Request for Proposal
RFP-4591-19-DH

Investigation and Repair of Outlet Control Valves at Juniata Reservoir

RESPONSES DUE:
January 15, 2019 prior to 3:30 PM Local
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 solicitation has been developed specifically for a Request for Proposal intended to solicit competitive responses for this solicitation, and may not be the same as previous City of Grand Junction solicitations. All offerors are urged to thoroughly review this solicitation prior to submitting. Submittal by **FAX, EMAIL or HARD COPY IS NOT ACCEPTABLE** for this solicitation.

REQUEST FOR PROPOSAL

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REQUEST FOR PROPOSAL

SECTION 1.0: ADMINISTRATIVE INFORMATION & CONDITIONS FOR SUBMITTAL

1.1 Issuing Office: This Request for Proposal (RFP) is issued by the City of Grand Junction. All contact regarding this RFP shall be directed to:

RFP Questions:
Duane Hoff Jr., Senior Buyer
duaneh@gjcity.org

1.2 Purpose: The purpose of this RFP is to obtain proposals from qualified professional firms to provide underwater investigative and repair services of the outlet control valves at Juniata Reservoir.

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

1.4 Compliance: All participating Offerors, by their signature hereunder, shall agree to comply with all conditions, requirements, and instructions of this RFP as stated or implied herein. Should the Owner omit anything from this packet which is necessary to the clear understanding of the requirements, or should it appear that various instructions are in conflict, the Offeror(s) shall secure instructions from the Purchasing Division prior to the date and time of the submittal deadline shown in this RFP.

1.5 Submission: Please refer to section 5.0 for what is to be included. ***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. For proper comparison and evaluation, the City requests that proposals be formatted as directed in Section 5.0 "Preparation and Submittal of Proposals." Submittals received that fail to follow this format may be ruled non-responsive. (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 Altering Proposals: Any alterations made prior to opening date and time must be initialed by the signer of the proposal, guaranteeing authenticity. Proposals cannot be altered or amended after submission deadline.

1.7 Withdrawal of Proposal: A proposal must be firm and valid for award and may not be withdrawn or canceled by the Offeror for sixty (60) days following the submittal deadline date, and only prior to award. The Offeror so agrees upon submittal of their proposal. After award this statement is not applicable.

1.8 Addenda: All Questions shall be submitted in writing to the appropriate person as shown in Section 1.1. Any interpretations, corrections and changes to this RFP or extensions to the opening/receipt date shall be made by a written Addendum to the RFP by the Owner. Sole authority to authorize addenda shall be vested in the City of Grand Junction Purchasing Representative. Addenda will be issued electronically through the Rocky Mountain E-Purchasing website at www.rockymountainbidsystem.com. Offerors shall acknowledge receipt of all addenda in their proposal.

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

1.10 Confidential Material: All materials submitted in response to this RFP shall ultimately become public record and shall be subject to inspection after contract award. "**Proprietary or Confidential Information"** is defined as any information that is not generally known to competitors and which provides a competitive advantage. Unrestricted disclosure of proprietary information places it in the public domain. Only submittal information clearly identified with the words "***Confidential Disclosure***" and uploaded as a separate document shall establish a confidential, proprietary relationship. Any material to be treated as confidential or proprietary in nature must include a justification for the request. The request shall be reviewed and either approved or denied by the Owner. If denied, the proposer shall have the opportunity to withdraw its entire proposal, or to remove the confidential or proprietary restrictions. Neither cost nor pricing information nor the total proposal shall be considered confidential or proprietary

1.11 Response Material Ownership: All proposals become the property of the Owner upon receipt and shall only be returned to the proposer at the Owner's option. Selection or rejection of the proposal shall not affect this right. The Owner shall have the right to use all ideas or adaptations of the ideas contained in any proposal received in response to this RFP, subject to limitations outlined in the section titled "Confidential Material". Disqualification of a proposal does not eliminate this right.

1.12 Minimal Standards for Responsible Prospective Offerors: A prospective Offeror must affirmably demonstrate their responsibility. A prospective Offeror must meet the following requirements:

- Have adequate financial resources, or the ability to obtain such resources as required.
- Be able to comply with the required or proposed completion schedule.
- Have a satisfactory record of performance.
- Have a satisfactory record of integrity and ethics.
- Be otherwise qualified and eligible to receive an award and enter into a contract with the Owner.

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

1.14 Open Records: All proposals shall be open for public inspection after the contract is awarded. Trade secrets and confidential information contained in the proposal so identified by offer as such shall be treated as confidential by the Owner to the extent allowable in the Open Records Act.

1.15 Sales Tax: City of Grand Junction is, by statute, exempt from the State Sales Tax and Federal Excise Tax; therefore, all fees shall not include taxes.

1.16 Public Opening: Proposals shall be opened in the City Hall Auditorium, 250 North 5th Street, Grand Junction, CO 81501, immediately following the proposal deadline. Offerors, their representatives and interested persons may be present. Only the names and locations on the proposing firms will be disclosed.

SECTION 2.0: GENERAL CONTRACT TERMS AND CONDITIONS

2.1. Acceptance of RFP Terms: A proposal submitted in response to this RFP shall constitute a binding offer. Acknowledgment of this condition shall be indicated on the Cover Letter by the Offeror or an officer of the Offeror legally authorized to execute contractual obligations. A submission in response to the RFP acknowledges acceptance by the Offeror of all terms and conditions, as set forth herein. An Offeror shall identify clearly and thoroughly any variations between its proposal and the Owner's RFP requirements. Failure to do so shall be deemed a waiver of any rights to subsequently modify the terms of performance, except as outlined or specified in the RFP.

2.2. Execution, Correlation, Intent, and Interpretations: The Contract Documents shall be signed by the Owner and Contractor. By executing the contract, the Contractor represents that they have familiarized themselves with the local conditions under which the Work is to be performed, and correlated their 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, services 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 Owner are, and shall remain, Owner property. They are not to be used on any other project.

2.3. Permits, Fees, & Notices: The Contractor shall secure and pay for all permits, 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, Contractor

shall promptly notify the Owner in writing, and any necessary changes shall be adjusted by change order/amendment. 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, Contractor shall assume full responsibility and shall bear all costs attributable.

2.4. Responsibility for those Performing the Work: The Contractor shall be responsible to the Owner for the acts and omissions of all their employees and all other persons performing any of the work under a contract with the Contractor.

2.5. 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.

2.6. Cleanup: The Contractor at all times shall keep the premises free from accumulation of waste materials or rubbish caused by their operations. At the completion of work they shall remove all their waste materials and rubbish from and about the project, as well as all their equipment and surplus materials.

2.7. 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 Owner 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. Partial payments will be based upon estimates, prepared by the Contractor, of the value of Work performed and materials placed in accordance with the Contract Documents.

2.8. 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, they shall restore, at their 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.

2.9. 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. 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.

2.10. 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.

2.11. Uncovering & Correction of Work: The Contractor shall promptly correct all work found by the Owner as defective or as failing to conform to the contract documents. The Contractor shall bear all costs of correcting such rejected work, including the cost of the Owner's additional services thereby made necessary. 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.

2.12. Acceptance Not Waiver: The Owner's acceptance or approval of any work furnished hereunder shall not in any way relieve the proposer of their present responsibility to maintain the high quality, integrity and timeliness of his work. The Owner's approval or acceptance of, or payment for, any services shall not be construed as a future waiver of any rights under this Contract, or of any cause of action arising out of performance under this Contract.

2.13. Change Order/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 change orders/amendments to the contract shall be made in writing by the Owner Purchasing Division.

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

2.15. Compliance with Laws: Proposals 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. Contractor hereby warrants that it is qualified to assume the responsibilities and render the services described herein and has all requisite corporate authority and professional licenses in good standing, required by law.

2.16. Debarment/Suspension: The Contractor herby certifies that the Contractor is not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Governmental department or agency.

2.17. 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.

2.18. Conflict of Interest: No public official and/or Owner employee shall have interest in any contract resulting from this RFP.

2.19. Contract: This Request for Proposal, submitted documents, and any negotiations, when properly accepted by the Owner, shall constitute a contract equally binding between the

Owner and Offeror. The contract represents the entire and integrated agreement between the parties hereto and supersedes all prior negotiations, representations, or agreements, either written or oral, including the Proposal documents. The contract may be amended or modified with Change Orders, Field Orders, or Amendment.

2.20. Project Manager/Administrator: The Project Manager, on behalf of the Owner, shall render decisions in a timely manner pertaining to the work proposed or performed by the Offeror. The Project Manager shall be responsible for approval and/or acceptance of any related performance of the Scope of Work.

2.21. Cancelation of Solicitation: Any solicitation may be canceled by the Owner or any solicitation response by a vendor may be rejected in whole or in part when it is in the best interest of the Owner.

2.22. 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 at least thirty days past notification.

2.23. Employment Discrimination: During the performance of any services per agreement with the Owner, the Offeror, by submitting a Proposal, agrees to the following conditions:

2.23.1. The Offeror shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, age, disability, citizenship status, marital status, veteran status, sexual orientation, national origin, or any legally protected status except when such condition is a legitimate occupational qualification reasonably necessary for the normal operations of the Offeror. The Offeror agrees to post in conspicuous places, visible to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

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

2.23.3. 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.

2.24. 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).

2.25. Ethics: The Offeror 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.

2.26. Failure to Deliver: In the event of failure of the Offeror 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 Offeror 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.

2.27. 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.

2.28. Force Majeure: The Offeror 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 Offeror, unless otherwise specified in the contract.

2.29. Indemnification: Offeror 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 Offeror, or of any Offeror's agent, employee, subcontractor or supplier in the execution of, or performance under, any contract which may result from proposal award. Offeror shall pay any judgment with cost which may be obtained against the Owner growing out of such injury or damages.

2.30. Independent Firm: The Offeror shall be legally considered an Independent Firm and neither the Firm 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 Firm, its servants, or agents. The Owner shall not withhold from the contract payments to the Firm any federal or state unemployment taxes, federal or state income taxes, Social Security Tax or any other amounts for benefits to the Firm. Further, the Owner shall not provide to the Firm any insurance coverage or other benefits, including Workers' Compensation, normally provided by the Owner for its employees.

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

2.32. 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.

2.33. Patents/Copyrights: The Offeror 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 Offeror 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 RFP.

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

2.35. Venue: Any agreement as a result of responding to this RFP 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.

2.36. Expenses: Expenses incurred in preparation, submission and presentation of this RFP are the responsibility of the company and can not be charged to the Owner.

2.37. 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.

2.38. Public Funds/Non-Appropriation of Funds: Funds for payment have been provided through the Owner's budget approved by the City Council/Board of County Commissioners for the stated fiscal year only. State of Colorado statutes prohibit the obligation and expenditure of public funds beyond the fiscal year for which a budget has been approved. Therefore, anticipated orders or other obligations that may arise past the end of the stated Owner's fiscal year shall be subject to budget approval. Any contract will be subject to and must contain a governmental non-appropriation of funds clause.

2.39. Collusion Clause: Each Offeror by submitting a proposal 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 proposals shall be rejected if there is evidence or reason for believing that collusion exists among the proposers. The Owner may or may not, at the discretion of the Owner Purchasing Representative, accept future proposals for the same service or commodities for participants in such collusion.

2.40. 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.

2.41. Gratuities: The Contractor certifies and agrees that no gratuities or kickbacks were paid in connection with this contract, nor were any fees, commissions, gifts or other considerations made contingent upon the award of this contract. If the Contractor breaches or violates this warranty, the Owner may, at their discretion, terminate this contract without liability to the Owner.

2.42. OSHA Standards: All Offerors 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.

2.43. Performance of the Contract: The Owner reserves the right to enforce the performance of the contract in any manner prescribed by law or deemed to be in the best interest of the Owner in the event of breach or default of resulting contract award.

2.44. Benefit Claims: The Owner shall not provide to the Contractor any insurance coverage or other benefits, including Worker's Compensation, normally provided by the Owner for its employees.

2.45. Default: The Owner reserves the right to terminate the contract immediately in the event the Contractor fails to meet delivery or completion schedules, or otherwise perform in accordance with the accepted proposal. Breach of contract or default authorizes the Owner to purchase like services elsewhere and charge the full increase in cost to the defaulting Contractor.

2.46. Multiple Offers: Proposers must determine for themselves which product or service to offer. If said proposer chooses to submit more than one offer, THE ALTERNATE OFFER must be clearly marked "Alternate Proposal". The Owner reserves the right to make award in the best interest of the Owner.

2.47. Cooperative Purchasing: Purchases as a result of this solicitation are primarily for the Owner. 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 Proposal. The quantities furnished in this proposal document are for only the Owner. It does not include quantities for any other jurisdiction. The Owner will be responsible only for the award for our 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 Owner 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.

2.48. Definitions:

2.48.1. "Offeror" and/or "Proposer" refers to the person or persons legally authorized by the Consultant to make an offer and/or submit a response (fee) proposal in response to the Owner's RFP.

2.48.2. The term "Work" includes all labor, materials, equipment, and/or services necessary to produce the requirements of the Contract Documents.

2.48.3. "Contractor" is the person, organization, firm or consultant 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.

2.48.4. "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.

2.49. Public Disclosure Record: If the Proposer has knowledge of their employee(s) or sub-proposers having an immediate family relationship with an Owner employee or elected official, the proposer 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 Owner.

2.50. 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).

2.50.1. "Public Works 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.

SECTION 3.0: INSURANCE REQUIREMENTS

Insurance Requirements: The selected Contractor 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 Contractor pursuant to this Section. Such insurance shall be in addition to any other insurance requirements imposed by this Contract or by law. The Contractor 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. Contractor shall procure and maintain and, if applicable, shall cause any Subcontractor of the Contractor to procure and maintain insurance coverage listed below. Such coverage shall be procured and maintained with forms and insurers acceptable to the Owner. 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:

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

(b) General Liability insurance with minimum 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 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

With respect to each of Contractors 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 paragraph (b) above shall be endorsed to include the Owner, and the Owner'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.

SECTION 4.0: SPECIFICATIONS/SCOPE OF SERVICES

4.1. General/Background: Juniata Reservoir is located at the base of the Grand Mesa on Purdy Mesa east of the town of Whitewater. The reservoir is part of the Grand Junction City water storage system.

Previously completed investigation:
Previous inspection of the valves was completed by Marine Diving Solutions, Denver, CO in 2018. This inspection provided video evidence that tuberculation of the valve stems has occurred on the mid-level and low-level outlet control valves that may be limiting travel of the valve disc, not allowing the valves to fully close. Full video of this inspection

is available to contractors submitting cost proposals for this scope of work. As-built drawings of the upstream outlet valve configuration and reservoir water depth are also available with this solicitation.

4.2. Special Conditions/Provisions:

4.2.1 Licenses and Permits: Contractor is responsible for obtaining all necessary licenses and permits required for Construction, at Contractors expense. See Section 2.3

4.2.2 Freight/Shipping: All freight/shipping shall be F.O.B. Destination – Freight Pre-paid and allowed to the project location.

4.2.3 Price: Project pricing shall be all inclusive, to include, but not be limited to: labor, materials, equipment, travel, design, drawings, engineer work, supplies, shipping/freight, licenses, permits, fees, etc.

All prices shall be "F.O.B. Destination Freight Pre-Paid and Allowed". 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.

Contract shall be established as a "Lump Sum" for both mid-level valve investigation and/or low-level valve investigation, separately.

Pending the success of the mid-level investigation, the City, at it's discretion, may choose not to award the low-level investigation, with no additional cost consideration to the Contractor, nor any additional fees to the City.

All fees will be considered by the Owner to be negotiable.

4.2.4 Warranty: Contractor shall submit manufacturer warranty information for Owner's approval, prior to product ordering. Additionally, Contractor shall provide a minimum 1 year Contractors warranty.

4.2.5 Codes: Contractor shall ensure that project meets all Federal, State, County, and City Codes.

4.2.6 Working Schedule: Time is of the essence with this project. Working schedule shall be Monday – Friday from 7:00am-5:00pm

4.2.7 Time of Completion: The scheduled time of Completion for the Project shall be no later than March 31, 2019.

4.2.8 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.

4.3. Specifications/Scope of Services:

The City is interested in contracting for a second investigation to determine if the valves may be capable of closing when tuberculated materials are removed from the stem and seat of the valves. The scope of this second investigation is anticipated to include the following:

- Removal of a section of the steel trash rack that is immediately ahead of the valves and provide a physical de-scaling of the tuberculated valve stems, and valve seat area. Upon completion of de-scaling the valve stems and seat area, the valves will be operated by the City to confirm full operation of the valves is possible.

- Replacement of the trash rack section will then be completed to allow protection of the outlet works under normal operation. The trash rack must be securely re-attached via; welding, bolting, stainless steel banding, or other permanent mechanical connection.

- This level of investigation will be required for both the mid-level, and low-level outlet valves.

- The investigation of the mid-level valves shall be completed first.

- At the Contractors option, if the Contractor can fully remove tuberculated materials from the valve stems and seats without removal of the trash rack, this approach may be presented.

- Video documentation of the descaling and operation of the valves shall be provided to the City upon completion of the work scope. Video documentation shall clearly show progress of the descaling measures and operation of the valves.

Information Provided by the City:

The City will provide the Contractor electronic copy of the previous video inspection of the mid-level and low-level valves (completed in July 2017), and as-built drawings (See attached and video links).
Low Level Outlet 2017-07-24: https://youtu.be/KadXpIGUn0w
Mid Level Outlet 2017-07-24: https://youtu.be/aZa55NorlxE

Water depth in the Reservoir at the time of inspection is anticipated to be approximately 49-feet at the mid-level valves, and 93-feet at the low-level valves.

4.4. RFP Tentative Time Schedule:

• Request for Proposal available	December 21, 2018
• Inquiry deadline, no questions after this date	January 4, 2019
• Addendum Posted	January 9, 2019
• Submittal deadline for proposals	January 15, 2019
• Owner evaluation of proposals	January 16 – 23, 2019
• Final selection	January 29, 2019
• Contract execution	January 31, 2019
• Work begins no later than	February 4, 2019
• Work completed no later than	March 31, 2019

4.5. Questions Regarding Scope of Services:

Duane Hoff Jr., Senior Buyer
duaneh@gjcity.org

SECTION 5.0: PREPARATION AND SUBMITTAL OF PROPOSALS

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**). For proper comparison and evaluation, the City requests that proposals be formatted as directed. Offerors are required to indicate their interest in this Project, show their specific experience and address their capability to perform the Scope of Services in the Time Schedule as set forth herein. For proper comparison and evaluation, the Owner requires that proposals be formatted **A** to **F**.

A. **Cover Letter:** Cover letter shall be provided which explains the Firm's interest in the project. The letter shall contain the name/address/phone number/email of the person who will serve as the firm's principal contact person with Owner's Contract Administrator and shall identify individual(s) who will be authorized to make presentations on behalf of the firm. The statement shall bear the signature of the person having proper authority to make formal commitments on behalf of the firm. By submitting a response to this solicitation the Contractor agrees to all requirements herein.

B. **Qualifications/Experience/Credentials:** Proposers shall provide at least five years, of at least 5 similar projects for their qualifications for consideration as a contract provider to the City of Grand Junction.

C. **Strategy and Implementation Plan:** Describe your (the firm's) interpretation of the Owner's objectives with regard to this RFP. Describe the proposed strategy and/or plan for achieving the objectives of this RFP. The Firm may utilize a written narrative or any other printed technique to demonstrate their ability to satisfy the Scope of Services. The narrative should describe a logical progression of tasks and efforts starting with the initial steps or tasks to be accomplished and continuing until all proposed tasks are fully described and the RFP objectives are accomplished. Include a **time schedule** for completion of your firm's implementation plan and an estimate of time commitments from Owner staff.

D. **References:** A minimum of three (5) **references** with name, address, telephone number, and email address that can attest to your experience in projects of similar scope and size.

E. **Fee Proposal:** Provide a complete list of costs using Solicitation Response Form found in Section 7.

F. Additional Data (optional): Provide any additional information that will aid in evaluation of your qualifications with respect to this project.

SECTION 6.0: EVALUATION CRITERIA AND FACTORS

6.1 Evaluation: An evaluation team shall review all responses and select the proposal or proposals that best demonstrate the capability in all aspects to perform the scope of services and possess the integrity and reliability that will ensure good faith performance.

6.2 Intent: Only respondents who meet the qualification criteria will be considered. Therefore, it is imperative that the submitted proposal clearly indicate the firm's ability to provide the services described herein.

Submittal evaluations will be done in accordance with the criteria and procedure defined herein. The Owner reserves the right to reject any and all portions of proposals and take into consideration past performance. The following parameters will be used to evaluate the submittals (in no particular order of priority):

- Responsiveness of submittal to the RFP
- Understanding of the project and the objectives
- Experience/Required Skills
- Strategy & Implementation Plan
- Demonstrated capability
- References
- Fees

Owner also reserves the right to take into consideration past performance of previous awards/contracts with the Owner of any vendor, contractor, supplier, or service provider in determining final award(s).

The Owner will undertake negotiations with the top rated firm and will not negotiate with lower rated firms unless negotiations with higher rated firms have been unsuccessful and terminated.

6.3 Oral Interviews: The Owner may invite the most qualified rated proposers to participate in oral interviews.

6.4 Award: Firms shall be ranked or disqualified based on the criteria listed in Section 6.2. The Owner reserves the right to consider all of the information submitted and/or oral presentations, if required, in selecting the project Contractor.

SECTION 7.0: SOLICITATION RESPONSE FORM

RFP-4591-19-DH "Investigation and Repair of Outlet Control Valves at Juniata Reservoir"

*Offeror must submit entire Form completed, dated and signed***.**

1) Total cost to provide all labor, parts, supplies, equipment and installation necessary for the Investigation of the Mid-Level Valves per specifications:

TOTAL COST $_____

WRITTEN:_____dollars.

2) Total cost to provide all labor, parts, supplies, equipment and installation necessary for the Investigation of the Low-Level Valves per specifications:

TOTAL COST $_____

WRITTEN:_____dollars.

The Owner reserves the right to accept any portion of the work to be performed at its discretion

---

The undersigned has thoroughly examined the entire Request for Proposals and therefore submits the proposal and schedule of fees and services attached hereto.

This offer is firm and irrevocable for sixty (60) days after the time and date set for receipt of proposals.

The undersigned Offeror agrees to provide services and products in accordance with the terms and conditions contained in this Request for Proposal and as described in the Offeror's proposal attached hereto; as accepted by the Owner.

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

- Prices in this proposal have been arrived at independently, without consultation, communication or agreement for the purpose of restricting competition.
- No attempt has been made nor will be to induce any other person or firm to submit a proposal for the purpose of restricting competition.
- The individual signing this proposal certifies they are a legal agent of the offeror, authorized to represent the offeror and is legally responsible for the offer with regard to supporting documentation and prices provided.
- Direct purchases by the City of Grand Junction are tax exempt from Colorado Sales or Use Tax. Tax exempt No. 98-903544. The undersigned certifies that no Federal, State, County or Municipal tax will be added to the above quoted prices.
- City of Grand Junction payment terms shall be Net 30 days.
- Prompt payment discount of _____ percent of the net dollar will be offered to the Owner if the invoice is paid within _____ days after the receipt of the invoice.

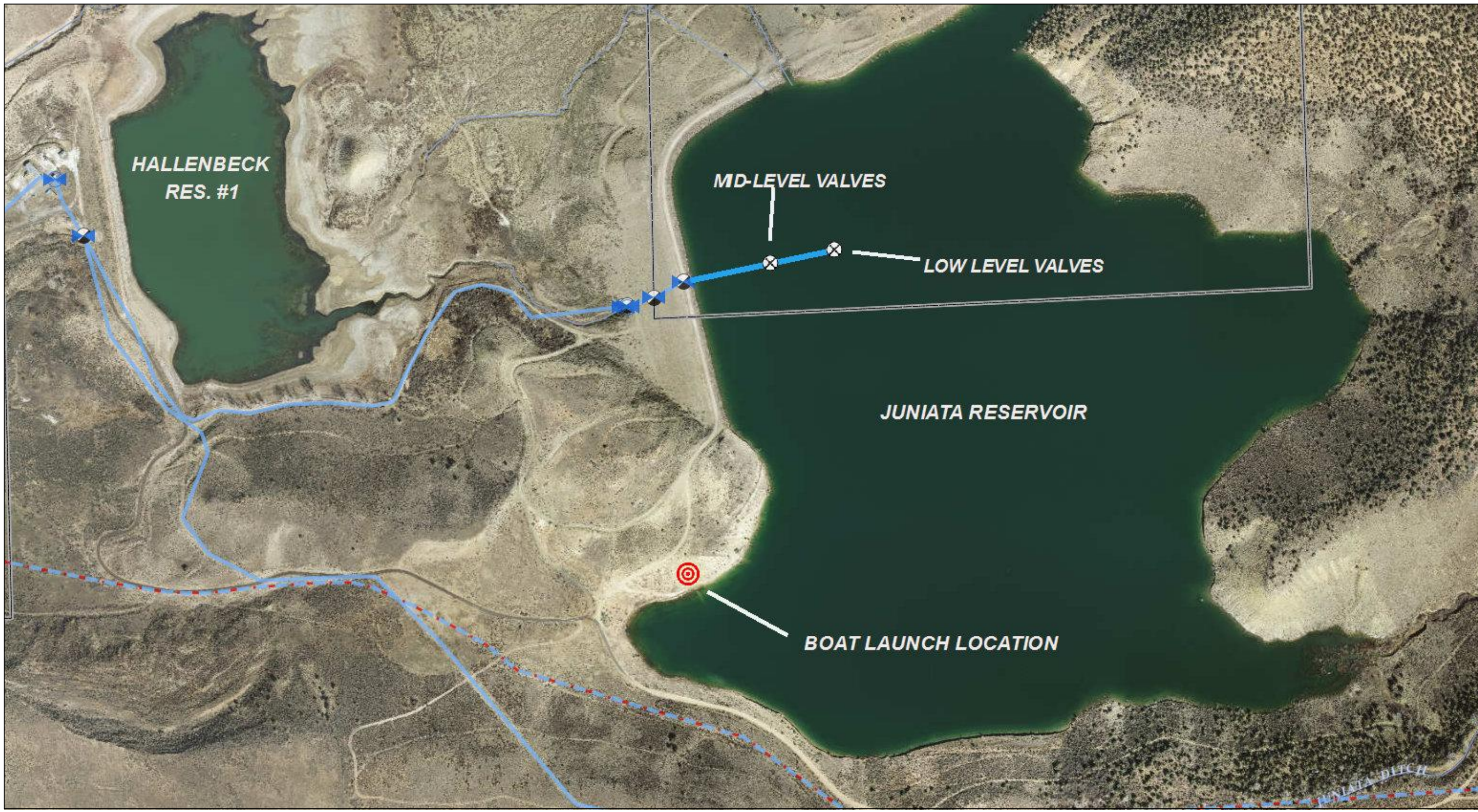
RECEIPT OF ADDENDA: the undersigned Contractor acknowledges receipt of Addenda to the Solicitation, Specifications, and other Contract Documents.

State number of Addenda received: _____.

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

_____	_____
Company Name – (Typed or Printed)	Authorized Agent – (Typed or Printed)
_____	_____
Authorized Agent Signature	Phone Number
_____	_____
Address of Offeror	E-mail Address of Agent
_____	_____
City, State, and Zip Code	Date

JUNIATA RESERVOIR - CITY OF GRAND JUNCTION



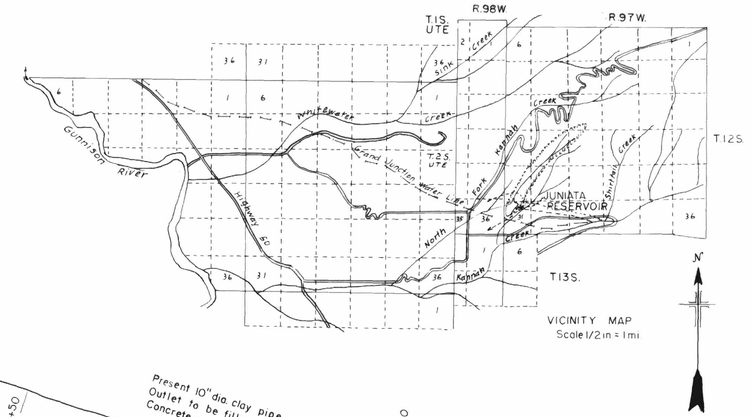
N

0 0.15 0.3 mi

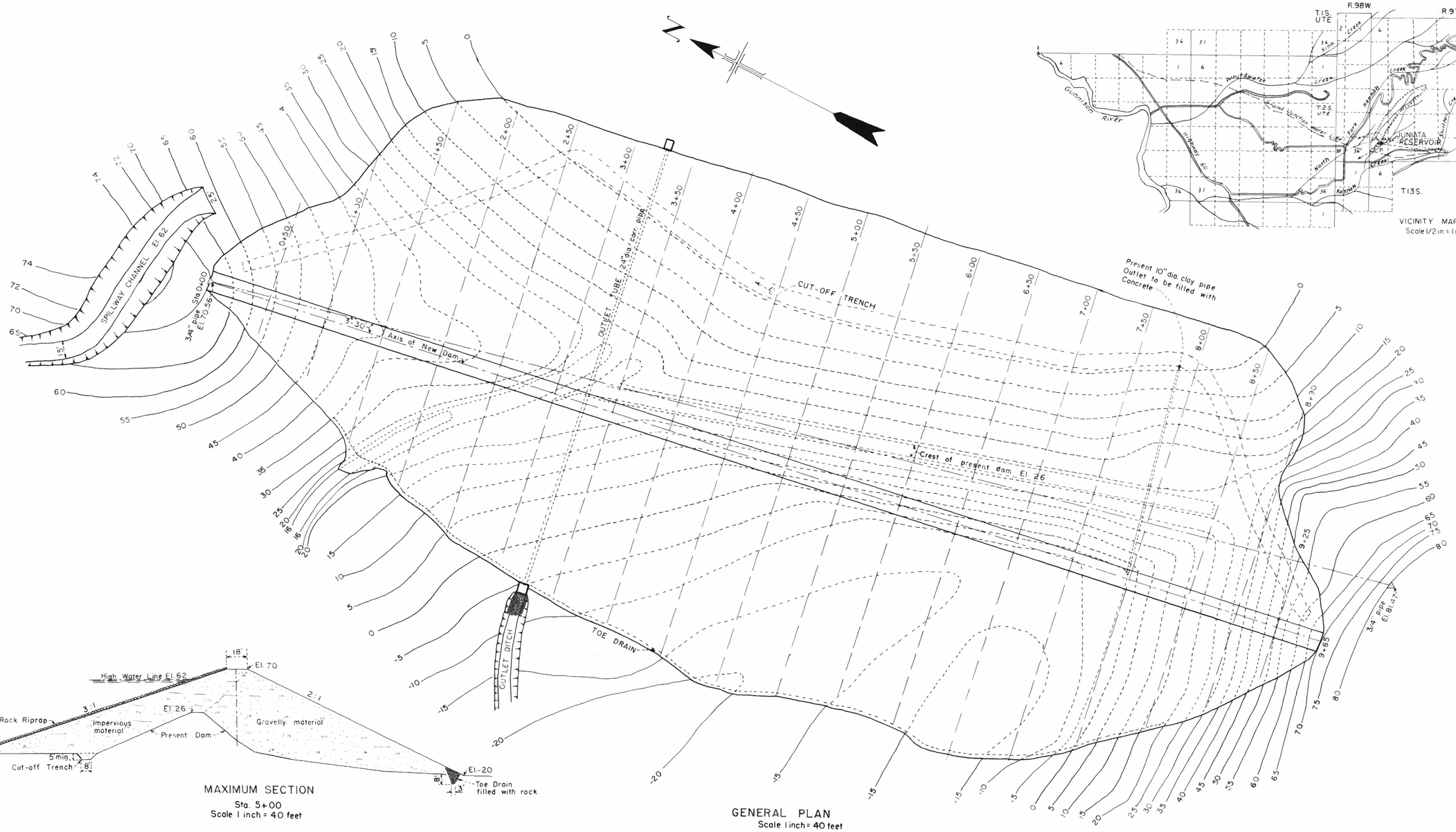
Date: 12/19/2018

1 inch = 870 feet

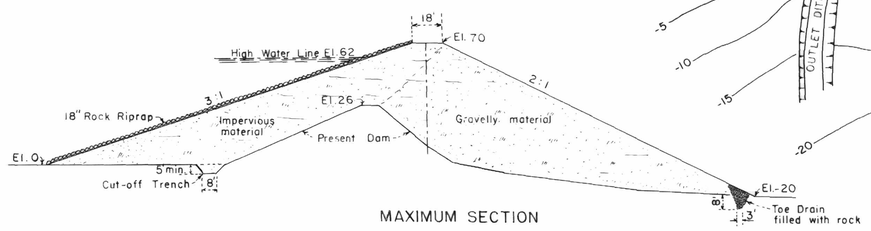
CITY OF Grand Junction COLORADO
GEOGRAPHIC INFORMATION SYSTEM



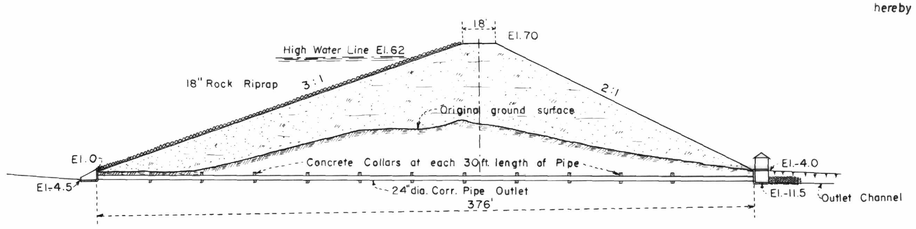
VICINITY MAP
Scale 1/2 in = 1 mi



GENERAL PLAN
Scale 1 inch = 40 feet



MAXIMUM SECTION
Sta. 5+00
Scale 1 inch = 40 feet



SECTION AT ℄ OF OUTLET
Sta. 3+25
Scale 1 inch = 40 feet

These Plans for the construction of the Juniata Reservoir Dam Enlargement are hereby approved and accepted.

C. W. Hallenbeck
Owner
Lester Groswhite
Owner
John P. Rohn
By William J. Rohn
William J. Rohn

I hereby certify that these Plans for the construction of the Juniata Reservoir Dam Enlargement were prepared by me for the owners thereof.

Guy L. Newkirk
Registered Engineer

Subscribed and sworn to before me this 7th day of January 1954 Wilmer Moore
Notary Public
My commission expires Sept. 17, 1957

PLANS FOR
JUNIATA RESERVOIR DAM ENLARGEMENT

LOCATED IN SEC. 31, T. 12 S., R. 97 W., 6th P.M.
MESA COUNTY, COLORADO
IRRIGATION DIVISION No. 4 WATER DISTRICT No. 42

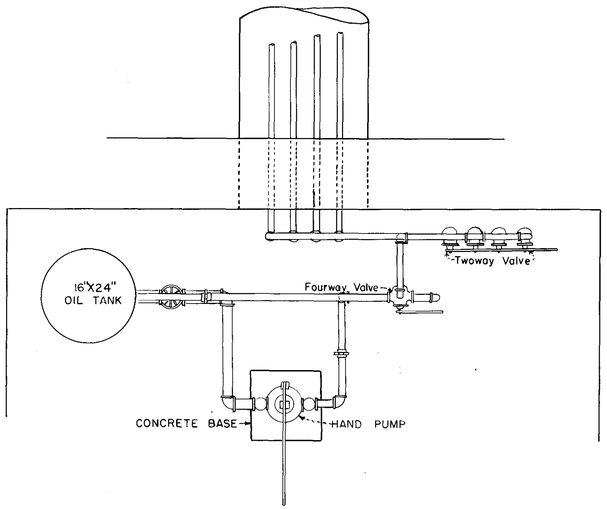
GENERAL PLAN & SECTIONS

SHEET 1 OF 2 SHEETS

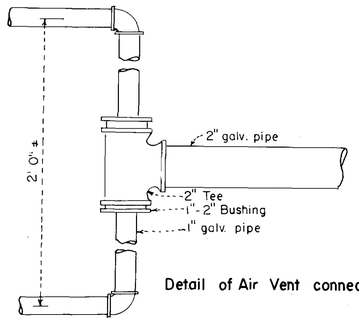
Approved on the 15th day of February 1954
M. C. Hinderlider
State Engineer
By C. C. Kuhlhoff
Deputy

C-661

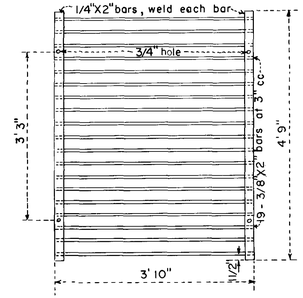
103973



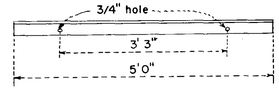
PLAN



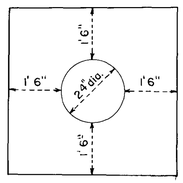
Detail of Air Vent connection



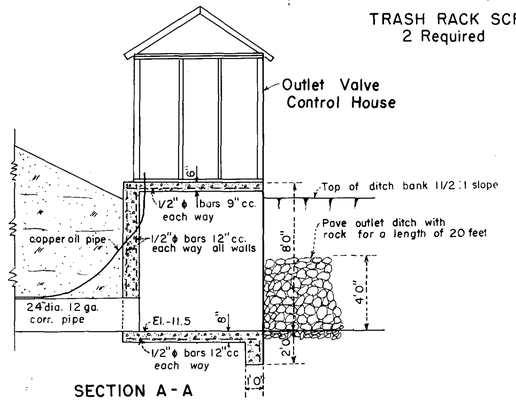
TRASH RACK SCREEN
2 Required



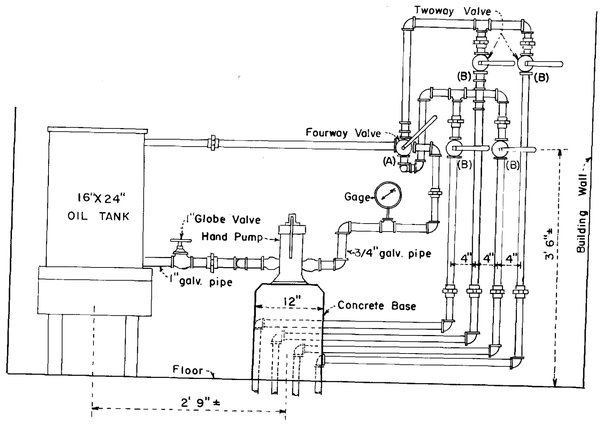
3"X3"X1/4" Angle
2 Required
4 - 5/8"X12" Anchor Bolts
1 - 6" H Beam 6' long with 4-5/8"X3 1/2" bolts



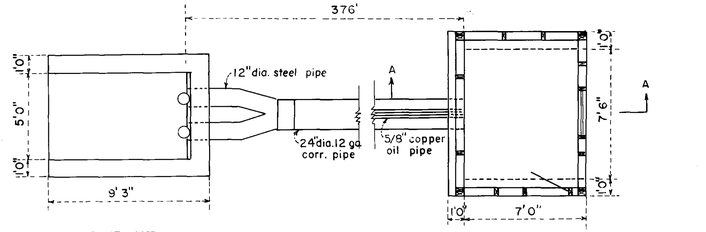
Concrete Collars 1'6" thick at each 30' joint in pipe



SECTION A - A



FRONT ELEVATION
OUTLET VALVE CONTROL PIPING
Scale 1 inch = 1 foot



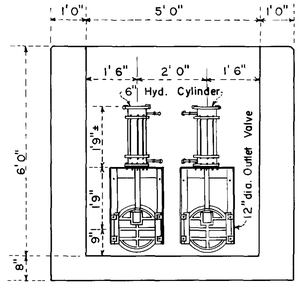
INTAKE

OUTLET

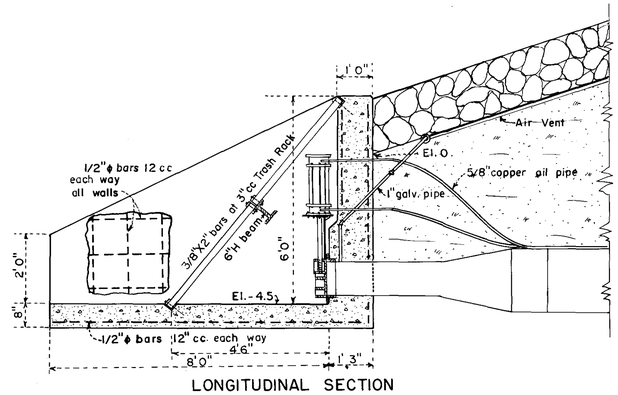
PLAN OF OUTLET
Scale 1/4 inch = 1 foot

INSTRUCTIONS FOR OPERATING GATE VALVES

1. All valves are to be kept closed when gate valves are not to be moved. Fourway Valve (A) and Twoway Valves (B) are closed when handles are horizontal.
2. To raise a gate valve move handle of fourway valve(A) to extreme upper position. To close gate valve move handle to extreme lower position.
3. Open both twoway valves(B) of gate valve to be moved, valve is open when handle is parallel to pipe.
4. Operate hand pump until desired position of gate valve is obtained then close all valves.
5. The oil tank should be kept between 2/3 and 3/4 full of oil.



FRONT ELEVATION



LONGITUDINAL SECTION

OUTLET VALVES
Scale 1/2" = 1'

PLANS FOR

JUNIATA RESERVOIR DAM ENLARGEMENT

LOCATED IN SEC. 31, T. 12 S., R. 97 W., 6th P.M.

MESA COUNTY, COLORADO

IRRIGATION DIVISION No. 4 WATER DISTRICT No. 42

OUTLET DETAILS

SHEET 2 OF 2 SHEETS

Approved on the 15th day of February 1954

M. C. Hinderlider
State Engineer

By C. C. Hyndman
Deputy

C-661

WATER DIVISION No. 4

WATER DISTRICT No. 42

MESA COUNTY

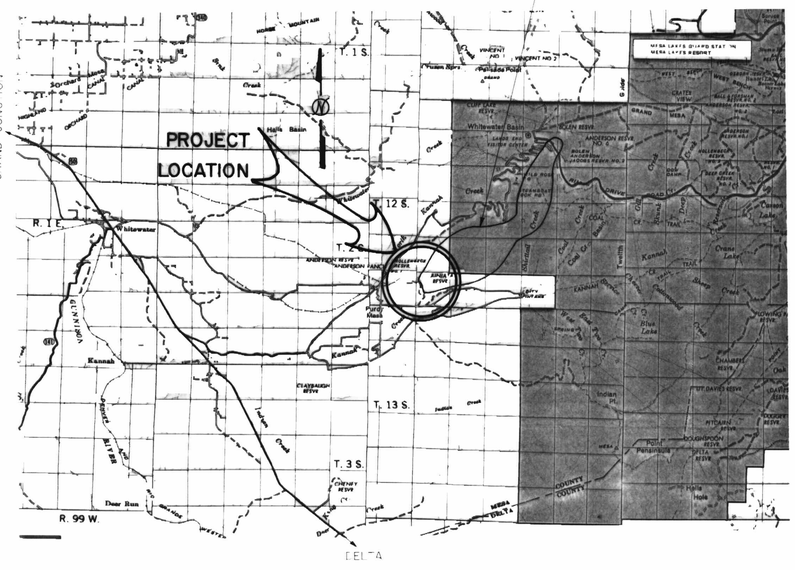
STATE OF COLORADO

OWNED BY CITY OF GRAND JUNCTION

PLANS FOR PROPOSED SECOND ENLARGEMENT

JUNIATA RESERVOIR DAM

DRAINAGE AREA TRIBUTARY TO JUNIATA RESERVOIR, AREA = 2.11 SQ. MILES
PROPOSED CAPACITY AT SPILLWAY LEVEL 6658.5 AC. FT.



SOUTHEAST SECTOR OF MESA COUNTY, COLORADO

SCALES

Topography 1" = 100'

Cross-Sections 1" = 50'

Details As Shown

Approved Duane K. Jensen Date May 17, 1978
CITY ENGINEER – UTILITIES

PLANS PREPARED BY:

ARMSTRONG ENGINEERS & ASSOCIATES, INC.

GRAND JUNCTION, COLORADO

STATE OF COLORADO
DIVISION OF WATER RESOURCES

Plans Reviewed by Stephen H. Hamm 9/25, 1978
Design Review Unit

Approval Recommended by J. Mark Davidson 8/28, 1978
Supervisor – Dam Safety Branch

INDEX OF SHEETS

SHEET 1	COVER SHEET
SHEET 2	TOPOGRAPHY
SHEET 3	TOPOGRAPHY
SHEET 4	TOPOGRAPHY, HIGH WATER TRAVERSE
SHEET 5	TYPICAL SECTIONS
SHEET 6	DAM PROFILE, SPILLWAY DISCHARGE CURVES, RESERVOIR CAPACITY DATA.
SHEET 7	VALVE AND OUTLET DETAILS
SHEET 8	OPERATING MECHANISM DETAILS
SHEET 9	STILLING BASIN AND ASSORTED DETAILS
SHEET 10	SPILLWAY PLAN & PROFILE
SHEETS 11-17	EMBANKMENT CROSS-SECTIONS

I hereby certify that these plans for the construction of the second enlargement of the Juniata Reservoir Dam, were prepared under my direct supervision for the owners thereof.

DAVID M. LEONARD REGISTERED 15170 PROFESSIONAL ENGINEER STATE OF COLORADO

David M. Leonard
Registered Engineer

I, James E. Wysocki, City Manager for the City of Grand Junction, Colorado, whose post office address is Grand Junction, Colorado, do hereby accept and approve these plans for the construction of the second enlargement of the Juniata Reservoir Dam.

James E. Wysocki
Owner

Approved on the 1st day of September, 1978.

C. J. Kuiper
State Engineer

By: Louis J. Davidson
Deputy

STATE OF COLORADO

Revised by ADDENDUM #1

C-661A

103858

NOTE:
Shaded area denotes limits of Filter Blanket.

CONNECTS TO EXISTING PURDY MESA PIPELINE ROAD

BORROW SITE "B"

PROPOSED RELOCATED ACCESS ROAD

HAUL ROAD "B"

OUTLET WORKS

Limits of riprap toe Type B

6" Drain Pipe

6" Drain Pipe Discharge to Outlet Works

8" Port Entry Drain Pipe

EXISTING CONTOURS

PROPOSED CONTOURS

EXISTING ACCESS ROAD

Permanent Control Movement Monitor

TOE DRAIN (FILTER BLANKET)

SPILLWAY CURVE DATA
Δ = 73°58'
T = 100.00
R = 133.11'
L.Ch. = 171.53'

NW CORNER SECTION 31 T.12S., R.97W., 6th P.M.

NE CORNER, SECTION 36 T.12S., R.98W., 6th P.M.

NW CORNER TRACT 39

220.44

S 44° 36' 30" E 691.82'

PROPOSED ACCESS ROAD RELOCATION

Sta. 16+75=POB HIGH WATER TRAVERSE

SPILLWAY

HIGH WATER LEVEL

HAUL ROAD "A"

BORROW SITE "A"

CITY LOT 16

CITY LOT 15

CITY LOT 10

CITY LOT 9

CITY LOT 8

CITY LOT 7

CITY LOT 12

TRACT 40

TRACT 39

B.L.M.

MATCH LINE - SHEET 3 (GRID LINE)

MATCH LINE SHEET 4 (GRID LINE)

NOTES:

1. Construction limits; Sta. 0+39 to Sta. 20+25.
2. Spillway ℄ Sta. 18+00; 10' wide, variable depth (4' min.), 2:1 sides.
3. Grout Curtain Construction from Sta. 0+39 to Sta. 2+00, and from Sta. 8+50 to Sta. 20+25. Initial spacing for grout holes will be 40 feet.
4. Piezometer Depths (Approximate):
   P#1 & P#2 = 80'
   P#3 & P#4 = 50'
5. Existing ground water monitoring structures, if any, unearthed during construction, shall be raised to proposed grade in a manner acceptable to the Engineer, and shall be considered as incidental to embankment construction.
6. Tree and brush removal below the high water line shall conform to the Specifications. Payment shall be considered incidental to the various bid items.

LEGEND:

- P#1 - Piezometer Location (Typ.)
- M#1 - Movement Monument (Typ.)

DAM AXIS CURVE DATA:

Δ = 75° 37' 05"
T = 250.0'
R = 322.19'
L = 425.22'
L.Ch. = 395.03'

N

SCALE 50 0 100 — 1" = 100'

C-661A

ARMSTRONG ENGINEERS
ENGINEERING-SURVEYING
CONCRETE & SOILS TESTING

SCALE	1" = 100'
DATE	4/25/78
DRAWN BY	BKJ
CHECKED BY	DML
DATE OF SURVEY	JAN 1978

JUNIATA RESERVOIR
TOPOGRAPHY, PLAN VIEW OF DAM
SHEET 2 of 17
JOB NUMBER 771511

Revised 7/20/78 D.M.L. ADDENDUM #1.
Revised 8/24/78 D.M.L.

MATCH LINE SHEET 2
(GRID LINE)

MATCH LINE-SHEET 4
(GRID LINE)

SHEET 2
SHEET 4

EXISTING ACCESS ROAD TO BE ABANDONED AFTER CONSTRUCTION

PROPOSED RELOCATED ACCESS ROAD (CONNECTS TO PURDY MESA PIPELINE ROAD)

HAUL ROAD "A"

BORROW SITE "A"

HIGH WATER LEVEL

ACCESS ROAD

ACCESS ROAD

CITY
LOT 16

CITY
LOT 15

CITY
LOT 14

TRACT 40

TRACT 41

CITY
LOT 17

CITY
LOT 18

CITY
LOT 19

NOTE:
The Contractor shall take suitable precautions to maintain the structural integrity of ditch crossings during construction.

N

SCALE 50 0 100
1" = 100'

C-661A

ARMSTRONG ENGINEERS
ENGINEERING-SURVEYING
CONCRETE & SOILS TESTING

SCALE	1" = 100'
DATE	4/25/78
DRAWN BY	BKJ
CHECKED BY	DML
DATE OF SURVEY	JAN. 1978

JUNIATA RESERVOIR
TOPOGRAPHY - BORROW SITE A

SHEET 3 of 17

JOB NUMBER 771311

Revised 6/9/78 D.M.L.

MATCH LINE SHEET 2
(GRID LINE)

(GRID LINE) MATCH LINE-SHEET 3

TRACT 41

CITY LOT 15

CITY LOT 14

CITY LOT 11

CITY LOT 10

TRACT 39

CITY LOT 7

CITY LOT 12

B.L.M.

B.L.M. LOT 14

CITY LOT 6

TRACT 38

CITY LOT 15

TRACT 38

HIGH WATER LEVEL

N

SCALE — 1" = 100'

TRAVERSE OF HIGH WATER LINE

FROM STATION 1 ON THE HIGH WATER LINE AT THE NORTHEAST CORNER OF THE DAM, WHICH BEARS S41°46'30"E., 697.82' FROM THE NE CORNER OF SECTION 36, T12S, R98W, 6th P.M.

STATION	COURSE	DISTANCE FT.
1 - 2	S68°40'58"E	72.07'
2 - 3	N85°19'46"E	261.35
3 - 4	N61°55'30"E	654.55
4 - 5	N37°07'18"E	78.72
5 - 6	N28°14'22"E	148.15
6 - 7	N 8°21'53"E	112.18
7 - 7A	N 2°52'07"E	253.57
7A - 8	N25°45'05"E	90.39
8 - 8A	N56°37'40"E	66.52
8A - 8B	S26°57'49"W	136.25
8B - 9	S17°30'14"E	186.02
9 - 10	S43°15'36"E	172.08
10 - 11	N86°18'18"E	99.31
11 - 12	N79°34'57"E	355.05
12 - 13	S24°32'48"W	29.58
13 - 14	S77°08'01"W	137.20
14 - 15	S60°48'49"W	147.75
15 - 16	S33°20'36"E	65.85
16 - 17	S53°34'43"W	135.43
17 - 18	S67°36'54"W	175.59
18 - 19	S38°59'30"W	279.61
19 - 20	S62°18'35"E	97.46
20 - 21	S40°46'00"E	102.21
21 - 22	S43°39'49"E	227.11
22 - 23	S11°38'02"W	116.24
23 - 24	S32°26'12"W	91.93
24 - 25	S52°11'22"E	180.07
25 - 26	S86°21'11"E	330.77

STATION	COURSE	DISTANCE FT.
26 - 27	S32°18'01"E	176.90
27 - 28	N89°29'16"E	413.84
28 - 29	S33°41'24"E	121.87
29 - 30	S24°20'39"E	199.65
30 - 31	S40°10'22"E	103.10
31 - 32	S31°40'35"W	375.57
32 - 33	S70°03'46"W	146.54
33 - 34	S67°37'43"W	89.04
34 - 35	S47°03'39"W	453.05
35 - 36	S 3°18'33"E	161.81
36 - 37	S22°09'53"E	121.24
37 - 38	S 2°28'44"W	67.51
38 - 39	S37°46'03"W	61.67
39 - 40	S41°46'56"E	225.36
40 - 41	S58°29'15"E	111.54
41 - 42	N89°04'17"E	130.19
42 - 43	S80°21'43"E	285.21
43 - 44	S 4°03'25"E	34.07
44 - 45	S47°06'37"W	176.86
45 - 46	S75°00'08"W	258.98
46 - 47	N79°42'22"W	465.26
47 - 48	S89°15'07"W	216.74
48 - 49	S63°44'27"W	156.66
49 - 50	N51°11'40"W	247.38
50 - 51	S69°32'36"W	353.45
51 - 52	S55°43'39"W	273.40
52 - 53	S89°11'57"W	150.24
53 - 54	N47°31'51"W	222.26

STATION	COURSE	DISTANCE FT.
54 - 55	N69°32'46"W	436.80
55 - 56	N70°08'07"W	276.66
56 - 57	N26°29'25"W	133.89
57 - 58	N61°13'46"E	495.41
58 - 59	N25°47'47"E	346.30
59 - 60	N14°09'12"W	161.59
60 - 61	N39°26'52"W	104.58
61 - 62	N64°13'57"W	123.71
62 - 63	N11°15'19"W	931.00
63 - 64	CURVE Δ=75°37'05" R=322.19	425.22
64 - 1	N63°51'46"E	284.19

Revised 6/9/78 D.M.L.

ARMSTRONG ENGINEERS
ENGINEERING-SURVEYING
CONCRETE & SOILS TESTING

JUNIATA RESERVOIR
TOPOGRAPHY

SCALE 1" = 100'
DATE 4/26/78
DRAWN BY A.K.J.
CHECKED BY D.M.L.
DATE OF SURVEY 5/10/78

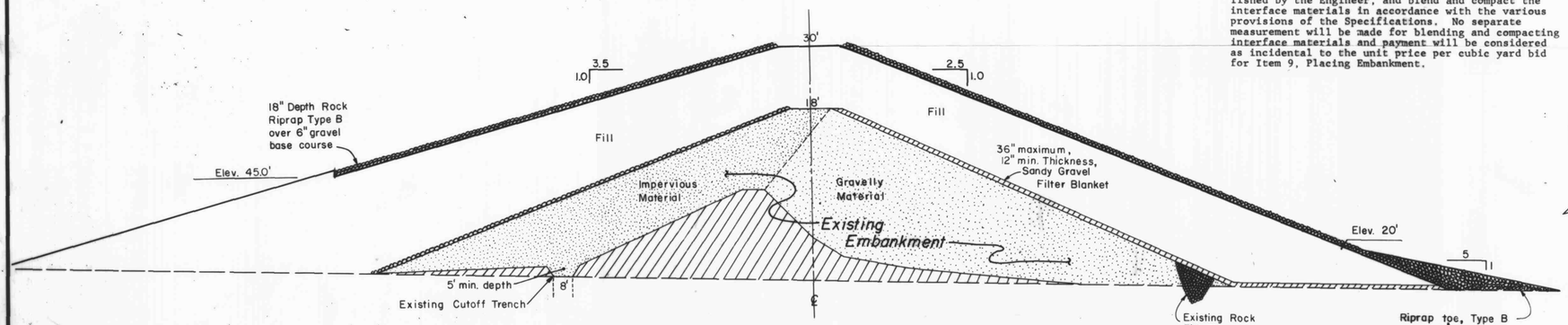
SHEET 4 of 17

JOB NUMBER 771511

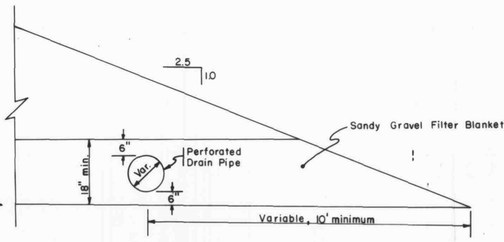
C-661 A

Sheets B

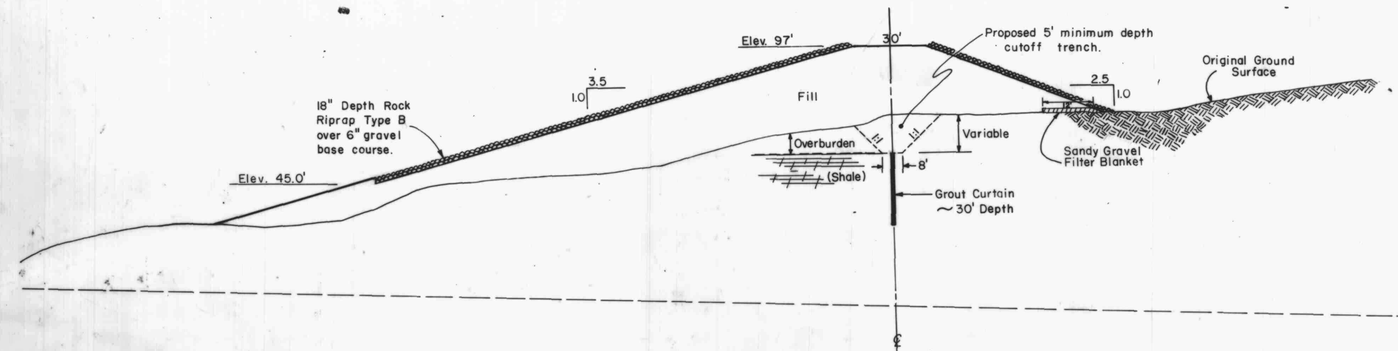
Note:
Blending of proposed embankment construction into existing embankment shall be accomplished by use of fill dozer on upstream face and on downstream face in areas not receiving filter blanket. As each lift is placed, the fill dozer shall excavate into the existing embankment, to the limits established by the Engineer, and blend and compact the interface materials in accordance with the various provisions of the Specifications. No separate measurement will be made for blending and compacting interface materials and payment will be considered as incidental to the unit price per cubic yard bid for Item 9, Placing Embankment.

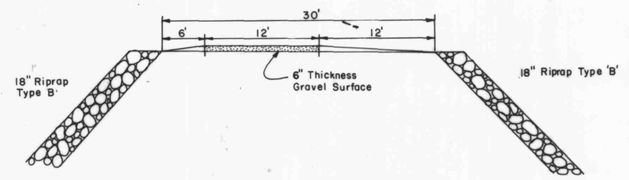


MAXIMUM SECTION
Scale — 1" = 30'

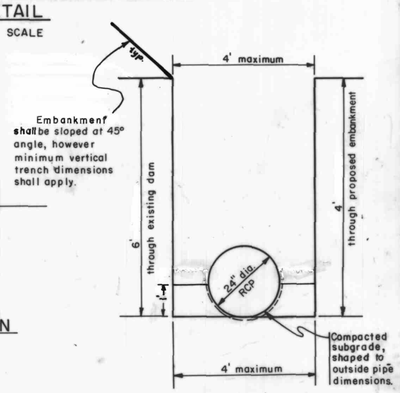


TYPICAL DRAIN PIPE INSTALLATION
NO SCALE
SEE SHEET 2 FOR LOCATION DETAILS





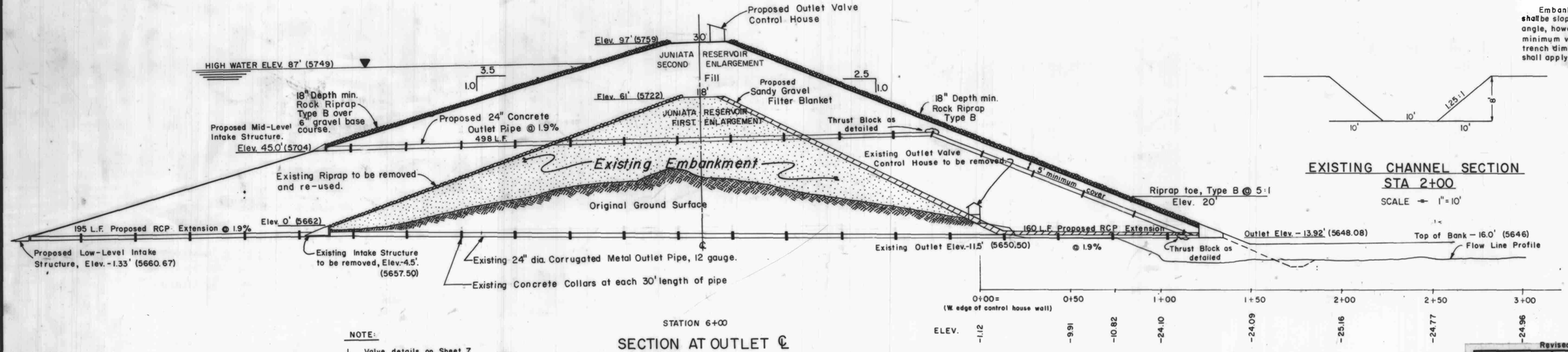
TYPICAL EMBANKMENT SURFACING DETAIL
NO SCALE



TYPICAL R.C.P. INSTALLATION DETAIL
SCALE — 1" = 2'

EXISTING CHANNEL SECTION STA 2+00
SCALE — 1" = 10'

TYPICAL GROUT & CUTOFF TRENCH SECTION – Sta. 1+00
Scale — 1" = 30'



STATION 6+00
SECTION AT OUTLET ℄
Scale — 1" = 30'

NOTE:
1. Valve details on Sheet 7.
2. Operating Mechanism details on Sheet 8.
3. Stilling Basin details Sheet 9.
4. Existing Corrugated Metal Pipe to be excavated to first joint, thoroughly cleaned, banded, and extended to the limits noted, with RCP as detailed in the Specifications. See sheet 9 for connection detail.
5. Joints for reinforced concrete pipe shall conform to ASTM Specification 361 latest revision, for R-4 Bell and Spigot Joint.

C-661 A

Revised 7/3/78 D.M.L. ADDENDUM #1.

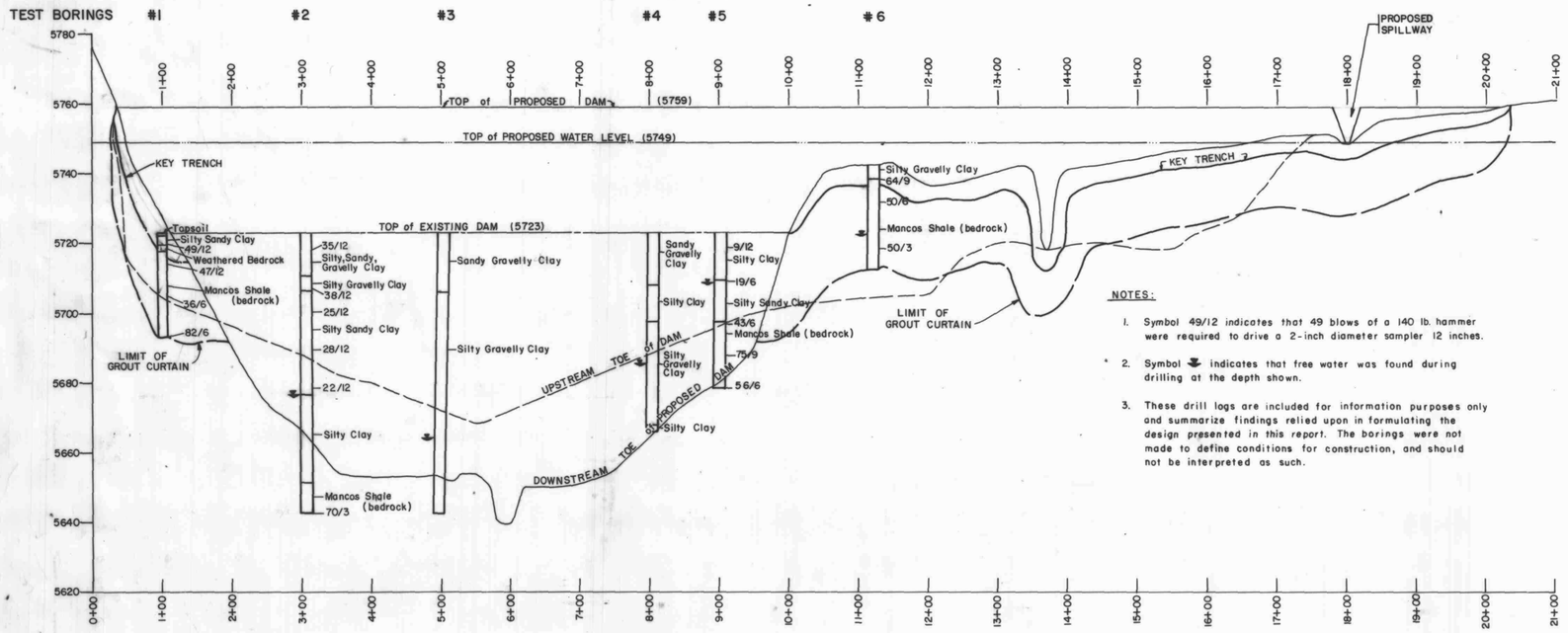
ARMSTRONG ENGINEERS
ENGINEERING-SURVEYING
CONCRETE & SOILS TESTING

SCALE	1"=30'
DATE	5/1/78
DRAWN BY	B.K.J.
CHECKED BY	D.M.L.
DATE OF SURVEY	JAN. 1978

JUNIATA RESERVOIR
TYPICAL SECTIONS

SHEET 5 of 17

JOB NUMBER 77151



NOTES:

1. Symbol 49/12 indicates that 49 blows of a 140 lb. hammer were required to drive a 2-inch diameter sampler 12 inches.
2. Symbol ▼ indicates that free water was found during drilling at the depth shown.
3. These drill logs are included for information purposes only and summarize findings relied upon in formulating the design presented in this report. The borings were not made to define conditions for construction, and should not be interpreted as such.

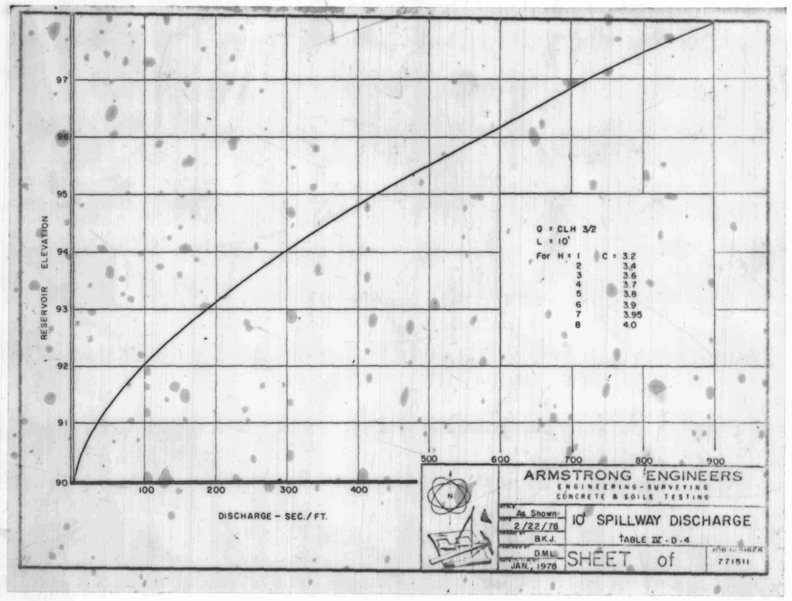
JUNIATA RESERVOIR PROFILE

SCALE:
HORIZ.—●—1" = 100'
VERT.—●—1" = 20'

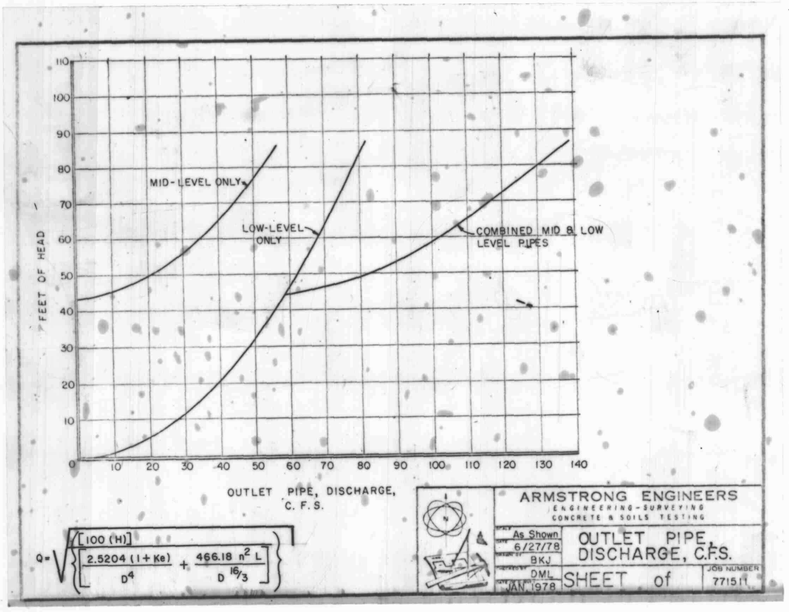
CAPACITY OF RESERVOIR

From the Amended Map of Juniata Reservoir Enlarged, Filing No. 19918, dated October 7, 1954, the area at depth 40.8 feet is approximately the same as depth 43 feet of the resurvey of May 10, 1978. Depth 43 feet is the water surface at the time of the resurvey and is the gage height above the outlet pipe as constructed in 1955. Capacity is assumed as 73,915,650 cu. ft. or 1,696.9 Acre Feet.

DEPTH Ft.	AREA SQ.FT.	CAPACITY CU.FT.	AREA ACRES	CAPACITY ACRE FT.	USGS ELEV.
43	3,596,400	73,915,650	82.56	1,696.9	5705
44	3,649,800	77,538,750	83.79	1,780.0	5706
45	3,703,200	81,215,250	85.01	1,864.4	5707
46	3,765,440	84,949,570	86.44	1,950.2	5708
47	3,827,680	88,746,130	87.86	2,037.3	5709
48	3,889,920	92,604,930	89.29	2,125.9	5710
49	3,952,160	96,525,970	90.71	2,215.9	5711
50	4,014,400	100,539,250	92.14	2,307.3	5712
51	4,074,400	104,553,650	93.52	2,400.1	5713
52	4,134,400	108,658,050	94.90	2,494.3	5714
53	4,194,400	112,822,450	96.28	2,589.9	5715
54	4,254,400	117,046,850	97.66	2,686.9	5716
55	4,314,400	121,381,250	99.04	2,785.3	5717
56	4,373,200	125,775,050	100.40	2,885.0	5718
57	4,432,000	130,077,650	101.74	2,986.1	5719
58	4,490,800	134,539,050	103.09	3,088.5	5720
59	4,549,600	139,059,250	104.44	3,192.2	5721
60	4,608,400	143,638,250	105.79	3,297.4	5722
61	4,669,000	148,376,950	107.18	3,403.8	5723
62	4,729,600	152,976,250	108.58	3,511.7	5724
63	4,790,200	157,736,150	109.97	3,621.0	5725
64	4,850,800	162,556,650	111.36	3,731.7	5726
65	4,911,400	167,437,750	112.75	3,843.7	5727
66	4,969,320	172,378,110	114.08	3,957.1	5728
67	5,027,240	177,376,390	115.41	4,071.9	5729
68	5,085,160	182,432,590	116.74	4,188.0	5730
69	5,143,080	187,546,710	118.07	4,305.4	5731
70	5,201,000	192,718,750	119.40	4,424.1	5732
71	5,254,640	197,946,570	120.63	4,544.1	5733
72	5,308,280	203,228,030	121.86	4,665.4	5734
73	5,361,920	208,563,130	123.09	4,787.8	5735
74	5,415,560	213,951,870	124.32	4,911.5	5736
75	5,469,200	219,394,250	125.56	5,036.5	5737
76	5,541,300	224,899,500	127.21	5,162.8	5738
77	5,613,400	230,476,850	128.86	5,290.9	5739
78	5,685,500	236,126,300	130.52	5,420.6	5740
79	5,757,600	241,847,850	132.18	5,551.9	5741
80	5,829,700	247,641,500	133.83	5,684.9	5742
81	5,895,500	253,504,100	135.34	5,819.5	5743
82	5,961,300	259,432,500	136.85	5,955.6	5744
83	6,027,100	265,426,700	138.36	6,093.2	5745
84	6,092,900	271,486,700	139.87	6,232.3	5746
85	6,158,700	277,612,500	141.38	6,373.0	5747
86	6,218,500	283,801,100	142.76	6,515.0	5748
87	6,278,300	290,049,500	144.13	6,658.5	5749
88	6,338,100	296,357,700	145.50	6,803.3	5750
89	6,397,900	302,725,700	146.88	6,959.5	5751
90	6,457,700	309,153,500	148.25	7,097.0	5752
91	6,526,800	315,645,750	149.84	7,246.2	5753
92	6,596,000	322,207,150	151.42	7,396.7	5754
93	6,665,200	328,837,750	153.01	7,584.9	5755
94	6,734,400	335,537,550	154.60	7,702.8	5756
95	6,803,600	342,306,550	156.19	7,858.1	5757
96	6,882,880	349,149,790	158.01	8,015.2	5758
97	6,962,160	356,072,310	159.83	8,174.2	5759



ARMSTRONG ENGINEERS
ENGINEERING-SURVEYING
CONCRETE & SOILS TESTING
SCALE: As Shown
DATE: 2/22/78
DRAWN BY: BKJ
CHECKED BY: DML
DATE OF SURVEY: JAN., 1978
10' SPILLWAY DISCHARGE
TABLE IV-D-4
SHEET of
JOB NUMBER 77151I



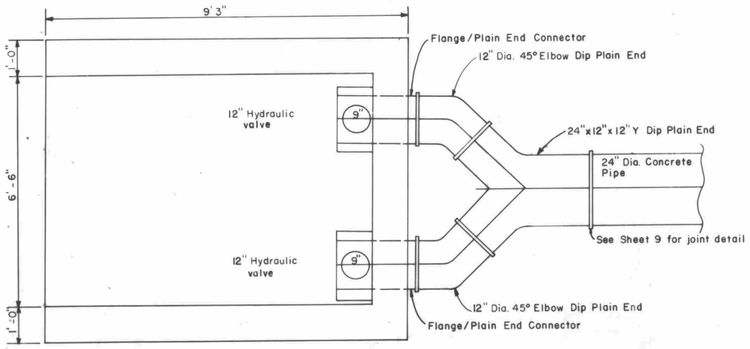
ARMSTRONG ENGINEERS
ENGINEERING-SURVEYING
CONCRETE & SOILS TESTING
SCALE: As Shown
DATE: 6/27/78
DRAWN BY: BKJ
CHECKED BY: DML
DATE OF SURVEY: JAN. 1978
OUTLET PIPE, DISCHARGE, C.F.S.
SHEET of
JOB NUMBER 77151I

C-661A

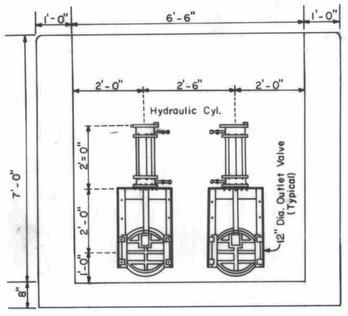
Revised 7/3/78 D.M.L. ADDENDUM #1

ARMSTRONG ENGINEERS
ENGINEERING-SURVEYING
CONCRETE & SOILS TESTING
SCALE: As Shown
DATE: 6/22/78
DRAWN BY: BKJ
CHECKED BY: DML
DATE OF SURVEY:
DAM PROFILE, SPILLWAY, DISCHARGE CURVE, CAPACITY DATA
SHEET 6 of 17
JOB NUMBER 77151I

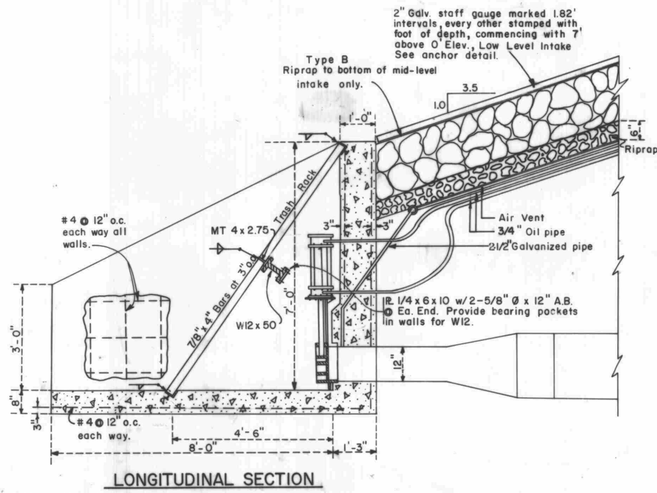
NOTE:
1. Valves to be supplied by Owner.
2. Ductile Iron Pipe Joints shall conform to the requirements of AWWA C-111 and AWWA C-600, latest revisions.
3. Entire Ductile Iron Pipe Assembly shall be encased in unformed concrete mass. Minimum concrete cover shall be 3 inches.



MID LEVEL AND LOW LEVEL
INTAKE STRUCTURE & PIPING
(2 Required)
SCALE — 1/2"=1'

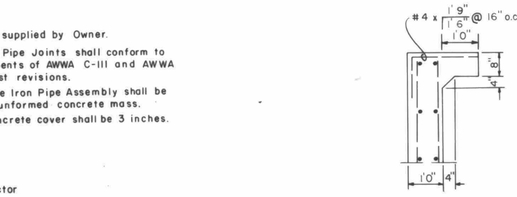


FRONT ELEVATION
NO SCALE

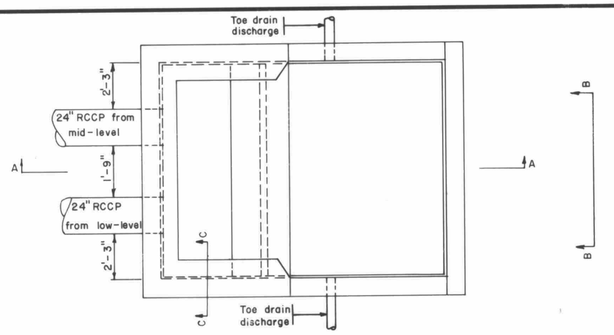


LONGITUDINAL SECTION
INTAKE STRUCTURE & PIPING (TYP.)
SCALE — 1/2"=1'

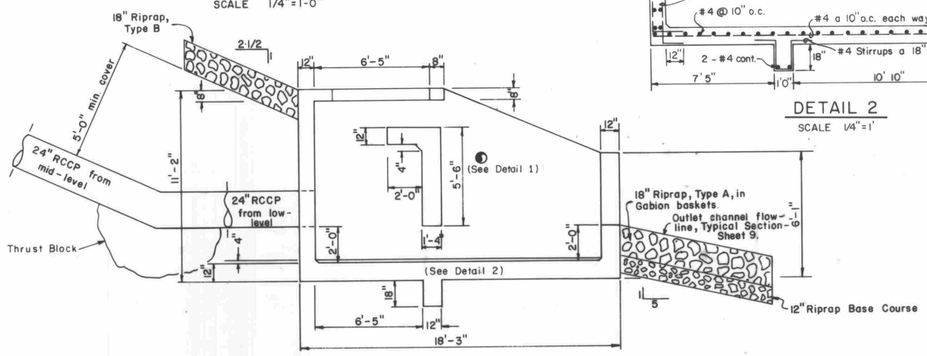
INTAKE PIPING NOTES
1. Fittings shall meet all requirements of AWWA C110 and AWWA C111.
2. Pipe shall meet all requirements of AWWA C106 and AWWA C111.
3. Payment for intake structure piping shall be considered as incidental to Item 29, Installing Gate Valves and Hydraulic Controls.



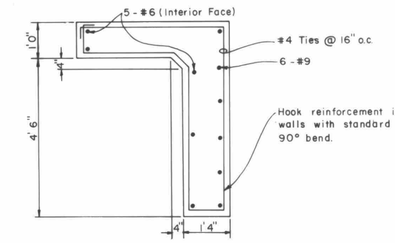
SECTION C-C
SCALE 1/2"=1'



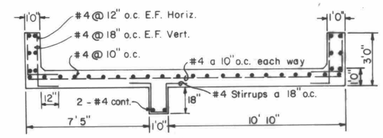
OUTLET STRUCTURE
SCALE 1/4"=1'-0"



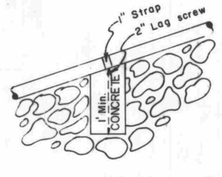
SECTION A-A
SCALE 1/4"=1'-0"



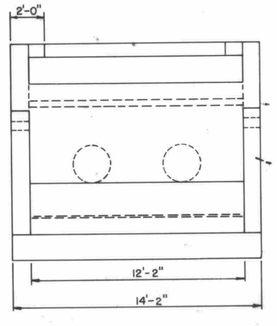
DETAIL 1
SCALE 1/2"=1'



DETAIL 2
SCALE 1/4"=1'

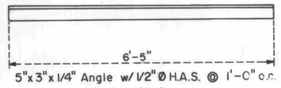


6"x6" STAFF GAUGE ANCHOR
(SPACED AT 10' INTERVALS)

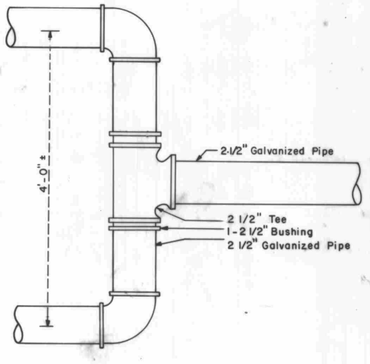


ELEVATION B
SCALE 1/4"=1'-0"

NOTE: Toe drains shall discharge into outlet structure.



TRASH RACK GRATE
(4 Required)
NO SCALE



DETAIL OF AIR VENT CONNECTION
AT VALVE STRUCTURE
(2 Required)
NO SCALE

C-661 A

Revised 7/19/78 DM.L. ADDENDUMS #1, #4.

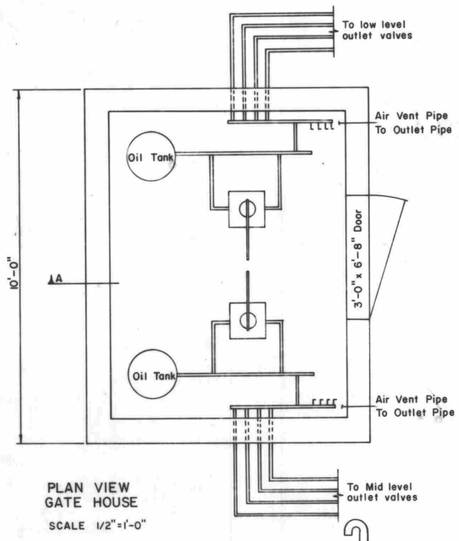
ARMSTRONG ENGINEERS
ENGINEERING-SURVEYING
CONCRETE & SOILS TESTING

SCALE	As Noted
DATE	4/25/78
DRAWN BY	B.K.J.
CHECKED BY	D.M.L.
DATE OF SURVEY	JAN. 1978

JUNIATA RESERVOIR
VALVE DETAILS
OUTLET DETAILS

JOB NUMBER 771511

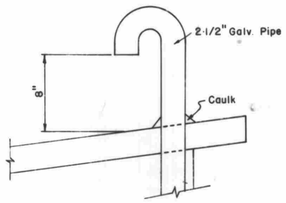
SHEET 7 of 17



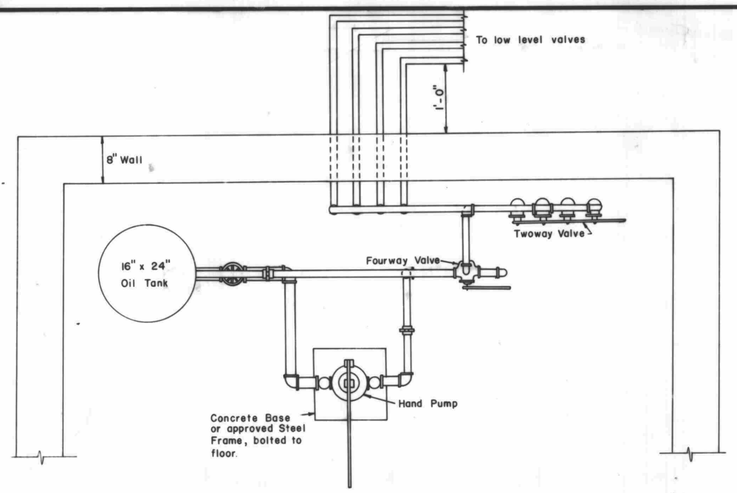
PLAN VIEW
GATE HOUSE
SCALE 1/2"=1'-0"

NOTES, GATE HOUSE

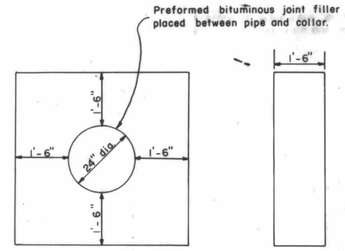
1. DOOR SHALL BE INDUSTRIAL QUALITY METAL COMPOSITION, 3'0" BY 6'8" AND SHALL HAVE INDUSTRIAL QUALITY LOCKABLE HANDLE ON EXTERIOR. WEATHER STRIPPING SHALL BE PROVIDED.
2. CONCRETE SHALL BE CONSTRUCTED IN ACCORDANCE WITH ACI 318-71 OR ACI 301-72. 28 DAY COMPRESSIVE STRENGTH SHALL BE 3000 PSI MIN.
3. AIR VENT OPENING AT ROOF SHALL BE SCREENED AS DIRECTED BY THE ENGINEER TO PREVENT ENTRY OF BIRDS OR RODENTS.
4. VALVE CONTROLS TO BE SUPPLIED BY OWNER.



AIR VENT DETAIL AT ROOF
(TYPICAL)
SCALE 1-1/2"=1'-0"



PLAN VIEW
LOW LEVEL OUTLET VALVE CONTROLS
SCALE 1"=1'-0"

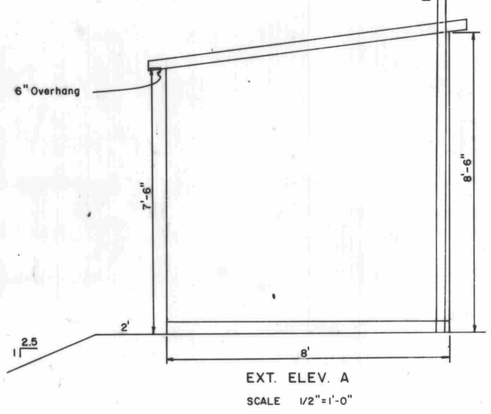


CUTOFF COLLER INSTALLATION

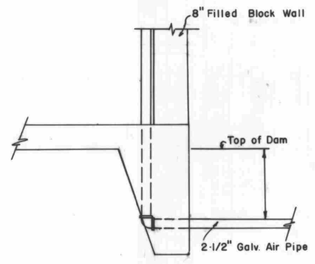
Excavate to neat lines, install pipe in prepared trench, install joint filler, form cutoff collar in trench, pour concrete to 1'-6" over pipe, remove forms, and backfill to specifications.

CONCRETE CUTOFF COLLAR (TYPICAL)
(TO BE PLACED AT 30' MAXIMUM SPACING)

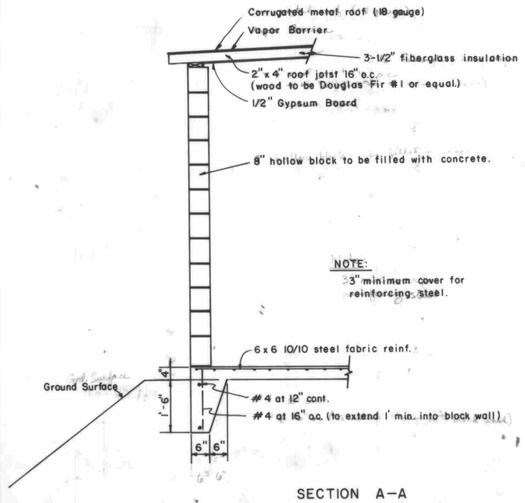
SCALE: 1"=2'



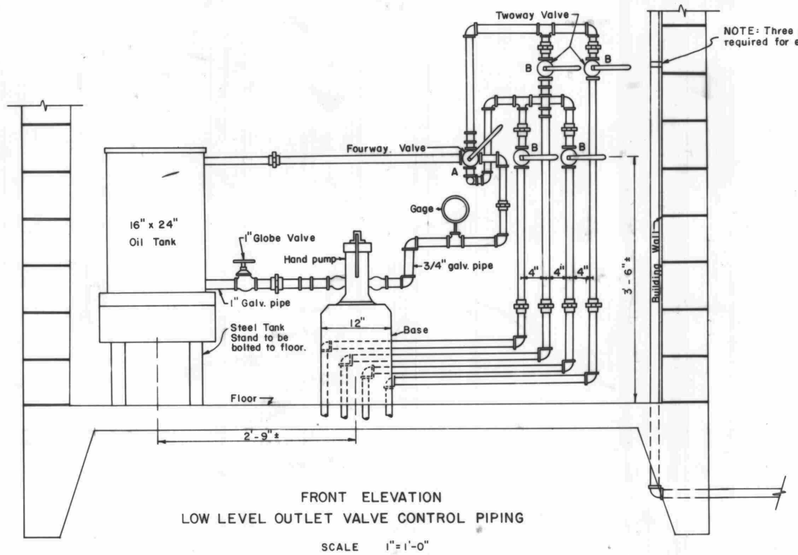
EXT. ELEV. A
SCALE 1/2"=1'-0"



AIR VENT DETAIL AT GATE HOUSE
(TYPICAL)
SCALE 1"=1'-0"



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

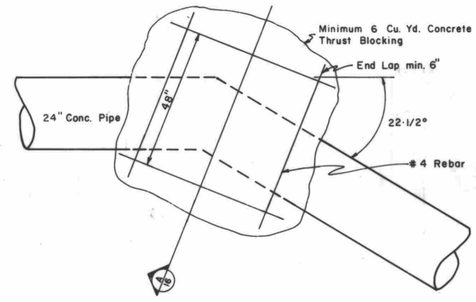


FRONT ELEVATION
LOW LEVEL OUTLET VALVE CONTROL PIPING
SCALE 1"=1'-0"

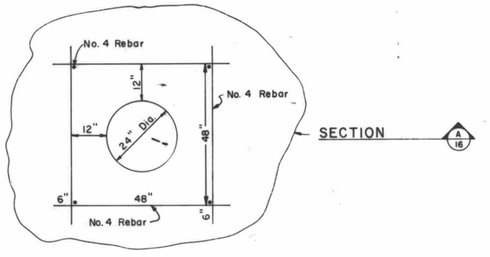
(Mid-Level Outlet Valves and Control Piping are mirror-image of low-level arrangement.)

INSTRUCTIONS FOR OPERATING GATE VALVES

1. All valves are to be kept closed when gate valves are not to be moved. Fourway Valve (A) and Twoway Valves (B) are closed when handles are horizontal.
2. To raise a gate valve move handle of fourway valve(A) to extreme upper position. To close gate valve move handle to extreme lower position.
3. Open both twoway valves (B) of gate valve to be moved, valve is open when handle is parallel to pipe.
4. Operate hand pump until desired position of gate valve is obtained then close all valves.
5. The oil tank should be kept between 2/3 and 3/4 full of oil.
6. Valves should be exercised periodically to insure operability.
7. Air vent must be unobstructed when operating valves.
8. Valves must be operated in fully opened or fully closed positions, only.



THRUST BLOCK (Typical)
SCALE 1/2"=1'-0"
(Bottom block is mirror image of top)



NOTE:
Thrust Blocking shall be installed after conduit has been constructed and backfilled to springline in accordance with the detailed specifications. Thrust Blocking at bottom bend shall be poured upon compacted fill simultaneously with conduit construction.
All reinforcing steel to be covered by 3" min. thickness P.C.C.
All concrete shall be constructed in accordance with A.C.I. 318-71 and A.C.I. 301-72.
Min. strength at 28 days shall be 3000 p.s.i.

C-661 A

Revised 7/3/78 D.M.L. ADDENDUM # 1

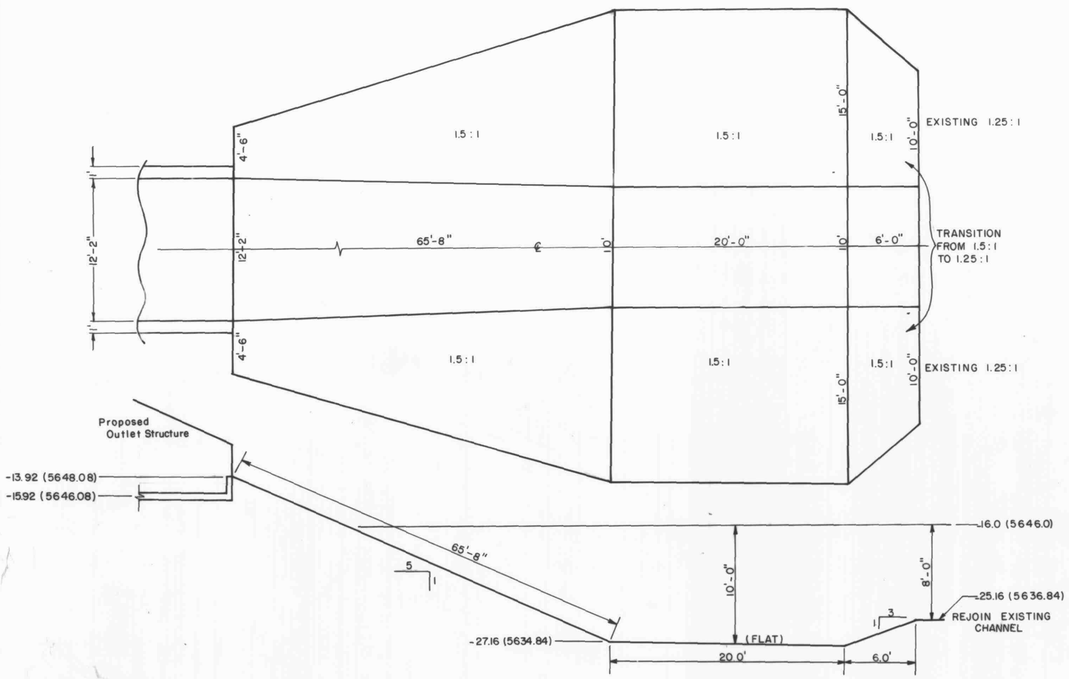
ARMSTRONG ENGINEERS
ENGINEERING-SURVEYING
CONCRETE & SOILS TESTING

SCALE AS SHOWN
DATE 4/19/78
DRAWN BY K.L.F.
CHECKED BY D.M.L.
DATE OF SURVEY N.R.

JUNIATA RESERVOIR
OPERATING MECHANISM DETAILS

SHEET 8 of 17

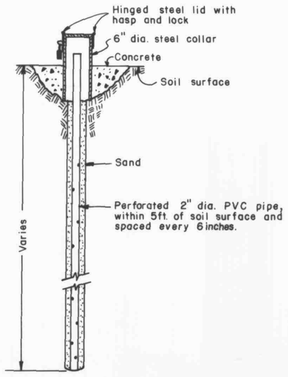
JOB NUMBER 771511



NOTE:
OUTLET CHANNEL AND STILLING BASIN TO BE SURFACED WITH 18" RIPRAP TYPE A, GABION, PLACED OVER 12" RIPRAP BASE COURSE.

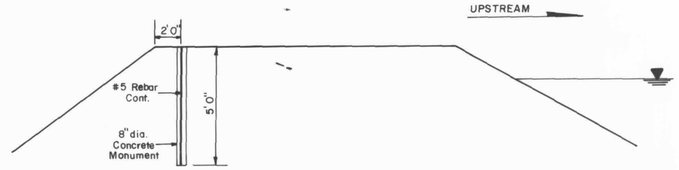
OUTLET CHANNEL STILLING BASIN

SCALE: 1"= 6'



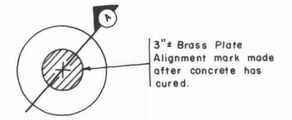
OPEN WELL PIEZOMETER SECTION-TYP.

NO SCALE



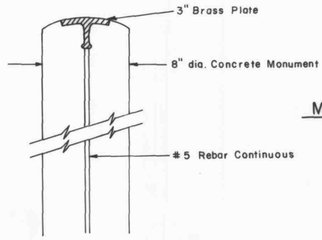
MOVEMENT MONUMENT-TYP.

9 Required — See Sheet 2 for locations
NO SCALE



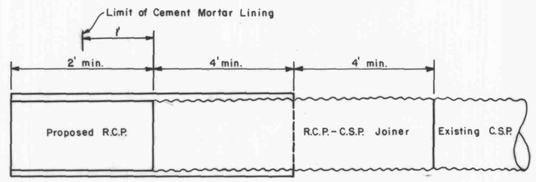
MOVEMENT MONUMENT-PLAN

NO SCALE



MOVEMENT MONUMENT-PROFILE SECTION 'A'

NO SCALE



RCP-C.S.P JOINER DETAIL

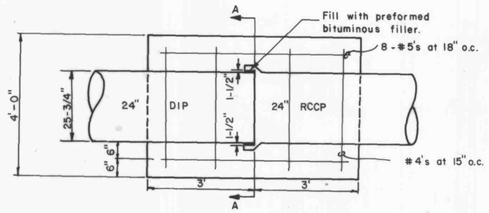
(NO SCALE)

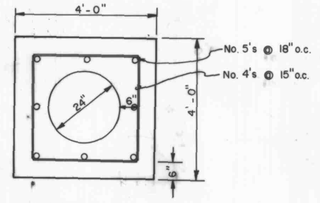
LEGEND

b	=	Gabion Cell Dimension
t	=	18" Thickness
w	=	Width, as detailed
l	=	Length, as detailed

NOTES:

1. If add-alternate, Cement Mortar Lining is elected, the following notes shall apply;
2. Prior to mortar lining operations, the Contractor shall inspect the existing CSP in order to locate holes in the CSP and voids under and around the CSP which have been caused by deterioration of the CSP. The Contractor shall fill all existing voids under and around bottom of CSP with cement mortar. This shall include a cement mortar fill in bottom of CSP as necessary to fill voids and provide support to bottom of CSP.
3. The Contractor shall take adequate steps to handle any run-off, due to rain storms or any other reason, during the curing period.
4. Unless otherwise specified, all incidental work and materials required in connection with providing access to the pipe, shall be considered as included in the contract price paid per linear foot for pipe lining (cement mortar) and no additional compensation will be allowed.





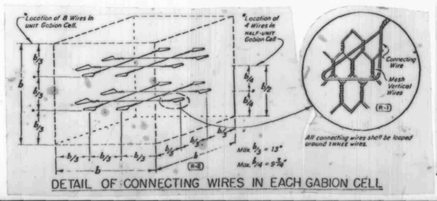
SECTION A-A

RCP-DIP JOINT DETAIL

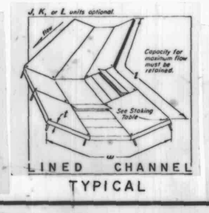
SCALE → 1"= 2'

GABION NOTES:

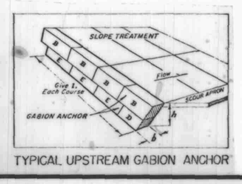
1. Slope Mattresses may be substituted for Gabion Baskets if approved by the Engineer. The Contractor shall submit material and construction details for approval.
2. Stakes shall be placed at connection points of units when possible. Stakes shall be straight and shall not be wired to the basket. Minimum stake penetration shall be three (3) feet. Stakes shall be installed at ten (10) feet o.c. spacing.
3. Slope Mattress or Gabion Cell thickness shall be eighteen (18) inches constructed over twelve (12) inches minimum thickness riprap base course.



DETAIL OF CONNECTING WIRES IN EACH GABION CELL



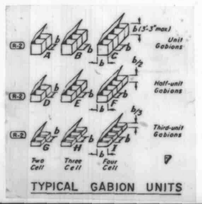
LINED CHANNEL TYPICAL



TYPICAL UPSTREAM GABION ANCHOR



TYPICAL SLOPE MATTRESS UNITS



TYPICAL GABION UNITS

REVISED 7/19/78 - DML. ADDENDUM #1

C-661 A

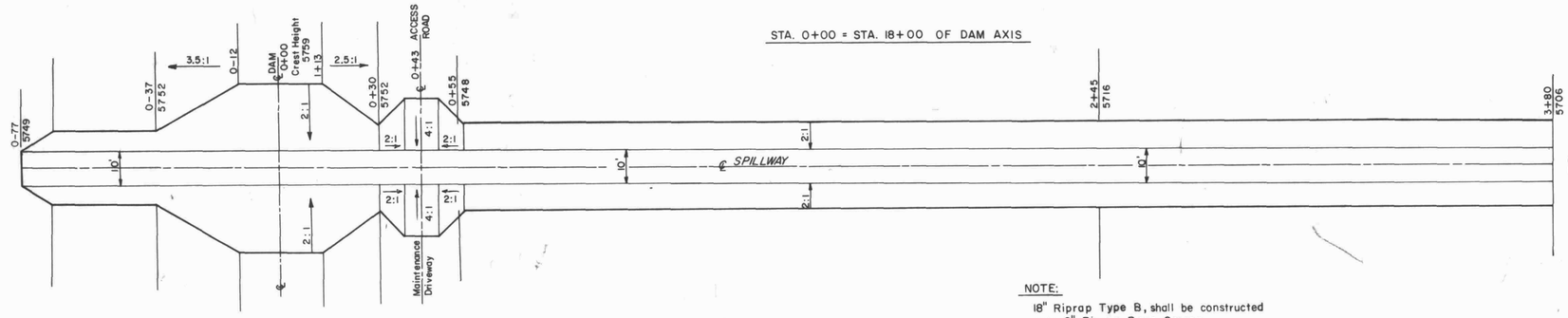
ARMSTRONG ENGINEERS
ENGINEERING-SURVEYING
CONCRETE & SOILS TESTING

SCALE	As Shown
DATE	May 9, 1978
DRAWN BY	BKJ
CHECKED BY	DML
DATE OF SURVEY	

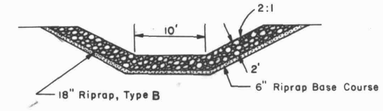
STILLING BASIN AND ASSORTED DETAILS

SHEET 9 of 17

JOB NUMBER 771511



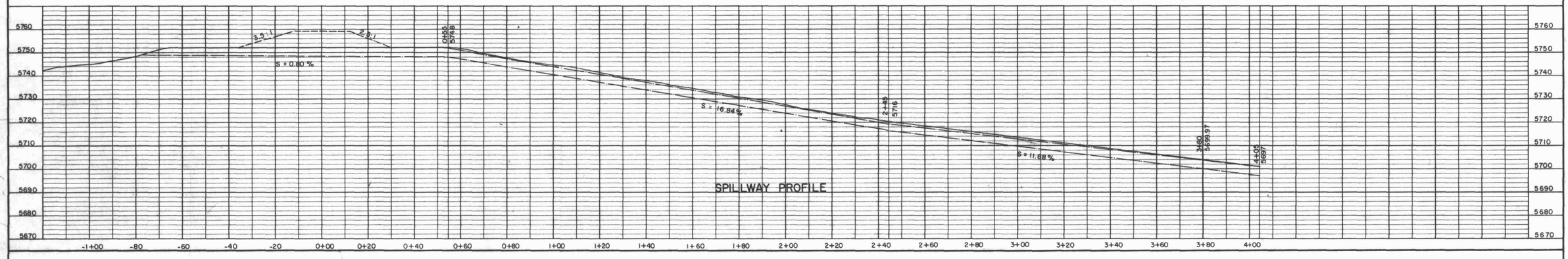
NOTE:
Riprap Type B to end at Sta. 5+76.

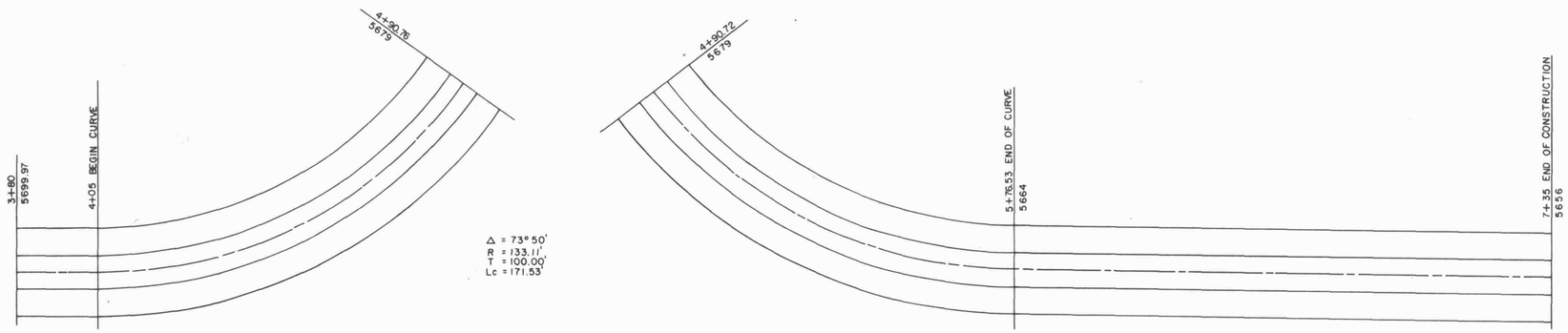


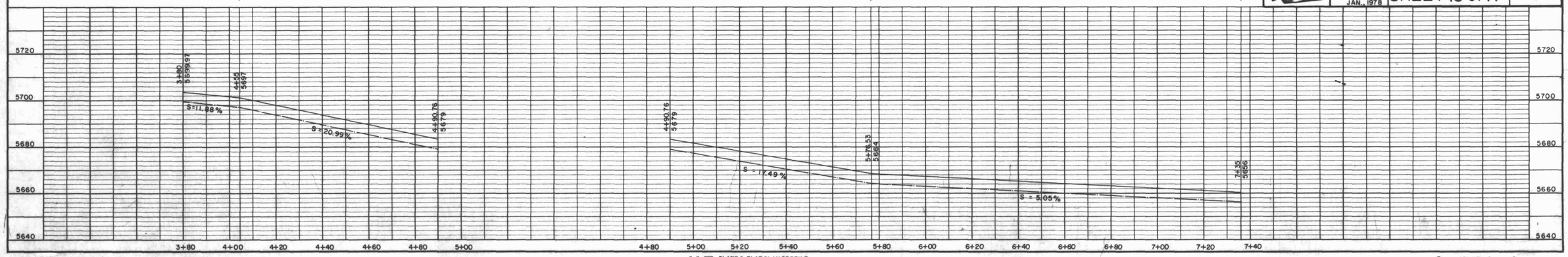
TYPICAL SECTION
SCALE — 1" = 10'

NOTE:
18" Riprap Type B, shall be constructed over 6" Riprap Base Course.

SCALE — 1" = 20'







ADDENDUM # 1.
Revised 7/3/78-D.M.L.

ARMSTRONG ENGINEERS
ENGINEERING-SURVEYING
CONCRETE & SOILS TESTING

SCALE	As Shown
DATE	5/3/78
DRAWN BY	BKJ
CHECKED BY	DML
DATE OF SURVEY	JAN., 1978

JUNIATA RESERVOIR
SPILLWAY PLAN - PROFILE
SHEET 10 of 17
JOB NUMBER 771511

PLAN — NOTE BOOK — No. — SUBMITTED — REVISED — GRADES CHECKED — R. W.'s NOTED — STRUCTURE DIMENSIONS CHECKED — ALIGNMENT CHECKED — BY — DATE

PROFILE — NOTE BOOK — No. — SUBMITTED — REVISED — GRADES CHECKED — R. W.'s NOTED — STRUCTURE DIMENSIONS CHECKED — BY — DATE

K+E PLATE 2, FLAT PLAN-PROFILE
KEUFFEL & ESSER CO.
46 7032 MADE IN U.S.A.

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JUNIATA RESERVOIR

771511 SHEET # 11

STA. 1+50

3,796 cu. yds.

STA. 1+00

6250 cu. yds.

STA. 0+50

289 cu. yds.

(0+38 = 100 AREA)

STA. 0+00

STA. 3+00

28,194 cu. yds.

STA. 2+50

24,130 cu. yds.

STA. 2+00

19,620 cu. yds.

5760 5750 5740 5730 5720 5710 5790 5780 5770 5760 5750 5740 5730 5720 5710 5780 5770 5760 5750 5740 5730 5720 5710

5770 5760 5750 5740 5730 5720 5710 5700 5690 5680 5670 5770 5760 5750 5740 5730 5720 5710 5700 5690 5680

300 250 200 150 100 50 0 50 100 150 200 250 300

300 250 200 150 100 50 0 50 100 150 200 250 300

ORIGINAL SURVEY	BY	DATE
SURVEYED		
PLOTTED		
TEMPLATE		
NOTE BOOK		
NO.		
AREAS CHECKED		

FINAL SURVEY	BY	DATE
SURVEYED		
PLOTTED		
TEMPLATE		
NOTE BOOK		
NO.		
AREAS CHECKED		

HIGHWAY FEDERAL AID SHEET

PLATE 3-FULL CROSS SECTION-FULL LINE

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JUNIATA RESERVOIR
771511 SHEET #12

STA. 4+50

34,417 cu. yds.

STA. 4+00

33,213 cu. yds.

STA. 3+50

31,557 yds.^{3}

STA. 6+00

37,990 yds.^{3}

STA. 5+50

37,620 yds.^{3}

STA. 5+00

36,657 yds.^{3}

300 250 200 150 100 50 0 50 100 150 200 250 300

5760 5750 5740 5730 5720 5710 5700 5690 5680 5670 5660 5650

5740 5730 5720 5710 5700 5690 5680 5670 5660 5650

FINAL SURVEY
SURVEYED BY
PLOTTED
TEMPLATE
AREAS
AREAS CHECKED
NOTE BOOK
NO.
DATE

ORIGINAL SURVEY
SURVEYED BY
PLOTTED
TEMPLATE
AREAS
AREAS CHECKED
NOTE BOOK
NO.
DATE

C-661 A

JUNIATA RESERVOIR
771511 SHEET #13

7+50

31,463 yds.^{3}

7+00

32,546 yds.^{3}

6+50

35,546 yds.^{3}

9+00

23,870 yds.^{3}

8+50

25,074 yds.^{3}

8+00

28,398 yds.^{3}

5760 5750 5740 5730 5720 5710 5700 5690 5680 5670 5660 5650 5640 5630 5620 5610 5600

300 250 200 150 100 50 0 50 100 150 200 250 300

FINAL SURVEY
SURVEYED
PLOTTED
TEMPLATE
NOTE BOOK
NO.
AREAS
AREAS CHECKED
BY
DATE

ORIGINAL SURVEY
SURVEYED
PLOTTED
TEMPLATE
NOTE BOOK
NO.
AREAS
AREAS CHECKED
BY
DATE

HIGHWAY FEDERAL AID SHEET
PLATE 3-FULL CROSS SECTION-FULL LINE
TELEDYNE
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JUNIATA RESERVOIR
771511 SHEET #14

FINAL SURVEY
SURVEYED
PLOTTED
TEMPLATE
AREAS
AREAS CHECKED
NOTE BOOK
NO.
BY
DATE

ORIGINAL SURVEY
SURVEYED
PLOTTED
TEMPLATE
AREAS
AREAS CHECKED
NOTE BOOK
NO.
BY
DATE

STA. 10+50
8491 yds.^{3}

STA. 10+00
13,712 yds.^{3}

STA. 9+50
20,500 yds.^{3}

STA. 12+00
4102 yds.^{3}

STA. 11+50
4787 yds.^{3}

STA. 11+00
6139 yds.^{3}

5760 5750 5740 5730 5720 5710 5700 5690 5680 5670 5660

300 250 200 150 100 50 0 50 100 150 200 250 300

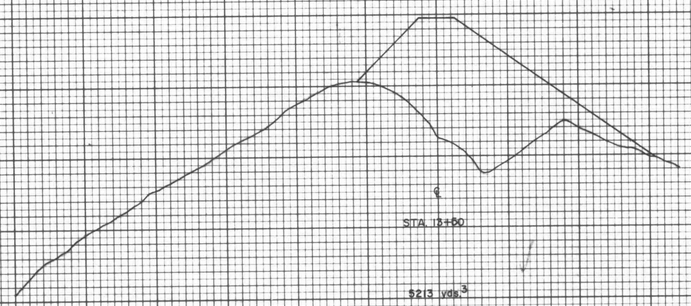
HIGHWAY FEDERAL AID SHEET
PLATE 3-FULL CROSS SECTION-FULL LINE
W.T. TELEDYNE
PRINTED IN U.S.A.

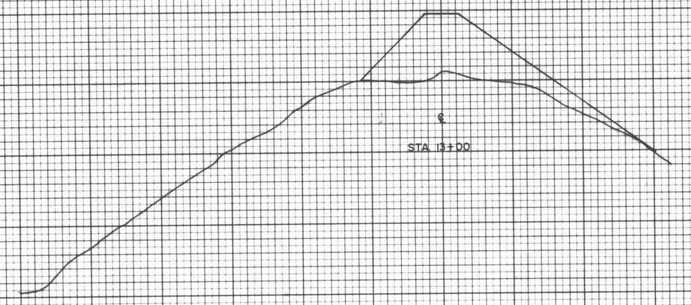
C-661 A

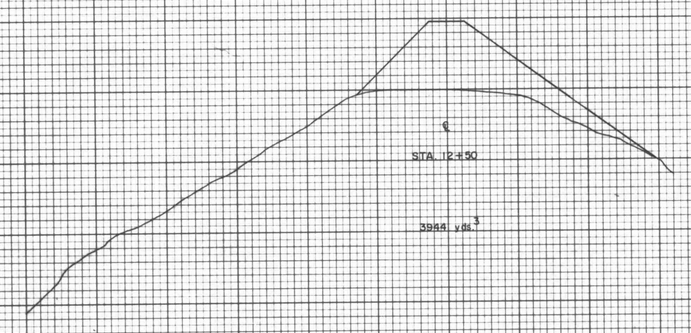
JUNIATA RESERVOIR
771511 SHEET # 15

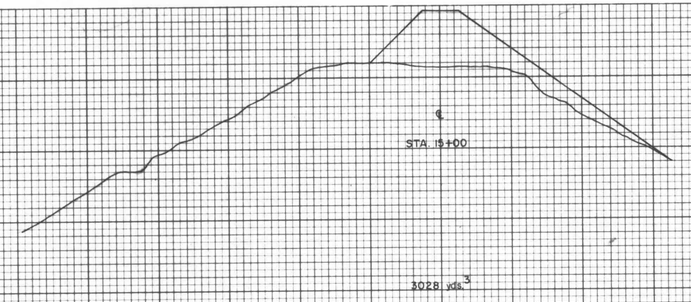
FINAL SURVEY
SURVEYED
PLOTTED
TEMPLATE
AREAS
AREAS CHECKED
NOTE BOOK
NO.
BY
DATE

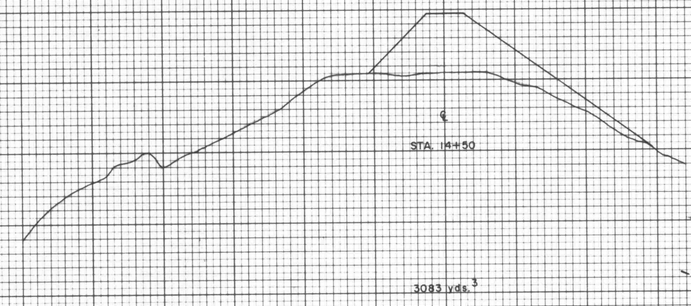
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TEMPLATE
AREAS
AREAS CHECKED
NOTE BOOK
NO.
BY
DATE

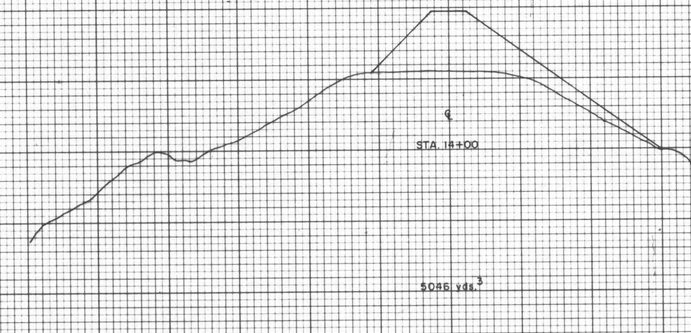












5760 5750 5740 5730 5720 5710 5700 5690 5680 5670

300 250 200 150 100 50 0 50 100 150 200 250 300

HIGHWAY FEDERAL AID SHEET
PLATE 3-FULL CROSS SECTION-FULL LINE
TELEDYNE
PRINTED IN U.S.A.

C-661A

JUNIATA RESERVOIR
771511 SHEET # 16

STA. 16+50

1963 yds.^{3}

STA. 16+00

2278 yds.^{3}

STA. 15+50

2731 yds.^{3}

STA. 18+00

565 yds.^{3}

STA. 17+50

944 yds.^{3}

STA. 17+00

1546 yds.^{3}

5760
5750
5740
5730
5720
5710
5700
5690

300 250 200 150 100 50 0 50 100 150 200 250 300

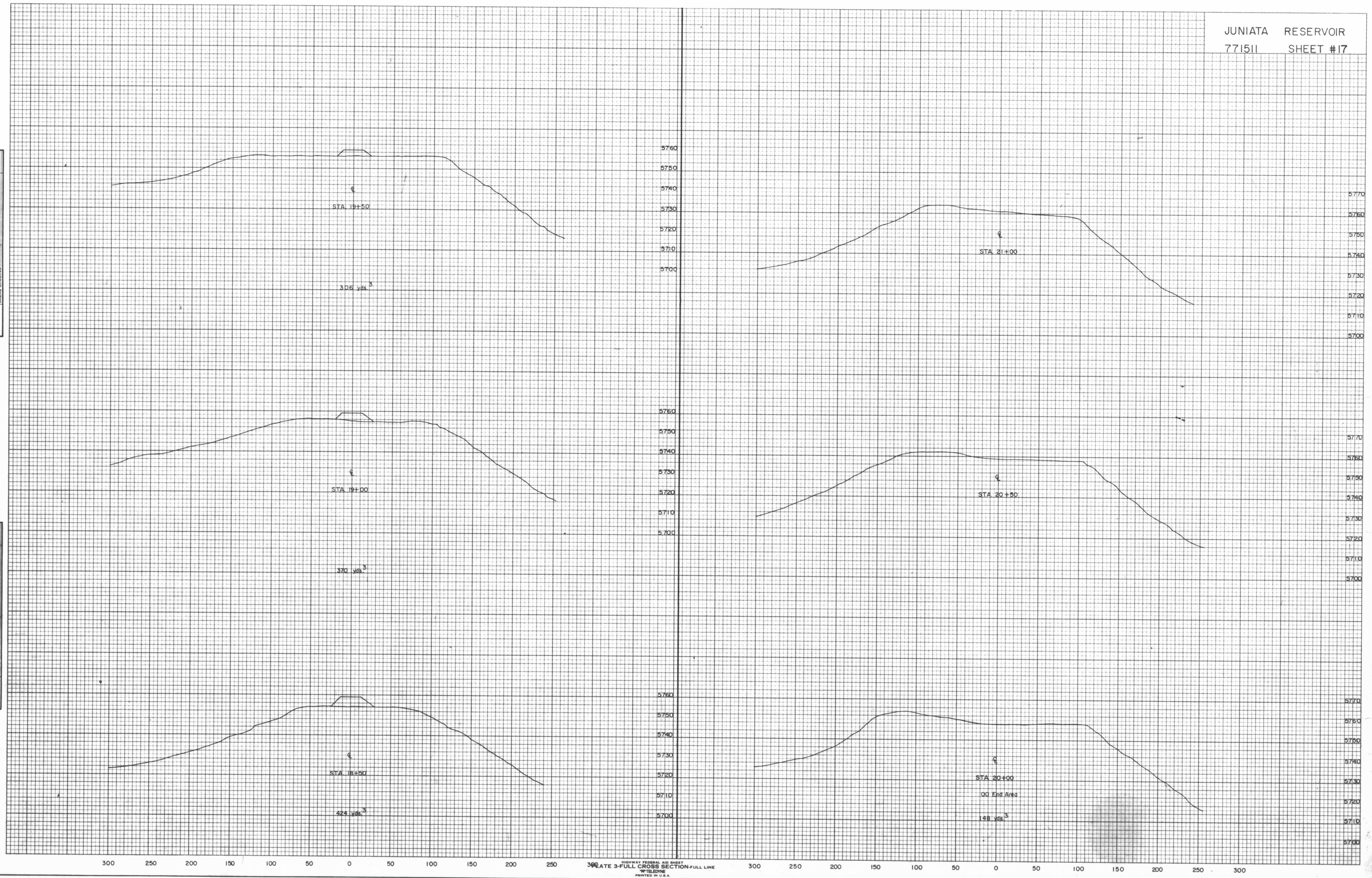
HIGHWAY FEDERAL AID SHEET
PLATE 3-FULL CROSS SECTION-FULL LINE
TELEDYNE
PRINTED IN U.S.A.

C-661 A

JUNIATA RESERVOIR
771511 SHEET #17

FINAL SURVEY
NOTE BOOK NO.
SURVEYED
PLOTTED
TEMPLATE
AREAS
AREAS CHECKED
BY
DATE

ORIGINAL SURVEY
NOTE BOOK NO.
SURVEYED
PLOTTED
TEMPLATE
AREAS
AREAS CHECKED
BY
DATE



J05-158-01

Drawings
For

North Fork Diversion Pipeline
and
Juniata Outlet Works Modifications

City of Grand Junction, Colorado

1986

Job No's. 73-75-50 / 73-77-50

Water Division 4, Water District 42
Mesa County, Colorado

HDR Infrastructure, Inc.
A Centerra Company

CONSTRUCTION DRAWINGS OF RECORD FOR
NORTH FORK DIVERSION PIPELINE PROJECT
Kenneth Beatty
REGISTERED ENGINEER, BANNER ASSOCIATES INC.

I hereby certify that these plans for the repair of the Juniata Dam Outlet Works were prepared under my direct supervision for the owners thereof.
James R Roberts
Registered Engineer, HDR Infrastructure, Inc.

I, on behalf of the City of Grand Junction, owner, hereby accept and approve these plans for the repairs thereto of the Juniata Dam Outlet Works.
Gregory O. Tramon 11/21/86
Owner's Agent Date

Accepted for filing 2/26/90

C-661B

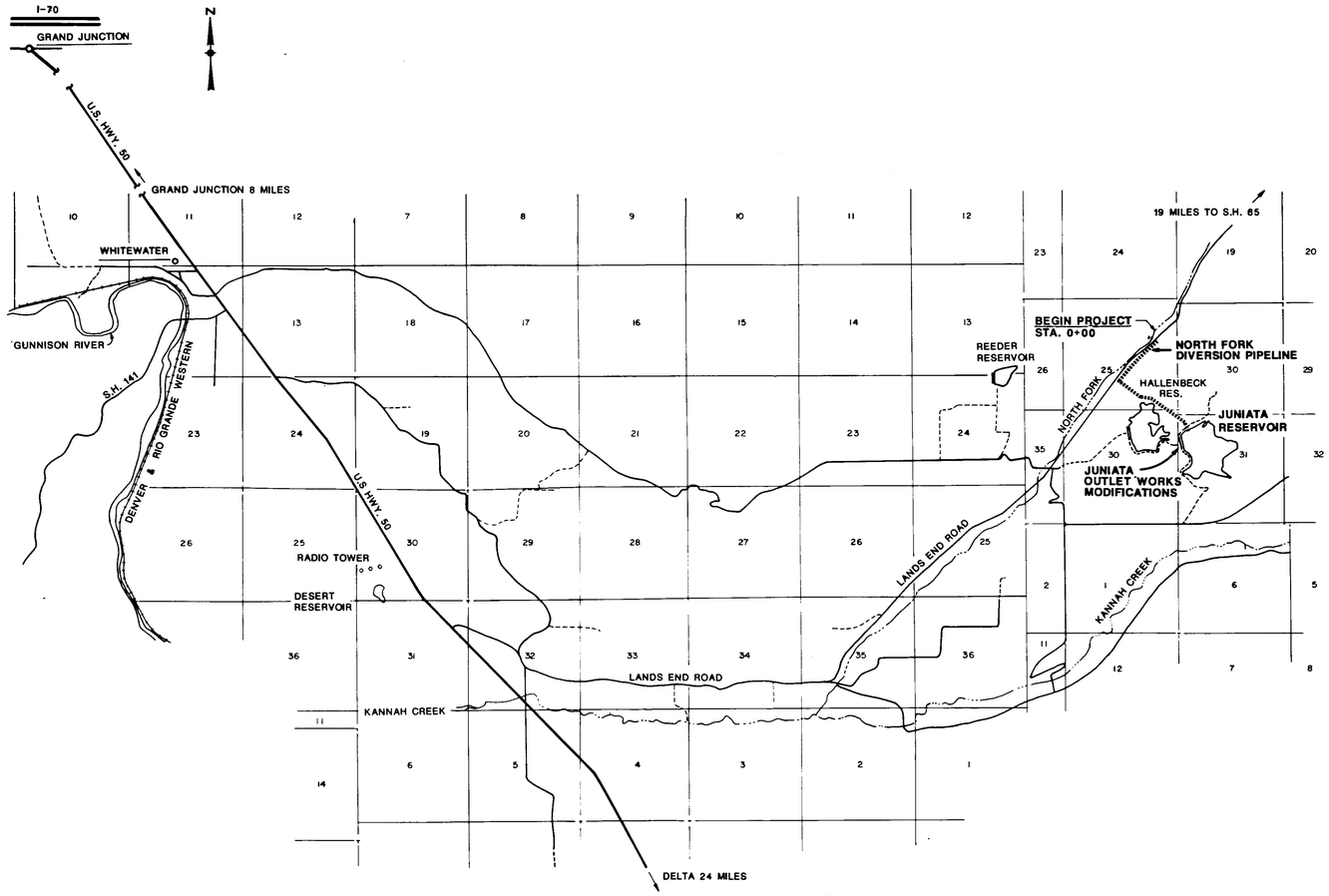
STATE OF COLORADO
DIVISION OF WATER RESOURCES
Plans Reviewed by _____ 20 Jan, 1987
Design Review Unit
Approval Recommended by _____ 22, 1987
Supervisor — Dam Safety Branch

Approved on the 23rd day of January, 1987.
Jeris A. Danielson
State Engineer
By: _____
Deputy

C-661B

103295

J05-158-02



VICINITY MAP

NO SCALE

DRAWING INDEX

1. COVER SHEET
2. VICINITY MAP / DRAWING INDEX
~~3. PLAN / PROFILE~~
~~4. PLAN / PROFILE~~
~~5. PLAN / PROFILE~~
6. PLAN / PROFILE
7. DETAILS
8. DETAILS

SCHEDULE I

SCHEDULE II (Not In Contract)

9. OUTLET WORKS PLAN & RESERVOIR CAPACITIES
10 MISCELLANEOUS MODIFICATIONS

HDR Infrastructure, Inc.
A Centerra Company

North Fork Diversion Pipeline

City of Grand Junction

Vicinity Map / Drawing Index

Project Number: 73-77-50

Date: October, 1986

Project Manager: J. Roberts

Design: J. Roberts

Architectural:

Structural: C. Nyman

Mechanical:

Electrical:

Drawn By: R. Bredsnajder

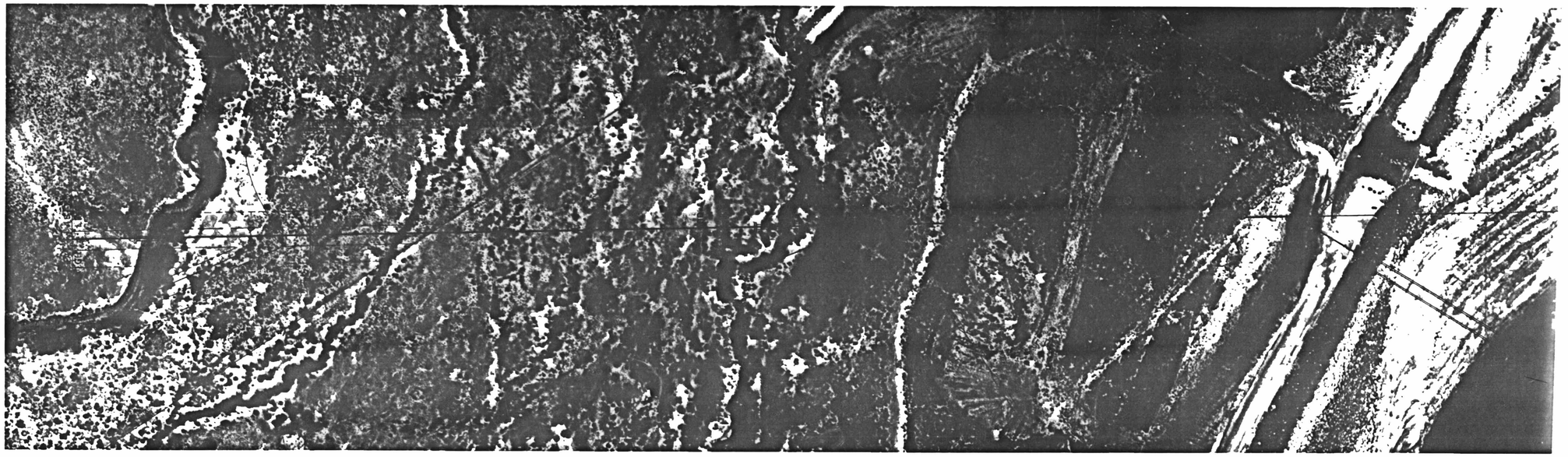
Revisions:

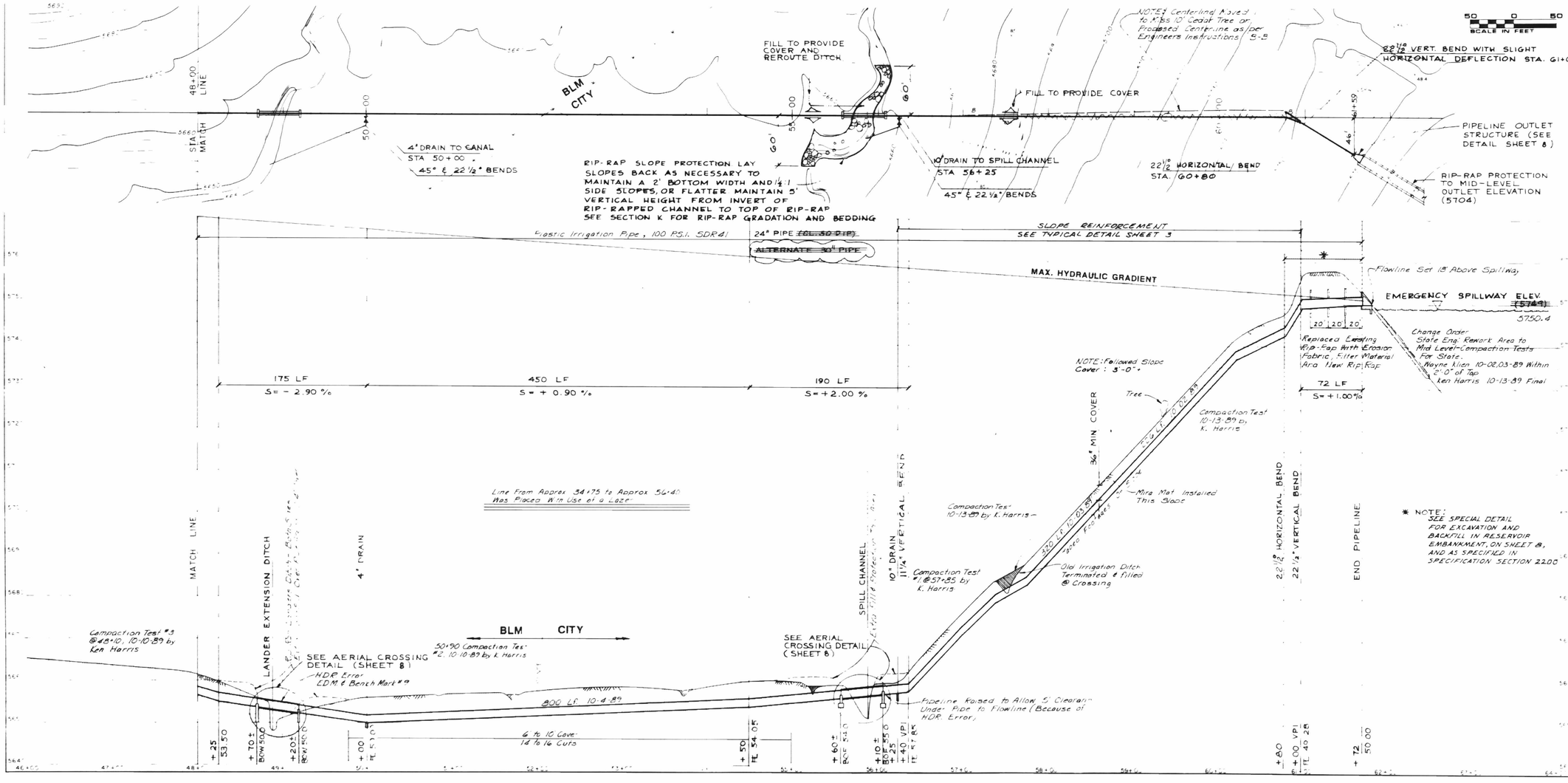
C-661B

JAMES R. ROBERTS REGISTERED ENGINEER STATE OF COLORADO

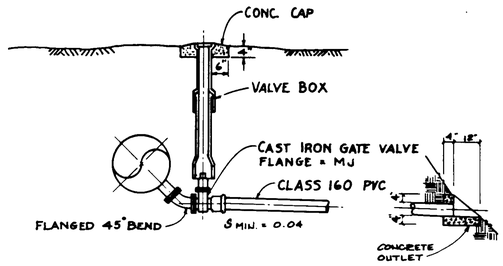
Sheet Number: 2

J05-158-06

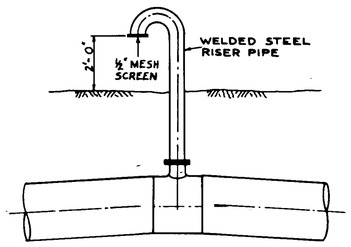



SEE SECTION K FOR RIP-RAP GRADATION AND BEDDING
Plastic Irrigation Pipe, 100 P.S.I. SDR 21
24" PIPE (EL. 50.0 I.E.)
ALTERNATE 30" PIPE
MAX. HYDRAULIC GRADIENT
SLOPE REINFORCEMENT SEE TYPICAL DETAIL SHEET 3
175 LF S = - 2.90 %
450 LF S = + 0.90 %
190 LF S = + 2.00 %
72 LF S = + 1.00 %
Flowline Set 1ft Above Spillway
EMERGENCY SPILLWAY ELEV. (5749) 5750.4
20 20 20
Replaced Eroding R/P-Rap With Erosion Fabric, Filter Material And New Rip Rap
Change Order State Eng. Rework Area to Mid Level-Compaction Tests for State, Wayne Klien 10-02,03-89 Within 2'-0" of Top Ken Harris 10-13-89 Final
NOTE: Followed Slope Cover: 3'-0"
Tree
Compaction Test 10-13-89 by K. Harris
36" MIN COVER
Mira Mat Installed This Slope
Compaction Test 10-13-89 by K. Harris
Compaction Test #1 @ 57+85 by K. Harris
Old Irrigation Ditch Terminated & Filled @ Crossing
10" DRAIN
11¼° VERTICAL BEND
SPILL CHANNEL
2.2½° HORIZONTAL BEND
22½° VERTICAL BEND
END PIPELINE
MATCH LINE
LANDER EXTENSION DITCH
4" DRAIN
Line From Approx 34+75 to Approx 56+40 Was Placed With Use of a Lazr
BLM CITY
50+90 Compaction Test #2, 10-10-89 By K. Harris
Compaction Test #3 @ 48+10, 10-10-89 by Ken Harris
SEE AERIAL CROSSING DETAIL (SHEET 8)
HDR Error LDM & Bench Mark #9
800 LF 10-4-89
6' to 10' Cover 14' to 16' Cuts
SEE AERIAL CROSSING DETAIL (SHEET 8)
Pipeline Raised to Allow 5' Clearance Under Pipe to Flowline (Because of HDR Error)
+25 53.50
+70± BOW 50.0
+20± BOW 50.0
+00 I.E. 51.0
+50 I.E. 54.05
+60± BOT. 54.0
+10± BOT. 55.0
+40 VPI I.E. 47.85
+80
+00 VPI I.E. 40.28
+72 50.00
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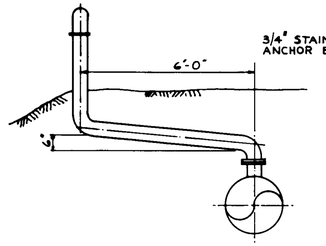
J05-158-08



TYPICAL DRAIN DETAIL
NTS

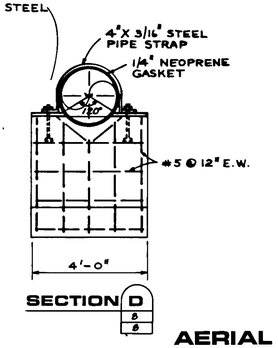


TYPICAL AIR VENT DETAIL
NTS

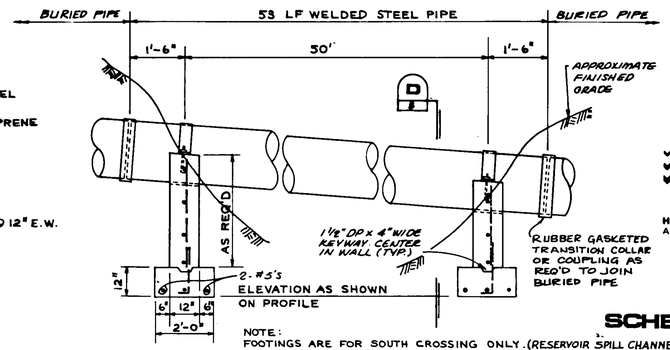


AIR VENT OFFSET DETAIL
NTS

OFFSET 6' TO UPHILL SIDE OF ROAD AT STATION 3+25
OFFSET 6' TO DOWNHILL SIDE OF ROAD AT STATION 7+50



SECTION D
D



NOTE:
FOOTINGS ARE FOR SOUTH CROSSING ONLY. (RESERVOIR SPILL CHANNEL)
WALL BEARS DIRECTLY ON SOIL AT NORTH CROSSING. (LANDER EXTENSION DITCH)

AERIAL CROSSING DETAIL
1/2" = 1'-0"

SCALE : 2"=1'-0"

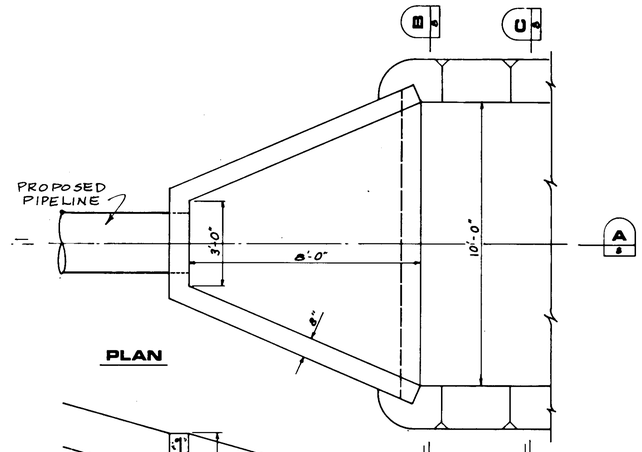
SCHEDULE I.

90° STD. HOOK LENGTH		
#'S & D. 90° STD. HOOK LENGTH		
#'S / SIZE	4000 PSI	
#3	6"	
4	8"	
5	10"	
6	1'-0"	
7	1'-2"	
8	1'-4"	
9	1'-7"	
10	1'-10"	
11	2'-0"	

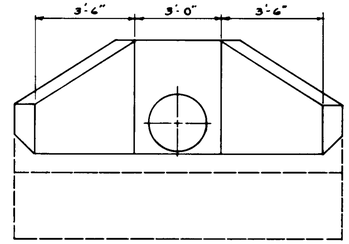
MIN. SPLICE LAP LENGTH		
#'S / SIZE	4000 PSI	
	VERTICAL	OTHER *
#3	1'-8"	1'-8"
4	1'-8"	2'-5"
5	2'-2"	3'-0"
6	2'-7"	3'-7"
7	3'-3"	4'-6"
8	4'-3"	5'-11"
9	5'-5"	7'-6"
10	7'-0"	9'-7"
11	8'-5"	11'-9"

REBAR DETAIL
NO SCALE

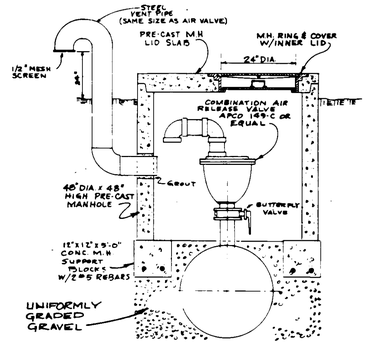
REBAR NOTES:
*1. ALL REBAR SPLICE LAP LENGTHS SHALL BE PROVIDED AS SHOWN UNDER HEADING MARKED "OTHER" UNLESS SPLICED BARS ARE VERTICAL BARS.
2. COLUMN BAR SPLICE LAP LENGTHS SHALL BE PROVIDED AS SHOWN UNDER HEADING MARKED "VERTICAL" UNLESS NOTED OTHERWISE ON DRAWINGS.
3. ALL SPLICES SHALL BE CONTACT SPLICES & WIRED TOGETHER.



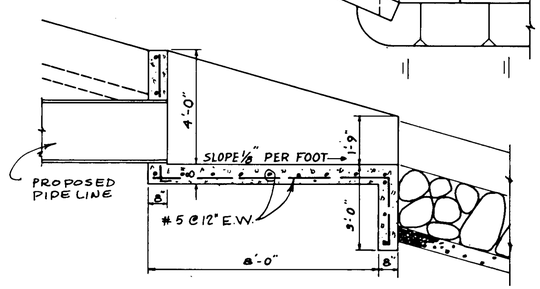
PLAN



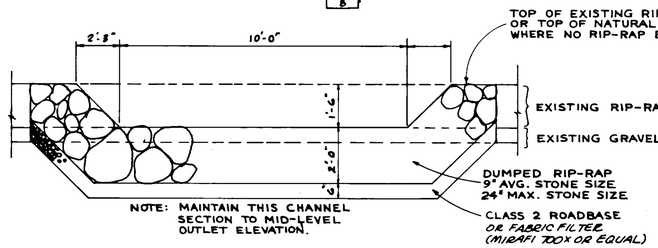
SECTION A
A



AIR RELEASE MANHOLE
NO SCALE



SECTION B
B

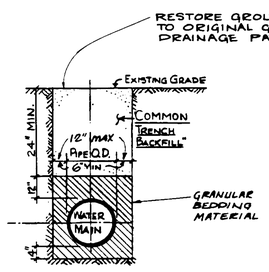


NOTE: MAINTAIN THIS CHANNEL SECTION TO MID-LEVEL OUTLET ELEVATION.

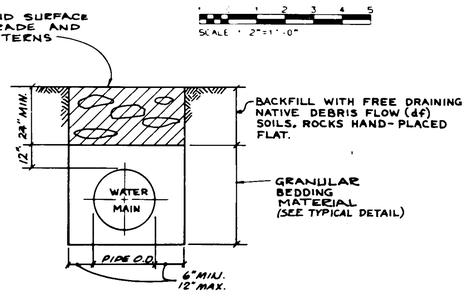
SECTION C
C

PIPELINE OUTLET STRUCTURE
SCALE: 1/2" = 1'-0"

SCALE : 2"=1'-0"

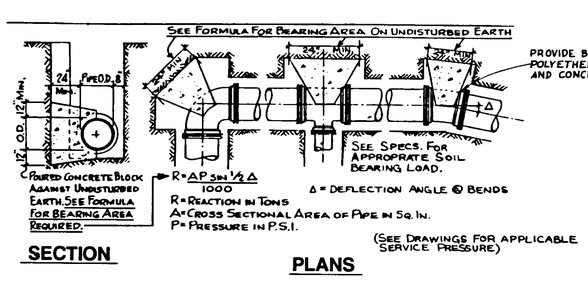


TYPICAL PIPE BEDDING DETAIL
NO SCALE



SPECIAL TRENCH BACKFILL
NO SCALE

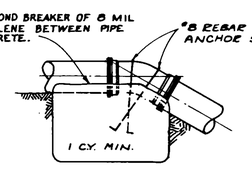
STA 32+75 to 35+00, 43+50 to 44+25



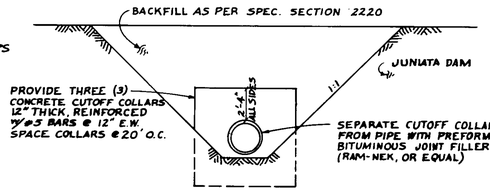
SECTION

PLANS

TYPICAL THRUST BLOCK DETAILS
NO SCALE



VERTICAL BEND
NO SCALE



INSTALLATION OF DIVERSION PIPELINE THROUGH JUANIATA DAM EMBACKMENT

HDR Infrastructure, Inc.
A Centerra Company

North Fork Diversion Pipeline

City of Grand Junction

DETAILS

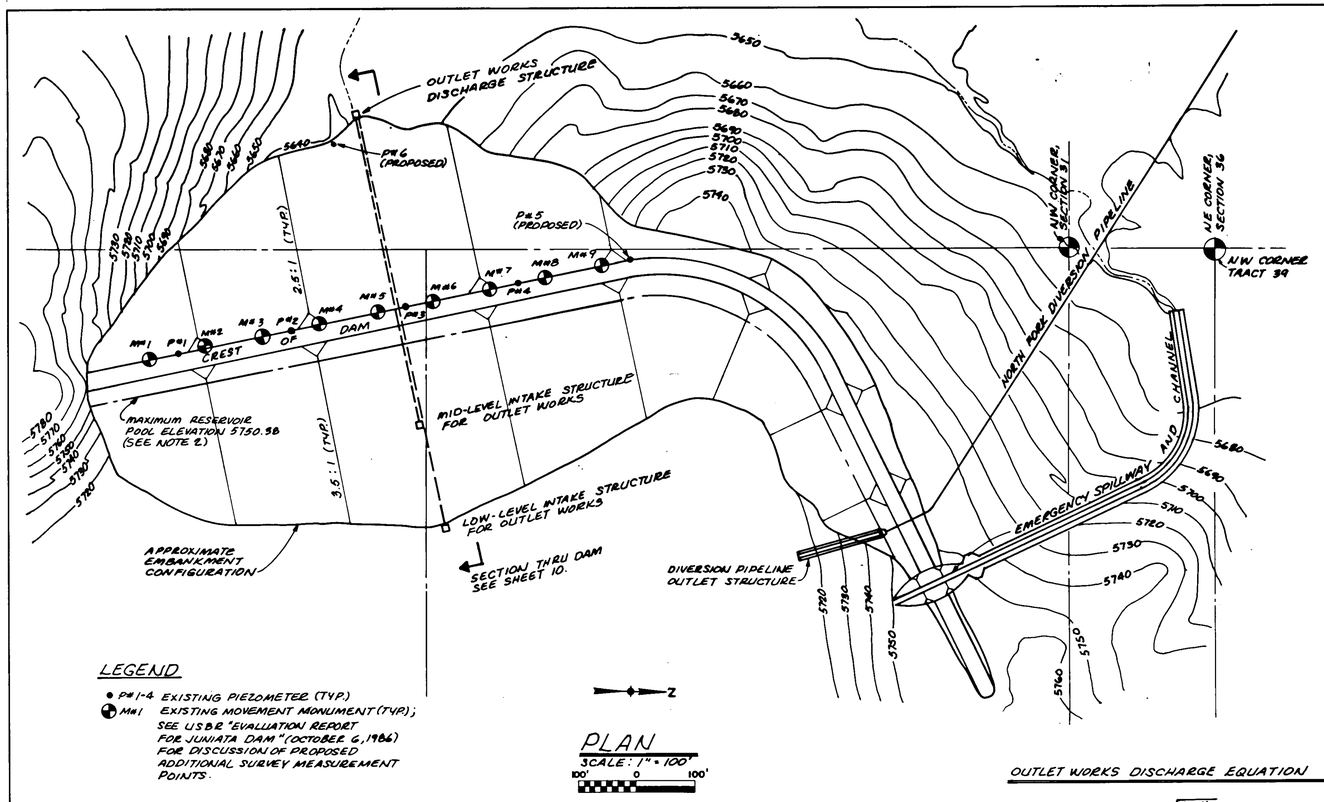
Project Number: 73-75-50
Date: July, 1986
Project Manager: J. Roberts
Design: J. Roberts
Architectural:
Structural: C. Nyman
Mechanical:
Electrical:
Drawn By: D. Walker, L. Armstrong
Revisions:

C-661B

JAMES B. ROBERTS — NUMBER 19484 — REGISTERED PROFESSIONAL ENGINEER — STATE OF COLORADO

Sheet Number: 8

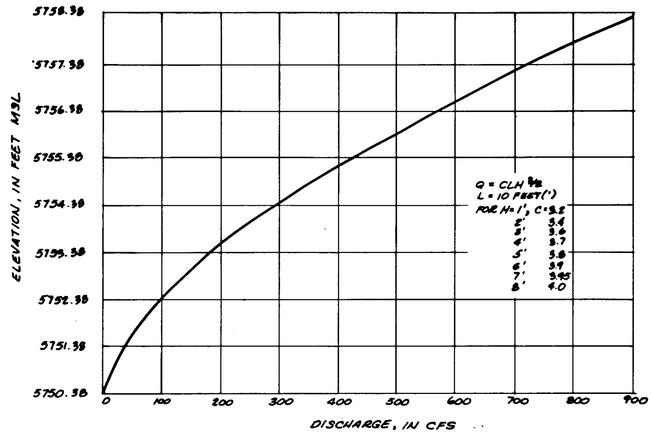
J05-158-09



LEGEND

- P#1-4 EXISTING PIEZOMETER (TYP.)
- M#1 EXISTING MOVEMENT MONUMENT (TYP.); SEE USBR "EVALUATION REPORT FOR JUNIATA DAM" (OCTOBER 6, 1986) FOR DISCUSSION OF PROPOSED ADDITIONAL SURVEY MEASUREMENT POINTS.

PLAN
SCALE: 1" = 100'



10' SPILLWAY DISCHARGE

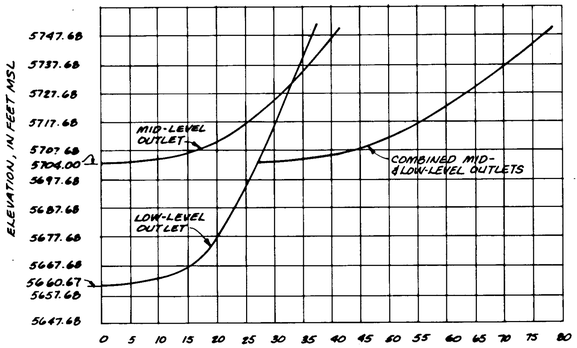
NOTE: SPILLWAY DISCHARGE CURVE IS REPRODUCED FROM JUNIATA DAM AS-BUILT DRAWINGS PREPARED BY ARMSTRONG ENGINEERS DATED JULY 14, 1978.

OUTLET WORKS DISCHARGE EQUATION

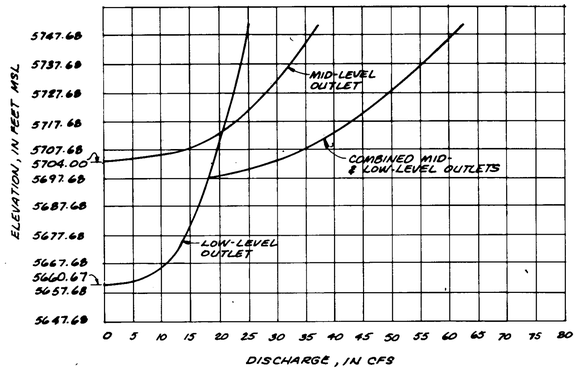
$$Q = \frac{a\sqrt{2gH}}{\sqrt{K_T + Ke + K_b + K_{exp} + K_{con} + K_{ex} + \left(\frac{5087\, n^2 L}{d^{4/3}}\right)}}$$

WHERE:
- a = FLOW CROSS-SECTIONAL AREA OF PIPE, IN SQ. FT.
- g = GRAVITATIONAL ACCELERATION CONSTANT, 32 FT/SEC.^{2}
- H = TOTAL HEAD LOSS THROUGH SYSTEM, IN FEET
- K_T = TRASHRACK LOSS COEFFICIENT
- Ke = PIPE ENTRANCE LOSS COEFFICIENT
- K_b = PIPE BEND LOSS COEFFICIENT
- K_{exp} = PIPE EXPANSION LOSS COEFFICIENT
- K_{con} = PIPE CONTRACTION LOSS COEFFICIENT
- K_{ex} = PIPE EXIT LOSS COEFFICIENT
- n = MANNING'S ROUGHNESS COEFFICIENT
- L = LENGTH OF PIPE, IN FEET
- d = PIPE LINER DIAMETER, IN INCHES
- Q = OUTLET WORKS DISCHARGE, IN CFS.

NOTE: GATES TO BOTH THE LOW-LEVEL AND MID-LEVEL INTAKES ARE ASSUMED TO BE FULLY OPEN FOR MAXIMUM RELEASE.



OUTLET RATING CURVE WITH STEEL LINER



OUTLET RATING CURVE WITH POLYETHYLENE LINER

ESTIMATED
CAPACITY OF RESERVOIR

From the Amended Map of Juniata Reservoir Enlarged, Filing No. 19918, dated October 7, 1964, the area at depth 40.8 feet is approximately the same as depth 43 feet of the resurvey of May 10, 1978. Depth 43 feet is the water surface at the time of the resurvey and is the gage height above the outlet pipe as constructed in 1966. Capacity is assumed as 73,915,650 cu. ft. or 1,696.9 acre feet.

Depth Ft.	Area Sq. Ft.	Capacity Cu. Ft.	Area Acres	Capacity Acre Ft.	USGS Elev.
43	3,596,400	73,515,650	82.56	1,696.9	5705
44	3,649,800	77,538,750	83.79	1,780.0	5706
45	3,703,200	81,015,250	85.01	1,864.4	5707
46	3,765,440	84,949,570	86.44	1,950.2	5708
47	3,827,680	88,746,130	87.86	2,037.3	5709
48	3,889,970	92,604,930	89.29	2,125.9	5710
49	3,952,160	96,525,970	90.71	2,215.9	5711
50	4,014,400	100,539,250	92.14	2,307.3	5712
51	4,074,400	104,553,650	93.52	2,400.1	5713
52	4,134,400	108,658,050	94.90	2,494.3	5714
53	4,194,400	112,822,450	96.28	2,589.9	5715
54	4,254,400	117,046,850	97.66	2,686.9	5716
55	4,314,400	121,381,250	99.04	2,785.3	5717
56	4,373,200	125,775,050	100.40	2,885.0	5718
57	4,432,000	130,077,650	101.74	2,986.1	5719
58	4,490,800	134,539,050	103.09	3,088.5	5720
59	4,549,600	139,059,250	104.44	3,192.2	5721
60	4,608,400	143,638,250	105.79	3,297.4	5722
61	4,669,000	148,376,950	107.18	3,403.8	5723
62	4,729,600	152,976,250	108.58	3,511.7	5724
63	4,790,200	157,736,150	109.97	3,621.0	5725
64	4,850,800	162,556,650	111.36	3,731.7	5726
65	4,911,400	167,437,750	112.75	3,843.7	5727
66	4,969,320	172,378,110	114.08	3,957.1	5728
67	5,027,240	177,376,390	115.41	4,071.9	5729
68	5,085,160	182,432,590	116.74	4,188.0	5730
69	5,143,080	187,546,710	118.07	4,305.4	5731
70	5,201,000	192,718,750	119.40	4,424.1	5732
71	5,254,640	197,946,570	120.63	4,544.1	5733
72	5,308,280	203,228,030	121.86	4,665.4	5734
73	5,361,920	208,563,130	123.09	4,787.8	5735
74	5,415,560	213,951,870	124.32	4,911.5	5736
75	5,469,200	219,394,250	125.56	5,036.5	5737
76	5,541,306	224,899,500	127.21	5,162.8	5738
77	5,613,400	230,476,850	128.86	5,290.9	5739
78	5,685,500	236,126,300	130.52	5,420.6	5740
79	5,757,600	241,847,850	132.18	5,551.9	5741
80	5,829,700	247,641,500	133.83	5,684.9	5742
81	5,895,500	253,504,100	135.34	5,819.5	5743
82	5,961,300	259,432,500	136.85	5,955.6	5744
83	6,027,100	265,426,700	138.36	6,093.2	5745
84	6,092,900	271,486,700	139.87	6,232.3	5746
85	6,158,700	277,612,500	141.38	6,373.0	5747
86	6,218,500	283,801,100	142.76	6,515.0	5748
87	6,278,300	290,049,500	144.13	6,658.5	5749
88	6,338,100	296,357,700	145.50	6,803.3	5750
89	6,397,900	302,725,700	146.88	6,949.5	5751
90	6,457,700	309,153,500	148.25	7,097.0	5752
91	6,526,800	315,645,750	149.84	7,246.2	5753
92	6,596,000	322,207,150	151.42	7,396.7	5754
93	6,665,200	328,837,750	153.01	7,584.9	5755
94	6,734,400	335,537,550	154.60	7,702.8	5756
95	6,803,600	342,306,550	156.19	7,858.1	5757
96	6,882,880	349,149,790	158.01	8,015.2	5758
97	6,962,160	356,072,310	159.83	8,174.2	5759

APPROXIMATE SPILLWAY ELEVATION

NOTES: 1. AREA-CAPACITY CHART IS REPRODUCED FROM JUNIATA DAM AS BUILT DRAWINGS PREPARED BY ARMSTRONG ENGINEERS, DATED JULY 14, 1978.
2. THE MAXIMUM RESERVOIR POOL ELEVATION IS 5750.38 FEET, CONTROLLED BY A CONCRETE RETAINING WALL CONSTRUCTED ACROSS THE SPILLWAY. THE MAXIMUM RESERVOIR CAPACITY IS 6867.7 AC-FT (PER ARMSTRONG ENGINEERS FIELD SURVEY ON AUGUST 31, 1988).

RESERVOIR EVACUATION RATES

Steel-liner Alternative

Reservoir Water Withdrawal in Days	in ac-ft/day from low-level outlet	in ac-ft/day from mid-level outlet	Total ac-ft/day from combined system Incre.	Accum.
1	72.61	81.30	153.91	153.91
2	72.25	80.51	152.76	306.67
3	71.89	79.71	151.60	458.27
4	71.53	78.90	150.43	608.70
5	71.17	78.08	149.25	757.95

4.76 days evacuation time for maximum five feet of storage. 721.4 ac-ft in upper five feet of reservoir storage.

Polyethylene-liner Alternative

Reservoir Water Withdrawal in Days	in ac-ft/day from low-level outlet	in ac-ft/day from mid-level outlet	Total ac-ft/day from combined system Incre.	Accum.
1	49.94	73.75	123.69	123.69
2	49.70	73.03	122.73	246.42
3	49.45	72.31	121.76	368.18
4	49.21	71.57	120.78	488.96
5	48.96	70.83	119.79	608.75
6	48.71	70.08	118.79	727.54

5.95 days evacuation time for maximum five feet of storage. 721.4 ac-ft in upper five feet of reservoir storage.

HDR Infrastructure, Inc.
A Centerra Company

SCHEDULE II

Juniata Outlet Works Modifications

Outlet Works Plan & Reservoir Capacities

Project Number: 73-77-50
Date: October, 1986
Project Manager: J. Roberts
Design: G. Lake
Architectural:
Structural: C. Nyman
Mechanical:
Electrical:
Drawn By: R. Bredsnajder
Revisions:

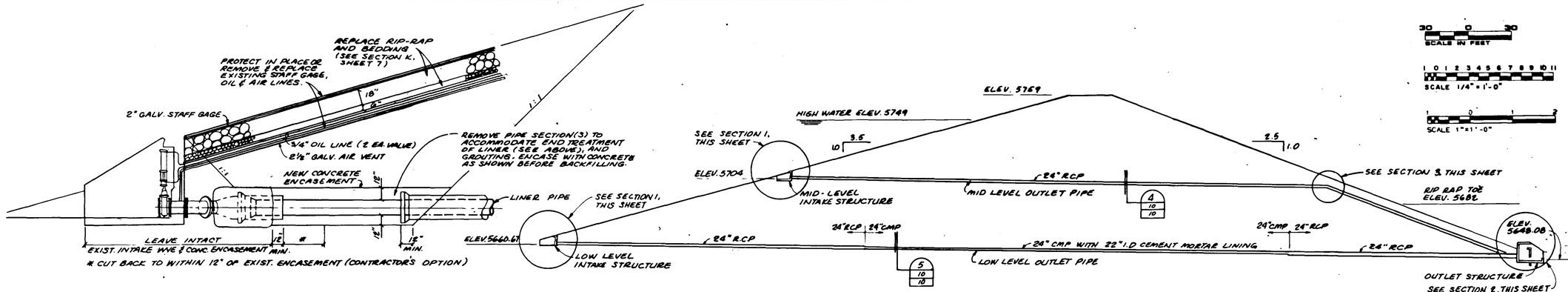
"AS RECORDED" FROM INFORMATION PROVIDED BY THE CONTRACTORS DATE: JUN - 1987

C-661B

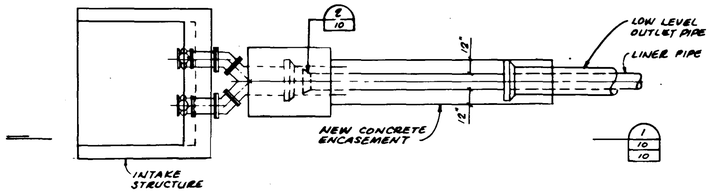
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NOT IN CONTRACT

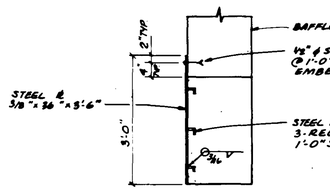
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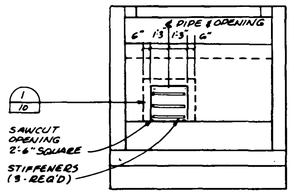
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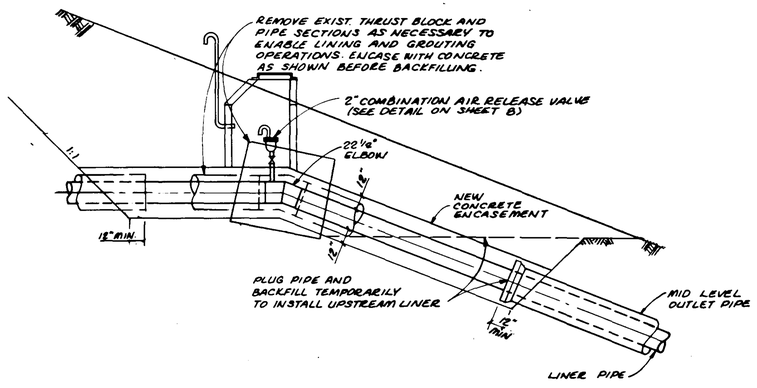
INTAKE STRUCTURE PLAN
SCALE: 1/4"=1'-0"



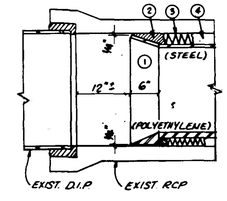
DETAIL
SCALE: NONE



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



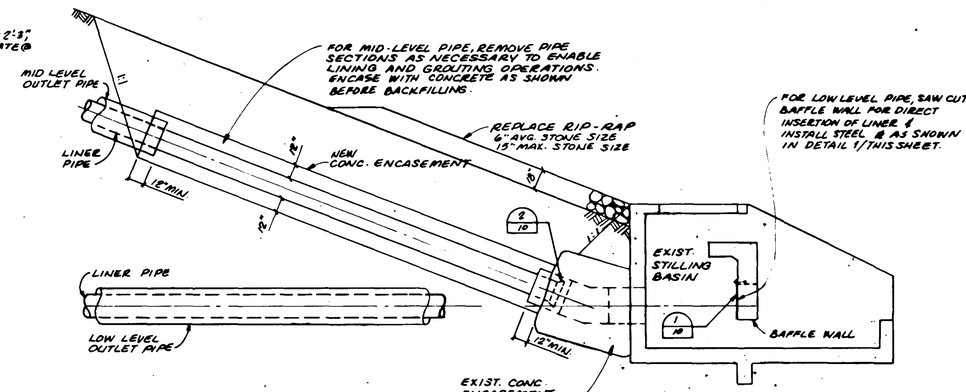
SECTION
SCALE: 1/4"=1'-0"



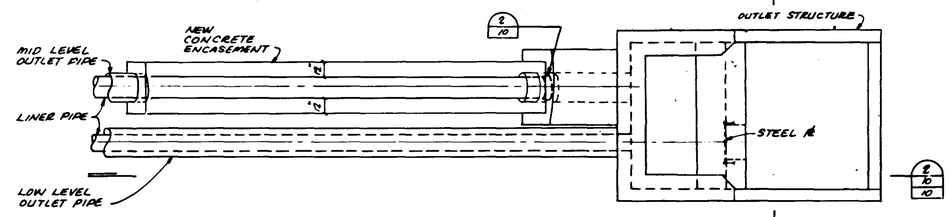
① FABRICATED BELL WELDED TO END OF LINER PIPE PRIOR TO INSERTION INTO FINAL JOINT.
② WRAP WITH CAULKING OR PRE-FORMED GASKET MATERIAL AND TAMP TIGHTLY AFTER INSERTION.
③ LOW DENSITY COMPRESSIBLE MATERIAL TO ALLOW A MINIMUM CONTRACTION OF 2" FOR STEEL LINER OR 6" FOR POLYETHYLENE LINER.
④ CAULK

END TREATMENT DETAIL
SCALE: 1"=1'-0"

SECTION THRU DAM
SCALE: 1"=30'



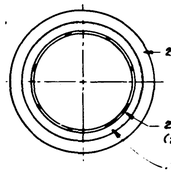
SECTION
SCALE: 1/4"=1'-0"



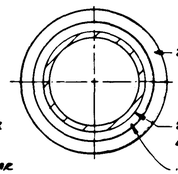
OUTLET STRUCTURE PLAN
SCALE: 1/4"=1'-0"

"AS RECORDED" FROM INFORMATION PROVIDED BY THE CONTRACTORS DATE: JUN 1987

STEEL

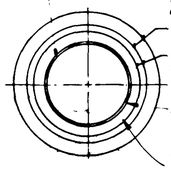


POLYETHYLENE

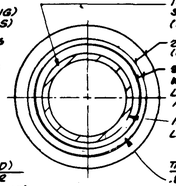


SECTION THRU MID LEVEL OUTLET PIPE
SCALE: 1"=1'-0"

STEEL



POLYETHYLENE



SECTION THRU LOW LEVEL OUTLET PIPE
SCALE: 1"=1'-0"

NOT IN CONTRACT

SCALE IN FEET 30 0 30

SCALE 1/4"=1'-0"

SCALE 1"=1'-0"

HDR Infrastructure, Inc. A Centerra Company

SCHEDULE II

Juniata Outlet Works Modifications

Miscellaneous Modifications

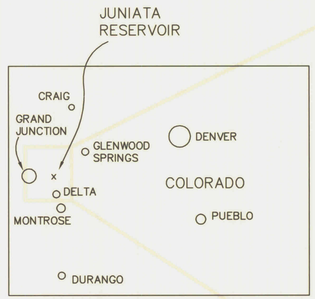
Project Number: 73-77-50
Date: October, 1986
Project Manager: J. Roberts
Design: J. Roberts
Architectural:
Structural: C. Nyman
Mechanical:
Electrical:
Drawn By: R. Bredenajder
Revisions:

C-661B

Sheet Number: 10

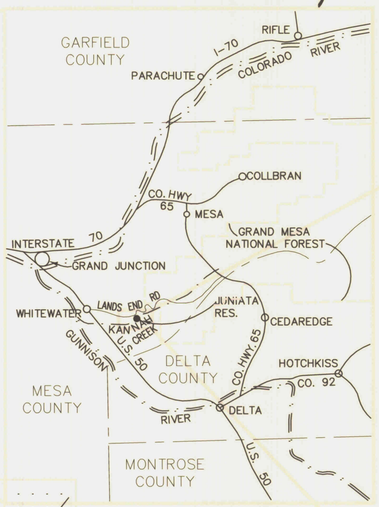
AUDIT | OVERLAY | 001 | 002 | 003 | 004

PURDY MESA BYPASS, JUNIATA RESERVOIR OUTLET WORKS REHABILITATION MESA COUNTY, W. DIV. 4, DAMID: 420128 MAY, 2002

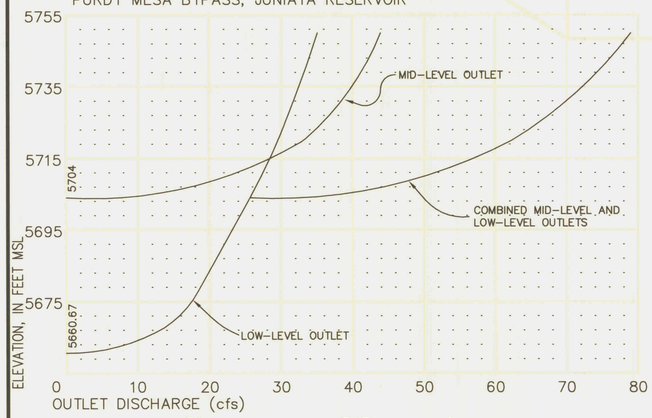


LOCATION MAP
N.T.S.

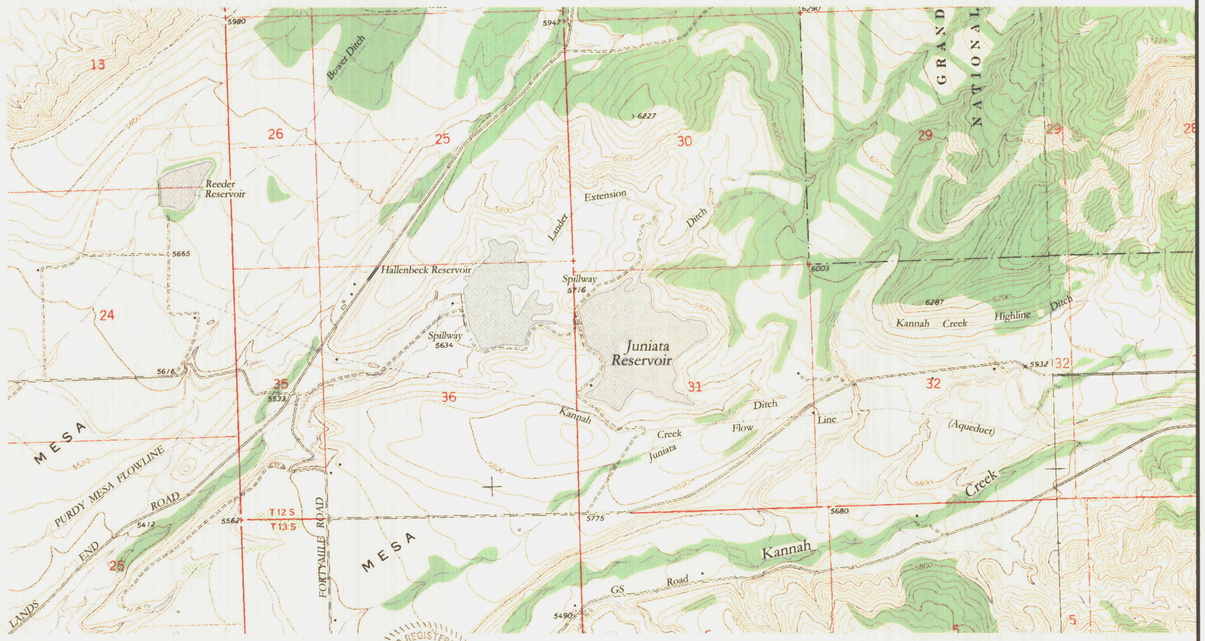
N.T.S.



REGIONAL MAP
N.T.S.



N.T.S.



VICINITY MAP

ENGINEER CERTIFICATION

I, BRET GUILLORY CERTIFY THAT THESE PLANS AND ACCOMPANYING SPECIFICATIONS WERE PROVIDED BY ME OR UNDER MY DIRECT SUPERVISION.

SIGNATURE — CO 31675 — LICENSE NO. — 5/14/02 — DATE

COLORADO REGISTERED BRET GUILLORY 31675 PROFESSIONAL ENGINEER

STATE ENGINEER APPROVAL

APPROVED ON THE 23rd DAY OF May 2002

H. D. SIMPSON
STATE ENGINEER

BY: _____
DEPUTY PE169-0

STATE ENGINEER OF COLORADO

OWNER ACCEPTANCE

AS OWNER OF PURDY MESA BYPASS, JUNIATA RESERVOIR WE ACKNOWLEDGE THAT THESE PLANS AND ACCOMPANYING SPECIFICATIONS HAVE BEEN REVIEWED AND ACCEPTED BY US, AND WE REQUEST CONSIDERATION FOR APPROVAL BY THE OFFICE OF THE STATE ENGINEER.

Gregory O. Trainor — UTILITY MANAGER — 11/5/03
SIGNATURE — TITLE — DATE

AS-BUILT CERTIFICATION

THESE PLANS REPRESENT THE AS-CONSTRUCTED CONDITIONS OF PURDY MESA BYPASS, JUNIATA RESERVOIR OUTLET WORKS TO THE BEST OF OUR KNOWLEDGE AND JUDGEMENT, BASE IN PART ON INFORMATION FURNISHED BY OTHERS AS OF THE 5th DAY OF August 2004

STEVEN BRET GUILLORY
ENGINEERS PRINTED NAME — SIGNATURE

1—— Cover Sheet

2—— Outlet Works Reconfiguration, Plan, Profile, and Sections

3—— Purdy Mesa Bypass Plan and Profile

City of Grand Junction, Colorado

Department of Public Works & Utilities *Engineering Division*

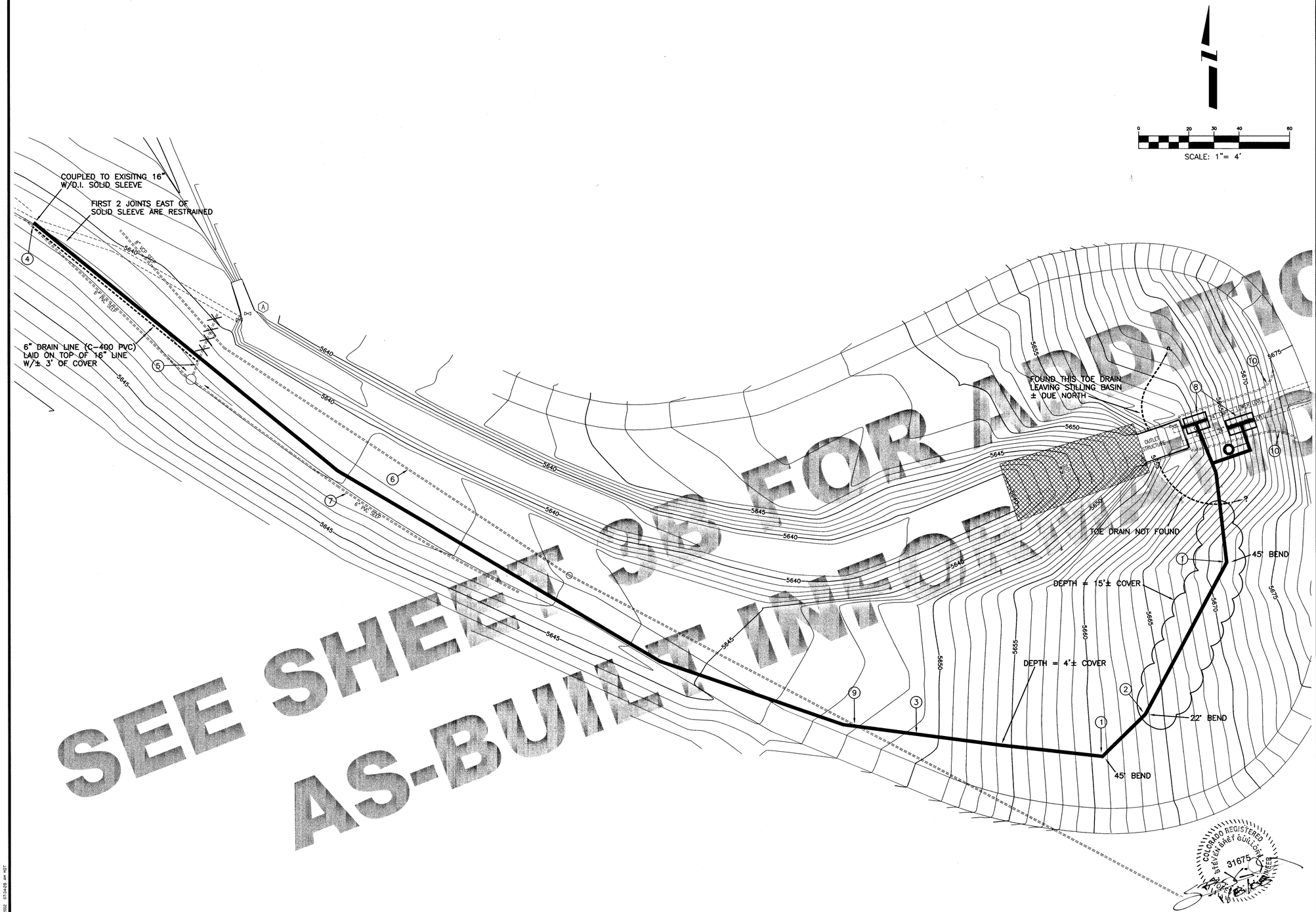
C-661C

PURDY MESA BYPASS, JUNIATA RESERVOIR, OUTLET WORKS REHABILITATION

PROJECT NO. 301-61115-F04812

CONSTRUCTION NOTES

1. 102/104 – INSTALL 16" D.I. 45° BEND W/MEGA-LUG RESTRAINT.
2. 102/104 – INSTALL 16" D.I. 22.5° BEND W/MEGA LUG RESTRAINT.
3. 102/104 – INSTALL 16" C-905 PVC DR-25. CITY OF GRAND JUNCTION WILL FURNISH 16" C-905 PVC. MAINTAIN MINIMUM 4' COVER OVER PIPE.
4. CONNECT TO EXISTING 16" C-905 PVC. THE EXISTING 16" PVC HAS BEEN TEMPORARILY CONNECTED TO THE 30" CMP USING A CONCRETE COLLAR. THE CONTRACTOR SHALL DIG BACK TO THE FIRST JOINT ON THE 16" PVC WEST OF THE TEMPORARY TIE-IN. REMOVE THE +/- 10' LENGTH OF 16" PVC STUBBED INTO THE CMP AND START NEW INSTALLATION OF THE 16" PVC BY-PASS LINE.
5. THE CONTRACTOR SHALL POTHOLE THE EXISTING 6" PVC DRAIN AND DEFLECT 16" PVC AS NEEDED TO INSTALL THE NEW PVC UNDER THE EXISTING DRAIN.
6. EXISTING 8" VCP SEEP LINE. LOCATION OF THE LINE IS APPROXIMATE.
7. EXISTING 6" PVC SEEP LINE. LOCATION OF THE LINE IS APPROXIMATE.
8. CONSTRUCT NEW JUNIATA REERVOIR OUTLET WORKS CONFIGURATION. SEE SHEET 3, THIS PLAN SET.
9. CONTRACTOR SHALL POTHOLE EXISTING 8" CLAY TILE DRAINAGE LINE TO VERIFY DEPTH. 16" PVC LINE MAY NEED TO BE DEFLECTED TO ALLOW INSTALLATION BELOW DRAIN IF 4' COVER CANNOT BE MAINTAINED.
10. APPROXIMATE LOCATION OF EXISTING TOE DRAIN. SEE SPECIAL PROVISIONS FOR PROJECT.



SEE SHEET 3 FOR ADDITIONAL AS-BUILT INFORMATION

AS CONSTRUCTED
12-2002

COLORADO REGISTERED STEVEN BRET GUILLEN 31675 PROFESSIONAL ENGINEER

DESCRIPTION	DATE
REVISION 1	
REVISION 2	
REVISION 3	
REVISION 4	

DRAWN BY	DW	DATE	3-02
DESIGNED BY	SBG	DATE	3-02
CHECKED BY	SBG	DATE	3-02
APPROVED BY		DATE	

SCALE: PLAN HORIZ. 1"=20' PROFILE HORIZ. ____ VERT. ____

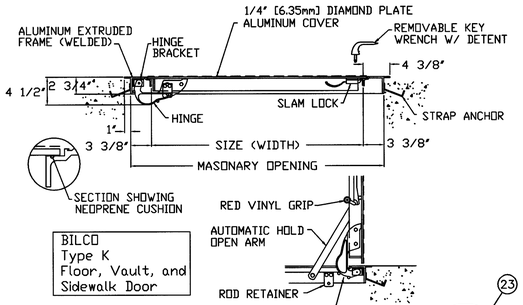
DEPARTMENT OF PUBLIC WORKS AND UTILITIES
ENGINEERING AND TECHNICAL SERVICES DIVISIONS
CITY OF GRAND JUNCTION, COLORADO

PURDY MESA BYPASS
PLAN

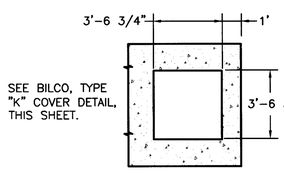
2 OF 3

C:\AAA EDUS\PROJECTS\purdymesa\dwg\OUTLET TOPO.dwg 05/16/2002 07:34:58 AM MDT

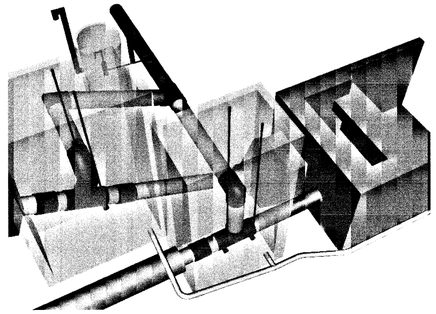
NOTE: EXISTING PIPE CONFIGURATION IS APPROXIMATE AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO INSTALLATION OF NEW VALVES AND APPURTENANCES



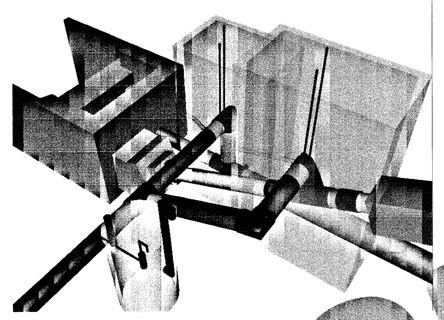
VAULT DOOR DETAIL
N.T.S



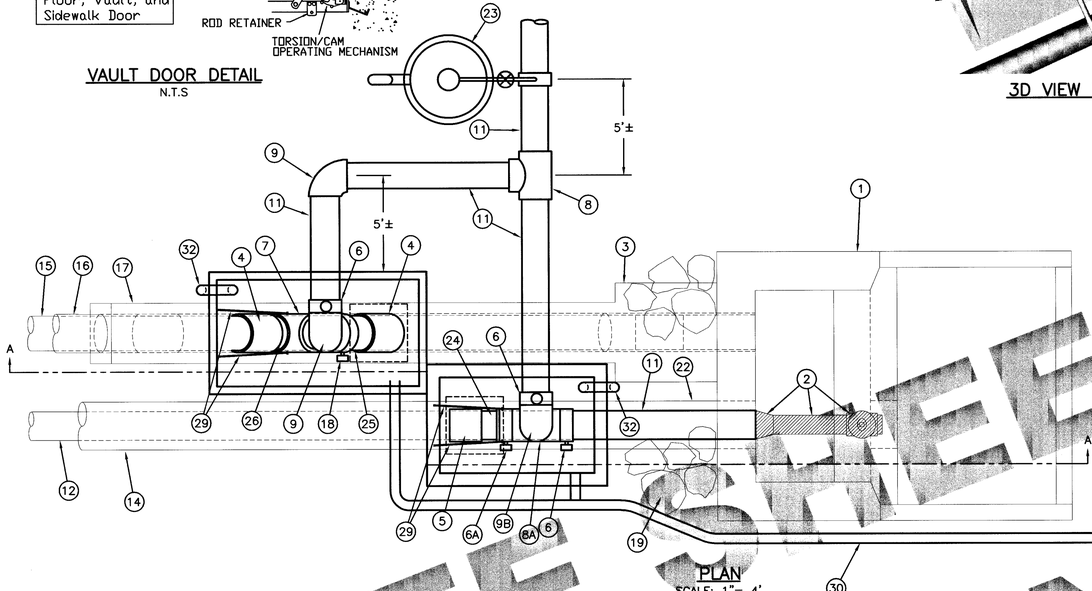
VAULT LID ACCESS HOLE DETAIL
SCALE: 1"= 4'



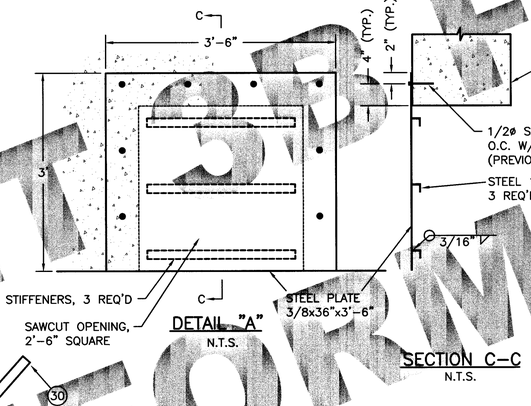
3D VIEW LOOKING SOUTH WEST



3D VIEW LOOKING NORTH WEST

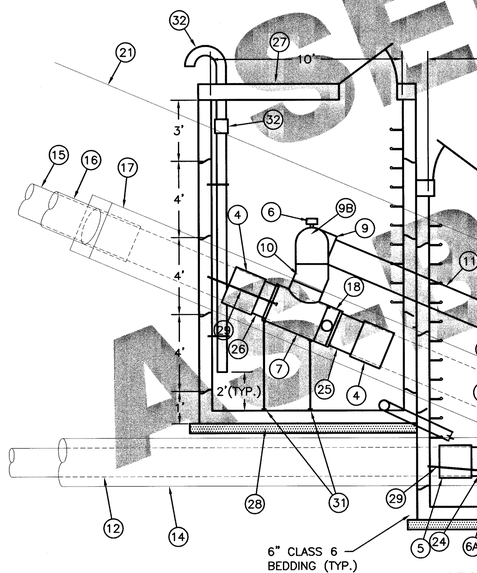


PLAN
SCALE: 1"= 4'

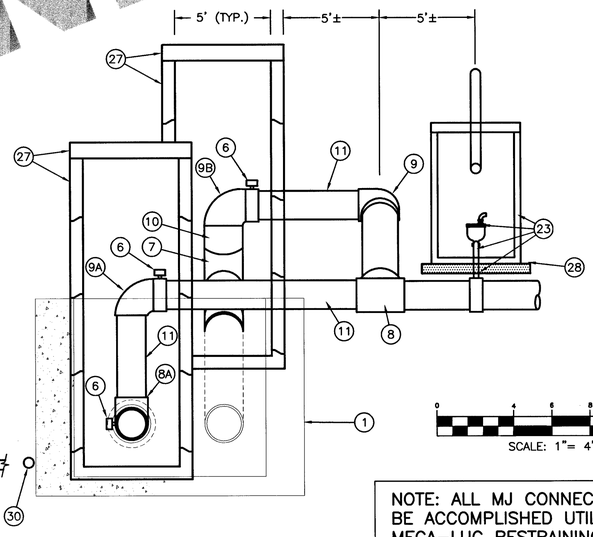


DETAIL "A"
N.T.S.

SECTION C–C
N.T.S.

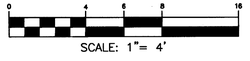


SECTION A–A
SCALE: 1"= 4'



SECTION B–B
SCALE: 1"= 4'





SCALE: 1"= 4'

NOTE: ALL MJ CONNECTIONS ARE TO BE ACCOMPLISHED UTILIZING MEGA–LUG RESTRAINING GLANDS.

PROJECT NO. 301–61115–F04812

1. 107.12 – PROTECT EXISTING CONCRETE STILLING BASIN.
2. 202 – REMOVE EXISTING REDUCER, PIPE AND VALVE AS SHOWN.
3. 107.12 – EXISTING CONCRETE ENCASEMENT/KICKER FOR MID–LEVEL OUTLET TO BE LEFT IN PLACE.
4. INSTALL SMITH–BLAIR TRANSITION COUPLING OR ENGINEER APPROVED EQUAL. 21.5" O.D. (HDPE) TO 19.5" O.D. (18" DR–25 C–905). COUPLING TO BE 16" WIDTH, WITH ALL HARDWARE 304 STAINLESS STEEL. STIFFENERS SHALL BE 304 STAINLESS STEEL. CONTRACTOR SHALL FIELD VERIFY O.D. OF HDPE (MID–LEVEL OUTLET) PRIOR TO ORDERING COUPLING. APPROXIMATELY 12 WORKING DAYS NEEDED FOR MANUFACTURER TO PROVIDE COUPLINGS.
5. INSTALL SMITH–BLAIR TRANSITION COUPLING OR ENGINEER APPROVED EQUAL. 18" O.D. (HDPE) TO 17.4" O.D. (16" DR–25 C–905). COUPLING TO BE 16" WIDTH WITH ALL HARDWARE 304 STAINLESS STEEL. STIFFENERS SHALL BE 304 STAINLESS STEEL. CONTRACTOR SHALL FIELD VERIFY O.D. OF HDPE (MID–LEVEL OUTLET) PRIOR TO ORDERING COUPLING. APPROXIMATELY 12 WORKING DAYS NEEDED FOR MANUFACTURER TO PROVIDE COUPLINGS.
6. 104 – INSTALL MUELLER LINESEAL III BUTTERFLY VALVE AND VALVE KEY EXTENSION, MODEL 75B, 16" FLxMJ, OR ENGINEER APPROVED EQUAL.
6A. 104 – INSTALL MUELLER LINSEAL III BUTTERFLY VALVE AND VALVE BOX, MODEL 75B, 16", FL x FL OR ENGINEER APPROVED EQUAL. THIS VALVE SHALL BE INSTALLED TO CONTROL LEAKAGE FROM THE INLET VALVE THAT IS ESTIMATED TO BE +/– 40 GPM. THERE WILL BE APPROXIMATELY 43 PSI ON THE VALVE WHEN CLOSED. THE INTENT OF THIS VALVE IS TO CONTROL SEEPAGE ONLY, THE VALVE SHALL BE FULLY OPENED AFTER INSTALLATION OF THE REMAINING FITTINGS IS COMPLETED AND THE OPERATING NUT SHALL BE REMOVED.
7. 104 – INSTALL 18"x18"x16" FLxFLxFL D.I. C110 TEE.
8. INSTALL 16" MJxMJxMJ D.I. C110 TEE.
8A. 104 – INSTALL 16" FLxFLxMJ D.I. C110 TEE.
9. 104 – INSTALL 16" MJ D.I. C110 90° BEND.
9A. 104 – INSTALL 16" MJxFL D.I. C110 90° BEND.
9B. 104 – INSTALL 16" FLxFL D.I. C110 90° BEND.
10. 104 – INSTALL 16" FLxFL D.I. C110 22 1/2° BEND.
11. 104 – 16" C–905 PVC, DR–25.
12. 18" O.D. (TO BE FIELD VERIFIED BY CONTRACTOR) SDR–11 HDPE LINER.
13. INSTALL STEEL PLATE PER DETAIL THIS SHEET.
14. 24" I.D. RCP CASING. ANNULAR SPACE BETWEEN HDPE AND RCP IS GROUTED. AVERAGE THICKNESS OF GROUT = +/– 3". CAREFULLY REMOVE CASING PIPE AND GROUT TO EXPOSE HDPE LINER AS NEEDED TO INSTALL NEW TRANSITION COUPLING FITTINGS.
15. 21.5" O.D. (TO BE FIELD VERIFIED BY CONTRACTOR) SDR 15.5 HDPE LINER.
16. 24" I.D. RCP CASING. ANNULAR SPACE BETWEEN HDPE AND RCP IS GROUTED. AVERAGE THICKNESS OF GROUT = +/– 1 1/4". CONCRETE PIPE MAY EXTEND TO THE WORK AREA FOR INSTALLATION OF NEW FITTINGS.
17. CONCRETE ENCASEMENT AROUND HDPE LINER EXTENDS APPROXIMATELY 12" BEYOND O.D. OF HDPE. CAREFULLY REMOVE CONCRETE ENCASEMENT TO EXPOSE HDPE LINER AS NEEDED TO INSTALL NEW FITTINGS.
18. 104 – INSTALL MUELLER LINESEAL III BUTTERFLY VALVE AND VALVE BOX, MODEL 75B, 18" FLxMJ, OR ENGINEER APPROVED EQUAL.
19. CONTRACTOR SHALL REMOVE AND REPLACE EXISTING RIP–RAP. SIZE OF EXISTING RIP–RAP VARIES FROM APPROXIMATELY 12" DIA. TO 48" DIA. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFICATION OF RIP–RAP SIZE AND AMOUNT TO BE MOVED PRIOR TO BID.
20. MAINTAIN 3' COVER OVER NEW PIPE AND FITTINGS.
21. APPROXIMATE EXISTING GRADE.
22. REMOVE EXISTING HDPE LINER AND REPLACE WITH NEW 16" C–905 PVC. CONTRACTOR MAY NEED TO JACKHAMMER CONCRETE ENCASEMENT FROM AROUND THE EXISTING HDPE TO ALLOW REMOVAL. GROUT ANNULAR SPACE BETWEEN OUTLET STRUCTURE AND C–905 PVC WITH NON SHRINK GROUT MEETING CITY OF GRAND JUNCTION SPECIFICATIONS, SECTION 102.15, CONCRETE AND MORTER.
23. 104 – INSTALL COMBINATION AIR VAC/RELIEF ASSEMBLY, CLOW MODEL E, STYLE 5403, 4" X 4", COMBINATION AIR RELEASE AND APPURTENANCES OR ENGINEER APPROVED EQUAL PER CITY OF GRAND JUNCTION STANDARD DETAIL W–11.
24. INSTALL 16" DR–25 C–905 PVC SPOOL, FL X PE, 1'–8" LENGTH. CONTRACTOR MAY ADJUST LENGTH TO FACILITATE CONSTRUCTION.
25. INSTALL 18" DR–25 C–905 PVC SPOOL, FL X PE, 2'–2" LENGTH. CONTRACTOR MAY ADJUST LENGTH TO FACILITATE CONSTRUCTION.
26. INSTALL 18" DR–25 C–905 PVC SPOOL, FL X PE, 1'–8" LENGTH. CONTRACTOR MAY ADJUST LENGTH TO FACILITATE CONSTRUCTION.
27. INSTALL VAULT AND VAULT LID SUPPLIED BY CITY OF GRAND JUNCTION WITH OPENING DIMENSIONS AS SHOWN. INSTALL BILCO, TYPE K, SINGLE LEAF FLOOR DOOR OR ENGINEERED APPROVED EQUAL. (SEE DETAIL THIS SHEET). LID WILL HAVE LIFTING EYES TO ALLOW FOR FUTURE REMOVAL. EYES TO BE LOCATED AT EACH CORNER (4) OF THE LID.
28. PROVIDE 6" DEPTH OF CL–6 BASE MATERIAL AS LEVELING COURSE COMPACTED TO 95 % MEETING AASHTO T–99
29. INSTALL 1/2" DIAMETER STAINLESS STEEL ALL–THREAD, RAWL, MODEL 6208, DROP–IN ANCHOR AND EYE BOLT PER MANUFACTURES RECOMMENDATION.
30. INSTALL 6" SDR–35 PVC DRAIN LINE AS SHOWN ON PLANS. PROVIDE 9" DIAMETER CORE AT ALL CONCRETE PENETRATIONS TO ALLOW ROOM FOR NON–SHRINK GROUT OF ANNULAR SPACE. INSTALL FRESNO SERIES 3800, TYPE R, MODEL 38B FLAP VALVE AT TERMINATION OF PIPE IN RIP–RAP DOWNSTREAM OF STILLING BASIN.
31. INSTALL PIPE SUPPORT STANDON MODEL S89, PER MANUFACTURES RECOMMENDATION OR ENGINEER APPROVED EQUAL AND SS ANCHORS TO FLOOR OF VAULT.
32. CONTRACTOR SHALL PROVIDE AND INSTALL 4" DIAMETER, SCH–80 (INSIDE VAULT), 4" DIAMETER GALVANIZED PIPE (OUTSIDE VAULT) AND VENT PIPE. PIPE SHALL STOP 2 FEET OFF THE FLOOR OF THE VAULT AND SHALL EXTEND 2 FEET ABOVE THE LID OF THE VAULT. A 4" CAULDER COUPLING SHALL BE INSTALLED 1 FOOT± BELOW THE LID OF THE VAULT TO ALLOW FOR FUTURE REMOVAL OF THE LID. THE VENT PIPE SHALL BE ANCHORED TO THE VAULT WALL AT TWO LOCATIONS, AS SHOWN, UTILIZING STAINLESS STEEL ANCHORS, ALL–THREAD AND STRAP (MIN. 2" WIDE x 1/8" THICK). ANCHOR AND ALL–THREAD SHALL BE 3/8" DIAMETER.

SEE STAMPED FOR AS-BUILT INFORMATION

DESCRIPTION	DATE
REVISION 1	
REVISION 2	
REVISION 3	
REVISION 4	

DRAWN BY	DW	DATE	3–02
DESIGNED BY	SBG	DATE	3–02
CHECKED BY	SBG	DATE	3–02
APPROVED BY		DATE	

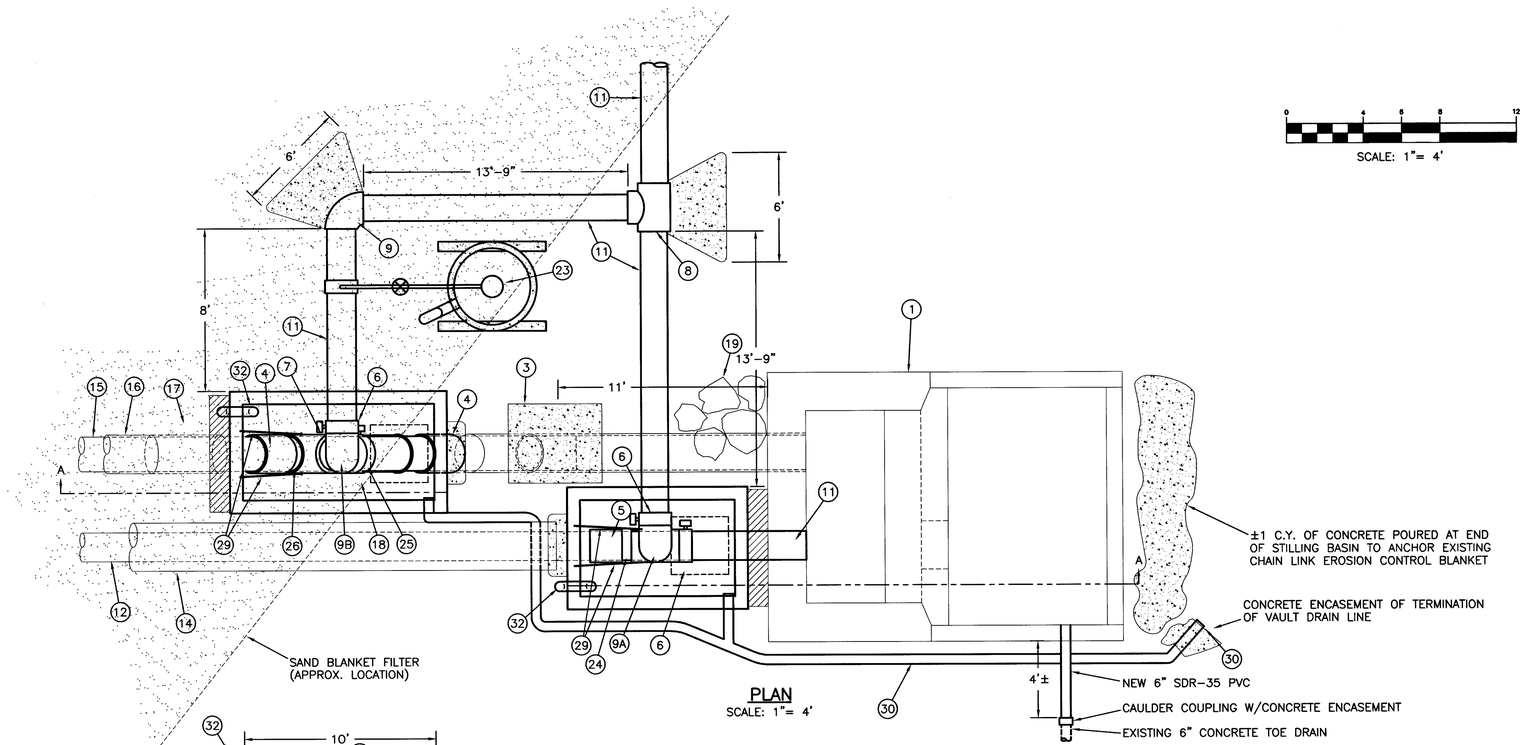
SCALE
PLAN: HORIZ AS SHOWN
PROFILE: HORIZ ____ VERT. ____

DEPARTMENT OF PUBLIC WORKS AND UTILITIES
ENGINEERING AND TECHNICAL SERVICES DIVISIONS
CITY OF GRAND JUNCTION, COLORADO

PURDY MESA BYPASS
JUNIATA OUTLET WORKS RECONSTRUCTION
DETAILS

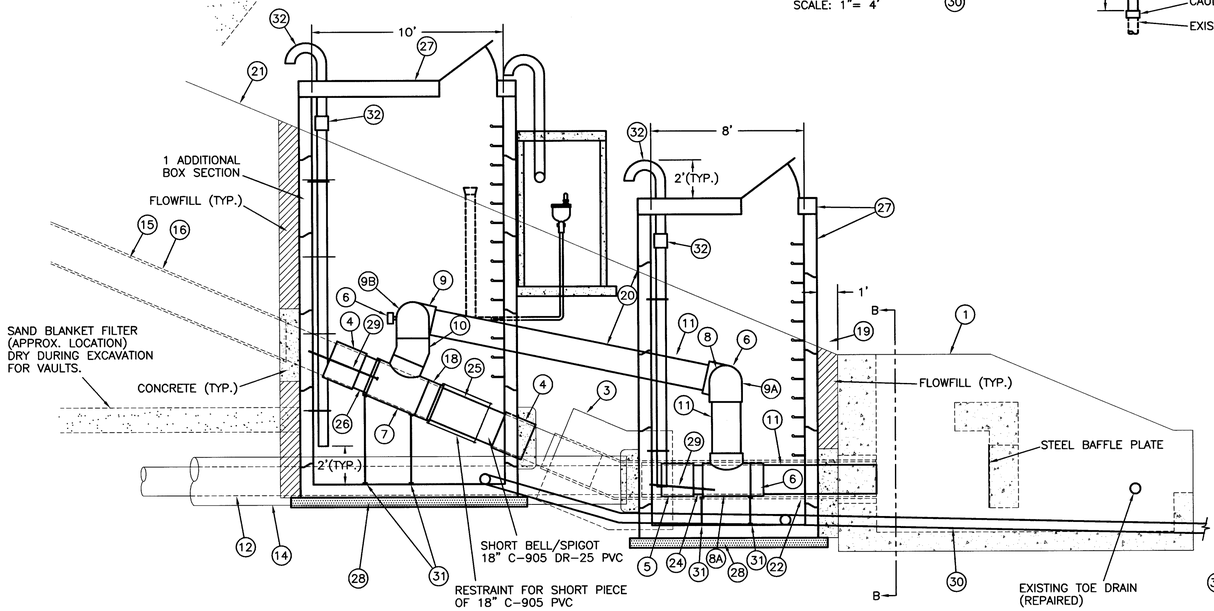
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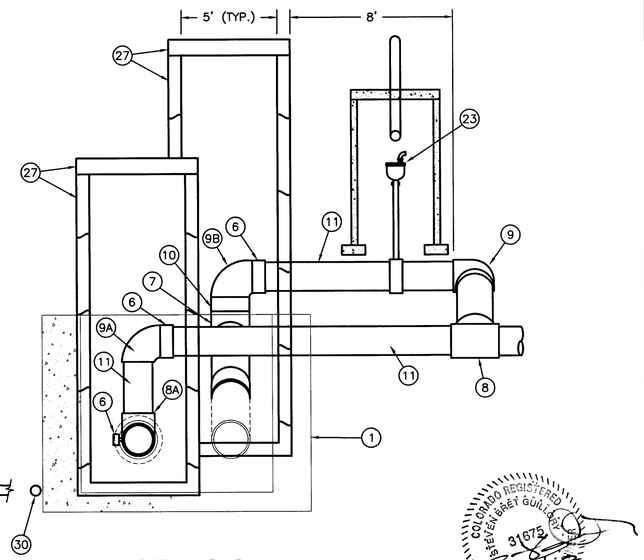


PLAN
SCALE: 1"= 4'

SCALE: 1"= 4'



SECTION A-A
SCALE: 1"= 4'



SECTION B-B
SCALE: 1"= 4'

AS CONSTRUCTED
12-2002

PROJECT NO. 301-61115-F04812

(1) 107.12 – PROTECT EXISTING CONCRETE STILLING BASIN.

(2) ~~202 – REMOVE EXISTING REDUCER, PIPE AND VALVE AS SHOWN.~~ **COMPLETED**

(3) 107.12 – EXISTING CONCRETE ENCASEMENT/KICKER FOR MID-LEVEL OUTLET TO BE LEFT IN PLACE.

(4) INSTALL SMITH-BLAIR TRANSITION COUPLING OR ENGINEER APPROVED EQUAL. 21.5" O.D. (HDPE) TO 19.5" O.D. (18" DR-25 C-905). COUPLING TO BE 16" WIDTH, WITH ALL HARDWARE 304 STAINLESS STEEL. STIFFENERS SHALL BE 304 STAINLESS STEEL. CONTRACTOR SHALL FIELD VERIFY O.D. OF HDPE (MID-LEVEL OUTLET) PRIOR TO ORDERING COUPLING. APPROXIMATELY 12 WORKING DAYS NEEDED FOR MANUFACTURER TO PROVIDE COUPLINGS.

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(7) 104 – INSTALL 18"x18"x16" FLxFLxFL D.I. C110 TEE.

(8) INSTALL 16" MJxMJxMJ D.I. C110 TEE.

(8A) 104 – INSTALL 16" FLxFLxMJ D.I. C110 TEE.

(9) 104 – INSTALL 16" MJ D.I. C110 90° BEND.

(9A) 104 – INSTALL 16" MJxFL D.I. C110 90° BEND.

(9B) 104 – INSTALL 16" FLxFL D.I. C110 90° BEND.

(10) 104 – INSTALL 16" FLxFL D.I. C110 22 1/2° BEND.

(11) 104 – 16" C-905 PVC, DR-25.

(12) 18" O.D. (TO BE FIELD VERIFIED BY CONTRACTOR) SDR-11 HDPE LINER.

(13) ~~INSTALL STEEL PLATE PER DETAIL THIS SHEET.~~ **COMPLETED**

(14) 24" I.D. RCP CASING. ANNULAR SPACE BETWEEN HDPE AND RCP IS GROUTED. AVERAGE THICKNESS OF GROUT = +/- 3". CAREFULLY REMOVE CASING PIPE AND GROUT TO EXPOSE HDPE LINER AS NEEDED TO INSTALL NEW TRANSITION COUPLING FITTINGS.

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(20) MAINTAIN 3' COVER OVER NEW PIPE AND FITTINGS.

(21) APPROXIMATE EXISTING GRADE.

(22) REMOVE EXISTING HDPE LINER AND REPLACE WITH NEW 16" C-905 PVC. CONTRACTOR MAY NEED TO JACKHAMMER CONCRETE ENCASEMENT FROM AROUND THE EXISTING HDPE TO ALLOW REMOVAL. GROUT ANNULAR SPACE BETWEEN OUTLET STRUCTURE AND C-905 PVC WITH NON SHRINK GROUT MEETING CITY OF GRAND JUNCTION SPECIFICATIONS, SECTION 102.15, CONCRETE AND MORTER.

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(24) INSTALL 16" DR-25 C-905 PVC SPOOL, FL X PE, 1'-8" LENGTH. CONTRACTOR MAY ADJUST LENGTH TO FACILITATE CONSTRUCTION.

(25) INSTALL 18" DR-25 C-905 PVC SPOOL, FL X PE, 2'-2" LENGTH. CONTRACTOR MAY ADJUST LENGTH TO FACILITATE CONSTRUCTION.

(26) INSTALL 18" DR-25 C-905 PVC SPOOL, FL X PE, 1'-8" LENGTH. CONTRACTOR MAY ADJUST LENGTH TO FACILITATE CONSTRUCTION.

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(28) PROVIDE 6" DEPTH OF CL-6 BASE MATERIAL AS LEVELING COURSE COMPACTED TO 95 % MEETING AASHTO T-99

(29) INSTALL ~~1/2"~~ **3/4"** DIAMETER STAINLESS STEEL ALL-THREAD, RAWL, MODEL 6208, DROP-IN ANCHOR AND EYE BOLT PER MANUFACTURES RECOMMENDATION.

(30) INSTALL 6" SDR-35 PVC DRAIN LINE AS SHOWN ON PLANS. PROVIDE 9" DIAMETER CORE AT ALL CONCRETE PENETRATIONS TO ALLOW ROOM FOR NON-SHRINK GROUT OF ANNULAR SPACE. INSTALL FRESNO SERIES 3800, TYPE R, MODEL 38B FLAP VALVE AT TERMINATION OF PIPE IN RIP-RAP DOWNSTREAM OF STILLING BASIN.

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STATE OF COLORADO REGISTERED STEVEN BRET GUILLEY 31675 PROFESSIONAL ENGINEER

DESCRIPTION	DATE
REVISION 1	
REVISION 2	
REVISION 3	
REVISION 4	

DRAWN BY	DW	DATE	3-02
DESIGNED BY	SBG	DATE	3-02
CHECKED BY	SBG	DATE	3-02
APPROVED BY		DATE	

SCALE
PLAN: AS SHOWN HORIZ.
PROFILE: HORIZ. ____ VERT. ____

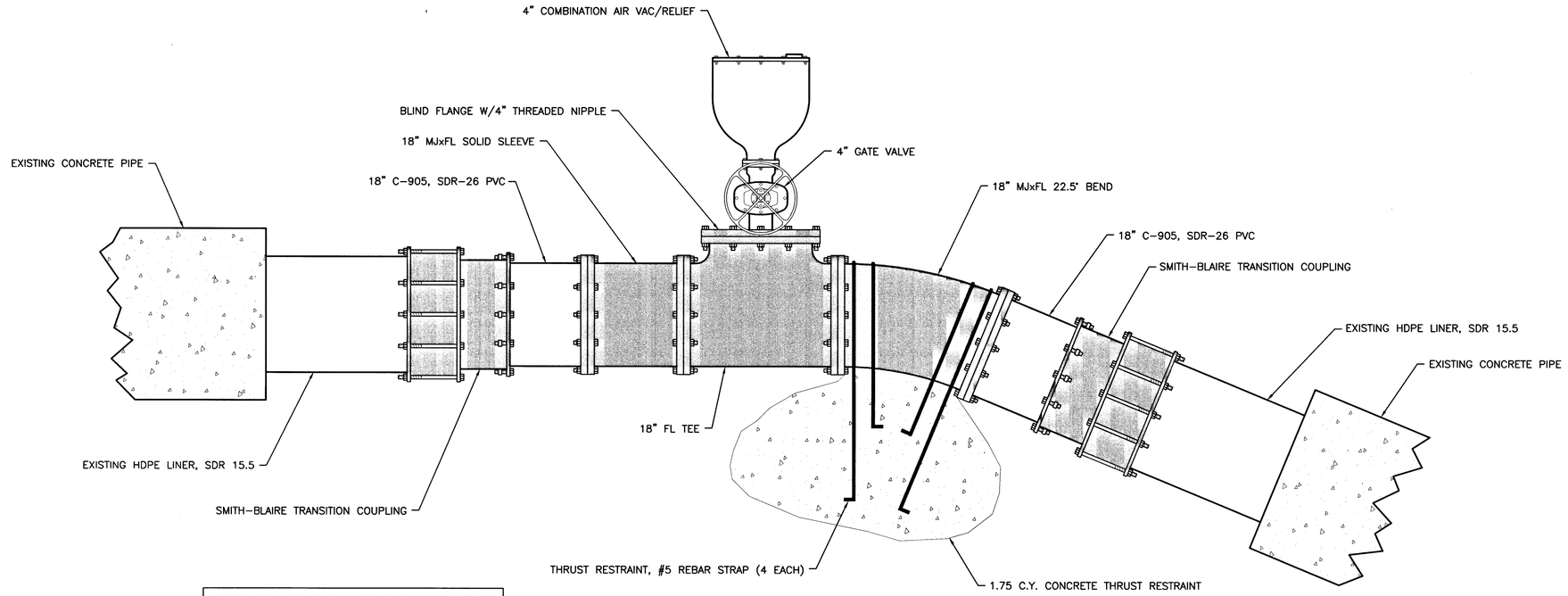
DEPARTMENT OF PUBLIC WORKS AND UTILITIES
ENGINEERING AND TECHNICAL SERVICES DIVISIONS
CITY OF GRAND JUNCTION, COLORADO

PURDY MESA BYPASS
JUNIATA OUTLET WORKS RECONSTRUCTION DETAILS

3B OF 3

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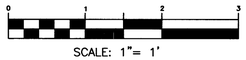
PROJECT NO. 301-61115-F04812



NOTE: INSTALLED BY THE CITY OF GRAND JUNCTION

JUNIATA RESERVOIR
MID-LEVEL OUTLET REPAIR

SCALE: 1"= 1'



SCALE: 1"= 1'



AS CONSTRUCTED
10-2003

DESCRIPTION	DATE
REVISION 1	
REVISION 2	
REVISION 3	
REVISION 4	

DRAWN BY	DW	DATE	10-03
DESIGNED BY	SBG	DATE	10-03
CHECKED BY	SBG	DATE	10-03
APPROVED BY		DATE	

SCALE
PLAN HORIZ. 1"= 1' PROFILE HORIZ. ____ VERT. ____

DEPARTMENT OF PUBLIC WORKS AND UTILITIES
ENGINEERING AND TECHNICAL SERVICES DIVISIONS
CITY OF GRAND JUNCTION, COLORADO

JUNIATA RESERVOIR
MID-LEVEL OUTLET REPAIR

3C OF 3

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CITY OF GRAND JUNCTION
JUNIATA RESERVOIR
SPILLWAY MODIFICATION PROJECT

WATER DIVISION 4, WATER DISTRICT 42
MESA COUNTY, COLORADO

OWNER

CITY OF GRAND JUNCTION
250 NORTH 5TH STREET
GRAND JUNCTION, CO 81501

DAM I.D. NUMBER 420128

BUCKHORN GEOTECH PROJECT #08-088-CIV



LOCATION MAP

BUCKHORNGEOTECH
Civil, Structural & Geotechnical Engineers
222 So. Park Ave. Montrose, Colorado 81401
970-249-6828 Fax. No. 970-249-0945
www.buckhorngeo.com

I HEREBY DECLARE THAT THESE PLANS FOR CONSTRUCTION OF THE JUNIATA RESERVOIR WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION FOR THE COLORADO DEPARTMENT OF WATER RESOURCES AS OF THE

19 DAY OF June, 2008.

ERIC L. KRCH, P.E.
COLORADO P.E. No. 28583

COLORADO REGISTERED ERIC L. KRCH 28583 PROFESSIONAL ENGINEER

ON BEHALF OF THE COLORADO DEPARTMENT OF WATER RESOURCES, THE UNDERSIGNED DOES HEREBY ACCEPT AND APPROVE THESE PLANS FOR CONSTRUCTION FOR THE JUNIATA DAM.

APPROVED ON THE 14th DAY OF July, 2008.

BY:

Dick Wolfe
STATE ENGINEER

STATE ENGINEER OF COLORADO

Mark R. Haynes, Chief, Safety of Dams Program
DEPUTY STATE ENGINEER
MARK R. HAYNES
P.E. # 16457

THESE PLANS REPRESENT THE AS-CONSTRUCTED CONDITIONS OF JUNIATA RESERVOIR TO THE BEST OF OUR KNOWLEDGE AND JUDGMENT, BASED IN PART ON INFORMATION FURNISHED BY OTHERS AS OF THE

21 DAY OF October, 2009.

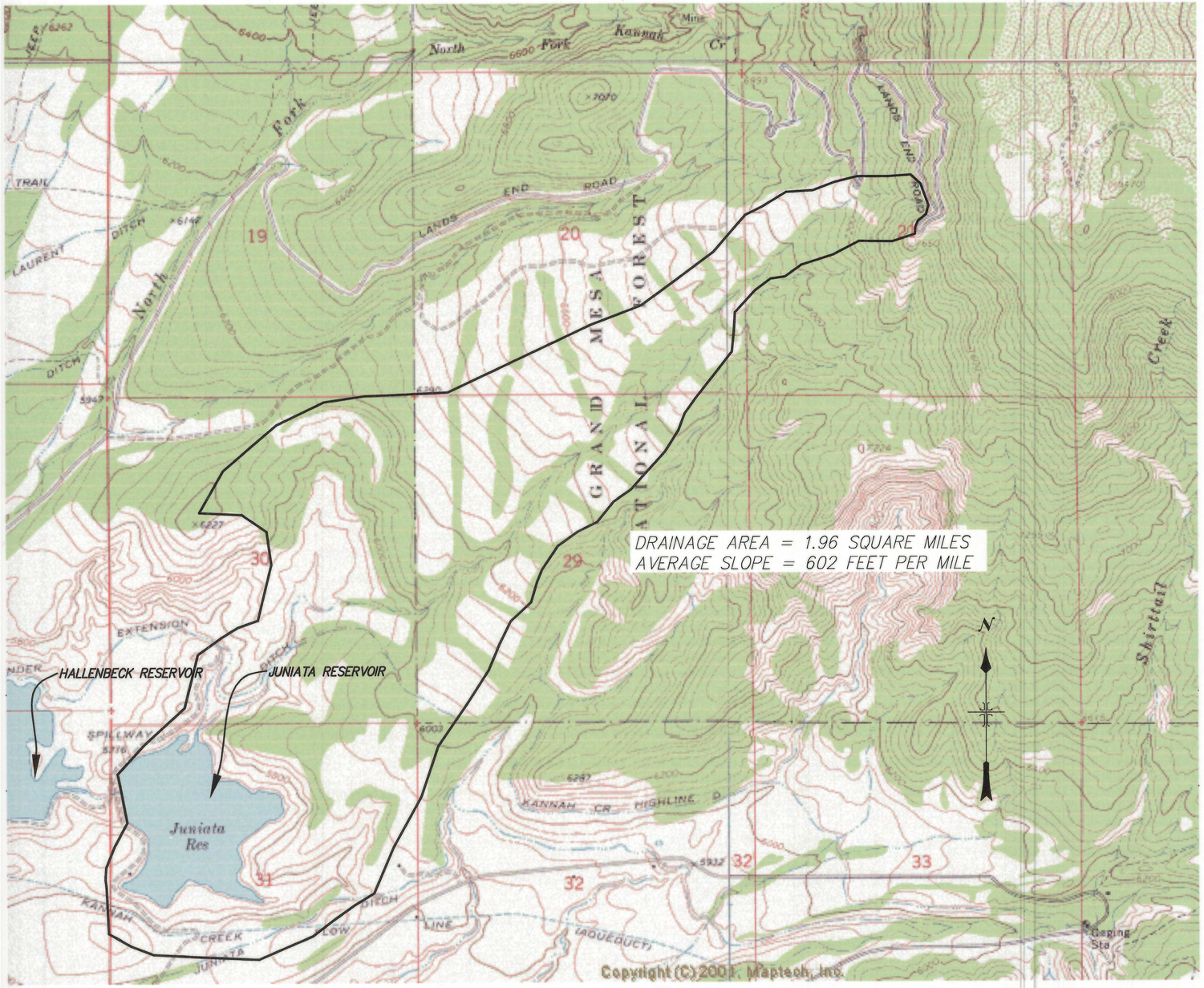
ERIC L. KRCH, P.E.
COLORADO P.E. No. 28583

COLORADO REGISTERED ERIC L. KRCH 28583 PROFESSIONAL ENGINEER
10/21/09

FOR A LIST OF DRAWINGS, SEE NEXT SHEET

COLORADO STATE ENGINEER FILE NUMBER
CONST FILE NO. C-0661D

SHEET C-1
OF 7 SHEETS



VICINITY MAP

APPROX SCALE: 1" = 0.2 MILES

INDEX TO DRAWINGS

C-1 COVER SHEET
C-2 VICINITY MAP AND GENERAL NOTES
C-3 SPILLWAY, OUTLET AND CAPACITY CURVES
C-4 SITE PLAN
C-5 SPILLWAY PLAN AND PROFILE
C-6 SPILLWAY AND TOE WALL DETAILS
C-7 WEIR WALL DETAILS

GENERAL NOTES

1. THESE CONSTRUCTION DRAWINGS ARE SUPPLEMENTED WITH THE BOUND TECHNICAL SPECIFICATIONS FOR JUNIATA RESERVOIR. AN ENGINEER SEALED COPY OF BOTH DOCUMENTS MUST BE MAINTAINED AT THE JOBSITE DURING ALL PHASES OF CONSTRUCTION.
2. THIS PROJECT FALLS UNDER THE COLORADO STATE ENGINEER'S OFFICE RULE 5 FOR DAM SAFETY RULES AND REGULATIONS FOR JURISDICTIONAL EMBANKMENT DAMS. THE CONTRACTOR, BY STARTING THIS PROJECT, ACKNOWLEDGES THAT THEY ARE FULLY AWARE OF THE CURRENTLY ADOPTED RULES AND REGULATIONS AND HOW THEY PERTAIN TO THEIR CONSTRUCTION PRACTICES AND SCHEDULING.
3. THE OWNER WILL PROVIDE MATERIAL TESTING, FULL TIME CONSTRUCTION, ENGINEERING OVERSIGHT, INSPECTION, AND CONTROL SURVEYING. THE CONTRACTOR SHALL DEVELOP A SURVEYING NEEDS/SCHEDULE AND PROVIDE IT TO THE OWNER/ENGINEER AT OR PRIOR TO THE PRECONSTRUCTION CONFERENCE.
4. ALL CHANGE ORDERS MUST BE APPROVED BY THE STATE ENGINEER'S OFFICE OF COLORADO AS WELL AS THE PROJECT ENGINEER. THIS WILL NECESSITATE A LONGER PERIOD FOR REVIEW AND APPROVALS.

EMBANKMENT MATERIAL SCHEDULE

ZONE	MATERIAL*	PLACEMENT REQUIREMENTS	TESTING FREQ.
SPILLWAY GROUTED RIPRAP	ANGULAR IGNEOUS ROCK	DUMPED, MACHINE ADJUSTED, THEN SOME GROUTED IN-PLACE	EVERY 500 TONS
SAND UNDER GROUTED RIPRAP	ASTM C-33 CONCRETE SAND	65-75% RELATIVE DENSITY AT OPT MOISTURE	EVERY 5 TONS

* SEE BOUND SPECIFICATIONS FOR DETAILED MATERIAL DESCRIPTIONS

COLORADO STATE ENGINEER FILE NUMBER

CONST FILE NO. C-0661D

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REVISIONS | DATE

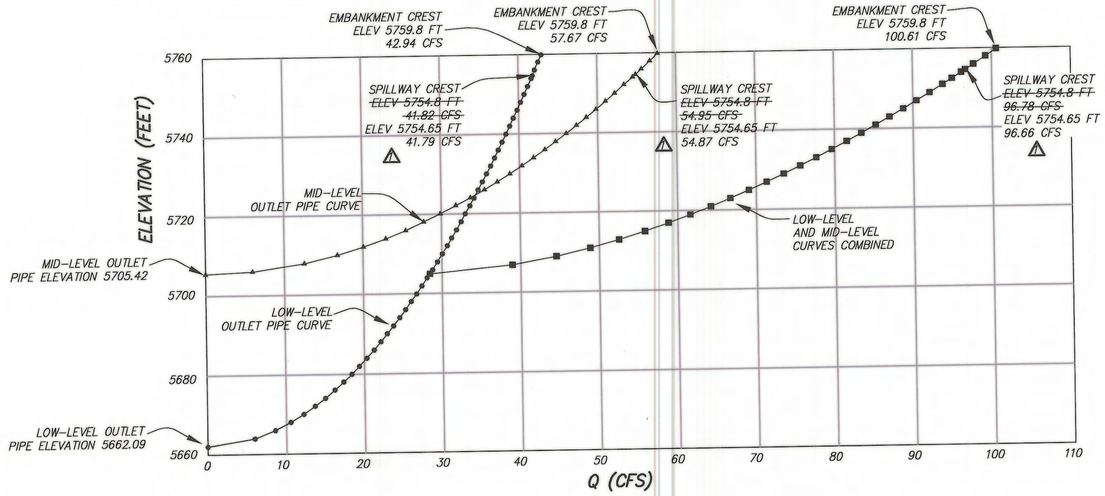
CITY OF GRAND JUNCTION
JUNIATA RESERVOIR - SPILLWAY MODIFICATION PROJECT
VICINITY MAP AND GENERAL NOTES

DESIGNED	ELK
DRAWN	BMB
DATE	05-23-08
PROJ. NO.	08-088

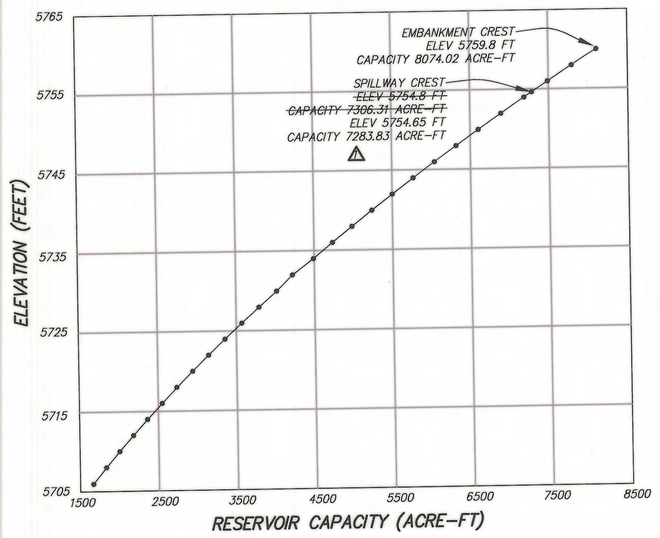
DRAWING NUMBER
C-2
OF 7 DWGS.

Water Level	Low-level pipe		Mid-level pipe		Combined	
	Adjusted Elevation = 5662.09		Adjusted Elevation = 5705.42			
	Q (cfs)		Q (cfs)		Q (cfs)	
5759.8	42.94		57.67		100.61	(Crest)
5759	42.76		57.24		100.00	
5758	42.54		56.71		99.25	
5757	42.32		56.16		98.48	
5756	42.09		55.62		97.71	
5755	41.87		55.06		96.93	
~~5754.8~~	~~5754.65~~	~~41.82~~ ~~41.79~~	~~54.95~~ ~~54.87~~		~~96.66~~ ~~96.78~~	(Spillway) ⚠
5754	41.64		54.51		96.15	
5753	41.42		53.94		95.36	
5752	41.19		53.37		94.56	
5751	40.96		52.80		93.76	
5750	40.73		52.21		92.94	
5749	40.50		51.63		92.12	
5748	40.26		51.03		91.29	
5747	40.03		50.43		90.45	
5746	39.79		49.82		89.61	
5745	39.55		49.20		88.75	
5744	39.31		48.57		87.89	
5743	39.07		47.94		87.01	
5742	38.83		47.30		86.13	
5741	38.59		46.65		85.23	
5740	38.34		45.99		84.33	
5739	38.09		45.32		83.41	
5738	37.85		44.64		82.48	
5737	37.60		43.95		81.54	
5736	37.34		43.25		80.59	
5735	37.09		42.53		79.62	
5734	36.84		41.81		78.64	
5733	36.58		41.07		77.65	
5732	36.32		40.32		76.64	
5731	36.06		39.55		75.61	
5730	35.80		38.77		74.57	
5729	35.53		37.97		73.51	
5728	35.27		37.16		72.43	
5727	35.00		36.33		71.32	
5726	34.73		35.48		70.20	
5725	34.45		34.60		69.06	
5724	34.18		33.71		67.89	
5723	33.90		32.79		66.69	
5722	33.62		31.84		65.46	
5721	33.34		30.87		64.21	
5720	33.06		29.86		62.92	
5719	32.77		28.82		61.59	
5718	32.48		27.74		60.22	
5717	32.19		26.61		58.80	
5716	31.89		25.44		57.33	
5715	31.60		24.20		55.80	
5714	31.30		22.91		54.20	
5713	30.99		21.53		52.52	
5712	30.69		20.06		50.75	
5711	30.38		18.47		48.85	
5710	30.07		16.74		46.80	
5709	29.75		14.80		44.55	
5708	29.43		12.56		41.99	
5707	29.11		9.83		38.94	
5706	28.78		5.96		34.74	
5705	28.45				28.45	
5704	28.12					
5703	27.78					
5702	27.44					
5701	27.10					
5700	26.75					
5699	26.39					
5698	26.03					
5697	25.67					
5696	25.29					
5695	24.92					
5694	24.54					
5693	24.15					
5692	23.76					
5691	23.36					
5690	22.95					
5689	22.53					
5688	22.11					
5687	21.68					
5686	21.24					
5685	20.79					
5684	20.33					
5683	19.86					
5682	19.38					
5681	18.89					
5680	18.38					
5679	17.86					
5678	17.33					
5677	16.77					
5676	16.20					
5675	15.61					
5674	14.99					
5673	14.35					
5672	13.67					
5671	12.97					
5670	12.22					
5669	11.42					
5668	10.56					
5667	9.63					
5666	8.59					
5665	7.41					
5664	6.00					
5663	4.14					

OUTLET RATING CURVES



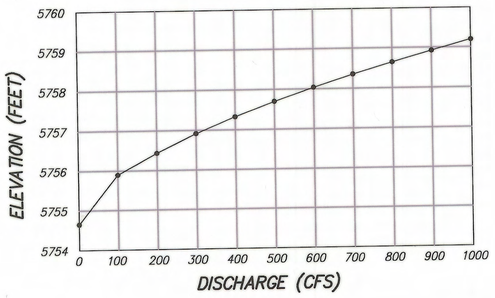
STAGE VS RESERVOIR CAPACITY



CAPACITY TABLE

ELEVATION (FEET)		CAPACITY (ACRE-FT)	
5706.42		1701.22	
5708		1832.84	
5710		2002.75	
5712		2179.09	
5714		2361.07	
5716		2548.70	
5718		2741.98	
5720		2940.91	
5722		3145.48	
5724		3355.71	
5726		3571.57	
5728		3793.09	
5730		4020.26	
5732		4253.07	
5734		4491.53	
5736		4735.64	
5738		4985.39	
5740		5240.80	
5742		5501.85	
5744		5768.55	
5746		6040.89	
5748		6318.89	
5750		6602.53	
5752		6891.82	
5754		7186.76	
~~5754.80~~	5754.65 ⚠	7283.83	~~7306.31~~
5756		7487.34	
5758		7793.58	
5759.80		8074.02	

SPILLWAY RATING CURVE



SPILLWAY RATING TABLE

ELEVATION (FEET)		DISCHARGE (CFS)
~~5754.80~~	5754.65	0
~~5755.90~~	5755.77	100
~~5756.44~~	5756.39	200
~~5756.92~~	5757.03	300
~~5757.33~~	5757.62	400
~~5757.70~~	5758.12	500
~~5758.04~~	5758.57	600
~~5758.36~~	5758.98	700
~~5758.65~~	5759.35	800
~~5758.93~~	5759.70	900
~~5759.20~~	5760.03	1000

⚠

COLORADO STATE ENGINEER FILE NUMBER
CONST FILE NO. C-0661D

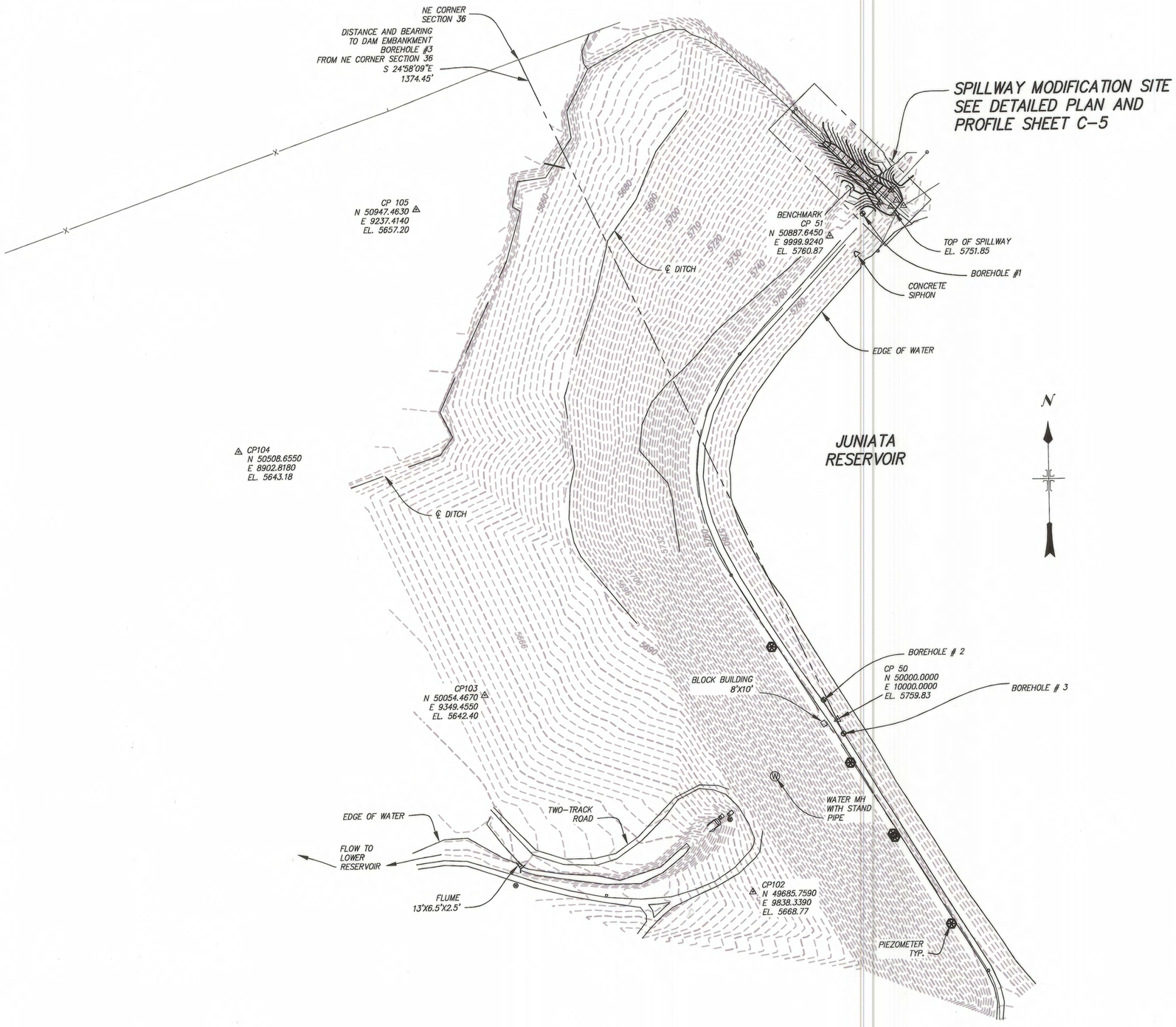
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REGISTERED PROFESSIONAL ENGINEER STATE OF COLORADO 29583 BRIAN L. KNOX

REVISIONS	DATE
1 AS-BUILTS	10-7-09

CITY OF GRAND JUNCTION
JUNIATA RESERVOIR - SPILLWAY MODIFICATION PROJECT
SPILLWAY, OUTLET AND CAPACITY CURVES

DESIGNED	ELK
DRAWN	BMB
DATE	05-23-08
PROJ. NO.	08-088
DRAWING NUMBER	C-3
	OF 7 DWGS.



COLORADO STATE ENGINEER FILE NUMBER
CONST FILE NO. C-0661D

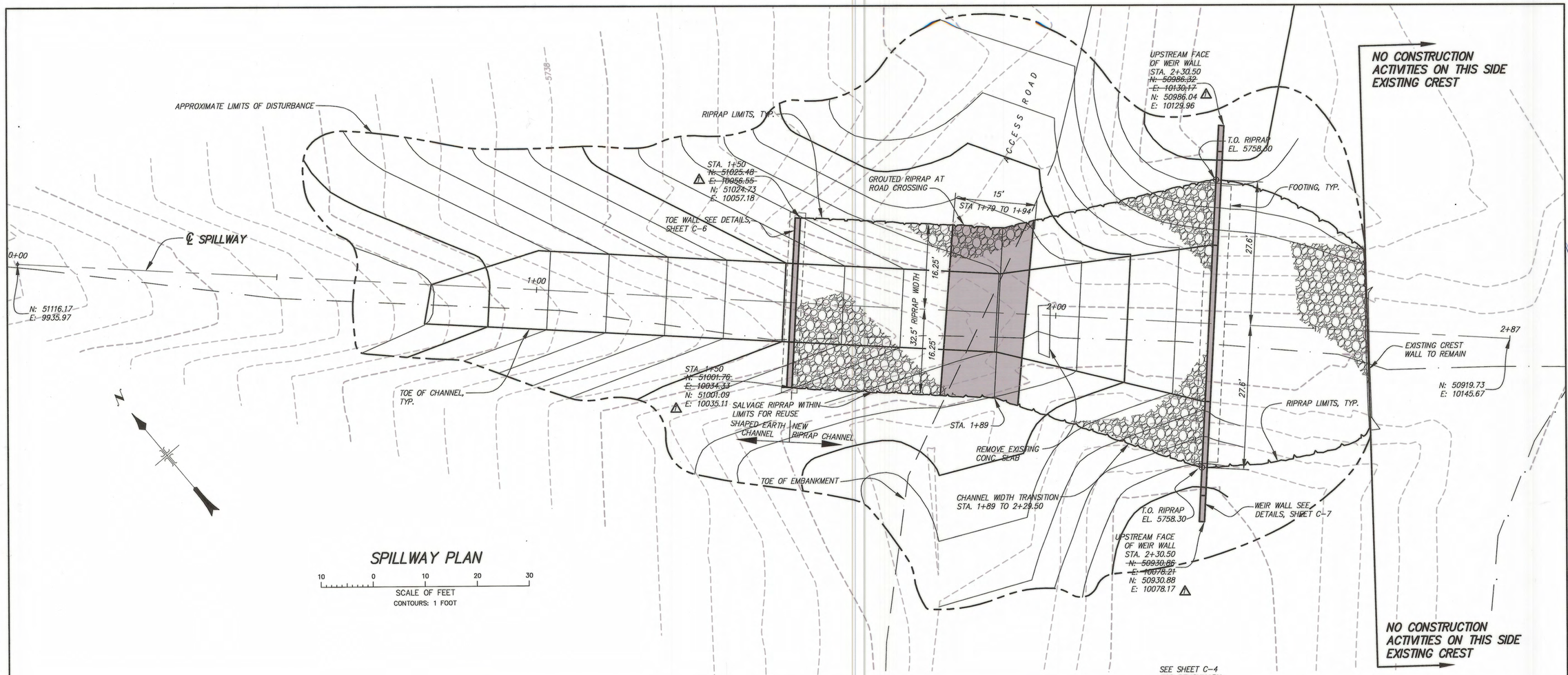
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COLORADO REGISTERED PROFESSIONAL ENGINEER 28583

REVISIONS	DATE

CITY OF GRAND JUNCTION
JUNIATA RESERVOIR - SPILLWAY MODIFICATION PROJECT
SITE PLAN

DESIGNED	ELK
DRAWN	BMB
DATE	05-23-08
PROJ. NO.	08-088
DRAWING NUMBER	C-4
	OF 7 DWGS.



COLORADO STATE ENGINEER FILE NUMBER
CONST FILE NO. C-0661D

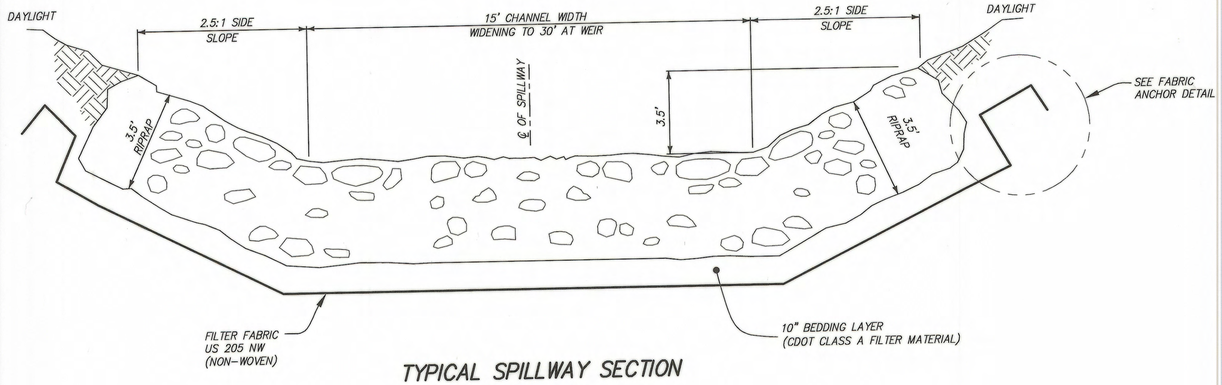
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COLORADO REGISTERED PROFESSIONAL ENGINEER
GREGG L. HUNT
28583

REVISIONS	DATE
1 AS-BUILTS	10-7-09

CITY OF GRAND JUNCTION
JUNIATA RESERVOIR - SPILLWAY MODIFICATION PROJECT
SPILLWAY PLAN AND PROFILE

DESIGNED	ELK
DRAWN	BMB
DATE	05-23-08
PROJ. NO.	08-088
DRAWING NUMBER	C-5
OF 7 DWGS.	



TYPICAL SPILLWAY SECTION

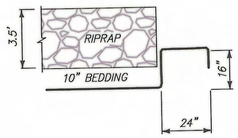
NOT TO SCALE

RIPRAP GRADATION

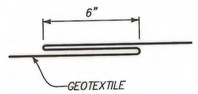
D30	1.95 FEET	W15	346–818 LBS
D50	2.12 FEET	W50	1106–1637 LBS
D90	2.82 FEET	W100	2212–5529 LBS

CLASS A GRADATION

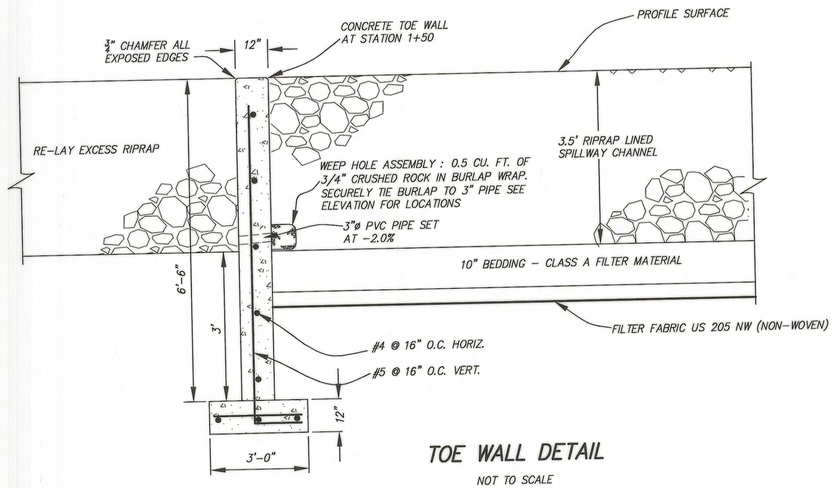
PERCENT PASSING	SIZE
100%	3"
20–90%	3/4"
0–20%	#4
0–3%	#200



FABRIC ANCHOR DETAIL

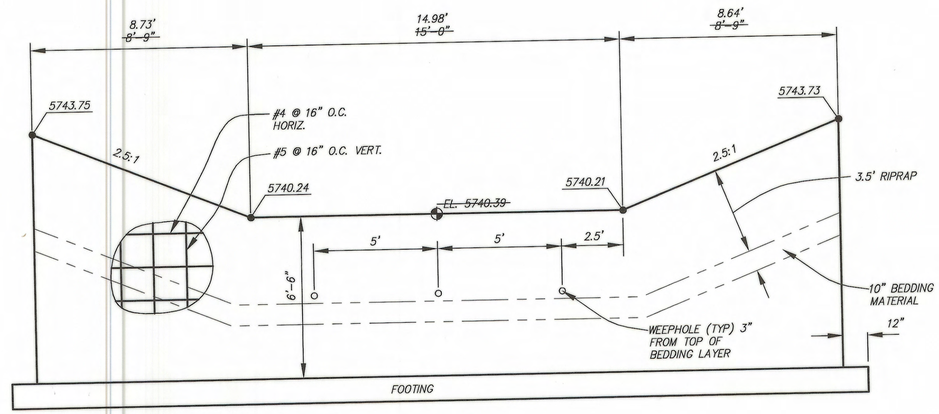


FABRIC FOLD DETAIL



TOE WALL DETAIL

NOT TO SCALE



TOE WALL ELEVATION

NOT TO SCALE ⚠

COLORADO STATE ENGINEER FILE NUMBER

CONST FILE NO. C-0661D

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REGISTERED PROFESSIONAL ENGINEER COLORADO JOHN L. KNOX 28583

REVISIONS	DATE
1 AS-BUILTS	10-7-09

CITY OF GRAND JUNCTION
JUNIATA RESERVOIR – SPILLWAY MODIFICATION PROJECT
SPILLWAY AND TOE WALL DETAILS

DESIGNED	ELK
DRAWN	BMB
DATE	05-23-08
PROJ. NO.	08-088

DRAWING NUMBER
C-6
OF 7 DWGS.

CONCRETE NOTES:

A. ALL CEMENT SHALL BE TYPE II SULFATE RESISTANT (ASTM C 150).

B. PROVIDE CONCRETE HAVING THE FOLLOWING GENERAL CHARACTERISTICS:

28-DAY STRENGTH	MAX SLUMP	AGGREGATE SIZE (MAX)	WATER/CEMENT RATIO	AIR CONTENT	USAGE
4500 PSI	4 IN.	0.75 IN.	0.49	5% TO 8%	FOOTINGS
4500 PSI	4 IN.	0.75 IN.	0.45	5% TO 8%	WALLS

C. WHERE FLY ASH IS PERMITTED, THE QUANTITY OF FLY ASH IS INCLUDED WITHIN THE SCHEDULED WATER/CEMENT (CEMENTITIOUS) RATIO ABOVE.

D. ALL REINFORCING STEEL SHALL BE NEW HIGH STRENGTH DOMESTIC DEFORMED BARS, GRADE 60, ASTM 1615-89 WITH 60,000 PSI MINIMUM YIELD STRENGTH.

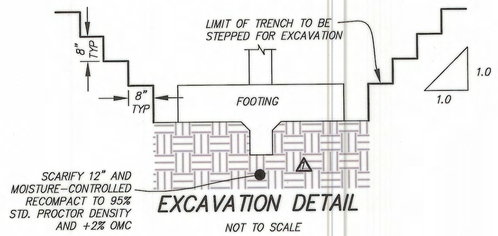
E. CORNER BARS SHALL BE PROVIDED TO MATCH AND LAP ALL HORIZONTAL REINFORCING. CARE SHOULD BE TAKEN DURING THE PLACEMENT OF LAPPED BARS TO INSURE THAT THERE IS ADEQUATE SPACE REMAINING FOR PROPER CONCRETE PLACEMENT AND COVER.

F. SPLICES IN REINFORCING STEEL SHALL BE MADE USING A MINIMUM OF 40 BAR DIAMETER LAPS.

G. PROVIDE ALL ACCESSORIES NECESSARY TO SUPPORT REINFORCING AT ALL POSITIONS SHOWN ON THE STRUCTURAL DRAWINGS.

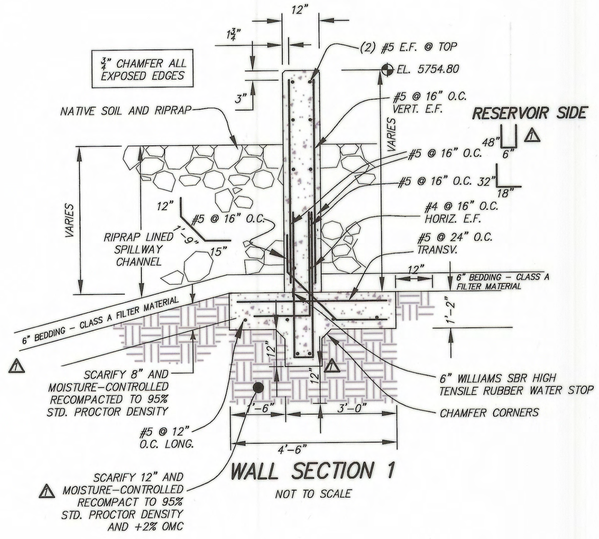
H. REINFORCEMENT CONCRETE COVER PROTECTION MINIMUMS:

- H.A. CONCRETE PLACED AGAINST EARTH – 3 INCHES
- H.B. CONCRETE PLACED IN FORMS BUT EXPOSED TO WEATHER OR EARTH:
  - H.B.A. IF BARS ARE LARGER THAN NO. 5 – 2 INCHES
  - H.B.B. IF BARS ARE NO. 5 OR SMALLER – 1.5 INCHES
- H.C. COLUMNS, GIRDERS AND BEAMS – 1.5 INCHES
- H.D. SLABS AND WALLS – 0.75 INCHES



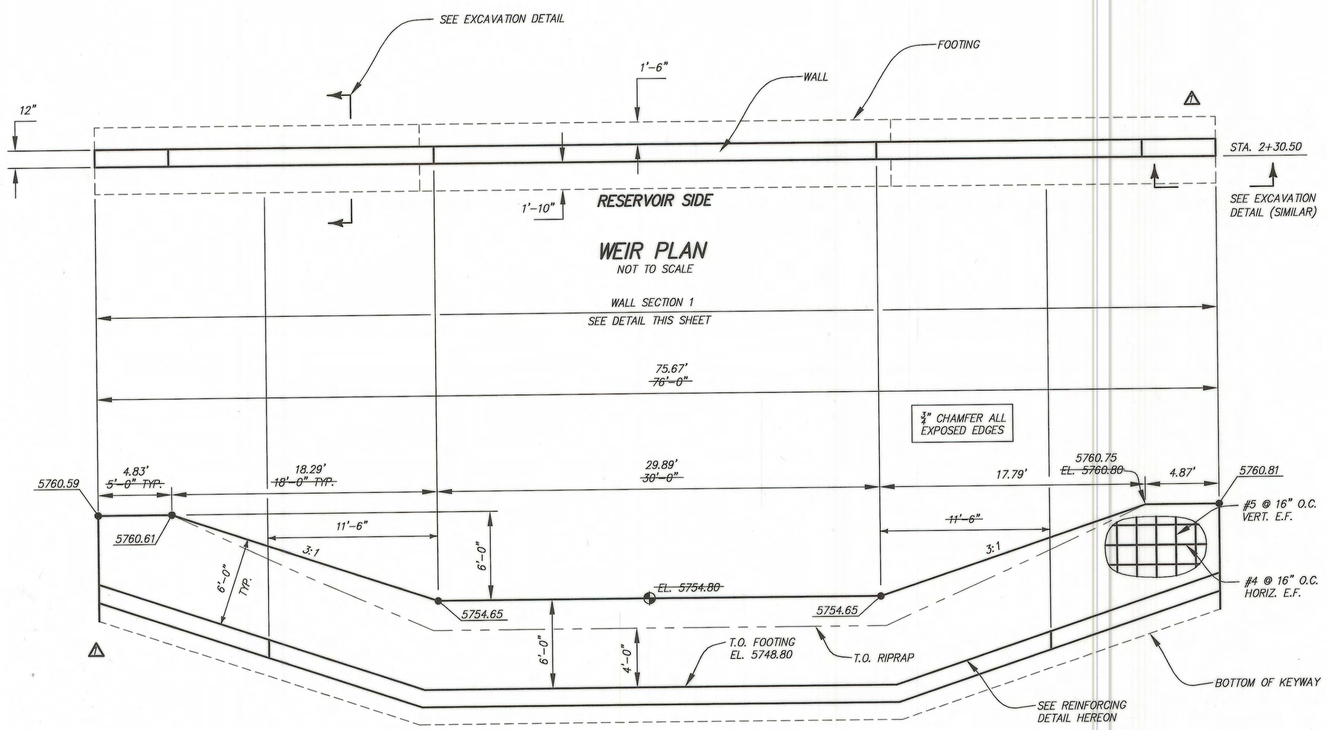
EXCAVATION DETAIL

NOT TO SCALE



WALL SECTION 1

NOT TO SCALE

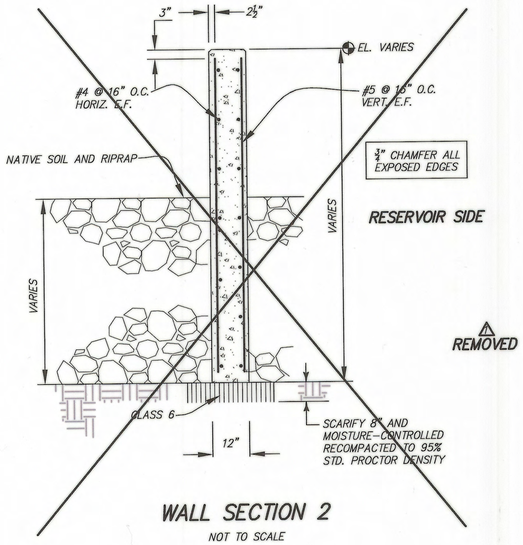


WEIR PLAN

NOT TO SCALE

WEIR ELEVATION

NOT TO SCALE



WALL SECTION 2

NOT TO SCALE

COLORADO STATE ENGINEER FILE NUMBER

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BUCKHORN GEOTECH

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COLORADO REGISTERED PROFESSIONAL ENGINEER 23583

REVISIONS	DATE
1 AS-BUILTS	10-7-08

CITY OF GRAND JUNCTION

JUNIATA RESERVOIR - SPILLWAY MODIFICATION PROJECT

WEIR WALL DETAILS

DESIGNED	ELK
DRAWN	BMB
DATE	05-23-08
PROJ. NO.	08-088

DRAWING NUMBER C-7

OF 7 DWGS.