Purchasing Division

Invitation for Bid

IFB-4276-16-DH
Slough Excavation, Concrete Demo and Nesting for Las Colonias Park Project

Responses Due:

September 13, 2016 prior to 3:30pm

Accepting Electronic Responses Only

Responses Only Submitted Through the Rocky Mountain E-Purchasing System (RMEPS)

https://www.rockymountainbidsystem.com/default.asp

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

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

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

Invitation for Bids

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1. Instructions to Bidders

1.1. **Purpose:** The City of Grand Junction is soliciting competitive bids from qualified and interested companies for all labor, equipment, and materials required to provide construction services for slough excavation, concrete demo, and nesting for the Las Colonias Project. All dimensions and scope of work should be verified by Contractors prior to submission of bids.

1.2. **Recommended Pre-Bid Briefing:** Due to the complexity of the project, prospective bidders are ***highly encouraged*** to attend a pre-bid briefing on **August 30, 2016 at 9:00 a.m. at Grand Junction City Hall, 250 N. 5th Street in the Auditorium. Bidders are then invited to attend a walk through on the site at 925 Struthers Avenue immediately following the pre-bid briefing.** The purpose of this visit will be to inspect and to clarify the contents of this Invitation for Bids (IFB).

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

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

1.5. **Submission:** ***Each proposal shall be submitted in electronic format only, and only through the Rocky Mountain E-Purchasing website (https://www.rockymountainbidsystem.com/default.asp).*** *This site offers both "free" and "paying" registration options that allow for full access of the Owner's documents and for electronic submission of proposals. (Note: "free" registration may take up to 24 hours to process. Please Plan accordingly.)* Please view our "**Electronic Vendor Registration Guide"** at http://www.gjcity.org/BidOpenings.aspx for details. (Purchasing Representative does not have access or control of the vendor side of RMEPS. If website or other problems arise during response submission, vendor **MUST** contact RMEPS to resolve issue prior to the response deadline. **800-835-4603**)

1.6. **Printed Form for Price Bid:** All Price Bids must be made upon the Contractor's Bid Form attached, and should give the amounts both in words and in figures, and must be signed and acknowledged by the bidder.

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

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

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

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

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

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

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

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

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

2. General Contract Conditions for Construction Projects

2.1. The Contract: This Invitation for Bid, submitted documents, and any negotiations, when properly accepted by the City/County, shall constitute a contract equally binding between the City/County and Contractor. The contract represents the entire and

integrated agreement between the parties hereto and supersedes all prior negotiations, representations, or agreements, either written or oral. The contract may be amended or modified with Change Orders, Field Orders, or Addendums.

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

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

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

2.5. Contractor: The Contractor is the person or organization identified as such in the Agreement and is referred to throughout the Contract Documents. The term Contractor means the Contractor or his authorized representative. The Contractor shall carefully study and compare the General Contract Conditions of the Contract, Specification and Drawings, Scope of Work, Addenda and Modifications and shall at once report to the Owner any error, inconsistency or omission he may discover.

Contractor shall not be liable to the Owner for any damage resulting from such errors, inconsistencies or omissions. The Contractor shall not commence work without clarifying Drawings, Specifications, or Interpretations.

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

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

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

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

Contractor will also bear the expenses of making good all work of others destroyed or damaged by the correction, removal or replacement of his defective work.

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

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

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

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

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

(a) Worker Compensation: Contractor shall comply with all State of Colorado Regulations concerning Workers' Compensation insurance coverage.

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

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

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

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

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

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

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

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

2.16. Miscellaneous Conditions: Material Availability: Contractors must accept responsibility for verification of material availability, production schedules, and other pertinent data prior to submission of bid. It is the responsibility of the bidder to notify

the Owner immediately if materials specified are discontinued, replaced, or not available for an extended period of time. OSHA Standards: All bidders agree and warrant that services performed in response to this invitation shall conform to the standards declared by the US Department of Labor under the Occupational Safety and Health Act of 1970 (OSHA). In the event the services do not conform to OSHA standards, the Owner may require the services to be redone at no additional expense to the Owner.

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

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

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

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

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

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

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

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

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

The Contractor agrees that as a part of the consideration for the City's awarding of this Contract liquidated damages in the daily amount of **$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 substantially complete. In addition to the Work being substantially complete, Final Completion date is the date by which the Contractor shall have fully completed all clean-up, and all items that were identified by the City in the inspection for final completion. Unless otherwise stated in the Special Conditions, for purposes of this liquidated damages clause, the Work shall not be finished and the Contract time shall continue to accrue until the City gives its written Final Acceptance.

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

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

2.26. Contingency/Force Account: Contingency/Force Account work will be authorized by the Owner's Project Manager and is defined as minor expenses to cover miscellaneous or unforeseen expenses related to the project. The expenses are not included in the Drawings, Specifications, or Scope of Work and are necessary to accomplish the scope of this contract. Contingency/Force Account Authorization will be directed by the Owner through an approved form. Contingency/Force Account funds are the property of the Owner and any Contingency/Force Account funds, not

required for project completion, shall remain the property of the Owner. Contractor is not entitled to any Contingency/Force Account funds, that are not authorized by Owner or Owner's Project Manager.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

2.42. Independent Contractor: The Contractor shall be legally considered an Independent Contractor and neither the Contractor nor its employees shall, under any circumstances, be considered servants or agents of the Owner. The Owner shall be at no time legally responsible for any negligence or other wrongdoing by the Contractor, its servants, or agents. The Owner shall not withhold from the contract payments to the Contractor any federal or state unemployment taxes, federal or state

income taxes, Social Security Tax or any other amounts for benefits to the Contractor. Further, the Owner shall not provide to the Contractor any insurance coverage or other benefits, including Workers' Compensation, normally provided by the Owner for its employees.

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

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

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

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

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

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

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

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

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

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

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

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

2.53.1. "Public project" is defined as:

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

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

(c) except any project that receives federal moneys.

3. Statement of Work

3.1. General: The City of Grand Junction is soliciting competitive bids from qualified and interested companies for all labor, equipment, and materials required to provide

construction services for slough excavation, concrete demo, and nesting for the Las Colonias Project. All dimensions and scope of work should be verified by Contractors prior to submission of bids.

From a uranium mill tailings clean-up site to a regional riverfront park, the Las Colonias Park project will restore and revitalize over 130 acres on the banks of the Colorado River in the heart of Grand Junction. A major component of the Park is an outdoor Amphitheater that will serve as a regional draw and a catalyst for reinvestment and revitalization in the River and Rail Districts of the Greater Downtown Area. The project enjoys widespread support from the community, with many funding partners stepping up to make this project possible, including the Department of Local Affairs, Grand Junction Lions Club, the Downtown Development Authority, and the Riverfront Foundation, as well as others. This Slough Excavation, Concrete Demo and Nesting for Las Colonias Park Project is one of three bids being advertised concurrently to achieve a complete phase for the outdoor Amphitheater. It is incumbent on the bidding contractor to understand and consider the overlap of work in this bid with the other two bids.

3.2. Project Description: Slough excavation, west trail demo, concrete nesting, compaction, and alternates. The City of Grand Junction, in partnership with the Tamarisk Coalition, Colorado Parks and Wildlife, and Ducks Unlimited, is creating 25 acres of riparian and wetland habitats adjacent to the Colorado River at Las Colonias Park. The goals of this project are: first, to provide wetland-dependent migratory birds (and other fish and wildlife species) with high quality slough habitat on the property; and, second, to increase support for wetland habitat conservation by the citizens and visitors of the City by making this section of Las Colonias Park accessible for outdoor exploration and education activities. To achieve these goals, a three acre slough channel will be excavated directly linked to the Colorado River. The intent of this project is to excavate and shape a new channel such that historic hydric regimes are restored to an area of the river whose natural meandering processes have been artificially restricted. The hydrology of the system will re-create environmental gradients from the new channel upwards that will supply targeted wildlife species with riverine, wetland, and riparian habitats on the site.

In addition to the excavation work, the bid includes demolition of the existing west trail and nesting of that concrete in the amphitheater seating area. Following this demolition and nesting process, the excavation process will begin with the excavated material being transported to the amphitheater seating area and then compacted. The slough excavation project must take place during times of low water flow, and the first week of October is the targeted start date with completion by the end of 2016.

3.3. Special Conditions & Provisions:

3.3.1 Recommended Pre-Bid Briefing: Due to the complexity of the project, prospective bidders are ***highly encouraged*** to attend a pre-bid briefing on **August 30, 2016 at 9:00 a.m. at Grand Junction City Hall, 250 N. 5th Street in the Auditorium. Bidders are then invited to attend a walk through on the site at 925**

Struthers Avenue immediately following the pre-bid briefing. The purpose of this visit will be to inspect and to clarify the contents of this Invitation for Bids (IFB).

3.3.2 QUESTIONS REGUARDING SOLICIATION PROCESS/SCOPE OF WORK:
Duane Hoff Jr., Senior Buyer
City of Grand Junction
duaneh@gjcity.org

3.3.2 Project Manager: The Project Manager for the Project is Scott Hockins, Project Manager, who can be reached at (970)244-1484. 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
Purchasing Division
Attn: Scott Hockins, Project Manager
250 North Fifth Street
Grand Junction, CO 81501

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

3.3.4 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.

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

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

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

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

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

3.3.8 Time of Completion: The scheduled time of Completion for the Project is November 11, 2016.

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

3.3.9 Working Days and Hours: The working days and hours shall be as stated in the General Contract Conditions, Section VI or as mutually agreed upon in the preconstruction meeting.

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

3.3.11 Permits: See Section 01410 – Regulatory Requirements. The following permits, if required for the Project, will be obtained by the City at no cost to the Contractor:

- United States Army Corps of Engineer's (USACE) Clean Water Act Section 404 Nationwide Permit and Clean Water Act Section 401 Water Quality Certification Authorization.

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

- Dewatering Permit

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

- AutoCAD drawings for survey stake-out. (Provided by River Restoration, upon request)

3.3.13 Project Newsletters: Project newsletters, if required, will be the responsibility of the City.

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

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

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

3.3.17 Stormwater Management Plan: All vehicle and equipment maintenance and fueling shall be performed within the projects designated staging and material stockpile area. The fueling area shall exhibit Best Management Practices in order to minimize and/or eliminate the potential of fuel spillage. Any spillage of fuel onto the ground shall be immediately cleaned up and any contaminated soil disposed of properly at the Mesa County Landfill. Documentation of spills, leaks and overflows that result in the discharge of pollutants, including logging and reporting of the spill is required to the Water Quality Control Division at their toll-free 24-hour environmental emergency spill reporting line – 1-877-518-5608.

The Contractor shall clear the site of all on-site waste daily, including scrap from construction materials.

Concrete trucks will be required to wash out in a portable concrete washout pool supplied by the Contractor or the concrete truck shall wait to washout back at the concrete batching facility. The Contractor will be responsible for maintaining the concrete washout pool. The washout pool shall be cleaned out and/or replaced when the washout pool reaches 50% of total capacity.

The Contractor shall clear the site of all trash and litter daily. Portable toilets will be maintained (cleaned and emptied) by a local supplier.

3.3.18 Clean-Up: The Contractor shall clear the construction site of all trash and on-site waste daily, including scrap from construction materials.

3.3.19 Construction Equipment Storage: Staging and material stockpile areas shall be coordinated with the City's Project Manager.

3.3.20 Existing Utilities and Structures: Utilities were **not** potholed during design of this project. The location of existing utilities and structures shown on the Plans is approximate with the information gathered during design. It is the responsibility of the Contractor to pothole/locate and protect all structures and utilities in accordance with General Contract Condition Section 37.

3.3.21 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.

3.3.22 Weekly Progress Meetings: The Contractor and City's Project Manager will schedule and hold regular progress meetings at least weekly and at other times as

requested by the City's Project Manager. The purpose of the meetings will be to review the progress of the work, maintain coordination efforts, discuss changes in schedule, and resolve issues that may develop.

3.4. Scope of Work: See attached drawings containing scope of work and specifications.

3.5. IFB Tentative Time Schedule:

Invitation For Bids available	August 15, 2016
Recommended Pre-Bid Briefing	August 30, 2016
Inquiry deadline, no questions after this date	September 2, 2016
Addendum Posted	September 8, 2016
Submittal deadline for proposals	September 13, 2016
City Council Approval	October 5, 2016
Contract execution	October 6, 2016
Bonding & Insurance Cert due	October 12, 2016
Work begins no later than	October 17, 2016
Final Completion	December 31, 2016

3.6. Questions Regarding Scope of Services:

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

4. Contractor's Bid Form

Bid Date: _____

Project: IFB-4276-16-DH "Slough Excavation, Concrete Demo and Nesting for Las Colonias Park Project"

Bidding Company: _____

Name of Authorized Agent: _____

Email _____

Telephone_____ **Address**_____

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

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

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

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

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

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

State number of Addenda received: _____.

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

- Direct purchases by the City of Grand Junction are tax exempt from Colorado Sales or Use Tax. Tax exempt #98-903544.
- The undersigned certifies that no Federal, State, County or Municipal tax will be added to the above quoted prices.
- Prompt payment discount of _____percent of the net dollar amount will be offered to the Owner if the invoice is paid within _____ days after the receipt of the invoice.
- The undersigned certifies and agrees that this bid is submitted in accordance with all applicable Federal, State, County, and City laws.

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

Company: _____

Authorized Signature: _____

Title: _____

BID SCHEDULE

The Construction Contract is known as:
LAS COLONIAS PARK SLOUGH RESTORATION PROJECT

PART 1 BID SCHEDULES

1.1 BASE BID
The Base Bid covers work required to complete the project as specified in the plans and technical specifications. Represented in the Bid Schedule as bid item numbers 1-16 and 23-25

1.2 ADD ALTERNATIVE BID: DEMO, HAUL, and PLACE EXISTING CONCRETE PATH
Bid covers work required to complete Add Alternative: Demo, haul, and place existing concrete path as specified in the plans and technical specifications. Represented in the Bid Schedule as bid item numbers 17 and 18

1.3 ADD ALTERNATIVE BID: WATSON ISLAND SLOUGH CONTROL STRUCTURE
Bid covers work required to complete Add Alternative: Watson Island Slough Control Structure as specified in the plans and technical specifications. Represented in the Bid Schedule as bid item numbers 19-22

1.4 ADD ALTERNATIVE BID: TOPSOIL and EROSION CONTROL BLANKETS
Bid cover work required to complete Add Alternative: Topsoil and Erosion Control Blankets as specified in the plans and technical specifications. Represented in the Bid Schedule as bid item numbers 26 and 27

Cost is for all work basic to the Contract. The estimated quantities and prices are as follows:

Las Colonias Park Slough Restoration Project Bid Schedule

Bid Item No.	CDOT Spec. Ref.	Description	Quantity	Units	Unit Price	Total Price	Totals
		Site Preparation					
1		Mobilization/Demobilization/Bonding/Insurance	1	LS			
2		Construction Survey/Stake/As-built	NA	NA			
3		Trail/Pedestrian signage	1	LS			
					Sub Total:		

		Erosion Control and Care of Water					
4		General Staging Area BMPs	1	LS			
5		Care of Water Practices	1	LS			
6		Haul Route Maintenance	1	LS			
					Sub Total:		
		Construction					
7	*201*	Clearing and Grubbing	3	AC			
8		Excavation and transport to disposal areas	28,976	CY			
9		Disposal area rough grading	15,000	CY			
10		Selective sorting and stockpiling of alluvium	1,972	CY			
11		Grading of riffles with coarse cobble alluvium	1,904	CY			
12		Install coarse cobble riffle inlet for slough split	26	CY			
12		Furnish and place 36" boulder	573	TONS			
13		Backfill boulder with general alluvium	67	CY			
14	*202*	Miter, haul off, and dispose of 30" storm pipe	170	LF			
15		Furnish and Install outfall structure for 30" storm pipe	161	TONS			
16		Furnish and install non-woven filter fabric beneath boulder/riprap	364	SY			
					Sub Total:		
		Construction - Add Alternative					
		Demo, Haul, and Place Existing Concrete Path					
17		Deconstruct concrete path	200	CY			
18		Transport/place concrete to disposal area	200	CY			
		Watson Island slough control structure					
19		Excavate and transport to disposal area	106	CY			

20		Furnish and place 36" boulder	300	TONS			
21		Furnish and install non-woven filter fabric beneath boulder	132	SY			
22		Backfill boulder with general alluvium	26	CY			
					Sub Total:		
		Bio-engineering					
		Required Seeding					
23		Furnish and install riparian native seed mix	2.00	AC			
24		Furnish and install wetland native seed mix	2.60	AC			
25		Furnish and install dormant willow poles	3,500	SY			
					Sub Total:		
		Add Alternative: Topsoil and Erosion Control Blankets					
26		Erosion Control Blankets	3,500	SY			
27		Topsoil Import and Grading	583	CY			
					Sub Total:		
		TOTAL SUM BID					
		BASE BID					
		ADD ALTERNATIVE: DEMO, HAUL, AND PLACE EXISTING CONCRETE PATH					
		ADD ALTERNATIVE: WATSON ISLAND SLOUGH CONTROL STRUCTURE					
		ADD ALTERNATIVE: TOPSOIL AND EROSION CONTROL BLANKETS					

PART 2 MEASUREMENT AND PAYMENT

2.1 GENERAL

A. ENGINEER will take all measurements and compute all quantities.

B. CONTRACTOR will verify measurement and quantities.

C. CONTRACTOR will provide all equipment, workers, and survey crews to assist ENGINEER in making measurements.

D. Units of measurement are listed above in the bid schedule(s).

E. Refer to Technical Specifications and Details for more detailed information to the following bid items, if applicable.

F. Bids shall encompass all costs associated with each bid item. This includes, but is not limited to planning, measuring, locating, surveying, executing, supplying, testing, cleaning, protecting, and finalizing Work and any and all incidentals. Bids shall include all costs associated with purchasing all materials necessary to complete Work. Bids shall encompass all costs associated with minimizing impacts upon the natural environment during any and all construction activities, including delays associated with sequencing.

G. Payment for all Lump Sum (LS) items will be made on a percentage basis as follows.

Percent of Original Contract Amount Earned	Percent of Amount Bid Item to be Paid
5	20
15	20
40	20
60	20
100	20

2.2 BID ITEM DESCRIPTIONS

Bid Item No. 1
MOBILIZATION/DEMOBILIZATION/BONDING/INSURANCE

A. Measurement is per Lump Sum (LS).

B. Work includes, but is not limited to: providing all required bonds and insurance; mobilization; demobilization; installation of temporary work area facilities; protecting in place vegetation and utilities, bringing and removing all necessary construction equipment to and from the site; obtaining construction permits; any and all incidentals; and restoration of site and disturbed areas to pre-construction conditions.

Bid Item No. 2
CONSTRUCTION SURVEY/STAKE/AS-BUILT

Work to be completed by OWNER

Bid Item No. 3
TRAIL/PEDESTRIAN SIGNAGE
A. Measurement is per Lump Sum (LS).
B. Payment covers the complete installation and removal of any and all signage required to inform pedestrian traffic of construction activities and provide detour information if necessary. Detour route to be supplied by OWNER. Work includes, but is not limited to: purchasing and delivery of all materials; delays; removal of work; and any and all incidentals.

Bid Item No. 4
GENERAL STAGING AREA BMP's
A. Measurement is per Lump Sum (LS).
B. Payment covers the complete installation and removal of any and all structures required to minimize environmental impact and non-point source pollution. Work includes, but is not limited to: purchasing and delivery of all materials; delays; installation of temporary work; maintaining and replacing work; removal of work and restoration of the site; and any and all incidentals.

Bid Item No. 5
CARE OF WATER (COW) PRACTICES
A. Measured is per Lump Sum (LS)
B. Payment covers complete cost of installation of structures and maintenance in place, to minimize environmental impacts and simultaneously maximize construction efficiency, by caring for water for the duration of the project. Work includes installation of turbidity curtains, coffer dams, oil booms, pumps and filters, coffer dams, sequencing, and intermittent excavation operations if exceeding 10 NTUs of turbidity, and all BMPs necessary for open bank excavations and channel work in the wet, and Care of Water permit conditions adherence. Payment covers methods, precautions, delays, installations, modifications, maintenance, replacement, and materials for water control structures and removal and disposal of structures and incidentals required to complete work as shown on drawings or noted in specifications.

Bid Item No. 6
HAUL ROUTE MAINTENANCE
A. Measurement is per Lump Sum (LS)
B. Payment covers the complete installation and removal of any and all activities required to establish, maintain, and restore haul routes during and after construction. Haul routes are expected to be minimal given the current state of the site, so all areas within project limits is available to hauling. Work includes, but is not limited to: purchasing and delivery of all materials; delays; installation of temporary work; maintaining and replacing work; removal of work and restoration of the site; and any and all incidentals.

Bid Item No. 7
CLEARING AND GRUBBING
A. Measurement is per Lump Sum (LS).
B. Meet or Exceed CDOT 2011 Standard Specification section 201

Bid Item No. 8, 19
EXCAVATION AND TRANSPORT TO DISPOSAL AREA
A. Measurement per Cubic Yard (CY) of excavation
B. Payment covers complete cost of the excavation and the transport to on site disposal areas. Work includes, but is not limited to: COW BMP's; supplying equipment; excavating; on-site transport; and any and all incidentals.

Bid Item No. 9
DISPOSAL AREA ROUGH GRADING
A. Measurement per Cubic Yard (CY) of fill material
B. Payment covers all work necessary to grade the disposal area fill to sub-grade elevations specified in plans (by others). Work includes, but is not limited to: BMP's; supplying equipment; rough grading; and any and all incidentals.

Bid Item No. 10
SELECTIVE SORTING AND STOCKPILING OF ALLUVIUM
A. Measurement per Cubic Yard (CY) of alluvium
B. Payment covers all work necessary to sort excavated material into gradations specified in section 4 of this document. Work includes, but is not limited to: BMP's; supplying equipment; sorting alluvium; and any and all incidentals.

Bid Item No. 11
GRADING OF RIFFLES WITH COARSE COBBLE ALLUVIUM
A. Measurement per Cubic Yard (CY) of coarse cobble alluvium
B. Payment covers all work necessary to grade sorted alluvium to elevations specified on plans and per section 2 of the technical specifications. Work includes, but is not limited to: COW BMP's; supplying equipment; fine grading; and any and all incidentals.

Bid Item No. 12, 20
FURNISH AND PLACE 36" BOULDER
A. Measurement is per Ton of installed boulders per certified scale tickets.
B. Sources of boulder must be approved by OWNER prior to procurement installation and payment.
C. Boulder gradation must comply with section 4 of the technical specification.
D. Payment covers complete cost of furnishing and installing boulders for the inlet structure, existing slough plug structure, or the junction with the existing slough per the plans and under the direction of the OWNER. Work includes, but is not limited to: COW BMP's; purchase and delivery of all materials; excavating; surveying; protecting filter fabric with alluvium; and any and all incidentals.

Bid Item No. 13, 22
BACKFILL BOULDER WITH GENERAL ALLUVIUM
A. Measurement per Cubic Yard (CY) of general alluvium
B. Payment covers all work necessary to backfill excavation of boulder structures and fill voids with general alluvium meeting gradations specified in section 4 of the technical specification.

Work includes, but is not limited to: BMP's; supplying equipment; backfilling; and any and all incidentals.

Bid Item No. 14
MITER, HAUL OFF, AND DISPOSE OF 30" STORM PIPE
A. Measurement per Linear Feet (LF) of storm pipe
B. Payment covers all work necessary to remove section of plastic storm pipe between the proposed slough and the Colorado River. Work includes, but is not limited to: BMP's; supplying equipment; excavating around pipe; removal of pipe; removal of associated structures; haul off and disposal; backfilling excavation; restoring impact area; mitering the pipe to conform with final grade; and any and all incidentals.

Bid Item No. 15
FURNISH AND INSTALL OUTFALL STRUCTURE FOR 30" STORM PIPE
A. Measurement per Cubic Yard (CY) of riprap
B. Payment covers all work necessary to furnish and install rip-rap outfall structure. Work includes, but is not limited to: BMP's; supplying equipment; installing riprap; and any and all incidentals.

Bid Items No. 16, 21
FURNISH AND INSTALL NON-WOVEN FILTER FABRIC BENEATH BOULDER/RIPRAP
A. Measurement is per square yard (SY) of installed non-woven filter fabric installed between the bank and boulders/riprap. Embedded lengths of erosion control fabrics, vertical faces, and overlapped fabric shall not be measured for payment.
B. Payment covers the complete cost of installing non-woven filter fabric. Work includes, but is not limited to: BMP's; providing all necessary good quality materials; labor; fasteners; excavation; installation per manufacturers recommendations; and any and all incidentals such as overlap at edges and tucking into bank; storing, and protecting fabric from tears or damage throughout construction.

Bid Item No. 17
DECONSTRUCT CONCRETE PATH
A. Measurement per Linear Feet (CY) of concrete
B. Payment covers all work necessary to deconstruct approximately 1,300 feet of existing concrete path on site. Work includes, but is not limited to: BMP's; supplying equipment; breaking up concrete; and any and all incidentals.

Bid Item No. 18
TRANSPORT/PLACE CONCRETE TO DISPOSAL AREA
A. Measurement per Linear Feet (CY) of concrete
B. Payment covers all work necessary to transport concrete from deconstructed path to disposal area on west side of site. Work includes, but is not limited to: BMP's; supplying equipment; loading and transporting concrete; placing concrete rubble at base of disposal area; and any and all incidentals.

Bid Item No. 23
FURNISH AND INSTALL WETLAND NATIVE SEED MIX
A. Measurement is per acre of seeded area
B. Payment covers the complete installation of wetland seed mix in locations specified on plans, and on those lands incidentally disturbed by construction activities. Work includes, but is not limited to: BMP's; purchasing all materials; broadcasting seed mix; raking into soil; special guarantees, any and all incidentals such as providing water necessary for establishment.

Bid Item No. 24
FURNISH AND INSTALL RIPARIAN NATIVE SEED MIX
A. Measurement is per acre of seeded area
B. Payment covers the complete installation of riparian seed mix in locations specified on plans, and on those lands incidentally disturbed by construction activities. Work includes, but is not limited to: BMP's; purchasing all materials; broadcasting seed mix; raking into soil; special guarantees, any and all incidentals such as providing water necessary for establishment.

Bid Items No. 25
FURNISH AND INSTALL DORMANT WILLOW POLES
A. Measurement is per square yard (SY) of installed bank surface.
B. Payment covers the complete cost of installing willow stakes along the banks of the proposed slough as specified on plans and marked by the ENGINEER in the field. Work includes, but is not limited to: BMP's; gathering stakes; keeping stakes alive; special guarantees; survival density warranties; and any and all incidentals such as re-mobilization associated with seasonal constraints.

Bid Items No. 26
EROSION CONTROL BLANKETS
A. Measurement is per square yard (SY) of installed erosion control blanket surface. Embedded lengths of erosion control fabrics, vertical faces, and overlapped fabric shall not be measured for payment.
B. Payment covers the complete cost of installing erosion control blankets. Work includes, but is not limited to: BMP's; providing all necessary good quality materials; labor; installation; and any and all incidentals such as key downs at edges and stakes; differing fabrics and installations for appropriate application. Seeding is covered in Bid Item 44 and 45.

Bid Item No. 27
TOP SOIL IMPORT AND GRADING
A. Measurement is per Cubic Yard (CY) of imported weed free top soil per certified scale tickets.
B. Payment covers costs of purchasing all materials; delivery and stockpile of top soil, including BMP's, grading in 4” min. lifts, preparation for erosion control fabrics, weed control and placement of top soil.

TECHNICAL SPECIFICATIONS

Las Colonias Park Slough Restoration Project

August 11, 2016

OWNER:
City of Grand Junction
Parks and Recreation Department
250 N 5th Street
Grand Junction, Colorado 81501

ENGINEER:
RiverRestoration.org
Jason Carey PE
P.O. Box 248
Carbondale, CO

View of Project site on right bank looking downstream during high water on May 31, 2016.

Contents

SECTION 1 SCOPE OF WORK

1.01 GENERAL

This Project is for the excavation of a new slough channel to restore and enhance the riparian function within Las Colonias Park on the Colorado River in Grand Junction, CO. This Project is expected to be complete by December 21, 2016, with in-stream construction complete by November 20th, 2016.

The scope of this project is to excavate 1 slough channel including:

- Identify and maintain erosion control measures and BMPs.
- Protect in-place all driveways, and utilities
- Deconstruction of approximately 1,300 LF of existing concrete path (add alternative);
- Transport and deposit broken-up concrete in deposition area specified on plans (add alternative);
- Divert and care for the Colorado River;
- Excavate approximately 30,000 CY of upland and grade to elevations and grades shown on plans;
- Sort excavation material; stockpile 2,000 CY of coarse cobble alluvium with 50% greater than 6";
- Transport and deposit approximately 15,000 CY of excavation material on site and grade to sub-grade elevation for amphitheater;
- Transport and deposit remaining excavation material (approximately 13,000 CY) to stockpile location on east side of the site;
- Excavate approximately 400 CY of existing slough bed material downstream of proposed slough confluence;
- Grade riffles to elevations specified on plans using coarse cobble alluvium;
- Construct, install, and backfill inlet boulder structure, using 230 tons of boulder as specified on plans;
- Construct, install, and backfill junctions with existing slough using coarse cobble alluvium and boulder, using 290 tons as specified on plans;
- Cut back, remove, and dispose of 170 feet of 30" plastic stormwater pipe;
- Miter existing 30" plastic stormwater pipe and install outfall structure;
- Spread native seeding on banks as specified on plans;
- Restore construction staging areas and access areas to equal or better than condition before construction began;

In accordance with these Specifications and as shown on the Project Drawings. Project Drawings include 19 total plan sheets, including general site information (G Sheets), erosion control and care of water (EC Sheets), grading plan and details (R Sheets) and planting plan and details (L Sheets).

Exhibit A: Section 401 Water Quality Certification No: **TBD**
Exhibit B: U.S. Army Corps of Engineers Individual Permit number **TBD**

1.02 KEY PROJECT PERSONNEL CONTACTS

References to the OWNER are to City of Grand Junction, Colorado.

A. The following is a list of Project stakeholders and their contact information. CONTRACTOR shall notify all stakeholders 7 days prior to commencing work:

1. City of Grand Junction (OWNER)
Scott Hockins, Special Projects Manager
250 N 5th Street
Grand Junction, CO 81501
(970) 244-1484
scotth@gjcity.org

2. Mr. Jason Carey, PE (ENGINEER)
RiverRestoration.org, LLC.
PO Box 248
Carbondale, CO 81623
(970) 947-9568 (w)
jason.carey@riverrestoration.org

3. Terry Ireland, US Fish and Wildlife Service (USFWS)
Western Colorado Ecological Services Field Office
445 West Gunnison Ave, Suite 240
Grand Junction, CO 81501
(970) 243-2778 x16
Terry_Ireland@fws.gov

1.03 CONTRACTOR QUALIFICATIONS

Please refer and adhere to all City of Grand Junction Specifications.

SECTION 2 GENERAL CONSTRUCTION METHODS

2.01 PROJECT LIMITS

The Project Limits are defined in the plans. No construction related activities or impacts shall occur outside of the project limits, excepting road access, unless otherwise authorized by OWNER in writing. Protect in place all structures, vegetation, drainages and other within the Project Limits that are not specifically identified for construction. When construction activities are within 5 feet of the Project Limits, mark and flag the Project Limits.

2.02 PERMITS AND REQUIREMENTS

The CONTRACTOR shall comply with all applicable requirements set forth in all permits obtained for this project. A partial list of permits required, with associated terms and conditions, includes:

- **Nationwide Permit (NWP) # 27**
- **Regional General Permit (RGP) #4**

2.03 SITE INTEGRITY

The CONTRACTOR is required to document the condition of the Utilities, Riverside Parkway adjacent to the project site, construction entrance on Riverside Parkway, mature vegetation and the general area with video recordings, submitted to ENGINEER and OWNER prior to any construction phase and after each phase of construction is completed. The video recording shall document the surface integrity of the structures with clear and recognizable reference features or established and repeatable reference markers in the field of view. The CONTRACTOR is responsible for rehabilitating, repairing or replacing, to better than pre-construction conditions, any damage to the structures, roads, and vegetation directly or indirectly related to construction activities.

2.04 UTILITIES

CONTRACTOR shall field-locate and mark all utilities within or adjacent to the Project. Any utility locations marked on plans are approximate and actual field location of any utility is wholly the responsibility of the CONTRACTOR. CONTRACTOR shall protect in place all utilities.

2.05 TEMPORARY FACILITIES

CONTRACTOR shall provide all temporary facilities required for performing the work. Temporary construction facilities and utility connections are solely the CONTRACTOR's responsibility based on his selected method of operation and schedule. CONTRACTOR is responsible for providing a clean and safe environment for all workers on the job site. CONTRACTOR is responsible for providing sanitary facilities. CONTRACTOR shall follow Occupational Safety and Health Administration regulations. CONTRACTOR is responsible for

providing all electrical, water and utility needs. CONTRACTOR shall keep the Project Limits in a neat and orderly manner. CONTRACTOR is responsible for removing temporary facilities and controls after completion of all Work.

2.05.A: Staging Areas:
Preliminary Staging Areas are shown on the Plans. Final staging and access are to be pre-approved in writing by the OWNER. All construction staging, stockpiling of materials, equipment storage, and other, shall take place in designated areas with adequate barriers to protect the public from entry. Staging areas shall have a designated office or contact information posted for public inquires. Staging areas shall provide employees all necessary facilities, legal postings, and safety protocol. Staging area shall include trash disposal container and portable toilet maintained and serviced as necessary. The CONTRACTOR is responsible for maintaining a clean and organized staging area and restoration of all disturbed areas equal to pre project conditions.

2.05.B: Dewatering Areas:
Project areas disturbing greater than 1 acrea may require a COR030000 permit from the CDPHE and must implement an erosion control plan. Construction activities are anticipated to produce clean fill materials, as well as some other waste materials. All excess materials produced by construction activities shall be properly disposed in authorized areas. Dewatering areas shall have adequate BMPs in place to stockpile material prior to disposal. Dewatering areas may also be configured to include a Washout Area for concrete pours. Pours shall not be conducted during or before an anticipated storm event. All excess concrete and concrete washout slurries from the concrete mixer trucks and chutes shall be discharged off site, or temporarily into a washout area designated in an unvegetated upland and completely isolated from stormwater and drainage. All concrete residues shall be hauled off-site and properly disposed. Returning water from dewatering areas to surface flow routes may require a dewatering permit from the Colorado Department of Public Health and the Environment (CDPHE) and is wholly the responsibility of the CONTRACTOR.

Example of dewatering.

2.05.C. Oiling Areas:
Any and all fueling and oiling of equipment shall be in designated upland locations, with adequate BMP's to contain any potential spill. All major equipment/vehicle maintenance shall be performed off-site. Fuel tank may be kept on-site in the staging area with drip pans underneath the fueling area. All equipment fluids generated from maintenance activities shall be disposed of into designated drums stored on spill pallets in accordance with hazardous waste management practices. Drip pans shall be placed under all equipment receiving minor or routine maintenance.

A Spill Cleanup Plan is wholly the responsibility of the CONTRACTOR and shall be posted and available at all times on site for all work areas prior to any construction activities and shall include coordination with local emergency response agencies. A release of any chemical, oil, petroleum product, sewage, etc., which may enter waters of the State of Colorado (which include surface water, ground water and dry gullies or storm sewers leading to surface water) shall be reported to the Colorado Department of Public Health and Environment immediately (25-8-601 CRS) and form http://www.cdphe.state.co.us/hm/spillselfreportform.pdf and/or Toll-Free 24-hour Environmental Emergency Spill Reporting Line 1-877-518-5608 may be used. Written notification to the Department shall follow within five (5) days (5 CCR 1002-61, Section 61.8(5)(d)). Releases of petroleum products and certain hazardous substances listed under the Federal Clean Water Act (40 CFR Part 116) must be reported to the National Response Center as well as to Colorado Department of Public Health and Environment as required under the Clean Water Act and the Oil Pollution Act. Furthermore, contact must be made immediately, reporting any spill incident with the OWNER, ENGINEER and Colorado Parks and Wildlife (CPW).

2.05.D. Haul Routes:
The import and export of materials from the Project Limits shall occur at designated locations on defined haul routes as shown on the plans or as agreed upon with the OWNER. The haul route should be selected to minimize the amount of imported material required to operate the needed machinery and equipment. Haul routes shall be clearly marked if there is interference with the existing, detour, or new trail system. The CONTRACTOR is responsible for establishing and maintaining haul routes, including snow removal if required. Haul routes shall be repaired, at the completion of the work, to pre project conditions as determined by OWNER. CONTRACTOR is responsible for restoring haul routes to pre-project conditions at the conclusion of construction.

2.05.E. Channel Access Areas:
CONTRACTOR shall be responsible for designating and maintaining channel access sites for equipment and workers within Project Limits defined on plans and for rehabilitating access sites once construction is complete. Random or multiple channel access areas shall not be used. Gravel berms shall be installed at the top of the access ramp and other areas to eliminate sheet flow or drainage onto the exposed or disturbed Riverbanks. A silt barrier shall be erected along the toe of any and all out-of-channel open cuts to eliminate the migration of material outside of the limits of work. Straw Bales shall be used at the toe of the ramp when the access is not in use to prevent the migration of material into the River.

2.05 F. Disposal Area:
OWNER has provided on site disposal areas for inert, clean fill materials required to be removed from the site such as alluvium and bank material. See plans for disposal area locations. Material shall be sorted and neatly stockpiled at Disposal Area clear of all haul routes.

THIS PROJECT SHALL ADHERE TO THE CURRENT VERSION OF THE "URANIUM MILL TAILINGS MANAGEMENT PLAN" (UMTMP)
https://www.colorado.gov/pacific/sites/default/files/HM_umilltail-mgt-plan.pdf
PER THE DOCUMENT MENTIONED ABOVE, IF ANY SITE MATERIAL IS TO BE REMOVED FROM THE SITE, IT MUST BE FIRST CHECKED FOR RADIOACTIVITY. IF IT IS UNDER THE LIMITS FOUND IN THE UMTMP THEN IT MAY BE REMOVED, BUT NOT BEFORE. A LOG OF THIS SHOULD BE KEPT. IF IT IS NOT UNDER THE LIMITS, THEN IT MAY LEAVE THE SITE TO A LICENSED DISPOSAL FACILITY OR TO THE INTERIM STORAGE FACILITY AT THE CITY YARD, AS DESCRIBED IN THE UMTMP.

2.06 CONSTRUCTION STAKING

The OWNER shall provide adequate horizontal and vertical control points for the CONTRACTOR to establish the lines and grades shown on the plans. The OWNER shall provide initial construction staking. Grade elevations and additional construction staking shall be wholly the responsibility of the CONTRACTOR.

Established control points shall be provided with special colored flagging and it shall be the responsibility of the CONTRACTOR to protect those control points. In the event they are lost, due to any cause, the CONTRACTOR shall re-establish adequate and permanent control markers.

There is an expectation that the CONTRACTOR will use GPS controlled equipment for the grading on the site. The ENGINEER will provide a proposed conditions XML compatible digital surface model and channel alignments to the CONTRACTOR. The CONTRACTOR shall have the means to load the alignment and surface into a field survey controller, for use in layout, checking, and as-builts of any location in the project area. CONTRACTOR shall provide a surveyor to be available for ENGINEER inspection at 2 days notice to provide measurements in the field at ENGINEER'S request.

Point	Northing	Easting	Elevation	Description
1	31,597.82	96,030.38	4574.65	N 273

2.07 SITE GRADING

CONTRACTOR shall establish and identify required lines, levels, contours and datum. Grade Site to match all lines, elevations and grades shown on the Project Drawings.

2.08 ACCEPTABLE AS BUILT ELEVATION VARIATIONS (feet)

Average Elevations across each Cross-Section shall be exact according to Plans and conform to Grand County Floodplain regulations and any applicable State of Colorado applicable regulations. With natural building materials variances are expected and shall be allowed for average locations of individual particles. The following As-Built Variances are allowed.

Table 2.08. Acceptable As-Built Variances for Average Locations of Individual Particles (feet)

Description	**Variance Elevation**	**Variance Horizontal**
Top of Boulder Grade Control Bottom of Boulder Grade Control	+/-0.1	+/-0.5 channel alignment
Cross Section Average of Boulder Grade Control	+/-0.0	+/-0.0 channel alignment
Top of Alluvial Plug Bottom of Alluvial Plug	+/-0.1	+/-0.5 channel alignment
Cross Section Average of Alluvial Plug	+/-0.0	+/-0.0 channel alignment
Channel bed and bank elevations	+/-0.5	+/- 0.5 channel alignment
Average Control Riffle Crest Elevations	+/-0.0	+/-0.5 channel alignment
Top of Channel Banks	+/-0.5	+/-1.0 bank alignment
Top of Stone Toe Protection (STP)	+/-0.5	+/-2.0 bank alignment

2.09 TURBIDITY MONITORING

During periods of in-river construction turbidity of the water 300 yards downstream of the Project Limits shall not be visually greater than the turbidity of the water upstream of the Project Limits. BMP's to limit turbidity increases shall include: intermittent excavation; construction during periods of elevated background turbidity; Care of Water; and structural BMP's such as turbidity curtains.

CONTRACTOR shall continually visually monitor and daily record turbidity increases. If turbidity increases cannot be avoided at a point 300 yards downstream of the Project Limits, the CONTRACTOR shall supply a turbidity monitoring device and recorder suitable to record half hour increments for allowable increases, above background, of less than 20 NTU. CONTRACTOR shall take all precautions and implement any and all necessary BMP’s to maintain turbidity increases less than 20 NTU. If measurements are lower than the 20 NTU maximum criteria for 2 consecutive days, measurements increments may increase to 4 hours on the third day and visual observations may be reinstated thereafter. When the nature of the instream activity changes and turbidity appears to change, then the original ½ hour increments

must be reinstituted. OWNER may stop construction during ineffective BMP's, visual increases of downstream turbid conditions, or exceedance of 20 NTU increases in turbidity above background. CONTRACTOR is wholly responsible for time delays associated with inadequate BMP's, inadequate Care of Water, or stopped work. CONTRACTOR is wholly responsible for environmental damage associated with uncontrolled sedimentation outside of the Project Limits.

2.10 UTILIZING IN-CHANNEL MATERIALS

Clean Native Alluvium that is excavated for structure placement and is to be backfilled in the channel may be utilized in channel as temporary cofferdams or other water control practices. Exposed Alluvium resulting in noticeable downstream turbidity shall be isolated from the flow of the channel.

Excavated clean native alluvium, boulders and clean bedrock may be allowed to be backfilled in the channel around structures within the limits of excavation as defined in plans**.** All other excavated material including fines and bank material shall not be placed in any flow path, shall be properly disposed of in designated Disposal Area and shall have appropriate erosion control measures in place**.** All in-stream structures shall be constructed in sections sized to minimize open excavation area**.** Each day of work shall be a completed work and no excavations of the bank or streambed shall be left open to erosion**.**

2.11 TEMPORARY DIVERSION STRUCTURES

Control of the River stage and associated erosion during construction is wholly the responsibility of the CONTRACTOR. Setting boulders and grading of clean native alluvium may be performed in the wet channel. However, any and all wet cement work shall be isolated from the flow of the River. For In-Stream Boulder Placement, it is by CONTRACTOR's discretion whether to have a diversion and of what type. For In-Stream Construction (i.e. below Ordinary High Water (OHW), a temporary erosion control and care of water BMP's will be required. An example used for cost estimating and permitting purposes has been included in the plan set. This example is provided for reference only.

Other diversion methods may be suitable and the CONTRACTOR is wholly responsible for the diversion methods implemented. In addition to controlling the stage of the river, seepage and ground water will likely require additional control methods such as pumping, sand bagging, impermeable membranes and jersey barriers. The CONTRACTOR shall be wholly responsible for the selection of suitable method(s), and for design, installation, and operation of the diversion and care of the river required during the performance of the work under these specifications. The CONTRACTOR is required to design and install adequate diversion and care of water facilities in a timely fashion in accordance with his/her schedule of construction and the requirements of these specifications. Areas disturbed for diversion practices shall be restored and stabilized to pre project conditions. Failure of the CONTRACTOR to become adequately familiar with and address the existing structures, access and river conditions which impact the work may result in unnecessary construction delays and associated increased efforts for which the CONTRACTOR shall be solely responsible. Pumping and returning of coffered water may

require a dewatering permit from the CDPHE and is wholly the responsibility of the CONTRACTOR.

Any planned closure of the main channel in a coffered area shall give the OWNER, ENGINEER and USFWS 14 days notice to prior to the closure. CPW shall be coordinated with for the removal of any fish within the coffered area of the main channel during diversion.

2.12 TRAIL/PEDESTRIAN SIGNAGE

If necessary, CONTRACTOR shall submit a Traffic Control Plan, to include the Roads, Parking Areas, Path and River, to be approved by the OWNER. No construction activities shall impede public traffic patterns prior to written approval from the OWNER. Any necessary traffic control Plan shall be submitted to the OWNER for approval with 7 days notice for review. If CONTRACTOR finds it necessary to close any Roads or Paths or re-route traffic, the OWNER shall work with CONTRACTOR approve a reasonable alternative route.

2.13 TIMING OF PLANTING.

CONTRACTOR shall seed within 2-weeks following cessation of disturbance. Seed be should be properly prepared, seeds broadcast, soils raked over seed, then tamped into place. Plants should be installed either in winter when soils are not frozen or in early spring before runoff begins to take advantage of the cool weather and moist conditions. The CONTRACTOR may need to provide temporary water for adequate establishment of all seeding and container plantings. The CONTRACTOR may need to use a water truck to periodically water and establish plants for site restoration for two full growing seasons. Any plants that need to be replaced will be installed in late fall of the following growing season.

SECTION 3 BEST MANAGEMENT PRACTICES

3.01 GENERAL

The Work covered by this section includes the furnishing of all labor, materials, equipment and incidentals for installation and maintenance of all on shore and in-channel BMPs. Within the Project Limits all disturbed surfaces shall utilize best management practices such as Turbidity Curtains, Silt Fences, Construction Sequencing, Care of Water, etc.; to minimize potential environmental damage, turbid conditions, locations of ponding, sediment loading in any flow path, dust, noise, light, etc. Adequate numbers, locations and properly functioning BMPs and erosion control are wholly the responsibility of the CONTRACTOR. CONTRACTOR is responsible for maintaining all BMPs during construction activities, and for the removal post construction activities and/or adequate stabilization periods. The OWNER may stop work in any area due to improperly installed, inadequate, or non-functioning BMP's based on OWNER's discretion.

3.02 CHANNEL ACCESS

Grading on berms shall be installed at the top of the access ramp and other areas to eliminate sheet flow or drainage onto the exposed or disturbed banks. A silt barrier shall be erected along the toe of any and all out-of-channel open cuts to eliminate the migration of material outside of the limits of work. Straw Bales shall be used at the toe of the ramp when the access is not in use to prevent the migration of material into the body of water.

3.03 CONSTRUCTION SEQUENCING

Prior to starting site activities, the CONTRACTOR shall notify the ENGINEER and the OWNER of the date the CONTRACTOR intends to start construction with a written notice delivered a minimum 7 days in advance.

The sequence of the critical construction processes are defined by the ENGINEER and CONTRACTOR shall follow the sequence.

3.03 A. Initial Site Setup

1. Notify the City of Grand Junction (OWNER) and the ENGINEER of start date with at least 7 days notice and include Emergency contact information.
2. Document with photographs and video the project vicinity, structures, haul routes and vegetation and submit to ENGINEER.
3. Obtain Traffic/Pedestrian Control Plan approvals from the OWNER, if necessary.
4. Develop Erosion Control and Diversion Plan and methods.
5. Establish and post construction site safety protocol.
6. Place Barriers, Post Signs, Install Safety Fencing and Isolate Project Site.
7. Locate, in field, all Utilities.
8. Protect in place structures, roads, utilities, boulders, trees and other.
9. Locate and flag Project Limits.

10. Locate construction staging and stockpile areas.
11. Install oil booms across wet channel downstream of work area as required; replace used oil booms per manufacturer's specifications.
12. Locate area for storage of spare oil booms and designate oiling and petroleum handling areas with appropriate and adequate BMPs outside of the riparian zone.
13. Establish and post protocol for potential oil spill cleanup and emergency response.

3.03 B. Staging

1. Install temporary portable toilet
2. Implement approved traffic control plan or trail access signage.
3. Establish and prepare haul routes on site.
4. Install BMPs
    i. Control erosion and concentrated runoff
    ii. Maintain and facilitate any and all existing Drainage Channels
    iii. Identify and install any other BMPs as necessary

5. Locate and Protect in Place Survey Control
6. Grade Access and Staging Areas
7. Maintain, add and repair BMP structures as necessary throughout project

3.03 C. Construction

All construction activities shall follow U.S. Army Corps of Engineers ref # (SPK-2016-00344). In-stream work shall be performed during low water periods. Prior to construction activities, Best Management Practices (BMPs) shall be in place in order to minimize turbidity and sedimentation, as well as prevent pollution and the potential release of contaminants from equipment. Construction activities shall be sequenced and sized to minimize temporary impacts to flowing water.

1. Obtain all necessary approvals and permits, which may include CDPHE dewatering permit
2. Pre-order materials and submit shop drawings as necessary.
3. Stake out grades, lines, offsets and spot elevations as necessary.
4. Install any and all erosion and sediment control BMP's as per plans and specs.
5. Implement Care of Water and any diversion plans needed to isolate the construction area from the flowing waters of the Colorado River and the adjacent sloughs.
6. Stage pump with sediment filter and adequate hose length to remove contaminants before return flow.
7. Leave pump and filter staged to filter all return waters, if required.
8. Excavate proposed channels to the grades shown in the plans and haul material to deposition site. Utilize existing bank grading for work area isolation to maximum extent possible.
9. Install turbidity curtains and oil booms as needed prior to excavation of banks connected to active channel.
10. Excavated existing banks and connect proposed channels to Colorado River and existing sloughs.

11. Remove care of water structures
12. Finalize work above ordinary high water line

3.03 D. Final Site Restoration

1. Remove water control structures in accordance with Project Specifications and Project Drawings;
2. Plant remaining stream-bank riparian vegetation areas;
3. Dispose of any excess materials in onsite disposal areas;
4. Restore Temporary Equipment and Haul Routes to original grade and vegetation;
5. Remove all materials from staging areas;
6. Re-grade or repair staging areas to pre-construction condition;
7. Identify and install BMPs down-gradient from all disturbed areas until establishment of vegetation to at least 80% cover of species found in the seed mixes (approx. 1 growing season);
8. Remove all waste materials;
9. Remove utilities protection;
10. Remove temporary signs, barriers and safety fencing;
11. Repair damage to any adjacent property, structures or vegetation;
12. Establish erosion control grasses (upland seed mix) in all disturbed areas above the Ordinary High Water Line; and
13. Remove non-biodegradable BMPs after the establishment of vegetation covering at least 80% of the disturbed areas with plant species found in the seed mixes (after approximately 1 growing season).

3.04 EQUIPMENT OPERATING IN WET CHANNELS

Equipment shall be allowed to operate in the wet channels. Equipment operating in wet channels shall be limited to the minimum area and minimum time necessary to perform the work. Equipment operating in or adjacent to any wet channels shall be free of any fluid leaks and in excellent operating condition. Biodegradable hydraulic fluids shall be utilized for any equipment operating in the flowing river channel or sloughs. CONTRACTOR shall submit a list of equipment operating with certified bio degradable hydraulic fluids to the OWNER prior to use of the equipment in the flowing channel and shall provide the specification sheets for the fluids upon request. No equipment shall be left unattended at any time in any wet channel or below the Ordinary High Water (OHW) Line. Any and all fueling and oiling of equipment shall be in a designated upland location, with adequate BMPs to contain any potential spill.

All equipment shall be cleaned prior to being on-site to minimize potential for spreading of invasive species and OWNER will check equipment prior to start of work. Equipment shall be power-sprayed and free of weeds, soil and untreated water. If any equipment being used for the Project has been previously working in another stream, river, lake, pond or wetland, one of the following disinfection practices is necessary prior to construction to prevent the spread of whirling disease, New Zealand mud snails, zebra mussels, didymosphenia, and other aquatic hitchhikers. These practices are also necessary after project completion, prior to the equipment being used in another stream, river, lake, pond, or wetland, for the same purpose:

Offsite, remove all mud and debris from equipment (tracks, turrets, buckets, drags, teeth, hand tools, boots, etc.) and spray/soak equipment in a 1:15 solution of Sparquat institutional cleaner and water. Keep equipment moist for at least 10 minutes;

or

Offsite, remove all mud and debris from equipment (tracks, turrets, buckets, drags, teeth, hand tools, boots, etc.) and spray/soak equipment with water greater than 140 degrees Fahrenheit for at least 10 minutes.

The excavators and backhoes may need to be cleaned on site to remove excess native sediments stuck to the track or hoes. Sediments that are removed with a shovel shall be placed in designated clean fill material storage areas. Sediments removed with clean water shall be washed into the dewatering area. All dewatering areas shall have erosion control logs staked at flow lines before discharge into dewatering area.

3.05 OIL BOOM

An adequate number of oil boom SPC 5510 manufactured by SPC (http://www.sorbentproducts.com) or equivalent shall be placed in a designated location onsite, visible and unobstructed at all times. Any spills shall be contained and cleaned by the CONTRACTOR. Oil booms shall be installed across the channel at the downstream end of the Project Limits at all times equipment is working in or crossing the flowing. All Booms shall be replaced as needed, approximately weekly with new Oil Booms or per manufacturer's recommendations.

3.06 PERMEABLE TURBIDITY BARRIER

All exposed bank excavations and disturbances shall be separated from the main flow of the river by a Permeable Turbidity Curtain. The turbidity curtain shall have a non-woven 8 oz filter fabric (Mirafi 180N or equivalent) for at least 50% of the curtain area between the float and the ballast.

Example turbidity curtain

3.07 STRAW BALES

Straw Bales shall be certified “Weed-Free” and not hay bales. Bales shall be secured with wood or metal stakes driven a minimum of 2 feet into ground. 4 inches of 3 inch minus washed gravel shall be placed on the up-gradient toe of the bales. Bales can be removed when 80% cover of plant species found in the seed mixes is established.

3.08 SILT FENCE

Silt Fences shall be placed to contain construction activities on land. Silt Fence shall be constructed with 4oz. Non-Woven Filter Fabric (Mirafi 140n or equivalent) with a 6 inch by 6 inch anchor trench up-grade (i.e. uphill) of the fence line and fence posts in 6 ft centers. The anchor trench shall be backfilled to existing grade with native material compacted to 95% of maximum as determined by the Standard Proctor Method (ASTM D-698-66T or AASHTO T 99).

3.09 FILTERING OF PUMPED WATER

Any pumped water being returned to the main flow of the river or other drainage shall first be processed through a Filter or settling pond. Turbid waters that are clean of contaminants or concrete residue shall be filtered or settled to prevent excessive turbidity. Waters with contaminants or concrete residue shall be filtered clean before returning to the natural flow. Dewatering permits may be required. It is the wholly responsibility of the CONTRACTOR to obtain these permits.

3.10 REMOVAL OF BMPs

All BMPs below the Ordinary High Water Line are to be removed prior to the completion of the work. All BMPs above the Ordinary High Water Line are to remain in place until the establishment of vegetation, approximately one year. Any non- biodegradable BMPs shall be removed after the establishment of vegetation cover at least 80% with the plant species found in the seed mixes, or approximately one year. All non-biodegradable BMPs are the property of the CONTRACTOR. The locations of the BMP installations shall be graded, seeded and restored to preconstruction conditions after removal.

3.11 RIPARIAN PROTECTION

Any and all riparian areas and riparian vegetation outside of the limits of excavation shall be protected in place. No construction supplies, fuels nor oils shall be stored in riparian areas, no vehicles nor heavy equipment shall be allowed into riparian areas other than the designated channel access sites. No discharge of any materials shall be allowed into any riparian areas. Riparian areas shall be traversed only by foot and leak free hoses may cross riparian vegetation. Any incidentally disturbed riparian areas shall be restored to better than pre-construction conditions. Care should be taken not to spread any existing weed infestations in riparian areas.

3.13 MATURE TREE PROTECTION

The preservation of existing mature trees is an important component of the work and a measure of the successful completion thereof. Healthy root mass at the toe of the riverbanks is essential to the stability of the Colorado River channel. The healthy mature native trees that are adjacent to excavating activities shall be Protected In Place (PIP) and no equipment should work within the “drip line” of existing trees to reduce chances of soil compaction around roots. The work shall include the preservation from injury or defacement of all vegetation that is NOT designated for removal by the ENGINEER or OWNER in the field. ENGINEER or OWNER shall mark all trees and large shrubs approved for removal prior to excavation work. Areas of tree removal shall be determined and marked in collaboration between the CONTRACTOR and the ENGINEER or OWNER.

a) CONTRACTOR guarantees that care, caution and best management techniques are implemented to maximize the survivability of native mature trees not designated for removal.

b) All Protect in Place trees shall have 100% success rate, showing vigor and general health, for one year after PIP measures are conducted.

c) Post construction monitoring may recommend additional pruning, irrigation, or fertilizer to restore health to the marked tree. The CONTRACTOR is responsible for all measures to restore the health of trees for one year after construction disturbances around Protect-in-Place trees.

d) If negligence results in potential mortality of trees, as determined by the ENGINEER or OWNER, the CONTRACTOR shall replace all damaged trees with new native trees to reclaim an equivalent canopy cover at CONTRACTOR's sole expense.

Special care shall be applied when working under driplines or near the toe of the riverbank. The majority of critical roots are expected to run parallel to the Colorado River. The CONTRACTOR shall take great care when any earth disturbing activities beneath the drip line of trees are conducted. Protect in Place mature trees shall follow the below guidelines:

3.13.A. Hand Excavations under the drip line:
Under the drip line, or at a minimum of 10 feet from the base of a PIP Tree, all necessary excavating activities shall be done by hand to expose the roots.

a. Expose all roots greater than 1'' and preserve.

b. If it is necessary for the removal of concrete litter, or for the installation of bank and in-channel features, the roots may be cleanly cut, and shall not be ripped or torn.

3.13.B. Treatment of cut and exposed roots:
Backfill all cut and exposed roots the same day of root cutting, and water until backfilling is accomplished.

3.13.C. Root Care:
Roots can be up to 2-3 times the diameter of the drip line.
The CONTRACTOR shall take as much care as possible to preserve roots.

a. All roots that are necessary to remove for excavation activities shall be cleanly cut.

b. The CONTACTOR shall apply all root cuts with approved root stimulator.

3.13. D. Areas of fill near PIP trees:

a. If necessary, any fill material shall be held away from PIP trees with a boulder retaining wall with a discontinuous footing.

b. If fill is necessary adjacent to the PIP tree, then air vents shall be installed.

c. No soils shall be compacted under the drip line without ENGINEER or OWNER approval.

3.14 ENVIRONMENTAL PROTECTION

The construction site shall be maintained to minimize dust, noise, erosion, and water ponding. Any and all fuel operated equipment near or within drainage areas, riparian areas or open water areas shall be leak-free and in excellent operational condition. Equipment operating in the riparian zone shall also use biodegradable fluids when feasible. The CONTRACTOR is wholly responsible for any environmental damage directly or indirectly related to storage of supplies and equipment, equipment operation, any fluid spills or any other construction activities.

3.15 BARRIERS

The CONTRACTOR shall furnish, install and maintain suitable barriers, as required to prevent public entry, and to protect the work, facilities, trees and wetland areas from any associated construction activities. Remove temporary barriers at the completion of work.

3.16 PROJECT SITE REHABILITATION

After all other construction activities are completed; all disturbed areas are to be rehabilitated to pre-construction conditions. Clean the site of trash and debris and remove all construction measures, equipment and supplies. Permanent riparian plantings and seeding shall be installed immediately after the final design grades are achieved, but no later than 14 days after construction activities have permanently ceased at the disturbed area.

One year after installation the CONTRACTOR shall guarantee that containerized and B&B plants have 100% success rate, seed plantings shall have 80% success rate with species found in the seed mixes, and all PIP mature trees shall have 100% success rate.

3.17 CULTURAL RESOURCES

Cultural resources within the project area shall be protected in place. The project area has been disturbed by prior mill site reclamation, slough construction, bank construction, road alignments, pedestrian path construction and is within the floodway of the Colorado River. No cultural resources are anticipated to be within the Project Limits or impacted by the project. If potential cultural resources in the project area are discovered during construction and cannot be avoided, CONTRACTOR shall immediately suspend all activities in that area and contact OWNER. Activities shall be suspended until written approval to proceed is obtained. OWNER shall evaluate the discovery for listing in the National Register of Historic Places in consultation with Colorado State Historical Preservation Office.

SECTION 4 IN-CHANNEL AND BANK CONSTRUCTION

4.01 CONSTRUCTION OF IN-CHANNEL BOULDER STRUCTURES

All Boulder Structures constructed In-Channel or below the Ordinary High Water Line (OHWL) shall be constructed with Footer Rocks and Keying Techniques (See Drawing Details). Construction of Boulder Structures shall include rotation, placement and adjustment of each individual rock to minimize void spaces and maximize interlocking of boulders. The OWNER shall identify each imported boulder that may affect surface flow, and observe the placement of marked boulder.

Boulder Structures shall be constructed by placing individual boulders in designed cross-sections of the channel. Each cross-section has specific elevations and alignments for the placement of rock as shown on the Project Drawings. Each structure shall include footer boulders extending to the elevations shown on the plans. Stacked boulders shall have a minimum 0.5:1 horizontal to vertical slope with the footer offset in the downstream direction when buried and footer offset in all directions when exposed.

Each individual boulder shall be set with the "B" axis in the direction of flow when exposed or the "A" or "B" axis when the boulder is interlocked between other boulders (See Plan Details). Minimum acceptable boulder size is 36 inches along the B-axis.

4.02 THIS SECTION NOT USED

4.03 SECTION NOT USED

4.04 FILTER FABRIC SPECIFICATION

An undamaged Filter Fabric with Geo-Composite shall underlay all Exposed earthen embankment materials. Filter Fabric shall be placed to eliminate migration of fines through the boulder structures and allow water to drain from structure. A composite that provides drainage, **Hydrodrain 300** by www.hydrotechusa.com/drainage2.htm**,** or approved equivalent shall be used at a minimum of 4 feet width on 10 feet center (approximately 40% of total Filter Fabric coverage). An acceptable non-woven 8oz Filter Fabric, Mirafi 180N or equivalent, may be used for the bank coverage not overlaid by drainage. Filter Fabric shall be placed to have intimate contact with intact bank material. Washed Gravel bedding may be used to protect Filter Fabric from damage during boulder placement.

4.05 IMPORTED BOULDERS SPECIFICATION

Imported Boulders may be quarried or excavated and generally smooth in shape with the largest rock faces being approximately flat. Boulders shall be of a consistent material for the entire project and shall be a color that is aesthetically neutral with the native landscape. Boulder gradations shall conform to Table 4.05 by number, and measurement of the intermediate axis ("B"-Axis). The minor axis (shortest dimension or "C"-Axis) shall not be less than indicated in Table 4.05. Boulders exposed in the grade controls and keyed into the toe of each structure shall have a minimum intermediate axis (B-Axis) of 36 inches.

Table 4.05. B-Axis Rock Gradations (inches)

Percent of Stones	Indicator	24 inch	36 inch	48 inch	72 inch
< 10%	Greater	36	48	60	84
> 75%	Between	32&18	42&30	54&36	78&60
0%	Less	15	21	28	48
C-Axis	Greater Than	12	18	23	28

Imported Boulders shall consist of hard, dense durable stone, resistant to weathering. Surface stones must have an aesthetic neutral color. Stone shall be suitable for incidental human contact. CONTRACTOR shall submit source information and samples to OWNER. The OWNER shall approve Boulder material. Granitic and Basaltic boulders subjected to weathering such as glacial or alluvial flows will be preferred.

The OWNER may require CONTRACTOR to furnish laboratory results if, in the OWNER'S opinion, the material is marginal or unacceptable. At the request of the OWNER, the CONTRACTOR shall furnish laboratory test results indicating that the material meet the requirements including those for abrasion resistance and soundness as indicated below:

---Boulders shall have a minimum specific gravity of 2.65.

---Abrasion resistance by Los Angeles Machine; Test Method ASTM C535; Specification Requirement: 15% loss, maximum.

--Soundness by use of Sodium/Magnesium Sulfate, Test Method ASTM D5240-04 Standard Test Method for Testing Rock Slabs to Evaluate Soundness of Riprap by Use of Sodium Sulfate or Magnesium Sulfate; Specification Requirement: 5% loss, maximum.

--Soundness by Freezing and Thawing, Test Method ASTM D5312-04 Standard Test Method for Evaluation of Durability of Rock for Erosion Control Under Freezing and Thawing Conditions; Specification Requirement: 5% loss, maximum.

4.06 SECTION NOT USED

4.07 ALLUVIUM MATERIAL

Round clean, hard, durable uncrushed well graded stream bed material, S.G. > 2.60. Alluvium is defined herein as coarse native material that is very well graded. Unless specified on plans, alluvium gradation shall match the 12 inch minus defined in table 4.07.

Table No. 4.07. Alluvial Material Gradations (inches)

Weight	Indicator	12”-0	4”-0
100%	Passing	12”	4”
90%-100%	Passing	8”	--
50%-90%	Passing	6”	2”
40%-70%	Passing	3”	1”
30%-50%	Passing	3/4”	3/4”
20%-30%	Passing	No. 4	No. 4
10%-20%	Passing	No. 20	No. 20
0%- 4%	Passing	No. 200	No. 200

(a) Coarse Alluvium: well graded alluvium meeting the 12”-0 gradation in table 4.07.

(b) General Alluvium: well graded alluvium meeting the 4”-0 gradation in table 4.07.

SECTION 5 CONSTRUCTION OF CONCRETE STRUCTURES

5.01 GENERAL

The following specifications, standards and codes shall govern the construction of any and all concrete structures, where applicable, with modifications as specified herein:

ACI 318 - Building Code Requirements for Reinforced Concrete.

ACI 301 - Structural Concrete

ACI 304R - Guide for Measuring, Mixing, Transporting and Placing Concrete

ACI 301 Specifications for Structural Concrete for Buildings.

AWS D12.1 Recommended Practices for Welding Reinforcing Steel, Metal Inserts and Connections in Reinforced Concrete Construction.

ANSI/ASTM C 478 Standard Specification for Precast Reinforced Concrete Manhole Sections.

All designs for precast concrete shall be for M-18 (H-20) AASHTO bridge loading.

ASTM A884/A884M-04 Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement

ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete

ASTM C979 - Pigments for Integrally Colored Concrete

5.02 CONCRETE

Concrete shall be:

- CDOT Class D 4,500 psi 28 day strength;
- Air content 5.5% +-0.5%;
- 4-6 inch slump;
- Number 5 grade 60 epoxy coated reinforcing steel; and
- Epoxy joint filler (100% solids) shall be specific for exterior use with continuous exposure to water or submerged conditions.

Contractor shall protect work from vandals until set. CONTRACTOR shall deliver concrete free of marks, stains, etc. Pressure washing may be required prior to acceptance of work. .

CONTRACTOR shall deliver smooth horizontal and vertical curvature on paving segments as determined by OWNER. All elevations and grades set using appropriate survey equipment.

Paving segments with wavy edges, humps, and/or dips will be removed and replaced at the expense of the contractor.

5.02.A. Anti-Freezing Admixture

If freezing temperatures are present, an accelerator such as Polarset may be used per manufacturer's recommendations, as 1-2% of total.

5.02.B. Concrete Testing

Provide an ASTM D 1077 compliant and ACI certified laboratory and provide level I ACI certified field sampling technicians. For every 50 CY of concrete provide one (1) test of:

- Temperature per ASTM C 1064;
- Air content per ASTM C 231;
- Slump per ASTM C 143;
- Compressive strength per ASTM C 31; and
- Flexure strength per ASTM C 78.

5.03 SECTION NOT USED

5.04 SECTION NOT USED

5.05 SECTION NOT USED

5.06 SECTION NOT USED

5.07 SECTION NOT USED

SECTION 6 LANDSCAPE INSTALLATION

6.01 PLANTINGS

The CONTACTOR is responsible to provide water suitable for establishment of vegetation. Water shall be free from pollutants harmful to plants.

6.01.A. Erosion Control Grasses

All disturbed areas in uplands and riparian areas shall be seeded with grasses as listed in Table 6.01.1. Specific percentages can be based on seed cost and any proposed changes to these mixes should be submitted to the ENGINEER prior to purchase and installation. Seeding of upland and riparian areas can be either drill seeded or broadcast seeded, based on site conditions. Wetland seed mixes should be broadcast and properly raked in.

TABLE 6.01.1. ***Seeding Specification – Riparian Buffer***

Riparian buffer			
Common name	**Scientific name**	**Growth form**	**Revegetation technique**
Western wheatgrass	*Pascopyrum smithii*	grass	seed (drill or broadcast)
Slender wheatgrass	*Elymus trachyculus*	grass	seed (drill or broadcast)
Alkali sacaton	*Sporobolus airoides*	grass	seed (drill or broadcast)
Indian ricegrass	*Achatherum hymenoides*	grass	seed (drill or broadcast)
Inland saltgrass	*Distichlis spicata*	grass	seed (drill or broadcast)
Palmer penstemon	*Penstemon palmeri*	forb	seed (drill or broadcast)
Solidago canadensis	*Canada goldenrod*	forb	seed (drill or broadcast)

TABLE 6.01.2. ***Seeding Specification –Wetland Areas***

Wetland areas			
Western wheatgrass	*Pascopyrum smithii*	grass	broadcast seeding
Inland saltgrass	*Distichlis spicata*	grass	broadcast seeding
Alkali grass	*Puccinellia airoides*	grass-like	broadcast seeding
Alkali muhley	*Mulenberghia aspertifolia*	grass-like	broadcast seeding
Arctic rush	*Juncus arcticus*	grass-like	broadcast seeding
Common spikerush	*Eleocharis palustris*	grass-like	broadcast seeding
Alkali bulrush	*Scirpus maritimus*	grass-like	broadcast seeding
Marsh milkweed	*Asclepsia incarnata*	forb	broadcast seeding
Nutall's sunflower	*Helianthus nuttallii*	forb	broadcast seeding

a) Soil Preparation: Place topsoil to a minimum of 6 inches in depth in areas shown on plans. All other areas use existing soil. Soil shall be graded and raked to 0.25'' to 0.5'' to create a seed bed. Soils must be moist prior to seed application. Sprinkle areas to be seeded with water, using fine spray to avoid washing or erosion of soil.

b) Seed Application: Within 48 hours of soil placement or preparation, broadcast seed at the specified rate and lightly rake into soil. Do not apply seeds when weather is too windy, hot or drying, or other adverse conditions exist. When called for in plans, install Erosion Control Blanket as specified in Section 6.03 immediately after seed application.

c) All areas that are not covered by erosion control blanket shall apply weed free straw 2 inches thick over the seeds to reduce erosion and wind losses. Do not use straw containing noxious weeds and foreign materials.

d) Broadcast hay or straw mulch and apply hydromulch in all seed areas except for areas covered by erosion control blanket.

e) Properly tamp soils or crimp straw in seeded areas outside of locations that erosion control blankets are specified.

6.01.B Riparian Plantings.

Any willows or native vegetation disturbed shall be replanted in equivalent coverage, at equivalent elevations, in existing open areas. Russian Olives shall be removed and painted and replaced with riparian plantings. Please specify size of proposed plants in both riparian and wetland areas.

Landscape tree planters shall be held open in the terrace banks at a minimum of 2.5 times the width of the rootball (Note: if holes are held during construction they shall be a minimum of 5' wide and approximately 2.5' deep). Carefully place Tree and backfill the planters with top soil and fertilizer.

1. Containerized Riparian Plants

Containerized plants should not be root-bound in their containers. Roots that circle the container can become strangulated roots and hinder future growth of the plant. Extensive roots that have grown out through the drain ports of the container may be dried or damaged and become a source for infection and additional stress for the plant. Any or all abnormalities listed above shall be reason for rejection.

2. Bare Root or Containerized Wetland Plants

Plants used in wetland areas and emergent benches may be either bare root of small containerized stock (10 cubic inch or equivalent) and will be planted at approximately 1' on center. Plants must be in good condition and should not be "j-rooted" during installation. The crown of the bare root or container plant should be installed approximately 1" below ground surface or at ground surface level and not above ground level.

TABLE 6.01.B.1 ***Container Plants – Riparian Buffer***

Riparian Buffer Planting			
Common name	**Scientific name**	**Growth form**	**Revegetation technique**
Upland Buffer			
Sliverscale saltbush	*Atriplex argentea*	shrub	Deep cell pots - 14" or 30"; or gallon sized
Gardner's saltbush	*Atriplex gardneri*	shrub	Deep cell pots - 14" or 30"; or gallon sized
Greasewood	*Sarcobatus vermiculatus*	shrub	Deep cell pots - 14" or 30"; or gallon sized
Four-wing saltbush	*Atriplex canescens*	shrub	Deep cell pots - 14" or 30"; or gallon sized
Rubber rabbitbrush	*Ericameria nauseosus*	shrub	Deep cell pots - 14" or 30"; or gallon sized
Green rabbitbrush	*Crysothamnus viscidiflorus*	shrub	Deep cell pots - 14" or 30"; or gallon sized
Sulfur-flower buckwheat	*Eriogonum umbellatum*	forb	Deep cell pots - 14" or 30"; or gallon sized
Large leaf globemallow	*Sphaeralcea grossulariifolia*	forb	Deep cell pots - 14" or 30"; or gallon sized
Riparian Zone			
Fremont cottonwood	*Populus fremontii*	tree	Deep cell pots - 14" or 30"; or gallon sized; dormant poles
Peachleaf willow	*Salix amygdaloides*	tree	Deep cell pots - 14" or 30"; or gallon sized; dormant poles
Box elder	*Acre negundo*	tree	Deep cell pots - 14" or 30"; or gallon sized
River hawthorn	*Crataegus rivularis*	tree	Deep cell pots - 14" or 30"; or gallon sized
Sandbar willow	*Salix exigua*	shrub	Deep cell pots - 14" or 30"; or gallon sized' dormant poles
Bebb willow	*Salix bebbiana*	shrub	Deep cell pots - 14" or 30"; or gallon sized; dormant poles
Black chokecherry	*Prunus virginiana*	shrub	Deep cell pots - 14" or 30"; or gallon sized
Skunkbush sumac	*Rhus trilobata*	shrub	Deep cell pots - 14" or 30"; or gallon sized
Wood's rose	*Rosa woodsii*	shrub	Deep cell pots - 14" or 30"; or gallon sized
Golden currant	*Ribes aureum*	shrub	Deep cell pots - 14" or 30"; or gallon sized
Notes: Container species are very successful with supplemental irrigation for at least 2 years. Willows and cottonwoods can be planted as dormant pole cuttings.			

TABLE 6.01.B.2 ***Container Plant – Wetland Bench Planting***

Wetland Bench Planting			
Common name	**Scientific name**	**Growth form**	**Revegetation technique**
Wet Meadow			
Western wheatgrass	*Pascopyrum smithii*	grass	Bare root or 10 cubic inch containers
Inland saltgrass	*Distichlis spicata*	grass	Bare root or 10 cubic inch containers
Alkali muhley	*Mulenberghia aspertifolia*	grass-like	Bare root or 10 cubic inch containers
Arctic rush	*Juncus arcticus*	grass-like	Bare root or 10 cubic inch containers
Nebraska sedge	*Carex nebrascensis*	grass-like	Bare root or 10 cubic inch containers
Wooly sedge	*Carex pellita*	grass-like	Bare root or 10 cubic inch containers
Common spikerush	*Eleocharis palustris*	grass-like	Bare root or 10 cubic inch containers
Torrey's rush	*Juncus torreyi*	grass-like	Bare root or 10 cubic inch containers
Hardstem bulrush	*Schoenoplectus acutus*	grass-like	Bare root or 10 cubic inch containers
Alkali bulrush	*Scirpus maritimus*	grass-like	Bare root or 10 cubic inch containers
Marsh milkweed	*Asclepsia incarnata*	forb	Bare root or 10 cubic inch containers
Nutall's sunflower	*Helianthus nuttallii*	forb	Bare root or 10 cubic inch containers
Emergent Marsh			
Hardstem bulrush	*Schoenoplectus acutus*	grass-like	Bare root or 10 cubic inch containers
Alkali bulrush	*Scirpus maritimus*	grass-like	Bare root or 10 cubic inch containers
Wooly sedge	*Carex pellita*	grass-like	Bare root or 10 cubic inch containers
Notes: specific species selected will be based on site hydrology and soil salinity.			

3. Dormant Willow and Cottonwood Poles

Native willow and cottonwood dormant poles should be obtained from locally adapted genotypes that can tolerate high salinity conditions. The species listed in Table 6.01.B.1 should be used. All poles should be dormant at the time of harvest and should be soaked for 2-10 days prior to installation. Poles should be installed at approximately 2’ on center for shrub species and up to 10’ on center for tree species. Holes can be dug with spikes or a stinger and soil must be tamped around the poles after installation to ensure soil to bark contact and to reduce potential for drying. All poles should be installed to at least 6” below the base flow elevation and cut at 6” above the soil surface. Prior to installation, all side branches should be removed from the poles. Cottonwood poles should be at least 1.5” and can be up to 6” in diameter. Willow poles should be 1.5” to 3” in diameter.

4. Transplanting On-site Vegetation

Native vegetation to be disturbed by excavation activities should be transplanted when feasible. Vegetation suitable for transplants should be healthy native species. Prune shrub or tree to approximately 6 feet in height. Cleanly cut all broken and damaged limbs. Herbaceous clusters are also suitable for transplants. Excavate a hole that is larger than

the transplant rootball. Scoop the entire root mass of the transplant with the bucket of a trackhoe, keeping intact the rootball and soils. Immediately place transplant in the excavated hole and hand backfill lightly compacting the soil. Water transplants as necessary to ensure survival.

6.01.C. Fertilizers.
Planted trees shall be fertilized with a slow-release fertilizer, and placed deep into the planting hole and backfilled with soil to minimize fertilizer absorption by
weeds and turf. Use a complete slow release fertilizer in a NPK ratio of 1:2:1, nitrogen, phosphate, and potash.

6.01.D. Staking.
All planted ball and burlap trees and large shrubs shall be staked with hardwood stakes driven greater than 2 feet into the ground and extending 4 feet above the ground. At least two stakes shall be used and placed so that the tree grows vertically straight. Put the stake firmly in the ground, while assuring that it is not penetrating or damaging the root ball. Ties shall be of three-quarter inch or wider bands of polypropylene, elasticized or webbed strapping, or horticultural tape. Ties shall have a smooth surface and be flexible to allow some movement of the trunk without damaging the bark. Loop ties to and not girdle the trunks or branches. The CONTRACTOR is responsible for removing stakes and support of the tree after one year installation.

6.01. F. Fencing.
All planted ball and burlap trees shall have small mammal protective fencing. Fencing shall be 14 gauge welded wire, or chicken wire with less than 6 inch spacing. The welded wire shall be held 6 inches from the truck and placed as a cylinder around the trunk of the tree at a minimum of 4 feet in height. The welded wire shall be fastened to hardwood stakes with cord. The welded fencing shall be flush with the ground.

6.02 MULCH TACKIFIER

All disturbed slopes greater than 10 percent grade require the application of Mulch with Tackifier. Mulch and tackifier as an overspray should be applied at the following rate or as approved by the ENGINEER:

a. Seeding Application Mulching 300 lb/ac
b. Application Powder/ac 150 lb/ac
c. Wood Fiber/ac 45 lb/ac 225 lb/ac

Water/ac 1400 gal/ac 1400 gal/ac.

6.03 EROSION CONTROL BLANKET

All Natural biodegradable Erosion Control Blankets (ECB) shall be placed on all cut bank slopes. Material shall be North American Green (800-772-2040) SC150BN, or approved

equivalent that is all natural coir fabric with a tensile strength 164 lbs/ft, permissible shear force of 2.1 lbs/sqft, and mass of 0.5 lbs/sqyd.

Install per manufactures recommendations. Store all coir fabric elevated off the ground and insure that it is adequately covered to protect the material from damage. Protect fabric from sharp objects that may damage the material. Materials damaged during transport, storage or placement shall be replaced at the CONTRACTOR expense. The ENGINEER or OWNER shall inspect and approve all materials prior to installation.

6.04 TOP SOIL

If available on site, topsoil shall be salvaged a minimum of 6 inches in depth from all disturbed areas. Salvaged topsoil shall be stockpiled in areas that shall not interfere with construction phases and at least 15 feet away from areas of concentrated flows or pavement. The slopes of the stockpile shall not exceed 2:1 horizontal to vertical. A silt fence or other adequate erosion control shall be installed around the perimeter of each stockpile.

6.04. A. Top Soil Application.

Top soil shall be applied to all areas show in plans for seeding and planting. Top soil shall be applied at a minimum of 6 inches depth on all seeded areas, and shall be used to backfill all shrub and tree plantings to the depth and twice the width of the root ball. Topsoil shall not be placed when the ground or Topsoil is frozen, or excessively wet. Following the spreading operation, the Topsoil surface shall be raked to final grades without surface irregularities that could contribute to concentrated waterflow downslope. Top soil shall be raked with 0.5 inch undulations for a seed bed.

6.04. B. Top Soil Material.

Imported topsoil shall be a natural sandy loam that is weed free. Imported Topsoil shall be properly stored and protected, and shall be free of roots, hard clay and stones which shall not pass through a 1-inch square opening. It shall be a loamy mixture having at least 90 percent passing No. 10 sieve. Below lists the soil properties:

1. Contain no less than 2 percent nor more than 13 percent organic matter, as determined by the test for organic matter in accordance with ASTM D2974.

2. Contain no less than 12 percent or more than 40 percent clay, as determined in accordance with ASTM D422.

3. Sand content shall not exceed 55 percent, as determined in accordance with ASTM D422.

4. The pH shall not be lower than 5.0 or higher than 8.0. The pH shall be determined with an acceptable pH meter on that portion of the sample passing the No. 10 sieve, in accordance with the ―Suggested Methods of Tests for Hydrogen Ion Concentration (pH) of Soils, included in the ASTM Procedures for Testing Soils issued December 1964.

5. One hundred percent shall pass the 1-inch screen; 97-100 percent shall pass the 1.5-inch screen, and 40-60 percent shall pass the No. 100 mesh sieve.

6. Topsoil shall be free of clods, gravel, and other inert material. It shall be free of thistle, reed canary grass, creeping foxtail, noxious vegetation and seed. Should such regenerative material be present in the soil, the CONTRACTOR shall remove, at his expense and in a manner satisfactory to the Owner's Representative, all such growth, both surface and root, which may appear in the imported Topsoil within 1 year following acceptance of the work.

7. All soil to be seeded shall be amended with Humate and fertilizer product. The method of incorporation of amendments shall result in a uniform application of material as approved. Humate shall be applied at a rate of 1500 pounds per acre. The humate shall be applied using approximately 1 gallon of water for 1 pound of dry powder. The fertilizer product shall be applied at a rate of 2000 pounds per acre.

SECTION 7 HYDROLOGY

7.01 HYDROLOGY

Hydrology herein is based on gage USGS Gage 09106150 COLORADO RIVER NEAR PALISADE for water years 1990 thru 2016, modified for average diversion and returns between the gage and the project site. The USGS point of contact (Grand Junction Field Office) for the gage may be telephoned at (970) 245-5257 for daily discharge data, or accessed online at: http://waterdata.usgs.gov/co/nwis/uv?site_no=09106150

Real time data may be seasonal and is provisional, subject to change. Statistical Analysis of historical data is not a guarantee for the flow rates during construction and are provided herein solely for the information of the CONTRACTOR. Maintenance of the River Flows, diversions, erosion, environmental protection, BMPs and River stages during the construction period are wholly the responsibility of the CONTRACTOR.

TABLE 3. ***Percent of record that average daily flows were exceeded on the Colorado River near the Project Area (cfs)***

Month	Day	Max (cfs)	Min (cfs)	5% (cfs)	25% (cfs)	50% (cfs)	75% (cfs)	95% (cfs)
Sept	1	2080	60	158	722	1040	1490	2010
Sept	2	2120	61	156	733	1020	1450	2030
Sept	3	2020	60	150	769	986	1410	2010
Sept	4	2140	59	178	750	985	1370	2090
Sept	5	2100	62	164	702	956	1350	2050
Sept	6	2220	74	164	726	946	1360	2070
Sept	7	2380	80	162	763	959	1330	2190
Sept	8	2370	109	163	785	1050	1320	2280
Sept	9	2260	100	152	865	1090	1440	2210
Sept	10	2920	106	159	872	1210	1520	2670
Sept	11	3050	120	169	840	1250	1460	2710
Sept	12	2560	249	271	825	1170	1480	2320
Sept	13	2200	277	315	845	1190	1430	2160
Sept	14	2150	351	380	881	1160	1540	2090
Sept	15	1930	341	369	855	1200	1550	1900
Sept	16	1920	278	305	829	1190	1500	1900
Sept	17	2170	240	267	831	1290	1610	2090
Sept	18	2350	321	334	850	1190	1580	2320
Sept	19	2400	310	364	899	1150	1480	2330
Sept	20	2720	316	368	1070	1200	1450	2540
Sept	21	4630	302	354	986	1190	1470	3910
Sept	22	4300	297	301	904	1250	1690	3680
Sept	23	3690	267	271	979	1330	1820	3260
Sept	24	3250	233	247	954	1320	1710	2970
Sept	25	2990	191	236	922	1200	1630	2760
Sept	26	2840	170	238	850	1140	1570	2670
Sept	27	2910	146	229	781	1120	1520	2690

Month	Day	Max (cfs)	Min (cfs)	5% (cfs)	25% (cfs)	50% (cfs)	75% (cfs)	95% (cfs)
Sept	28	3030	281	331	733	1150	1460	2900
Sept	29	2820	466	473	697	1120	1430	2820
Sept	30	2570	467	522	783	1130	1520	2520
Oct	1	2840	451	455	791	1130	1540	2700
Oct	2	2980	423	432	744	1220	1530	2740
Oct	3	2800	385	420	757	1170	1540	2710
Oct	4	3130	369	429	697	1220	1580	2810
Oct	5	2730	284	366	715	1270	1710	2470
Oct	6	3140	243	336	709	1260	1710	2930
Oct	7	3530	255	335	734	1260	1610	3150
Oct	8	3160	239	309	771	1240	1550	3030
Oct	9	2820	214	292	910	1280	1620	2640
Oct	10	2670	209	281	894	1240	1670	2560
Oct	11	2680	200	279	900	1270	1590	2510
Oct	12	2890	219	272	859	1220	1530	2590
Oct	13	2830	344	361	853	1200	1560	2560
Oct	14	2710	359	366	863	1270	1580	2500
Oct	15	2700	325	364	875	1290	1580	2470
Oct	16	2680	303	355	866	1290	1550	2450
Oct	17	2710	290	340	886	1280	1540	2510
Oct	18	2680	323	352	858	1170	1580	2530
Oct	19	2590	337	361	842	1170	1590	2390
Oct	20	2560	331	352	806	1220	1520	2330
Oct	21	2440	360	366	816	1200	1540	2240
Oct	22	2260	418	419	807	1280	1550	2120
Oct	23	2170	412	420	835	1320	1540	2070
Oct	24	2360	467	476	898	1340	1530	2190
Oct	25	2470	505	514	1010	1330	1570	2280
Oct	26	2290	520	583	1080	1320	1650	2240
Oct	27	2210	510	588	1070	1320	1650	2200
Oct	28	2220	530	603	1070	1350	1650	2170
Oct	29	2250	540	624	955	1490	1670	2180
Oct	30	2330	550	635	1010	1480	1890	2260
Oct	31	2290	530	585	1290	1580	1790	2280
Nov	1	2430	540	590	1260	1550	1930	2400
Nov	2	2490	600	602	1290	1530	1920	2460
Nov	3	2380	580	635	1380	1730	1970	2360
Nov	4	2320	689	843	1400	1750	2100	2320
Nov	5	2490	775	875	1460	1820	2180	2480
Nov	6	2690	870	958	1560	2000	2180	2660
Nov	7	2540	1170	1170	1570	2020	2340	2540
Nov	8	2540	1190	1220	1810	2030	2280	2540
Nov	9	2980	1220	1270	1830	2060	2370	2860
Nov	10	2870	1400	1430	1820	2050	2400	2800
Nov	11	2730	1510	1540	1850	2050	2320	2710

Month	Day	Max (cfs)	Min (cfs)	5% (cfs)	25% (cfs)	50% (cfs)	75% (cfs)	95% (cfs)
Nov	12	2860	1530	1540	1860	2050	2300	2740
Nov	13	2830	1180	1270	1790	2030	2320	2720
Nov	14	2760	1380	1400	1730	1990	2290	2690
Nov	15	2610	1390	1430	1730	2000	2300	2600
Nov	16	2580	1410	1410	1740	1990	2270	2530
Nov	17	2580	1250	1290	1700	1990	2200	2540
Nov	18	2520	1220	1290	1670	1980	2150	2490
Nov	19	2670	1130	1250	1680	1940	2180	2630
Nov	20	2630	1300	1340	1710	1880	2150	2600
Nov	21	2680	1170	1250	1640	1980	2210	2580
Nov	22	2650	1300	1320	1700	2000	2230	2640
Nov	23	3190	1350	1390	1650	2010	2160	2960
Nov	24	2820	1350	1360	1680	1940	2260	2690
Nov	25	2530	1250	1270	1660	1810	2200	2510
Nov	26	2570	1260	1270	1570	1810	2090	2560
Nov	27	2490	1280	1320	1580	1840	2170	2470
Nov	28	2690	1160	1190	1610	1820	2180	2610
Nov	29	2570	1160	1180	1500	1850	2170	2510
Nov	30	2480	1210	1210	1470	1780	2090	2480
Dec	1	2480	1240	1250	1520	1740	2170	2460
Dec	2	2490	1190	1220	1540	1710	2140	2480
Dec	3	2580	1080	1150	1540	1780	2090	2550
Dec	4	2460	1110	1140	1520	1660	2030	2450
Dec	5	2260	1020	1030	1450	1670	2040	2230
Dec	6	2210	1090	1110	1440	1660	2030	2190
Dec	7	2430	1080	1130	1410	1620	1960	2390
Dec	8	2400	1200	1220	1420	1610	2010	2380
Dec	9	2440	1230	1230	1390	1700	2010	2370
Dec	10	2430	1040	1070	1290	1720	1940	2390
Dec	11	2500	972	992	1390	1710	1920	2460
Dec	12	2500	987	1050	1460	1710	1910	2380
Dec	13	2430	1110	1120	1500	1690	1990	2380
Dec	14	2540	1220	1230	1580	1740	2020	2470
Dec	15	2560	1210	1230	1470	1730	1910	2470
Dec	16	2470	1160	1200	1480	1610	1920	2460
Dec	17	2590	1180	1200	1390	1610	1920	2560
Dec	18	2600	1200	1210	1390	1580	1920	2580
Dec	19	2640	1280	1290	1390	1600	1970	2550
Dec	20	2600	1180	1190	1350	1690	2010	2490
Dec	21	2850	1050	1070	1380	1760	1950	2710
Dec	22	2490	807	896	1430	1680	2000	2470
Dec	23	2570	719	766	1290	1640	1970	2540
Dec	24	2420	642	762	1270	1650	1850	2390
Dec	25	2290	682	814	1300	1600	1810	2280
Dec	26	2180	879	949	1270	1610	1820	2180

Month	Day	Max (cfs)	Min (cfs)	5% (cfs)	25% (cfs)	50% (cfs)	75% (cfs)	95% (cfs)
Dec	27	2380	1010	1020	1370	1570	1880	2320
Dec	28	2490	1020	1050	1270	1520	1920	2410
Dec	29	2440	1100	1100	1270	1570	1980	2400
Dec	30	2440	1070	1120	1360	1610	2060	2400
Dec	31	2670	1070	1120	1430	1650	1870	2520
Jan	1	2630	1140	1140	1420	1570	1840	2520
Jan	2	2560	1130	1140	1260	1520	1860	2450
Jan	3	2670	1090	1090	1210	1540	1980	2660
Jan	4	2670	1050	1080	1270	1590	1900	2670
Jan	5	2600	1020	1080	1340	1610	1960	2520
Jan	6	2500	981	1010	1450	1660	1990	2370
Jan	7	2340	921	984	1420	1650	1890	2280
Jan	8	2220	1080	1100	1460	1610	1890	2200
Jan	9	2240	1100	1100	1510	1730	1970	2180
Jan	10	2340	1120	1120	1520	1750	1990	2310
Jan	11	2990	1140	1160	1450	1730	1960	2790
Jan	12	3130	1210	1220	1380	1670	2000	2910
Jan	13	2470	1170	1180	1360	1580	1980	2360
Jan	14	2440	1070	1100	1410	1570	1860	2320
Jan	15	2340	1070	1110	1410	1520	1880	2240
Jan	16	2300	1080	1100	1380	1550	1890	2230
Jan	17	2380	1050	1060	1350	1590	1830	2350
Jan	18	2380	1100	1100	1330	1660	1790	2320
Jan	19	2360	1090	1110	1280	1640	1890	2280
Jan	20	2350	1040	1090	1250	1620	1910	2280
Jan	21	2310	1080	1100	1340	1610	1820	2280
Jan	22	2220	1120	1130	1350	1630	1890	2200
Jan	23	2200	1120	1120	1320	1560	1810	2180
Jan	24	2310	1140	1140	1340	1580	1770	2270
Jan	25	2380	1140	1140	1300	1580	1820	2360
Jan	26	2370	1080	1100	1360	1610	1820	2320
Jan	27	2370	1140	1140	1360	1610	1870	2350
Jan	28	2380	1130	1170	1440	1630	1810	2340
Jan	29	2250	1140	1170	1410	1600	1770	2210
Jan	30	2250	1120	1160	1400	1600	1700	2250
Jan	31	2410	1120	1130	1350	1580	1720	2370
Feb	1	2470	1100	1100	1370	1510	1740	2410
Feb	2	2230	1120	1120	1270	1490	1780	2210
Feb	3	2240	1120	1130	1270	1490	1810	2230
Feb	4	2260	1050	1080	1320	1490	1790	2250
Feb	5	2270	1120	1140	1340	1510	1800	2220
Feb	6	2360	1090	1110	1340	1500	1860	2300
Feb	7	2410	1020	1090	1360	1570	1850	2390
Feb	8	2360	931	1030	1420	1590	1860	2340
Feb	9	2360	931	1010	1420	1680	1860	2350

Month	Day	Max (cfs)	Min (cfs)	5% (cfs)	25% (cfs)	50% (cfs)	75% (cfs)	95% (cfs)
Feb	10	2350	912	1000	1330	1710	1950	2340
Feb	11	2280	1040	1070	1320	1610	1950	2270
Feb	12	2200	1130	1140	1350	1570	1900	2190
Feb	13	2230	1120	1140	1400	1650	1820	2220
Feb	14	2220	1130	1140	1410	1710	1820	2200
Feb	15	2290	1150	1160	1430	1680	1890	2250
Feb	16	2320	1160	1180	1380	1620	1890	2290
Feb	17	2300	1100	1150	1370	1620	1970	2270
Feb	18	2370	1120	1150	1360	1600	1980	2340
Feb	19	2360	1130	1140	1390	1620	1920	2350
Feb	20	2440	1050	1080	1410	1680	2040	2420
Feb	21	3510	1110	1110	1410	1710	1990	3100
Feb	22	4800	1120	1120	1420	1630	1830	4030
Feb	23	3560	1100	1120	1450	1630	1910	3210
Feb	24	2710	1050	1070	1430	1680	1960	2610
Feb	25	2570	1120	1130	1400	1640	1990	2540
Feb	26	2390	1090	1130	1380	1580	2010	2390
Feb	27	2320	1110	1130	1390	1670	1980	2310
Feb	28	2360	1090	1110	1420	1670	2010	2320
Feb	29	2160	1400	1420	2100	2130		

7.02 APPROXIMATE WSEL

Water Surface Elevations (WSEL) are based on limited survey and one/two-dimensional hydraulic modeling. Actual WSELs in the field may vary from those listed herein. Approximate WSELs are provided herein solely for the information of the CONTRACTOR.

Water Surface Elevations would be affected an unknown degree with temporary flow obstructions of equipment, coffers, temporary alluvium placement or other construction activities. The CONTRACTOR is wholly responsible for monitoring and controlling WSELs during construction and any associated erosion, flooding, structure integrity or environmental damage.

TABLE 4, ***Pre-Construction AND Care of Water Approximate Water Surface Elevations (feet)***

Flow rate (cfs)	Predicted Water Surface Elevation at Slough Inlet (feet)	Predicted Water Surface Elevation at Slough Outlet (feet)
810	4566.5	4563*
1600	4567.3	4563.2
3000	4568.4	4563.9
5000	4569.4	4564.5
7000	4569.6	4564.6
9000	4569.9	4565.55
** Standing water only*		

SECTION 8 MODIFICATIONS TO TIME OF COMPLETION

8.1 CONSTRUCTION WINDOW

Construction is permitted October 1 through April 1. The IN-STREAM construction window is November 1st through March 15th. If IN-STREAM construction is anticipated to take place outside of these dates, CONTRACTOR shall notify OWNER in writing. ON-SHORE construction may take place outside of these dates with the OWNER. The OWNER shall be notified of any work anticipated outside of these dates.

No construction activities shall be performed on soil during periods when the soil is too wet to adequately support construction equipment as measured by ruts greater than 4 inches deep.

The date of beginning and the time for completion of the work are essential conditions of the Contract Documents and the work embraced shall be commenced on a date specified in the Notice to Proceed. The Contractor will proceed with the work at such rate of progress to ensure full completion within the Contract time. It is expressly understood and agreed, by and between the Contractor and the Owner, that the Contract time for the completion of the work described herein is a reasonable time, taking into consideration the climatic and other factors prevailing in the locality of the work. Every effort shall be made by the Contractor to complete the project within the "Contract Time" shown in the bid, quote or proposal. The "Contract Time" anticipates "Normal" weather and climate conditions in and around the vicinity of the Project site during the times of year that the construction will be carried out.

Contractor acknowledges that the Project site is located in a high altitude environment where weather patterns can be variable and extreme during winter months. Freezing conditions are likely to be regularly encountered during the construction window.

Frazil ice is a winter occurrence throughout much of the Colorado River in Colorado. Ice can pile up significantly on many in-channel obstructions. Contractor is wholly responsible for maintaining conditions that prevent build up of ice during construction and for delays associated with ice.

SECTION 9 DEFINITIONS

B-Axis
The intermediate (and overturning) axis on a boulder.

Best Management Practices (BMPs)
Water and Soil Care Measures designed to prevent sediment soil erosion, minimize turbidity and protect wetlands.

Coffer Dam
Structure used to isolate an area for dewatering.

Ordinary High Water Line (OHWL)
Approximate Water Surface Elevation at the 1 ½ year Flood.

In-Channel Work
All construction work occurring below the ordinary high water line or one and a half year flood or in a wet channel.

Invert
The cross-section that controls water flow.

On-Shore Work
All construction work occurring above the ordinary high water line or one and a half year flood.

Protect-In-Place
Protection of Structures or Vegetation by not disturbing them with adjacent construction activities.

Thalweg
Lowest elevation of the river channel in cross section perpendicular to the direction of the main current flow.

Toe
Point where a ground slope meets a low point and flattens out. Most commonly in rivers it refers to the point where the bank slope meets the channel bottom slope.

River Right
The right side of the channel when looking downstream.

River Left
The left side of the channel when looking downstream.

Riparian Vegetation Vegetation which is rooted in the water table of the adjacent river.

Water Surface Elevation Elevation on the project datum, of the surface of water at a specified location.

LAS COLONIAS PARK SLOUGH RESTORATION
COLORADO RIVER
GRAND JUNCTION, CO
AUGUST 11, 2016

BID SET DESIGN DRAWINGS

SHEET INDEX

CONTACTS

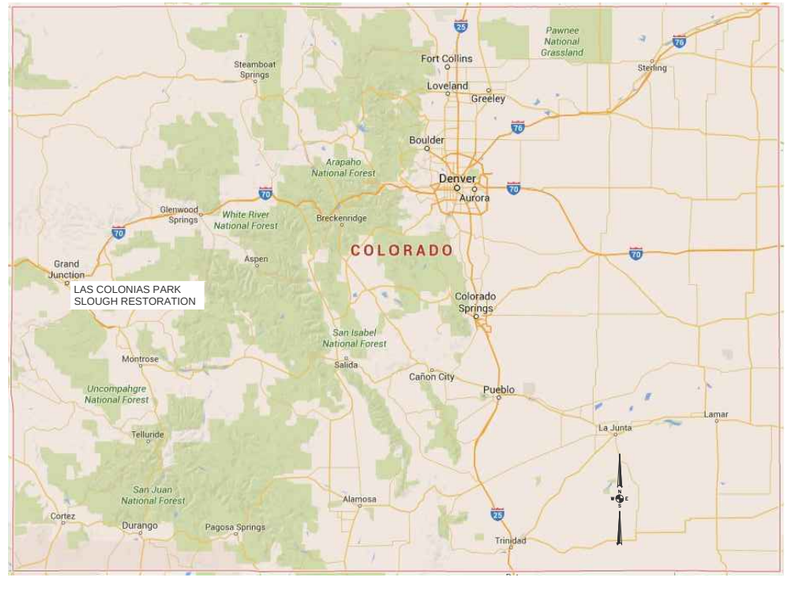
Traci Wieland
Recreation Superintendent
Grand Junction Parks and Recreation
(970) 254-3846

Mr. Scott Prins, P.E.
Project Engineer
RiverRestoration.org, LLC.
(970)-947-9568

LOCATION MAP

VICINITY MAP

State of Colorado



PROFESSIONAL ENGINEER STAMP

COLORADO LICENSED
JASON CAREY
38797
8/11/2016
PROFESSIONAL ENGINEER

LAS COLONIAS PARK SLOUGH RESTORATION
COVER SHEET

No.	REVISION/UPDATE	Date
1	DESIGN UPDATES	

CLIENT NAME AND ADDRESS

City of Grand Junction
Parks and Recreation
250 North 5th Street
Grand Junction, CO 81501
970.245.3866

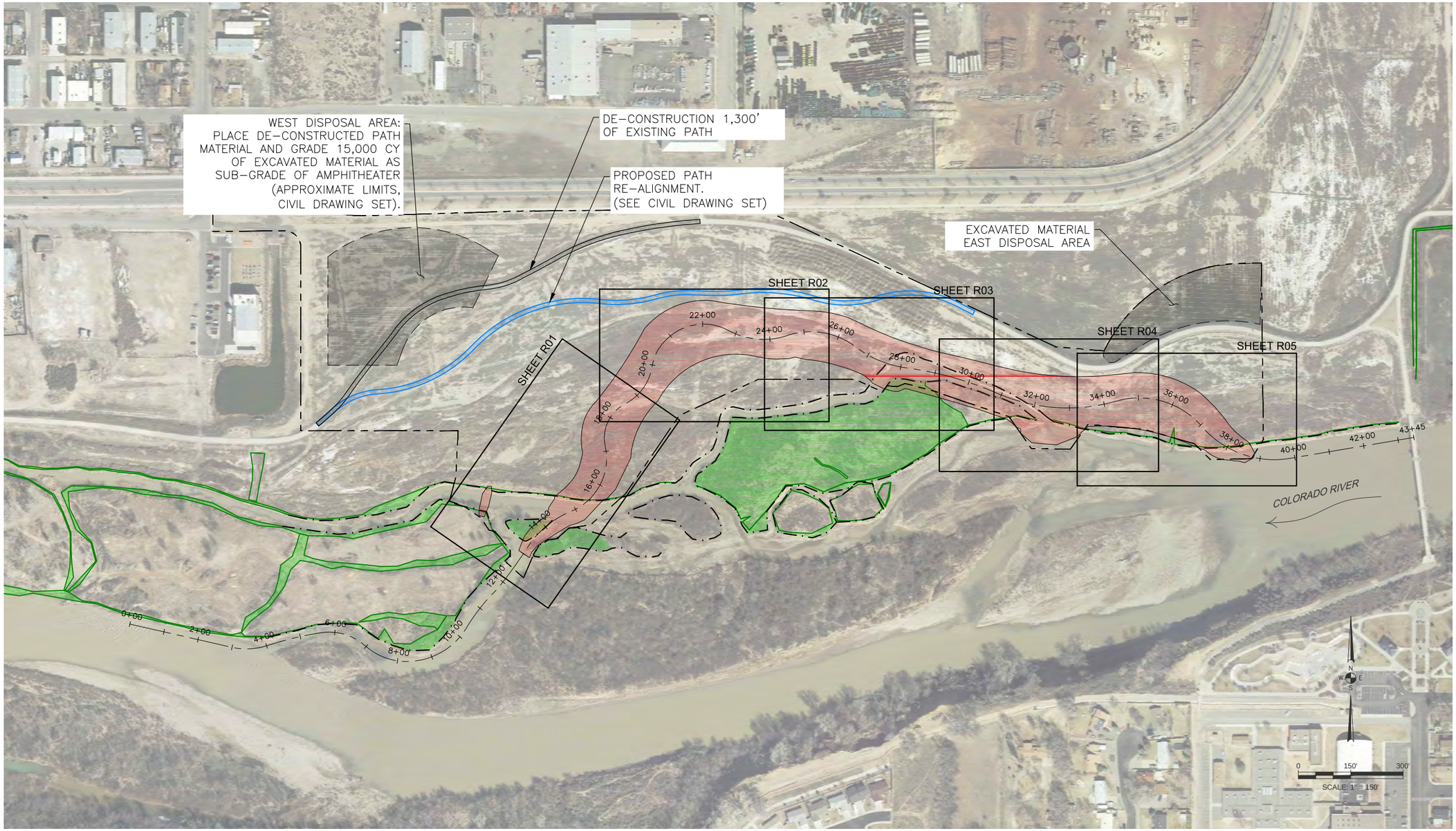
DESIGN FIRM NAME AND ADDRESS

RiverRestoration
P.O. Box 248
Carbondale, CO 81623
www.RiverRestoration.org

PROJECT NAME AND ADDRESS

Las Colonias Park Slough
Restoration Project
Las Colonias Park
Grand Junction, CO 81501

Project: 11.CO24.003
Date: AUGUST 11, 2016
Scale: NTS
Sheet: G01



DELINEATED WETLANDS
(PER WETLAND DELINEATION AND PRELIMINARY JURISDICTIONAL DETERMINATION, DATED JUNE, 28 2013)

PROPOSED SLOUGH CHANNEL LIMITS OF EXCAVATION

ORDINARY HIGH WATER LINE

PROJECT LIMTS

PROFESSIONAL ENGINEER STAMP

COLORADO LICENSED
JASON CAREY
38797
8/11/2016
PROFESSIONAL ENGINEER

LAS COLONIAS PARK SLOUGH RESTORATION SITE PLAN

No.	REVISION/UPDATE	Date
1	DESIGN UPDATES	

CLIENT NAME AND ADDRESS

City of Grand Junction
Parks and Recreation
250 North 5th Street
Grand Junction, CO 81501
970.245.3866

DESIGN FIRM NAME AND ADDRESS

RiverRestoration
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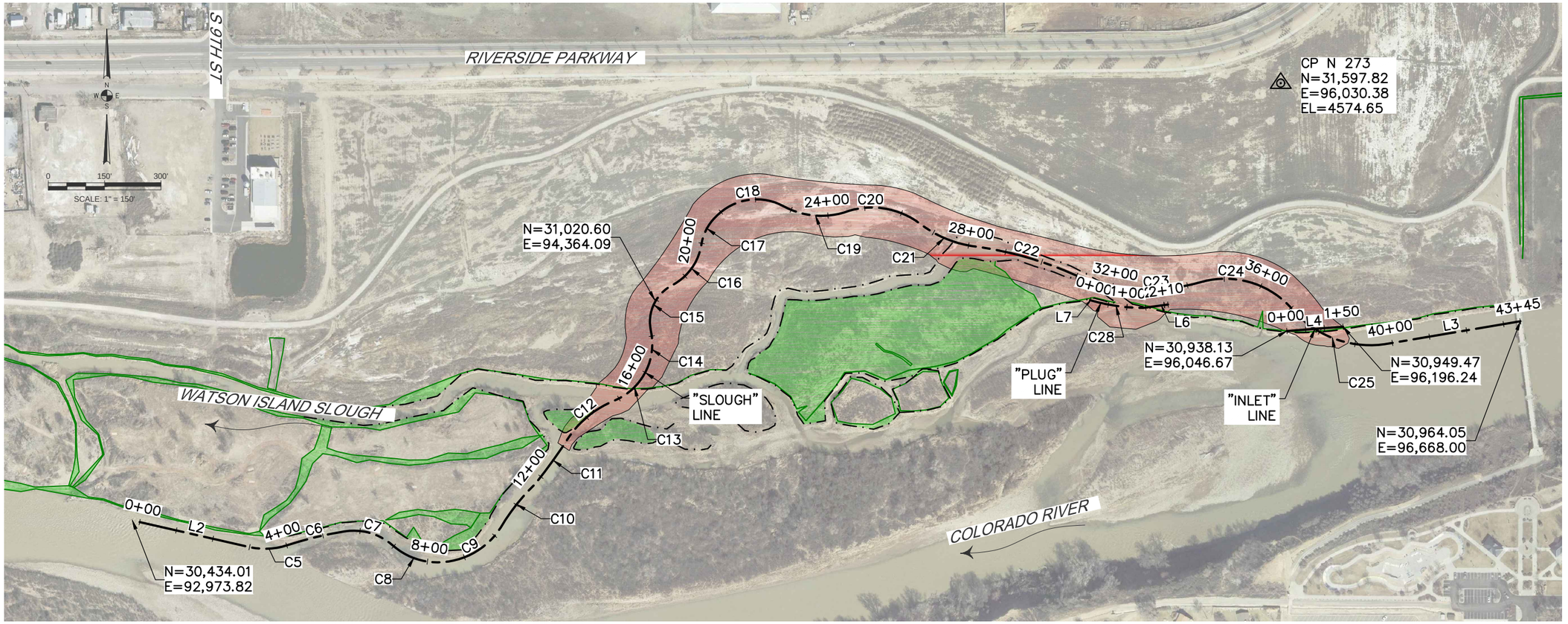
Carbondale, CO 81623
www.RiverRestoration.org

PROJECT NAME AND ADDRESS

Las Colonias Park Slough
Restoration Project
Las Colonias Park
Grand Junction, CO 81501

Project	Sheet
11.CO24.003	G02
Date: AUGUST 11, 2016	
Scale: 1"= 150' (FULL SIZE)	



"INLET" LINE

Line Table: Alignments				
Line #	Length	Direction	Start Point	End Point
L4	150.00	N85° 39' 51.11"E	(96046.667,30938.128)	(96196.2375,30949.4682)

"PLUG" LINE

Curve Table: Alignments					
Curve #	Radius	Length	Chord Direction	Start Point	End Point
C28	511.56	137.37	S81° 52' 48.73"E	(95528.176,31018.894)	(95663.7644,30999.5494)

Line Table: Alignments				
Line #	Length	Direction	Start Point	End Point
L6	67.09	N82° 11' 05.83"E	(95663.764,30999.549)	(95730.2319,31008.6721)
L7	5.54	S74° 15' 53.55"E	(95522.848,31020.395)	(95528.1762,31018.8942)

"SLOUGH" LINE

Curve Table: Alignments					
Curve #	Radius	Length	Chord Direction	Start Point	End Point
C5	191.02	100.24	N86° 50' 50.13"E	(93287.510,30362.592)	(93386.4561,30368.0418)
C6	970.17	157.15	N76° 27' 15.96"E	(93386.456,30368.042)	(93539.0674,30404.8089)
C7	156.69	137.85	S73° 42' 09.70"E	(93539.067,30404.809)	(93667.1518,30367.3609)
C8	178.79	130.55	S69° 25' 03.49"E	(93667.152,30367.361)	(93786.6673,30322.4800)
C9	200.10	199.66	N61° 04' 45.89"E	(93786.667,30322.480)	(93954.2672,30415.0787)
C10	546.18	149.73	N38° 24' 31.33"E	(93954.267,30415.079)	(94046.9990,30532.0406)
C11	1578.85	155.53	N35° 38' 52.76"E	(94046.999,30532.041)	(94137.6079,30658.3780)
C12	267.11	155.84	N51° 43' 58.64"E	(94137.608,30658.378)	(94258.2370,30753.5326)
C13	163.32	126.41	N44° 49' 23.72"E	(94258.237,30753.533)	(94345.1408,30840.9741)
C14	163.32	99.85	N05° 08' 01.32"E	(94345.141,30840.974)	(94353.9369,30938.8826)
C15	109.88	142.31	N24° 43' 16.92"E	(94353.937,30938.883)	(94409.3805,31059.3073)
C16	148.16	140.00	N35° 53' 10.30"E	(94409.381,31059.307)	(94488.4262,31168.5601)

Curve Table: Alignments					
Curve #	Radius	Length	Chord Direction	Start Point	End Point
C17	132.29	90.30	N28° 35' 55.69"E	(94488.426,31168.560)	(94530.8165,31246.3131)
C18	150.04	189.70	N82° 07' 03.07"E	(94530.816,31246.313)	(94706.4559,31270.6304)
C19	210.06	180.00	S85° 47' 14.98"E	(94706.456,31270.630)	(94880.5279,31257.8091)
C20	211.87	200.00	S79° 50' 04.00"E	(94880.528,31257.809)	(95070.1599,31223.8066)
C21	303.41	150.00	S66° 30' 12.42"E	(95070.160,31223.807)	(95206.3259,31164.6097)
C22	972.50	290.00	S74° 21' 13.39"E	(95206.326,31164.610)	(95484.5465,31086.6868)
C23	507.21	340.15	S86° 50' 45.00"E	(95484.546,31086.687)	(95817.8563,31068.3194)
C24	237.33	259.53	S74° 29' 16.53"E	(95817.856,31068.319)	(96055.6590,31002.3169)
C25	274.10	282.31	S68° 24' 57.82"E	(96055.659,31002.317)	(96306.7272,30902.9934)

Line Table: Alignments				
Line #	Length	Direction	Start Point	End Point
L2	301.74	S77° 10' 28.78"E	(92993.294,30429.573)	(93287.5104,30362.5917)
L3	366.40	N80° 24' 28.41"E	(96306.727,30902.993)	(96668.0014,30964.0471)

PROFESSIONAL ENGINEER STAMP

COLORADO LICENSED
JASON CAREY
38797
8/11/2016
PROFESSIONAL ENGINEER

LAS COLONIAS PARK SLOUGH RESTORATION HORIZONTAL CONTROL PLAN

No.	REVISION/UPDATE	Date
1	DESIGN UPDATES	

CLIENT NAME AND ADDRESS

City of Grand Junction
Parks and Recreation
250 North 5th Street
Grand Junction, CO 81501
970.245.3866

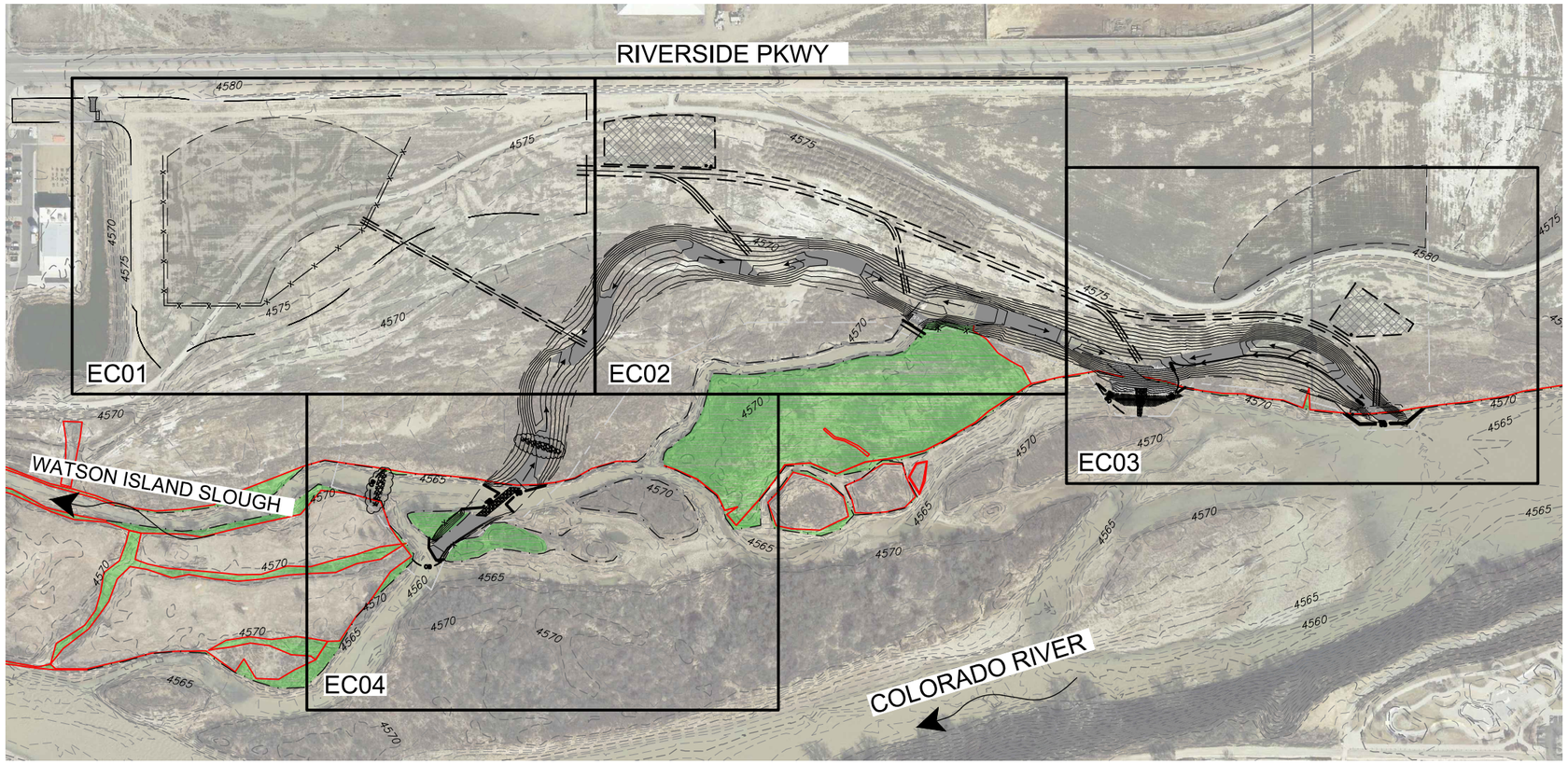
DESIGN FIRM NAME AND ADDRESS

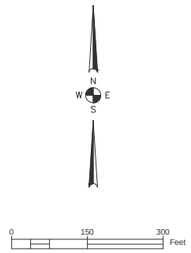
RiverRestoration
P.O. Box 248
Carbondale, CO 81623
www.RiverRestoration.org

PROJECT NAME AND ADDRESS

Las Colonias Park Slough
Restoration Project
Las Colonias Park
Grand Junction, CO 81501

Project: 11.CO24.003
Date: AUGUST 11, 2016
Scale: 1"= 150' (FULL SIZE)
Sheet: G03





CARE OF WATER NOTES:

1. IN-WATER WORK WINDOW ON THE COLORADO RIVER IS FROM NOVEMBER 1 THROUGH MARCH 15. NO WORK BELOW ORDINARY HIGH WATER WILL OCCUR OUTSIDE THIS WINDOW WITHOUT PRIOR WRITTEN APPROVAL FROM THE CITY OF GRAND JUNCTION AND THE PERMIT ISSUER.

2. CARE OF WATER PLAN IS SHOWN FOR PERMITTING AND COST ESTIMATING PURPOSES ONLY. CONTRACTOR WILL BE RESPONSIBLE FOR DEVELOPING A CARE OF WATER PLAN TO MEET PERMITTING REQUIREMENTS AND CONSTRUCTION NEEDS. SEE SPECIFICATIONS FOR COLORADO RIVER FLOW INFORMATION.

EROSION CONTROL NOTES:

1. PROJECT AREAS DISTURBING GREATER THAN 1 ACRE MAY REQUIRE COR03000 PERMIT FROM THE CDPHE AND MUST IMPLEMENT A ESCP.

2. THE ESCP MEASURES SHOWN ON THIS PLAN ARE EXAMPLE REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, CONTRACTOR SHALL UPGRADE THESE MEASURES AS NEEDED TO COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL EROSION AND SEDIMENT CONTROL REGULATIONS.

3. PHASE CLEARING AND GRADING TO THE EXTENT PRACTICAL TO PREVENT EXPOSED INACTIVE AREAS FROM BECOMING A SOURCE OF EROSION.

4. IDENTIFY, MARK, AND PROTECT (BY FENCING OFF OR OTHER MEANS) CRITICAL RIPARIAN AREAS, WETLANDS, AND VEGETATION INCLUDING ALL TREES AND ASSOCIATED ROOTING ZONES, AND VEGETATION AREAS NOT SPECIFICALLY IDENTIFIED FOR REMOVAL. MARK IN THE FIELD VEGETATIVE BUFFER ZONES BETWEEN THE SITE AND SENSITIVE AREAS (E.G., WETLANDS), AND OTHER AREAS TO BE PRESERVED, ESPECIALLY IN PERIMETER AREAS.

5. PRESERVE ALL EXISTING VEGETATION NOT SPECIFICALLY IDENTIFIED FOR REMOVAL AND RE-VEGETATE OPEN AREAS. RE-VEGETATE OPEN AREAS IN A TIMELY MANNER AFTER GRADING OR CONSTRUCTION. IDENTIFY THE TYPE OF VEGETATIVE SEED MIX USED.

6. EROSION AND SEDIMENT CONTROL MEASURES INCLUDING PERIMETER SEDIMENT CONTROL MUST BE IN PLACE BEFORE VEGETATION IS DISTURBED AND MUST REMAIN IN PLACE AND BE MAINTAINED, REPAIRED, AND PROMPTLY IMPLEMENTED FOLLOWING PROCEDURES ESTABLISHED FOR THE DURATION OF CONSTRUCTION, INCLUDING PROTECTION FOR ACTIVE STORM DRAIN INLETS AND CATCH BASINS AND APPROPRIATE NON-STORMWATER POLLUTION CONTROLS.

7. ESTABLISH CONCRETE TRUCK AND OTHER CONCRETE EQUIPMENT CONTAINED WASHOUT AREAS BEFORE BEGINNING CONCRETE WORK. CONCRETE WASHOUT AREAS SHOULD BE FULLY ISOLATED FROM OPEN WATER AND WETLANDS.

8. APPLY TEMPORARY AND/OR PERMANENT SOIL STABILIZATION MEASURES IMMEDIATELY ON ALL DISTURBED AREAS AS GRADING PROGRESSES AND FOR ALL ROADWAYS INCLUDING GRAVEL ROADWAYS.

9. ESTABLISH MATERIAL AND WASTE STORAGE AREAS, AND OTHER NON-STORMWATER CONTROLS.

10. PREVENT TRACKING OF SEDIMENT ONTO PUBLIC OR PRIVATE ROADS USING BMPS SUCH AS: GRAVELED (OR PAVED) EXITS AND PARKING AREAS, GRAVEL ALL UNPAVED ROADS LOCATED ONSITE, OR USE AN EXIT TIRE WASH. THESE BMPS MUST BE IN PLACE PRIOR TO LAND-DISTURBING ACTIVITIES.

11. USE BMPS TO PREVENT OR MINIMIZE STORMWATER EXPOSURE TO POLLUTANTS FROM SPILLS; VEHICLE AND EQUIPMENT FUELING, MAINTENANCE, AND STORAGE; OTHER CLEANING AND MAINTENANCE ACTIVITIES; AND WASTE HANDLING ACTIVITIES. THESE POLLUTANTS INCLUDE FUEL, HYDRAULIC FLUID, AND OTHER OILS FROM VEHICLES AND MACHINERY, AS WELL AS DEBRIS, LEFTOVER PAINTS, SOLVENTS, AND GLUES FROM CONSTRUCTION OPERATIONS. FUELING SHALL OCCUR IN UPLAND AREAS, ISOLATED FROM OPEN WATER.

12. IMPLEMENT THE FOLLOWING BMPS: WRITTEN SPILL PREVENTION AND RESPONSE PROCEDURES, EMPLOYEE TRAINING ON SPILL PREVENTION AND PROPER DISPOSAL PROCEDURES, SPILL KITS IN ALL VEHICLES, REGULAR MAINTENANCE SCHEDULE FOR VEHICLES AND MACHINERY, MATERIAL DELIVERY AND STORAGE CONTROLS, TRAINING AND SIGNAGE, AND COVERED STORAGE AREAS FOR WASTE AND SUPPLIES. ALL SPILLS OF ANY SIZE SHALL BE REPORTED TO THE OWNER, CDPHE, AND ENGINEER IMMEDIATELY.

13. USE WATER, SOIL-BINDING AGENT OR OTHER DUST CONTROL TECHNIQUE AS NEEDED TO AVOID WIND-BLOWN SOIL.

14. THE APPLICATION RATE OF FERTILIZERS USED TO REESTABLISH VEGETATION MUST FOLLOW MANUFACTURER'S RECOMMENDATIONS TO MINIMIZE NUTRIENT RELEASES TO SURFACE WATERS. EXERCISE CAUTION WHEN USING TIME-RELEASE FERTILIZERS WITHIN ANY WATERWAY RIPARIAN ZONE.

15. IF A DEWATERING TREATMENT SYSTEM (FOR EXAMPLE, ELECTRO-COAGULATION, FLOCCULATION, FILTRATION, ETC.) FOR SEDIMENT OR OTHER POLLUTANT REMOVAL IS EMPLOYED, SUBMIT AN OPERATION AND MAINTENANCE PLAN (INCLUDING SYSTEM SCHEMATIC, LOCATION OF SYSTEM, LOCATION OF INLET, LOCATION OF DISCHARGE, DISCHARGE DISPERSION DEVICE DESIGN, AND A SAMPLING PLAN AND FREQUENCY) BEFORE OPERATING THE TREATMENT SYSTEM. OBTAIN PLAN APPROVAL BEFORE OPERATING THE TREATMENT SYSTEM. OPERATE AND MAINTAIN THE TREATMENT SYSTEM ACCORDING TO MANUFACTURER'S SPECIFICATIONS.

16. TEMPORARILY STABILIZE SOILS AT THE END OF THE SHIFT BEFORE HOLIDAYS AND WEEKENDS, IF NEEDED. THE REGISTRANT IS RESPONSIBLE FOR ENSURING THAT SOILS ARE STABLE DURING RAIN EVENTS AT ALL TIMES OF THE YEAR.

17. AT THE END OF EACH WORKDAY SOIL STOCKPILES MUST BE STABILIZED OR COVERED, OR OTHER BMPS MUST BE IMPLEMENTED TO PREVENT DISCHARGES TO SURFACE WATERS.

18. CONSTRUCTION ACTIVITIES MUST AVOID OR MINIMIZE EXCAVATION AND CREATION OF BARE GROUND DURING WET WEATHER.

19. SEDIMENT FENCE: REMOVE TRAPPED SEDIMENT BEFORE IT REACHES ONE THIRD OF THE ABOVE GROUND FENCE HEIGHT AND BEFORE FENCE REMOVAL.

20. OTHER SEDIMENT BARRIERS (SUCH AS BIOBAGS): REMOVE SEDIMENT BEFORE IT REACHES TWO INCHES DEPTH ABOVE GROUND HEIGHT. AND BEFORE BMP REMOVAL.

21. THE INTENTIONAL WASHING OF SEDIMENT INTO THE COLORADO RIVER OR ITS ASSOCIATED SLOUGHS MUST NOT OCCUR. VACUUMING OR DRY SWEEPING AND MATERIAL PICKUP MUST BE USED TO CLEANUP RELEASED SEDIMENTS.

22. THE ENTIRE SITE MUST BE TEMPORARILY STABILIZED USING VEGETATION OR A HEAVY MULCH LAYER, TEMPORARY SEEDING, OR OTHER METHOD SHOULD ALL CONSTRUCTION ACTIVITIES CEASE FOR 30 DAYS OR MORE.

23. PROVIDE PERMANENT EROSION CONTROL MEASURES ON ALL EXPOSED AREAS. DO NOT REMOVE TEMPORARY SEDIMENT CONTROL PRACTICES UNTIL PERMANENT VEGETATION (AT LEAST 80% OF PLANT SPECIES FOUND IN THE RECLAMATION MIXES) OR OTHER COVER OF EXPOSED AREAS IS ESTABLISHED. HOWEVER, DO REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AS EXPOSED AREAS BECOME STABILIZED, UNLESS DOING SO CONFLICTS WITH LOCAL REQUIREMENTS. PROPERLY DISPOSE OF CONSTRUCTION MATERIALS AND WASTE, INCLUDING SEDIMENT RETAINED BY TEMPORARY BMPS.

NOT FOR CONSTRUCTION

LAS COLONIAS PARK SLOUGH RESTORATION
EROSION CONTROL AND CARE OF WATER COVER SHEET

No.	REVISION/UPDATE	Date
1	DESIGN UPDATES	

CLIENT NAME AND ADDRESS

City of Grand Junction
Parks and Recreation
250 North 5th Street
Grand Junction, CO 81501
970.245.3866

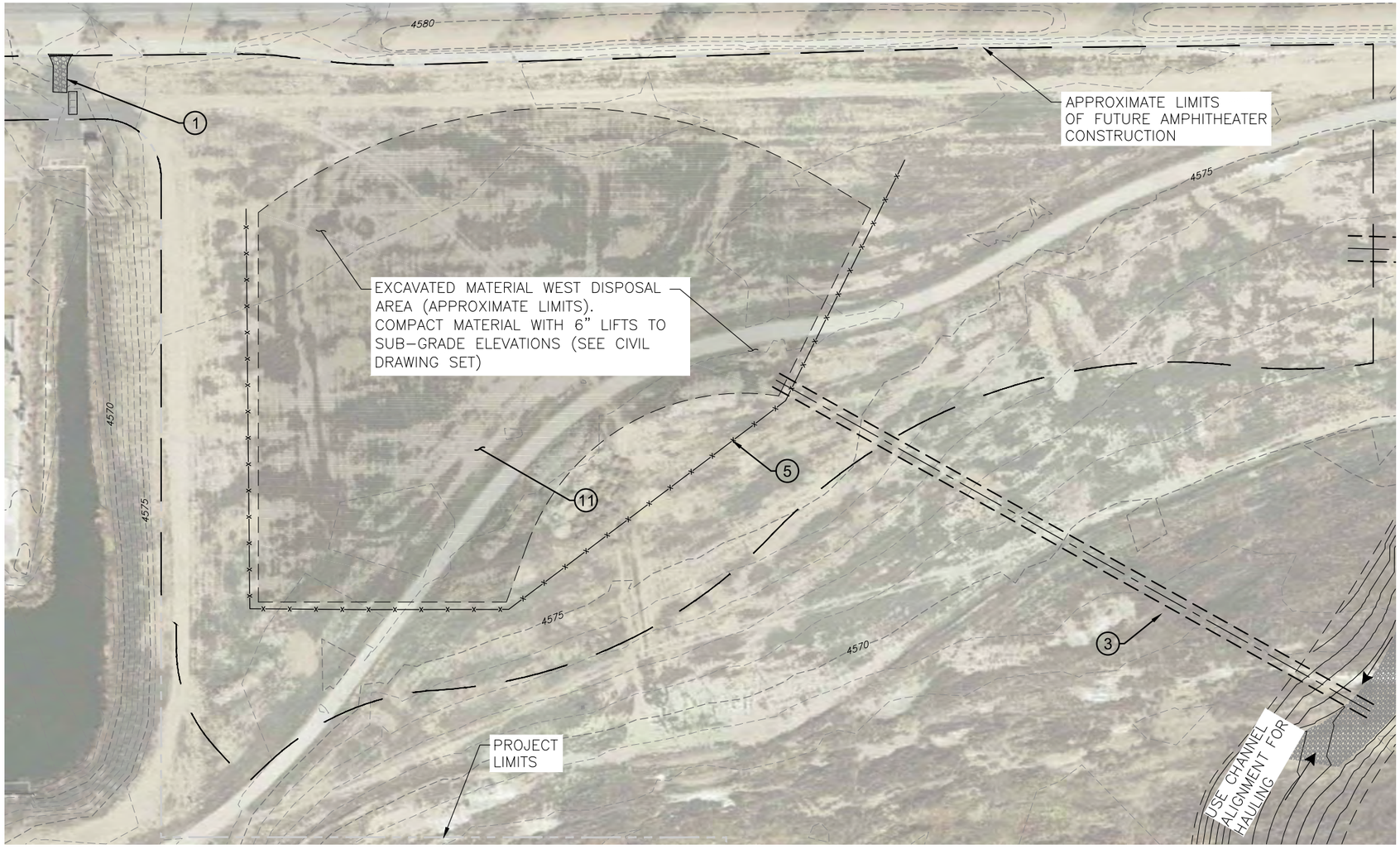
DESIGN FIRM NAME AND ADDRESS

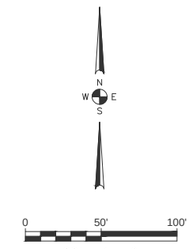
RiverRestoration
P.O. Box 248
Carbondale, CO 81623
www.RiverRestoration.org

PROJECT NAME AND ADDRESS

Las Colonias Park Slough
Restoration Project
Las Colonias Park
Grand Junction, CO 81501

Project	Sheet
11.CO24.003	EC00
Date: JULY, 2016	
Scale: 1"=150' (FULL SIZE)	





EROSION CONTROL/CARE OF WATER NOTES:

SEE SHEETS EC05 AND EC06 FOR EROSION AND CARE OF WATER DETAILS.

1. WHEEL WASH/CONSTRUCTION ENTRANCE
2. 20' HAUL ROUTE (INSTALL AGGREGATE BASE IF REQUIRED)
3. 12' HAUL ROUTE (INSTALL AGGREGATE BASE IF REQUIRED)
4. STAGING AREA WITH SPILL KIT
5. INSTALL SEDIMENT FENCE
6. INSTALL TURBIDITY CURTAIN
7. INSTALL OIL BOOM
8. DEWATERING PUMP AND FILTER
9. TEMPORARY AGGREGATE FILL
10. TEMPORARY DRAINAGE DITCH
11. COVER EXPOSED FILL WITH CERTIFIED WEED-FREE STRAW

PROFESSIONAL ENGINEER STAMP

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8/11/2016
PROFESSIONAL ENGINEER

LAS COLONIAS PARK SLOUGH RESTORATION EROSION CONTROL AND CARE OF WATER PLAN

No.	REVISION/UPDATE	Date
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Parks and Recreation
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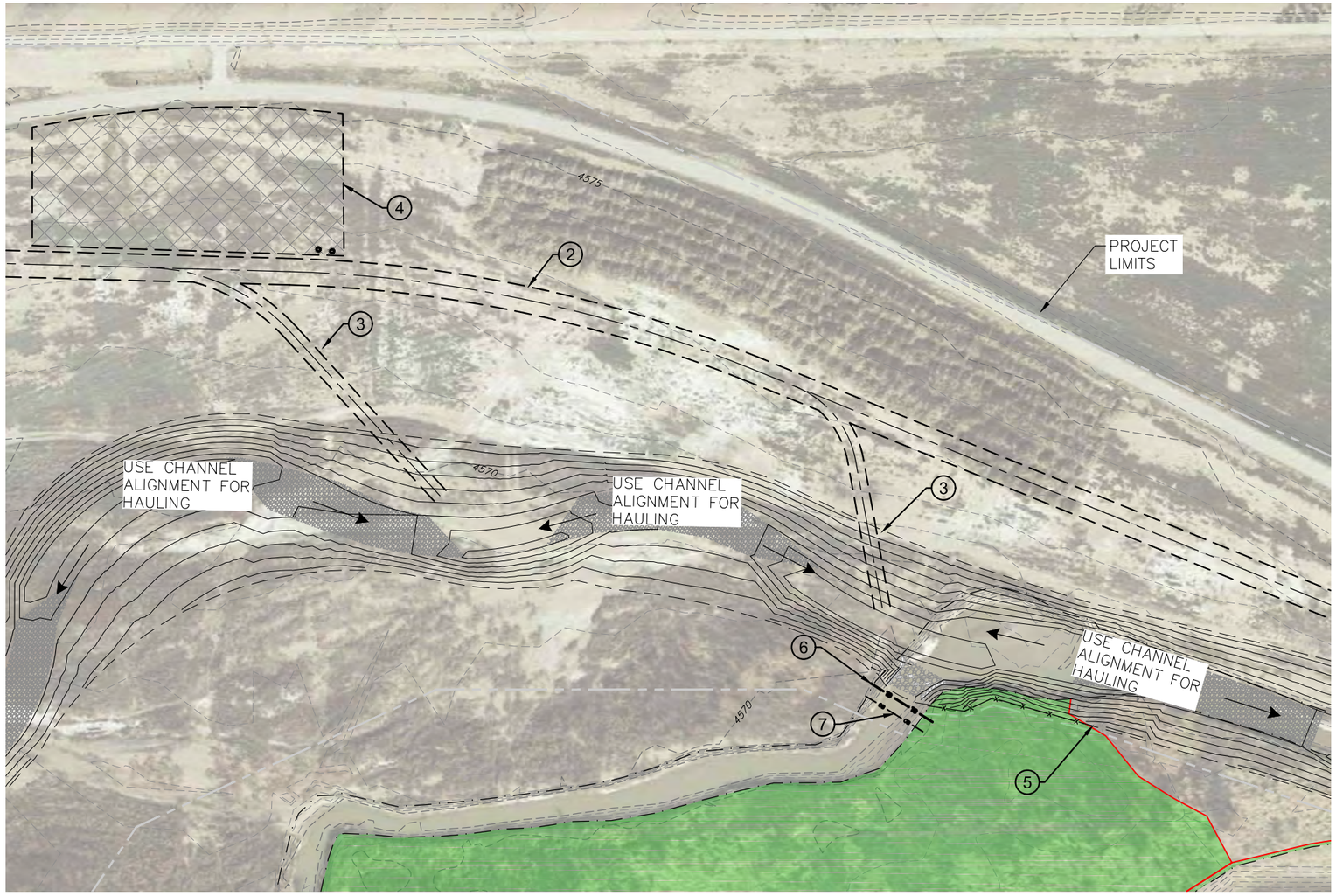
PROJECT NAME AND ADDRESS

Las Colonias Park Slough
Restoration Project
Las Colonias Park
Grand Junction, CO 81501

Project	Sheet
11.CO24.003	EC01
Date: AUGUST 11, 2016	
Scale: 1"=50' (FULL SIZE)	



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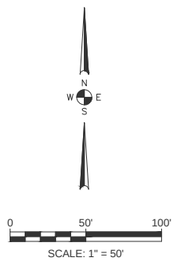

PROFESSIONAL ENGINEER STAMP

LAS COLONIAS PARK SLOUGH RESTORATION EROSION CONTROL AND CARE OF WATER PLAN

No.	REVISION/UPDATE	Date
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970.245.3866

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P.O. Box 248
Carbondale, CO 81623
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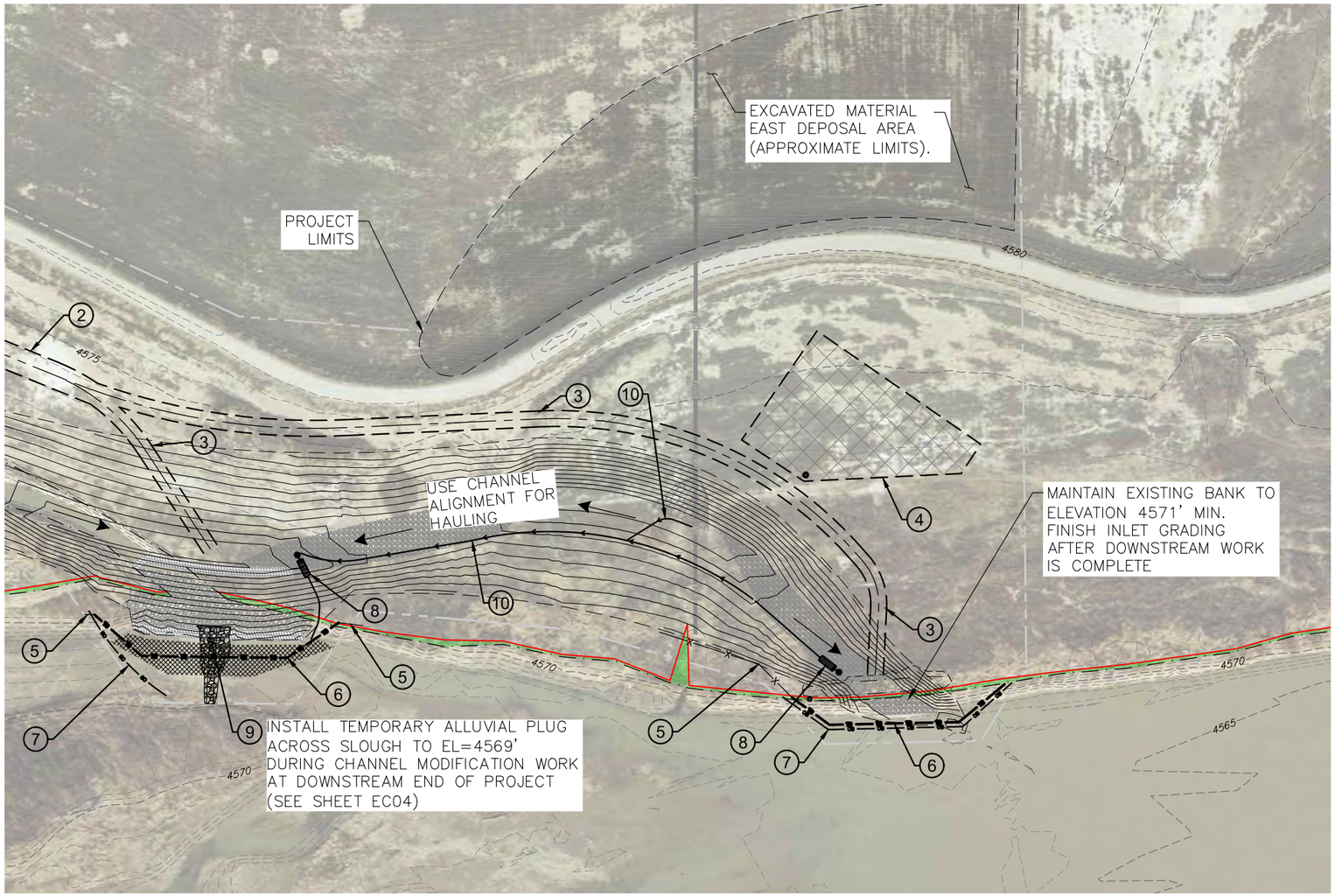
PROJECT NAME AND ADDRESS

Las Colonias Park Slough
Restoration Project
Las Colonias Park
Grand Junction, CO 81501

Project	Sheet
11.CO24.003	EC02
Date: AUGUST 11, 2016	
Scale: 1"=50' (FULL SIZE)	



EROSION CONTROL/CARE OF WATER NOTES:

SEE SHEETS EC05 AND EC06 FOR EROSION AND CARE OF WATER DETAILS.

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11. COVER EXPOSED FILL WITH CERTIFIED WEED-FREE STRAW

N W E S

0 50' 100'

SCALE: 1" = 50'

NOT FOR CONSTRUCTION

LAS COLONIAS PARK SLOUGH RESTORATION EROSION CONTROL AND CARE OF WATER PLAN

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970.245.3866

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Restoration Project
Las Colonias Park
Grand Junction, CO 81501

Project	Sheet
11.CO24.003	EC03
Date: JULY, 2016	
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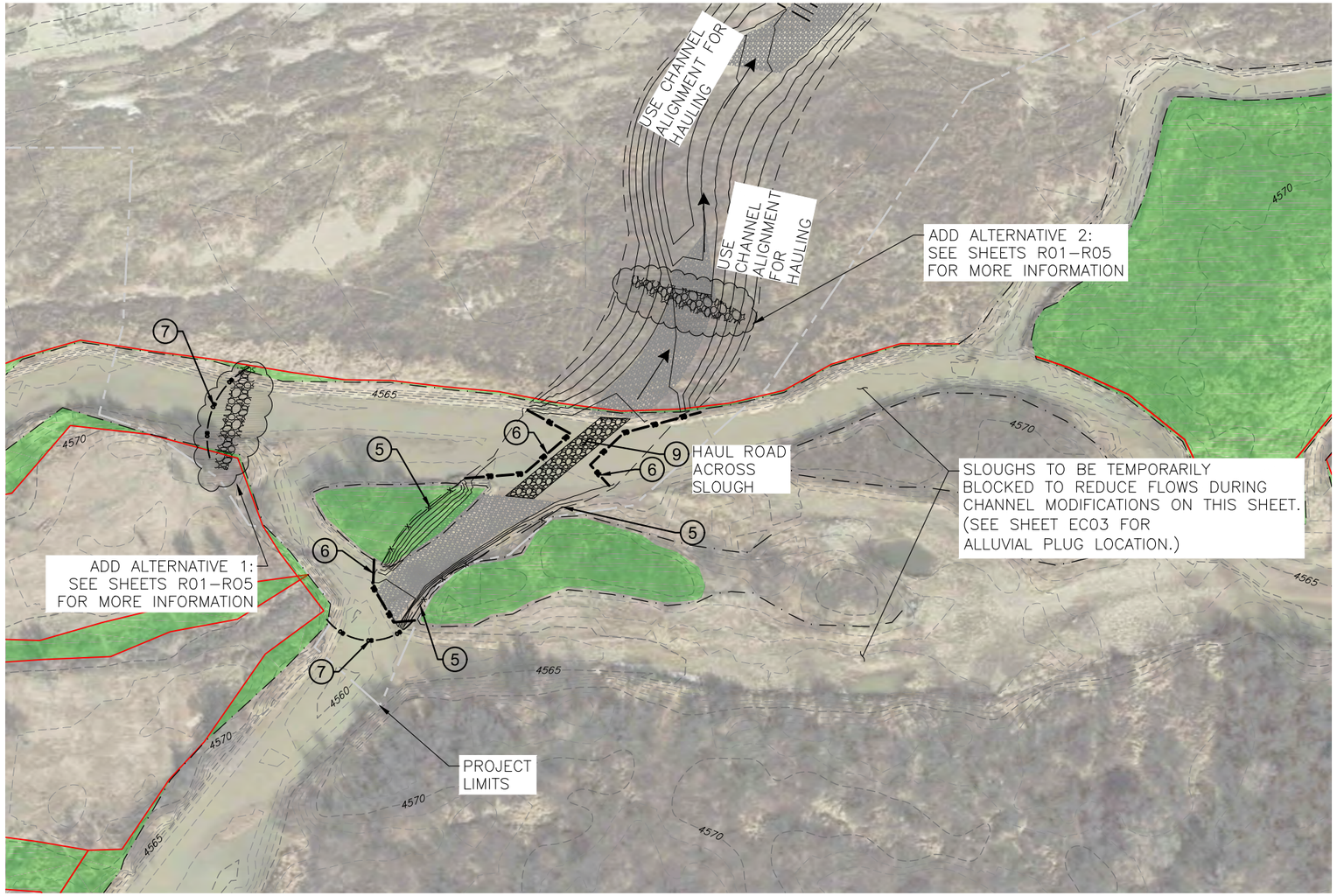

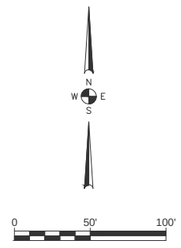

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PROFESSIONAL ENGINEER STAMP

COLORADO LICENSED
JASON CAREY
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8/11/2016
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LAS COLONIAS PARK SLOUGH RESTORATION EROSION CONTROL AND CARE OF WATER PLAN

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Grand Junction, CO 81501
970.245.3866

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PROJECT NAME AND ADDRESS

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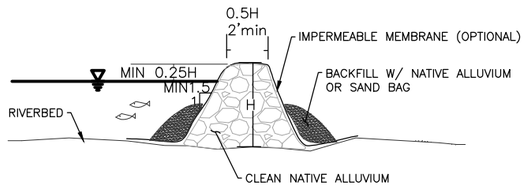
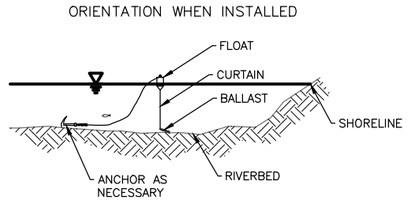
Restoration Project
Las Colonias Park
Grand Junction, CO 81501

Project	Sheet
11.C024.003	EC04
Date: AUGUST 11, 2016	
Scale: 1"=50' (FULL SIZE)	

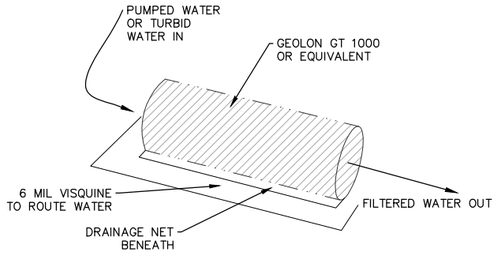


ALLUVIAL COFFER (TYP.)
SECTION VIEW–NTS

1 / EC06



TURBIDITY CURTAIN (TYP.)
SECTION VIEW–NTS



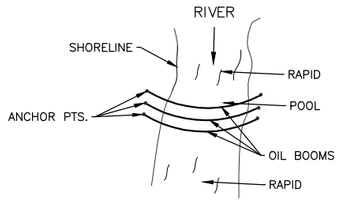
TO BE USED TO FILTER ALL PUMPED WATER

GEO–TUBEFILTER (TYPICAL)
NTS

5 / EC06

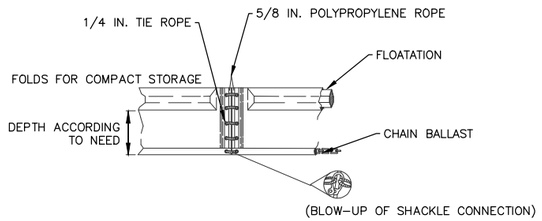
PLAN VIEW

TYPICAL LAYOUT FOR STREAMS AND RIVERS
TO BE PLACED DOWNSTREAM OF
ANY EQUIPMENT WORKING IN THE WET



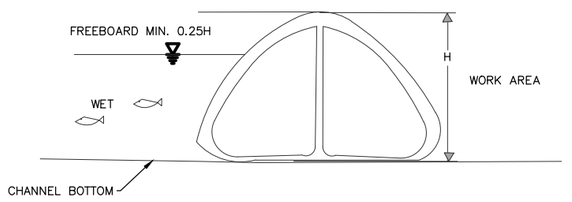
OIL BOOM (TYP.)
PLAN VIEW–NTS

2 / EC06

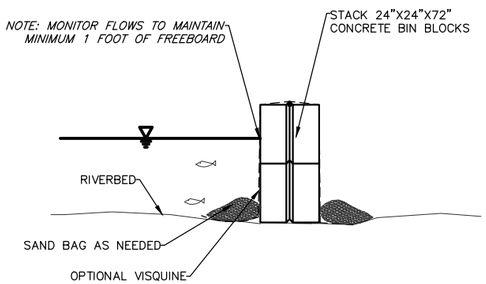


SILTMASTER II PERMEABLE GEOTEXTILE
DREDGE BARRIER NON–WOVEN DBNW
BY PARKERSYSTEMS OR EQUIVALENT

TURBIDITY CURTAIN (TYP.)
PROFILE VIEW–NTS



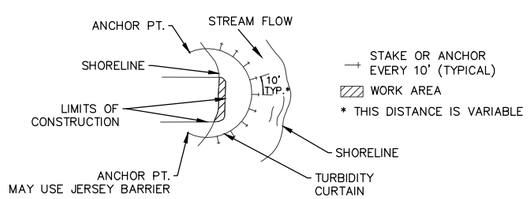
WATER FILLED COFFER DAM (TYP.)
SECTION VIEW–NTS



CONCRETE BARRIER COFFER DAM (TYP.)
SECTION VIEW–NTS

3 / EC06

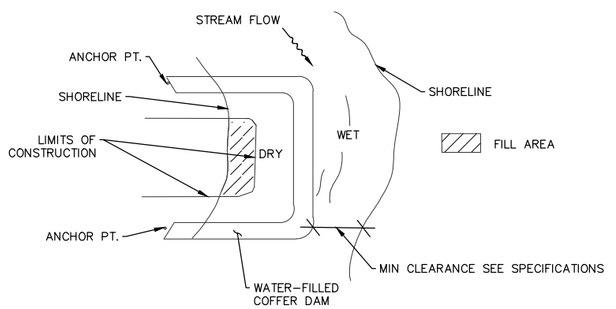
TYPICAL LAYOUTS
STREAMS, PONDS, AND LAKES (PROTECTED AND NON–TIDAL)



TURBIDITY CURTAIN (TYP.)
PLAN VIEW–NTS

4 / EC06

TYPICAL LAYOUTS
STREAMS AND RIVERS



WATER FILLED COFFER DAM (TYP.)
PLAN VIEW–NTS

6 / EC06

PROFESSIONAL ENGINEER STAMP

COLORADO LICENSED
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8/11/2016
PROFESSIONAL ENGINEER

LAS COLONIAS PARK SLOUGH RESTORATION
EROSION CONTROL AND CARE OF WATER DETAILS

No.	REVISION/UPDATE	Date
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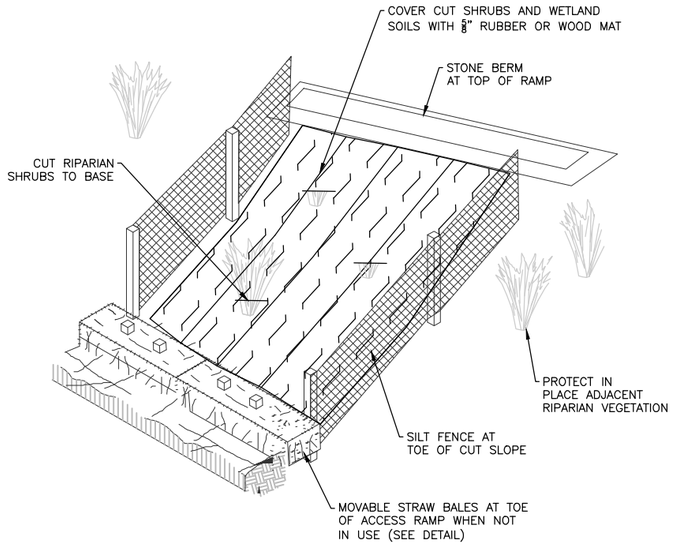
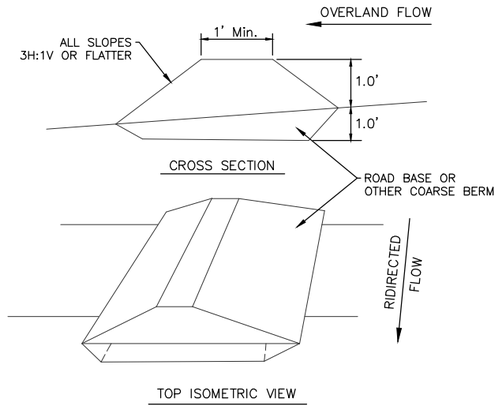
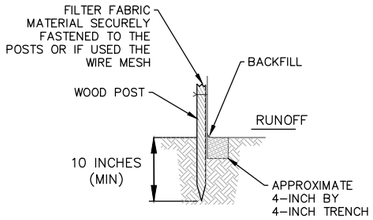
Project	Sheet
11.CO24.003	EC05
Date: AUGUST 11, 2016	
Scale:	

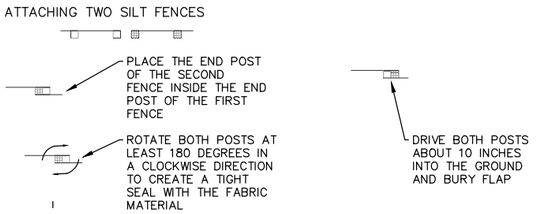


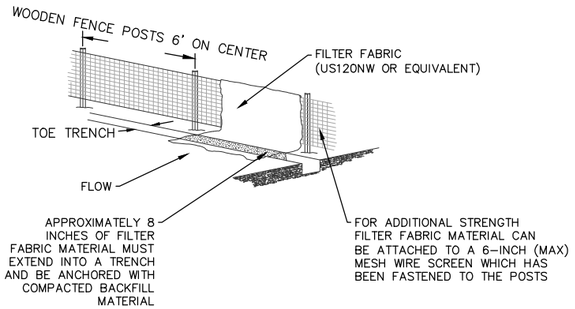
TEMPORARY EQUIPMENT ACCESS (TYP.)
NTS — 1 / EC07



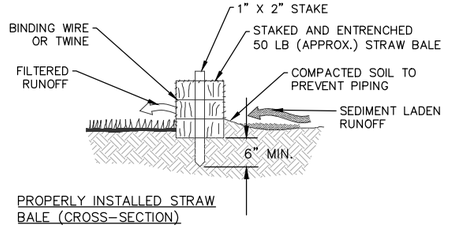
STONE BERM (TYP.)
NTS — 3 / EC07

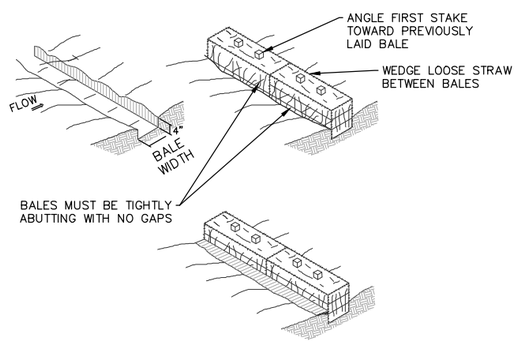




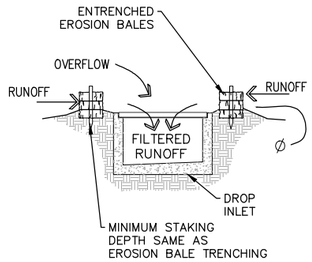


SILT FENCE (TYP.)
NTS — 5 / EC07



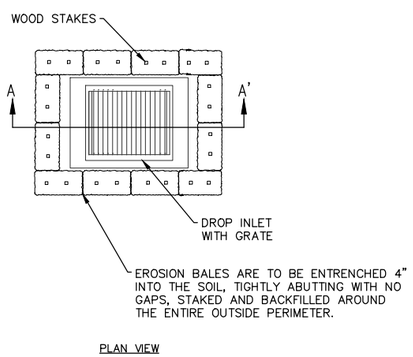


STRAW BALE (TYP.)
NTS — 2 / EC07



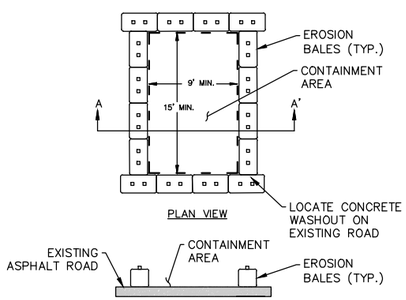
CROSS-SECTION A-A'

DROP INLET EROSION BALE FILTER
CROSS SECTION VIEW-NTS



PLAN VIEW

DROP INLET EROSION BALE FILTER
PLAN VIEW-NTS — 4 / EC07



PLAN VIEW

CROSS-SECTION A-A'

CONCRETE WASHOUT (TYP.)
NTS — 6 / EC07

PROFESSIONAL ENGINEER STAMP

COLORADO LICENSED — JASON CAREY — 38797 — 8/11/2016 — PROFESSIONAL ENGINEER

LAS COLONIAS PARK SLOUGH RESTORATION
EROSION CONTROL AND CARE OF WATER DETAILS

No.	REVISION/UPDATE	Date
1	DESIGN UPDATES	

CLIENT NAME AND ADDRESS

City of Grand Junction
Parks and Recreation
250 North 5th Street
Grand Junction, CO 81501
970.245.3866

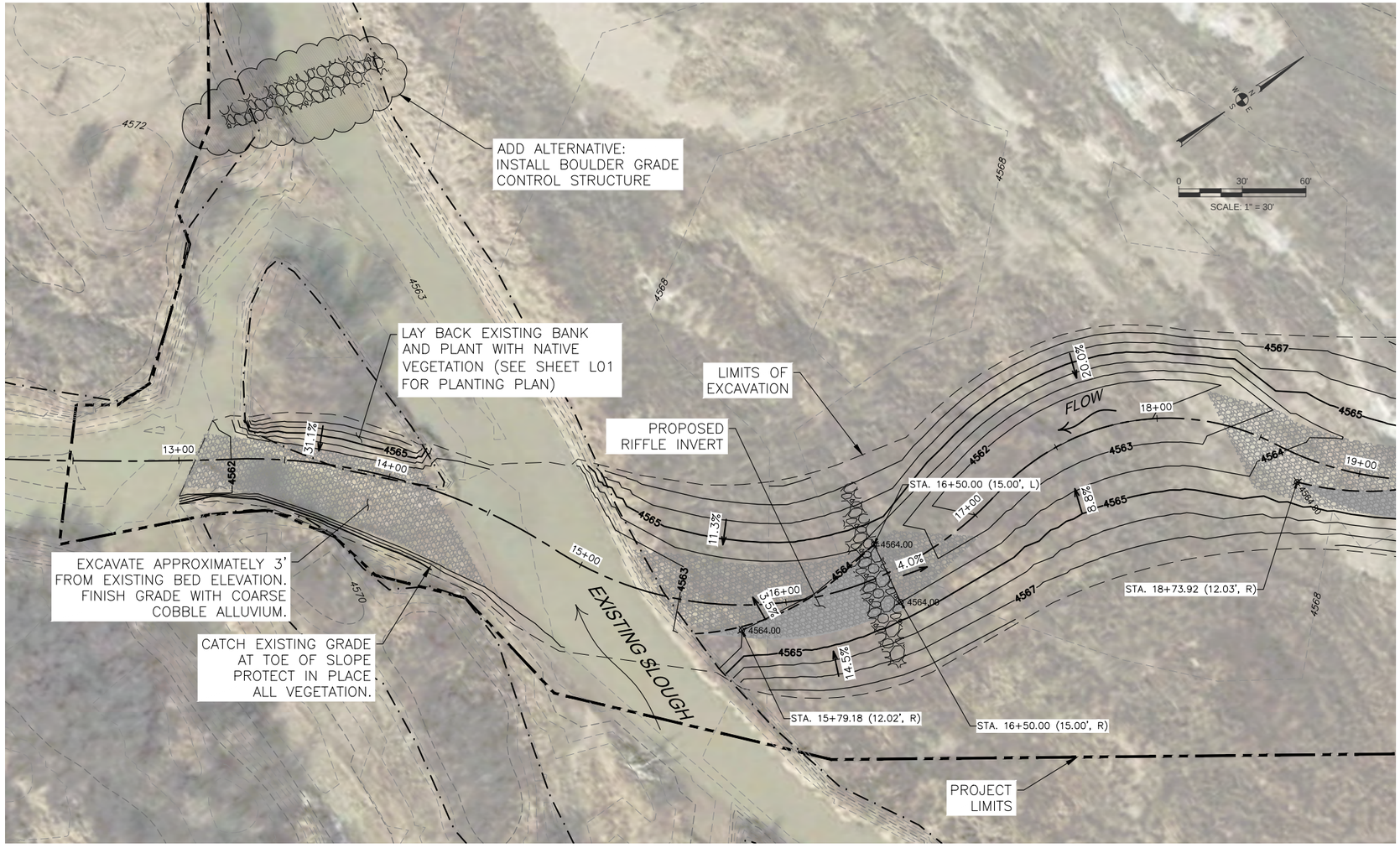
DESIGN FIRM NAME AND ADDRESS

RiverRestoration
P.O. Box 248
Carbondale, CO 81623
www.RiverRestoration.org

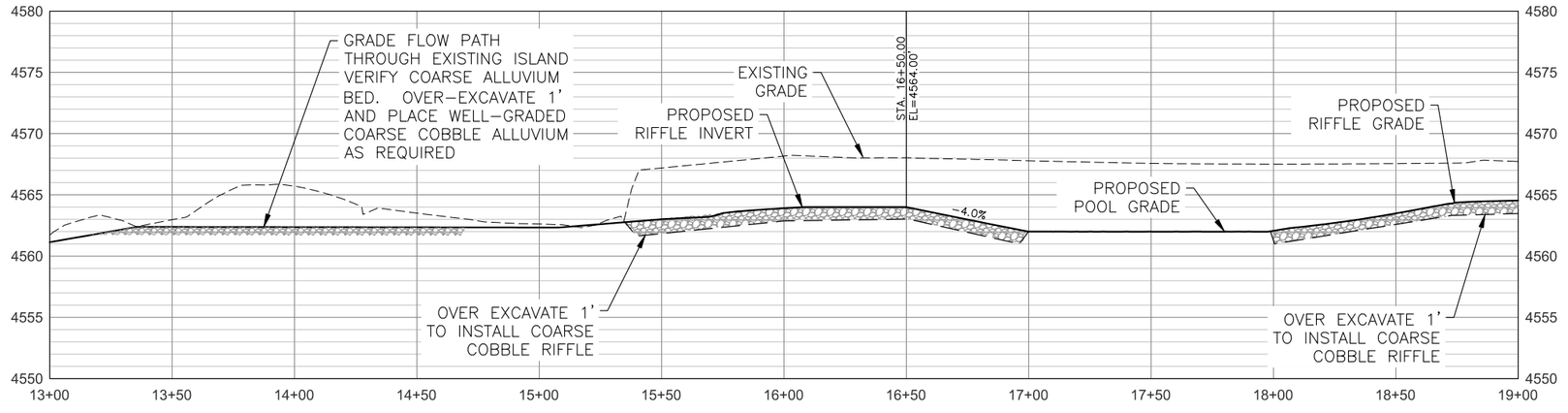
PROJECT NAME AND ADDRESS

Las Colonias Park Slough
Restoration Project
Las Colonias Park
Grand Junction, CO 81501

Project	Sheet
11.CO24.003	EC06
Date: AUGUST 11, 2016	
Scale:	



Proposed Slough Restoration Channel
HORIZ. SCALE: 1" = 30'
VERT. SCALE: 1" = 6'



LEGEND

- INV. ELEV. — RIFFLE GRADING INVERT AS SOLID HATCH AND DASHED LINE
- ROCK BANK PROTECTION
- TERRACED BOULDER ACCESS SEE SHEET R09 FOR DETAIL
- BOULDER GRADE CONTROL STRUCTURE
- PROJECT LIMITS
- LIMITS OF EXCAVATION

CONSTRUCTION NOTES

1) RIFFLES SHALL BE GRADED WITH WELL-GRADED COARSE COBBLE ALLUVIUM GENERATED ON SITE WITH 50% LARGER THAN 6 INCHES

2) BANKS GRADES SHOWN ON PLANS ARE APPROXIMATE. LIMITS OF EXCAVATION SHALL BE MET WITH GRADES NO STEEPER THAN 33%

3) PROTECT IN PLACE ALL VEGETATION OUTSIDE LIMITS OF DISTURBANCE

4) SEE SPECIFICATION FOR BOULDER SIZE GRADATION

5) SORT 2,000 CY OF EXCAVATED MATERIAL INTO WELL-GRADED COARSE COBBLE WITH 50% GREATER THAN 6" AND USE FOR RIFFLE GRADING AND THE EXISTING SLOUGH PLUG STRUCTURE.

6) TRANSPORT AND DUMP 15,000 CY OF THE EXCAVATED MATERIAL TO THE WEST DISPOSAL AREA TO BE GRADED AS THE SUB-GRADE SURFACE FOR AMPHITHEATER (BY OTHERS). ANY REMAINING EXCAVATED MATERIAL SHALL BE TRANSPORTED AND DUMPED AT THE EAST DISPOSAL AREA. SEE SHEETG02 FOR LOCATION OF DISPOSAL AREAS.

7) SEE SPECIFICATIONS FOR GENERAL AND COARSE COBBLE ALLUVIUM GRADATIONS

PROFESSIONAL ENGINEER STAMP

COLORADO LICENSED
JASON CAREY
38797
8/11/2016
PROFESSIONAL ENGINEER

LAS COLONIAS PARK SLOUGH RESTORATION GRADING PLAN

No.	REVISION/UPDATE	Date
1	DESIGN UPDATES	

CLIENT NAME AND ADDRESS

City of Grand Junction
Parks and Recreation
250 North 5th Street
Grand Junction, CO 81501
970.245.3866

DESIGN FIRM NAME AND ADDRESS

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P.O. Box 248
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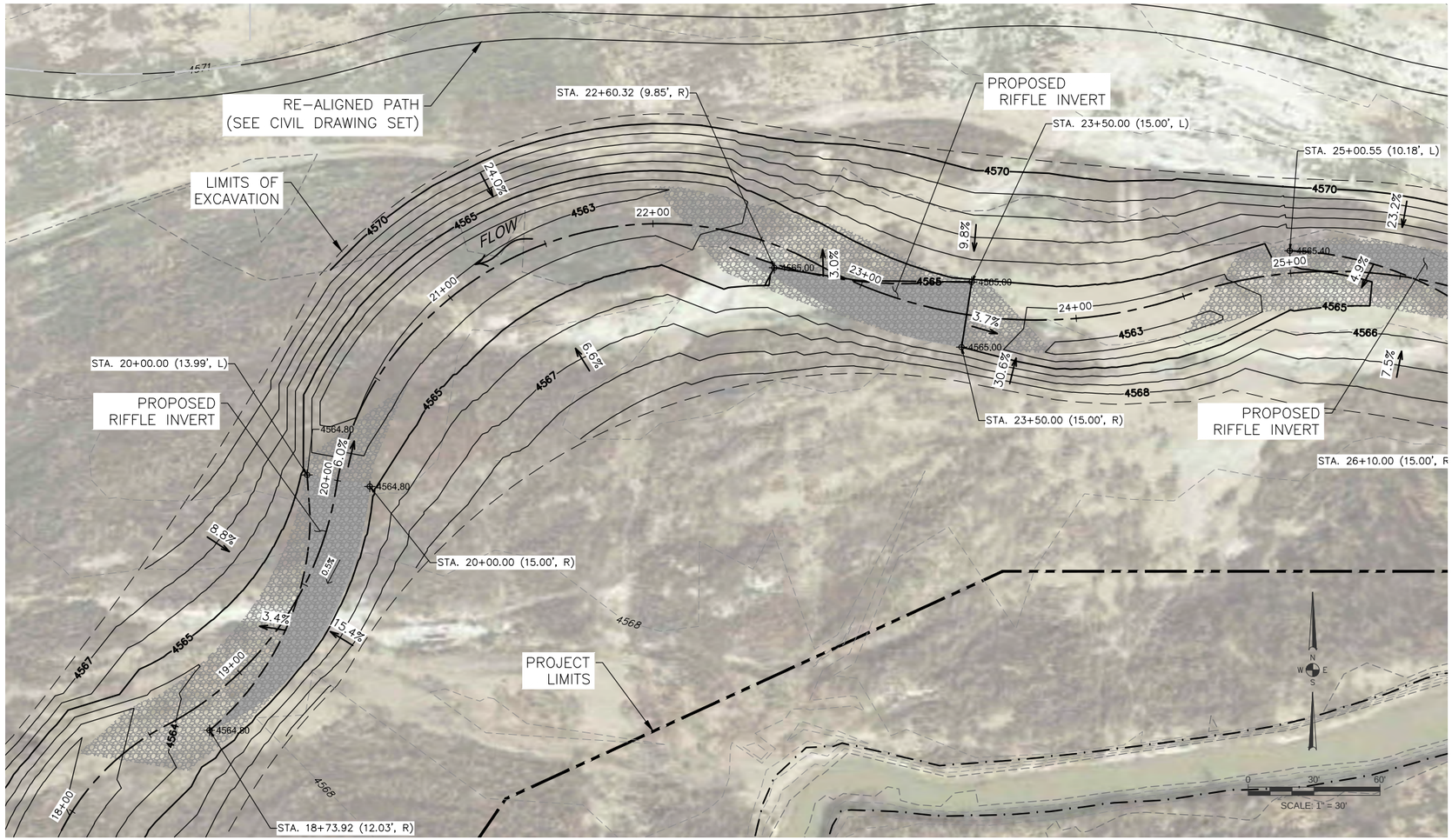
PROJECT NAME AND ADDRESS

Las Colonias Park Slough
Restoration Project
Las Colonias Park
Grand Junction, CO 81501

Project: 11.CO24.003
Date: AUGUST 11, 2016
Scale: 1"=30' (FULL SIZE)
Sheet: R01



LEGEND

- INV. ELEV. — RIFFLE GRADING INVERT AS SOLID HATCH AND DASHED LINE
- ROCK BANK PROTECTION
- TERRACED BOULDER ACCESS SEE SHEET R09 FOR DETAIL
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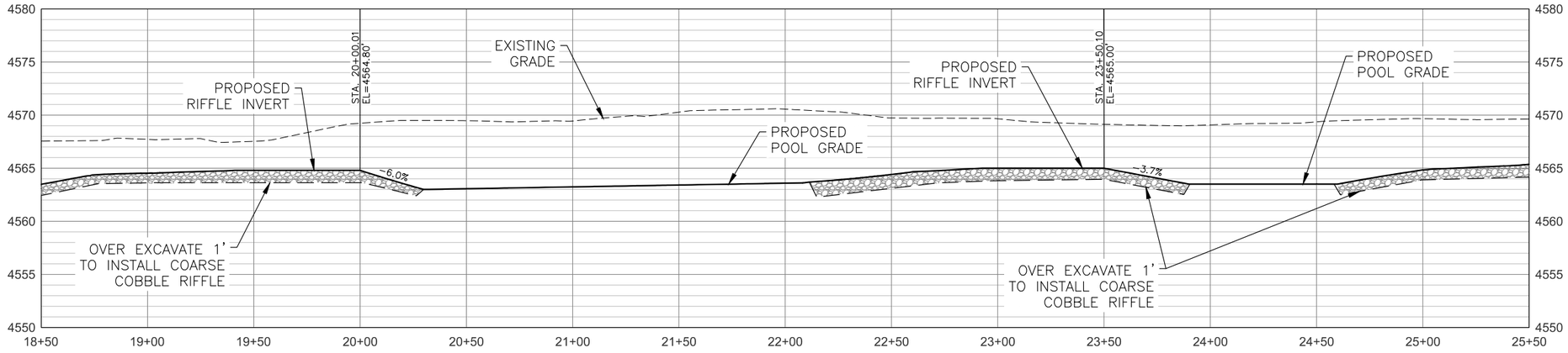
7) SEE SPECIFICATIONS FOR GENERAL AND COARSE COBBLE ALLUVIUM GRADATIONS

Proposed Slough Restoration Channel
HORIZ. SCALE: 1" = 30'
VERT. SCALE: 1" = 6'



PROFESSIONAL ENGINEER STAMP

COLORADO LICENSED
JASON CAREY
38797
8/11/2016
PROFESSIONAL ENGINEER

LAS COLONIAS PARK SLOUGH RESTORATION GRADING PLAN

No.	REVISION/UPDATE	Date
1	DESIGN UPDATES	

CLIENT NAME AND ADDRESS

City of Grand Junction
Parks and Recreation
250 North 5th Street
Grand Junction, CO 81501
970.245.3866

DESIGN FIRM NAME AND ADDRESS

RiverRestoration
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Carbondale, CO 81623
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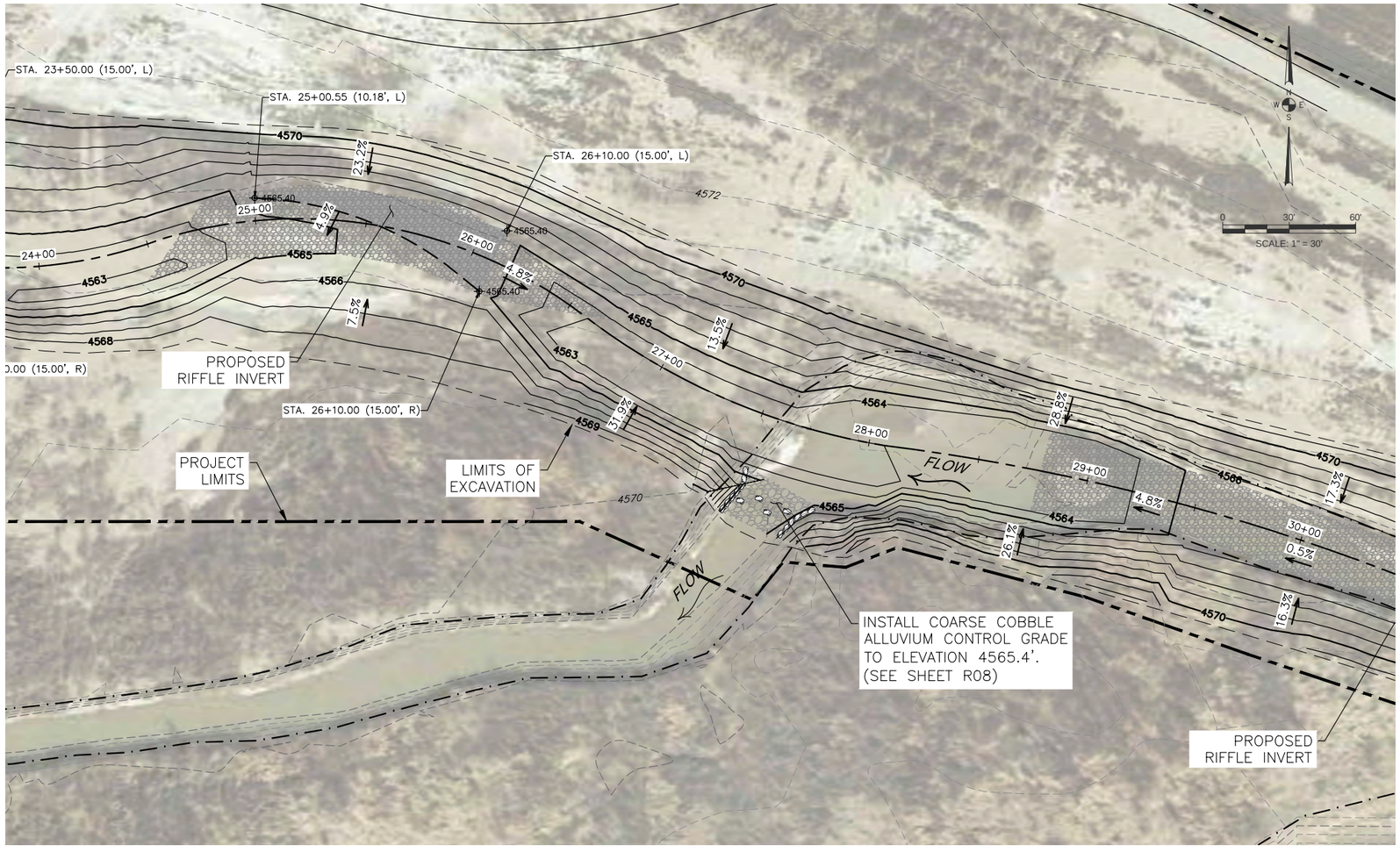
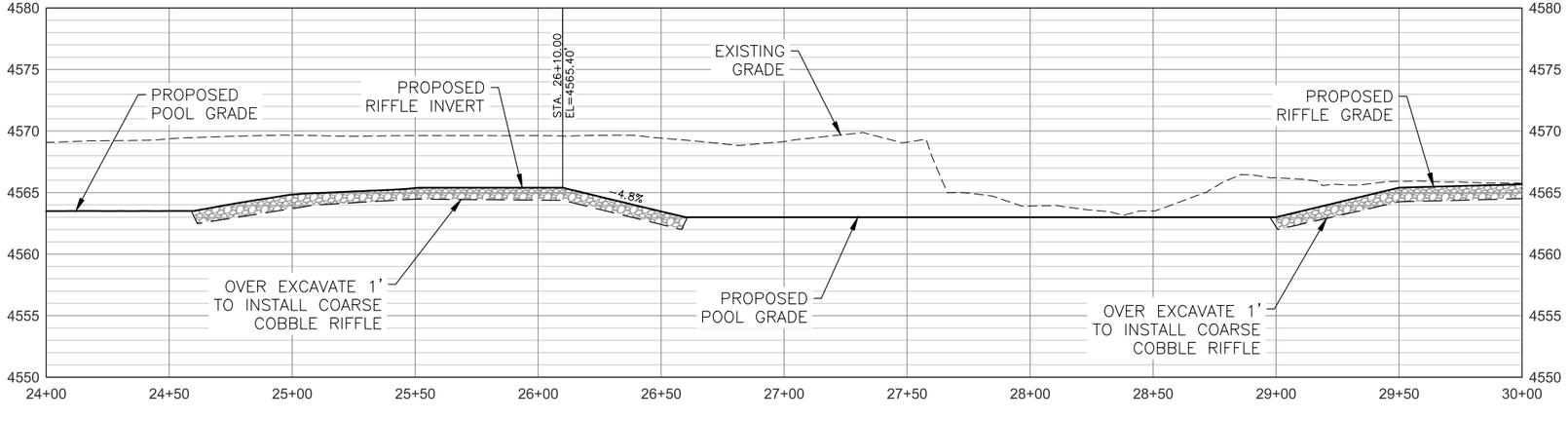
PROJECT NAME AND ADDRESS

Las Colonias Park Slough
Restoration Project
Las Colonias Park
Grand Junction, CO 81501

Project: 11.CO24.003
Date: AUGUST 11, 2016
Scale: 1"=30' (FULL SIZE)
Sheet: R02



Proposed Slough Restoration Channel
HORIZ. SCALE: 1" = 30'
VERT. SCALE: 1" = 6'



LEGEND

- INV. ELEV. — RIFFLE GRADING INVERT AS SOLID HATCH AND DASHED LINE
- ROCK BANK PROTECTION
- TERRACED BOULDER ACCESS SEE SHEET R09 FOR DETAIL
- BOULDER GRADE CONTROL STRUCTURE
- PROJECT LIMITS
- LIMITS OF EXCAVATION

CONSTRUCTION NOTES

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PROFESSIONAL ENGINEER STAMP

COLORADO LICENSED
JASON CAREY
38797
8/11/2016
PROFESSIONAL ENGINEER

LAS COLONIAS PARK SLOUGH RESTORATION GRADING PLAN

No.	REVISION/UPDATE	Date
1	DESIGN UPDATES	

CLIENT NAME AND ADDRESS

City of Grand Junction
Parks and Recreation
250 North 5th Street
Grand Junction, CO 81501
970.245.3866

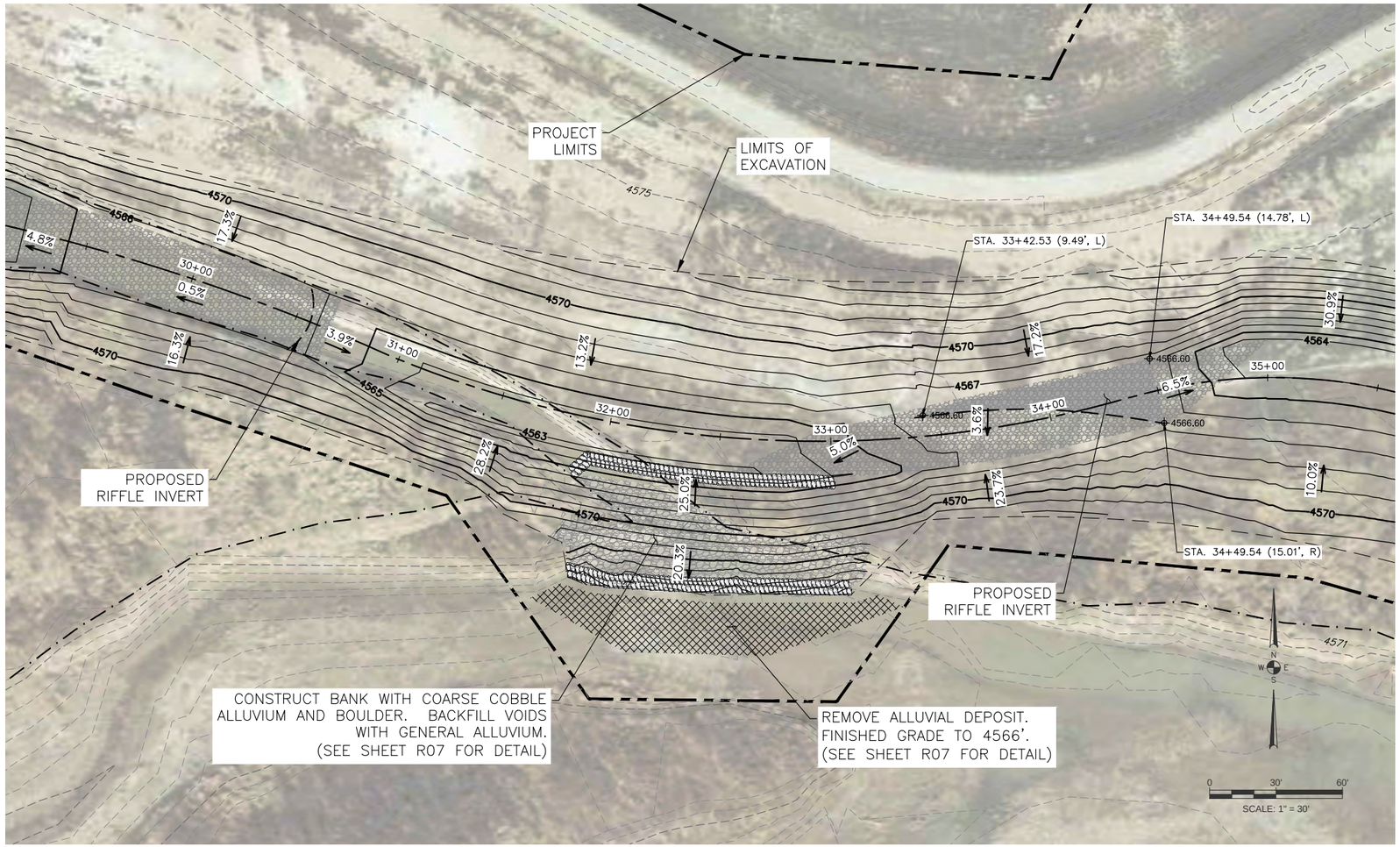
DESIGN FIRM NAME AND ADDRESS

RiverRestoration
P.O. Box 248
Carbondale, CO 81623
www.RiverRestoration.org

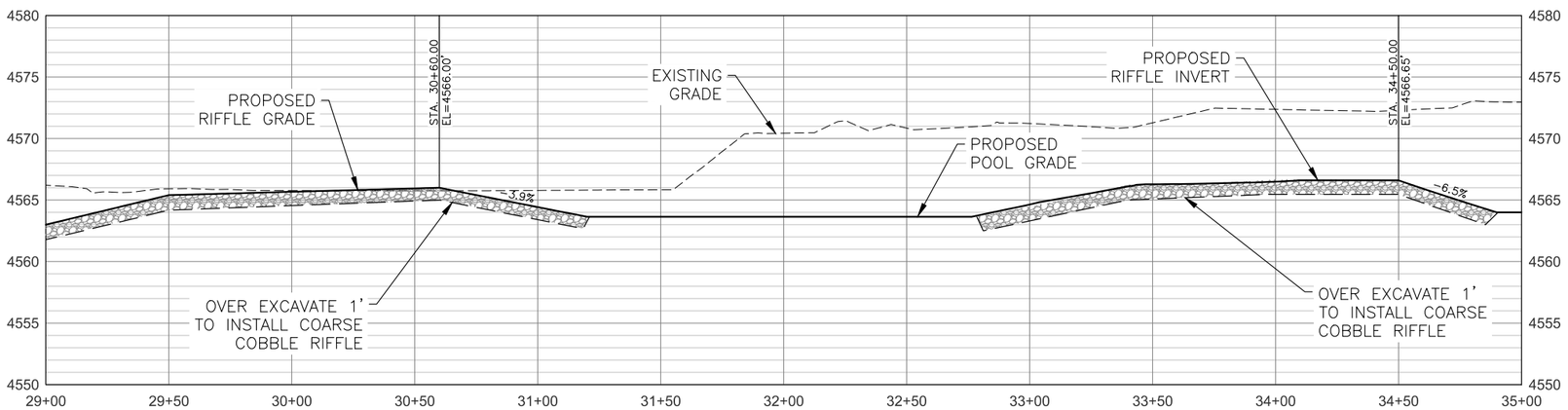
PROJECT NAME AND ADDRESS

Las Colonias Park Slough
Restoration Project
Las Colonias Park
Grand Junction, CO 81501

Project: 11.CO24.003
Date: AUGUST 11, 2016
Scale: 1"=30' (FULL SIZE)
Sheet: R03



Proposed Slough Restoration Channel
HORIZ. SCALE: 1" = 30'
VERT. SCALE: 1" = 6'



LEGEND

- INV. ELEV. — RIFFLE GRADING INVERT AS SOLID HATCH AND DASHED LINE
- ROCK BANK PROTECTION
- TERRACED BOULDER ACCESS SEE SHEET R09 FOR DETAIL
- BOULDER GRADE CONTROL STRUCTURE
- PROJECT LIMITS
- LIMITS OF EXCAVATION

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4) SEE SPECIFICATION FOR BOULDER SIZE GRADATION

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PROFESSIONAL ENGINEER STAMP

COLORADO LICENSED
JASON CAREY
39797
8/11/2016
PROFESSIONAL ENGINEER

LAS COLONIAS PARK SLOUGH RESTORATION GRADING PLAN

No.	REVISION/UPDATE	Date
1	DESIGN UPDATES	

CLIENT NAME AND ADDRESS

City of Grand Junction
COLORADO

City of Grand Junction
Parks and Recreation
250 North 5th Street
Grand Junction, CO 81501
970.245.3866

DESIGN FIRM NAME AND ADDRESS

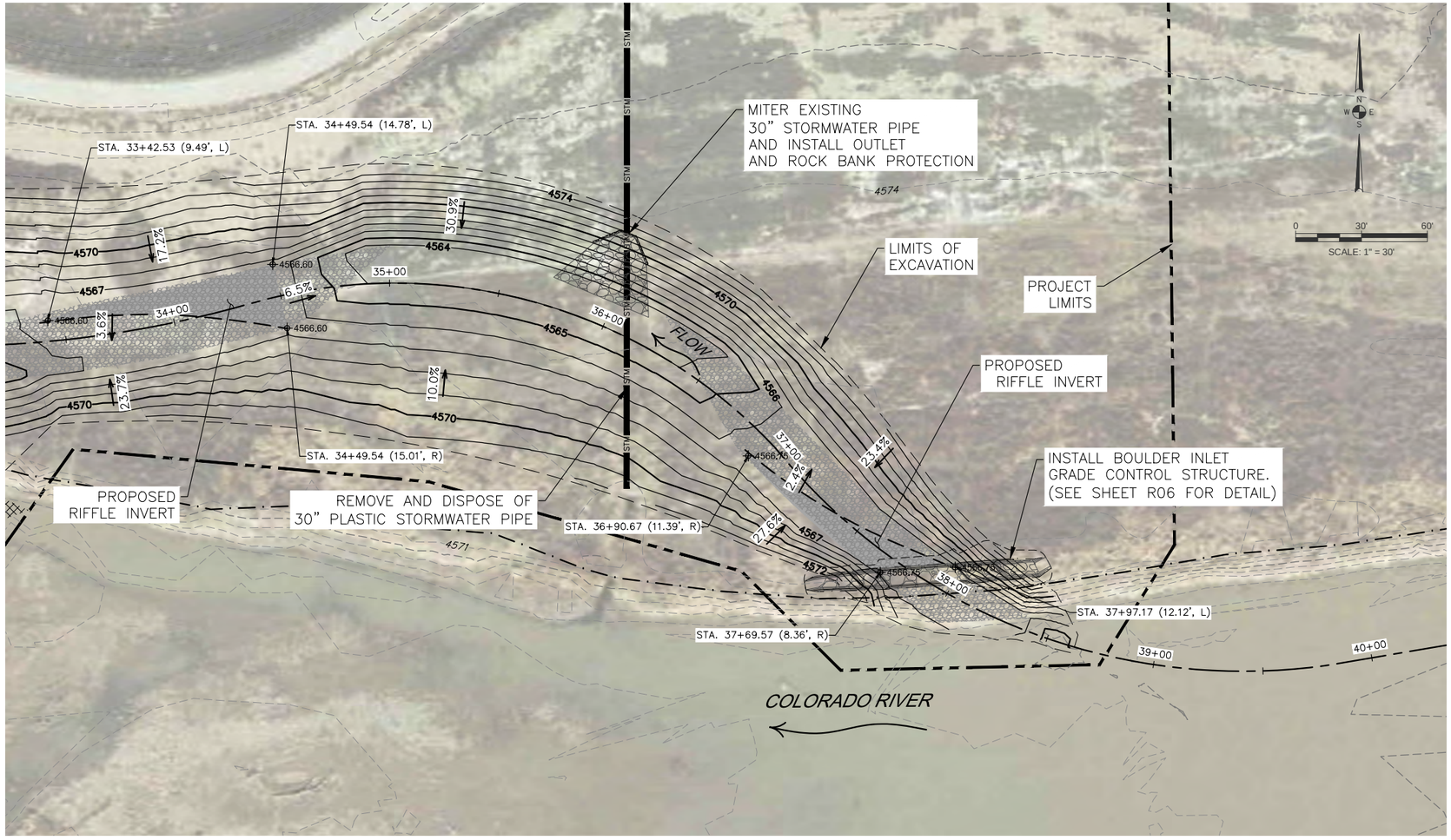
RIVER RESTORATION.ORG

RiverRestoration
P.O. Box 248
Carbondale, CO 81623
www.RiverRestoration.org

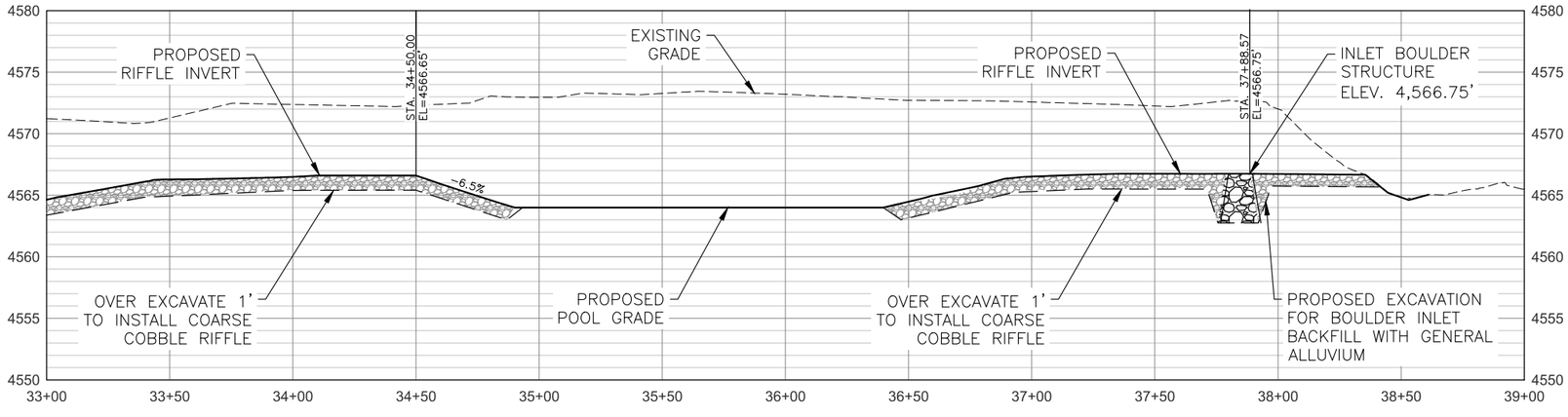
PROJECT NAME AND ADDRESS

Las Colonias Park Slough
Restoration Project
Las Colonias Park
Grand Junction, CO 81501

Project: 11.CO24.003
Date: AUGUST 11, 2016
Scale: 1"=30' (FULL SIZE)
Sheet: R04



Proposed Slough Restoration Channel
HORIZ. SCALE: 1" = 30'
VERT. SCALE: 1" = 6'



LEGEND

- INV. ELEV. — RIFFLE GRADING INVERT AS SOLID HATCH AND DASHED LINE
- ROCK BANK PROTECTION
- TERRACED BOULDER ACCESS SEE SHEET R09 FOR DETAIL
- BOULDER GRADE CONTROL STRUCTURE
- PROJECT LIMITS
- LIMITS OF EXCAVATION

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PROFESSIONAL ENGINEER STAMP

COLORADO LICENSED
JASON CAREY
38797
8/11/2016
PROFESSIONAL ENGINEER

LAS COLONIAS PARK SLOUGH RESTORATION GRADING PLAN

No.	REVISION/UPDATE	Date
1	DESIGN UPDATES	

CLIENT NAME AND ADDRESS

City of Grand Junction
Parks and Recreation
250 North 5th Street
Grand Junction, CO 81501
970.245.3866

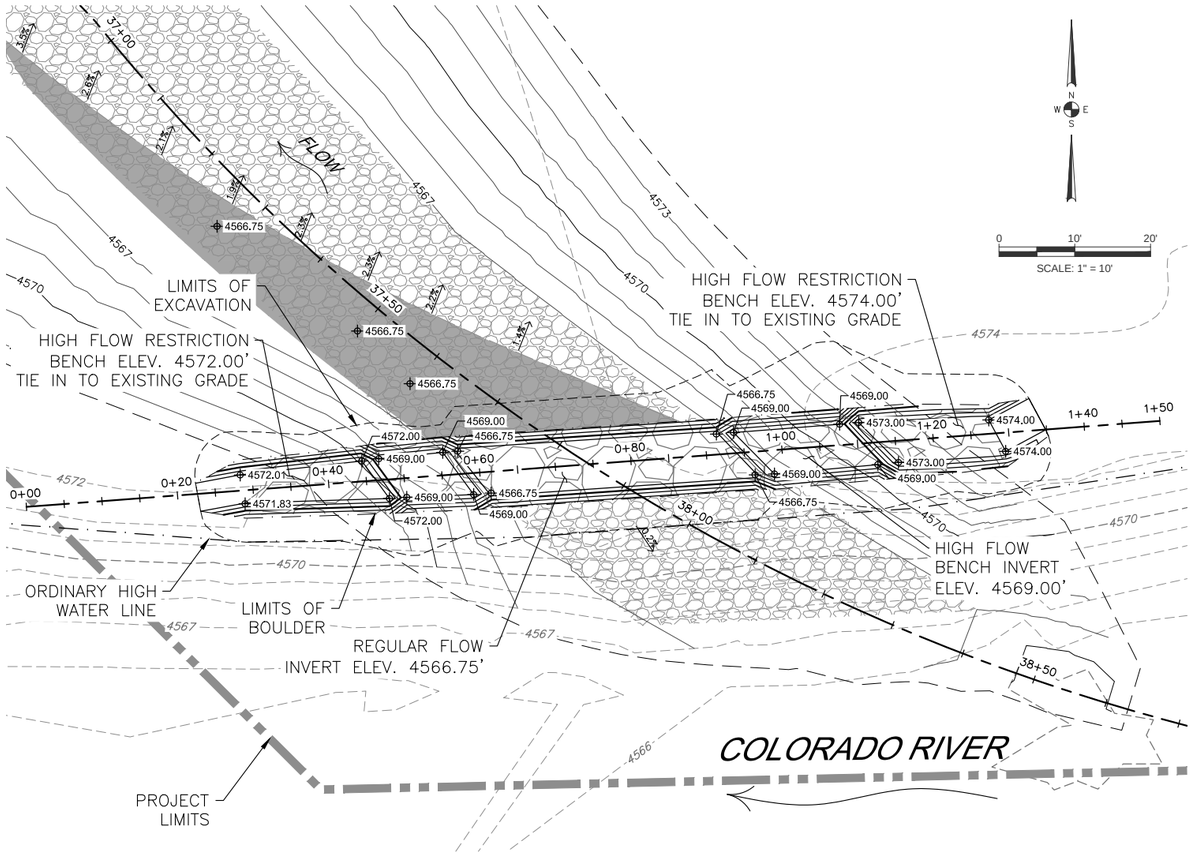
DESIGN FIRM NAME AND ADDRESS

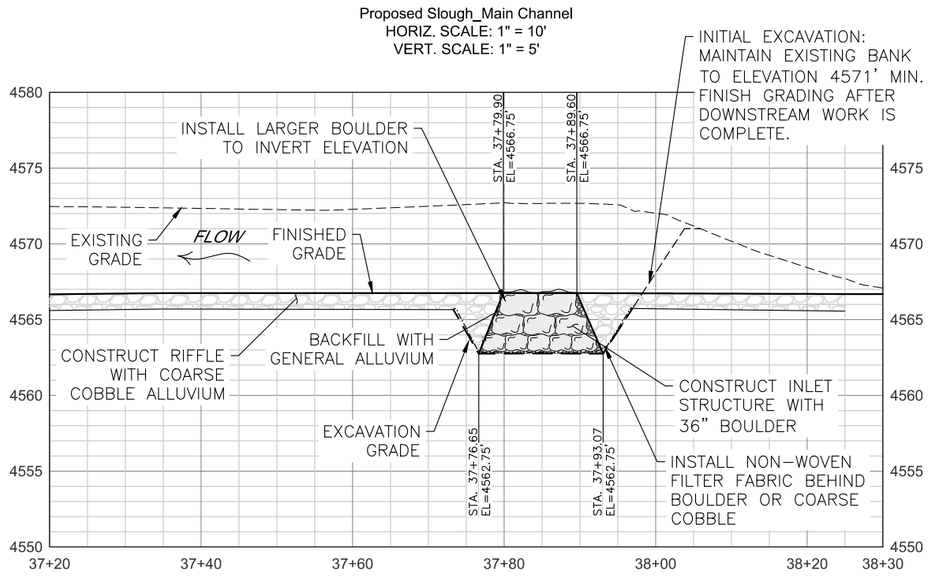
RiverRestoration
P.O. Box 248
Carbondale, CO 81623
www.RiverRestoration.org

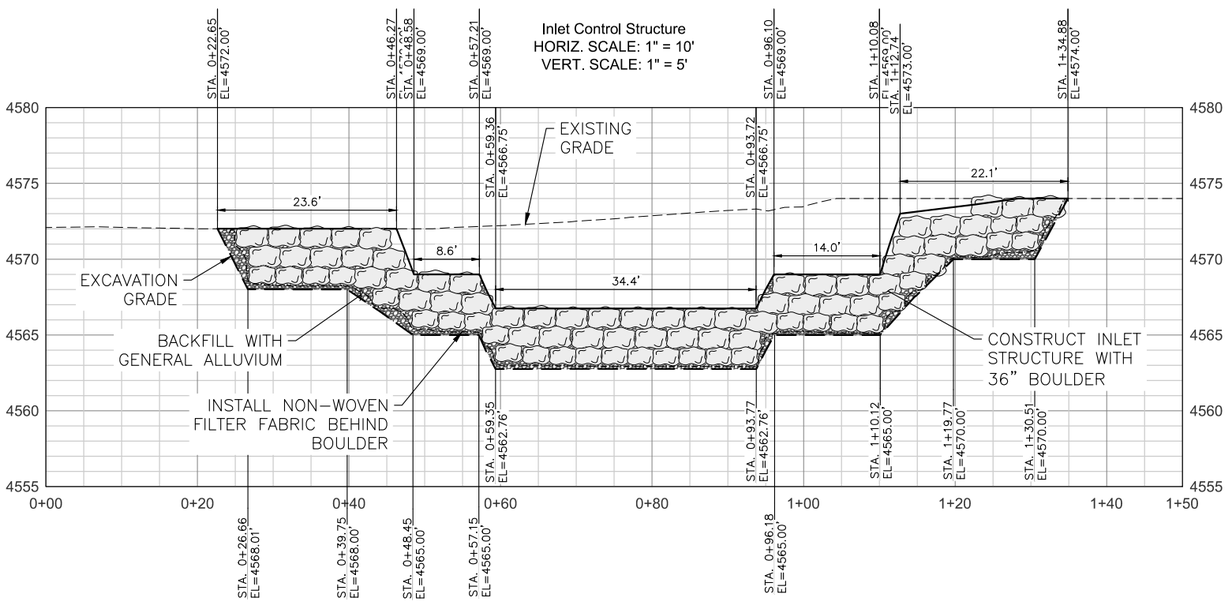
PROJECT NAME AND ADDRESS

Las Colonias Park Slough
Restoration Project
Las Colonias Park
Grand Junction, CO 81501

Project: 11.CO24.003
Date: AUGUST 11, 2016
Scale: 1"=30' (FULL SIZE)
Sheet: R05







CONSTRUCTION NOTES

1) ALL INVERT ELEVATIONS REPRESENT AVERAGE BOULDER GRADE; VOLUME OF BOULDER OR COBBLE ABOVE INVERT ELEVATION SHOULD APPROXIMATELY EQUAL VOLUME OF VOID SPACE BELOW INVERT ELEVATION.

2) REFER TO SPECIFICATION FOR VERTICAL AND HORIZONTAL TOLERANCE

3) FILTER FABRIC ONLY REQUIRED WHERE BOULDER INTERFACES WITH MATERIAL WITH D50 PARTICLE SIZE LESS THAN 2"

4) SEE SPECIFICATION FOR BOULDER SIZE GRADATION

5) SEE SPECIFICATIONS FOR COARSE COBBLE ALLUVIUM AND GENERAL ALLUVIUM GRADATIONS

PROFESSIONAL ENGINEER STAMP

COLORADO LICENSED
JASON CAREY
38797
8/11/2016
PROFESSIONAL ENGINEER

LAS COLONIAS PARK SLOUGH RESTORATION PROPOSED SLOUGH INLET STRUCTURE

No.	REVISION/UPDATE	Date
1	DESIGN UPDATES	

CLIENT NAME AND ADDRESS

City of Grand Junction
Parks and Recreation
250 North 5th Street
Grand Junction, CO 81501
970.245.3866

DESIGN FIRM NAME AND ADDRESS

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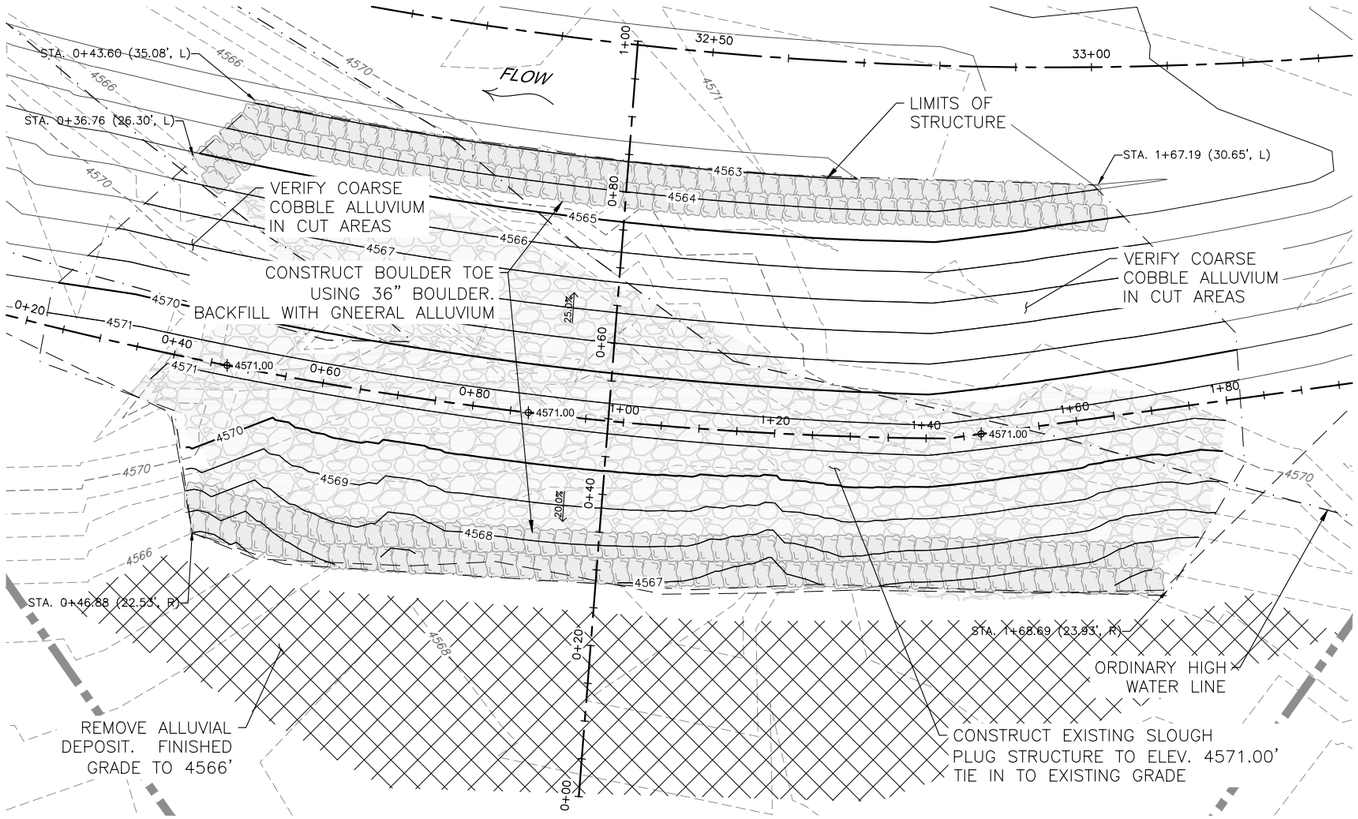
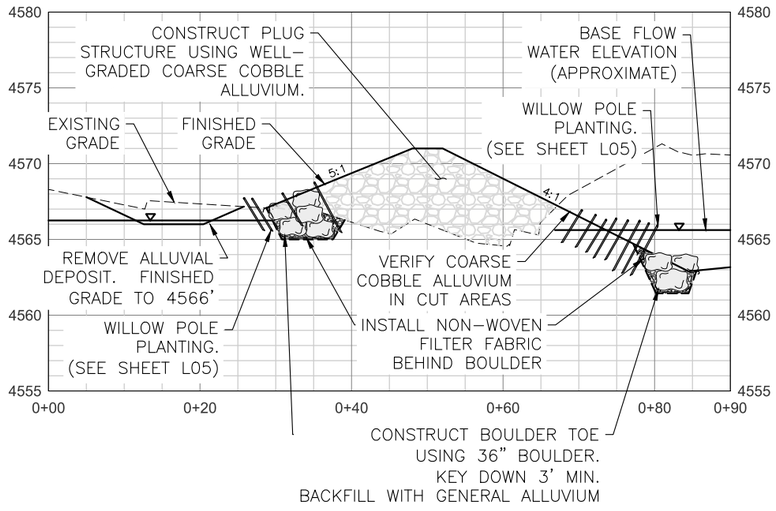
Las Colonias Park Slough
Restoration Project
Las Colonias Park
Grand Junction, CO 81501

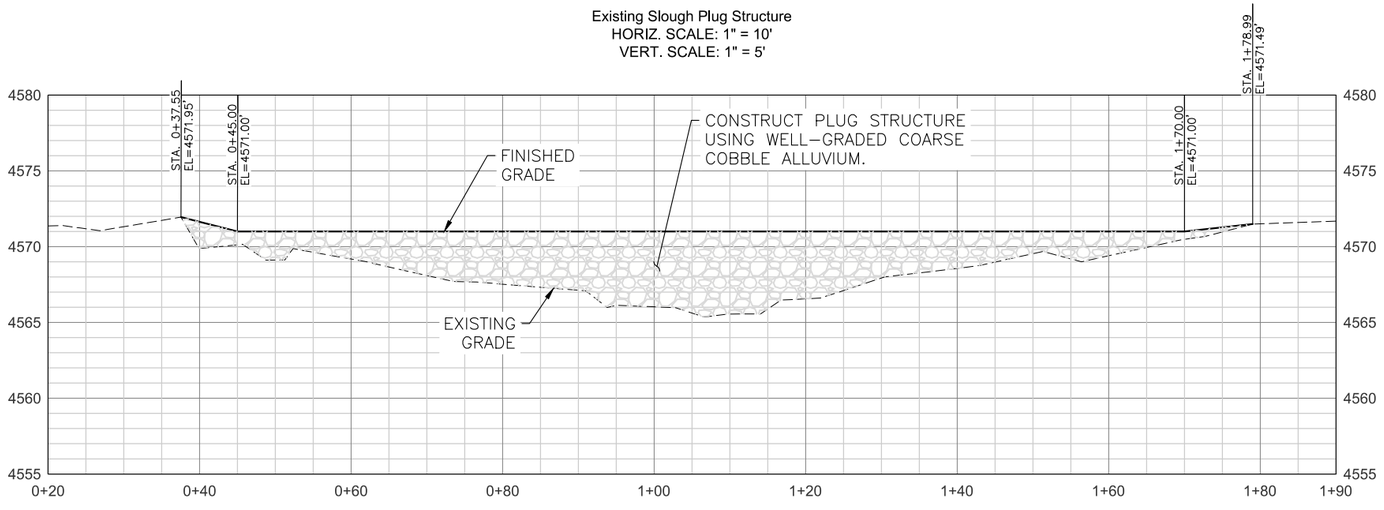
Project	Sheet
11.CO24.003	R06
Date: AUGUST 11, 2016	
Scale: 1"=30' (FULL SIZE)	



Existing Slough Plug Structure Profile
HORIZ. SCALE: 1" = 10'
VERT. SCALE: 1" = 5'



Existing Slough Plug Structure
HORIZ. SCALE: 1" = 10'
VERT. SCALE: 1" = 5'



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5) SEE SPECIFICATIONS FOR COARSE COBBLE ALLUVIUM AND GENERAL ALLUVIUM GRADATIONS

PROFESSIONAL ENGINEER STAMP

COLORADO LICENSED
JASON CAREY
38797
8/11/2016
PROFESSIONAL ENGINEER

LAS COLONIAS PARK SLOUGH RESTORATION EXISTING SLOUGH PLUG STRUCTURE

No.	REVISION/UPDATE	Date
1	DESIGN UPDATES	

CLIENT NAME AND ADDRESS

City of Grand Junction
Parks and Recreation
250 North 5th Street
Grand Junction, CO 81501
970.245.3866

DESIGN FIRM NAME AND ADDRESS

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PROJECT NAME AND ADDRESS

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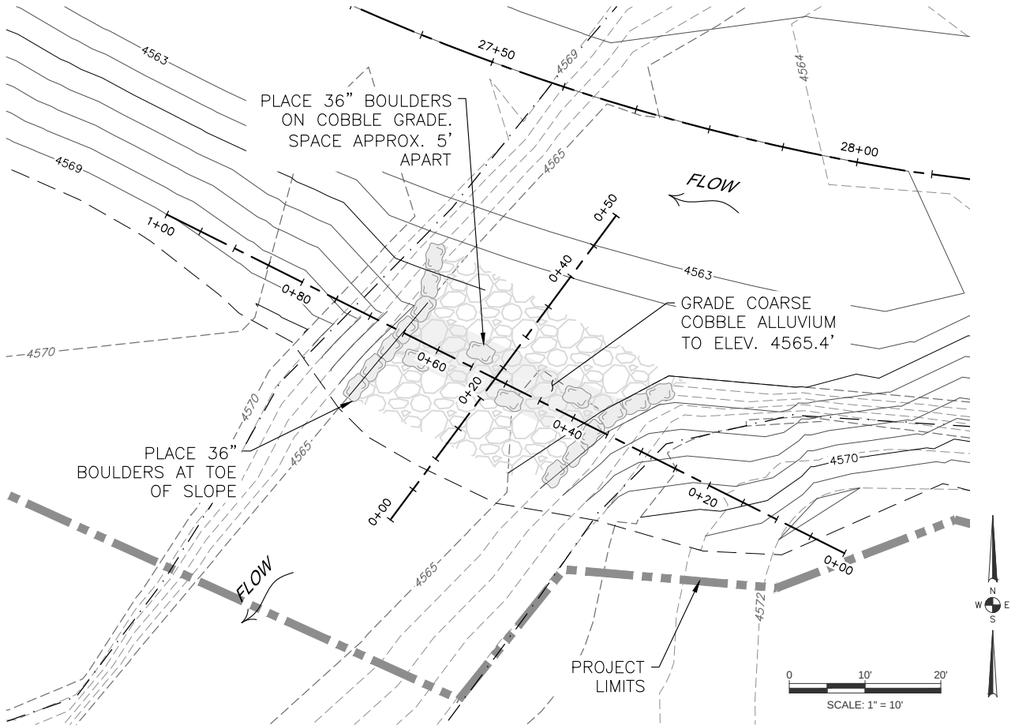
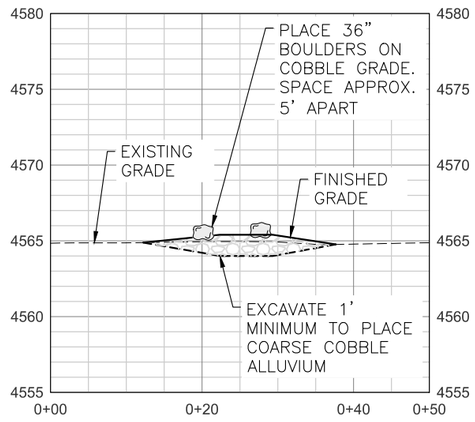
Restoration Project
Las Colonias Park
Grand Junction, CO 81501

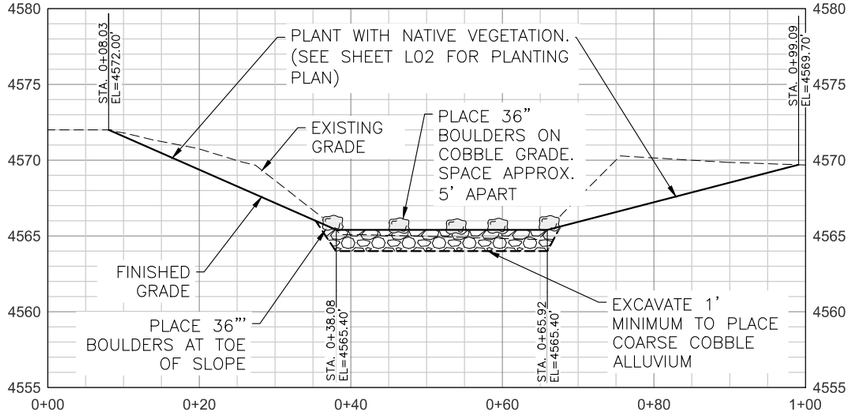
Project: 11.CO24.003
Date: AUGUST 11, 2016
Scale: 1"=30' (FULL SIZE)
Sheet: R07



Existing Slough Junction Profile
HORIZ. SCALE: 1" = 10'
VERT. SCALE: 1" = 5'



Existing Slough Junction Section
HORIZ. SCALE: 1" = 10'
VERT. SCALE: 1" = 5'



CONSTRUCTION NOTES

1) ALL INVERT ELEVATIONS REPRESENT AVERAGE BOULDER GRADE; VOLUME OF BOULDER OR COBBLE ABOVE INVERT ELEVATION SHOULD APPROXIMATELY EQUAL VOLUME OF VOID SPACE BELOW INVERT ELEVATION.

2) REFER TO SPECIFICATION FOR VERTICAL AND HORIZONTAL TOLERANCE

3) FILTER FABRIC ONLY REQUIRED WHERE BOULDER INTERFACES WITH MATERIAL WITH D50 PARTICLE SIZE LESS THAN 2"

4) SEE SPECIFICATION FOR BOULDER SIZE GRADATION

5) SEE SPECIFICATIONS FOR COARSE COBBLE ALLUVIUM AND GENERAL ALLUVIUM GRADATIONS

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LAS COLONIAS PARK SLOUGH RESTORATION EXISTING SLOUGH JUNCTION CONTROL STRUCTURE

No.	REVISION/UPDATE	Date
1	DESIGN UPDATES	

CLIENT NAME AND ADDRESS

City of Grand Junction
Parks and Recreation
250 North 5th Street
Grand Junction, CO 81501
970.245.3866

DESIGN FIRM NAME AND ADDRESS

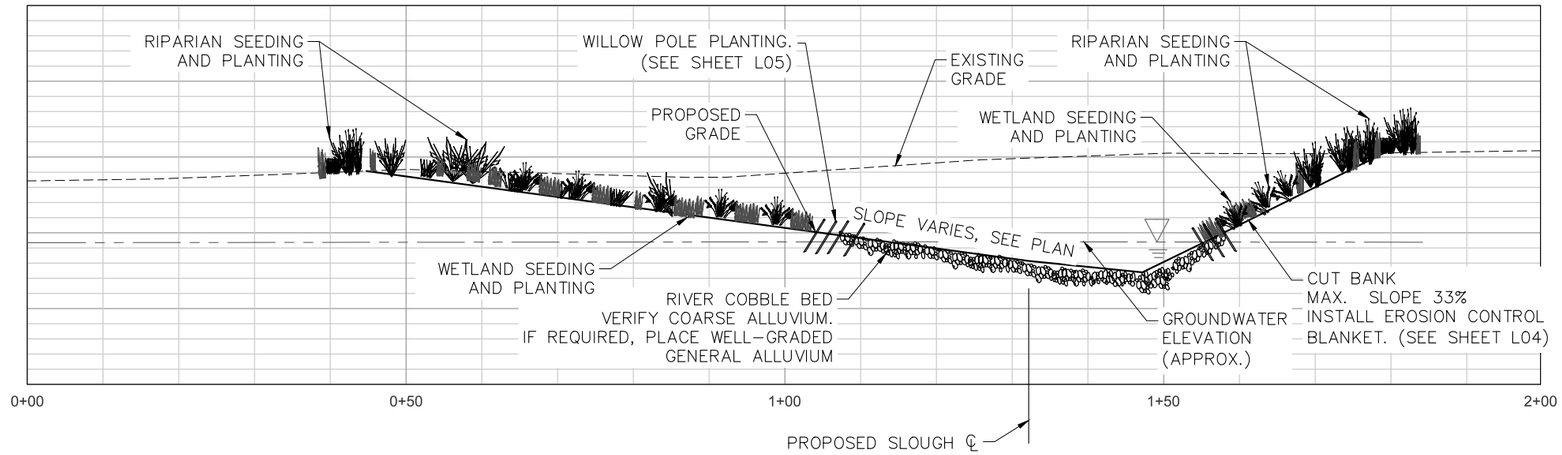
RiverRestoration
P.O. Box 248
Carbondale, CO 81623
www.RiverRestoration.org

PROJECT NAME AND ADDRESS

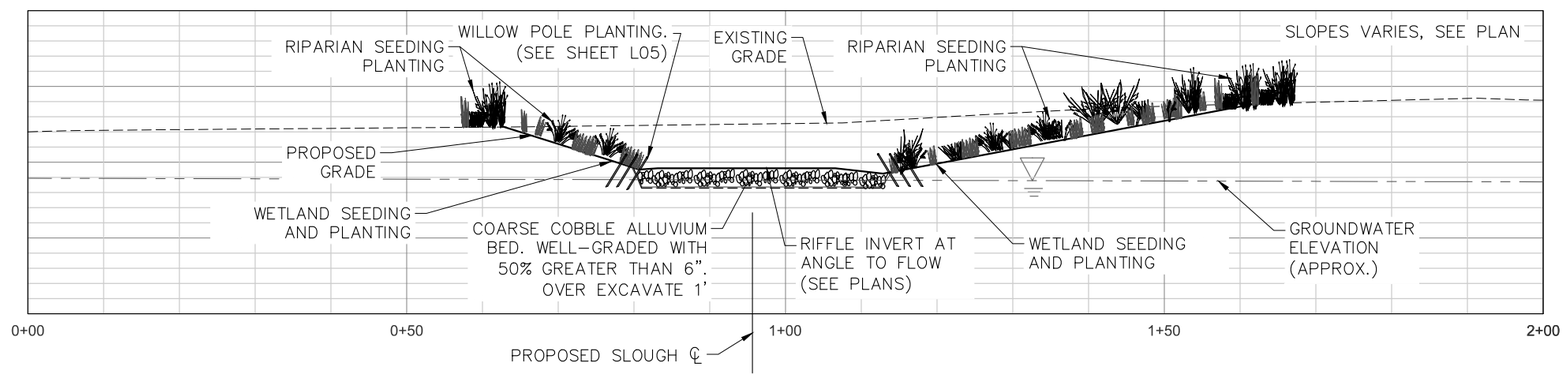
Las Colonias Park Slough
Restoration Project
Las Colonias Park
Grand Junction, CO 81501

Project: 11.CO24.003
Date: AUGUST 11, 2016
Scale: 1"=30' (FULL SIZE)
Sheet: R07

Typical Pool Section



Typical Riffle Section



0 10' 20'

SCALE: 1" = 10'

VERTICAL EXAGGERATION OF 2

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LAS COLONIAS PARK SLOUGH RESTORATION TYPICAL SECTIONS

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Date: AUGUST 11, 2016

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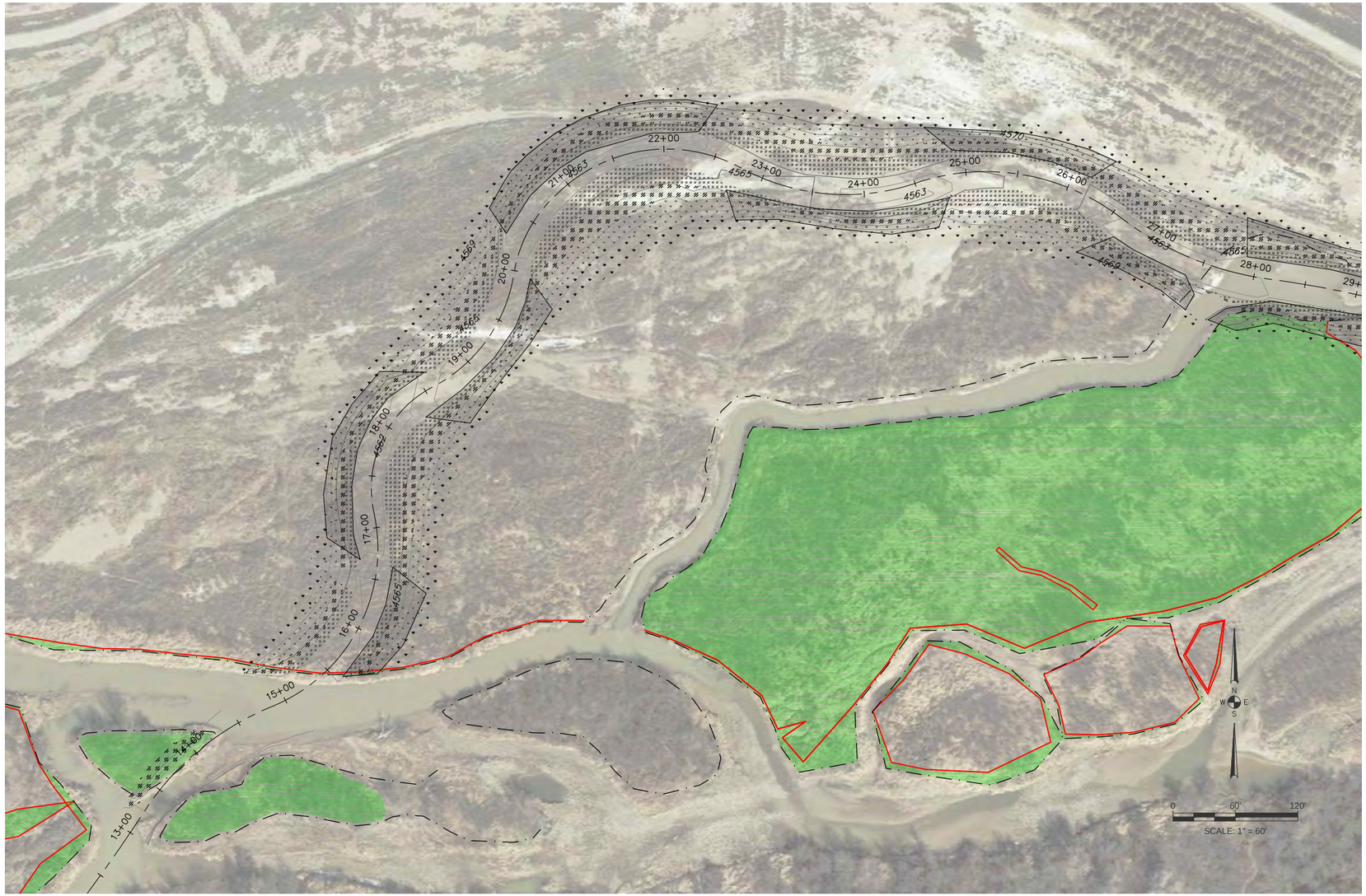
Sheet: R09



LEGEND

- EMERGENT WETLAND PLANTING +/- 1' FROM GROUNDWATER ELEVATION
- WETLAND MEADOW PLANTING 1' TO 3' ABOVE GROUNDWATER ELEVATION
- RIPARIAN ZONE PLANTING 2' TO 4' ABOVE GROUNDWATER ELEVATION
- UPLAND RIPARIAN BUFFER PLANTING AT LEAST 4' ABOVE GROUNDWATER ELEVATION
- ADD ALT: INSTALL EROSION CONTROL BLANKET OVER SEEDING WITH TOPSOIL. (SEE SHEET L04 FOR DETAIL).

- PROJECT LIMITS
- LIMITS OF EXCAVATION
- ORDINARY HIGH WATER

CONSTRUCTION NOTES:

1) MINIMUM PLANTING INCLUDES WETLAND AND RIPARIAN SEEDING, EROSION CONTROL BLANKETS TO BE INSTALLED ON CUT BANKS ON THE NORTH BANK OF THE SLOUGH, AND WILLOW STAKES TO BE INSTALLED IN LOCATIONS SPECIFIED ON PLANS AND IN SPECIFICATIONS.

2) EROSION CONTROL BLANKETS ON THE SOUTH BANK AND CONTAINER PLANTING ARE ADD ALTERNATIVES.

3) SEE SHEET R10 FOR TYPICAL SECTION DETAIL OF PLANTING

4) SEE SHEET L03 FOR SPECIFIC SEEDING AND CONTAINER PLANTING SPECIES LIST

5) SEE SHEET L04 FOR EROSION CONTROL BLANKET INSTALLATION DETAIL

6) SEE SHEET L05 FOR WILLOW STAKE POLE PLANTING DETAIL

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LAS COLONIAS PARK SLOUGH RESTORATION PLANTING PLAN

No.	REVISION/UPDATE	Date
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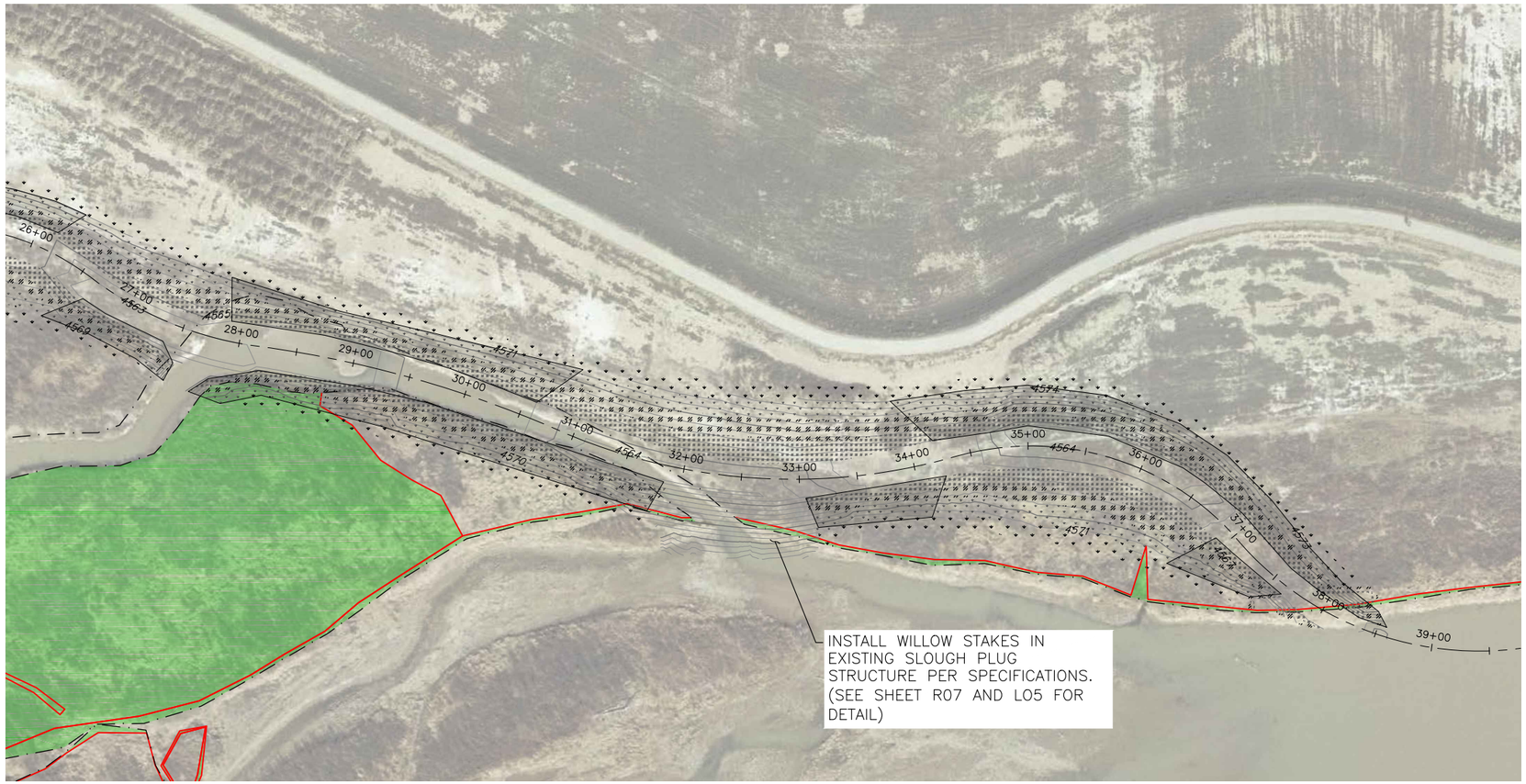
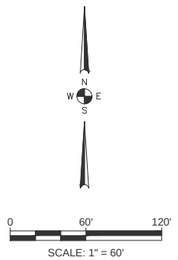
Sheet	L01





LEGEND

- EMERGENT WETLAND PLANTING +/- 1' FROM GROUNDWATER ELEVATION
- WETLAND MEADOW PLANTING 1' TO 3' ABOVE GROUNDWATER ELEVATION
- RIPARIAN ZONE PLANTING 2' TO 4' ABOVE GROUNDWATER ELEVATION
- UPLAND RIPARIAN BUFFER PLANTING AT LEAST 4' ABOVE GROUNDWATER ELEVATION
- ADD ALT: INSTALL EROSION CONTROL BLANKET OVER SEEDING WITH TOPSOIL. (SEE SHEET L04 FOR DETAIL).

- PROJECT LIMITS
- LIMITS OF EXCAVATION
- ORDINARY HIGH WATER

CONSTRUCTION NOTES:

1) MINIMUM PLANTING INCLUDES WETLAND AND RIPARIAN SEEDING, EROSION CONTROL BLANKETS TO BE INSTALLED ON CUT BANKS ON THE NORTH BANK OF THE SLOUGH, AND WILLOW STAKES TO BE INSTALLED IN LOCATIONS SPECIFIED ON PLANS AND IN SPECIFICATIONS.

2) EROSION CONTROL BLANKETS ON THE SOUTH BANK AND CONTAINER PLANTING ARE ADD ALTERNATIVES.

3) SEE SHEET R10 FOR TYPICAL SECTION DETAIL OF PLANTING

4) SEE SHEET L03 FOR SPECIFIC SEEDING AND CONTAINER PLANTING SPECIES LIST

5) SEE SHEET L04 FOR EROSION CONTROL BLANKET INSTALLATION DETAIL

6) SEE SHEET L05 FOR WILLOW STAKE POLE PLANTING DETAIL

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LAS COLONIAS PARK SLOUGH RESTORATION PLANTING PLAN

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Grand Junction, CO 81501

Project: 11.CO24.003
Date: AUGUST 11, 2016
Scale: 1"=30' (FULL SIZE)
Sheet: L02

SEEDING

Initial Erosion Control Seeding			
Riparian buffer			
Common name	**Scientific name**	**Growth form**	**Revegetation technique**
Western wheatgrass	*Pascopyrum smithii*	grass	seed (drill or broadcast)
Slender wheatgrass	*Elymus trachyculus*	grass	seed (drill or broadcast)
Alkali sacaton	*Sporobolus airoides*	grass	seed (drill or broadcast)
Indian ricegrass	*Achatherum hymenoides*	grass	seed (drill or broadcast)
Inland saltgrass	*Distichlis spicata*	grass	seed (drill or broadcast)
Palmer penstemon	*Penstemon palmeri*	forb	seed (drill or broadcast)
Solidago canadensis	*Canada goldenrod*	forb	seed (drill or broadcast)
Wetland areas			
Western wheatgrass	*Pascopyrum smithii*	grass	broadcast seeding
Inland saltgrass	*Distichlis spicata*	grass	broadcast seeding
Alkali grass	*Puccinellia airoides*	grass-like	broadcast seeding
Alkali muhley	*Mulenberghia aspertifolia*	grass-like	broadcast seeding
Arctic rush	*Juncus arcticus*	grass-like	broadcast seeding
Common spikerush	*Eleocharis palustris*	grass-like	broadcast seeding
Alkali bulrush	*Scirpus maritimus*	grass-like	broadcast seeding
Marsh milkweed	*Asclepsia incarnata*	forb	broadcast seeding
Nutall's sunflower	*Helianthus nuttallii*	forb	broadcast seeding

CONTAINER PLANTS

Riparian Buffer Planting

Common name	Scientific name	Growth form	Revegetation technique
Upland Buffer			
Sliverscale saltbush	*Atriplex argentea*	shrub	Deep cell pots - 14" or 30"; or gallon sized
Gardner's saltbush	*Atriplex gardneri*	shrub	Deep cell pots - 14" or 30"; or gallon sized
Greasewood	*Sarcobatus vermiculatus*	shrub	Deep cell pots - 14" or 30"; or gallon sized
Four-wing saltbush	*Atriplex canescens*	shrub	Deep cell pots - 14" or 30"; or gallon sized
Rubber rabbitbrush	*Ericameria nauseosus*	shrub	Deep cell pots - 14" or 30"; or gallon sized
Green rabbitbrush	*Crysothamnus viscidiflorus*	shrub	Deep cell pots - 14" or 30"; or gallon sized
Sulfur-flower buckwheat	*Eriogonum umbellatum*	forb	Deep cell pots - 14" or 30"; or gallon sized
Large leaf globemallow	*Sphaeralcea grossulariifolia*	forb	Deep cell pots - 14" or 30"; or gallon sized
Riparian Zone			
Fremont cottonwood	*Populus fremontii*	tree	Deep cell pots - 14" or 30"; or gallon sized; dormant poles
Peachleaf willow	*Salix amygdaloides*	tree	Deep cell pots - 14" or 30"; or gallon sized; dormant poles
Box elder	*Acre negundo*	tree	Deep cell pots - 14" or 30"; or gallon sized
River hawthorn	*Crataegus rivularis*	tree	Deep cell pots - 14" or 30"; or gallon sized
Sandbar willow	*Salix exigua*	shrub	Deep cell pots - 14" or 30"; or gallon sized' dormant poles
Bebb willow	*Salix bebbiana*	shrub	Deep cell pots - 14" or 30"; or gallon sized; dormant poles
Black chokecherry	*Prunus virginiana*	shrub	Deep cell pots - 14" or 30"; or gallon sized
Skunkbush sumac	*Rhus trilobata*	shrub	Deep cell pots - 14" or 30"; or gallon sized
Wood's rose	*Rosa woodsii*	shrub	Deep cell pots - 14" or 30"; or gallon sized
Golden currant	*Ribes aureum*	shrub	Deep cell pots - 14" or 30"; or gallon sized
Notes: Container species are very successful with suplimental irrigation for at least 2 years. Willows and cottonwoods can be planted as dormant pole cuttings.			

Wetland Bench Planting

Common name	Scientific name	Growth form	Revegetation technique
Wet Meadow			
Western wheatgrass	*Pascopyrum smithii*	grass	Bare root or 10 cubic inch containers
Inland saltgrass	*Distichlis spicata*	grass	Bare root or 10 cubic inch containers
Alkali muhley	*Mulenberghia aspertifolia*	grass-like	Bare root or 10 cubic inch containers
Arctic rush	*Juncus arcticus*	grass-like	Bare root or 10 cubic inch containers
Nebraska sedge	*Carex nebrascensis*	grass-like	Bare root or 10 cubic inch containers
Wooly sedge	*Carex pellita*	grass-like	Bare root or 10 cubic inch containers
Common spikerush	*Eleocharis palustris*	grass-like	Bare root or 10 cubic inch containers
Torrey's rush	*Juncus torreyi*	grass-like	Bare root or 10 cubic inch containers
Hardstem bulrush	*Schoenoplectus acutus*	grass-like	Bare root or 10 cubic inch containers
Alkali bulrush	*Scirpus maritimus*	grass-like	Bare root or 10 cubic inch containers
Marsh milkweed	*Asclepsia incarnata*	forb	Bare root or 10 cubic inch containers
Nutall's sunflower	*Helianthus nuttallii*	forb	Bare root or 10 cubic inch containers
Emergent Marsh			
Hardstem bulrush	*Schoenoplectus acutus*	grass-like	Bare root or 10 cubic inch containers
Alkali bulrush	*Scirpus maritimus*	grass-like	Bare root or 10 cubic inch containers
Wooly sedge	*Carex pellita*	grass-like	Bare root or 10 cubic inch containers
Notes: specific species selected will be based on site hydrology and soil salinity.			

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LAS COLONIAS PARK SLOUGH RESTORATION PLANTING PLAN PLANT SPECIES TABLES

No.	REVISION/UPDATE	Date
1	DESIGN UPDATES	

CLIENT NAME AND ADDRESS

City of Grand Junction
Parks and Recreation
250 North 5th Street
Grand Junction, CO 81501
970.245.3866

DESIGN FIRM NAME AND ADDRESS

RiverRestoration
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PROJECT NAME AND ADDRESS

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Restoration Project
Las Colonias Park
Grand Junction, CO 81501

Project: 11.CO24.003
Date: AUGUST 11, 2016
Scale: 1"=30' (FULL SIZE)
Sheet: L03

Notes:

1. Contractor Shall Use All Natural 100% Biodegradable Erosion Control Blankets, Type 1, Type 2, Type 3.

2. Stake Blanket In Place, Cut Holes Through The Layers, Then Dig The Planting Holes In The Soil. Staple Around Plant Every 1'.

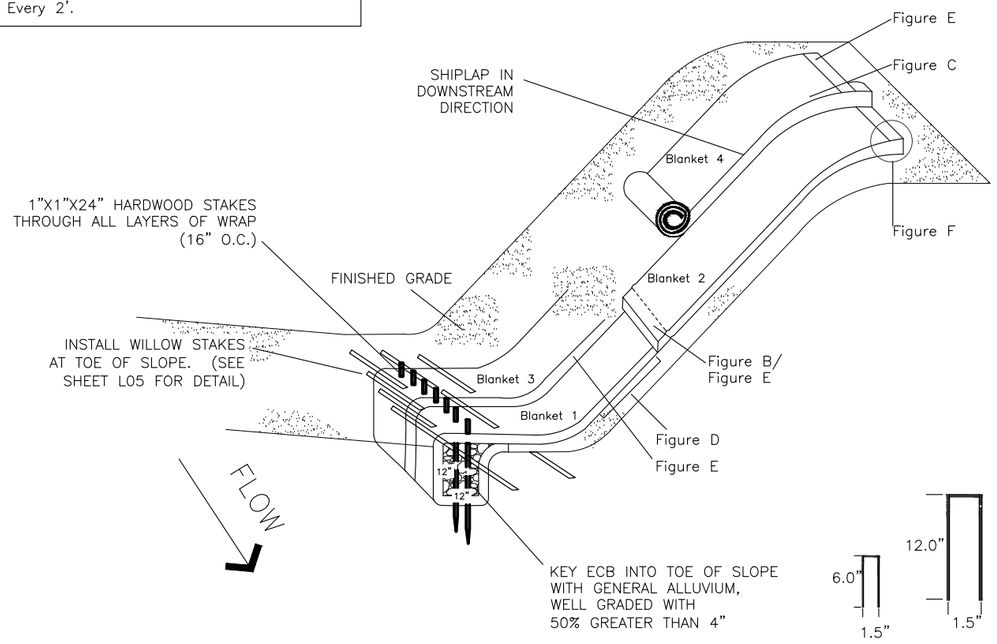
3. Erosion Control Material Must Be Placed Loosely Over Ground Surface. Do Not Stretch.

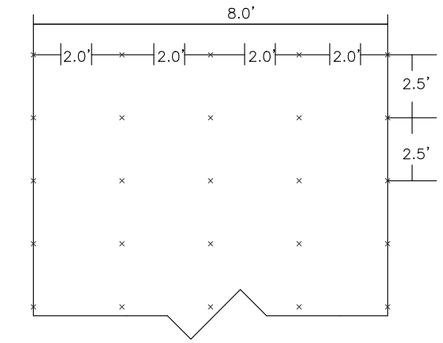
4. Excavate A 6" Wide By 6" Deep Trench Along The Top Of The Slope. The Trench Shall Run Along The Length Of The Installation. Staple Blanket Along Bottom Of Trench, Fill With Compacted Soil, Overlap Blanket Towards Toe Of Slope, And Secure With Staples Every 2'.

*Approximately 200 Staples Per 8.0' Roll.

Drawings Not To Scale

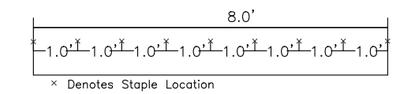
8.0' Wide Blanket Shown





× Denotes Staple Location

Figure D– Plan View



× Denotes Staple Location

Figure E– Plan View

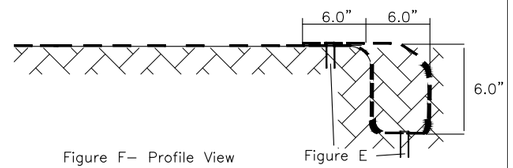


Figure F– Profile View

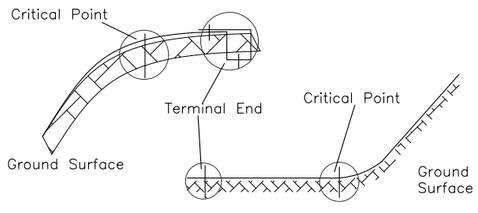


Figure G– Critical Point Securing

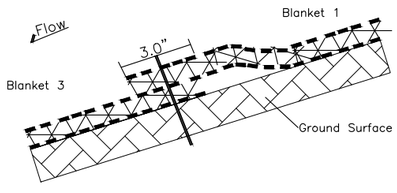


Figure B– Profile View

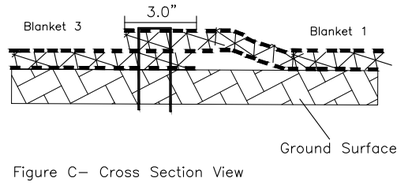


Figure C– Cross Section View

EROSION CONTROL BLANKET (ECB) INSTALLATION

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LAS COLONIAS PARK
SLOUGH RESTORATION
EROSION CONTROL BLANKET
INSTALLATION DETAIL

No.	REVISION/UPDATE	Date
1	DESIGN UPDATES	

CLIENT NAME AND ADDRESS

City of Grand Junction
Parks and Recreation
250 North 5th Street
Grand Junction, CO 81501
970.245.3866

DESIGN FIRM NAME AND ADDRESS

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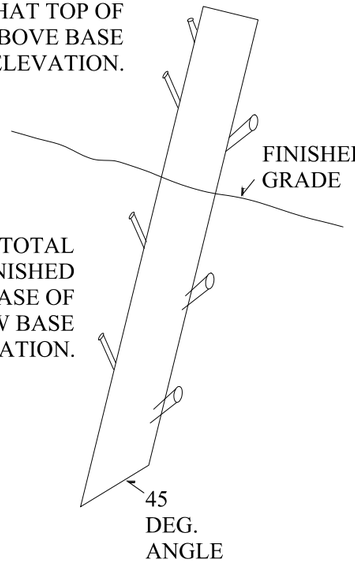
Las Colonias Park Slough
Restoration Project
Las Colonias Park
Grand Junction, CO 81501

Project	Sheet
11.CO24.003	L04
Date: AUGUST 11, 2016	
Scale: 1"=30' (FULL SIZE)	

INSTALL WITH $\frac{1}{3}$ OF TOTAL LENGTH ABOVE FINISHED GRADE. ENSURE THAT TOP OF STAKE EXTENDS ABOVE BASE FLOW WATER ELEVATION.



INSTALL WITH $\frac{2}{3}$ OF TOTAL LENGTH BENEATH FINISHED GRADE. ENSURE BASE OF STAKE EXTENDS BELOW BASE FLOW WATER ELEVATION.

NOTES:

1. CUTTINGS SHALL BE COLLECTED WHILE DORMANT, WHEN THE LEAVES HAVE FALLEN, AND NIGHT TEMPERATURES ARE FREEZING.

2. CUTTINGS OF WILLOWS SHALL BE 1.5"-3" IN DIAMETER, AND 4-6' IN LENGTH.

3.CUTTING SHALL BE TAKEN FROM THE BASE OF THE STEMS. CUT THE BOTTOMS AT A 45 DEG. ANGLE AND THE TOPS FLAT.

4. CUTTINGS SHALL BE STRIPPED OF LEADERS, AND LONG BRANCHES TO AVOID EXCESS DRYING.

5. CUTTINGS SHALL BE STORED IN WATER AND SHADE FOR UP TO 24 HOURS BEFORE PLANTING.

6. PLANT THE CUTTINGS WITH THEIR BASES BELOW NORMAL WATER TABLE.

7. INSTALL WILLOW STAKES 2' O.C.

8. INSTALL WITH AT LEAST 6" ABOVE GRADE

9. INSTALL TO AT LEAST 6" BELOW BASE FLOW ELEVATION.

10. CUTTINGS SHALL BE SOAKED IN WATER FOR 2-10 DAYS BEFORE INSTALLATION

11. INSTALL WILLOW POLES THROUGH EROSION CONTROL BLANKETS.

WILLOW STAKE POLE PLANTING

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LAS COLONIAS PARK SLOUGH RESTORATION
WILLOW STAKE POLE PLANTING DETAIL

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