504; Rob Fleck (303) 776-9570	Frachetti Engineering, Inc.; 5325 S. Valentia Way Greenwood Village, CO 80111; Nick Toussaint (303) 300-3464
1267	2012 Wastewater Treatment Plant Improvements	$3,604,100.00	$3,724,637.00	7/2/2012	7/16/2012	7/16/2013	10/25/2013	4/$120,537	Improvements to blowers, nitrification cells, odor control, HVAC and Electrical at two wastewater treatment facilities. Installation of new high speed turbo blower, new coarse bubble diffusers, new aeration headers, lateral piping, and control valves and new weirs. Secondary treatment improvements including the installation of fine bubble diffuser system, chemical scrubber, odor control system and new Ferric Chloride chemical feed system.	Jennifer Smith	Aaron Karraker	Matt Crozier*	Eagle River Water & Sanitation; 846 Forrest Rd Vail, CO 81657; John Cahill (970) 471-5357	Frachetti Engineering, Inc.; 5325 S. Valentia Way Greenwood Village, CO 80111; Mike Broms (303) 300-3464
1401	Williams Monaco BNR Upgrade	$20,034,000.00	$19,955,636.75	9/17/2014	10/15/2014	10/4/2016	5/31/2016	2/-$78,363.25	New secondary process train and renovations to the existing secondary process. Work also includes grit removal upgrades, blower upgrades, uv disinfection, concrete process basins, additional process buildings, equipment installation, electrical power, and instrumentation and controls.	Randy Wambsganss	Aaron Karraker	Jared Brewer/ Mitchell Peterson*	South Adams County Water & Sanitation District; 6595 E. 70th Ave Commerce City, CO 80037; JM Grebenc (303) 288-2646	Burns & McDonnell; 9785 Maroon Cir, Suite 400 Centennial, CO 80112; Andrew Waddoups (303) 721-9292
1512	Leprino Foods Greeley Phase 2 Wastewater Treatment Plant Upgrades	$420,000.00	$10,562,417.57	12/10/2015	12/10/2015	6/13/2017	6/13/2017	42/ $10,142,417.57	This project included additions and improvements to the primary treatment, advanced aerobic treatment, tertiary treatment,and solids handling processes at the wastewater treatment plant. There were 2 new EQ tanks, 2 new MBBR reactors and aeration blowers, a new clarifier, and a new aerated calamity lagoon in the primary treatment process. The advanced aerobic treatment got a new permanent feed systems as well as a new SBR feed lift station. The tertiary treatment process got bulk chemical storage, feed system, and 2 clarifiers for tertiary precipitation of phosphorous and 8 tertiary phosphorous filters as well as additional frame heat exchanger plates.	Randy Wambsganss	Aaron Karraker	Schuyler Lemley	Leprino Foods Company; 1831 W. 38th Ave Denver, CO 80211; Kelly Hawkins (303) 480-2760 khawkins@leprinofoods.com	Symbiont; 6737 W. Washington St, Suite 3440 West Allis, WI 53214; Tom Bachman (414) 291-8840 tom.bachman@symbiontonline.com
1617	Lagae Lift Station Permanent No. 9	$1,149,969.00	$1,173,790.54	4/11/2016	6/2/2016	11/9/2016	4/12/2017	5/$23,822.54	Construction of lift station including Gorman-Rupp pumps, dual cast-in-place concrete wet wells, CMU building with standing-seam metal roof, standby diesel generator with automatic transfer switch, grinder system, and bioxide chemical feed system.	Abram Karraker	Ray Smith	Taylor Pearson	North Pine Vistas Metropolitan District No. 1; 1700 Lincoln St, Suite 3800 Denver, CO 80203; Tom Clark (303) 660-7446	Rick Engineering Company; 9801 E. Easter Ave Centennial, CO 80112; Michael Flanagan (303) 565-8082
1622	Big Dry Creek Wastewater Treatment Facility Digester Improvements	$2,561,900.00	$3,050,263.26	6/14/2016	7/5/2016	8/7/2017	6/30/2017	3/$488,363.26	Primary digester concrete cover and liner repairs, primary digester mixer replacement, digester #3 floating cover repairs, digester biogas collection and handling equipment replacement and upgrades, digester building HVAC upgrades, biofilter media replacement, installation of hoist mechanism in the headworks building, caulking and sealing exterior of administration building, and reclaimed water treatment facility pump repairs.	Jennifer Smith	Jared Brewer	Elias Delacruz	City of Westminster; 4800 W. 92nd Ave Westminster, CO 80031; Kent Brugler (303) 658-2196 kbrugler@cityofwestminster.us	HDR Engineering, Inc.; 1670 Broadway, Suite 3400 Denver, CO 80202; Adam Parmenter (303) 764-1590 Adam.Parmenter@hdrinc.com
1742	80th & Clay Lift Station	$2,208,753.00	$2,139,582.50	9/12/2017	10/31/2017	7/19/2018	6/21/2018	8/-$69,170.50	Constructing new lift station with submersible pumps and a valve vault, installing approximately 585 lf of 8" and 24" PVC gravity sewer main and manholes, installing approximately 2,210 lf of new 4" PVC of HDPR force main using horizontal directional drilling, installing approximately 130 lf of new force main using open cut trenching, rehabilitating approximately 610 lf of existing 4" force main using HDD in-reaming, demo of existing lift station and associated equipment, and site restoration. A conduit and fiber optic cable will be installed with the new force main to connect the lift station to the City's SCADA system. Fiber terminations and SCADA programming are included as part of this project. All electrical work at the lift station site, including a new diesel generator, is included.	Jennifer Smith	Jared Brewer	N/A	City of Westminster; 4800 W. 92nd Ave Westminster, CO 80031; Julie Koehler (303) 658-2178 Email: jkoehler@CityofWestminster.us	Kennedy/Jenks; 143 Union Blvd, Suite 600 Lakewood, CO 80228; Lisa Schwien (303) 985-3636 'Lisa Schwien' <LisaSchwien@KennedyJenks.com>
1963	Wagons West Lift Station	$582,263.00	$653,950.00	2/28/2019	4/15/2019	7/29/2019	4/15/2020	5/$71,687	Construction of a sewage lift station and force main including earthwork, dewatering, concrete placement, asphalt paving, utility installation, process piping, equipment installation, electrical, startup and commissioning, and all incidental work required.	Bryan Caudill	Jeff Woelk	TBD	ProTerra Properties, LLC; 1864 Woodmoor Dr Suite 100 Monument, CO 80132; Charlie Williams (719) 476-0800 Email: cwilliams@proterraco.com	JDS-Hydro Consultants, Inc.; 5540 Tech Center Dr, Suite 100 Colorado Springs, CO 80919; Geoffrey Sanders (719) 227-0072 Doug Schwenke (719) 227-0072 dschwenke@jdshydro.com
2088	Big Dry Creek LS Updates	$6,569,000.00	$6,815,601.98	2/25/2020	3/31/2020	10/7/2021	2/28/2022	7/$246,601.98	Constructing an 8-MGD sewage lift station including emergency overflow structure, submersible pumps, cast-in-place concrete wet well, emergency backup generator equipment, valves, fittings, ancillary structures and buried piping on the lift station site.	Bryan Caudill	Mike Stephenson	Elias Delacruz	City of Thornton 9500 Civic Center Drive, Thornton, CO 80229 Dennis Laurita (303) 538-7649 Dennis.Laurita@thorntonco.gov	Providence Infrastructure Consultants 300 Plaza Dr, Suite 320 Highlands Ranch, CO 80129 303-997-5035 Daniel Rice drice@providenceic.com