COLORADO
Parks and Wildlife
Department of Natural Resources

Rifle Falls SFU - Isolation Building
PART 1 - BIDDING AND CONTRACT INFORMATION

PROJECT NO. SCA23A
IFB1: 2025*169

OPTIONAL PRE-BID CONFERENCE: April 2, 2025 at 11:00 AM

BID OPENING: April 16, 2025 at 1:00 PM

ADDENDUM NO. 1 - 4/9/2025

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INVITATION FOR BIDS
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The Colorado Division of Parks and Wildlife is accepting sealed bids for the complete furnishing and installation of a 33'x26' Isolation Building in accordance with these bid documents.

Sealed bids will be received by Colorado Parks and Wildlife, 711 Independent Avenue, Grand Junction until April 16, 2025 at 1:00 PM, after which the bids will then be made public. Bids shall be submitted using the form provided in the project specifications. On-line bid submittals are not accepted.

A five-percent (5%) Bid Bond, certified check, or cashier's check is required with bid proposals of $50,000.00 or more.

Non-Mandatory Pre-bid conference: April 2, 2025 at 11:00 AM at the project site.

Project Address: Rifle Falls SFU
11466 State Highway 325
Rifle, 81650
Garfield County

Project Coordinates: Latitude: 39°41'36"N
Longitude: 107°41'59"W
View Google Map Location

Contractor Questions: All questions related to the project shall be submitted via e-mail to the Design Engineer, Jordan Hasz at jordan.hasz@state.co.us. The deadline for questions is April 9, 2025 at 5:00 PM. Questions submitted after the deadline will not be addressed. All questions and answers will be posted as solicitation amendments on the Vendor Self Service (VSS) website. Bidders may not automatically be notified of the existence of a modification or addendum. It is the responsibility of the bidder to check the VSS website periodically to see if any modifications have been issued. Failure to retrieve such modifications and include their provisions in your bid response may result in your bid being deemed non-responsive.

Plans and specifications are available for all bidders on the web at: www.colorado.gov/vss

The following is a tentative project schedule, which will be revised and expanded by the selected Contractor and submitted to the Project Manager for review:

NON-MANDATORY PRE-BID CONFERENCE	April 2, 2025 at 11:00 AM
WRITTEN QUESTIONS DUE	April 9, 2025 at 5:00 PM
BID OPENING	April 16, 2025 at 1:00 PM
NOTICE OF INTENT TO AWARD	April 21, 2025 (Tentative)
NOTICE TO PROCEED	June 2, 2025 (Tentative)
SUBSTANTIAL COMPLETION	September 1, 2025 (Tentative)

BID SCHEDULE
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DEPARTMENT OF NATURAL RESOURCES
COLORADO PARKS AND WILDLIFE
STATE OF COLORADO

_____**Proposes to furnish all labor, equipment, materials, and incidentals needed to complete the Rifle Falls SFU - Isolation Building. The work shall be completed in 90 calendar days from the date of the Notice to Proceed. We have read and made, the "Instructions to Bidders", the "General Conditions for Capital Construction", the Written Specifications, and the Construction Drawings part of this bid.**

Technical Specifications related to construction materials and methods for work embraced under this Contract shall consist of references to, but not limited to, the **Colorado Department of Transportation Most Current Standard Specifications for Roads and Bridge Construction**. Special attention should be given to these references and revisions noted within.

UNITS: ALLOW = allowance, CY = cubic yard, EA = each, LF = linear foot, LS = lump sum, TON = tons

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Service Disabled Veteran Owned Small Business Statement (SDVOSB): The undersigned bidder shall certify by **checking** below that the corporation, partnership, or sole proprietorship **IS or IS NOT** claiming a 5% bid preference in accordance with C.R.S. 24-103-211. SDVOSB certification must be included with your bid.

Is: ☐ **Is Not:** ☐

Addendum Inclusion Statement: The undersigned bidder shall certify by **listing** below that all Addendums have been considered and included as part of the Contractor's proposal. The Addendum numbers that the Contractor has included as part of his proposal shall be listed in the space provided.

Addendums:_____

BID SCHEDULE
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Base Bid: Furnish and install all materials and labor for the completion of the Base Bid Improvements per the Construction Drawings and Specifications

Base Bid Items:	Quantity	Unit	Unit Cost	Total Item Cost
1. Mobilization	1	LS		
2. Site Grading and Earthwork	1	LS		
3. Site Restoration and Reseeding	1	LS		
4. Compacted ABC	50	TON		
5. Concrete Foundation	23.4	CY		
6. Isolation Building, Complete	1	LS		
7. Concrete Slab	18.4	CY		
8. Channel Drains	73	LF		
9. Water and Sewer Utilities to Building	1	LS		
10. Interior Plumbing	1	LS		
11. Electrical Service	1	ALLOW	$ 10,000	$ 10,000
12. Electrical Distribution and Fixtures	1	LS		

Base Bid AMOUNT $_____

Base Bid AMOUNT (PLEASE WRITE OUT)

_____ DOLLARS

BID SCHEDULE
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Additional Bid Items: Furnish and install all materials and labor for the completion of Additional Bid Items per the Construction Drawings and Specifications. These items are to be completed by the bidder and may be added by the Owner in any combination to arrive at the selection of the lowest responsible bidder. They are NOT to be included in the BASE BID.

Additional Bid Items:	Quantity	Unit	Unit Cost	Total Item Cost
13. Ultraviolet Treatment System	1	LS		
14. Service Sink with Tankless Water Heater	2	EA		
15. Fiberglass Tanks	14	EA		
16. 8-Tray Vertical Incubators	4	EA		

Additional Bid Total AMOUNT $ _____

Additional Bid Total AMOUNT (PLEASE WRITE OUT)

$ _____ DOLLARS

BID SCHEDULE
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(A Corporate Signature Block)

_____

Company Name

A _____Corporation

Date_____, 20_____

Colorado VSS Vendor ID# (if available) _____

By _____
President

Attested to by _____
Secretary

(A Partnership Signature Block)
A limited partnership of _____, general

partner;

_____ doing business as (dba)

_____.

Company Name

Colorado VSS Vendor ID# (if available) _____

by _____
General Partner

(A Sole Proprietorship Signature Block)
A Sole Proprietorship of _____(dba)

_____.

Colorado VSS Vendor ID# (if available) _____

by_____Owner

MEASUREMENT AND PAYMENT
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The following descriptions delineate the Work, materials, and how measurements of completed Work will be made and paid for, for each bid item in the Bid Schedule. The Bidder is to read these definitions and price their proposal accordingly.

Bid Item 1 – Mobilization
Measurement and payment will be in accordance with SECTION 02050 – MOBILIZATION.

Bid Item 2 – Site Grading and Earthwork
This bid item includes all labor, materials, equipment, independent testing services and incidental costs required to perform earthwork in accordance with these bid documents. This includes but is not limited to: any costs for preparatory earthwork, clearing and grubbing, excavation, backfill, compaction, soil testing, and finish grading. Individual items shall not be measured separately but shall be included in the total unit cost. Payment will be made at the lump sum bid price as reported on the Bid Schedule.

Bid Item 3 – Site Restoration and Reseeding
This bid item includes all labor, materials, equipment and incidental costs required to restore the site to preconstruction conditions in accordance with these bid documents. This pay item includes, but is not limited to: removal of all construction debris and materials, final grading, placement of topsoil, and reseeding. Individual items shall not be measured separately but shall be included in the total unit cost. Payment will be made at the lump sum bid price as reported on the Bid Schedule.

Bid Item 4 – Compacted ABC
This bid item includes all labor, materials, equipment, independent testing services and incidental costs required to furnish and place CDOT Class 5 Aggregate Base Course (ABC) in accordance with these bid documents. ABC shall be placed at optimum moisture content and compacted to a minimum 95% of standard proctor density. The method to bring mixture to optimum moisture and density will not be measured or paid for separately, but shall be included in the unit price for this item. Measurement for this item will be according to load tickets delivered to the site, and paid at the unit price per ton as reported on the Bid Schedule. The load tickets shall be submitted by the Contractor with the pay application.

Bid Item 5 – Concrete Foundation
This bid item includes all labor, materials, equipment, independent testing services and incidental costs required to furnish and install reinforced concrete foundations in accordance with these bid documents. This pay item includes but is not limited to: formwork, reinforcement, inserts and fastening devices, and all other supplies necessary for installation as described in the drawings and specifications. These additional items shall not be measured separately but shall be included in the total unit cost. Quantities shall be measured according to the neat lines of the Foundation Plan, and paid at the unit price per cubic yard as reported on the Bid Schedule.

Bid Item 6 – Isolation Building, Complete
This bid item includes all labor, materials, equipment and incidental costs required for the complete construction of the Isolation Building in accordance with these bid documents. This includes, but is not limited to:

- The complete furnishing, fabrication, and erection of the insulated wood and metal

building.
- All structural systems, building and foundation insulation, doors, windows, wall panels, flashing, trim and incidental hardware required for the complete building system.

The building will be measured and paid as a completed building unit in place. Progress payments will be made based on a percentage of the completed work, at the lump sum price as reported on the Bid Schedule.

Bid Item 7 – Concrete Slab
This bid item includes all labor, materials, equipment, independent testing services and incidental costs required to furnish and install the interior concrete slab in accordance with these bid documents. This pay item includes but is not limited to: formwork, reinforcement, sealants, joint fillers, finishing, and all other supplies necessary for the complete installation. These additional items shall not be measured separately but shall be included in the total unit cost. Quantities shall be measured according to the neat lines of the Foundation Plan, and paid at the unit price per cubic yard as reported on the Bid Schedule.

Bid Item 8 – Channel Drains
This bid item includes all labor, materials, equipment and incidental costs required to furnish and install the pre-cast concrete channel drains in accordance with these bid documents. This includes but is not limited to: channels, grating, end caps, outlets, installation brackets, rebar, and all additional hardware and incidental costs associated with the complete channel drain installation. Individual items shall not be measured separately but shall be included in the total unit cost. Payment will be made at the unit price per lineal foot of complete channel drain as reported on the Bid Schedule.

Bid Item 9 – Water and Sewer Utilities to Building
This bid item includes all labor, materials, equipment, independent testing services and incidental costs required to install water and sewer utilities from the indicated connection points to the interior of the building in accordance with these bid documents. Backfill for utility trenches shall be moisture adjusted, placed in loose lifts not exceeding 1 foot, and compacted to a minimum of 95% of standard proctor density throughout the fill. The method to bring mixture to optimum moisture and density will not be measured or paid for separately, but shall be included in the unit price for this item. Individual items shall not be measured separately but shall be included in the total unit cost. Payment will be made at the lump sum unit price as reported on the Bid Schedule.

Bid Item 10 – Interior Plumbing
This bid item includes all labor, materials, equipment and incidental costs required to complete the installation of interior plumbing up to the plumbing fixtures in accordance with these bid documents. This includes but is not limited to: interior piping, fittings, hangers, valves and all additional hardware and incidental costs associated with the complete plumbing system installation outside of bid items 13-16. Individual items shall not be measured separately but shall be included in the total unit cost. Payment will be made at the lump sum unit price as reported on the Bid Schedule.

Bid Item 11 – Electrical Service
This bid item includes all necessary coordination and communication regarding the installation of the electrical service line. The contractor will be required coordinate with **Xcel Energy** to ensure that the electrical service is installed within the project schedule at the price agreed upon. This bid item will be paid as an allowance at the price quoted by **Xcel Energy** as shown on the bid schedule.

Bid Item 12 – Electrical Distribution and Fixtures
This bid item includes all labor, material, equipment and incidental costs required to install electrical service from the transformer to the building, and distribution and fixtures within the building in accordance with these bid documents. This includes, but is not limited to:

- Service panels, C.T. cabinet, meter socket, disconnect panels, overhead wiring, ties, system grounding, connection testing and any other cost associated with the complete electrical system.
- All electrical distribution within the building, conduit, wiring, switches, outlets, lights, fans, heaters and any other cost associated with the complete electrical system outside of Bid Item 11.

This bid item also includes all required drawings, submittals, certifications and inspections. Individual items shall not be measured separately but shall be included in the total unit cost. Payment will be made at the lump sum unit price as reported on the Bid Schedule.

The following bid items are to be completed by the bidder, and are additional items which are NOT to be included in the Base Bid. They may be added in any combination to arrive at the selection of the lowest responsible bidder. All bid items shall include costs associated with additional mobilization and insurance required above that necessary to complete the base bid.

Additional Bid Item 13 – Ultraviolet Treatment System
This bid item includes all labor, materials, equipment and incidental costs required to complete the installation of the Ultraviolet Treatment System in accordance with these bid documents. This includes but is not limited to: UV treatment vessel, bulbs, quartz sleeve, intensity and temperature sensors, power supply, enclosure and mounting hardware, Pro-Series control, and all additional hardware and incidental costs associated with the complete system installation. Additional items shall not be measured separately but shall be included in the total unit cost. If selected, payment will be made at the lump sum unit price as reported on the Bid Schedule.

Additional Bid Item 14 – Service Sink with Tankless Water Heater
This bid item includes all labor, materials, equipment and incidental costs required to install Service Sinks with Tankless Water Heaters in accordance with these bid documents. This includes but is not limited to: sinks, faucets, water heaters, additional plumbing, valves, and all additional hardware and incidental costs associated with the complete sink installation. If selected, payment will be made for each sink with hot water heater completely installed at the unit cost reported on the Bid Schedule.

Additional Bid Item 15 – Fiberglass Tanks
This bid item includes all labor, materials, equipment and incidental costs required to install 48”D x 30”H Fiberglass Tanks in accordance with these bid documents. This includes but is not limited to: fiberglass tanks, leveling legs, drain connections, and all additional hardware and incidental costs associated with the complete tank installation. If selected, payment will be made for each tank completely installed at the unit cost reported on the Bid Schedule.

Additional Bid Item 16 – 8-Tray Vertical Incubators
This bid item includes all labor, materials, equipment and incidental costs required to install 8-Tray Vertical Incubators in accordance with these bid documents. This includes but is not limited to: aluminum frame, egg trays, screens, and all additional hardware and incidental

costs associated with the complete incubator installation. If selected, payment will be made for each incubator assembly completely installed at the unit cost reported on the Bid Schedule.

As a footnote to the bid items, the following items have NOT been included as specific pay items and ARE to be considered incidental to the construction for which they are required:

- Testing
- State electrical permits and inspections
- Water, watering, and dust control
- Dewatering
- Temporary facilities and utilities
- Traffic control
- Barricades and other required safety provisions

This concludes the bid items listed in the proposal. The only payments made under this contract are for the bid items listed herein, and no additional payments will be made to the Contractor for work specified or shown in these Contract Documents. If any discrepancies exist, the Contractor shall notify the Project Manager in writing, requesting clarification.

END OF SECTION

INSTRUCTIONS TO BIDDERS

PROJECT: Rifle Falls SFU - Isolation Building
PROJECT NO: SCA23A

1. Bidders must review the plans and specifications, construction site and conditions in their entirety, and determine the problems that may be encountered in performing the work. The bidder shall include any costs associated with his/her findings in the prices quoted in the proposal. Documents will be available on the State of Colorado VSS website www.colorado.gov/vss. No additional copies of the drawings and specifications will be provided by the Division of Parks and Wildlife at any time before or after the bid opening.

2. All work must conform to the requirements stated in the "General Conditions for Capital Construction".

3. All questions concerning this project shall be in writing directed to the Project Manager identified in the Invitation for Bids. The Invitation for Bids also identifies important dates and deadlines for this project.

4. BID SCHEDULE:
   A. The bidder shall include on the signature page, their Vendor ID (if available) obtained from registration on the Colorado VSS website.
   B. The bidder shall complete the Minority Business, Service Disabled Veteran Owned Small Business and Colorado Labor statements as well as acknowledge addendum(s) on the first page of the Bid Schedule.
   C. All bid items shall include a unit and extended price or the bid will be disqualified. The bidder shall write in words and numerically the total base bid and add/alternate (if applicable) amounts on the included Bid Schedule. If conflicts exist between the written words and the numerical amount, the actual line item unit cost shall take precedence.
   D. The Bid Schedule shall be signed manually in ink:
      1) If the bidder is a corporation, use the corporate signature block, insert the name of the state in which the company was incorporated, and include the Employer Identification Number (E.I.N.) in the appropriate spaces. The bid must be signed by an officer (President or Vice President), and the title indicated. The signature of the officer shall be attested to by the Secretary and properly sealed. Cross out incorrect titles and insert correct ones, if necessary.
      2) If the bidder is a partnership, use the partnership signature block. Cross out the word "Limited" if the partnership is a general one. Print each partner's name and note the proportion of the partnership that each partner has. The majority or general partner must sign the proposal. The same person must sign the contract, if awarded. Print the company name in the appropriate space.
      3) If the bidder is a proprietorship, use the sole proprietorship signature block, print in the owner's name, Social Security number, and the business name in the blanks provided, and the owner signs the owner blank.

5. BID BOND: A bid bond is required for all competitive sealed bids when the price exceeds $50,000. A bid guarantee in an amount not less than five percent (5%) of the total bid price must be submitted in the form of a firm commitment, such as a bid bond, bank money order, certified check or cashier's check. Checks or money orders should be made payable to the Treasurer, State of Colorado. An irrevocable letter of credit is not acceptable as a bid guarantee. Failure to furnish a bid guarantee in the proper form and amount by the time set for opening of bids may be cause for rejection of the bid.

6. PERFORMANCE BOND, LABOR AND MATERIAL BOND: The successful bidder shall furnish a bond in the amount of 100% of the contract price for performance and for material and labor payment when bid is equal to or exceeds $150,000. The bond shall be executed on the standard State of Colorado form. The State requests that the Surety and Contractor leave the date of the Contract found on the first page of each bond form, blank and we will 'pen' in the date after the Controller executes the Contract. These bonds will be submitted along with the standard State Agreement form within 10 days of the "Notice of Award."

7. SERVICE DISABLED VETERAN OWNED SMALL BUSINESSES (SDVOSB's): SDVOSB's, who are incorporated or organized in Colorado or maintain a place of business or have an office in Colorado and who are officially registered and verified as a SDVOSB by the Center for Veteran Enterprise within the U.S. Department of Veterans Affairs. (www.vip.vetbiz.gov), may receive a 5% preference on their bid. This preference applies only to the price, and the SDVOSB's must still meet all other qualifications required in the bid. SDVOSB's claiming this preference shall submit documentation of SDVOSB certification Issued through the U.S. Department of Veterans Affairs in their response to the solicitation. Bid submissions without this documentation will not be given a preference.

8. SUBMITTAL OF BID: The completed Bid must be received by the deadline identified in the Invitation for Bid. You must include as part of your bid the following items:

   A. Provide completed Bid Schedule as described above.
   B. Provide Bid Bond (if required) as described above.
   C. SDVOSB certification issued through the U.S Department of Veterans Affairs (if applicable).
   D. Contractor's Qualifications and References Statement.

   This information is to be enclosed in a sealed envelope marked "SEALED BID". Include the bid opening date and time.

   The envelope shall be addressed to:

   ATTN: Kendal Bergman
   Northwest Regional Office
   Colorado Parks and Wildlife
   711 Independent Avenue
   Grand Junction, 81505

   Bidders Name and Address should appear in the Upper Left Corner of the envelope.

9. METHOD OF AWARD: The lowest responsible bid, taking into account the Colorado resident bidder preference provision of Colorado Law, will be determined by and the purchase order or contract will be issued, to the extent that the total dollar amount is within available funds to finance the construction. If all bids exceed such amount, the right is reserved to reject all bids. The Division of Parks and Wildlife reserves the right to reject any or all proposals, to waive informalities, and to accept any proposal deemed desirable.

   Additive alternates will be used in determining the lowest responsible bidder within the amount available to finance the contract, added in the numeric order listed. An equal number of alternates shall be added to the base bid of each bidder within funds available to finance the contract for purposes of determining the lowest responsible bidder.

The bidder must be registered to do business in the State of Colorado with the Secretary of State www.sos.state.co.us. A Certificate of Good Standing will be required to process the Agreement.

10. UNIT COST: The price quoted in the proposal shall include the costs of labor, materials, equipment, and incidentals required to provide a fully complete and functioning unit as shown and described in the plans and specifications. The price stated in the proposal shall be complete, and represent total payment for each item in the proposal. No additional payment will be made for the work presented in the proposal.

11. INSURANCE: The successful bidder will be required to submit proof of insurance at the time of executing the agreement. Proof of insurance must be submitted on certificates showing the minimum coverage amounts.
    A. The Contractor is required to procure and maintain at all times during the term of this contract the insurance coverage listed below:
        1) Workers' Compensation and Employer's Liability Insurance, as required by state statute, including occupational disease, covering all of contractor or subcontractor employees acting within the course and scope of their employment.
        2) Commercial General Liability Insurance written on ISO occurrence form CG 00 01 10/93 or equivalent, covering premises operations, fire damage, independent contractors, products and completed operations, blanket contractual liability, personal injury, and advertising liability with minimum limits as follows:
            a. $1,000,000 combined single limit written on an occurrence basis;
            b. $1,000,000 general aggregate;
            c. $1,000,000 products and completed operations aggregate; and
            d. $50,000 any one fire.
            e. If any aggregate limit is reduced below $1,000,000 because of claims made or paid, the contractor shall immediately obtain additional insurance to restore the full aggregate limit and furnish to the State a certificate or other document satisfactory to the State showing compliance with this provision.
        3) Automobile Liability Insurance covering any auto (including owned, hired and non-owned autos) with a minimum limit as follows: $1,000,000 each accident combined single limit.
        4) Builder's Risk Insurance.
    B. The State of Colorado shall be named as an *Additional Insured* on the Commercial General Liability, Automobile Liability, and Builder's Risk policy insurance certificates and Colorado Parks and Wildlife must be named as the certificate holder for all coverages 1-4 noted above (leases and construction contracts will require the additional insured coverage for completed operations on endorsements CG 2010 11/85, CG 2037, or equivalent). Coverage required of the contract will be primary over any insurance or self-insurance program carried by the State of Colorado.
    C. The Insurance shall include provisions preventing cancellation or non-renewal without at least 45 days prior notice to the State by certified mail.
    D. The Insurance shall include a waiver of subrogation for all coverages.
    E. The contractor will require all insurance policies in any way related to the contract and secured and maintained by the contractor to include clauses stating that each carrier will waive all rights of recovery, under subrogation or otherwise, against the State of Colorado, its agencies, institutions, organizations, officers, agents, employees and volunteers.
    F. All policies evidencing the insurance coverage required hereunder shall be issued by insurance companies satisfactory to the State. No later than 15 days prior to the expiration date of any such coverage, the contractor shall deliver the State certificates of insurance evidencing renewals thereof.

12. BUILDER'S RISK INSURANCE: The Contractor shall effect and maintain, at their own expense, during the life of the contract, All Risk Builder's Risk Completed Value Insurance if the work is for an entirely new structure, or All Risk Insurance if the work is for an existing structure. The coverage shall be in the dollar amount of the total project for the contract.

    The insurance shall remain in effect until all contract work has been completed and a Notice of Final Acceptance has been issued, whether or not the building or some part thereof is occupied in any manner prior to final acceptance of the project. Such insurance shall be in an amount equal to the aggregate total insurable value of the construction contract entered in with permissible deductions of the cost of the excavations, foundations below the lowest basement floor, underground construction, underground pipes, underground wiring, sidewalks, driveways, curbs and gutters, street improvements, and fences.

    Upon request, the amount of such fire insurance shall be increased to include the cost of any additional work to be done on the project, or materials or equipment to be incorporated in the project, under other independent contracts let or to be let. In such event, the Contractor shall be reimbursed for the cost of their share of the insurance in the same ratio of the insurance represented by such independent contracts let or to be let to the total insurance carried.

    All such insurance shall insure the State of Colorado acting by and through the Division, the Contractor and their subcontractors as their interest may appear, but the loss, if any shall be payable to the State Controller, as Trustee. The certificate of insurance shall specifically state the inclusion of provisions herein above. The Division with the approval of the State Controller will have the power to adjust and settle any loss. Unless it is agreed otherwise, all moneys received will be applied on rebuilding or repairing the destroyed or injured work.

13. If the successful bidder, upon acceptance of his bid by the OWNER, fails to execute such further contractual documents, and give such bond(s) (including any necessary coinsurance or reinsurance agreements) as may be required within ten (10) days after receipt of the Notice of Award, the contract may be terminated for default. In such event the CONTRACTOR shall be liable for any cost of procuring the work which exceeds the amount of his bid, and the bid guarantee shall be available toward offsetting such difference.

14. The bidder is not to give any information concerning his proposal to any other bidder or receive any information concerning another proposal.

15. SALES TAX: The Division of Parks and Wildlife is exempt from paying Colorado sales tax. Any materials and supplies purchased for this contract are exempt. The Contractor will need to obtain an exemption number from the Department of Revenue for this project and each subcontractor is required to obtain one under the general contractor.

16. QUANTITIES: Quantities stated in the bid schedule and construction documents are estimates only and may increase or decrease during construction. The contractor will perform the required quantity of work based on the unit prices stated in the Bid Schedule except as provided in Section 4.2 of the "General Conditions for Capital Construction."

17. WORK STOPPAGE: Work stoppage is a possibility. The contractor must request all shutdowns or stoppages in writing. If a shutdown is granted, the Division will pay for only work that has been totally completed. No advanced payment of mobilization will be made.

18. CONSTRUCTION SCHEDULE: The Contractor shall submit a written project schedule and supporting data to the Project Manager as soon as possible after the receipt of the Notice of Award. The schedule shall describe key milestones and duration of project activities. The supporting data for the schedule shall include a complete list of anticipated submittals and due dates, and the key ordering and delivery lead times. The Contractor shall schedule the sequence of construction to consider the delivery of long lead-time items. It shall be the Contractor's responsibility to notify the Project Manager of any problem in conforming to the Contract Documents, Specifications, and Construction Drawings for any element of the proposed improvements prior to its construction.

19. SCHEDULE OF VALUES/WORK SCHEDULE: The Contractor shall provide the Project Manager for review and acceptance, and prior to the commencement of any Work, a breakdown of the Contract cost proposal into values representing the various distinct stages, or units of the whole project, as a basis for making partial and final payments. Stages or specialty items shall be described in terms of a percentage to the whole. The schedule of values shall be shown on a proposed time line estimating the actual Work schedule. The schedule shall indicate starting and completion dates for the various stages of Work and shall be in a format acceptable to the Project Manager.

20. SCHEDULE OF SUBCONTRACTORS, MAJOR EQUIPMENT AND MATERIALS SUPPLIERS: The Contractor shall provide the Owner, prior to the commencement of any Work, a detailed listing of subcontractors and major equipment and materials suppliers indicating their name, address, description of service or equipment and materials being provided, if they are a woman owned or minority owned business enterprise (WBE/MBE), and their vested monetary interest in the contract. The Contractor shall not award any Work to a subcontractor, transfer or assign any portion of the Contract Work, without the written approval of the Owner. Records shall be maintained throughout the duration of the Contract and periodically submitted at the time the Contractor submits progress payment applications. The Owner will use these records to verify the Contractor’s level of indebtedness prior to making final payment.

21. DIVISION APPROVAL OF INDEPENDENT TESTING LABORATORY AND SURVEYOR: The Contractor shall submit the name and qualifications of the independent testing laboratory and the registered land surveyor to the Project Manager as soon as possible after the receipt of the Notice of Award. The Division may request personal interviews, and retains the right to reject the proposed candidates without reservation. If a candidate is rejected, the Contractor shall provide an alternative that is acceptable, and work shall not begin until approval is obtained.

22. CONSTRUCTION CONTROL PLAN: A traffic, excavation, and construction access control plan shall be submitted by the Contractor and approved by the Owner prior to the commencement of work. The disruption to project area visitors shall be kept to a minimum. The plan shall take into consideration all users, including motorists, cyclists, and pedestrians. The Contractor shall provide all lights, signs, barricades, flagmen, or other devices necessary to provide for public safety in accordance with the current United States Department of Transportation’s Manual of Uniform Traffic Control Devices.

23. STORMWATER MANAGEMENT PLAN: This project will not disturb more than 1 acre of ground, so a State stormwater control permit is not required.

24. Colorado Parks and Wildlife shall not be obligated or liable for any cost incurred by any company or individual reviewing this proposed project or prior to the issuance of a contract

approved by the Controller of the State of Colorado or such assistant as he may designate. Any and all costs, to review the project, inspect the proposed construction site, prepare and or submit bids will be the sole responsibility of the bidder.

25. A submission in response to the solicitation acknowledges acceptance by the proposer of all unaltered terms and conditions, as set forth herein. Any proposed exception taken to the State's Terms and Conditions must be clearly and thoroughly identified and supported and acceptable alternatives must be proposed. Failure to do so shall be deemed a waiver of any rights to subsequently raise exception and/or request modification, except as outlined or specified in this solicitation. Submission of exceptions does not guarantee their acceptance, however, and such submittal will be taken into consideration during proposal review and scoring by the evaluation team. The state reserves the right to reject any changes suggested to PO or Contact terms and conditions and award to the next most advantageous qualified responsive vendor.

26. In accordance with procurement code and CRS 24-103-904 titled "Purchasing Preference for Environmentally Preferable Products", bidders responding to this solicitation may seek to qualify for the preference and governmental bodies conducting this solicitation shall award a contract to a bidder who offers environmentally preferable products subject to the condition in the code and procurement rules.

27. ALTERNATIVE PRODUCTS: Certain materials and equipment have been specified by manufacturers' trade names. This was done to establish the minimum quality and type of product desired. Alternatives to the manufacturers' products may be used if the Project Manager determines they are equal. The Award will be based on the products identified in the plans.

28. DAVIS-BACON WAGE LAW: The subject Project is not a Federal prevailing wage rate project so Davis-Bacon Wage Rates do not apply.

29. NOTICE OF CONTRACTOR'S SETTLEMENT: If the project exceeds $150,000.00, a Final Settlement will be advertised via electronic media on the Colorado VSS website at www.colorado.gov/vss.

30. LIQUIDATED DAMAGES: The parties agree that time is of the essence of the Contract and of the Specifications wherever a definite and certain length of time is fixed for the performances of any act. A daily charge will be made against the Contractor for each calendar day that any work remains uncompleted after the elapse of contract time. This daily charge will be deducted from any money due to the Contractor. This deduction will not be considered a penalty, but as liquidated damages.

    The liquidated damages set forth is an amount, agreed to by the Contractor and the Division, as reasonably representing additional project construction administration costs incurred by the Division and projected loss of revenue to the Park if the Contractor fails to complete performance within the contract time. For this project, the **Liquidated Damages will be $285 per day**.

    Due account shall be taken of any adjustment of the contract time for completion of the work granted under the provisions of subsection 8.5 of the General Conditions for Capital Construction. Permitting the Contractor to continue and finish the work or any part thereof after elapse of contract time will not operate as a waiver on the part of the Division on any of its rights under the Contract.

Any deduction assessed as liquidated damages under this section shall not relieve the Contractor from liability for any damages or costs resulting from delays to other contractors on the project or other projects caused by a failure of the assessed Contractor to complete the work according to contract times.

31. WORK HOURS ON PROJECT SITE: All work on this project site will be allowed as follows: 8am to 6pm or otherwise approved by the Project Manager.

32. PERFORMANCE MONITORING CRS §§ 24-106-107:

A. PERFORMANCE MEASURES AND STANDARDS:
Performance measures and Standards as defined in the General Conditions for Capital Construction shall be the basis for this Contract. This includes but is not limited to the following:
1) The Contractor shall prepare a project schedule at project startup and continue to update the schedule throughout construction providing detailed justifications for construction delays and schedule changes.
2) The Contractor shall submit all required product information as defined in the Construction Drawings & Specifications. In turn, the State's Project Manager shall review and comment within 10 days of receipt.
3) The State's Project Manager and the Contractor shall conduct Construction Progress Meetings and Quantity Verification Inspections at least monthly or as otherwise determined necessary during Construction activities.

B. ACCOUNTABILITY:
Project and Contract administration will provide accountability by documenting and evaluating the progression of construction and the ability to follow the agreed upon construction schedule. The Contractor shall report regularly on achievement of the performance measures and standards specified above and failure to do so allows the governmental body to withhold payment until successful completion of all or part of the contract and the achievement of established performance standards. Payment by the State to the Contractor shall be made without delay upon successful completion of all or any part of the contract in accordance with the payment schedule specified in the contract or as otherwise agreed upon by the parties.

C. MONITORING REQUIREMENTS:
The State will evaluate the Contractor's performance by preparing monthly progress reports and monthly construction schedule updates provided by the Contractor as well as performing site visits to verify quantities based on the Bid Schedule, inspections to verify quality of work, and reviews of performance data as construction progresses to ensure that the results, objectives and obligations of the contract are met.

D. NONCOMPLIANCE RESOLUTION:
Methods and mechanisms as defined in the General Conditions for Capital Construction shall be used to resolve any situation in which the State's monitoring assessment determines noncompliance, including termination of the contract.

END OF SECTION

COLORADO
Parks and Wildlife
Department of Natural Resources

Rifle Falls SFU - Isolation Building
PART 2 - SPECIFICATIONS

PROJECT I.D. NO. SCA23A
IFB1: 2025*169

PRE-BID CONFERENCE: April 2, 2025 at 11:00 AM

BID OPENING: April 16, 2025 at 1:00 PM

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Rifle Falls SFU - Isolation Building
SCA23A

PART 2 - SPECIFICATIONS

DIVISION 1 - GENERAL REQUIREMENTS

GENERAL CONDITION:

Please read the most current "General Conditions for Capital Construction" in your possession. They apply to all Divisions of these specifications, accompanying drawings and to this proposed project.

SECTION 01010 - SUMMARY OF WORK

1. LOCATION:

   Non-Mandatory Pre-bid conference: April 2, 2025 at 11:00 AM at the project site.

   Project Address: Rifle Falls SFU
   11466 State Highway 325
   Rifle, 81650
   Garfield County

   Project Coordinates: Latitude: 39°41'36"N
   Longitude: 107°41'59"W

2. DESCRIPTION OF THE WORK:

   The project consists of the complete furnishing and installation of a 33'x26' Isolation Building in accordance with these bid documents.

3. CONSTRUCTION COMMENCEMENT:

   The Contractor shall be allowed from the date of approval of contract documents through the CONTRACT START DATE (as indicated on the Notice to Proceed letter) to submit shop drawings and product approvals and order and delivery of materials.

4. ADDITIONAL PROVISIONS:

   The work and the compensation, therefore, shall be as covered by these specifications consisting of furnishing all plant, labor, equipment and materials required to perform the work shown on the drawings and listed in the bid schedule, unless otherwise stipulated or approved in writing by the Capital Development Program Manager.

   Division field engineering personnel are authorized to supervise the construction of this project in accordance with the previously approved plans and specifications and change orders. All changes in the work shall be approved in writing by the Capital Development Program Manager before being activated in accordance with Section 4, Item 4.2 of the General Conditions for Capital Construction.

   The specifications included herein are the Specifications for this project. If there should be a difference between the Specifications and the drawings, the Specifications shall govern.

5. CONTRACTOR RESPONSIBILITY:

Visit the site and determine to your own satisfaction the amount and type of work to be performed to complete the project in accordance with the drawings, specifications and Contract Documents before submitting your bid.

Furnish sufficient qualified help to the Project Manager for setting construction controls.

Before final payment will be made on the completed contract, submit to the Owner all specified warranties, and other product warranties.

6. SITE LAYOUT AND STAKING:

Location points for the work will be defined with stakes and/or other means of identification prior to the start of construction. These location points, grades, and elevations are shown on the drawings. The drawings indicate existing and proposed elevations, but may be modified on the site by the Project Manager.

7. CONSTRUCTION LIMITS:

At the commencement of construction, the Project Manager will designate the area allowed for the construction process. Restrict work to that designated area. Any changes deemed necessary shall be discussed with and approved by the Project Manager.

8. MARSHALLING AND ACCESS:

Limits and access to the site for use: before taking possession and use of the site, meet with the Project Manager to determine the marshalling area(s) and access points to be used to execute the work. Limit access and marshalling areas agreed to at that meeting. Obtain written permission from the Division of any changes other than first agreed upon. Upon completion of all work, restore all areas to original or improved conditions.

9. JOB CONDITIONS:

Examine the site, determine the nature of conditions to be encountered and accept the site as found upon the examination. Examination must be made prior to bidding as no additional compensation will be considered after receipt of bids for existing conditions which are required to be worked, adapted, or modified to these specifications.

10. BUILDING CODES:

Local city or county building codes shall be used for all construction. Where there is no local authority and/or code, the current codes required by the Office of the State Architect, State Electrical Board or State Plumbing Board shall be utilized. Appropriate inspections and certificates shall be obtained from the state or local inspector. See relative specification section(s) for additional detail.

11. PROTECTION AND SAFETY PRACTICE:

I. All work shall be carried out in a safe manner in accordance with local codes and the safety requirements of the Colorado State Division of Labor.

II. Provide shoring, sheeting, barricading, bracing to prevent caving, erosion and gullying of side of excavation. The design, engineering, construction and maintenance of all temporary protection, including its adequacy and safety shall be the Contractor's responsibility and shall comply with the Occupational Safety and Health Administration (OSHA).

III. Contactor shall be required to conform to all industry standard safety requirements as well as OSHA requirements (i.e. Confined Space Entry, etc.) in effect at the time of construction.

IV. Existing Utilities: Colorado SB 93-155 requires that anyone that engages in any type of excavation must provide advance notice to the underground facility owners. Prior to any moving or excavating of earth, the Contractor shall call the Utility Notification Center of Colorado (UNCC) or "Common Ground Alliance" (CGA) – the "Call Before You Dig" number – at 811. Utility owners have three business days to perform locates. If facilities are not marked within the three business days, you are required to call back to UNCC and process a Second Notice Request. UNCC encourages both Contractors and Sub-Contractors to obtain a locate ticket. A "no response" from the utility owner does not allow the Contractor to start digging. Notify the Project Manager when working near utility lines or appurtenances.

V. Location Markers: Carefully maintain and protect all bench marks, corner monuments and other points. If disturbed or destroyed, replace at no cost to the Owner as directed by the Project Manager.

SECTION 01023 - MINOR CONTRACT REVISION

1. SCOPE OF WORK:

Furnish all labor, materials and equipment required as additional work for completion of the project.

2. WORK INCLUDED:

The work shall include unanticipated extra work in excess of the quantities included in the bid schedule.

3. PAYMENT:

Payment for minor contract revisions shall be made at the contract unit price, negotiated basis or force account in accordance with Section 9.4 of the General Conditions for Capital Construction.

SECTION 01050 - FIELD SURVEY

1. SCOPE OF WORK

This work shall consist of the construction staking of the project in accordance with the drawings and specifications and includes labor, equipment, instruments, materials,

transportation, and other incidentals necessary to complete the construction staking in accordance with these specifications and acceptable engineering practices.

This work shall also include providing final “as-built” drawings. Construction shall be accomplished under the direction of a professional land surveyor licensed to practice in Colorado and acceptable to the Project Manager.

Each subcontractor shall lay out his work from the base lines as established by Contractor. Any discrepancies found shall be promptly documented to the Project Manager. NO work shall be conducted in areas where discrepancies are discovered.

Any work done without being properly located and established by base lines, offset stakes, bench marks, or other basic reference points located, established, or changed by the Project Manager may be ordered removed and replaced at the Contractor's expense.

2. QUALIFICATIONS OF SURVEYOR:

Qualified Registered Professional Land Surveyor registered in Colorado, acceptable to Contractor and Owner.

3. SURVEY REFERENCE POINTS:

Existing basic control points for the project are those designated on drawings. Locate and protect control points prior to starting site work, and preserve all permanent reference points during construction. Make no changes or relocations without prior written notice to Project Manager, and report to Project Manager when any reference point is lost or destroyed.

SECTION 01200 - CONSTRUCTION MEETINGS

1. PRECONSTRUCTION CONFERENCE:

The Contractor or his representative after award of the contract shall attend a preconstruction conference to be held at the Colorado Parks and Wildlife regional office, Denver office or other office in proximity to the project as designated by the Project Manager.

SECTION 01202 - ALLOWANCES

1. GENERAL:

Allowance shall be paid on a force account basis in accordance with Section 9.4.(a), (b) and or (c) as determined by the Project Manager - Materials of Extra and Force Account Work of the General Conditions for Capital Construction or as noted in the bid schedule.

2. ADJUSTMENT OF COSTS:

Should the net cost be more or less than the specified amount of the allowance, the contract sum will be adjusted accordingly by change order.

SECTION 01300 - SUBMITTALS

1. Provide the manufacturer's literature for products specified or approved equal products as stated in Section 6 of the General Conditions for Capital Construction.

2. The following is the list of required submittals for this Contract. Refer to each Contract Section for any additional requirements for each submittal.

SECTION	TITLE	SUBMITTAL DESCRIPTION	DATE RECEIVED	STATUS
01050	SURVEY CONTROL	Name and Address and list of local experience of Surveyor		
01310	CONSTRUCTION SCHEDULES	Schedule of Construction		
01720	AS-CONSTRUCTED AND RECORD DOCUMENTS	Construction drawings and technical specifications indicating changes to the original project design		
02200, 02221, 02545	EARTHWORK, TRENCHING AND BACKFILLING, AGGREGATE BASE COURSE	Firm name, address and phone number for Geotechnical Firm used for testing		
		Imported or Select Material Certified Gradation		
		Imported or Select Material Standard Proctor Test		
02610, 02640	PIPE AND FITTINGS, VALVES AND GATES	Manufacturer's Descriptive Literature and Recommended Methods of Installation		
		Manufacturer's Certification that Products Meet Specification Requirements		
02934	SEEDING AND MULCHING	Signed Testing Certificate Statement by Vendor		
		Data Sheet of Seed Mix with Supplier Information		
03100	STRUCTURAL CONCRETE FORMWORK	Description of Forming System with Complete Details		

SECTION	TITLE	SUBMITTAL DESCRIPTION	DATE RECEIVED	STATUS
03200	CONCRETE REINFORCEMENT	Placing Drawings, Bending and Cut Sheet Schedules		
		Mill Test Reports for Each Shipment of Reinforcement		
03252	INSERTS AND FASTENING DEVICES	Manufacturer's Certification that Products Meet Specification Requirements		
03300	CAST-IN-PLACE STRUCTURAL CONCRETE	Firm name, address and phone number for testing agency		
		Certified Concrete Design Mix		
		Laboratory Test Results		
		Aggregate: Gradation Analysis and Specific Gravity		
03600	GROUT	Manufacturer's Application Instructions		
06100	CARPENTRY	Shop Drawings		
		Lumber Grading Certification		
06600	PVC WALL AND CEILING PANELS	Manufacturer's Certification that Products Meet Specification Requirements		
07200	INSULATION	Samples of Insulation		
		Testing Agency Reports		
		Manufacturer's Written Certification that Product Meets Specified Requirements		
		Testing Agency Reports Verifying Proper Density, Distribution and Placement in Proper Thickness		
		Affidavit that Loose Fill Thermal Insulation is Water Repellent		

SECTION	TITLE	SUBMITTAL DESCRIPTION	DATE RECEIVED	STATUS
07250, 07410, 07620, 07900	WEATHER BARRIER, METAL ROOFING AND SIDING, FLASHING, SEALANTS AND JOINT FILLERS	Manufacturer’s Data Sheets		
08100	METAL DOORS AND FRAMES	Manufacturer’s Data Sheets for doors frames and hardware		
		Executed Warranty		
08530	VINYL WINDOWS	Manufacturer’s Data Sheets		
		Test Reports Demonstrating the Window Meets Specification Requirements		
		Executed Warranty		
09900	PAINTING	Color Samples (2 – 12”x12”, material used for sample should be the same as the material the paint will be applied to)		
		Manufacturer's Application Recommendations		
10200	LOUVERS AND VENTS	Manufacturer’s Data Sheets		
11265	ULTRAVIOLET WATER STERILIZER EQUIPMENT	Manufacturer's Certification that Products Meet Specification Requirements		
		Operation and Maintenance Manuals		

SECTION	TITLE	SUBMITTAL DESCRIPTION	DATE RECEIVED	STATUS
15440, 15453	PLUMBING FIXTURES AND TRIM, TANKLESS WATER HEATERS	Manufacturer's Certification that Products Meet Specification Requirements		
		Operation and Maintenance Manuals		
15500	HEATING	Manufacturer’s Data Sheet		
		Shop Drawings – Drawings shall include all fuel, ductwork, vent and electrical connections and schedule of required equipment.		
		Operation and Maintenance Manual		
15890	DUCTWORK	Shop Drawings		
		Manufacturer's Data		
16010	GENERAL PROVISIONS	Shop Drawings- Submit the shop drawings showing each item of equipment, whether specified or substituted, to the Project Manager for approval. In addition, submit a complete catalog of product cuts of equipment that will be installed. Include the name or description of the item, the name of manufacturer, the model or type, the catalog number and other pertinent designations.		
		As-Built Drawings		
		Additional Drawings		
		Manufacturer's Data Sheets		
		Operation and Maintenance Manuals		
16500	LIGHTING FIXTURES	Manufacturer’s Mounting Details		
		Executed Warranty		

SECTION 01310 - CONSTRUCTION SCHEDULES

1. CONSTRUCTION SCHEDULE SUBMITTAL:

   Submit to the Project Manager, 15 calendar days before commencing construction, a schedule of construction. The schedule shall include provisions for time necessary to acquire and provide shop drawings and product submittals, the allowed period for submittal review, time required for ordering and delivery of materials, a normal time period allowed based on climate, location of project, season of year, weather patterns for temperature, and precipitation conditions which reasonably will hinder or prevent construction progress.

   The construction schedule shall be updated within 7 calendar days after starting work or upon issuance of any Contract Modification which substantially affects the scheduling, and monthly thereafter until completion.

   Newly updated construction schedules shall be forwarded to the Project Manager, as directed, immediately upon preparation.

2. PRODUCT DELIVERY:

   Order products in a timely, properly sequenced manner so that delivery schedule of products corresponds with anticipated installation periods of these products.

SECTION 01410 - LABORATORY TESTS

1. REQUIRED TESTS:

   I. Concrete Testing - provided and paid for by the Contractor.

   II. Compaction Tests - provided by the Contractor as specified. Compaction test reports shall be provided to Owner upon completion of tests.

   III. Proctor Tests - the Contractor shall provide samples and tests of on-site material and aggregate base course as specified.

SECTION 01500 - TEMPORARY UTILITIES AND CONTROLS

1. TEMPORARY ELECTRIC FACILITIES:

   Contractor shall provide and maintain during the course and progress of the contract work all electrical power and wiring requirements to facilitate the work of all trades and services associated with the contract work.

2. FIRE PROTECTION:

   Fire Plan:

   I. Maintain, at least, two all purpose 10 lb. fire extinguishers at each work zone at the construction site. Maintain the site in an orderly condition to prevent fire hazards.

II. The Colorado Parks and Wildlife (hereafter referred to as the operator) shall do everything reasonable within its power and shall require its employees, contractors and employees of contractors to do everything reasonable within their power to prevent and suppress fires on or near the lands to be occupied under this contract. The operator is responsible for all suppression costs and resource damage for any fire resulting from its operations and practices.

III. The operator is responsible to insure that each employee, subcontractor, or any other individual or company working on the project site is aware of the provisions of this fire plan, is familiar with the location and proper use of firefighting equipment, and conducts themselves in a fire safe manner.

IV. No material shall be disposed of by burning in open fires.

V. Exhaust systems of vehicles and engine generators shall have an acceptable muffler and shall be in proper working condition. All motorized equipment and machinery shall be equipped with the spark arresters.

VI. Fire extinguishers required, Type ABC:

One 2 lbs. Per pickup, or one 5 lb. For trucks over 1 Ton GW.

One 10 lb. per dozer, motor patrol, scraper or other earthmoving equipment.

VII. Vehicles shall be parked only in cleared, approved areas.

VIII. All smoking shall be done only inside of vehicles or in areas cleared of flammable material.

IX. Blasting: Use of explosives is not authorized.

X. All trucks operated on the project area shall be equipped with a round-pointed shovel, mounted where it is readily accessible for suppression of fires.

XI. Refueling:

Special care will be taken to prevent fires when refueling tractors and other equipment. Preferably, equipment should be moved to an area of mineral soil before refueling.

XII. Oil Filters, Cartridges and Oily Rags:

Used and discarded oil filters, cartridges and oil rags or waste will be removed from the site. Glass jugs or bottles will not be used for gas, oil or water containers.

XIII. Storage of Inflammables:

Fuels, lubricants and/or other highly inflammable material will be stored either in a separate building, or "job box" type container and/or approved containers. If materials are not stored in a separate building there must be a basin to catch spills. Storage buildings or sites shall be a minimum distance of 50 feet from other

structures. Storage buildings shall be adequately posed to warn of the inflammables and to prohibit smoking in or around the building.

3. HERITAGE RESOURCES:

All persons associated with operations under this authorization must be informed that any objects or sites of cultural, paleontological, or scientific value such as historic or prehistoric resources, graves or grave markers, human remains, ruins, cabins, rock art, fossils, or artifacts shall not be damaged, destroyed, removed, moved, or disturbed. If in connection with operations under this authorization any of the above resources are encountered, the proponent shall immediately suspend all activities in the immediate vicinity of the discovery that might further disturb such materials and notify the Project Manager of the findings. The discovery must be protected until notified in writing to proceed by the Project Manager. (36 CFR 800.110 &112, 43 CFR 10.4)

4. TEMPORARY SANITARY FACILITIES:

Contractor shall provide adequate temporary sanitary conveniences for the use of all employees and persons engaged on the work, including subcontractors, Owner, Project Manager, and their employees, as required by law, ordinances, or regulations of public authorities having jurisdiction.

Toilet facilities shall be enclosed chemical toilets, or water closets and urinals connected to a holding tank, and shall meet with the approval of State and County authorities. Open pit or trench latrines will not be permitted.

5. TEMPORARY WATER:

Water will be made available on site for light construction use. Commercial water quantities shall be provided by the contractor.

6. TEMPORARY HEAT:

Contractor shall provide, at his own expense, all temporary heat as necessary for the proper installation of all work, equipment, and materials and for the protection of all work and materials against injury from dampness, cold, and freezing. Fuel, equipment, and methods of heating shall be in accordance with federal, state, and local regulations.

7. EXTERIOR STORAGE:

All operations of the Contractor, including storage of materials, shall be confined to areas approved by the Project Manager. Contractor shall be liable for any and all damage caused by him during such use by him of property of the Owner or other parties. Contractor shall save the Owner, its officers and agents, and the Project Manager and his employees free and harmless from liability of any nature or kind arising from any use, trespass, or damage occasioned by his operations on premises of third persons or parties.

8. TEMPORARY TELEPHONE SERVICE:

The Contractor shall maintain an operating cell phone and be available by phone during work hours assuming available cell phone service.

9. SECURITY:

The Contractor shall make all necessary provisions and be responsible for the security of the contract work and the work site until final inspection and acceptance of the contract work.

SECTION 01710 - PROJECT CLEANING

All areas shall be cleared and cleaned upon completion of work at all construction site locations. All debris and construction materials scattered and blown about the site shall be gathered, returned and secured to their proper location or disposed of during the construction process and upon completion.

SECTION 01720 – AS-CONSTRUCTED AND RECORD DOCUMENTS

1. SCOPE OF WORK:

Maintaining and providing As-Constructed and Record documents for the work described in project drawings and specifications.

2. WORK INCLUDED:

The work shall include, but is not necessarily limited to, maintaining a clear and concise set of construction documents clearly indicating changes to the original project design. Contractor shall provide all necessary measurements, survey, and product changes to indicate As-Constructed conditions for the each element of the project.

3. PAYMENT:

Payment for As-Constructed and Record documents shall not be made as a line item but shall be included in Mobilization.

4. SUBMITTALS:

Refer to Section 01300 – Submittals, for requirments. Final payment will not be made until As-Constructed and Record documents are received and accepted as complete by the Project Manager.

5. MAINTENANCE OF DOCUMENTS:

I. Store documents in clean, dry area seperate from documents used for construction.

II. Documents shall be made available for inspection by Project Manager upon request.

6. RECORDING:

I. The Project Manager will provide the contractor one set of design drawings and specifications to record information.

II. Label each drawing sheet “AS-CONSTRUCTED” and cover sheet of specifications in neat large printed letters.

III. Record information concurrently with construction progress.

A. Do not backfill work until required information is recorded.

B. Use dark pen or pencil. Ink shall not be water based and lettering shall be legible and not subject to easy smearing.

IV. Mark drawings to record actual construction.

A. Field dimensions, elevations, and details.

B. Changes made by Project Manager in approved modifications.

C. Details not on original drawings.

D. Horizontal and vertical locations of underground facilities (pipelines, electric line, valves, fittings, etc.) and appurtenances referenced to a minimum of two permanent surface improvements or project coordinates/datum.

End of Section

End of General Requirements

SECTION 02050 - MOBILIZATION

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   The work shall include, but is not necessarily limited to moving onto and off the site all the equipment and personnel required. It also includes cleaning up the site upon completion of the Contract and other items as identified in this section. Shipping/freight charges for materials covered by other specifications sections shall not be paid under this item.

3. PAYMENT:

   I. Payment for mobilization will be made on a contract lump sum basis as shown in the Bid Schedule. The lump sum price bid will be paid once only and shall include complete mobilization and demobilization regardless of the number of times the equipment is moved or additional equipment transported to the construction site.

      Of the lump sum price bid, 60% will be paid on the first month's pay estimate. The remaining 40% will be paid when the equipment is removed from the site and after the final cleanup has been completed, and as-built documents have been submitted and approved.

   II. Mobilization shall include the obtaining of all permits, insurance, and bonds, and the moving onto the site of all plant and equipment; for furnishing and erecting plants, temporary buildings, and other construction facilities; all as required for the proper performance and completion of the work. Such work shall include but not be limited to the following principal items:

      A. Moving onto the site of all the Contractor's plant and equipment required.

      B. Installing temporary construction power and wiring.

      C. Establish fire protection system.

      D. Provide on-site sanitary facilities as specified.

      E. Arrange for and erect the Contractor's work and storage area.

      F. Submit all required insurance certificates and bonds.

      G. Obtain all required permits. Contractor is responsible for providing all additional drawings and documentation as may be required to obtain these permits.

         1. State Electrical Permit
         2. State Plumbing Permit

H. Have the Contractor's superintendent at job site at least 50% of the time and available full time via phone.

I. Construction schedule.

J. List of subcontractors and their scope of work.

K. Perform Onsite Utility Locates (Contractor Responsible for hiring private utility locator to locate private utility lines as shown on the drawings prior to construction.)

L. General cleanup of the project area.

M. Shop drawings and product submittals.

N. Maintaining and submitting As-Constructed and Record documents per specifications.

End of Section

SECTION 02200 - EARTHWORK

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   The earthwork for structures shall include excavation, trenching, filling, compacting and grading.

   Excavate and fill to elevations and dimensions indicated on the drawings and on the site. Allow additional space as required for construction operations.

3. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

4. QUALITY ASSURANCE:

   I. Classification of Soils: ASTM D 2487.

   II. Density Relations of Soils: Maximum Dry Density as determined by ASTM D 698 or AASHTO T 99 (Standard Proctor).

   III. Density for Sands and Gravels: Relative Density Method ASTM D 4253 and ASTM D 4254.

   IV. In-place Density Determination: Nuclear Method ASTM D 2922 or Sandcone Method ASTM D 1556.

5. FIELD QUALITY CONTROL:

   Quality control for excavation and backfill shall be provided by the Contractor's independent laboratory.

   I. Density and moisture content testing shall be performed at the bottom of excavation for at least two (2) tests per side of building.

   II. (2) Density tests for each layer of backfill material.

   III. Tests which fail density specification shall be reported verbally to the Project Manager within four (4) hours, either in person or via telephone.

   IV. Soil within the failed area shall be subjected to additional compaction, moisture conditioning with additional compaction, or other corrective measures, and shall be retested. Implementation of corrective measures and retesting shall continue until the effected soil meets specification.

   V. All test results, description of corrective measures, and retest results shall be provided to the Project Manager in writing within 48 hours of testing.

VI. Any failed areas for which corrective measures and retesting do not document that the material meets specification shall be removed and replaced to specification at the contractors expense.

6. MATERIALS:

I. Select Material:

A. Class I: Angular, ¼ to 1½ inches, graded stone including slag, cinders and crushed stone.

B. Class II: Coarse sand and gravels with maximum particle size of ½ inch with no more than 12% passing a No. 200 sieve. Soil Types GW, GP, SW and SP are included.

C. Class III: Fine sand and clayey gravels including sands, sand-clay and gravel-clay mixtures. Soil Types GM, GC, SM and SC are included.

II. Imported Material:

Imported material is defined as material imported by the Contractor for use in place of native material.

III. Relative Density:

Where Class I or Class II select material is used, compaction shall be measured by relative density to the percentages as follows corresponding to the specified Standard Proctor values in these Specifications.

A. 95% Standard Proctor - 75% Relative Density

1. Required beneath all structures, slabs, parking lots, roads, and culverts.

B. 90% Standard Proctor - 70% Relative Density

1. Landscaped areas 10’ and greater from structures, slabs and culverts.

7. EXCAVATION:

I. General:

Excavation shall be open-cut, except as shown or approved.

Excavation may be sloped or kept vertical where sloping of the excavation does not endanger any existing utility or structure.

Excavation shall be performed in accordance with applicable federal, state or local safety codes.

Control grading around the structure so that the ground is pitched to prevent water from flowing into excavated areas or damaging the foundation. Provide pumping to keep excavations clear of water.

II. Underground Obstructions:

Locate utilities prior to excavating. Unless otherwise specified, preserve intact pipe or utilities encountered during construction. If utilities or structures are accidentally damaged, replace immediately to their original condition.

A. Unsuitable Bearing:

Excavate such that uniform bearings are obtained throughout. If suitable bearing is not obtained at the depth indicated on the drawings for the foundations, immediately notify the Project Manager. Do not proceed until further instructions are given.

Completely remove subsurface debris and abandoned construction materials including broken pieces of concrete. Remove such materials within construction lines to 6 inches below the excavation. Dispose of materials where designated.

B. Freezing:

When freezing temperatures are expected, do not excavate to the full depth indicated unless the work can be performed immediately after the excavation has been completed.

C. Dimensions:

Excavate to elevations and dimensions where shown. Allow additional space as required for construction operations and inspection.

III. Shoring:

Shore, sheet pile and brace excavations as required to maintain them secure. Remove shoring as backfilling progresses, but only when banks are safe against caving or collapse.

IV. Classification of Excavation:

Excavation shall be classified as common unless otherwise specified.

A. Common Excavation:

Common excavation consists of grass, sod, humus, peat, earth, clay, sand, silt, gravel, hard and compacted materials, such as hardpan, loosely cemented gravel, soft or disintegrated rock and similar materials that can be removed by hand, heavy ripping equipment such as tracked equipment with a single ripper with a 15,000 pound pry-out force or a hydraulic excavator with a weight in excess of 50,000 pounds and a drawbar pull in excess of 40,000 pounds. Boulders and loose rock less than 1 cu. yd. are also classified as common excavation.

V. Overexcavation:

Excavate so that uniform bearing shall be obtained for the foundation. Do not excavate below the depth specified. If over excavation occurs, backfill with select material.

VI. Unsuitable Foundation:

The foundation is considered unsuitable when after dewatering, the existing soils are unstable. Unstable soils are those that are too soft, provide low load bearing or are otherwise inadequate. Unstable soils include organic soils, fine grain soils saturated with water in excess of their liquid limit, low density fine sands or silts, and expansive soils. Cohesive soils or granular cohesive soils with shear strength measured using ASTM D 2166 or ASTM D 2573 of less than 500 psf or sands with penetration resistance measured using ASTM D 1586 of less than 8 blows per foot are unsuitable.

Where excavation is in shale or rock, or broken concrete occurs, excavate six inches below grade. No rock, shale or broken concrete shall be within 6 inches of the structure.

8. BACKFILLING FOR STRUCTURES:

I. General:

Backfill against the structure only after approval. Place and compact backfill materials to minimize settlement and to avoid damage to the structure, waterproofing and connecting construction. Before placing backfill, remove debris subject to rot or corrosion and other detrimental materials.

Water shall not be allowed to rise until the concrete has set a minimum of 24 hours, and the forms have been removed. Water shall not be allowed to rise unequally against unsupported structural walls.

Do not place brush, sod, frozen material or other perishable or unsuitable materials in the fill. Distribute material to avoid lenses differing substantially from the surrounding material.

Deliver material to achieve well and uniformly compacted backfill.

II. Placement:

Place and spread backfill material in 4 in. layers.

Compact backfill to a minimum of 95% of maximum dry density as determined by ASTM D 698 or AASHTO T 99 (Standard Proctor).

III. Concrete Structures:

Do not backfill or place loads against concrete (including patched areas) before the concrete has developed at least 70% of the specified strength, or before 7 days after placing the concrete.

From 7 days to 14 days after placing concrete, backfill operations may be initiated, but no rolling or hauling equipment will be permitted within 2 feet of the structure. At this time, backfill may be placed against concrete surfaces to a thickness of not more than 2 feet if compaction is accomplished by power tampers.

IV. Imported Backfill:

Notify the Project Manager when imported material is to be used and indicate where material is to be placed. Do not place imported fill until approved by the Project Manager.

A. The grading requirements of the material, Colorado Department of Transportation, Section 703.03, Class 1 Structure Fill , are as follows:

Sieve size or designation	Percentage by Weight passing square mesh sieve sizes
2½ inch	100
2 inch	95-100
No. 4	30-65
No. 200	3-15

V. Grading:

Perform finish grading for smooth transitions between lines. Grades shall be free of abrupt or irregular changes.

Grade between existing and final grades not otherwise shown to a uniform slope. Round abrupt change in slopes.

9. INSPECTION:

Backfilling shall not commence until all tests and inspections have been made. Areas to receive backfill are to be cleared of all rubbish and debris.

End of Section

SECTION 02210 - FINISH GRADING

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   The work shall include, but is not necessarily limited to, all cutting, filling, compacting of fills and rough grading required to bring project areas to grade.

3. FILLS:

   Where fill is required to raise the existing grades to the new subgrade elevation indicated on drawings, such fill shall be of earth placed and compacted as specified. The quality of fill material shall be approved.

4. MATERIALS:

   Material for fill shall be reasonably free from roots, wood and other organic material. Fill under surfaced areas shall not contain more than 15 percent clay or loam and no humus. Stones larger than 4 inches, maximum dimension, shall not be used in the upper 6 inches of fill or embankment. Place the material in successive horizontal layers in loose depths as specified, for the full width of the cross section. Deposit fill layers not more than 8 inches thick under surface areas.

5. FINISH GRADING:

   Perform finish grading for transition between lines. Grades shall be free of abrupt or irregular changes.

   Grade between existing and finished grades. Round abrupt change in slopes.

   Stockpiled topsoil shall be used in the areas used for backslopes and other areas exposed through construction and equipment damage.

End of Section

SECTION 02221 - TRENCHING AND BACKFILLING

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   The earthwork for the pipe installations shall include excavation, trenching, backfilling, compacting and grading.

3. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

4. QUALITY ASSURANCE:

   I. Classification of Soils: ASTM D 2487 and ASTM D 2488.

   II. Density Relations of Soils: Maximum Dry Density as determined by ASTM D 698 or AASHTO T 99 (Standard Proctor).

   III. Density for Sands and Gravels: Relative Density Method ASTM D 4253 and ASTM D 4254.

   IV. In-place Density Determination: Nuclear Method ASTM D 2922 or Sandcone Method ASTM D 1556.

   V. Pipe Embedment Materials: ASTM D 2321.

5. MATERIALS:

   I. Select Material:

      A. Class I: Angular, 1/4 to 1-1/2 inches, graded stone including slag, cinders and crushed stone.

      B. Class II: Coarse sand and gravels with maximum particle size of 1-1/2 inch with no more than 12% passing a No. 200 sieve. Soil Types GW, GP, SW and SP are included.

      C. Class III: Fine sand and clayey gravels including sands, sand-clay and gravel-clay mixtures. Soil Types GM, GC, SM and SC are included.

      D. Class IV: Inorganic silts or clays, silty or clayey fine sands, gravelly or silty clays. Soil Types ML, CL, MH and CH are included.

II. Imported Material:

Imported material is defined as material imported by the Contractor for use as backfill material when used in place of native material or material used for pipe embedment where select material is not required by the Plans and Specifications.

III. Relative Density:

Where Class I or Class II select material is used, compaction shall be measured by relative density or Standard Proctor to the percentages as follows corresponding to the specified Standard Proctor values in these Specifications.

A. 95% Standard Proctor - 75% Relative Density

B. 85% Standard Proctor – 65% Relative Density

6. EXCAVATION:

I. General:

Excavation shall be open-cut, except as shown or approved.

Trenches may be sloped or kept vertical where sloping of the trench does not endanger any existing utility or structure.

Trench excavation shall be performed in accordance with applicable federal, state and local safety codes.

Perform grading necessary to prevent surface water from causing damage to the work. Place material compactly on the sides of the excavation so as not to endanger the work. Dispose of surplus material as directed on the site.

II. Dewatering:

Where running water, quicksand, or unsuitable foundation conditions are encountered, push the work with the utmost vigor. Drain water in the trench to sumps through well points, underdrains or other approved methods, providing a suitable foundation with no running or standing water for pipe laying operations. Ensure that subsurface water does not interfere with maintaining proper soil moisture for a suitable foundation and proper compaction of backfill.

Maintain dewatering until the pipe has been installed and backfill has been placed to a height above the water table.

III. Trench Width:

Minimum trench width shall be as shown on the drawings. Use the minimum width only when it provides adequate space for workers to place and join the pipe properly. Use additional width where required for compaction equipment.

IV. Dimensions:

Excavate to elevations and dimensions shown. Allow additional space as required for construction operations and inspection.

V. Obstructions:

Completely remove subsurface debris and abandoned construction materials including broken pieces of concrete. Remove such materials within construction lines to 6 inches below excavation. Dispose of the materials where designated. No blasting will be permitted.

Locate utilities prior to excavating. Unless otherwise specified, preserve intact pipe or utilities encountered. If utilities or structures are damaged, replace immediately to their original condition.

VI. Shoring:

Shore, sheet pile and brace excavations as required to maintain them secure for protection of workmen or work. Remove shoring as work progresses, but only when banks are safe from caving or collapse.

VII. Classification of Excavation:

Excavation shall be classified as common unless otherwise specified.

A. Common Excavation:

Common excavation consists of grass, sod, humus, peat, earth, clay, sand, silt, gravel, hard and compacted materials, such as hardpan, loosely cemented gravel, soft or disintegrated rock and similar materials that can be removed by hand, heavy ripping equipment such as tracked equipment with a single ripper with a 15,000 pound pry-out force or a hydraulic excavator with a weight in excess of 50,000 pounds and a drawbar pull in excess of 40,000 pounds. Boulders and loose rock less than 1 cu. yd. are also classified as common excavation.

VIII. Overexcavation:

Excavate so that uniform bearing shall be obtained for the length of the pipe. Do not excavate below the depth specified. If over excavation occurs, backfill with select material.

IX. Disturbed Foundation:

Where excavation results in the foundation being disturbed, scarify to a depth of 6 inches and compact to a density equal to that of the surrounding earth or a minimum of 95% of maximum dry density, whichever is greater.

X. Unsuitable Foundation:

The trench bottom is considered unsuitable when after dewatering, the existing soils are unstable. Unstable soils are those that are too soft, provide low load bearing or are otherwise inadequate. Unstable soils include organic soils, fine grain soils saturated with water in excess of their liquid limit, low density fine sands or silts, and expansive soils. Cohesive soils or granular cohesive soils with shear strength measured using ASTM D 2166 or ASTM D 2573 of less than 500 psf or sands with penetration resistance measured using ASTM D 1586 of less than 8 blows per foot are unsuitable.

Where the trench is excavated in shale or rock, or broken concrete occurs, excavate six inches below grade. No rock, shale or broken concrete shall be within 6 inches of the pipe.

XI. Tunneling:

Tunneling will be allowed under water, gas or other pipe when approved.

The width of the excavation, tunnels and subgrade preparation shall be the same as that specified for open trench excavation.

XII. Utilization of Excavated Material:

Suitable material removed from the excavations shall be used, as practical, in the backfill and at other places as directed.

XIII. Disposal of Surplus and/or Waste Material:

Dispose of surplus and waste material where designated.

Grade areas for draining and a uniform appearance, blending into the surrounding grade.

7. BACKFILL:

I. General:

Do not place brush, sod, frozen material or other perishable or unsuitable materials in the fill. Distribute the material to avoid lenses differing substantially from the surrounding material.

Place the material to achieve a well and uniformly compacted fill.

II. Inspection and Approval:

Do not backfill until tests and inspections have been made on work to be covered and approved. Clear areas to receive backfill of rubbish and debris.

III. Imported Backfill:

Notify the Project Manager when imported material is to be used and indicate where material is to be placed. Do not place imported fill until approved by the Project Manager. Provide laboratory tests for the material.

IV. Moisture Control:

During compaction operations the material being placed shall be maintained within the moisture content range required to permit proper compaction to the specified density.

V. Placement and Methods:

A. General:

Because of varying trench conditions, the materials used and methods applied may vary. Individual trench requirements are specified as follows or shown on the drawings. Backfill only after approval. Maximum depth of lifts shall be 8 inches unless otherwise specified.

B. Foundation:

Where the trench bottom is unsuitable for pipe foundation, remove and replace material with select material. Compact to a minimum of 85% of maximum dry density.

C. Pipe Embedment:

1. Bedding: Place select material from the bottom of the trench to a minimum of 4 inches or the depth shown on the drawings. Mechanically tamp to a minimum of 85% of maximum dry density. Provide density tests for every 50’ of trench, minimum 2.

2. Haunching: Shape the trench bottom to provide firm, stable and uniform support for the full length of the pipe and joints. Dig bell holes to provide a minimum of 1 inch clearance between the bell and the material. Adjust pipe for line and grade and make the joint. Place material carefully and tamp under the haunches of the pipe and in bell holes and sling holes. Place select material from the bottom of the trench to the springline by hand. Tamp thoroughly and equally along each side of the pipe to avoid displacement or damage to the pipe. Compact to a minimum of 85% of maximum dry density. Provide density tests for every 50’ of trench, minimum 2.

Backfill methods shall be approved.

Haunching material shall be the same material as that used for bedding where Class I or Class II select material is used.

3. Initial Backfill: Compact select material to a minimum (85%) of maximum dry density. Do not drop material or perform compaction

directly over the top of the pipe. Place initial backfill from the springline to a minimum depth of 6 inches over the pipe.

4. Compacted Final Backfill: Mechanically compact lifts to a minimum of 95 percent of maximum dry density. Perform in roadways, dikes, or where otherwise shown on the drawings.

VI. Settlement:

Within one year after final acceptance of the project, utilities or other improvements adversely affected by settlement, repair the settled areas to proper grade and condition at no expense to the Owner.

VII. Surface Restoration:

Unsurfaced Areas: All surface cuts shall be, as a minimum, restored to a condition equal to that prior to construction.

VIII. Grading:

Perform finish grading for smooth transitions between lines. Grades shall be free of abrupt or irregular changes.

Grade between existing and final grades not otherwise shown to a uniform slope. Round abrupt change in slopes.

End of Section

SECTION 02545 - AGGREGATE BASE COURSE

1. SCOPE OF WORK:

Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

The work shall include, but is not necessarily limited to, placement of compacted aggregate upon the previously prepared surface.

3. SUBMITTALS:

Refer to Section 01300 - Submittals, for requirements.

4. QUALITY ASSURANCE:

Work covered in this Section shall be in accordance with these Specifications and applicable sections of the Colorado Department of Transportation Standard Specifications specified herein.

I. Density for Sands and Gravels: Relative Density Method ASTM D 4253 and ASTM D 4254.

II. In-place Density Determination: Nuclear Method ASTM D 2922

5. MATERIALS:

Aggregates for base courses shall be crushed stone, crushed slag, crushed gravel or natural gravel conforming to AASHTO M 147 except that the requirements for the ratio of minus No. 200 sieve fraction to the minus No. 40 sieve fraction shall not apply. Aggregates for base material shall meet the grading requirements of the following table and shall also be for material identification.

The liquid limit shall not be greater than 30 and the plasticity index shall not exceed 6 when the aggregate is tested in accordance with AASHTO T 89 and AASHTO T 90 respectively.

The grading requirements of the material, Colorado Department of Transportation, Section 703.03, Aggregate Base Course, are as follows:

I. Class 5:

Sieve size or designation	Percentage by Weight passing square mesh sieve sizes
1 in.	95-100
No. 4	30-70
No. 200	3-15

Quality control for earthwork shall be provided by the contractor. The Project Manager may, at any time, access the work area to perform quality control testing. Contractor shall allow access for such testing. No payment or claim will be granted for lost production during testing activities.

I. A qualified soil testing lab shall be retained to perform density testing, with field technicians working under the supervision of a Colorado registered professional engineer.

II. Denisty and moisture content testing shall be performed for every 50 tons of in place fill, and at least (4) tests under the interior concrete slab, (2) tests under the apron, and (2) tests on the gravel driveway.

III. Tests which fail density specification shall be reported verbally to the Project Manager within four (4) hours, either in person or via telephone.

IV. Base course within the failed area shall be subjected to additional compaction, moisture conditioning with additional compaction, or other corrective measures, and shall be retested. Implementation of corrective measures and retesting shall continue until the affected base coursel meets specification.

V. All test results, description of corrective measures, and retest results shall be provided to the Project Manager in writing within 48 hours of testing. Facsimile or electronic mail are acceptable forms of providing this information.

VI. Any failed areas for which corrective measures and retesting do not document that the material meets specification shall be removed and replaced to specification at the contractors expense.

6. EXECUTION:

I. Preparation:

Grade and compact the subgrade surface to receive aggregate base course to the elevations staked on the site.

Subgrade for all gravel shall be previously prepared to lines, grades and elevations shown on the drawing or as adjusted by the Project Manager, and compacted to a minimum of 95% of maximum dry density in accordance with AASHTO T 99 prior to placing gravel.

Do not place material when the prepared grade is wet, frozen, or in the Project Manager 's opinion, the prevailing conditions are not favorable.

The prepared surface coarse shall be in a plane, pitched and sloped as shown on the drawings.

II. Placement:

Place all aggregate in a single lift for the compacted thickness.

III. Mixing:

When the material used is acquired from two or more sources, the materials shall be mixed while at optimum moisture by approved equipment until the mixture is uniform throughout.

IV. Shaping and Compacting:

Continue compaction until a density of not less than 95 percent of the maximum density determined in accordance with AASHTO T 99 has been achieved. Maintain the surface during the compaction operations such that a uniform texture is produced and the aggregates firmly keyed. Water shall be uniformly applied during compaction in the amount necessary for proper consolidation.

Back dragging of a bucket is not an acceptable method of preparing the surface for compaction and is not allowed. Wheel rolling or the use of passes of loaded equipment is not an acceptable method of compaction.

End of Section

SECTION 02610 - PIPE AND FITTINGS

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   The work shall include, but is not necessarily limited to, the furnishing and installation of all components required for a complete installation.

3. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

4. PIPE INSPECTION AND INSTALLATION:

   I. Alignment:

      Alignment of pipe shall be maintained to the staked lines and grades.

   II. Placement:

      Lay pipe with spigot ends directed down-grade unless otherwise directed. Lay pipe, fittings and accessories with proper equipment and in a manner to prevent damage.

      Any defective pipe materials found during the inspection, prior to placing within the trench, shall be replaced.

      All foreign matter or dirt shall be removed from the interior of the pipe before lowering into position in the trench. Pipe shall be kept clean during and after completion of laying.

      Clean the sealing surfaces of the pipe immediately before assembly, and assembly shall be made as recommended by the manufacturer. Check the completed piping to assure joints are intact.

      Prior to the placement of earthfill or other material around the pipe, observe pipe for leakage. Repair any leaks. Repeat the procedure until the pipe is watertight (The pipe joints shall show no leakage).

      When pipe laying is not in progress, seal the open ends of installed pipe to prevent entrance of water into the line. Whenever water is excluded from the interior of the pipe, place enough backfill on the pipe to prevent floating. Remove any pipe that has floated from the trench and restore the bedding. No pipe shall be laid when the trench conditions or the weather are unsuitable for proper installation as determined by the Project Manager.

III. Handling:

Haul and handle the pipe in a manner that will avoid damage.

Remove any damaged pipe from the project site and replace. Pipe shall not be repaired for installation unless approved.

IV. Pressure Testing (Air Test):

A. Perform testing in the presence of the Project Manager prior to backfilling. Furnish water for testing.

B. Place sufficient backfill prior to filling with water and testing to prevent lifting of the pipe. If it is necessary to partially backfill the line prior to testing to hold the line in place, the initial backfill shall cover only the body of the pipe with joints and connections left uncovered for inspection. When local conditions require that the trenches be backfilled immediately after the pipe has been laid, the testing may be carried out after backfilling has been completed, but before placement of permanent surface.

C. Plug or cap the ends and cleanouts of the line with inflatable stoppers or other suitable test plugs.

D. Add air slowly to the test section until the pressure inside the pipe reaches 4.0 psig. Allow the pressure to stabilize such that a pressure between 4.0 and 3.5 psig is maintained. The pressure will normally drop slightly after install pressurization, allow the pressure to stabilize and re-pressurize as needed so that a minimum starting pressure of 3.5 psig is obtained prior to the start of the test.

E. Disconnect air supply and decrease pressure to 3.5 psig before starting the test.

F. Monitor the pressure for 5 minutes. The pressure should not drop by more than 1 psig for every 1000 ft of the line in the 5 minute period.

G. Should the line fail the pressure test, the source of the failure shall be determined and corrected at the Contractor's expense.

H. Once the source has been fixed the pipe shall be retested.

5. MATERIALS:

I. PVC Pipe:

A. General:

PVC pipe shall be manufactured by North American Specialty Products, Diamond Plastics Corp., J-M Manufacturing, Ipex Inc., or approved equal.

B. PVC Pressure Pipe:

1. Supply Pipe: Supply pipe shall be Schedule 80 PVC and shall be rated to a minimum 150 psi.

2. Drain Pipe: Drain pipe shall be Schedule 40 PVC and shall be rated to a minimum 150 psi.

C. Bell and Spigot Joints: Pipe joints, complying with ASTM D 3139, shall be made using an integral bell with an elastomeric gasket push-on type joint or using machined couplings of a sleeve type with rubber ring gaskets and machined pipe ends to form a push-on type joint. Rubber ring gaskets shall conform to ASTM F 477. Adequate gasket lubricant shall be furnished for all of the pipe and fittings connections.

D. Unions: Unions shall be rated for Schedule 80 PVC materials and fittings and comply with ASTM D 1784 for PVC Type 1, Grade 1. Threaded fittings shall conform to ASTM D 2464.

D. Schedule PVC Pipe: Schedule pipe requirements shall meet ASTM D 1785 using PVC 1120, 1220 or 2120. Socket type fittings for solvent welded joints shall conform to ASTM D 2467 for Schedule 80, ASTM D 2466 for Schedule 40 and ASTM D 2464 for the threaded type. The solvent cement shall comply with ASTM D 2564.

II. Steel Pipe: (General Use)

A. Pipe:

Steel pipe approved for water service shall comply with ASTM A 53 (Schedule 40) and AWWA C 200 (mill pipe) standards.

B. Flanges:

All required flanges shall be manufactured in compliance with the requirements of ASTM A 234 for seamless steel fittings. The Class 150 flanges of forged steel shall comply with the requirements of ASTM A 105, ready for welding to pipe or fittings.

Flange gaskets shall comply with ANSI A21.10 and AWWA requirements. The 1/8 inches thick gaskets shall be of SBR or neoprene rubber complying with ANSI requirements.

Flange bolts and nuts of high carbon, heat treated steel shall comply with ANSI B18.2.1 standard and be zinc chromate plated or galvanized.

C. Joints and Fittings:

The threaded fittings shall comply with ANSI B16.3 and AWWA C 208.

Pipe and fittings shall be hot-dipped galvanized.

Make all pipe joints carefully and neatly. All threaded joints shall comply with ANSI B2.1 NPT. Use joint compound or "teflon" thread tape on male threads only in making joints.

III. Modular Water Seals: "Link Seal" LS or approved equivalent.

IV. Associated Fittings and Adapters:

A. Compression Couplings: APAC, Dresser, Romac compression coupling, or approved equal. The coupling shall be of the type necessary for connecting the type and diameters of pipe required.

B. PVC Fittings: Unless otherwise noted on drawings or in the specifications, fittings for PVC pipe shall be PVC and certified for the pressure rating of the associated pipe. Elbow fittings shall be standard angles, a combination of standard angles, or angles fabricated to the nearest one degree for PIP, IPS, and sewer pipes.

6. EXECUTION:

I. Material Delivery, Storage, and Protection:

A. All piping materials, fittings, valves, and accessories shall be delivered in a clean and undamaged condition and stored off the ground for protection against oxidation caused by ground contact. All defective or damaged materials shall be replaced with new materials.

II. General:

A. Cleanup: After completion of the work, all remaining pipe cuttings, joining and wrapping materials, and other scattered debris, shall be removed from the site. The entire piping system shall be handed over in a clean and functional condition.

B. General Locations and Arrangements: Drawing plans indicate general location and arrangement of piping systems. Install piping as indicated, unless deviations to layout are approved on coordination drawings.

C. Install piping free of sags and bends.

D. Install exposed interior and exterior piping at right angles or parallel to building walls. Diagonal runs are prohibited, unless otherwise indicated.

E. Install piping tight to slabs, beams, joists, columns, walls and other building elements. Allow sufficient space above removable ceiling panels to allow for ceiling panel removal.

F. Pipe Penetrations: Install sleeves for pipes passing through concrete foundation walls and PVC panneling partitions.

1. Cut sleeves to length for mounting flush with both surfaces.

2. Build sleeves into new walls and slabs as work progresses.

3. Install sleeves large enough to provide 1/4" annular clear space between sleeve and pipe or pipe insulation. Use the following sleeve materials:

   a. PVC Pipe Sleeves: For pipes penetrating PVC panneling partitions

4. Except for underground wall penetrations, seal annular space between sleeve and pipe or pipe insulation, using elastomeric joint sealants.

5. Use Type S, Grade NS, Class 25, Use O, neutral-curing silicone sealant, unless otherwise indicated.

G. Underground, Exterior-Wall, Pipe Penetrations: Install cast-iron "wall pipes" for sleeves. Seal pipe penetrations using mechanical sleeve seals. Size sleeve for 1" annular clear space between pipe and sleeve for installing mechanical sleeve seals.

1. Assemble and install mechanical sleeve seals according to manufacturer's written instructions. Tighten bolts that cause rubber sealing elements to expand and make watertight seal.

H. Piping Joint Construction: Join pipe and fittings as follows and as specifically required in individual piping specification sections:

1. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

2. Remove scale, slag, dirt and debris from inside and outside of pipe and fittings before assembly.

3. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

   a. Note internal length of threads in fittings or valve ends and proximity of internal seat or wall to determine how far pipe should be threaded into joint.

   b. Apply appropriate tape or thread compound to external pipe threads, unless dry seal threading is specified.

   c. Align threads at point of assembly.

   d. Tighten joint with wrench. Apply wrench to valve end into which pipe is being threaded.

   e. Damaged Threads: Do not use pipe or pipe fittings with threads

that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

4. Flanged Joints: Align flange surfaces parallel. Select appropriate gasket material, size, type and thickness for service application. Install gasket concentrically positioned. Assemble joints by sequencing bolt tightening to make initial contact of flanges and gaskets as flat and parallel as possible. Use suitable lubricants on bolt threads. Tighten bolts gradually and uniformly using torque wrench.

5. Plastic Piping Solvent-Cement Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join pipe and fittings according to the following:

   a. Comply with ASTM F 402 for safe-handling practice of cleaners, primers and solvent cements.

   b. PVC Pressure Piping: ASTM D 2672.

I. Piping Connections: Make connections according to the following, unless otherwise indicated:

1. Install unions, in piping 2" NPS and smaller, adjacent to each valve and at final connection to each piece of equipment with 2" NPS or smaller threaded pipe connection.

2. Install flanges, in piping 2-1/2" NPS and larger, adjacent to flanged valves and at final connection to each piece of equipment with flanged pipe connection.

3. Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

III. Erection Of Metal Supports And Anchorage:

A. Cut, fit and place miscellaneous metal supports accurately in location, alignment and elevation to support and anchor mechanical materials and equipment.

End of Section

02640 – VALVES AND GATES

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   The work shall include, but is not necessarily limited to the furnishing and installation of specified items.

3. MEASUREMENTS:

   Valves shall not be measured separately for each installation but shall be included in the related portion of construction as noted in the Bid Schedule. Additional quantities shall not be measured for attachments, connecting hardware or required earthwork, but also included in related construction.

4. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

5. MATERIALS AND INSTALLATION:

   I. Gate Valves:

      A. General:

         Gate valves shall be resilient seated, manufactured to meet or exceed the requirements of AWWA C 509 of the latest revision and in accordance and shall be manufactured by American Darling, M&H, Clow, U.S. Pipe, Mueller, or approved equivalent.

      B. Materials:

         The valve body, bonnet, and bonnet cover shall be ductile iron or cast iron, ASTM A126, Class B, fully coated with fusion bonded epoxy. The sealing mechanism shall consist of a cast or ductile iron wedge gate fully encapsulated in synthetic rubber or urethane. The resilient sealing mechanism shall provide zero leakage at 175 psi working pressure when installed.

   II. Ball Valves:

      A. General:

         Ball valves shall be of the non-lubricating, eccentric type and shall be designed for a working pressure of 175 psi. Valves shall provide tight shut-off at rated pressure.

B. Manufacturer:

Ball valves shall be 1" Socket PVC Ball Valve by True Union or approved equivalent.

Contractor to provide valve with valve key where applicable.

C. Curb Box:

Curb box shall be "Telescoping Plastic Curb Box" by Orbit or approved equivalent.

III. Plug Valves:

A. General:

Plug valves shall be of the non-lubricating, eccentric type and shall be designed for a working pressure of 175 psi. Valves shall provide tight shut-off at rated pressure.

B. Materials:

Valve body shall be constructed of ASTM A126 Class B cast iron. Valve plugs shall be constructed of ASTM A 126 Class B cast iron or ASTM A 536 Grade 65-45-12 ductile iron. Bearings shall be constructed of self-lubricating Type 316 stainless steel.

IV. Backwater Valves:

A. General:

Backwater valves shall be manufactured to meet or exceed requirements of ASME/ANSI A112.14.1 for Backwater Valves. Valves shall be fitted with extension kits as necessary. Valves shall be manufactured by Spears or approved equivalent.

B. Materials:

All thermoplastic valves shall be Backwater type constructed from PVC Type I, ASTM D 1784 Cell Classification 12454. All Valve Seats shall be EPDM. All valves shall have external Arrow Flow Indicator.

End of Section

SECTION 02934 - SEEDING AND MULCHING

1. SCOPE OF WORK:

   Furnish all labor, materials, and equipment required to complete the work of the noted Sections described herein and on the drawings.

2. WORK INCLUDED:

   The work shall include, but is not necessarily limited to, soil preparation, seeding, and mulching.

3. JOB CONDITIONS:

   Materials shall not be applied during high winds (defined as windy enough to blow materials around or off site) or when the ground is excessively wet, frozen, or not tillable.

4. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

5. DEFINITIONS:

   Cultivar: A cultivated variety of a native plant, with intentional selection for agronomically desirable traits such as drought tolerance, rust resistance, even stand production, high germination rates, etc.

   Ecotype: A genetically distinct plant population adapted to specific environmental conditions (elevation, geography, soils, precipitation, etc.). Ecotypic plant material is not selected for desirable traits.

   NPF: Native Perennial Forb.

   NPG-L: Native Perennial Grass-Like (grasses, sedges, or rushes).

   PLS: Pure Live Seed. The amount of viable seed in a seed mix, which remains after one accounts for the chaff, unviable seed, inert material, crop seeds, weed seeds, and other material that is not part of the pure live seed listed in the desired seed mix.

   VNS: Variety Not Stated. The designation “VNS” is typically used when a local ecotype is being sold, and may also be termed “yellow label” or Source Identified Seed, though there are subtle differences between these designations according to the Colorado Seed Growers Association.

6. PRODUCTS:

   I. TOPSOIL - EXISTING:

      Use existing on-site material in areas to be seeded as shown on the drawings. Where applicable, topsoil should be stripped and placed in an area designated by the Project Manager.

II. SEED:

Seed shall meet the requirements of Federal Specification JJJ-S-181.

Seed shall be furnished separately or in mixture in standard containers with:

A. Seed name.
B. Lot number.
C. Net weight.
D. Percentage of purity and germination (in case of legumes, percentage of germination to include hard seed).
E. Percentage of maximum weed seed content clearly marked for each kind of seed.

Unless otherwise stated, the Contractor shall furnish the Project Manager duplicate signed copies of a statement by the vendor, certifying that each lot of seed has been tested by a recognized laboratory for seed testing within 6 months of date of delivery. This statement shall include:

A. Name and address of laboratory.
B. Date of test.
C. Lot number for each kind of seed.
D. Results of tests as to name, percentages of purity and germination, and percentage of weed content for each kind of seed furnished, and in case of a mixture, the proportions of each kind of seed.

Legume seed shall be inoculated with approved cultures in accordance with the manufacturer's instructions.

Note: All seeding rates provided are for broadcast seeding. If drill seeding is performed, reduce seeding rates by ½.

RIPARIAN SEED MIX:

Seed shall be applied at a rate of 9.4 pounds of PLS (pure live seed) per acre and have the following mix:

Species:	Variety:	Percentage Species in Mix:
Green Needlegrass	Lodom	15
Switchgrass	Blackwell, Grenville	20
Western Wheatgrass	Arriba	25
Tufted Hairgrass		15
Streambank Wheatgrass	Sodar	15
Bluebunch Wheatgrass	Goldar	10

Contact the local Natural Resources Conservation Services (NRCS) office (Glenwood Springs, 970-945-5494) for approved alternate mixes/substitutions.

UPLAND SEED MIX:

Seed shall be applied at a rate of 11.4 pounds of PLS (pure live seed) per acre and have the following mix:

Species:	Variety:	Percentage Species in Mix:
Indian Ricegrass	Paloma	15
Bottlebrush Squirreltail		15
Western Wheatgrass	Arriba	20
Sandberg Bluegrass		10
Streambank Wheatgrass	Sodar	20
Bluebunch Wheatgrass	Goldar	20

Contact the local Natural Resources Conservation Services (NRCS) office (Glenwood Springs, 970-945-5494) for approved alternate mixes/substitutions.

III. EROSION CONTROL NET AND BLANKET MATERIAL:

All erosion control materials shall be made of new material, clean, sound, and free of rips or tears.

A. Erosion control blankets should be considered for use in the entire project area. Erosion control blankets will be used on all slopes equal or steeper than 3:1 and those that will readily carry water downhill.

B. Erosion control blankets should be used whenever possible, as they help to retain moisture, reduce/eliminate seed predation by birds, and reduce weed infestations post soil disturbance.

C. Erosion control blanket shall be made of natural materials, biodegradable, non-toxic to vegetation or germination of seed, and shall not be toxic or injurious to humans or wildlife.

D. Erosion contonl netting shall be Nedia S400B or approved equal.

E. Landscape fabric staples should be used to secure erosion control blankets. Edges should be tucked into grooves dug into the soil and buried to ensure wind does not get under the blankets. Staples shall be U-shaped metal, 11-gauge minimum, 12” long.

IV. EROSION CONTROL LOGS:

A. Erosion control logs must be used in all unvegetated swales and drainage areas within the project area to reduce soil and seed loss. Wood stakes should be used to secure straw wattles and consist of 18x1x2-inch stakes cut diagonally.

B. Straw wattles must be used on downhill borders of all disturbed areas.

7. EXECUTION:

I. GENERAL SEEDING:

A. Seeding equipment, including disks, drag harrows, and hoppers, shall be cleaned and inspected prior to entering State Property. No remnant seed (from a previous project) should remain in the hoppers, seeding tubes, augers, or any other part of the seeding equipment.

B. Decompact soils.

C. Prepare the seedbed.

D. Apply soil amendments.

E. Apply and cover seed.

F. Apply soil surface protection treatments. If compost is being incorporated into the soil, it should be incorporated during decompaction or seedbed preparation steps.

G. Hydroseeding is not allowed. Seed should not be applied in hydromulch.

H. The optimal seeding timing is September or May.

II. DRILL SEEDING:

A. Use the application rate as listed. If drill seeding is being used, use half as much seed as what is called for in the broadcast seed mix. Drill seed density shall be a minimum of 50 seeds per square foot.

B. Keep in mind that smaller seeds sink to the bottom with larger seeds rising to the top. Mixing seed prior to pouring into the seed hopper will help to ensure an even application of species across your project area. All native grass drills should have a chaffy seed box if seed has not been de-bearded.

C. Seed at a depth of ¼ - ½".

D. Use half the seed on the entire area, then seed in a different direction with the second half of the seed. (This helps alleviate the effects of settling of small seeds and provides even distribution of plants and species)

III. BROADCAST SEEDING:

A. The rate of application will be doubled for all broadcast seeding. Do not broadcast seed in high winds. Broadcast seed density shall be a minimum of 100 seeds per square foot.

B. Preparatory to seeding, the topsoil should be loosened or tilled into an even and loose seedbed.

C. Loosen the seed bed soil to a depth of 4 inches. Seeded area shall be free of all clods in excess of 2 inches in diameter, and brought to the desired line and grade prior to placing any additional topsoil.

1. Keep disturbance to a minimum in order to reduce weed competition.
2. Prior to seeding, a person standing on the seed bed should sink no more than ¾" into the soil.
3. Foot prints deeper than ¾" mean that the seed bed is too loose and seeds risk being planted too deep. If this is the case, wait and let soil settle, or use a roller or foot traffic to reduce loose soil in the planting area.

D. Mix seed prior to application to ensure an even application of species across the project area.

E. Broadcast half the seed on the entire area, then broadcast the second half of the seed in the same area but in a direction perpendicular to the original direction.

F. All seed sown by broadcast seeding shall be "raked in" or covered with soil to a depth of ¼ - ½ inches. Bouncing a grass rake upside down across the seeded area can help to achieve this effect. Soil to seed contact is critical for success.

G. Post seeding, a packer should be utilized to create soil to seed contact in the seedbed to maximize seed to soil contact. If no packer is available, foot traffic across the seeded area can help achieve this effect.

IV. MULCH:

A. Straw and Native Grass Hay: Straw and native grass hay shall be applied at a rate of 4,000 lbs. per acre of air-dry material. At least 50 percent (50%) of the mulch, by weight, shall be ten inches (10″) or more in length. The mulch shall be crimped four inches (4″) into the soil immediately after mulching. Can be used on slopes less then 4:1.

Either straw or hay can be distributed uniformly over the soil surface after seeding and held in place by crimping or punching it into the surface soil with either a mulch tiller or crimper, a modified sheeps-foot roller, or a weighted agricultural type disc. Anchoring the mulch will adequately cover the seed, so it is not necessary to cover the seed prior to mulching.

Hydromulch: Natural wood fiber mulch shall be produced from clean, whole-wood chips and have the property of dispersing readily in water. Mulch shall be applied at the rate of:

2,000 lbs/acre for slopes 4:1 or less

2,500 lbs/acre for slopes 2:1 to 4:1

3,000 lbs/acre for critical areas, slopes 2:1 or more

A tackifier shall be incorporated in the mix at a rate of 150 lbs/per acre (Guar gum for dry soils; starch-based absorbent for wet soils.)

The material shall contain no weed seed. The material shall have no toxic effect when combined with seed or other materials. A continuous agitator action that keeps the materials in uniform suspension must be maintained throughout the distribution cycle. The discharge line shall provide an even distribution of the solution to the seedbed.

The material shall readily blend with water and other additives to form a homogenous slurry or mixture capable of application with power spray equipment. A colored dye that is noninjurious to plant growth and that fades rapidly with exposure to light may be used. Wood cellulose fiber shall be packaged in new, labeled containers in an air-dry condition.

Mulching shall not be done in the presence of free surface water.

B. Hydraulic Blanket Mulch

A bonded fiber matrix consisting of 85-90% natural wood fiber, 5-10% crosslinked tackifier and 5% locking fibers. Mulch shall be applied at the rate of 3,500 lbs. per acre. To be used of slopes steeper than 2:1, and can be used on shallower slopes.

The material shall contain no weed seed. The material shall have no toxic effect when combined with seed or other materials. A continuous agitator action that keeps the materials in uniform suspension must be maintained throughout the distribution cycle. The discharge line shall provide an even distribution of the solution to the seedbed.

The material shall readily blend with water and other additives to form a homogenous slurry or mixture capable of application with power spray equipment. A colored dye that is noninjurious to plant growth and that fades rapidly with exposure to light may be used. Wood cellulose fiber shall be packaged in new, labeled containers in an air-dry condition.

Mulching shall not be done in the presence of free surface water.

8. CARE DURING CONSTRUCTION:

The Contractor shall be responsible for protecting and caring for seeded areas until final acceptance of the work. The Contractor shall repair all damage to seeded areas caused by his construction operation without additional compensation.

9. ACCEPTANCE OF SUBSTANTIAL COMPLETION:

I. SUBSTANTIAL COMPLETION:

Upon completion of all seeding operations the Contractor shall notify the Project Manager. If all work is acceptable, the Project Manager shall record that date and issue a Substantial Completion memorandum stating that the Contractor has

completed seeding operations. The seed establishment period shall begin upon issue of Substantial Completion by the Project Manager.

II. ESTABLISHMENT AND FINAL ACCEPTANCE:

A. Seeding Areas: The Contractor shall maintain seeded areas, including all areas disturbed by Contractor equipment during the seeding operation (i.e., staging areas, access routes, etc.) until date of Final Acceptance. During the establishment period, the Contractor is responsible for keeping the seeding areas free of weeds and debris. Weed control will be accomplished by mowing the site at any point where weed species start to set flowers and before the seed heads develop, or when weeds reach 6" in height in dryland seeding areas. Areas seeded and so maintained shall be protected against damage by construction activity and pedestrian traffic by the use of barriers and appropriate warning signs.

B. Seed Germination Inspection: When germination is complete and seedlings are visible, the Contractor shall notify the Project Manager and request a "Germination Inspection" for final acceptance of the seeded areas. Any areas deemed by the Project Manager at this time to be thin, weak or dead shall be reseeded at this time.

C. Areas shall be reseeded and managed for weeds until they meet the following criteria:

1. Seeded areas contain no more than ten percent (10%) absolute weed cover;
2. No bare patches (i.e., no germination of sown species) greater than 20 square feet exist; and
3. Seeded areas contain, on average, more than 6 desirable seedlings per square foot.

D. Contractor shall continue to maintain areas until they successfully pass inspection.

10. WARRANTY:

I. As determined by the Project Manager, the Contractor shall restore and re-seed eroded areas and areas lacking a satisfactory stand of grasses at the end of 12 months following seeding. A satisfactory stand is defined as a minimal coverage of 6 healthy seeded plants per square foot, with bare patches (not including weeds) less than 20 square feet in size. Re-seeding and repair shall occur during the next earliest seeding season following notice from the Project Manager that seeded areas require reseeding and repair, and shall follow guidelines and specifications described herein.

II. Re-seeding and repair, if required, shall be at contractor’s expense.

End of Section

SECTION 03100 - STRUCTURAL CONCRETE FORMWORK

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   The work shall include, but is not necessarily limited to, the construction of formwork for concrete structures.

3. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

4. QUALITY ASSURANCE:

   I. Standards:

      A. “Recommended Practice for Concrete Formwork", ACI 347

      B. “Building Code Requirements for Structural Concrete”, ACI 318

      C. "Chapter 19", International Building Code.

      D. U.S. Product Standard PS 1-74 for Plywood.

      E. Standard Grading and Dressing Rules No. 167 of the West Coast Lumber Inspection Bureau.

5. MATERIALS:

   I. Plywood:

      Plywood shall be new or in new condition "B-B Plyform Class 1 Exterior" grade plywood, 5/8 inch minimum thickness.

   II. Steel Panels:

      Steel panels shall be flat steel sheet or plate of sufficient thickness, or braced sufficiently, to prevent noticeable deflection from pressure of concrete. Steel forms shall be galvanized and/or coated to prevent rust and staining.

   III. Framing, Studding, and Bracing:

      Framing, studding and bracing shall be "Standard" or "Construction" grade West Coast Species lumber.

IV. Form Ties:

A. Form ties shall be of a cone-type snap-tie configuration type or as approved by the Project Manager. They shall have a minimum working strength when fully assembled of 3,000 pounds. Ties shall be adjustable in length permitting complete tightening of forms and of a type that leaves no metal closer than 1 inch to the surface. Wire ties will not be permitted.

B. Ties used in structures designed to contain water shall be Superior Concrete Specialties, Inc., 3M Waterseal Snap Tie or approval equal.

V. Form Coatings:

Coat surfaces of formwork prior to each pour with "Symons Magic Kote" form coating, by Symons Manufacturing Company, Des Plaines, Illinois, or approved equal, compatible with the forming system. Do not place concrete in forms until inspected and approved.

VI. Chamfer Strips:

Chamfer strips shall be (for all exposed edges) ¾ inch, 45° bevel wood strips or reusable plastic triangular strips.

6. FORM CONSTRUCTION:

I. Construct forms to slopes, lines and dimensions shown, plumb, straight and sufficiently tight to prevent leakage, ACI 347, Chapter 2, Construction.

II. Securely brace, frame and shore forms to prevent displacement and to safely support construction loads, APA Form V 345.

III. Provide temporary openings in formwork, when needed, for concrete placement.

IV. All exposed external corners shall have chamfers of ¾ inch.

7. EXECUTION:

I. Defective Work:

Any form movement or deflection during construction or finished surface variations in excess of the tolerances specified will be basis for rejection of cast-in-place product and requirement for replacement of same.

II. Removal of Forms:

A. Do not remove forms and supports until concrete has attained sufficient strength to support anticipated loads.

B. The listing below serves only as a guide in determining the minimum length of time required before removal of forms and is based on the use of Type II Portland Cement. When high early strength Portland Cement is used, the length of time listed below may be reduced to not less than one-third time

listed, but not less than 1 day. Unless otherwise indicated the minimum length of time prior to removal of forms shall be 48 hours.

C. Use methods of form removal which will not cause overstressing of the concrete. Remove supports to permit the concrete to uniformly and gradually take the stress due to its own weight. Do not use high impact methods to remove supports.

D. Break back ties after concrete has cured sufficiently to maintain unbroken bond with steel rod.

III. Reuse of Forms:

A. Reused forms for exposed concrete work shall be reconditioned to "like new" condition. Reused forms shall be cleaned, repaired, and recoated before each reuse.

IV. Blockouts:

A. Where pipes, castings, or conduits pass through the walls, place such pipes or castings in the forms before pouring the concrete, or in special cases, with the express consent of the Project Manager or as specified, build accepted boxes in the forms to make cored openings for subsequent insertion of such pipes, castings or conduits. Provide boxes or cores with continuous keyways and waterstop all the way around, and with slight flare to facilitate grouting and the escape of entrapped air during grouting.

End of Section

SECTION 03200 - CONCRETE REINFORCEMENT

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   The work shall include, but is not necessarily limited to, the furnishing and placement of reinforcing for structural concrete.

3. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

4. QUALITY ASSURANCE CONTROL:

   I. Manual of Standard Practice for Detailing Reinforced Concrete Structures, ACI 315.

   II. Manual of Standard Practices, Concrete Reinforcing Steel Institute.

5. PRODUCT DELIVERY, STORAGE AND HANDLING:

   I. Deliver reinforcement to project site in bundles marked to coordinate with placement drawings.

   II. Handle and store to prevent contamination from dirt, oil and other materials which will affect bond.

   III. Store a minimum of 6" above ground and in locations where the material will not be subject to abuse.

6. PRODUCTS:

   I. Reinforcing Bars:

      Bars shall be deformed in accordance with ASTM A 615, ASTM A 616 and ASTM A 617 and formed of either intermediate or hard grades of steel unless otherwise specified. Steel shall have a 60,000 psi minimum yield point. Reinforcement shall be clean and free from loose rust, scale or other coatings that will reduce bond.

   II. Tie Wire: Steel, black, annealed, 16-gauge minimum.

   III. Metal Accessories:

      Include all spacers, chairs, bolsters, ties, and other devices necessary for properly placing, spacing, supporting and fastening reinforcement in place.

      Metal accessories shall be galvanized or plastic coated where legs will be exposed in finished concrete surfaces. Accessories shall conform to requirements of the

Concrete Reinforcing Steel Institute (CRSI) *"Manual of Standard Practice for Reinforced Concrete Construction."*

Chairs and other accessories fabricated from concrete, ceramic or plastic may be used in place of metal accessories when approved by the Project Manager.

IV. Reinforcing Fibers:

Shall be The FORTA Corporation (www.forta-ferro.com), "FORTA-FERRO" 2.25" length at a dosage rate of 7.5 lb per cubic yard of concrete or approved equivalent. Fiber-reinforcement shall be installed in all slabs in accordance with fiber manufacturer's recommendations and in other concrete locations if indicated on the drawings.

7. EXECUTION:

I. Splices:

A. Do not splice bars except at locations shown or noted on the shop drawings or as otherwise approved.

B. All effort shall be made to minimize the number of splices on the project. When splices are used, splices shall meet Type B, ACI 318 requriements.

C. Tie lap splices securely with wire to prevent displacement of splices during placement of concrete.

D. Perform welded splices in accordance with AWS 12.1.

II. Remove dirt, grease, oil, loose mill scale, excessive rust, and foreign matter that may reduce bond with concrete.

III. Keep reinforcing in proper position during concrete placement.

IV. Maintain minimum concrete cover over reinforcement as specified in ACI 318 or as noted.

End of Section

SECTION 03252 - INSERTS AND FASTENING DEVICES

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   The work shall include, but is not necessarily limited to, the furnishing and placement of all inserts and fastening devices in structural concrete.

3. SUBMITTALS:

   Refer to Section 01300- Submittals for requirements.

4. MEASUREMENTS:

   Quantities shall not be measured separately for inserts and fastening devices, but shall be included as part of the related construction.

5. GENERAL:

   Sufficient time between erection of forms and placing of concrete shall be given to the various trades to permit the proper installation of their work. See drawings and other Sections of the Specifications for extent, location and details of items to be embedded or placed in the concrete. Inserts shall be cast into the concrete with care to avoid misalignment or damage.

   All inserts shall be maintained in position and protected until the concrete placement is completed.

6. QUALITY CONTROL ASSURANCE:

   Anchor bolts which have the threads pressed instead of cut from bar stock shall be have testing certification on the completed unit.

7. MATERIALS:

   I. Joint Filler

      Isolation joint filler shall be cellulose fibers securely bonded together with a uniform impregnation of bituminous binder and preformed into strips. The joint filler shall comply with ASTM D 8139.

   II. Anchor Bolts:

      Bolts and nuts shall comply with ASTM A 307 and ASTM A 563 for bolt and nut materials. All nuts, bolts and washers shall be galvanized.

8. EXECUTION:

I. Embedded Materials:

A. Coordinate the location and placement of all items to be embedded in concrete.

B. Coat any embedded aluminum with asphalt paint.

C. Cadmium or aluminum coated steel materials shall be coated with asphalt paint.

II. Drilled In Grouted Anchors and Dowels:

In lieu of embedding anchor bolts and when approved, drill holes in hardened concrete and install the anchor bolts and other items with special mortars. Drill with diamond boring or coring bits. Adhesive shall be Sika AnchorFix-3030 or approved equivalent, and shall be installed according to the manufacturer's requirements. Studs of equal size and length may be substituted for anchor bolts if nut fasteners are used. Drilled in studs or anchors utilizing mechanical expansion locking in any process areas shall not be used.

End of Section

SECTION 03300 - CAST-IN-PLACE STRUCTURAL CONCRETE

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   The work shall include, but is not necessarily limited to, the construction of concrete structures.

3. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

4. COMPLIANCE WITH STANDARD AND INDUSTRY SPECIFICATIONS:

   Concrete work shall conform to all requirements of ACI 301, Specifications for Structural Concrete for Buildings, except as modified below.

5. QUALITY ASSURANCES:

   I. Allowable Tolerances:

      A. Variations from the plumb in lines and surfaces of columns, piers and walls for a height of up to 10 feet shall not be greater than ¼ inch per location and a cummulative of one inch maximum for entire length.

      B. Variation from the level and grades of floors and slabs in any 10 foot of length shall not be greater than ¼ inch and cummulative of ¾ inch maximum for entire length.

         Variation in thickness of slabs:

         Minus ¼ inch
         Plus ½ inch

   II. Control Tests:

      A. Testing Laboratory: Retain the services of a testing laboratory under the direction of a professional engineer and pay all costs to take samples, make tests. The testing laboratory shall be independent of both the contractor and the supplier.

         Field technicians shall be ACI certified as a Concrete Field Testing Technician. Laboratory technicians shall be ACI certified as either Concrete Strength Testing Technician or Concrete Laboratory Testing Technician.

      B. Extent of Tests: Take samples and make tests for each 25 cubic yards of fresh concrete or fractional amount placed, but not less than one set for each day's concreting. Take air entrainment and slump tests for each batch or truck of concrete delivered.

1. Compression and Strength Tests: Each test shall consist of four standard cylinders (either 6”x12” or 4”x8”). Cylinder diameter shall be at least three (3) times the nominal maximum size of the coarse aggregate. One cylinder to be tested at the age of 7 days and two cylinders at the age of 28 days. Test one cylinder at 56 days if the other two 28 day cylinders do not meet the required strength. Secure samples for compression test specimens in accordance with ASTM C 172. Cure specimens in accordance with ASTM C 31. Additional test of specimens cured entirely under field conditions may be utilized to check the adequacy of curing and protection of the concrete as directed. Strength tests shall be made in accordance with ASTM C 39. Core tests may be required in the event that compression tests fail to meet the specifications. Core testing shall be in accordance with ASTM C 42 and evaluated in accordance with ACI 301, Chapter 17.

2. Slump Tests: Tests shall be made in accordance with ASTM C 143.

3. Air Entrainment Tests: Tests shall be in accordance with ASTM C 231, ASTM C 173, or ASTM C 138 for normal weight concrete.

4. Temperature: Determine temperature for each set of slump and air entrainment tests.

5. Unit Weight Tests: Tests shall be in accordance with ASTM C 138.

C. Acceptance of Concrete:

1. Cylinders: The average of all sets of three consecutive strength tests shall equal or exceed the specified strength f_c', and no individual strength test result shall be less than the specified strength f_c' by more than 500 psi.

2. Core Tests: The average compressive strength must be equal to or greater than 85 percent of specified strength f_c' and no single core shall be less than 75 percent of the specified strength f_c'.

D. Enforcement of Strength Requirements: When the compressive strength of cylinder falls below the specified strength, the Project Manager may order additional curing for that portion of the structure where the concrete has been placed.

If such additional curing does not give the strength required, the defective parts shall be removed and replaced.

Submit ready-mix delivery tickets per ASTM C 94 if requested.

III. Environmental Requirements:

A. Concrete when deposited shall have a temperature not below 40°F. and not above 90°F. During periods not defined as cold weather but when freezing temperatures are foreseen or occur provide suitable means for protecting the concrete from freezing the first 24 hours after placing.

B. The methods and recommended practice as described in Standard Specification for Cold Weather Concreting, ACI 306.1 and ACI Report 306R shall be followed for cold weather concreting.

C. Cold weather is a period when for more than 3 successive days the average daily outdoor temperature drops below 40°F. The average daily temperature is the average of the highest and lowest temperature during the period from midnight to midnight. When temperatures above 50°F occur during more than half of any 24 hour duration, the period shall no longer be regarded as cold weather.

D. The methods and recommended practice as described in ACI Report 305R shall be followed for hot weather concreting.

E. Hot weather is defined as any combination of high air temperature, low relative humidity, and wind velocity at which the evaporation rate exceeds 0.2 $lb/ft^2/hr$. In excess of this rate, precautions against plastic shrinkage cracking are required. Minimum precautions require the application of an evaporation retardant.

F. The use of salt, chemicals or other foreign materials shall not be mixed with the concrete without approval.

G. Prevent the discharge of wet concrete into any stream or lake.

IV. Delivery and Placement:

A. Concrete that is completely mixed in a truck mixer shall receive 70 to 100 revolutions at the mixing speed prior to placement.

B. Discharge of the concrete shall be completed within 1½ hours, or before the drum has revolved 300 revolutions, whichever comes first, after the introduction of the mixing water to the cement and aggregates or the introduction of the cement to the aggregates. These limitations may be waived by the Project Manager if the concrete is of such slump after the 1½ hours or 300-revolution limit has been reached that it can be placed, without the addition of water, to the batch.

C. Concrete delivered in cold weather shall have the following minimum temperature as placed and maintained during the protection period. The period shall be for a minimum of 3 days.

	Section Size, Min. Dimension (inches)			
	12 or less	12 to 36	36 to 72	72 and greater
Min. Temp.	55°F	50°F	45°F	40°F

D. Termination of Protection: At the end of the protection period, the concrete shall be allowed to cool gradually. The maximum decrease in temperature measured at the surface of the concrete in a 24 hour period shall be as follows:

	Section Size, Min. Dimension (inches)			
	12 or less	12 to 36	36 to 72	72 and greater
Max. Temp. Drop	50°F	40°F	30°F	20°F

6. INSPECTION:

   I. Assure that excavations and form work are completed, and that ice and excess water are removed from all surfaces.

   II. Check that reinforcement is secured in place and forms are thoroughly wetted or oiled.

   III. Verify that anchors and other embedded items are secured in position.

   IV. Inspection and approval shall be attained before any concrete is placed.

7. PRODUCTS:

   Concrete materials shall conform to the requirements of Section 700 of the latest version of the Colorado Department of Transportation Standard Specifications for Road and Bridge Construction, and subsequent revisions thereto.

   I. Portland Cement:

      Type II, low to moderate alkali, shall conform to CDOT 701.01 (ASTM C 150).

      Low to moderate alkali cement will not be required upon approval of submittals certifying the use of non-reactive aggregate.

   II. Blended Hydraulic Cement:

      Type IL, (MS and HS), Portland-Limestone Cement, shall conform to CDOT 701.01 (ASTM C 595).

   III. Admixtures:

      A. Air-entraining admixture shall meet CDOT section 711.02 (AASHTO M 154).

      B. Water reducing admixtures shall meet CDOT section 711.03 (AASHTO M 194).

      C. Permeability reducing admixture for hydrostatic conditions shall meet CDOT section 711.03 (AASHTO M 194) and ACI 212.3.

      D. Approved fly ash may be substituted for portland cement up to a maximum of 20 percent Class C or 30 percent Class F by weight. Fly ash shall conform to ASTM C 618. Fly ash must be a pre-approved product from a source listed on the Colorado Department of Transportation's Approved Products List.

IV. Aggregate:

A. Fine Aggregate:

Shall conform to CDOT 703.01 (AASHTO M 6).

B. Coarse Aggregate:

Shall conform to CDOT 703.02 (AASHTO M 80), except crushed hydraulic-cement concrete shall not be allowed.

Regular, CDOT Class D, concrete shall be made with ¾ inch nominal sized course aggregate.

V. Mix Proportioning:

Concrete materials shall conform to the requirements of the Section 600 of the latest version of the Colorado Department of Transportation (CDOT) Standard Specifications for Road and Bridge Construction, and subsequent revisions thereto.

Concrete shall meet all of the following:

A. Regular Concrete:

1. CDOT Class D - Except as otherwise specified, concrete shall have a 28 day compressive strength of 4,500 psi, minimum.

2. Minimum cement content: 550 to 600 pounds of cement per cubic yard.

3. Maximum water to cement ratio, including aggregate surface moisture but excluding water of absorption of aggregate: 0.44.

4. Air entrainment content: 5 to 8 percent. Air content of trowel-finished interior concrete floors shall not exceed 3.0 percent

5. Slump: The maximum slump of the delivered concrete shall be the slump of the approved concrete mix design plus 1.5 inches.

B. Patching Mixture:

The patching mixture shall be made of the same materials and of approximately the same proportions as used for the concrete, except that the coarse aggregate shall be omitted and the mortar shall consist of not more than 1 part cement to 2½ parts sand by damp, loose volume. The quantity of mixing water shall be no more than necessary for handling and placing. The patching mortar shall be mixed in advance and allowed to stand with frequent manipulation with a trowel, without addition of water, until it has reached the stiffest consistency that will permit placing.

VI. Water Quality:

Mixing water shall be clean and free of oil, acid and injurious amounts of vegetable matter, alkalies and other impurities.

VII. Joint Sealant:

The material shall be Sikaflex 1-A, Mameco weatherproofing sealant Vulkem 116 or approved equivalent. The material shall be a one-part moisture curing, gun-grade polyurethane sealant suitable for continual immersion in water of a limestone color conforming to ASTM C 920. Vulkem primer 171 or Sikaflex primer 429 shall be applied to the concrete when joint will be immersed in water.

VIII. Joint Backer: extruded closed-cell polyethylene foam by Hercules, or approved equivalent.

IX. Evaporation Retardant:

SikaFilm, "ConFilm", or approved equivalent.

X. Isolation Joint:

Isolation joint expansion filler shall be closed cell superior grade polyethylene or non-extruding PVC such as "Foamjoint" or "Conflex" available from Sweeney Materials, Inc. or approved equivalent.

Joint Spacing (feet)	10-20	20-30	30-50	50-70	70-100
Filler Thickness (inches)	½	3/8	½	¾	1

8. INSTALLATION:

I. Placing Concrete:

A. Place concrete only in the presence of the Project Manager. Remove and replace concrete placed in his absence unless otherwise accepted.

B. Convey concrete from mixer to final position by method which will prevent separation or loss of material.

C. Maximum height of concrete free fall 5 feet unless otherwise allowed.

D. Regulate rate of placement so concrete remains plastic and flows into position.

E. Deposit concrete in continuous operation until section is completed.

F. Place concrete in horizontal layers 18 inches maximum thickness.

G. Do not retemper or use set concrete.

H. Water shall not be added to concrete after test samples have been taken.

I. Prevent the discharge of wet concrete into any stream or lake.

II. Consolidating Concrete:

A. Use mechanical vibrating equipment for consolidation. Contractor is

encouraged to have a spare vibrator in case of failure.

B. Do not use vibrators to transport concrete in forms.

C. Insert vibrators vertically and quickly. Withdraw slowly to remove entrapped air pockets.

D. Vibration spacing shall be such that the radius of action overlaps that of previously vibrated concrete.

E. Special attention and effort shall be used next to hardened concrete, embedded items and corners.

F. Unreinforced slabs less then 8-inches thick do not require consolidation.

III. Repairing Formed Surfaces of New Concrete:

A. After removal of forms inspect all concrete surfaces, repair any joints, voids, stone pockets, tie holes or other defective areas before the concrete is thoroughly dry. Defective areas shall be chipped away to a depth of not less than one inch with the edges undercut to the surface. The area to be repair and a space at least 6 ins. wide entirely surrounding it shall be wetted to prevent absorption of water from the patching mortar. Do not repair any concrete in freezing weather.

B. Unexposed formed surfaces of concrete shall be repair as directed.

C. Where approved, the bonding of the patching mortar to the acceptable concrete after necessary cutting and removal of porous or otherwise unacceptable concrete is completed may be done by the use of an approved bonding agent applied in accordance with the printed directions of the manufacturer. Filling and finishing of the patch shall be completed as herein specified.

IV. Slabs On Subgrade:

Place the concrete slab over material compacted to a minimum of 95% of maximum dry density as determined by ASTM or AASHTO T 99 (Standard Proctor). Place concrete of the required thickness and strike off at the proper levels.

V. Control Joints:

Control joints shall be provided at spacing as noted on the drawings.

Floor joints shall be a maximum ¼ inch wide. Wall joints can use chamfer strips with a maximum width of ¾ inch. Depth shall be ¼ the thickness of the wall or slab.

Timing of joint creation is critical and depends on the method used. Conventional saw-cut joints should be made as soon as possible without raveling the concrete -- 4 to 12 hours after placement is common, but never more than 24-hours after placement. Soft-cut joints are normally made one to four hours after completion of finishing operations. Tooled joints should be run early in the finishing process

and repeated later to provide esthetically-pleasing joints and eliminate any possibility of groove bond.

All joints shall be filled with flexible liquid joint filler within 7 days of concrete placement. Refer to Section 07900 – Sealants and Joint Fillers for additional information.

9. CONCRETE FINISHES AND TOLERANCE:

I. General Finish:

A. Finish surfaces to conform with the following table unless otherwise noted on the drawings.

B. Formed Surfaces: System:

1. Exterior - Below Grade F1

2. Exterior - Exposed, Rough.....F2

C. Unformed Surfaces: System:

1. Top of Forms U1

2. Interior Slabs.....U2

3. Driving and Exterior Walking Surface U7

II. Formed Surfaces:

Finishes for formed surfaces shall be as designated below:

A. Finishing for F1 and F2 finishes consists of concrete repairing within 48 hours after forms are removed.

B. Finish F1: Rough formed surface with defective concrete repaired and form tie holes and other holes over ½ inch deep filled. Forms may be built with a minimum of refinement and form sheathing may be any material that will not leak mortar or yield beyond specified tolerances when the concrete is vibrated.

C. Finish F2: Smooth, formed concrete surface with all fins, projections and loose material removed, and defective concrete, form tie holes, air bubble holes, surface pits, holes from defective forms, nail head holes and similar surface defects repaired and filled. Forms in contact with concrete shall be plywood or steel.

III. Unformed Surfaces:

A. Working on unformed surfaces in various finishing operations shall be held to the minimum required to produce the desired finish. Use of any finishing tool in areas where water has accumulated will not be allowed. Work in these areas shall be delayed until the water has been absorbed, evaporated, or removed by draining, mopping, dragging off with a loop of

hose, or other means. In no case, shall cement or mixture of cement and sand be spread on the surface to absorb excess moisture or shall such materials or water be added to facilitate troweling. Joints and edges, unless specified otherwise, shall be carefully finished with edging tools.

Finishes for unformed surface shall be as designated below:

B. Finish U1: Even, uniform finish. Consolidate, level, screed, and bull-float (darby) concrete for an even, uniform surface. Concrete shall be removed immediately after consolidated by striking with a sawing motion of a straightedge or template across wood or metal strips, set as guides. When the surface is curved, use screed strips at approved intervals. For long, narrow stretches of curved surfaces such as on invert paving, a heavy slip form may be used. In the case of extensive flat paving, a paving and finishing machine is preferred. Use the bull-float or darby to fill in voids and eliminate ridges. Use magnesium or aluminum on air-entrained concrete. Bull-float immediately after screeding and before bleed water appears on the surface. Do not perform any finish operation while there is bleed water or excess water on the surface.

C. Finish U2: Steel Trowel finish. Follow treatment for U1 by steel troweling by hand, or power driven equipment. Troweling to be started after some stiffening has taken place in the surface concrete and the bleed water, excess moisture and "shine" has disappeared. Work the concrete no more than necessary to produce a surface known as "Steel Trowel Finish" that is uniform in texture and free of screed marks. Do any necessary cutting and filling during the floating operations. Use a magnesium or aluminum float on air-entrained concrete.

D. Finish U7: Drive and Exterior Walking Surface. Immediately after the concrete has been placed and consolidated, strike off the surface with a finishing machine or hand-operated screed until the required surface is obtained. The use of "jitterbugs" or similar devices is not permitted. The strike-off method and equipment shall be approved. Approval shall be withdrawn for unsatisfactory performance. The equipment shall be capable of finishing within the specified surface tolerances. Improper adjustment and operation that results in unsatisfactory consolidated and smoothness shall be corrected immediately. Unsatisfactory performance may be cause for rejection of the equipment and removal of the concrete.

Following completion of the strike-off, float the slab surface to a smooth, uniform surface using floats 10 feet or longer. Use adequate floats to remove roughness and minor irregularities left by the strike board or finishing machine and to seal the concrete surface. Excessive working of the concrete surface will not be permitted. All floats shall be used so that each transverse pass overlaps the previous pass by at least one-half the length of the float.

When hand-operated float boards are used they shall be from 12 feet to 16 feet long, ribbed and trussed as necessary to provide a rigid float, with adjustable handles at each end. The float shall be wood at least 1 inch thick and 8 inches wide. Provide adjusting screws between the float and

the rib no more than 24 inches apart. Maintain the float board free of twist and true.

Operate hand-operated float boards from transverse finishing bridges. The finishing bridges shall completely span the area being floated, and a sufficient number of finishing bridges shall be provided to permit operation of the floats without undue delay. Not less than two transverse finishing bridges shall be provided when hand-operated float boards are used. When a finishing machine is used for longitudinal floating, one finishing bridge equivalent to the transverse finishing bridge specified herein shall be furnished for use by the Project Manager.

All finishing bridges shall be of rigid construction, free of wobble and spring when used by the operators of longitudinal floats, and easily moved.

After floating is complete, but while the concrete is still plastic, test the surface of the concrete for trueness with a 10-foot straightedge. The straightedge shall be held in contact with the surface in successive positions parallel to the slab centerline and the whole area gone over from one side of the slab to the other. Advancement along the slab shall be in successive stages of not more than one-half of the length of the straightedge. Any depressions found shall be filled immediately with freshly mixed concrete, and any high areas shall be cut down. The surface shall be struck off, consolidated, and refinished. Special attention shall be given to ensure that the surface across joints fully meets the requirements for smoothness. The straightedge testing and refloating shall continue until the entire surface is found to be free from observable departures from the straightedge and the slab has the required grade and crown.

As soon as the concrete has hardened sufficiently, the surfaces shall be given a further test for trueness using a 10-foot straightedge or other specified device. Areas showing high spots of more than 1/8 inch shall be marked and immediately ground down with a diamond-faced, saw-type cutting machine, capable of cutting through mortar and aggregate without breaking or dislodging the aggregate or causing spalls, to an elevation where the area or spot will not show surface deviations in excess of 1/8 inch when tested with a 10-foot straightedge.

Provide the 10-foot straightedge and perform the straightedge testing while the Project Manager is present.

IV. Tolerances:

A. Unless otherwise required, allowable tolerances for concrete surfaces shall be in accordance with the following table. Surface irregularities are classified as either "abrupt" or "gradual".

Offsets caused by displaced or misplaced form sheathing, lining, or form section or by defective form lumber shall be considered as abrupt irregularities. All others are classed as gradual irregularities. Gradual irregularities shall be measured with a template consisting of a straight edge for plane surfaces and its equivalent for curved surfaces.

B. The length of the template for testing formed surfaces is 5 feet. The length of the template for unformed surfaces is 10 feet. Maintain a 5-foot length and 10-foot length steel template on the site.

C. Maximum allowable irregularities in concrete:

Finish Designation	Irregularity in Inches	
	Gradual	Abrupt
F1	1	½
F2	½	¼
U1 through U7	1/8	1/8

10. CURING:

I. Apply curing and sealing compound, BASF "Kure-N-Seal" or approved equivalent, to the concrete by spraying. Apply one coat for curing (apply a second coat for sealing and dustproofing). For vertical surfaces application shall be made as soon as the forms have been stripped, the surfaces have been rubbed and patched, if applicable. Store and handle the curing compound and apply in recommended surface coverages in compliance with the Manufacturer's printed instructions. Curing compound shall be a liquid membrane and meet ASTM C 309, Type I-D and applied at a rate of not greater than 200 square feet per gallon for the first coat unless otherwise approved. Coating shall be kept undamaged or repaired for 7 consecutive days.

If curing compound will interfere with any sealers, grouts or other materials to be placed on the concrete, obtain approval of another curing method from the Project Manager.

11. FOUNDATION DAMPPROOFING

I. Materials:

A. Cold Solvent Mastic:

Karnak 83, Sonneborn, Hydrocide Semi-Mastic, W.R. Meadows Semi-Mastic, or approved equal asphaltic compound reinforced with mineral fibers. Roller or spray application on dry or cured concrete foundation walls.

B. Cold Emulsion Mastic:

Karnak 220 AF, Sonneborn Hydrocide 700, W.R. Meadows Sealmastic Type 2, or approved equal asphalt emulsion compound reinforced with mineral fibers for brush, roller, or spray application on damp or green concrete foundation walls.

II. Installation:

Remove fins and loose material from surfaces, fill holes and cracks with mortar, clean all surfaces free of dirt, oil, and grease. Apply mastic in 2 coats at a minimum rate of 25 square feet per gallon each coat in strict accordance with manufacturer's printed instructions. Apply to exterior face of exterior foundation walls from outside face of footing to 2" below finish grade.

12. CONCRETE PATCHING:

Patching Mortar:

The mortar mixture shall be composed of a two component system polymer-modified Portland cement appropriate to the thickness required. The mortar shall be Sika "MonoTop 611", BASF “ALL-CRETE 5”, or approved equivalent.

Sand shall be clean and graded with 100 percent passing a No. 8 standard sieve; not more than 5 percent retained on a No. 16 standard sieve; from 10 to 30 percent passing a No. 100 standard sieve; and not more than 5 percent passing a No. 200 standard sieve.

End of Section

SECTION 03600 - GROUT

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   The work shall include, but is not necessarily limited to, the placement of nonshrink grout beneath building columns and anchor bolt installation as approved by the Project Manager.

3. INSPECTION:

   Assure that all of the items have been leveled, plumbed, centered and that all the nuts have been completely tightened.

   Inspection and approval by the Project Manager shall be obtained before the grouting begins.

4. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

5. DELIVERY, STORAGE AND HANDLING:

   Deliver the material in the original unopened containers and store under cover.

6. PRODUCTS:

   I. Anchor Bolts:

      A. The two-component liquid epoxy grout shall be BASF Building Systems, or approved equal.

      B. Design Strength:

         Minimum design strength shall be determined by Professional Engineer responsible for the foundation and anchor bolt design and shall be included as part of the design submittal.

7. INSTALLATION:

   I. General:

      Non-shrink grout shall be placed between building column base plates and concrete foundations once building installation is complete. Non-shrink grout shall be placed such that is completely fills the void between baseplate and concrete foundation.

II. Preparation:

Locate all tools and materials as close as possible to the area to be grouted. All surfaces in contact with the grout shall be entirely free of oil, grease, laitance, and other foreign substances. Roughen the concrete surfaces to insure good bond of grout to the existing concrete. Clean thoroughly with liberal quantities of water, leaving the surface wet but free of excess water.

III. Mixing and Placing:

Mix the grout according to the manufacturer's recommendations.

Place the grout from one side of a base plate only, to avoid entrapping air.

IV. Protection and Curing:

Protect the placed cementitious grout from rapid drying. Spray apply a curing compound to the exposed surfaces complying with ASTM C 309, Type I, such as Master Builders MB-429 curing and sealing compound, or approved equal.

End of Section

SECTION 06100 - CARPENTRY

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   The work shall include, but is not necessarily limited to framing and finish carpentry.

3. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

4. QUALITY ASSURANCE:

   I. Product Handling:

      Store materials in such a manner as to insure proper ventilation and drainage and to protect against damage and the weather with tarpaulin.

      Keep all material clearly identified with all grade marks legible; keep all damaged material clearly identified as damaged and separately store to prevent its inadvertent use.

      Do not allow installation of damaged or otherwise noncomplying material.

      Use all means necessary to protect the installed work and materials of all other trades.

      Do such work as is necessary to cover and protect all carpentry work or materials from damage of any kind.

5. MATERIALS:

   I. General:

      All materials to be used shall be consistent with grade specified. Lumber shall be protected from weather until actually used. All lumber shall be of a quality equal to or superior to the minimum required for the specified grade.

   II. Standards:

      A. General:

         All pieces shall bear the official manufacturer's association grade mark. For rough sawn lumber, lot grading certifications are acceptable. All lumber for finish millwork, trim, etc., to be properly kiln-dried to a maximum of seven (7) percent moisture content. For rough sawn lumber greater than two inches thick, "S-Grn" accepted. For 2 inch thick rough sawn and S4S lumber, the

moisture content shall be a maximum of nineteen (19) percent, (S-Dry) unless otherwise noted.

B. Western Wood Products Association (WWPA)

C. Standard Grading Rules, California Redwood Association (CRA)

D. Standard Grading Rules and the American Plywood Association (APA)

III. Wood Types:

A. Structural Framing:

Structural framing includes studs, posts, beams, joists, purlins, rafters, etc.

B. General Framing:

1. Stud Wall Framing (2" to 4" thick, 2" to 4" wide)
   Douglas Fir-Larch @24" O.C.
   Grade: #2 or better
   F_b = 900 psi
   F_c = 1350 psi

2. Structural Light Framing (2" to 4" thick, 2" to 4" wide)
   Douglas Fir-Larch
   Grade: No. 2 or better
   F_b = 900 psi
   F_c = 1350 psi

3. Structural Joists and Planks (2" to 4" thick, 5" and wider)
   Douglas Fir-Larch or Hem-Fir
   Grade No. 2 or better
   F_b = 850 psi

4. Trusses, Top and Bottom Chords
   Douglas Fir - Larch
   MSR 1650f

C. Exposed to Moisture:

1. Structural Light Framing, (2" to 4" thick, 2" to 4" wide)
   Redwood, Heart Structural
   Construction Grade
   F_b = 825 psi

2. Structural Joists and Planks, (2" to 4" thick, 5" and wider)
   Redwood, Heart Structural
   Construction Grade
   F_b = 825 psi

D. General Purpose Boards:

Common boards shall be WWPA, all species, (1" and thicker), Grade 3 Common or better.

E. Oriented Strand Board (OSB):

Shall be "inner-seal OSB" sheathing as manufactured by Louisiana-Pacific, or approved equivalent. The sheathing shall be back stamped with American Plywood Association Performance Rating Standard PRP108 or HUD/FHA Material Release 1060 Structural Requirements. Structural 1 rated sheathing shall conform to National Evaluation Report NERQA397. Installation shall conform to the manufacturer's instructions and to A.P.A. procedures.

F. Trim and Mouldings:

Western Woods producers. Finger-jointed (painted trim applications).

IV. Preservative Pressure Treatment:

All pressure treatment shall be in accordance with American Wood Preservers' Association (AWPA) Standards, unless otherwise noted.

Ammoniacal Copper Quat (AQC), Copper Boron Azole (CBA), Copper Azole (CA-B) are allowed. Preservative products shall be applied according to AWPA standards for the selected use.

"Wolman" salts CCA (chromated copper arsenate, Type C) are allowed where AWPA allows their use. CCA shall not be used in residential applications.

A. No earthen or fresh water contact: 0.25 lb./cu. ft. (ACQ & CCA)
0.20 lb./cu. Ft. (CBA)
0.10 lb./cu. Ft. (CA-B)

B. In contact with earth and/or fresh water: 0.40 lb./cu. ft. (ACQ & CCA).
0.41 lb./cu. Ft. (CBA)
0.21 lb./cu. Ft. (CA-B)

6. TRUSSES:

Design shall be for the loading indicated in the project drawings. All trusses shall be stamped to identify the fabricator. The gusset plates shall be 20 gauge minimum and galvanized.

Shop drawings and engineering design shall be submitted for approval prior to fabrication. Lateral bracing shall be reviewed for the conditions shown on the drawings. Drawings shall be stamped by a registered professional engineer.

7. TEMPORARY BRACING:

Provide and maintain all temporary bracing for door frames. Furnish and maintain all necessary scaffolding, ladders, etc.

8. METAL FRAMING CONNECTORS:

Metal framing connectors shall be furnished and installed where specified or as necessary for completion of work to anchor carpentry and millwork to adjoining construction.

I. Products:

Structural framing connectors shall be by Simpson Strong-Tie., or approved equivalent.

Install in accordance with the manufacturer's recommendations.

Connectors used with treated wood shall be hot dipped galvanized according to ASTM A653, A123 or A153. Simpson Strong-Tie "ZMAX" or "HDG" or approved equivalent. Stainless steel is also acceptable. Do not use galvanized materials with stainless steel materials.

II. Fasteners:

Fasteners shall be provided and of the type recommended by the manufacturer,

A. Column cap and base bolts, complying with ASTM A 307 for bolt and nut materials. All hardware shall be galvanized or plated with another acceptable corrosion resistant material.

B. Nails shall have a corrosion resistant coating.

C. Fasteners for treated lumber shall be hot dipped galvanized, ASTM 153, or stainless steel, Type 316L. Electro-platted fasteners shall not be used. Use only hot dipped galvanized or stainless steel connectors and fasteners. Do not use hot dipped galvanized with stainless steel.

9. WORKMANSHIP AND INSTALLATION:

Woodwork shall be properly framed, closely fitted and accurately set to required lines and levels and shall be rigidly secured in place. Panels shall be set loose and so secured as to prevent checks and warps.

Caulk the perimeter of moldings.

No carpentry work shall be covered until inspection has been made.

10. EXECUTION:

I. Selection of Lumber Pieces:

A. Carefully select all members; select individual pieces so that knots and obvious defects will not interfere with placing bolts or proper nailing or making proper connections.

B. Cut out and discard all defects which will render a piece unable to serve its intended function, lumber may be rejected whether or not it has been

installed, for excessive warp, twist, bow, crook, mildew, fungus, or mold, as well as for improper cutting and fitting.

II. General Framing:

A. At a minimum all framing shall be done in accordance with the 2015 International Building Code.

B. Top plates shall be doubled on all stud walls.

C. Cripples under headers shall be continuous to sill plate.

D. Block all stud walls as required for sheathing.

E. Beams, girders, and joists supporting bearing walls or other concentrated loads, shall not be notched. Joists, except as above, may be notched no deeper than ¼ the depth, at top edge only, provided such notch is located within $^1/_8$ to ¼ of span from face of support. Sawcuts for notches shall not overrun depth of notch. Holes in joists, beams and girders shall not be larger in diameter than 1/10 the depth of member and shall be located within center half of the span. All holes shall be centered within depth of member. Holes and notches in studs shall be located within 1/3 of height from either top or bottom but no closer than 3″ form plates. Holes and notches in studs shall not exceed 1″ in diameter or depth. Studs in exterior walls shall not be notched.

F. Joists, rafters, and decking shall not be cut and headed or displaced to provide for openings in roofs or floors, except as detailed on drawings.

G. Install all horizontal members with crown up.

H. All members in bearing shall be accurately cut and aligned so that full bearing is provided without use of shims. Bearing posts shall have full blocking or support under.

I. All rafters shall be notched for full bearing at all supports.

J. All joists shall have a minimum of 1½″ bearing on wood or metal supports. Lapping joints shall have 6″ laps centered over interior supports.

K. Stud wall foundation sill plates shall be bolted to concrete with anchor bolts of size and minimum spacing as shown on drawings. At least two bolts shall be provided for each piece with one bolt within 12″ of each end.

L. All wall sheathing shall be applied as follows: Center vertical joints over studs and center horizontal joints over 2″ blocking or plate. nail top of panels to double top plate, and nail bottom of panels to anchored sill plate.

M. Roof sheathing: Install with face grain at right angles to supports, continuous over two (2) or more spans. Allow minimum space 1/16-inch between end joints and $^1/_8$ inch at edge joints for expansion and

contraction of panels.

III. Fasteners:

A. General:

All structural timber connections using bolts, lag screws, nails, spikes and wood screws shall have a pilot hole bored into the timber joint prior to the connector insertion in accordance with the National Design Specification for Wood Construction. Nails and spikes may not be pre-bored unless the integrity of the joint is not damaged in any way. All fasteners exposed to weather shall be noncorrosive.

B. Nailing:

1. Rough Framing: Use only common nails or spikes as required to properly fasten members. Avoid nailing into end grain of wood and use toe nailing whenever possible.

2. Treated Lumber: All fasteners used with Treated Lumber shall be hot dipped galvanized.

3. Wood Stops and Trim: Nail with appropriate size non-corrosive finish nails.

4. OSB: Use only non-corrosive coated common nails to properly fasten panels. Nail 6 inches o.c. along panel edges and 12 inches at the intermediate supports, except that when supports are spaced at 48 inches o.c. or more, space nails 6 inches o.c. at all supports.

C. Bolts:

Bolts shall be ASTM A 307. Bolt threads must not bear on wood; use washer under head and nut where both bear on wood; use washers under all nuts. All bolts and associated hardware shall be galvanized.

D. Screws:

Lag screws shall be ASTM A 307 and wood screws shall be of sufficient strength to cause failure in the wood rather than in the screw. Screw, do not drive, all lag screw and wood screws.

IV. Powder Actuated Fasteners:

For masonry or concrete, powder actuated fasteners shall be Ramset or approved equivalent.

End of Section

SECTION 06600 – PVC WALL AND CEILING PANELING

1. SCOPE OF WORK:

Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

The work shall include, but is not necessarily limited to, the furnishing and installation of PVC paneling within selected areas.

3. SUBMITTALS:

Refer to Section 01300 - Submittals, for requirements.

4. REFERENCES:

I. American Society for Testing and Materials: Standard Specifications (ASTM)

II. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

III. ASTM D4226 – Standard Test Method for Impact Resistance.

IV. ASTM G21 – Standard Test Method Standard Practice for Determining Resistance of Synthetic Polymetric Materials to Fungi.

5. GENERAL PROVISIONS:

I. Product Delivery and Storage:

A. Deliver materials to the project site in manufacturer's original, unopened containers with labels indicating brand names, colors and patterns, and quality designations legible and intact.

B. Do not open containers or remove markings until materials are inspected and accepted.

C. Store and protect accepted materials in accordance with manufacturer's directions and recommendations.

D. Store wall and ceiling panels flat.

II. Environmental Requirements:

A. Installing Wall and Ceiling Panels:

1. Cold Temperatures: When installing wall and ceiling panels in temperatures below 40 degrees F, warm to a minimum of 60 degrees F overnight and leave space between panels to allow for expansion in

accordance with manufacturer's instructions.

2. Warm Temperatures: When installing wall and ceiling panels in temperatures above 70 degrees F, warm panels to a minimum of 60 degrees F in accordance with manufacturer's instructions.

B. Cutting Wall and Ceiling Panels:

1. Cold Temperatures: Before field-cutting wall and ceiling panels in temperatures below 40 degrees F, warm panels to a minimum of 60 degrees F overnight.

6. PRODUCTS:

I. PVC Wall and Ceiling Panels:

A. PVC tongue-and-groove, rib-reinforced wall and ceiling panels with nailing fins shall be DURAMAX Building Products, “Wall and Ceiling Panel” or approved equivalent.

B. Material: 100 percent virgin, exterior-grade PVC. Nonporous, waterproof and corosion proof.

C. Width: 16 inches.

D. Thickness: 1/2 inch.

E. Weight 0.95 pound per square foot.

F. Surface Burning Characteristics, ASTM E 84:

1. Flame Spread Index: 10.

2. Smoke Developed Index: 400.

G. Color: White, glossy finish.

H. Acceptance: FDA (U.S. Food and Drug Administration) & USDA.

II. Trim:

A. 100 percent virgin, exterior-grade PVC. Color to match wall and ceiling panels.

B. Trim shall be applied around the perimeter of the area receiving PVC paneling.

III. Acessories:

A. Provide all necessary accessories (i.e. sealants, fasteners, etc.) for the complete installation of the FRP system in accordance with the manufacturer’s recommendations.

B. Construction Adhesive: PL400 or Liquid Nails, as recommended by wall and ceiling panel manufacturer.

C. Fastening into Wood: Stainless steel,1 to 1-1/2-inch, No.10 pancake-head metal screws. Staples are not permitted.

7. EXECUTION:

I. Inspection of Surfaces:

A. Examine the substrate for unevenness which would prevent proper execution and impair the quality of the panel installation.

B. Do not proceed with the panel installation until the defects have been corrected except where correction is indicated under Preparation in this Section.

II. Preparation:

A. Prepare wall and ceiling panels for installation in accordance with manufacturer's instructions.

B. Remove dirt, oil, grease, or other foreign matter from surfaces to receive FRP covering materials.

III. Installation:

A. Install wall and ceiling panels in accordance with manufacturer's instructions at locations indicated on the Drawings.

B. Install wall and ceiling panels plumb, level, square, flat, and in proper alignment.

C. Install trim in accordance with manufacturer's instructions.

D. Ceiling Panels: Anchor ceiling panels with fasteners in accordance with manufacturer's instructions.

E. Wall Panels: Anchor wall panels with construction adhesive and fasteners in accordance with manufacturer's instructions.

F. Fasteners:

1. Install fasteners 16 inches to 24 inches on center into nailing fins.

2. Keep top of screw head 1/16 inch above top of nailing fins, allowing panels to move slightly.

3. Do not recess screw heads into nailing fins.

4. Ensure nailing fins lay flat against surface, not deformed around screw heads.

5. Ensure fasteners are not exposed.

G. Cutting Wall and Ceiling Panels:

1. Field-cut panels as necessary in accordance with manufacturer's instructions.

2. Ensure cuts are straight, square, and do not damage panels.

3. Apply joint sealants as specificed in Section 07900.

IV. Adjusting:

A. Repair minor damages to finish in accordance with manufacturer's instructions and as approved by the Project Manager.

B. Remove and replace damaged wall and ceiling panels in accordance with manufacturer's instructions.

V. Cleaning:

A. Upon completion of the installation of floor covering, adjacent work, and after materials have set, clean surfaces with a neutral cleaner as recommended by the manufacturer for the type of floor covering material installed.

B. Do not use harsh cleaning materials or methods that could damage finish.

C. Protect installed wall and ceiling panels from damage during construction.

End of Section

SECTION 07200 - INSULATION

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   The work shall include, but is not necessarily limited to furnishing, installation and application of insulation materials.

3. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

4. PRODUCT DELIVERY, STORAGE AND HANDLING:

   I. Delivery:

      Deliver material to the site in unopened packages, with identification labels intact. Identify contents, manufacturer, brand name, thermal values and applicable standards. Use all means necessary to protect insulation before, during, and after installation and to protect the installed work and materials of all other trades.

   II. Storage:

      Insulation must be stored under water resistant cover, protected from weather and direct sunlight or sparks and stacked on pallets. Material not stored in this manner will be immediately removed from job site at the Contractor's expense and not used.

5. QUALITY CONTROL:

   All work of this Section shall be done in accordance with manufacturer’s recommendations and in such a manner as to avoid gaps or voids at the insulation plane.

6. PRODUCTS:

   I. Fiberglass Wool (Overhead Spaces):

      Provide a fiberglass type of insulation, complying with Federal Specification (FS) HH-I-1030, Type I, Class B for pneumatically placed installations. Material shall be Owens-Corning "Therma-Cube", Johns-Manville blowing wool or approved equivalent.

   II. Fibrous Insulation (Walls):

      Provide fibrous glass insulation batts complying with ASTM C 665, Type II, Class C, (Kraft-faced), "Flexible Fibrous Glass Insulation", by Owens Corning, Johns-Manville, Certainteed, or approved equivalent. Thermal resistance shall be of the thickness or R-value shown on the drawings.

III. Closed-Cell Polyiso Insulation Board (Foundations):

Material shall be SIKA "RMAX Pro Select R-Matte Plus-3" polyisocyanurate (polyiso) foam insulation board or approved equivalent meeting ASTM C1289 Type I with a compressive strength of 20 psi.

Material shall be fastened with DOW "GREAT STUFF PRO" FOR WALL APPLICATIONS as specified below, or shall be mechanically fastened as per the manufacturer's recommendation.

7. INSPECTION:

I. Before Installation:

Assure that surfaces to receive insulation are uniform and free of debris, mortar sags and smears, grease, oil or other contaminants detrimental to the installation.

II. During Installation:

Verify that materials are undamaged when installed.

Examine areas to receive insulation to insure protection against inclement weather and other hazards until work of preceding trades is completed.

Examine space for insulation for proper depth to receive material.

Check that insulation is closely fitted around obstructions and openings.

8. EXECUTION:

I. Loose Fill Insulation:

Drill installation holes of the size and spacing required by the product manufacturer.

As the fiberglass wool is blown into all the required wall areas, allow the insulation to assume its natural density.

I. Fibrous Insulation:

Fit the insulation batts snugly between framing members per the manufacturer's specification.

Maintain integrity of insulation over entire area to be insulated.

Insulate small areas between closely spaced framing members.

Carefully cut and fit insulation around pipes, conduits and other obstructions.

Do not install insulation on top of or within 3 inches of recessed light fixtures, unless the fixtures are approved for such use.

II. Closed-Cell Polyiso Insulation Board:

1. Do not install foam insulation on concrete building surfaces with a cementitious adhesive when out-door temperatures are 32°F or below.

2. Fins and projections left after removal of concrete forms shall be removed to provide an even surface.

3. Waxes, oily films and other residue left on poured concrete surfaces from form release agents must be removed.

9. CLEANUP:

I. Remove adhesive splatters and smears.

II. Remove and dispose of excess materials, litter, and debris; leaving work areas in a clean condition.

End of Section

SECTION 07250 – WEATHER BARRIER

1. SCOPE OF WORK:

Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

The work shall include, but is not necessarily limited to furnishing, installation and application of weather barrier membrane, seam tape, flashing and fasteners.

3. SUBMITTALS:

Refer to Section 01300 - Submittals, for requirements.

4. PRODUCT DELIVERY, STORAGE AND HANDLING:

I. Delivery:

Deliver material to the site in unopened packages, with identification labels intact. Identify contents, manufacturer, brand name and applicable standards. Use all means necessary to protect weather barrier before, during, and after installation and to protect the installed work and materials of all other trades.

II. Storage:

Store weather barrier materials as recommended by system manufacturer.

5. QUALITY CONTROL:

All work of this Section shall be done in accordance with manufacturer's recommendations and in such a manner as to avoid gaps or voids.

6. MATERIALS:

I. Weather Barrier Membrane:

A. Air Penetration: <.004 cfm/ft^2 at 1.57 psf, when tested in accordance with ASTM E2178. Type I per ASTM E1677.

B. Water Vapor Transmission: 56 perms, when tested in accordance with ASTM E96-05, Method A.

C. Water Penetration Resistance: 250 cm when tested in accordance with AATCC Test Method 127.

D. Basis Weight: 1.8 oz/yd^2, when tested in accordance with TAPPI Test Method T-410.

E. Air Resistance: 1200 seconds, when tested in accordance with TAPPI Test

Method T-460.

F. Tensile Strength: 30/30 lbs/in., when tested in accordance with ASTM D882.

G. Tear Resistance: 8/6 lbs, when tested in accordance with ASTM D1117.

H. Surface Burning Characteristics: Class A, when tested in accordance with ASTM E84. Flame Spread: 15, Smoke Developed: 15.

II. Fasteners:

DuPont™ Tyvek® Wrap Cap staples as manufactured by DuPont Building Innovations. (Cap staples are only recommended for residential construction).

III. Sealants:

Refer to Section 07900 – SEALANTS AND JOINT FILLERS, Section 5.III.

IV. Adhesive:

Provide Liquid Nails "LN-910" adhesive or as recommended by the weather barrier manufacturer.

V. Flashing:

Provide DuPont "FlexWrap," as manufactured by DuPont Building Innovations or approved equivalent.

7. INSPECTION:

I. Before Installation:

Assure that surfaces to receive weather barrier are in accordance with the manufacturers recommended tolerances prior to installation of weather barrier and accessories.

II. During Installation:

Verify that materials are undamaged when installed.

Examine areas to receive insulation to insure protection against inclement weather and other hazards until work of preceding trades is completed.

Examine space for insulation for proper depth to receive material.

Check that insulation is closely fitted around obstructions and openings.

8. EXECUTION:

I. Install weather barrier over exterior face of exterior wall substrate in accordance

with manufacturer recommendations.

II. Start weather barrier installation at a building corner, leaving 6-12 inches of weather barrier extended beyond corner to overlap.

III. Install weather barrier in a horizontal manner starting at the lower portion of the wall surface. Maintain weather barrier plumb and level.

IV. Extend bottom roll edge over sill plate interface 2” to 3” minimum. Seal weather barrier with sealant or tape. Shingle weather barrier over back edge of thru-wall flashings and seal weather barrier with sealant or tape. Ensure weeps are not blocked.

V. Subsequent layers shall overlap lower layers a minimum of 6 inches horizontally in a shingling manner.

Window and Door Openings: Extend weather barrier completely over openings.

VI. Weather Barrier Attachment: Attach weather barrier to studs through exterior sheathing. Secure using weather barrier manufacturer recommended fasteners, spaced 12 -18 inches vertically on center along stud line, and 24 inch on center, maximum horizontally.

VII. Seaming:

A. Seal seams of weather barrier with seam tape at all vertical and horizontal overlapping seams.

B. Seal any tears or cuts as recommended by weather barrier manufacturer.

VIII. Opening Preparation:

A. Cut weather barrier membrane in a modified “I-cut” pattern.

B. Cut weather barrier horizontally along the bottom of the header.

C. Cut weather barrier vertically 2/3 of the way down from top center of window opening.

D. Cut weather barrier diagonally from bottom of center vertical cut to the left and right corners of the opening.

E. Fold side and bottom weather barrier flaps into window opening and fasten.

F. Cut a head flap at 45-degree angle in the weather barrier membrane at window head to expose 8 inches of sheathing. Temporarily secure weather barrier membrane flap away from sheathing with tape.

IX. Flashing:

A. Cut 7-inch wide flashing a minimum of 12 inches longer than width of sill

rough opening. Apply primer as recommended by the manufacturer.

B. Cover horizontal sill by aligning flashing edge with inside edge of sill. Adhere to rough opening across sill and up jambs a minimum of 6 inches. Secure flashing tightly into corners by working in along the sill before adhering up the jambs.

C. Fan flashing at bottom corners onto face of wall. Firmly press in place. Mechanically fasten fanned edges.

D. On exterior, apply continuous bead of sealant to wall or backside of window mounting flange across jambs and head. Do not apply sealant across sill.

E. Install window according to manufacturer's instructions.

F. Apply 4-inch wide strips of flashing at jambs overlapping entire mounting flange. Extend jamb flashing 1-inch above top of rough opening and below bottom edge of sill flashing.

G. Apply 4-inch wide strip of flashing as head flashing overlapping the mounting flange. Head flashing should extend beyond outside edges of both jamb flashings.

H. Position weather barrier head flap across head flashing. Adhere using 4-inch wide flashing over the 45-degree seams.

I. Tape head flap in accordance with manufacturer recommendations.

J. On interior, install backer rod in joint between frame of window and flashed rough framing. Apply sealant around entire window to create air seal. Apply sealant in accordance with sealant manufacturer's instructions and ASTM C1193.

9. CLEANUP:

Remove and dispose of excess materials, litter, and debris; leaving work areas in a clean condition.

End of Section

SECTION 07410 - METAL ROOFING AND SIDING

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   The work shall include, but is not necessarily limited to, furnishing, fabrication and erection of steel metal siding and roofing from a manufacturer's prefabricated component parts.

3. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

4. QUALITY ASSURANCE:

   I. Acceptable Manufacturers:

      A. Architectural Roofing and Siding:

         Metal Sales, “R-panel” or “PBR-Panel” or approved equivalent.

   II. Erector Qualifications: Minimum of 5 years experience on comparable projects.

   III. Compliance with Standard and Industry Specifications: Any material or operation specified by reference to the published specifications of a manufacturer, The American Society for Testing and Materials (ASTM), The American Iron and Steel Institute (AISI), The American Institute of Steel Construction (AISC), The American Hot Dip Galvanizers Association (AHDGA), The American Welding Society (AWS), The Metal Building Manufacturers Association (MBMA), the Steel Deck Institute (SDI) or other published standard shall comply with the requirements of the current specifications of standard listed. In case of conflict between the referenced specification and the project specifications, the project specifications shall govern unless written approval is obtained from the Engineer.

5. PRODUCT DELIVERY, STORAGE AND HANDLING:

   I. Do not bend or mar roof and siding panels.

   II. Store off ground with one end elevated for drainage.

   III. Cover materials with waterproof material.

6. PRODUCTS:

   Architectural Roofing and Siding:

   A. Painted materials shall be 26 gauge steel unless noted otherwise in the Drawings. Materials shall conform to ASTM A792 (50,000 psi minimum yield).

B. Standard paint system shall be a siliconized polyester meeting the following specifications:

1. The primer coat shall be pigmented with corrosion inhibiting pigments. It shall have a dry film thickness of .20 mils on both sides of the sheet.

2. The exterior finish coats shall have a dry film thickness of .80 mils over the primer.

3. Colors shall be selected from manufacturer's standard color chart.

4. Exterior finish shall have a 20 year written warranty.

C. Fasteners:

1. For fastening into wood structure use wood screws with neoprene washers, of the size and length recommended by the metal siding manufacturer. Screw heads and washers shall be painted to match the color of the siding or roofing.

2. For fastening into steel structures, use self-drilling tek screws with neoprene washers of the size and length recommended by the panel manufacturer. Screw heads and washers shall be painted to match the color of the siding or roofing.

3. Provide stitching screws for lapping the ribs in between the purlins.

D. Formed Closures Strips:

1. Material: Closed cell, laminated, semi-rigid, cross-linked, polyethylene foam.

2. Size and shape shall match panel configuration.

E. Trim and Accessories:

Trim items and accessories shall be per manufacturer's standards.

F. Sealants and Sealant Tape:

Sealants and sealant tape shall be as recommended by panel manufacturer.

7. EXECUTION:

I. Inspection:

A. Check that supporting structural elements have been completed.

B. Check supporting members for correct layout and alignment.

C. Correct noted deficiencies before beginning installation and erection.

II. Erection and Installation:

A. Install roof and wall panels and accessories in accordance with manufacturer's recommendations and shop drawings.

B. Placing Roofing and Siding Panels:

1. Panels should be started vertically at the end of the building, opposite from the direction of the prevailing wind.

2. Position panels on supporting framework and adjust to final position with ends bearing on supporting members and accurately aligned end to end before permanently fastened.

3. End laps shall be of the length recommended by panel manufacturer. No end lap should be less than 6".

4. Do not stretch or contract the side lap interlocks.

5. Place panel units flat and square, and secure to adjacent framing without warp or deflection.

C. Attaching and Fastening:

Architectural Roofing and Siding:

Secure roofing and siding panel units to supporting members with screws, and other fastenings. Place screw fasteners in the flat area of the sheet at 9 inches on center. Do not overdrive so as to dimple or distort. Use stitching screws on the lapping ribs in between the purlins at 9 inches on center.

D. Joint Sealing:

1. Remove dust, dirt, and moisture from joint surfaces.

2. Apply sealant in accordance with manufacturer's instructions.

E. Cutting and Fitting:

1. Cut and fit panel units and trim accessories as required.

2. Make cuts neat, square and trim.

F. Cover Plates and Mouldings:

Install sheet metal cover plates and mouldings at all open uncovered ends, edges of roof decking and in voids between decking and other construction.

G. Touch-Up Painting:

1. Wire brush, clean, and paint scarred areas, and rust spots on surfaces

of panel units.

2. Touch-up galvanized surfaces with galvanizing repair paint applied in accordance with manufacturer's instructions.

3. Touch-up paint to match existing paint in exposed areas.

8. CLEANUP:

Upon completion of the installation of the roof and related items, the site shall be cleaned of all roofing materials and debris and disposed of off State property.

End of Section

SECTION 07620 - FLASHING

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   The work shall include, but is not necessarily limited to, flashings and flashing cement to provide a weather-tight installation.

3. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

4. MATERIALS AND INSTALLATION:

   I. Sheet Metal Flashing and Counter Flashing:

      A. Strip Flashing: The galvanized steel sheeting shall be Armco, "Zinc Grip", or approved equivalent complying with ASTM A 526, commercial quality.

         All fabrication shall be strong, rigid and neat in appearance.

         Moulded surface, crickets, curbs, etc., shall be clean cut, straight and true. Mitered corners shall be well formed, neat and in true alignment.

         Plain surfaces shall be free of warping and buckles.

         All sheet metal shall be formed with a sheet metal break press or roll formed to configurations as shown on the drawings, or as approved on shop drawings.

      B. Gauge: Flashings for base course, vertical and horizontal surfaces and edge strips shall be 26 gauge minimum. Flashings for roof edges, ridges, hips, roof penetrations, crickets, and valleys shall be 24 gauge minimum.

         All sheet metal work shall be (24) gauge minimum.

      C. Fasteners:

         Screws, drive pins, or expansion type anchors shall be subject to approval by the Engineer and shall be submitted as a part of the shop drawing package. Samples may be requested.

      D. Flashing Cement: Cement shall be of premium quality complying with ASTM D 2822 (asphaltic cement) by Celotex, Flintkote, G.A.F., Johns-Manville or approved equivalent.

      E. Screws: Shall be self-tapping binder head type and are to be concealed wherever possible (all non-corrosive coatings).

II. Prefabricated Reglet and Counter Flashing:

Reglet and Counter Flashing:

Surface mounted prefabricated reglet and counter flashing system shall be Fry Reglet Corporation, "Type SM" or approved equivalent. The reglet and flashing shall be end lapped as per manufacturer's recommendations. Reglet is factory punched with slots at 16″ o.c.

Fasteners shall be of the type recommended by the manufacturer for the application. Damage caused by fastener on setting or by any other construction activity shall be repaired at the contractor's expense.

5. CLEANUP:

Upon completion of the flashing installation, the site shall be cleaned of all construction materials, nails and other related debris and disposed of off state property.

End of Section

SECTION 07900 - SEALANTS AND JOINT FILLERS

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   The work shall include, but is not necessarily limited to furnishing, installation and application of construction sealants and joint fillers.

3. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

4. GENERAL:

   The color shall closely match that of the material being caulked where it is not to be painted. Seal around all wall, ceiling and roof penetrations.

5. MATERIALS:

   I. Water Repellent Sealer:

      Thin coat, liquid applied, hydrophobic, water-repellent clear sealer consisting of an aqueous emulsion designed for use on concrete substrates with 0.5% maximum water absorption with 48 hrs exposure as tested in accordance with ASTM C642; Ghostshield Lithi-Tek® 9500 as manufactured by KreteTek Industries, Inc. or approved equivalent.

   II. Concrete Construction Joints:

      Provide self-leveling, 1-part polyurethane sealant such as Sika “Sikaflex-1c SL” or approved equal.

   III. Silicone Caulking (Waterproofing):

      Provide a waterproof silicone caulking General Electric "Silicone II Gutter and Flashing Caulk” or approved equal. The material shall meet ASTM C 920.

   IV. Acrylic Latex:

      Provide an acrylic latex caulk Pecora AC-20 or approved equal for general purpose interior and exterior applications where slight to moderate movement may be expected. The caulk shall be suitable for latex paint and meet ASTM C 834.

6. INSTALLATION:

   The surfaces receiving the sealant (joint filler) shall be thoroughly cleaned before the application of the sealant.

For control joints concrete shall have cured a minimum of 14 days prior to application. All joints shall be clean using compressed air and no water shall remain in the joint prior to application.

Apply the sealant with a caulking gun or air pressure equipment. There shall be no voids throughout the entire joint cross section. Remove the excess sealant from the surfaces and clean off all smears and streaks before the material sets.

End of Section

SECTION 08100 - METAL DOORS AND FRAMES

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   The work shall include, but is not necessarily limited to the furnishing and installation of flush metal doors and metal door frame for the building.

3. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

4. FLUSH METAL DOORS AND FRAMES:

   I. Materials:

      Framing members, adapters and mountings shall be steel. All screws, miscellaneous fastening devices and internal components shall be corrosion-resistant materials of sufficient strength to perform the functions for which they are used.

      The door shall be reinforced, stiffened, sound-deadened and insulated with a polyurethane or kraft honeycomb core completely filling the inside.

   II. Manufacturer:

      Shall be Steelcraft, Model F-16 (16 gauge) steel frames or approved equal and Model L-18 (18 gauge), galvanealed, 1-¾" flush exterior steel door (Doors to exterior shall have polyurethane insulation).

      The door frame shall have unitized weather stripping of synthetic rubber.

   III. Steel Frame Performance Under Uniform Loading:

      When tested in accordance with ASTM E 330, the maximum deflection of the head member shall not exceed 1/175 of its span and when the load is removed, there shall be no evidence of permanent deformation or damage when tested under a load of 30 psf.

   IV. Hardware:

      Provide and install hardware and accessories as specified in the Drawings. Alternative products may be approved by the Project Manager.

A. Installation:

Installation shall be in compliance with manufacturer's instructions to insure proper operation. Center line of door pulls shall be installed 3'-2" above finished floor.

B. Protection:

Trim plates and door stops shall not be installed until after painting is completed. Other hardware shall be loosened prior to painting and retightened after painting is completed. All hardware shall be masked or otherwise protected during painting operations.

V. Finish:

Shall be painted. All exposed framing members shall be free of scratches and other surface blemishes. Submit paint color and product for approval by Project Manager. All door frames shall be trimmed using metal trim (provided by building manufacturer) on exterior.

VI. Erection:

The door shall be set in its correct locations as shown in details and shall be level, square, plumb and at proper elevations and in alignment with other work.

All joints shall be tightly caulked in order to ensure a watertight job. All materials shall be screwed in placed using backfilling, masonry plugs, or anchor straps as required. When frame members are joined, they shall be accurately cut and fitted to result in a tightly closed joint.

After erection adequately protect exposed portions of framing from damage by plaster, lime, acid, cement, or other harmful compounds.

VII. Cleaning:

Remove protective materials and clean with plain water, or water with soap or household detergent. The area shall be cleaned of all debris and left in an acceptable condition as determined by the Project Manager.

End of Section

SECTION 08530 - VINYL (PVC) WINDOWS

1. SCOPE OF WORK

Furnish all labor, materials and equipment required to complete the work of the noted Divisions of this Section described herein and on the drawings.

2. WORK INCLUDED

This item shall include all work and materials necessary for the installation of vinyl windows in accordance with the building manufacturer's standard details and those details contained within this design package. The work shall include but is not necessarily limited to the following: furnishing and installing of new framed vinyl windows, screens, sealants, fasteners, blocking, interior trim and painting.

3. CODES, REGULATIONS, STANDARDS AND PERMITS:

I. AAMA 101/I.S.2/A440 - North American Fenestration Standard/Specification for windows, doors, and skylights

II. NFRC 100 - Thermal Properties; National Fenestration Rating Council.

III. NFRC 200 - Solar Heat Gain; National Fenestration Rating Council.

IV. ASTM D 3656 - Standard Specification for Insect Screening and Louver Cloth Woven from Vinyl-Coated Glass Fiber Yarn.

V. ASTM D 3678 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Interior Profile Extrusions.

VI. ASTM D 4028 - Standard Specification for Solar Screening Woven from Vinyl-Coated Fiber Glass Yarn.

VII. ASTM E 774 - Standard Specification for Sealed Insulating Glass.

VIII. IGCC - Classification of Insulating Glass Units; Insulated Glass Certification Council.

IX. U.S. Department of Energy - Energy Star Windows Program.

4. SUBMITTALS:

Refer to Section 01300 - Submittals, for requirements.

5. DELIVERY, STORAGE AND HANDLING:

I. Deliver windows to project site in undamaged condition; handle windows to prevent damage to components and to finishes.

II. Store windows out of contact with ground; protect windows from weather and construction traffic in well-ventilated area.

6. WARRANTY:

Furnish manufacturer's standard warranty against deficiencies in materials or fabrication. Warranties shall be for a minimum ten (10) years on commercial installations.

7. PRODUCTS:

I. Manufacturers:

A. Acceptable Manufacturers:

1. Alside / Windows, Web: www.alside.com

2. Jeld-Wen Windows and Doors, Web: www.jeld-wen.com

3. Pella Windows, Web: www.pella.com

4. Approved Equal

B. Window Product Requirements:

1. Grade: Shall conform to AAMA 101/I.S.2/A440; exceeding grade requirements as follows:

a. Thermal performance (U-Value), in accordance with NFRC 100, shall not exceed 0.38.

b. Solar Heat Gain Coefficient, in accordance with NFRC 200, shall not exceed 0.48.

2. Glazing: Low-E sealed insulating glass unit, ¾ inch unit thickness; U.S. Department of Energy, Energy Star conformance labeled for Northern Climate Zone.

3. Sealed Insulating Glass Units: Conform to ASTM E 774, Level CBA.

4. Color: White.

II. Fabrication: Window/Door Units: Assemble units completely in factory, including operating hardware and glazing.

8. EXECUTION:

I. Examination:

A. Verification of Conditions: Openings are in correct location, and of correct size, in accordance with approved shop drawings and manufacturer's installation instructions.

B. Installer's Examination: Have installer of this section examine conditions under which construction activities of this section are to be performed, then submit written notification if such conditions are unacceptable.

C. Beginning construction activities of this section before unacceptable conditions have been corrected is prohibited.

II. Installation:

A. Install products specified in this section square, plumb and level, in accordance with approved shop drawings and manufacturer's installation instructions.

B. Installation of joint sealers is specified in Section 07900.

III. Adjusting:

A. Adjust operating hardware for correct operation in accordance with manufacturer's installation instructions.

IV. Cleaning:

A. Clean interior and exterior surfaces free of labels, mortar, plaster, paint, joint sealers, and other foreign matter to prevent damage to weatherstrip, and to prevent interference with operation of hardware.

V. Protection:

A. Protect ventilators and operating parts from dirt and damage caused by subsequent construction activities.

B. Replace units damaged by subsequent construction activities.

End of Section

SECTION 09900 - PAINTING

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   Complete painting of unfinished metal or other surfaces as specified.

3. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

4. GENERAL:

   I. Related Work Described Elsewhere:

      Section 07900 - Sealants and Joint Fillers.

   II. Product Handling:

      A. Delivery:

         Deliver all paint materials to the job site in their original unopened containers with all labels intact and legible at the time of their use.

      B. Protection:

         1. Store only the approved materials at the job site, and store only in a suitable and designated area restricted to the storage of paint materials and related equipment. Protect floor with drop cloths or building paper during execution of the work.

         2. Use all means necessary to insure the safe storage and use of paint materials and the prompt and safe disposal of waste.

   III. Extra Stock:

      Upon completion of this portion of the work, deliver to the Project Manager an extra stock of paint equaling approximately 10% of each color used and each coating material used, with all such extra stock tightly sealed in clearly labeled containers.

   IV. Equipment:

      Furnish tools, ladders, scaffolding, other equipment necessary for work completion.

V. Specifications:

Examine specifications for various other trades; become familiar with their provisions regarding their painting; paint or finish surfaces that are left unfinished by requirements of other Sections.

VI. Methods:

If woodwork, metal or any other surface to be finished cannot be put in proper condition for finishing by customary cleaning, sanding, puttying operations, notify the Project Manager in writing; or assume responsibility for and rectify the unsatisfactory finish resulting.

5. MATERIALS:

I. Manufacturer's Standards:

All application and finish criteria shall conform to the manufacturer's specifications and recommendations.

II. Compatibility:

All paint materials and equipment shall be compatible in use: finish coats shall be compatible with prime coats; prime coats shall be compatible with the surface to be coated; all tools and equipment shall be compatible with the coating to be applied. Thinners, when used, shall be only those thinners recommended for that purpose by the manufacturer of the material to be thinned.

III. Paint Material:

Paint finishing materials shall be as specified for the different applications and of the highest quality for the appropriate use as recommended by the manufacturer. The application of second and third coats shall be made at the time intervals recommended by the manufacturer. The paint, unthinned, shall not be applied in excess of the rate specified on the label.

6. EXECUTION:

I. Surface Conditions:

Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that such work is complete to the point where this installation may properly commence.

II. Preparation of Surfaces:

A. Protection:

Prior to all surface preparation and painting operations, completely mask, remove or otherwise adequately protect all hardware, accessories, machined surfaces, plates, lighting fixtures, and similar items that may

come in contact with painted surfaces or may be subject to overspray, but not scheduled to receive paint.

B. Metal:

For steel surfaces, all surfaces must be free of dirt, rust, oil, grease, water, mill scale or other observed contamination. Make certain that the substrate is dry.

Rusted or new metal surfaces must be cleaned and primed properly.

Follow Steel Structures Painting Council Specifications SSPC SP 2-63 for hand cleaning (especially wire brushing, scraping, chipping, and sanding).

C. Wood:

The substrate must be dry (also the moisture content must be below 5%). Cover knots and resinous areas with shellac before painting. Putty nail holes flush with the surface. Exposed wood surfaces to be painted or stained shall be sanded, free of raised grain, hammer marks or sanding swirls.

III. Painting, Interior and Exterior Steel:

A. Prime Coating:

Apply 1 coat of Pittsburgh Inhibitive Metal Primer, an epoxy ester resin film type.

B. Finish Coatings and Application:

Apply 2 coats of Pittsburgh, "Speedhide" Alkyd Gloss Enamel a modified alkyd resin.

IV. Staining, Interior Wood:

Finish Coatings and Application:

Apply 2 coats of Sherwin Williams, "SuperDeck" Exterior Waterborne Solid Color Deck Stain, or approved equivalent.

Use roller, brush or airless spray equipment for application. Stir thoroughly (without whipping). Apply at air, surface and product temperatures above 55°F.

V. Touch-Up:

Upon completion of all work and before occupancy, touch up surfaces that are marred or damaged.

7. COMPLETION:

I. Atmospheric Conditions:

Paints other than water-thinned coatings shall be applied only to surfaces that are completely free of surface moisture as determined by sight or touch. While painting is being done, the temperature of the surfaces to be painted and of the atmosphere in contact therewith shall be maintained at or above 50°F for water-thinned coatings and 45°F for other coatings or as permitted by the Project Manager.

II. Cleanup:

Cleaning cloths and other waste that might constitute a fire hazard shall be placed in closed metal containers or destroyed at the end of each day. Upon completion of the work, staging, scaffolding, and containers shall be removed from the site or destroyed in an approved manner. Paint spots, oil, or other stains on adjacent surfaces shall be removed and the entire job left clean and acceptable.

End of Section

SECTION 10200 - LOUVERS AND VENTS

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   The work shall include, but is not necessarily limited to, the furnishing and installation of the items specified below and shown on the drawings.

3. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

4. MATERIALS AND INSTALLATION:

   I. Exhaust Fan (EF-1)

   Exhaust fan shall be Dayton “60KU30” or approved equivalent having a minimum capacity of 195 cfm. Install according to manufacturer requirements.

   II. Wall Louver (IL-1):

   Wall louver shall be 17.5”H x 17.5”W Dayton “5NKJ2” or approved equivalent with a maximum air intake of 744 cfm minimum. Louver shall be designed to have drainable blades that will prevent wind driven rain from entering the system and an internal insect screen. Paint louvers to match building. Install according to manufacturer requirements.

   III. Exhaust Duct Vent Cover:

   Vent cover shall be stainless steel 7” x 7” with 4” diameter duct connection. Vent cover shall have fully automatic flaps with drip edge and screen filter mesh. Install according to manufacturer requirements.

End of Section

SECTION 11265 - ULTRAVIOLET WATER STERILIZER EQUIPMENT

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   The work shall include, but is not necessarily limited to, supplying and installing an ultraviolet water sterilizer and associated accessories.

3. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

4. MATERIALS AND INSTALLATION:

   I. General:

   The Contractor shall furnish and install a complete low pressure disinfection system as described herein. The system shall include but is not limited to a stainless steel disinfection chamber, low pressure UV lamps and quartz sleeves with manual wiper mechanisms and complete monitoring and electrical equipment. Power source, electrical conduits and equipment base supports will be provided. The Contractor will physically install the treatment chamber and control modules as per the Manufacturer's directions and the Drawings. The Manufacturer shall be responsible for verification of installation including conductors, hook up of equipment, start-up, testing and operational instruction of the Owner's personnel.

   II. Acceptable Manufacturers: Only companies with a minimum of five years of experience and a history of successful installations of low pressure UV systems will be considered. Preference will be given to those systems that can clearly demonstrate applied experience for comparable fish hatchery applications. Acceptable manufacturers include RK2 Systems, Aquafine, Atlantic Ultraviolet, Ideal Horizons and Infilco-Degremont or approved equals.

   III. Operating Perameters:

   Fluid Composition: Water
   Maximum Flow Rate: 300 gpm
   Fluid Evaluation: 90 % Transmission in a 1 cm quartz cell at 254 nm
   Minimum Water Temperature: 42° F
   Maximum Allowable Head Loss Through Chamber: 1 foot (at 300 gpm)
   Minimum UV dose: 40,000 $\mu w/cm^2$ at end of lamp life

   End of lamp life shall be defined to be when the lamp output level has reduced by 30%. Minimum lamp life shall be 8000 hours.

IV. Disinfection Chamber:

A. Chamber:

1. The wetted metal parts shall be constructed of stainless steel. No metal parts in direct contact with the water shall be cadmium, brass, bronze, zinc, chromate, red lead, coal tar or other compounds injurious to fish shall be allowed in direct contact with the water.

2. The wetted metal parts shall have fusion welds with full penetration, purged with inert argon gas and radii ground smooth, or welds of similar strength and durability. The interior and exterior of the chamber shall be pickled, passivated and electropolished to Mil Spec S-5002.

3. The design operating pressure for the chamber shall be 150 psig. The inlet and outlet connections shall have 150 pound ANSI raised-face, slip-on flanges. The inlet and outlet flange risers shall have 1/4-inch tapped sample valve ports. The chamber shall have a 3/4-inch NPT drain plug at its lowest point to allow complete draining of the chamber.

B. Lamps: Ultraviolet lamps shall be of the low pressure mercury vapor type with hard glass enclosure. The lamp etch shall specify the UV wavelength output. Lamp bases shall be ceramic. Lamp sockets shall be watertight, vibration-resistant, and UV and ozone resistant. Lamp output shall not be altered at temperatures between 35° F and 100° F.

C. Quartz Sleeves: The lamps shall be protected by polished, high purity, ozone free quartz sleeves. The sleeve material for lamp housing shall be fused at the ends and shall have the capability of allowing 95% transmittance of UV wavelengths less than 290 nm. The sleeves shall be installed so that the lamps can be removed without breaking the water seal.

D. Cleaning System: A manual mechanical quartz sleeve cleaning system shall be provided to periodically clean the quartz sleeves and monitor windows to remove deposits.

V. UV Intensity Monitor:

A. Provide a UV intensity monitor to register on a relative percentage meter the transmission of the 254 nm wavelength as it passes from the UV lamp through the fluid to the photo sensor in the chamber wall.

B. The UV intensity monitor shall feed a module in the electrical enclosure with a 4-20 ma output signal.

C. The monitor shall include the ability to provide automatic alarm indication of low ultraviolet intensity. Dry contacts shall be provided for this purpose.

VI. Electrical Enclosures:

A. Electrical enclosures shall be weathertight and dust-tight, NEMA 4 or better. Fan-cooled ventilation shall be provided.

B. Each electrical enclosure shall contain the following controls and displays:

1. Lamp current indicator to verify each lamp "ON".

2. UV module to provide an intensity readout in percent.

3. Elapsed time indicator showing total number of hours run.

4. Fuse protection of incoming power circuits.

C. Dry contacts shall be provided to signal alarm conditions including lamp out or low UV dosage.

D. The lamps shall be protected by a ground fault circuit interrupter.

E. All wiring within the enclosure shall be done in accordance with the applicable codes and be done in a neat workmanship manner. All wiring shall be harnessed or enclosed in wireways. Electronic components shall be of standard manufacture and plug in or screw in for modular replacement.

5. WARRANTIES:

The Manufacturer shall provide written warranties that provide for:

I. For full replacement of all defective lamps within first 1000 hours of operation.

II. For full replacement of equipment for a period of two years of operation against defects in materials and workmanship. Replacement of defective equipment shall include installation, calibration and adjustment of new equipment.

III. Response time for required on site warrantee work shall not exceed 48 hours. Repairs or problems that can be resolved by telephone or shipment of minor replacement parts will not require a Manufacturer’s representative to report to the Owner provided the Owner’s personnel can perform the direct repairs under the Manufacturer’s direction.

IV. Warrantee periods shall start upon final acceptance of all equipment and contract requirements.

6. EXECUTION:

I. Installation:

A. The Contractor will obtain written verification from the Project Manager and the Manufacturer prior to installation to ensure adequate site

preparation. The system equipment will be fully covered and protected at all times during installation and construction.

B. The Contractor shall be responsible for installation of the UV disinfection equipment per the instructions of the Manufacturer and the Drawings. The Contractor shall install electrical enclosures units per Manufacturer's recommendations and the Drawings.

II. Start-Up and Training:

A. The Contractor shall provide the services of a manufacturer's representative for a period of two days to facilitate system start-up trip and training of the Owner's personnel.

B. Training shall cover system background, operation and maintenance.

III. Testing:

A. After the UV Disinfection System has been installed, the Contractor shall perform an operational test. The Contractor shall monitor head loss and UV intensity under rated flow. The Contractor shall provide all test equipment and labor for the test. Any damage resulting from or caused by the test shall be repaired at the Contractor's expense.

B. The Project Manager shall be present at the test and approve test results prior to acceptance. The Contractor shall repair, adjust and retest equipment at his expense if called for by the Project Manager.

End of Section

SECTION 15010 - GENERAL PROVISIONS

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. GENERAL:

   The drawings indicate the general arrangement of the proposed work. Details of departures due to actual field conditions or other causes shall be provided for by the Contractor as no extras will be paid for correcting faulty or poorly arranged and coordinated work.

3. COMPLETE INSTALLATION:

   Furnish and install all incidental parts and wiring required for the proper function of all component parts. The complete installation shall function smoothly and noiselessly to the full extent of the specifications and drawings. Complete the installation as rapidly as general construction permits. All safety devices shall be properly installed before starting equipment.

4. ORDINANCES AND CODES:

   All work shall be executed and inspected in accordance with all Underwriter's, Public Utililties, local and state codes and regulations applicable to the trade affected. Recommendations of ASTM, NFPA and ASHRAE shall be rigidly followed.

   Arrange and pay for all permits in connection with the work hereinafter specified and at completion of the work, furnish the Owner with the final certificate of inspection.

5. PERMITS AND INSPECTIONS:

   The contractor shall get a Colorado State Plumbing Permit prior to beginning the work. The work shall be inspected and approved. Make all changes, if any, directed to be made by the State Plumbing Inspector and accept and incur all expenses within the scope of the project to attain permanent approval.

6. COORDINATION:

   Before any equipment is purchased or fabricated and before running and/or fabricating any lines or piping, mechanical contractor or his subcontractors shall assure themselves that they can be run as contemplated.

   Because of the small scale of the drawings, it is not possible to indicate all offsets, fittings, and accessories that may be required. The mechanical contractor and his subcontractors shall carefully investigate all other mechanical and electrical drawings and the structural and finish conditions affecting all their work accordingly. Furnish such fittings, valves, offsets and accessories as may be required to meet such conditions, at no additional cost.

End of Section

SECTION 15050 - BASIC MATERIALS AND METHODS

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. MATERIALS:

   Materials shall be new and of the best grades specified. Receive and be responsible for all owner-furnished equipment and provide rough-in and final connections for all mechanical equipment furnished under this Contract or by others.

3. WORKMANSHIP:

   Work throughout shall be performed by persons skilled in the installation of the various parts of the work herein specified.

4. CURBS, BASES, SUPPORTS:

   Major curbs, openings, and equipment supports will be provided under the General Section of this Contract only where shown on the drawings. All other supports, anchors, and bases shall be provided by the mechanical contractor for all mechanical equipment. Equipment shall be supported per manufacturer's written recommendations for noise-free operations.

5. ANCHORS, HANGERS AND SLEEVES:

   Provide and arrange for installation of required bolts, anchors, hangers, inserts, sleeves, etc., properly located for the work. Tape or wire hangers are not acceptable.

6. ELECTRICAL WIRING:

   All line voltage wiring including switches, disconnects, conduits and starters will be as scheduled herein.

   Automatic control wiring and interlock wiring for Mechanical Equipment shall be as scheduled herein, and shall be inserted into conduit.

7. FINAL APPROVAL:

   Before final acceptance, all mechanical equipment shall operate without objectionable noise or vibration. All equipment shall be adjusted to capacities shown on drawings. Make all corrections for above conditions to provide a completely acceptable system.

End of Section

SECTION 15440 - PLUMBING FIXTURES AND TRIM

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   The work within this Section consists of furnishing materials, equipment and labor necessary to satisfactorily complete the installation of plumbing fixtures.

3. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

4. GENERAL PROVISIONS:

   Secure wall mounted fixtures in accordance with manufacturer's rough-in and setting requirements. Make proper provisions for hanging fixtures during building construction. Steel backing plates shall be used to rigidly secure the fixtures. Set all metal fixtures' frames in putty or waterproof mastic.

   After fixtures have been set, they shall be carefully protected until the building has been finally accepted. Any damage or defect developing before acceptance shall be replaced or situation resolved at the Contractor's expense. All metal trimmings on fixtures and exposed piping to fixtures shall be chrome plated, with chrome plated escutcheons.

5. PRODUCTS AND EXECUTION:

   I. Fiberglass Tanks:

      A. The tanks shall be 1 piece round fiberglass with a smooth polished gel coat interior, 48”D x 30”H Gemini RCT-235S or approved equivalent

      B. Hardware: Include leveling legs and drain connections.

   II. Vertical Incubators:

      A. Incubator cabinet constructed of a one-piece welded aluminum frame. 8-Tray Vertical Incubator by MariSource, Fish Farm Supply Co. or approved equivalent.

      B. Hardware: Include manufacturer’s egg trays and screens.

   III. Service Sinks:

      A. The sinks shall be a stainless steel one-compartement utility sink with galvanized tubular legs and adjustable bullet feet. Sani-Lav 21” x 20” Wall Mounted Hand Sink Model #525FL or approved equivalent.

      B. Hardware: Include manufacturer’s manual low-flow 0.5 GPM faucet.

End of Section

SECTION 15453 - TANKLESS WATER HEATERS

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED

   The work within this Section consists of furnishing materials, equipment and labor necessary to satisfactorily complete the installation of a tankless water heater.

3. SUBMITTALS:

   Refer to Section 01300 – Submittals, for requirements.

4. QUALITY ASSURANCE:

   The water heater must be UL listed, and shall meet efficiency performance criteria set by state performance codes when tested according to D.O.E. procedures.

5. DELIVERY, STORAGE AND HANDLING:

   Deliver, store, and handle the equipment to prevent damage and disfigurement. Protect all items from damage during transit and installation.

6. MATERIALS AND INSTALLATION:

   Electric Tankless Water Heaters

   The tankless water heaters shall be a BOSCH, Tronic 3000 US3-2R, or approved equivalent.

   I. Voltage: 110-120

   II. Loading (watts): 1513-1800 low, 3025-3600 high

   III. Activation Water Flow: 0.3 gallons per minute maximum

   IV. Temperature Rise: Must raise the ambient temperature of the water 49 degrees Fahrenheit minimum at 0.5 gallons per minute flow rate.

7. INSPECTION

   I. Upon Delivery: Check for damage that may have occurred in shipment. Reject equipment that will not satisfactorily function.

   II. During Installation: Check for the proper location of the unit. Check that the water heater unit is installed plumb and level.

End of Section

SECTION 15500 - HEATING

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   Work within this Section consists of furnishing materials, equipment and labor necessary to satisfactorily complete the installation of heating systems, and associated equipment.

3. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

4. QUALITY ASSURANCE:

   I. Regulatory Agency Requirements:

      The units shall be Underwriter Laboratories (UL) design certified, and shall be rated and tested in accordance with U.S. Department of Energy test procedures and Federal Trade Commission labeling regulations.

   II. Reference Standards:

      Except as modified by governing codes and by the Contract, comply with the applicable provisions and recommendations of the following:

      A. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE).

      B. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA).

      C. National Fire Protection Association (NFPA).

5. DELIVERY, STORAGE AND HANDLING:

   Deliver, store, and handle the equipment to prevent damage and disfigurement. Protect all items from damage during transit and installation.

6. GUARANTEE:

   Promptly repair or replace any defective material or faulty workmanship that becomes apparent prior to the final inspection.

7. MATERIALS AND INSTALLATION

   I. Electric Unit Heaters:

      A. Furnish and install unit heaters as specified in the Drawings. Alternative products may be approved by the Project Manager.

B. Installation: Follow manufacturer guidelines for wall and ceiling mount installation.

C. Disconnect Means: Provide factory-installed safety disconnect switch with "off" position marking on the face plate.

D. Finish: All steel casing sections shall be factory powder coated.

E. Accessories and Trim: All accessories shall match the lines of the enclosure and shall be built to fit precisely. Front covers of end caps shall be hinged to avoid loss or damage, to permit easy access to vents and to facilitate periodic cleaning.

II. Commercial Thermostat:

Thermostat shall be compatible with the unit heater and be a weekday/weekend programmable thermostat with a minimum of four time periods per day. The thermostat shall have a minimum heat set point of 40°F. Install isolation relay as recommended by unit heater manufacturer.

8. INSPECTION:

I. Upon Delivery:

Check for damage that may have occurred in shipment. Reject equipment that will not satisfactorily function.

II. During Installation:

Check for the proper location of the units. Check that the furnace unit is installed plumb and level.

III. After Installation:

Check the operation of all components and each component's correct function during its period of operation within the operating sequence.

9. ADJUST AND CLEAN:

Adjust and lubricate moving parts for smooth, quiet operation. As work progresses, remove the crating and packing materials from the premises.

End of Section

SECTION 15890 - DUCTWORK

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   The work within this Section consists of furnishing materials, equipment, and labor necessary to satisfactorily complete the installation of all ductwork for the complete air handling transport system.

3. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

4. QUALITY ASSURANCE:

   Reference Standards: Except as modified by governing codes and by the Contract, comply with the applicable provisions and recommendations of the following:

   I. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE).

   II. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA).

   III. National Fire Protection Association (NFPA).

5. MATERIALS AND INSTALLATION:

   I. Metal and Gauge:

      Galvanized iron shall be used throughout, fabricated, and installed so that no vibration or noise results. It shall be made from the best grade of mild steel sheets of the U.S. Standard Gauge, as recommended in the latest edition of ASHRAE Guide, with joint tabulated at the Contractor's option.

   II. Round Rigid Ductwork:

      A. All ductwork shall be constructed and erected in a workmanlike manner. Ducts shall be straight and smooth on the inside with neatly finished joints, air tight, and shall be free from vibration under all conditions in direction of air flow. Ducts shall be securely attached to building construction in an approved manner. Change in dimensions and shape of ducts shall be gradual. All duct sizes fall within limiting dimensions indicated on drawings, unless otherwise approved.

      B. Duct Turns: All 90° rectangular elbows up to 18" wide and all 45° elbows shall consist of an inside radius of not less than one-half the width of the duct, or shall be furnished with single blade duct vanes with 2¼" blade spacing. 90° elbows larger than 18" shall be equipped with air foil type

duct vanes having an inside radius of 4½", and an outside radius of 2¼", and shall be Tuttle & Bailey Type D, Elgen Manufacturing Corp., Vane Runners, or approved equal.

Curved elbows in round ducts shall have a center line radius equal to 1½ times the duct width. Square elbows shall have turning vanes similar to Tuttle-Bailey Ducturn. Job fabricated turning vanes will not be accepted without prior approval.

C. Flexible Connections: Furnish and install sound isolating flexible connections on the inlet and outlet of each fan and unit to which duct connectors are made. Flexible connections shall be made from Ventglas, neoprene coated glass fabric. At least 1" slack shall be allowed in these connections to insure that no vibration is transmitted from fan to ductwork. Fabric shall either be folded in with the metal or attached with metal collar frames at each end to prevent air leakage.

D. Joints and openings in ducts and around equipment with excessive leakage shall be sealed air tight.

E. Seams: All exposed ducts with a maximum width and/or depth of 24" shall have flat seams.

F. Collars: Wherever exposed ducts pass through walls, floors, or ceilings, a 2" sheet metal collar fitting close around ducts shall be slipped along duct until flange is tight against finished surface covering edges of openings and presenting a neat appearance. Lock collar to duct.

G. All concealed and lined ductwork shall be a fiberglass duct system, Type II taping system ½" thick with vapor seal. Installation as recommended by Manufacturer. Ductwork to be reinforced to ½" static pressure class as a minimum. All ducts in equipment rooms or otherwise exposed must be metal ductwork with liner.

H. At all places where inside of duct will be visible through return air grille louvers, etc., paint normally visible inside portion of duct with flat black paint.

6. COMPLETION:

At the completion of this Division's work, clean the area of all debris, building and packing materials, leaving it in an acceptable condition as determined by the Project Manager.

End of Section

SECTION 16010 - GENERAL PROVISIONS

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. GENERAL:

   I. The drawings show only the general location of conductors and the approximate location of fixtures, panels, outlets, switches, and other equipment. They are understood to be subject to such revision as may be found necessary or desirable at the time the work is installed. Report significant changes in feature location or conductor locations to the Project Manager for approval prior to alteration. The contractor shall be responsible for all other drawings necessary for permitting.

   II. Obtain from the Project Manager in the field the location of such outlets or equipment not definitely located on the drawings.

   III. Examine and compare the electrical drawings and specifications with the drawings and specifications of other trades. Report any discrepancies to the Project Manager and obtain from him written instructions for changes necessary in the electrical work.

   IV. The drawings generally do not indicate the number of wires for the branch circuit wiring of fixtures and outlets or the actual circuiting. Provide the correct wire size and quantity as required by the requirements of the NEC.

3. MEASUREMENTS:

   I. The contractor will be responsible for all work related to the installation of the complete electrical system as described in the drawings and specifications.

   II. All payments will be made in accordance with the bid schedule and bid item descriptions.

4. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

5. CODES, REGULATIONS, STANDARDS AND PERMITS:

   I. The electrical installation shall be in compliance with the latest requirements of the NEC, O.S.H.A. and the rules and regulations and requirements of the power company supplying power to the buildings. Comply with ASHRAE 90-75A energy conservation code.

   II. The electrical installation and the Contractor shall comply fully with all city, county and state laws, ordinances and regulations applicable to electrical installations.

   III. Notify the Project Manager of conflicts between these specifications, drawings,

codes and ordinances.

IV. All local fees and permits and services of inspection authorities shall be obtained and paid for by the Contractor. The Contractor shall cooperate fully with local utility companies with respect to their services. The Contractor shall include in his bid, any costs to be incurred relative to power service (primary and/or secondary).

6. COORDINATION OF WORK:

I. Coordinate with Division personnel the dates and times of installation.

II. Certain materials will be provided by other trades. Examine the Contract to ascertain these requirements.

III. Carefully check space requirements with other trades to insure that all material can be installed in the spaces allotted thereto.

IV. Wherever work interconnects with work of other trades, coordinate with other trades to insure that all trades have the information necessary so that they may properly install all the necessary connections and equipment. Identify all items to work that require access so that the ceiling trade will know where to install access doors and panels. Before installation, make proper provisions to avoid interferences in a manner approved by the Project Manager.

V. Due to the type of the installation, a fixed sequence of operation is required to properly install the complete systems. Coordinate projects and schedule work with other trades in accordance with the construction sequence.

7. CERTIFICATION:

Upon completion of the electrical service installation the Colorado State Electrical Board will be contacted by the Contractor and arrange to have the new construction inspected and certified. Make all changes, if any, directed to be made by the State Electrical Board and accept and incur all expenses within the scope of the project to attain permanent service certification for the electrical service installations.

8. INSPECTION TESTS AND GUARANTEES:

After the electrical installation is completed and at such times as the Project Manager may direct, the Contractor shall conduct an operating test for approval. The installation shall be demonstrated to be in accordance with the requirements of this specification. Any defects revealed shall be corrected promptly at the Contractor's expense and the tests reconducted.

9. PRODUCTS:

I. If products and materials are specified or indicated on the drawings for a specific item or system, use those products or materials. If products and materials are not listed in either of the above, use first class products and materials, subject to approval of shop drawings.

II. All equipment capacities, etc., are listed for job site operating conditions. All equipment sensitive to altitude is to be derated and method of derating shown on shop drawing. Where operating conditions shown differ from the laboratory test conditions, the equipment to be derated and the method of derating is to be shown on shop drawings.

III. All products and materials to be new, clean, free of defects and free of damage and corrosion, excluding temporary power and lighting.

IV. Delivery of Products and Materials:

Ship and store all products and materials in a manner which will protect them from damages, weather and entry of debris. If items are damaged, do not install, but take immediate steps to obtain replacement or repair. Deliver materials (except bulk materials) in manufacturer's unopened container fully identified with manufacturer's name, trade name, type, class, grade, size and color.

V. Storage of Products and Materials:

Store materials suitably sheltered from the elements, but readily accessible for inspection by the Project Manager until installed. Store all items subject to moisture damage in dry, heated spaces.

VI. Identification:

Furnish a nameplate for each panel, feeder switch, etc. Unless otherwise noted, use lamacoid or aluminum with a black enamel background with etched or engraved upper case letters, enclosed by natural aluminum border, or black and white laminated bakelite plate with beveled edges. Inscribe name and number of equipment as shown on the drawings.

10. EXECUTION:

I. Follow manufacturer's instructions for installing, connecting, and adjusting all equipment. Provide one copy of such instructions to the Project Manager before installing any equipment. Provide a copy of such instructions at the equipment during any work on the equipment. Provide all special valves, piping, wiring and accessories.

II. Use mechanics skilled in their trade for all work.

III. Keep all items protected before and after installation. Cleanup all debris.

IV. Perform all tests required by local authorities in addition to tests specified herein, such as life safety systems.

V. Applicable equipment and materials are to be listed by Underwriters' Laboratories and manufactured in accordance with ASME, NEMA, ANSI or IEEE standards and as approved by local authorities having jurisdiction.

VI. Before commencing work, examine all adjoining work on which this work is in any way dependent for perfect workmanship and report any condition which prevents

performance of first class work. Become thoroughly familiar with actual existing conditions to which connections must be made or which must be changed or altered. Adjust location of conduits, panels, equipment, pull boxes, fixtures, etc., to accommodate the work to prevent interferences, both anticipated and encountered. Determine the exact route and location of each pipe and duct prior to fabrication.

VII. Right of Way: Lines which pitch to have the right-of-way over those which do not pitch. For example: steam, condensate, and plumbing drains normally have right-of-way. Lines whose elevations cannot be changed to have right-of-way over lines whose elevations can be changed.

VIII. Make offsets, transitions and changes in direction in conduits as required to maintain proper head room in pitch of sloping lines whether or not indicated on the drawings.

IX. Miscellaneous Repair:

A. The work shall be carefully laid out in advance to avoid damage to surrounding elements. Where cutting, channeling, chasing or drilling is necessary for proper installation, the work shall be carefully done. Any damage shall be repaired or replaced by skilled mechanics of the trades involved at no additional cost to the Owner.

B. Slots, chases, openings and recesses through floors, walls, ceilings and roofs will be provided by the various trades in their respective materials. The trade requiring them to properly locate such openings shall be responsible for any cutting and patching caused by the neglect to do so.

C. The Contractor shall not do cutting, channeling, chasing, or drilling of unfinished masonry, structural steel, wood members, tile, etc., unless he first obtains permission from the Project Manager. If permission is granted, the Contractor shall perform this work in a manner approved by the Project Manager.

D. Where conduits, outlet, junction, or pull boxes are mounted on a painted surface, or a surface to be painted, they shall be painted to match the surface unless otherwise specified. Whenever support channels are cut, the bare metal shall be cold galvanized.

X. Deliver to the Owner's representative all special tools needed for proper operation, adjustment and maintenance of equipment.

End of Section

SECTION 16050 - BASIC MATERIALS AND METHODS

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   The work shall include, but is not necessarily limited to, the furnishing and installation of all components required for a complete installation of the electrical system.

3. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

4. GENERAL:

   I. Materials shall be new, first quality and approved by Underwriters' Laboratories, Inc. or National Electrical Manufacturers Association.

   II. Material damaged during course of installation shall be replaced and paid for by the Contractor. Alternates must be approved by the Project Manager.

   III. All materials and products will not be permitted to contain asbestos.

5. MATERIALS:

   I. Raceways:

      A. General:

         1. Provide raceways for wiring systems.

         2. Where nonmetallic raceways are utilized, provide the proper sized grounding conductor within the raceway.

         3. A minimum size ½" raceway is to be used.

      B. Concrete Encased Raceways:

         Provide electrical metallic underfloor distribution system manufactured of steel, galvanized on the outside and coated on the inside with a smooth hard finish of lacquer, varnish or enamel. Steel "Walkerduct" or approved equal screw type service fittings shall be used. Where installed in slab or fill, provide concrete tight fittings.

      C. Non-Encased Raceways:

         Unless specifically noted on the drawings or for concrete encasement, provide one of the following raceway systems:

1. Thinwall Conduit:

   Electrical Metal Tubing (EMT) with couplings and connectors for terminating conduit at outlet boxes, pull boxes, cabinets, gutters, etc.

2. Rigid Conduit:

   a. Rigid, heavywall, Schedule 40, PVC conduit, suitable for direct burial and Underwriters' Laboratories listed by Borg Warner, Carlon, Ethyl, Karloy, Triangle or approved equal. PVC may be utilized to exterior luminaries where ground wire is employed.

   b. Rigid, heavy wall galvanized steel conduit with double lockouts and bushings on conduits terminating at outlet boxes, cabinets, gutters, etc.

3. Flexible Electrical Conduit:

   Flexible interlocked double-wrapped steel, galvanized inside and outside forming smooth internal wiring channel, by National Electrical Products, Triangle, Clifton Conduit or approved equal. Each section of raceway must contain a bonding wire bonded at each end and sized as required, except for lighting fixtures. Provide connectors with insulating bushings.

4. Liquid-Tight Flexible Electrical Conduit:

   a. Maximum length 6 feet, single strip, continuous, flexible interlocked double-wrapped steel galvanized inside and outside forming a smooth internal wiring channel, by National Electric Products, Triangle, Clifton Conduit or approved equal. Each section of raceway must contain a bonding wire bonded at each end and sized as required, except for lighting fixtures. Conduit is to be covered with a tough, inert watertight plastic outer jacket, "Seal-Tite" Type U.S. (American Brass Company), "Flex-Seal Type LX" (Columbia Cable and Electric Corporation), "Electric-Flex" (International Metal Hose) or approved equal.

   b. Fittings: Cast malleable iron body and gland nut, cadmium plated with one-piece brass grounding bushings which threads to interior of conduit. Spiral molded vinyl sealing ring between gland nut and bushing and nylon insulated throat, by Gedney, Appleton, Thomas & Betts or approved equal.

D. Surface-mounted Raceways:

1. Surface Metal:

   a. Surface metal raceways shall be used to provide power services as shown on drawings.

b. The electrical contractor shall provide and install all surface metal raceways and appropriate fittings to provide a safe and complete installation "wiremold", two-piece, surface metal raceway.

c. The surface metal raceway and fittings shall be the G-3000 series as manufactured by The Wiremold Company, West Hartford, CT or approved equal.

d. The two piece surface metal raceway shall consist of a base section having ½" and ¾" trade size knockouts for electrical fittings.

e. The base and cover sections shall be manufactured of cold rolled steel, and painted with ANSI 61 gray finish which is capable of being overpainted in the field.

f. A full complement of fittings for the surface metal raceway shall be used including but not limited to elbows, (90°, internal and external), tees, couplings for joining raceway sections, wire clips for holding wires or cables in place, blank end fittings for closing open ends of the raceway, boxes to allow inclusion of devices like System 3000 Duplex Receptacles, transition connectors to other surface metal raceways and tradesize conduit or armored cable.

g. The surface metal raceway and fittings shall meet all requirements of the National Electrical Code Article 352A and shall be listed by Underwriters' Laboratories, Inc. in full compliance with their standard for surface metal raceways and fittings (UL-5).

II. Boxes:

A. Outlet, Junction and Pull Boxes

Provide zinc-coated or cadmium-plated sheet steel outlet boxes not less than 4 inches octagonal or square, unless otherwise noted. Equip fixture outlet boxes with 3/8 inch no-bolt fixture studs where required. Where fixtures are mounted on or in an accessible type ceiling, provide a junction box and extend flexible conduit to each fixture. Fit outlet boxes in finished ceilings or walls with appropriate covers, set flush with the finished surface. Where more than one switch or device is located at one point, use gang boxes and covers unless otherwise indicated. Sectional switch boxes or utility boxes will not be permitted. Where drywall material is utilized provide plaster ring. Provide outlet boxes of the type and size suitable for the specific application.

B. Provide pullboxes, Type "SC" surface mounted with screw covers exposed to outside. Each pullbox shall have knockouts. Each box shall be galvanized and U.S. labeled.

C. Plug any open knockouts not utilized.

D. Outdoor and Wet Location Boxes:

Weatherproof boxes to have built-in, reinforced, threaded international hubs and grounded terminals. Plugs to be nylon taped prior to installation. Connectors to be water tight and gasketed. Box to be affixed to surface with exterior tie.

III. Wire and Cable:

A. General:

Actual (secondary) service cable size shall be determined by the Contractor based upon the amperage required for the designated total installation.

B. Conductor:

Electrical grade, annealed copper, tinned or rubber insulated, and fabricated in accordance with ASTM standards. Minimum size number 12 for branch circuits; number 14 for control wiring.

C. Stranding and Number of Conductors:

1. Number 12 and number 10 solid.

2. Cables larger than number 10, stranded in accordance with Class B, ASTM flexibility standards.

3. Control wires stranded in accordance with Class B, ASTM flexibility standards.

4. Cables, multi-conductor unless otherwise noted for low tension systems.

D. Insulation:

1. Provide wire with a minimum insulating rating of 600 volts, except for wire used in low voltage (below 50 volts) control of signal systems use 300 volt minimum or 600 volt where permitted to be incorporated with other wiring systems.

2. Jacketed:

a. Type THW: Thermoplastic insulation suitable for use in wet locations up to 75°C. Use for lighting, outlet, and motor circuits and for panel and equipment feeders.

b. Type USE: Two and three conductor Type RHW insulated with neoprene jacket suitable for operation in wet or dry locations at a maximum temperature of 75°C. Underground service

entrance cable for direct earth burial, duct, or aerial applications.

c. Type TC: Control Wire, multiconductor THHN-THWN conductors rated for 90°C in dry locations and 75°C in wet locations. Cables may be installed in open air, ducts, conduits, in tray and trough, and are suitable for direct burial.

3. Single Conductor:

a. Type THHN: Heat-resistant thermoplastic insulation, nylon jacket rated for 90°C operation. Use for lighting branch circuit wiring installed and passing through the ballast channels of fluorescent fixtures, wiring in metal or wood roof decks in or near roof insulation, in attic or joist spaces, or in raceways exposed to the sun.

b. Type TFFN or TFN: Fixture wire with PVC insulation and nylon jacket, suitable for use on lighting fixtures and other applications where temperatures do not exceed 90°C.

4. Aerial Cable: Three conductor crosslinked polyethylene insulated cable with 30% EHS copper-clad steel messenger.

5. Color-code wiring for control systems installed in conjunction with mechanical and/or miscellaneous equipment in accordance with the wiring diagrams furnished with the equipment. Factor color code wire number 2 and smaller. Wire number 1 and larger may be color coded by color taping of the entire length of the exposed ends.

E. Connectors:

1. Make connections, splices, taps and joints with solderless devices mechanically and electrically secure. Protect exposed wires and connecting devices with electrical tape or insulation.

2. Branch circuit wires (No. 10 and smaller): Use any of the following types of terminals and connecting devices:

a. Hand Applied: Coiled tapered spring wound devices with a conducting corrosion-resistant coating over the spring steel and a plastic cover and skirt providing full insulation for splice and wired ends. Screw connector on by hand. Manufacturer: "Wing Nut" (Ideal Industries), "Piggy" (Thomas & Betts), "Scotchlok" (3M Company) or approved equal.

b. Tool Applied: Steel cap, with conduction and corrosion resistant metallic plating, open at both ends, fitted around the twisted ends of the wire and compressed or crimped by means of a special die designed for the purpose. Specifically fitted plastic or rubber insulating cover wrap over each connector.

Manufacturer: "Stakon" (Thomas & Betts), "Number 410 Crimp Connector" (Ideal Industries), "Wrap-Cap" (Buchanan) or approved equal.

F. Electrical Tape:

1. Specifically designed for use as insulating tape.

2. Manufacturer: Johns-Manville, Minnesota Mining or approved equal.

G. Lubricant: Use lubricant only where the possibility of damage to conductors exists. Use only a lubricant designed by the cable manufacturer and one which is inert to cable raceways.

IV. Switch and Wiring Devices:

A. Wall Switches:

1. Provide specification grade, flush mounting, quiet-operating AC type, with toggle operator and heat-resistant plastic housing. Silver alloy contact rated 20A at 277V and capable of full capacity on tungsten or fluorescent lamp load. Design for side or back wiring with up to Number 10 wire verified by U.L. to meet or exceed Federal specifications WS-896E.

2. Use single-pole, double-pole, 3-way, 4-way, pilot or keyed type, as indicated on drawings or required.

3. Switches controlling lighting by way of low voltage lighting control relays shall be 3-position, momentary-contact, center-off type to match the other switches.

4. Manufacturers: "1990 Series" (Arrow-Hart), "1220 Series" (Hubbell), "5600 Series" (Leviton) or approved equal. Color as selected by the Project Manager.

B. Duplex Convenience Outlets:

1. Unless otherwise noted, mount receptacle vertically with U-shaped ground position at bottom.

2. Provide 3-pole NEMA and American National Standards Institute standard type, with bronze contacts that accept plug with 2 parallel blades and 1 grounding blade, heat-resistant plastic enclosure with nylon face, two grounding screws, break-off terminals for 2-circuit wiring, rated for 20 amps at 125 volt AC. Comply with National Electrical Manufacturers' Association Standard W D-1, 3.02 through 3.10 and Underwriters' Laboratories Standard 498.

3. Manufacturers: "Catalog Number 5362" (Hubbell), Arrow Hart, Leviton or approved equal. Color as selected by the Project Manager.

C. Cover Plates:

Wall plates and cover plates shall be ivory plastic.

Screws to be of the same color and suitable for this application.

When two or more switches or devices are shown in one location, mount under a common plate.

D. Outdoor Locations:

1. Protect receptacles located outdoors or where indicated to be weatherproof by a GFI receptacle or circuit breaker.

2. Protect exterior receptacles by a cast aluminum metal plate with a stainless steel spring-loaded, gasketed lift cover to remain locked in either open or closed.

E. Switch and Pilot Light: "Number 1261" (Hubbell) switch with "Number 1375" (Hubbell) or approved equal flush neon pilot light with red jewel.

F. Smoke & Carbon Monoxide Alarm:

Provide and install smoke & carbon monoxide detection/alarm unit by Universal Security Systems, Model No. CD-9795 or approved equal.

G. Buried Detection Tape:

The electrical detection tape shall be a underground warning tape by Empire Level Manufacturer, Inc., available from Hamilton Associates, Inc., 800 W. Louisiana Ave, Denver, CO 80223, (303) 722-6882, or approved equal. The tape shall consist of a flexible plastic sheath, permanently color coded (impregnated) APWA "Safety Red" containing a solid aluminum foil core. The tape legend shall read "Caution Buried Electric Line Below" upon the 6 inch wide material.

6. EXECUTION:

I. Raceway Systems

A. Install capped bushings on conduits as soon as installed and remove only when wires are pulled. Securely tie embedded raceway in place prior to embedment. Conduits installed below or in floor slabs must extend a minimum of 6 inches above the finished slab to the first connector. Lay out the work in advance to avoid excessive concentrations of multiple raceway runs. Locate raceways so that the strength of structural members is unaffected and they do not conflict with the services of other trades. Install 1 inch or larger raceways in or through structural members (beams, slabs, etc.) only when and in the manner accepted by the Project Manager. Draw up couplings and fittings full and tight. Protect threads from corrosion with one (1) coat red lead or zinc chromate after installation.

B. Above Grade - Defined as the area above finished grade for a building exterior and above top surface or any slabs (or other concrete work) on grade for a building interior. Above-grade raceways to comply with the following:

1. Install raceways concealed except at surface cabinets and for motor and equipment connection in electrical and mechanical rooms. Install a minimum of 6 inches from flues, steam pipes, or other heated lines. Provide flashing and counter-flashing for waterproofing of raceways, outlets, fittings, etc., which penetrate the roof. Route exposed raceways parallel or perpendicular to building lines with right-angle turns and symmetrical bends. Run concealed raceways in a direct line and, where possible, with long sweep bends and offsets.

2. Provide raceway expansion joints with necessary bonding conductor at building expansion joints and where required to compensate for raceway or building thermal expansion and contraction. Terminate raceways 1¼ inches and larger with insulated bushings or rain-tight connections with insulated throats.

3. In all remaining areas where permitted by Code, Electric Metallic Tubing (EMT) may be used.

4. Provide flexible metal conduit in sufficient lengths not exceeding 6 feet for the makeup of motor, transformer or equipment, and/or raceway connections where isolation of sound and vibration transmission is required. For connections in locations exposed to weather and in interior locations to moisture, use watertight flexible conduit.

5. Provide separate code-size ground conductor in all plastic conduits.

6. Where conduits pass between levels provide seal fittings to maintain fire rating of level passing through.

II. Outlet, Junction and Pullboxes:

A. Provide outlets, junction and pullboxes as indicated on the drawings and as required for the complete installation of the various electrical systems and to facilitate proper pulling of wires and cables. J-boxes and pullboxes shall be sized per N.E.C. minimum.

B. The exact location of outlets and equipment is governed by structural conditions and obstructions, or other equipment items. When necessary, relocate outlets so that when fixtures or equipment are installed, they will be symmetrically located according to the room layout and will not interfere with other work or equipment. Verify final location of outlets, panels, equipment, etc., with the Project Manager and indicate on as-built drawings.

C. Back to back outlets in the same wall, or through-wall type boxes are not permitted. Provide 12 inch (minimum) spacing for outlets shown on

opposite sides of a common wall to minimize sound transmission.

III. Wiring Devices:

A. Plates:

1. Plates to be attached correctly and firmly without cracking.

2. Blind plates to be located at all boxes that are to be abandoned.

B. Mounting Heights:

Heights listed are from finished floor to center of device. Verify exact locations with the Project Manager before installation.

1. Convenience and Signal Outlets: 12” unless otherwise noted.

2. Lighting Switches: 4 feet

3. Disconnect Switches and Motor Controllers: 5 feet

4. Wall-mounted Fixtures: 7 feet 6 inches) or 1 foot below ceilings lower than 8 feet.

5. Mount switches vertically with the "on" position on top, unless noted or specified otherwise.

6. Where switches are indicated to be installed near doors, corner walls, etc., mount same not less than 2 inches and not more than 12” from trim. Verify exact location with the Project Manager.

7. Carefully coordinate the location of switches to insure locations at the strike side of doors.

8. Furnish and install an engraved legend for each switch that controls motors, equipment systems, etc., not located within sight of the controlling switch.

IV. Wire and Cable:

A. Provide a complete system of conductors in raceway system. Mount wiring through a specified raceway, regardless of voltage application.

B. Drawings do not indicate size of branch circuit wiring. For branch circuits whose length from panel to furthest outlet exceeds 150 feet for 120 volt circuits use number 10 or larger.

C. Do not install wire in incomplete conduit runs or until after the concrete work and plastering is completed and moisture is swabbed from conduits. Eliminate splices wherever possible. Where necessary, splice in readily accessible pull, junction or outlet box.

D. Provide cable supports for all vertical risers where required by code.

E. Flashover or insulation value of joints to be equal to that of the conductor. Provide Underwriters' Laboratories listed connectors rated at 600 volts for general use and 1,000 volts for use between ballasts and lamps or gaseous discharge fixtures.

F. Use terminating fittings, connectors, etc., of a type suitable for the specific cable furnished. Make bends in cable at termination prior to installing compression device. Make fittings tight. Recheck splices and termination and make mechanically and electrically tight during a 15 day period immediately prior to final acceptance of the work.

G. Apply an anti-oxide inhibitor equivalent to "Penetrox" (Burnday), "Noalox" (Ideal) or approved equal to aluminum terminations.

H. Install wire in raceways and make up terminations in accordance with manufacturer's recommendations using special washers, nuts, etc., as required. Use an accepted wire-pulling lubricant equivalent to "Yellow" (Ideal) or approved equal for all wire number 4 and larger. Strip insulation so as to avoid nicking of wire.

I. Extend wire sizing for the entire length of a circuit unless otherwise noted.

V. Grounding

A. Provide a separate grounding conductor, securely grounded on each end of the sections of plastic, fiber, or flexible raceways.

B. Provide grounding type bushings for conduits that originate at the service panels and individually bond this raceway to the ground bus in the service panels.

End of Section

SECTION 16400 - SERVICE AND DISTRIBUTION

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   The work shall include, but is not necessarily limited to, electrical service and distribution systems.

3. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

4. QUALITY ASSURANCE:

   Except as modified by governing codes and by the Contract, comply with the applicable provisions and recommendations of the following:

   I. Panelboards: Comply with Underwriters' Laboratories Standards UL 50 and UL 67, Federal Standard W-P-115A, Amendment Number 2, and National Electrical Manufacturers' Association Standard PB-1.

   II. Circuit Breakers: Comply with Underwriters' Laboratories Standard UL 489, Federal Standard W-C-375a, Amendment Number 4, and National Electrical Manufacturers' Association Standard AB-1.

   III. Ground Fault Circuit Interrupt (G.F.C.I.): Underwriters' Laboratories Standards

   IV. Except as modified by governing codes and by this specification, comply with the applicable provisions and recommendations of the following: Institute of Electrical and Electronics Engineering, National Electrical Manufacturers Association, Underwriters' Laboratories, Utility Company Standards, ASA, AIEE.

5. PRIMARY SERVICE:

   I. The power company will provide final connection to the pole mounted transformer as shown on the drawings. The Contractor will be responsible for installing the feed from the building to the base of the electrical pole including and extra 35’ of wire for Xcel to use to connect up the pole to the transformer. Contractor to coordinate with Xcel.

   II. Contractor will provide Meter Housing as required by Xcel and located as shown on the drawings. Contractor to coordinate with Xcel for all inspections and meter installation.

6. PRODUCTS:

I. Service Panel:

A. Provide panelboard consisting of an assembly of branch circuit switching and protective devices mounted inside a dead front enclosure. Provide the number and size of these branch circuit devices as required to serve the building. The panel shall have the following specifications.

1. Amperage - 200 amps.

2. Voltage – 110/240 volts.

3. Phase - single.

4. Blank spaces - 20.

B. Panelboard:

1. Rigid removable assembly of aluminum or copper bus bars and interchangeable bolted branch circuit devices.

2. Bus bars drilled to permit branch circuit devices of all sizes and number of poles to be interchangeable and installed in any spare space of sufficient size, without disturbing adjacent units; without removing main bus or branch circuit connectors; and without machining, drilling or tapping.

3. Arrange bus in sequence or distributed phasing so that multipole circuit breaker can replace any group of single circuit breakers of the same size.

4. Provide ground bus in each lighting and appliance branch circuit panelboard.

C. Enclosure:

1. Code gauge steel box galvanized.

2. Provide a bolt-on connector inside box for service entrance conduit.

3. Flush mounted in finished areas and where indicated. Surface mount elsewhere.

D. Front:

1. Heavy code gauge steel as required to maintain panel face flat.

2. Locate main lugs properly at top or bottom, depending on where main feeder enters.

E. Circuit Breaker Branch Circuit Devices:

1. Completely sealed enclosure; toggle type operating handle; trip ampere rating and ON/OFF indication clearly visible.

2. Thermal-magnetic trip-free, trip-indicating, quick-make, quick-break, with inverse time delay characteristics. Single-handle and common tripping multipole breakers. Silver alloy contacts with auxiliary arc-quenching devices.

3. Commercial grade plug-in or bolt-on type.

F. Provide main breakers in panels in sections of multi-section panels and when 2 or more panels are served by a common conductor or overcurrent device.

G. Ground Fault Interrupt (G.F.C.I.):

Furnish and install UL listed devices as required by code or as shown on the drawings.

7. EXECUTION:

I. Grounding:

A. Connect grounding wire to building foundation reinforcement in accordance with NEC requirements.

B. Ground service equipment, conduit systems, supports, cabinets, transformers, poles, fixtures, etc., and the grounding circuit conductors.

C. Provide bonding jumpers and wire, grounding bushings, clamps, etc., as required for complete grounding. Route ground conductors to provide the shortest and most direct path to the ground electrode system. Provide ground connections with clean contact surfaces, tinned and sweated while bolting. Install ground conductors in conduit. Make readily accessible connections to the underground in the vicinity of the switchgear. Make connections to the water pipe with "Series 3900" Thomas & Betts or approved equal ground clamp, grounding the conduit enclosing as well as the conductor. Bond cold water pipe system to separate grounding electrode.

D. Provide a separate grounding conductor, securely grounded on each end of sections of plastic, fiber, or flexible raceways. Route inside raceway.

E. Provide grounding type bushings for feeder conduits which originate from the service switchboards and individually bond this raceway to the ground bus in the main switchboards.

F. Connect the neutral bus in the main service switchboards to the ground bus by means of removable link.

G. Provide grounding of conduits entering motor control starters and panelboards as specified elsewhere.

II. Panelboards:

A. Installation:

1. Mount panel 4 feet to panel center but with maximum height of 6 feet 6 inches to handle of topmost switching device.

2. Neatly arrange branch circuit wires and tie together in each gutter with Thomas & Betts nylon "Ty-Raps," or approved equal at minimum intervals.

3. Plug all knockouts removed and not utilized.

B. Indexing and Identification

1. After installations are complete, provide and mount under sturdy transparent shield in the directory frame of each panel door, a neat, accurate and carefully typed directory properly identifying the lighting, receptacles, outlets, and equipment each branch circuit breaker controls.

2. Include on directory the panel identification, the cable and conduit size of panel feeder.

End of Section

SECTION 16410 – ENCLOSED SWITCHES AND CIRCUIT BREAKERS

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   This Section includes individually mounted enclosed switches and circuit breakers used for equipment disconnecting means.

3. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

4. QUALITY ASSURANCE:

   I. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by UL or by a testing agency acceptable to Authorities having Jurisdiction, and marked for intended use.

   II. Comply with NEMA AB 1 and NEMA KS 1.

   III. Comply with NFPA 70.

5. COORDINATION:

   I. Coordinate layout and installation of switches, circuit breakers, and components with other construction, including conduit, piping, equipment, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

6. EXTRA MATERIALS:

   Enclosure Keys: Furnish two each to owner. All keys shall be keyed alike or keyed as directed by the Project Manager.

7. PRODUCTS:

   I. Manufacturers:

      A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

         1. Eaton Corp.; Cutler-Hammer Products.

         2. General Electric Co.; Electrical Distribution & Control Division.

         3. Siemens Energy & Automation, Inc.

         4. Square D Co.

II. Enclosed switches:

A. Enclosed, Nonfusible Switch: NEMA KS 1, Type GD or HD to suit voltage, quick make, quick-break, load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position. Handle lockable in OFF position.

B. Enclosed, Fusible Switch, 800-A and Smaller: NEMA KS 1, Type GD or HD to suit voltage quick-make, quick-break, and load interrupter enclosed knife switch with externally operable handle. Provide interlock to prevent opening front cover with switch in ON position. Handle lockable in OFF position. Fuse Clips: Designed to accommodate specified fuses.

C. Enclosed switches shall be provided with an equipment ground kit, and if required an insulated, groundable, bondable neutral kit.

III. Enclosed circuit breakers:

A. Molded-Case Circuit Breaker: NEMA AB 1, with interrupting capacity to meet available fault currents.

1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250A and larger.

2. GFCI Circuit Breakers: Single-and two-pole configurations with 30-mA trip sensitivity.

B. Molded-Case Circuit-Breaker Features and Accessories: Standard frame sizes, trip ratings, and number of poles.

1. Lugs: Mechanical style suitable for number, size, trip ratings, and material of conductors.

2. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HACR for heating, air-conditioning, and refrigerating equipment.

3. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground fault indicator.

IV. Enclosures:

A. NEMA AB 1 and NEMA KS 1 to meet environmental conditions of installed location.

V. Factory finishes:

A. Finish for Outdoor Units: Factory-applied finish in manufacturer's standard

color or as specified, including undersurfaces treated with corrosion-resistant undercoating.

B. Finish for Indoor Units: Factory-applied finish in manufacturer's standard gray finish over a rust-inhibiting primer on treated metal surface.

8. EXECUTION:

I. Examination:

A. Examine areas and surfaces to receive enclosed switches and circuit breakers for compliance with requirements, installation tolerances, code compliance clearances, and other conditions affecting performance.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

II. Installation:

A. Install enclosures so they are rigidly supported and squarely aligned.

III. Identification:

A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs as specified in Division 16 Section "Electrical Identification."

B. Enclosure Nameplates: Label each enclosure with engraved metal or laminated plastic nameplate mounted with corrosion-resistant screws.

IV. Connections:

A. Install equipment grounding connections for switches and circuit breakers with ground continuity to main electrical ground bus.

B. Install power wiring. Install wiring between switches and circuit breakers, and control and indication devices.

C. Tighten electrical connectors and terminals according to manufacturers published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

D. Do not use switch or circuit breaker enclosure as pull box. All conductors entering enclosure must terminate on lugs within enclosure.

V. Field quality control:

A. Prepare for acceptance tests as follows:

1. Test insulation resistance for each enclosed switch, circuit breaker, component, and control circuit.

2. Test continuity of each line-and load-side circuit.

B. Testing: After installing enclosed switches and circuit breakers and after electrical circuitry has been energized, demonstrate product capability and compliance with requirements.

1. Procedures: Perform each visual and mechanical inspection and electrical test indicated in NETA ATS, Section 7.5 for switches and Section 7.6 for molded-case circuit breakers. Certify compliance with test parameters.

2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

VI. Cleaning:

A. On completion of installation, inspect interior and exterior of enclosures. Remove paint splatters and other spots, dirt, and debris. Vacuum dirt and debris; do not use compressed air to assist in cleaning. Touch up scratches and marred finish to match original finish.

End of Section

SECTION 16500 - LIGHTING FIXTURES

1. SCOPE OF WORK:

   Furnish all labor, materials and equipment required to complete the work of the noted Sections of this Division described herein and on the drawings.

2. WORK INCLUDED:

   The work shall include, but is not necessarily limited to, the installation of lighting fixtures.

3. GENERAL:

   I. Provide lighting fixtures in accordance with the Contract.

   II. Fixtures to be complete with light bulbs as specified.

4. QUALITY ASSURANCE:

   Provide three year manufacturer warranty for all LED luminaires, including drivers. Conform to requirements of NFPA 70.

5. SUBMITTALS:

   Refer to Section 01300 - Submittals, for requirements.

6. MATERIALS:

   I. Plastic Lenses and Diffusers: Virgin methyl methacylate unless otherwise permitted. Destaticize after cleaning. Install and leave with no finger or dirt marks on the lense or diffuser. Use white gloves if necessary.

   II. Parabolic Fixture Care: Parabolic fixtures to be installed with mylar cover over louvers. Upon completion of work, remove mylar cover with white gloves and blow clean reflectors.

   III. Finish: Porcelain or baked enamel finish matte white on interiors with minimum tested reflectance of 90 percent matte white finish or as specified in visible exterior. Thoroughly clean base metal and bonderize after fabrication.

   IV. LED Fixtures:

      A. LED Linear Strip (ID. 1&2):

         Nicor, LS1 4’ LED High Output Linear Strip. Provide the models specified in the drawings or an approved equivalent.

      B. LED Wall Pack (ID. 3):

         Nicor, “Corvus - OWG” LED Wall Pack with photocontrol. Color – bronze. Provide the models specified in the drawings or an approved equivalent.

7. EXECUTION:

I. Fabrication:

Provide fixtures, completely factory assembled and wired and equipped with necessary sockets, ballasts, wiring, shielding, reflectors, channels, lenses, etc., and deliver to job ready for installation.

II. Installation:

Install fixtures in mechanical areas after ductwork and piping installation. Locate fixtures above floor, as shown, or at suitable locations within space on walls or ceilings.

End of Section

COLORADO
Parks and Wildlife
Department of Natural Resources

Rifle Falls SFU - Isolation Building
PART 3 - CONSTRUCTION DRAWINGS

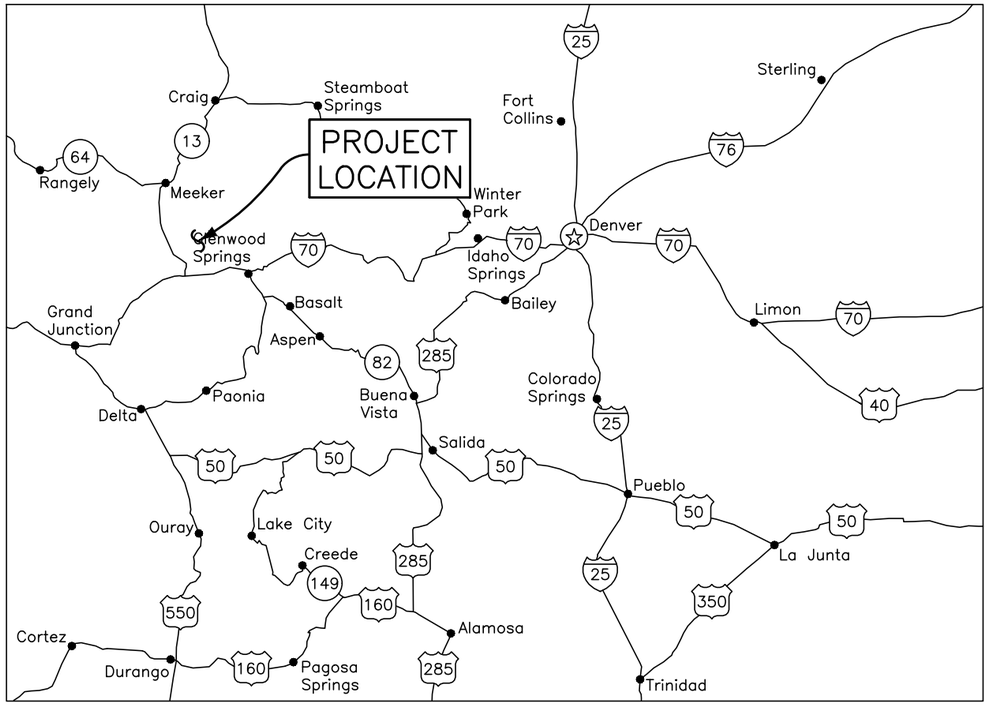
PROJECT I.D. NO. SCA23A
IFB1: 2025*169

PRE-BID CONFERENCE: April 2, 2025 at 11:00 AM

BID OPENING: April 16, 2025 at 1:00 PM

TABLE OF CONTENTS
Rifle Falls SFU - Isolation Building
SCA23A

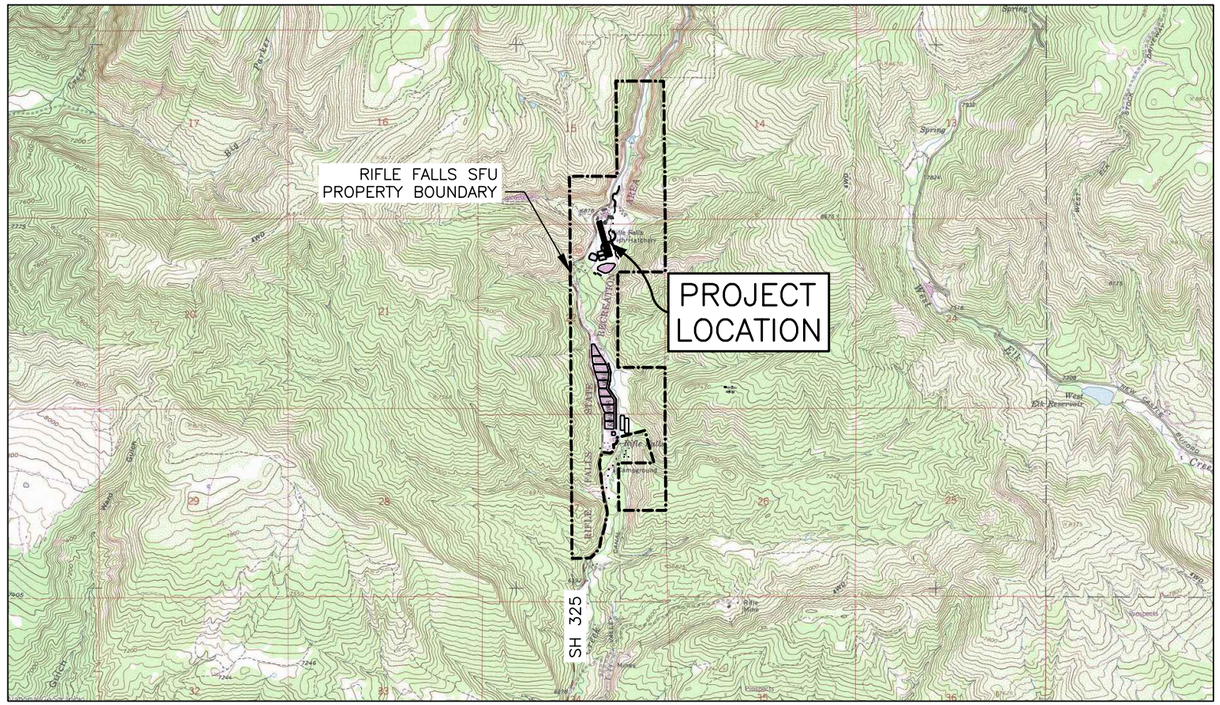
PART 3 - CONSTRUCTION DRAWINGS



STATE MAP

30 0 30 60

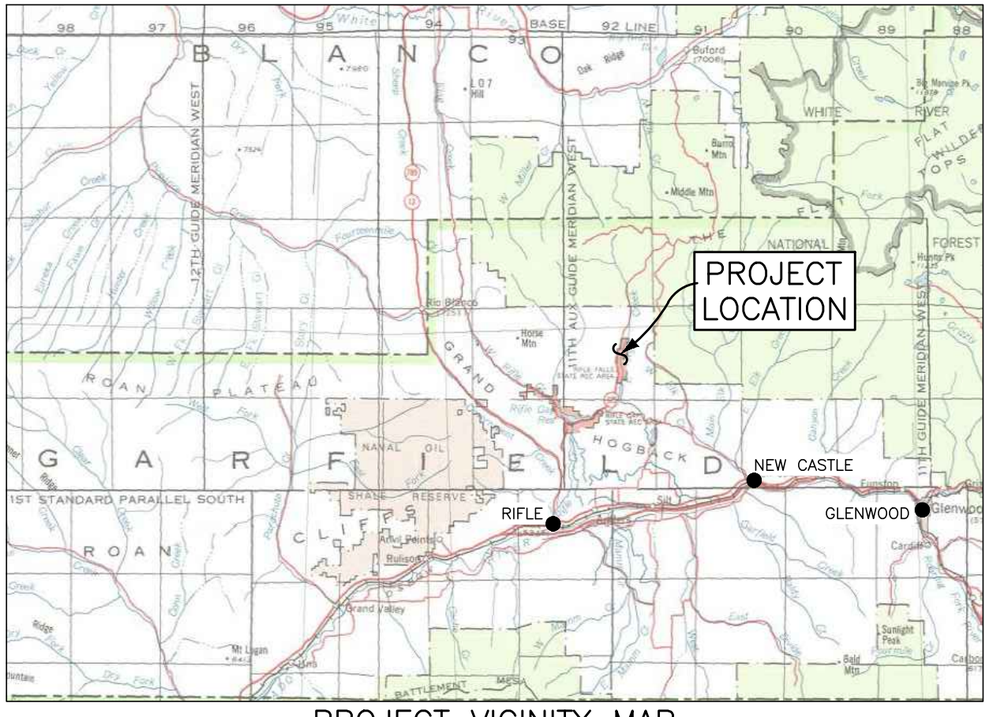
SCALE IN MILES



PROJECT LOCATION MAP

.25 0 .25 .5

SCALE IN MILES



PROJECT VICINITY MAP

4 0 4 8

SCALE IN MILES

RIFLE FALLS SFU
ISOLATION BUILDING

PROJECT ADDRESS:
11466 STATE HIGHWAY 325
RIFLE, 81650
GARFIELD COUNTY

PROJECT COORDINATES:
LATITUDE: 38°03'51"N
LONGITUDE: 103°40'37"W

Sheet List Table

Sheet Number	Sheet Title
1	Cover Sheet
2	Site Map
3	Proposed Site Plan
4	Elevations
5	Floor Plan
6	Foundation Plan
7	Framing Plan
8	Plumbing Plan
9	Electrical Plan
10	Sections and Details
11	Sections and Details (2)

DESIGN CODES (IBC, IPC, ETC)	DESIGN DEAD LOAD (PSF)	DESIGN LIVE LOAD (PSF)	ROOF SNOW LOAD (PSF) (NON-REDUCIBLE)	WIND DESIGN		SEISMIC DESIGN CATEGORY	SUBJECT TO DAMAGE FROM			WINTER DESIGN TEMP (°F)	ICE BARRIER UNDERLAYMENT REQUIRED
				SPEED (MPH)	TOPO. EFFECT		WEATHERING	FROST LINE DEPTH	TERMITE		
2015	10	20	40	115	–	B	SEVERE	36"	NONE	-2	YES

PARKS & WILDLIFE PROJECT CONTACTS

HATCHERY MANAGER, JASON WENTZ	970-625-1865
PROJECT MANAGER, KENDAL BERGMAN	970-902-7946
DESIGN ENGINEER, JORDAN HASZ	303-291-7393

FOR BURIED UTILITY INFORMATION
CALL 811
TWO BUSINESS DAYS BEFORE YOU DIG
UTILITY NOTIFICATION CENTER OF COLORADO (UNCC) OR COMMON GROUND ALLIANCE (CGA)

THE STATE OF COLORADO IS COMMITTED TO PROVIDING EQUITABLE ACCESS TO OUR SERVICES TO ALL. PLEASE CONTACT OUR COLORADO PARKS AND WILDLIFE ACCESSIBILITY SPECIALIST (ACCESSDNR@STATE.CO.US OR 303-297-1192) FOR PERSONALIZED ACCESSIBILITY ASSISTANCE WITH PROJECT CONSTRUCTION LAYOUTS AND DETAILS BELOW. WE WILL CONTACT YOU DIRECTLY WITHIN TWO BUSINESS DAYS. VISIT OUR ACCESSIBILITY WEBPAGE (DNR.COLORADO.GOV/ACCESSIBILITY) FOR MORE INFORMATION AND SERVICES, INCLUDING AIRA, OUR FREE SERVICE FOR BLIND AND LOW-VISION USERS.

RIFLE FALLS SFU
ISOLATION BUILDING

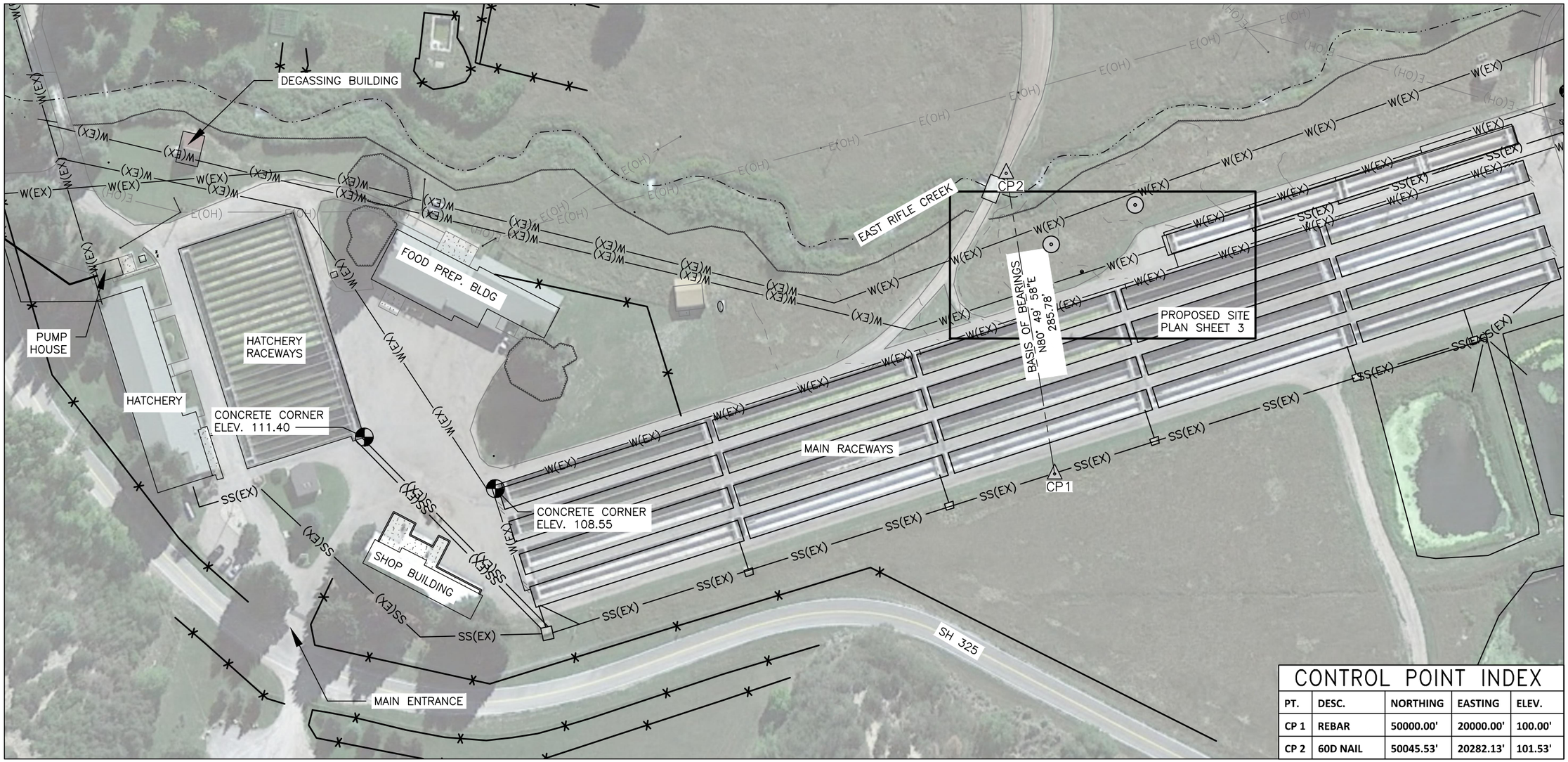
REVISIONS: | DATE | BY |

DESIGNER: JH 03/25
DRAFTER: JH 03/25
CHECKED BY:
APPROVED:
APPROVED:
CHIEF ENGR.:

DATE
PROJECT NO. SCA23A
SHEET NO. 1 OF 11

FINAL FOR BID

COVER SHEET



CONTROL POINT INDEX

PT.	DESC.	NORTHING	EASTING	ELEV.
CP 1	REBAR	50000.00'	20000.00'	100.00'
CP 2	60D NAIL	50045.53'	20282.13'	101.53'

GENERAL NOTES:

1. ONLY SURFACE EVIDENCE OF UTILITIES VISIBLE AT THE TIME OF THE FIELD WORK IS SHOWN HEREON. ALL UNDERGROUND UTILITIES MUST BE FIELD LOCATED BY THE APPROPRIATE AGENCY OR UTILITY COMPANY PRIOR TO ANY EXCAVATION, PURSUANT TO C.R.S. SEC. 9–15–103

2. THE CONTOURS REPRESENTED HEREON WERE INTERPOLATED BY AUTOCAD CIVIL 3D (DIGITAL TERRAIN MODELING) RELEASE 2022 SOFTWARE BETWEEN ACTUAL MEASURED SPOT ELEVATIONS. DEPENDING ON THE DISTANCE FROM A MEASURED SPOT ELEVATION, THE CONTOUR SHOWN MAY NOT BE AN EXACT REPRESENTATION OF THE SITE TOPOGRAPHY. THE PURPOSE OF THIS TOPOGRAPHIC MAP IS FOR SITE EVALUATION AND TO SHOW SURFACE DRAINAGE FEATURES. ADDITIONAL TOPOGRAPHIC OBSERVATIONS MAY BE NECESSARY IN SPECIFIC AREAS OF DESIGN.

3. DIMENSIONS SHOWN HEREON ARE U.S. SURVEY FOOT.

4. DATE OF FIELDWORK: 8/30/2023

LEGEND

- EXISTING FENCE
- W(EX) — EXISTING WATER SUPPLY
- SS(EX) — EXISTING EFFLUENT DRAIN
- E(OH) — EXISTING OVERHEAD ELECTRIC
- EXISTING EDGE OF VEGETATION
- 100' — EXISTING SURFACE CONTOUR
- APPROXIMATE TEST PIT LOCATION (SEE APPENDIX A)

N

SITE MAP

50 0 50 100
SCALE IN FEET

RIFLE FALLS SFU
ISOLATION BUILDING

COLORADO PARKS & WILDLIFE

DATE	BY

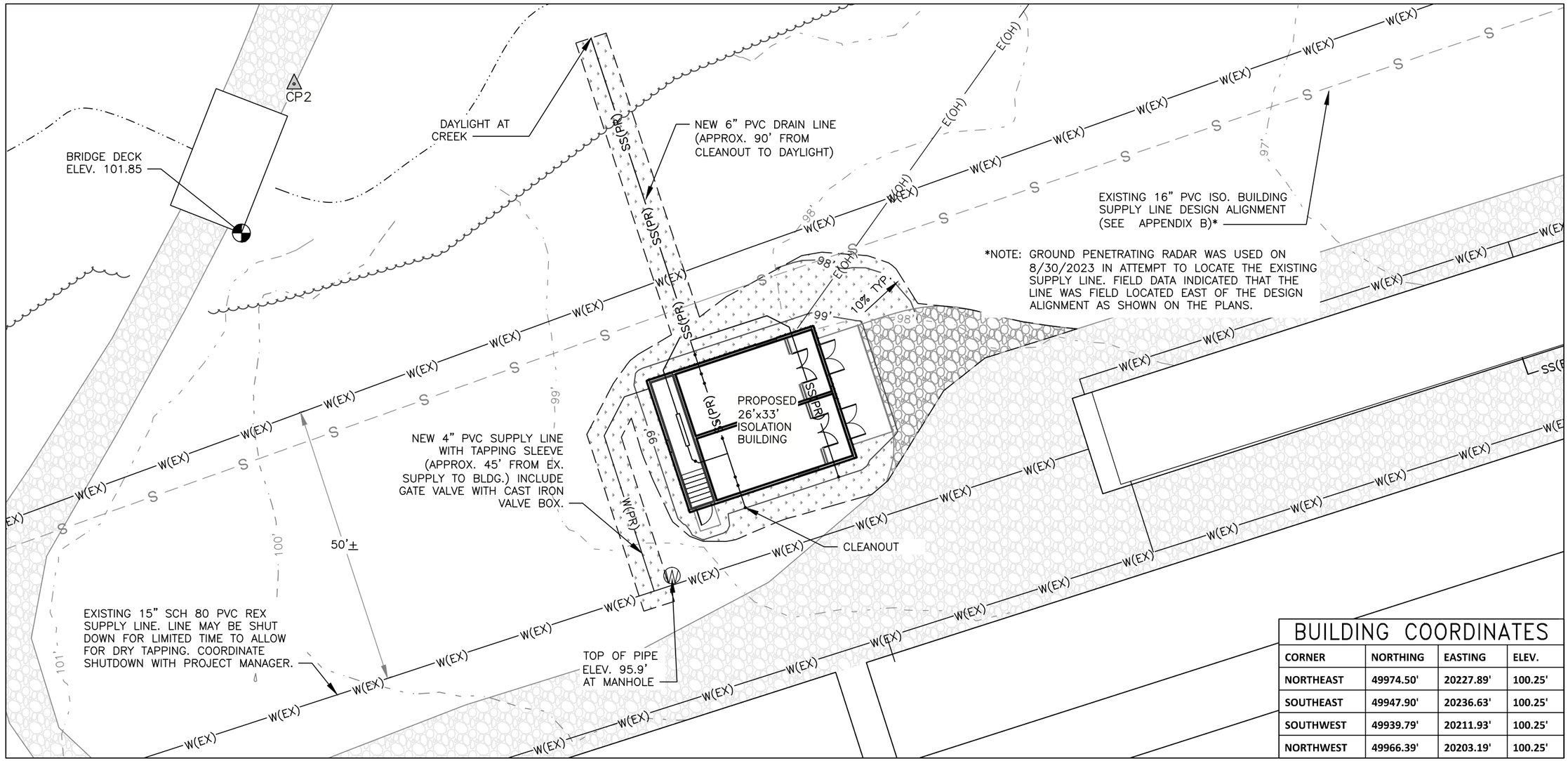
REVISIONS:

DESIGNER:	JH
DRAFTER:	JH
CHECKED BY:	
APPROVED:	
CHIEF ENGR.:	
DATE	08/24
	08/24

PROJECT NO.	SCA23A
SHEET NO.	2
	OF 11

FINAL FOR BID

SITE MAP



BUILDING COORDINATES

CORNER	NORTHING	EASTING	ELEV.
NORTHEAST	49974.50'	20227.89'	100.25'
SOUTHEAST	49947.90'	20236.63'	100.25'
SOUTHWEST	49939.79'	20211.93'	100.25'
NORTHWEST	49966.39'	20203.19'	100.25'

GENERAL NOTES:

1. CONTRACTOR TO COORDINATE SERVICE EXTENSION WITH XCEL ENERGY. SERVICE EXTENSION WILL BE PAID AS AN ALLOWANCE IN ACCORDANCE WITH SECTION 01202.
2. THE BUILDING LOCATION MAY BE ADJUSTED ON SITE BY THE PROJECT MANAGER.
3. DISPOSE OF EXCESS SOIL IN A LOCATION APPROVED BY THE PROJECT MANAGER.
4. NO WORK SHALL BE BACKFILLED UNTIL THE CONSTRUCTION HAS BEEN INSPECTED AND APPROVED FOR BACKFILLING BY THE PROJECT MANAGER.
5. CONTRACTOR SHALL NOT IMPEDE PUBLIC ACCESS TO THE SITE OR NORMAL CPW OPERATIONS DURING CONSTRUCTION.
6. CONTRACTOR SHALL AT ALL TIMES COORDINATE HIS WORK WITH THE PROJECT MANAGER, WHEN IT IS NECESSARY TO CLOSE THE EXISTING PORTIONS OF THE WATER OR SEWER SYSTEM DUE TO CONSTRUCTION OPERATIONS, AT LEAST 48 HOURS PRIOR NOTIFICATION MUST BE GIVEN TO THE PROJECT MANAGER.
7. THE CONTRACTOR SHALL NOTIFY ALL PUBLIC UTILITY COMPANIES AND DETERMINE THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO PROCEEDING WITH CONSTRUCTION. ALL WORK PERFORMED IN THE AREA OF PUBLIC UTILITIES SHALL BE PERFORMED ACCORDING TO THE REQUIREMENTS OF THESE AGENCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ANY EXISTING UTILITY (INCLUDING DEPTH), WHICH MAY CONFLICT WITH THE PROPOSED CONSTRUCTION, PRIOR TO COMMENCEMENT OF THE IMPROVEMENTS DESCRIBED IN THE PROJECT. THE CONTRACTOR SHALL PROTECT, AT HIS OWN EXPENSE, ALL EXISTING UTILITIES AND BE RESPONSIBLE FOR THEIR REPAIR IF THEY ARE DAMAGED DURING CONSTRUCTION.
8. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE PROJECT MANAGER OF ANY PROBLEM IN CONFORMING TO THE APPROVED PLANS OR ANY ELEMENT OF THE PROPOSED IMPROVEMENTS PRIOR TO CONSTRUCTION.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE PROJECT MANAGER AT LEAST 48 HOURS PRIOR TO START OR RESTART OF ANY CONSTRUCTION.

LEGEND

- W(EX) — EXISTING WATER SUPPLY
- SS(EX) — EXISTING EFFLUENT DRAIN
- E(OH) — EXISTING OVERHEAD ELECTRIC
- E(OH) — PROPOSED OVERHEAD ELECTRIC
- EXISTING EDGE OF VEGETATION
- 100' — EXISTING SURFACE CONTOUR
- 100' — PROPOSED SURFACE CONTOUR
- LIMIT OF DISTURBED AREA (APPROX. 3050 S.F.)
- EXISTING GRAVEL DRIVE
- PROPOSED 6" COMPACTED ABC (APPROX. 460 S.F.)
- PERMANENT SEEDING & MULCHING (APPROX. 1530 S.F.)

N

PROPOSED SITE PLAN

10 0 10 20
SCALE IN FEET

RIFLE FALLS SFU
ISOLATION BUILDING

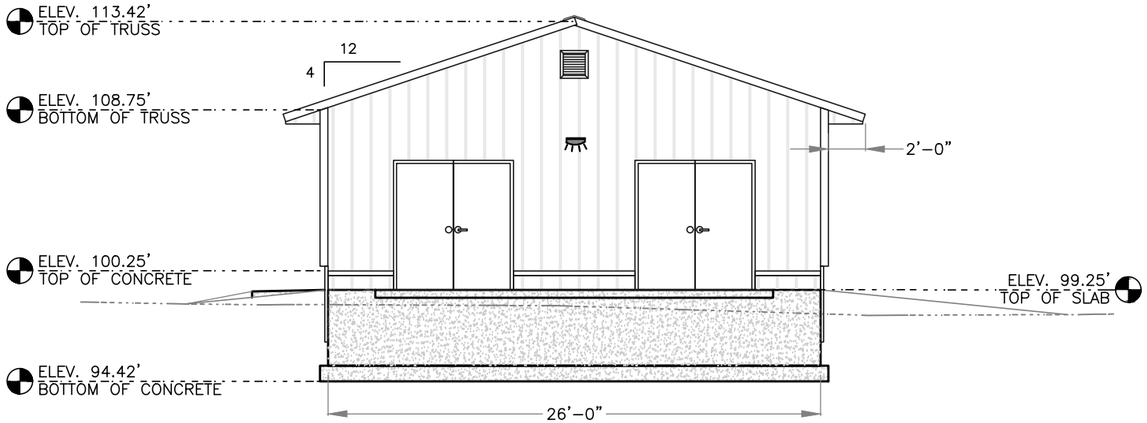
REVISIONS:	DATE	BY

DESIGNER:	JH
DRAFTER:	JH
CHECKED BY:	
APPROVED:	
CHIEF ENGR.:	
08/24	
09/24	

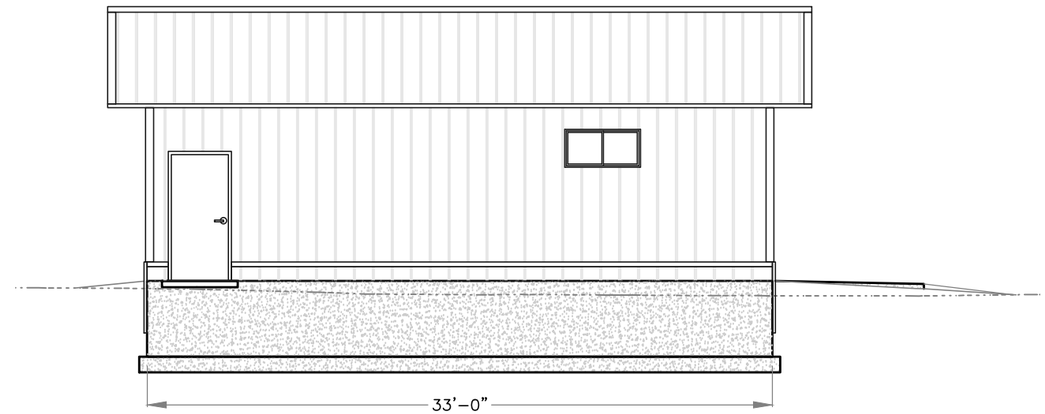
DATE	
PROJECT NO.	SOA23A
SHEET NO.	3 OF 11

FINAL FOR BID

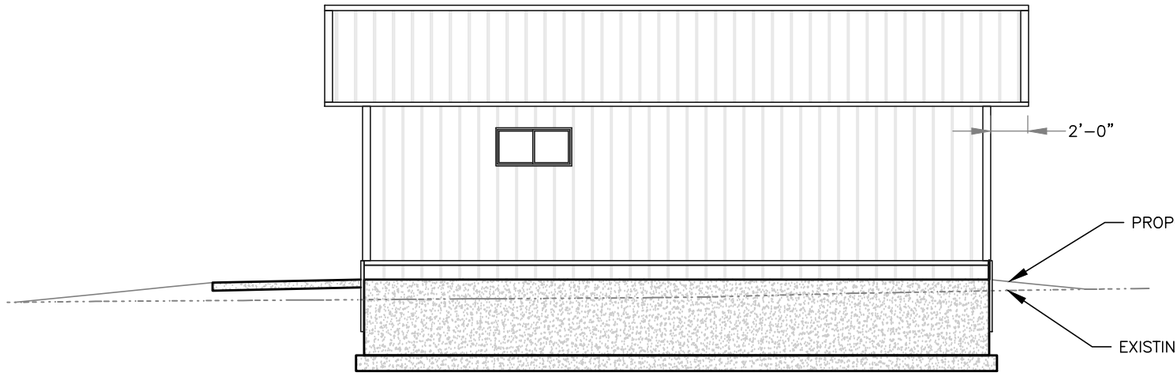
PROPOSED SITE PLAN



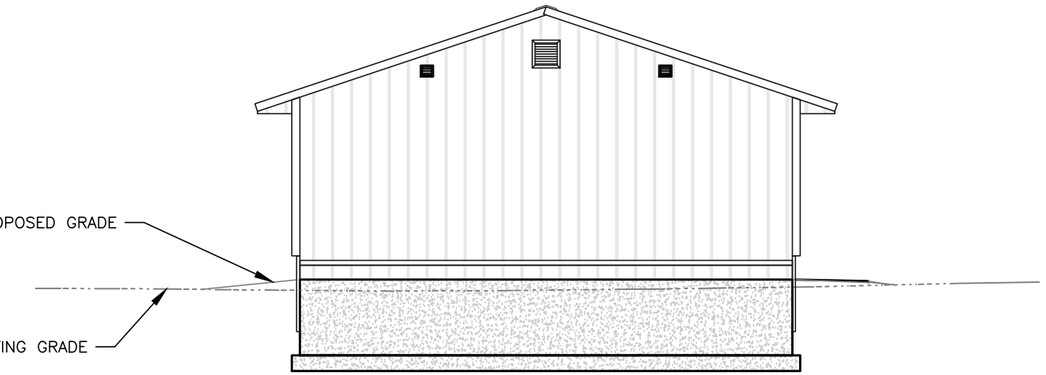
SOUTH ELEVATION



WEST ELEVATION



EAST ELEVATION



NORTH ELEVATION

ELEVATIONS

4 0 4 8

SCALE IN FEET

RIFLE FALLS SFU

ISOLATION BUILDING

COLORADO PARKS & WILDLIFE

REVISIONS:	DATE	BY

DESIGNER:	JH
DRAFTER:	JH
CHECKED BY:	
APPROVED:	
CHIEF ENGR.:	
08/24	
08/24	

DATE	
PROJECT NO.	SC423A
SHEET NO.	4
	OF 11

FINAL FOR BID

ELEVATIONS

DOOR DATA

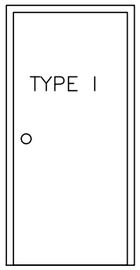
ID	Size (WxH)	TYPE	QTY	NO. REQ.	FRAME		HARDWARE		
					MATERIAL	FINISH	HINGE	LATCH LOCK	MISC. HARDWARE
A	6'–0" x 6'–8"	TYPE I	2	2	HOLLOW METAL	PAINT	1	F82	1,3
B	6'–0" x 6'–8"	TYPE I	2	2	HOLLOW METAL	PAINT	1	F82	1,2,3
C	3'–0" x 6'–8"	TYPE I	1	1	HOLLOW METAL	PAINT	1	F82	1

BUTT HINGES
1 – HEAVY STAINLESS STEEL SPRING HINGE

LOCKSETS
DESIGNATIONS INDICATED ARE ANSI A156.2 FUNCTIONS BEST ACCESS SYSTEM 9K SERIES (OR EQUIVALENT).

F82 – ENTRANCE LOCK, KEY OUTSIDE, BUTTON ON FACE OF LOCK

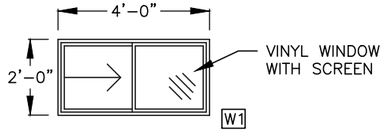
MISCELLANEOUS HARDWARE
GENERAL – DOOR SILENCERS: GLYNN–JOHNSON SR64 (OR EQUIVALENT) DOOR SILENCERS FOR ALL HOLLOW METAL FRAMES, 3 PER STRIKE JAMB FOR SINGLE DOORS, 2 PER HEAD FOR PAIRS OF DOORS
1 – WEATHERSTRIPPING: PEMKO 303AS (OR EQUIVALENT) AT HEAD AND JAMBS, PEMKO 18100CNB (OR EQUIVALENT) SWEEPS AT SILL, PEMKO 176A THRESHOLD AND PEMKO 346C RAIN DRIP AT EXTERIOR DOORS.
2 – WALL STOPS: BALDWIN 4273.264 (OR EQUIVALENT) CONCAVE BUMPER, SATIN CHROME FINISH CONCEALED MOUNTING AND ATTACHMENT
3 – FLUSH BOLTS: QUALITY HARDWARE CO. MPN:1357 (OR EQUIVALENT) EXTENSION BOLT AT HEAD AND SILL AND MPN:1225 (OR EQUIVALENT) DUSTPROOF STRIKE AT FLOOR, INSTALL ON INACTIVE LEAF.



HOLLOW METAL W/ INSULATED CORE

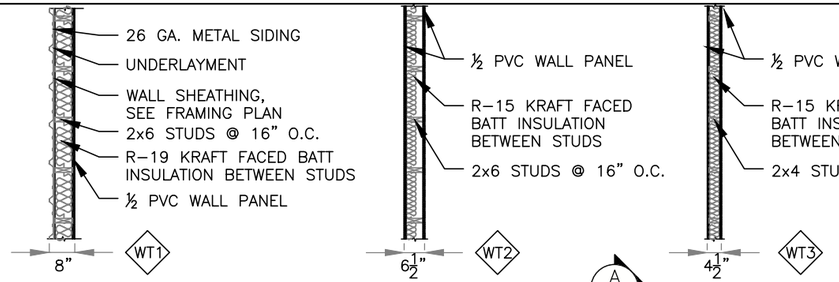
DOOR TYPES

2 0 2 4
SCALE IN FELT



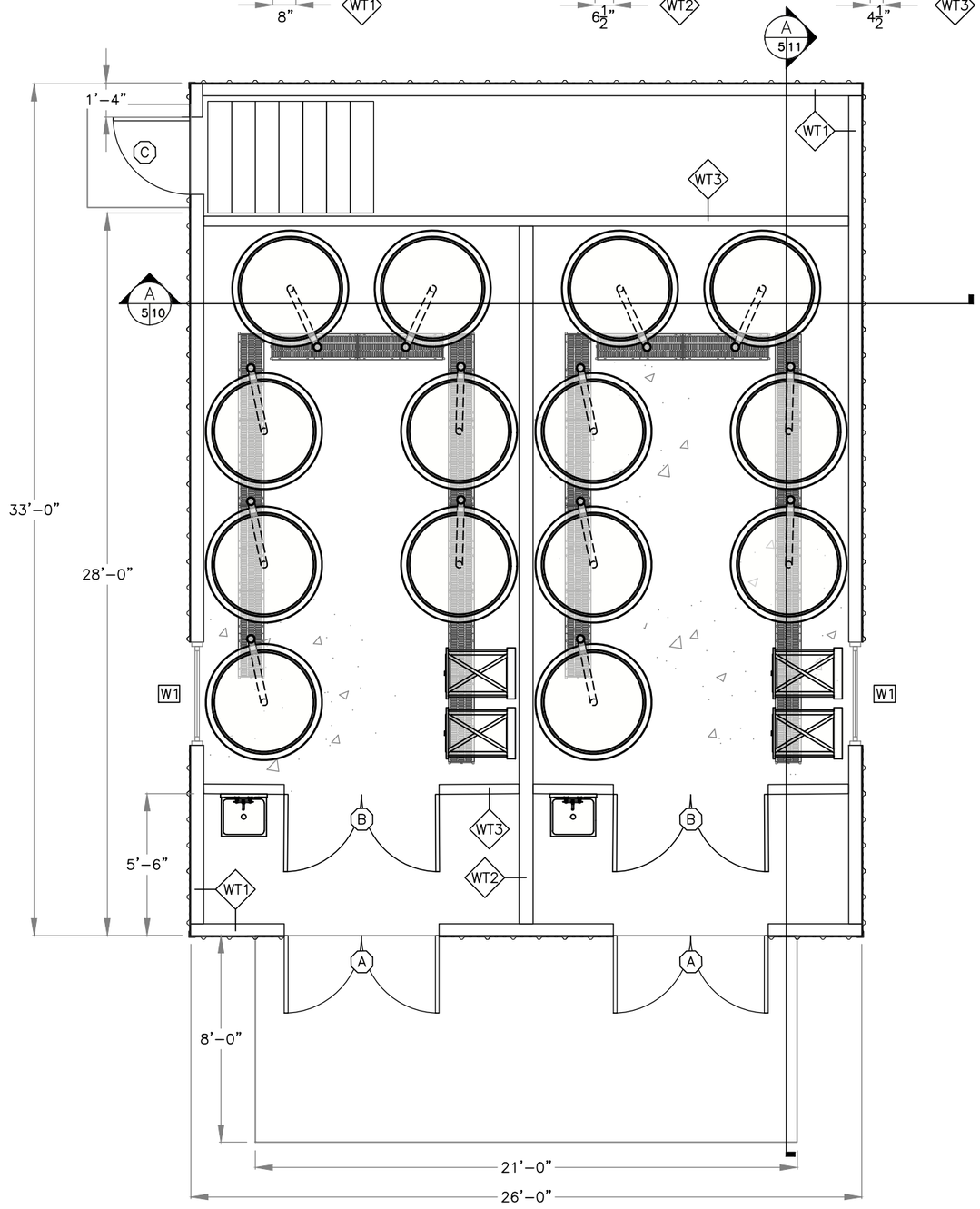
WINDOW TYPES

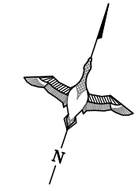
2 0 2 4
SCALE IN FEET



WALL TYPES

2 0 2 4
SCALE IN FEET





FLOOR PLAN

32" 0 32" 64"
3/16" = 1' U.N.O.

RIFLE FALLS SFU
ISOLATION BUILDING

COLORADO PARKS & WILDLIFE

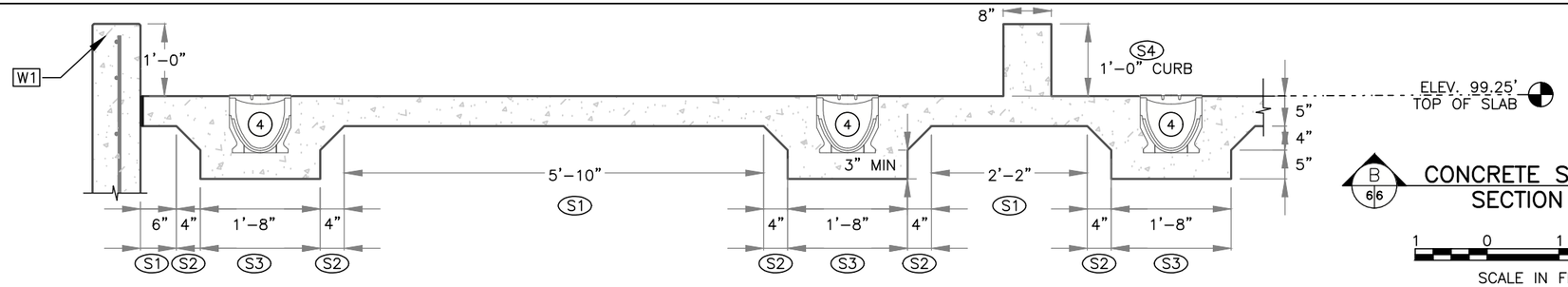
REVISIONS:	DATE	BY

DESIGNER:	JH
DRAFTER:	JH
CHECKED BY:	
APPROVED:	
CHIEF ENGR.:	
DATE	08/24
	08/24

DATE	
PROJECT NO.	SCA23A
SHEET NO.	5
	OF 11

FINAL FOR BID

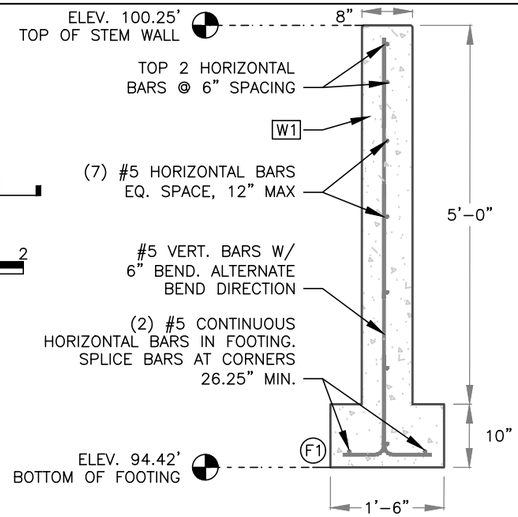
FLOOR PLAN



B 6|6 CONCRETE SLAB SECTION

1 0 1 2

SCALE IN FEET



A 6|6 TYPICAL FOOTING SECTION

1 0 1 2

SCALE IN FEET

FOOTING SCHEDULE

ID	SIZE (W x H x L)	HORIZONTAL REINFORCING	VERTICAL REINFORCING	VOL (CY)
F1	1'-6" x 10" x 139'-2"	(2)#5 CONTINUOUS	#5 HOOKED @ 12" O.C.	6.44

STEM WALL SCHEDULE

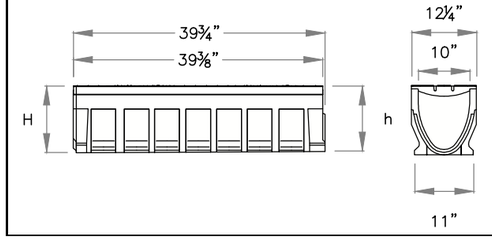
ID	SIZE (W x H x L)	HORIZONTAL REINFORCING	VERTICAL REINFORCING	VOL (CY)
W1	0'-8" x 5'-0" 125-0"	#5 @ 12" O.C. MAX.	#5 HOOKED @ 12" O.C.	15.43
W2	0'-8" x 4'-0" 15'-0"	#5 @ 12" O.C. MAX.	#5 HOOKED @ 12" O.C.	1.48
TOTAL FOUNDATION VOLUME				23.4

SLAB SCHEDULE

ID	AREA (S.F.)	AVERAGE DEPTH	VOLUME (CY)
S1	544.76	0'-5"	8.41
S2	48.25	0'-7"	1.04
S3	171.66	1'-2"	5.15
S4	25.78	1'-0"	0.95
S5	168.00	0'-5"	2.59
S6	16.00	0'-4"	0.20
TOTAL SLAB VOLUME			18.4

10" POLYMER CONCRETE CHANNEL SCHEDULE

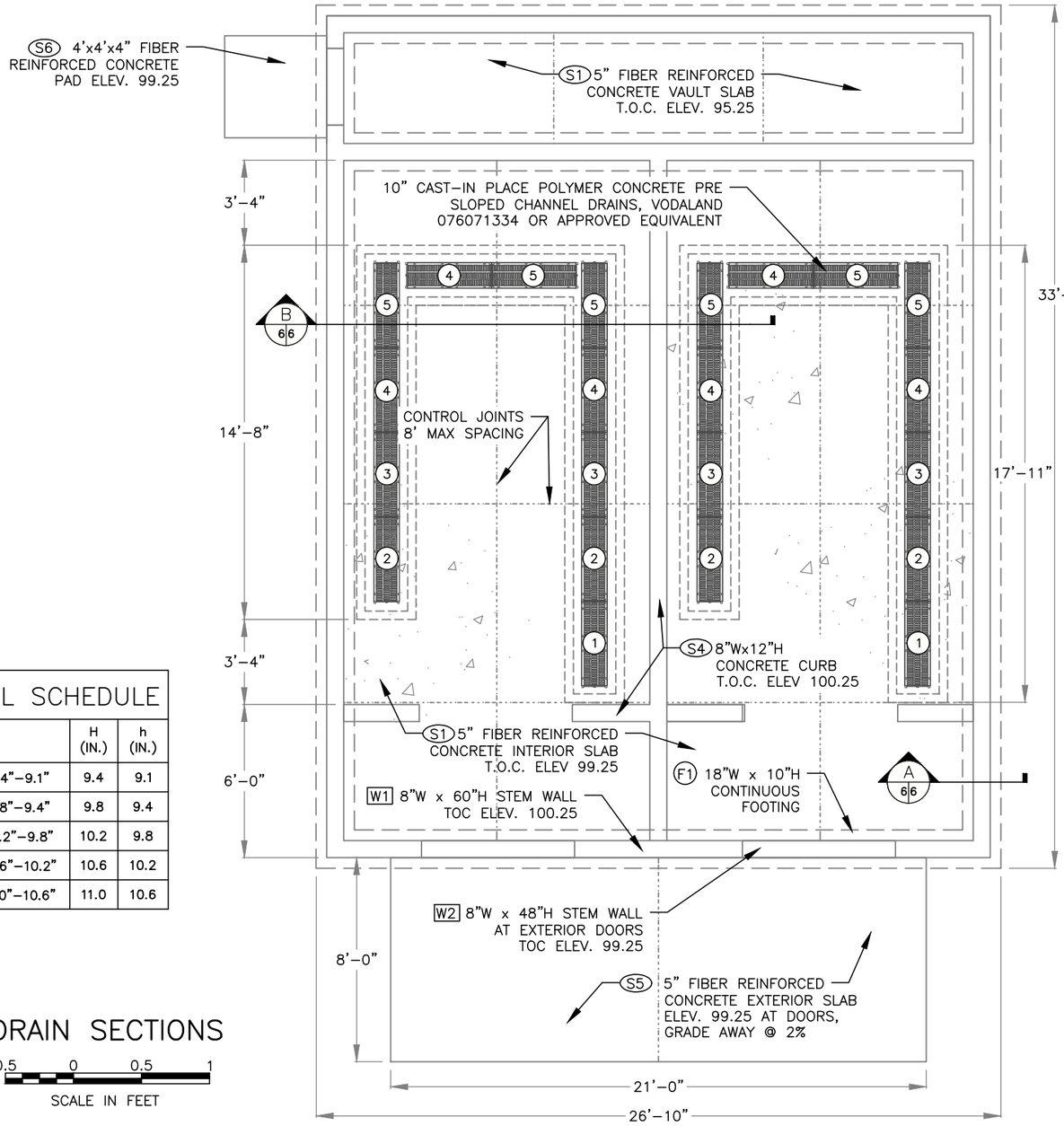
ID	QTY	ARTICLE	NAME	H (IN.)	h (IN.)
1	2	076071334/240-230	ST-PCN-10"-DR-D400H9.4"-9.1"	9.4	9.1
2	4	076071334/250-240	ST-PCN-10"-DR-D400H9.8"-9.4"	9.8	9.4
3	4	076071334/260-250	ST-PCN-10"-DR-D400H10.2"-9.8"	10.2	9.8
4	6	076071334/270-260	ST-PCN-10"-DR-D400H10.6"-10.2"	10.6	10.2
5	6	076071334/280-270	ST-PCN-10"-DR-D400H11.0"-10.6"	11.0	10.6



DRAIN SECTIONS

0.5 0 0.5 1

SCALE IN FEET



CONCRETE NOTES:

1. CONCRETE FOUNDATIONS WILL BE PAID TO THE NEAT LINES OF THE FOUNDATION PLAN AS REPORTED IN THE BID SCHEDULE.
2. ALL CONCRETE TO BE CONSTRUCTED ABOVE COMPACTED STRUCTURAL FILL ACCORDING TO THE GEOTECHNICAL INVESTIGATION. MINIMUM DEPTH REQUIREMENTS:
   - FOUNDATIONS 24"
   - NON STRUCTURAL FLOOR SLABS 18"
   - EXTERIOR FLATWORK 12"
3. ANCHOR SILL PLATES TO CONCRETE FOUNDATION USING ½" DIAMETER STEEL BOLTS. BOLTS SHALL BE EMBEDDED A MINIMUM OF 7" INTO THE FOUNDATION WALL. LOCATE BOLTS SUCH THAT THERE IS A BOLT AT EACH END OF THE WALL SECTION (12" MAX, 4" MIN FROM END) AND SPACED NO MORE THAN 4 FEET O.C. ALONG WALL
4. CONCRETE COVERAGE FOR REINFORCEMENT:
   - CONCRETE CAST AGAINST EARTH: 3"
   - FORMED EDGES EXPOSED TO WEATHER OR FREEZING: 2"
   - FINISHED INTERIOR SURFACES: 1½"
5. INTERIOR CONCRETE FLOORS SHALL BE FINISHED WITH WATER REPELLENT CONCRETE SEALER GHOSTSHIELD LITHI-TEK 9500 OR APPROVED EQUIVALENT

FOUNDATION PLAN

32" 0 32" 64"

3/16" = 1' U.N.O.

RIFLE FALLS SFU

ISOLATION BUILDING

COLORADO WILDLIFE PARKS

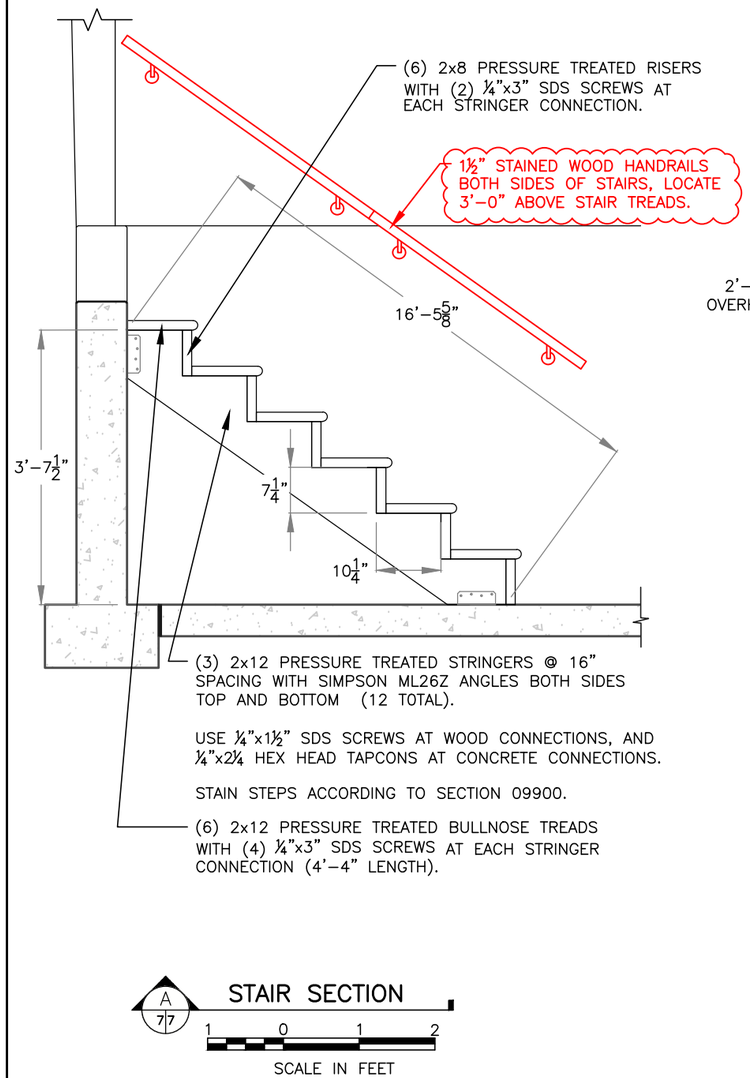
REVISIONS:	BY	DATE

DESIGNER:	JH	08/24
DRAFTER:	JH	08/24
CHECKED BY:		
APPROVED:		
CHIEF ENGR.:		

DATE	
PROJECT NO.	SCA23A
SHEET NO.	6 OF 11

FINAL FOR BID

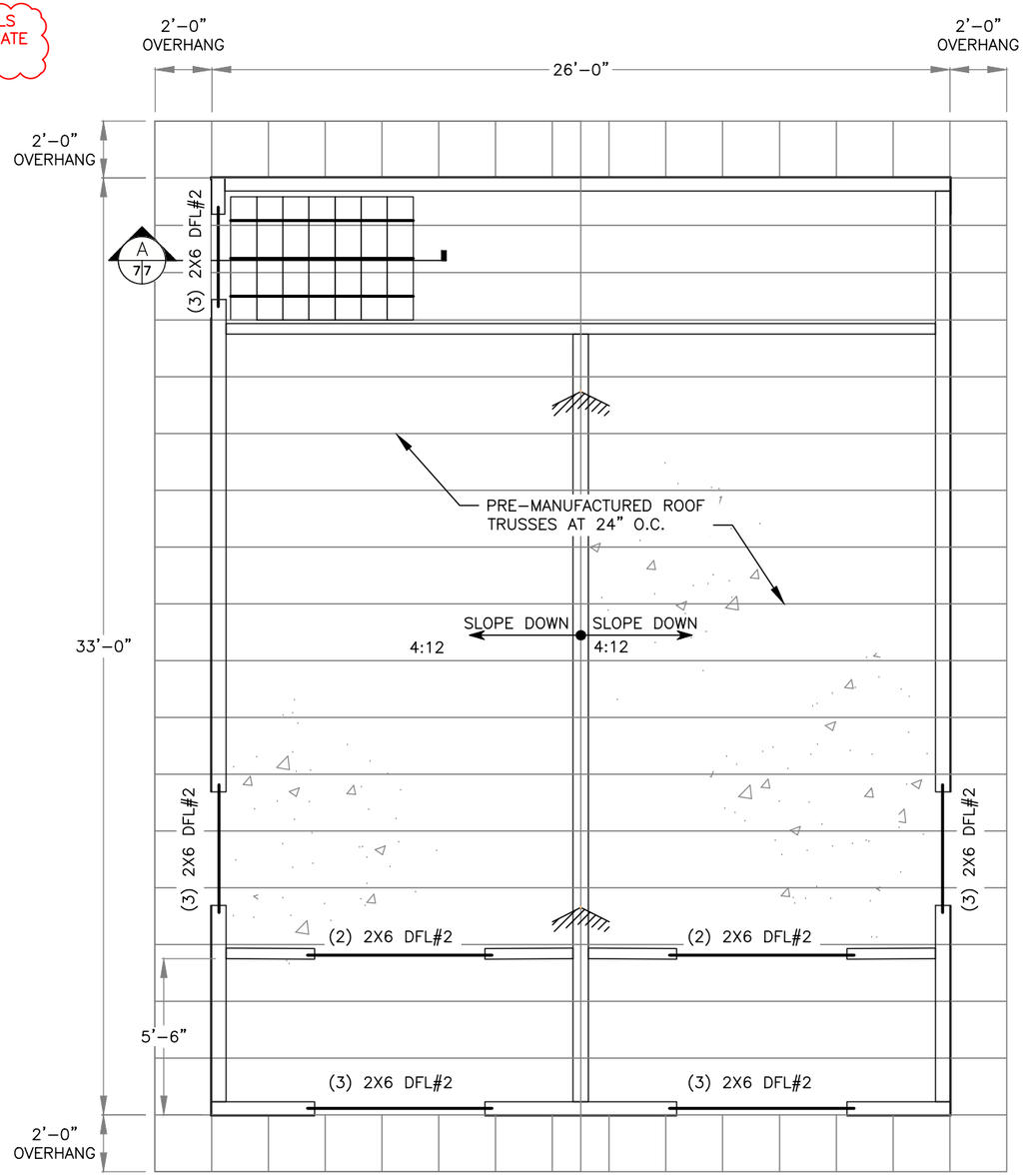
FOUNDATION PLAN



A 7/7 STAIR SECTION

1 0 1 2

SCALE IN FEET



FRAMING NOTES:

1. ROOF AND WALL SHEATHING SHALL BE 7/16" OSB/PLYWOOD (24/0 SPAN RATING OR BETTER). ROOF SHEATHING SHALL BE INSTALLED PERPENDICULAR TO SUPPORTING MEMBERS WITH VERTICAL JOINTS STAGGERED BETWEEN ROWS. THE FIRST ROW OF SHEATHING ABOVE GRADE SHALL BE PRESERVATIVE TREATED. WALL SHEATHING SHALL BE INSTALLED VERTICALLY WITH JOINTS LOCATED OVER FRAMING MEMBERS OR BLOCKING AND FASTENED WITH 6D COMMON NAILS SPACED 12" O.C. IN THE FIELD AND 6" O.C. ALONG PANEL EDGES.
2. COLORADO P.E. TO DESIGN ROOF TRUSSES. DESIGN CALCULATIONS AND SHOP DRAWINGS TO BE SUBMITTED TO CPW FOR REVIEW AND ACCEPTANCE.
3. SILL PLATES SHALL BE PRESSURED TREATED LUMBER IN ACCORDANCE WITH THE SPECIFICATIONS.
4. FASTENING OF WOOD FRAMING SHALL BE IN ACCORDANCE WITH TABLE 2304.9.1 OF THE IBC.
5. HEADERS ARE AS CALLED OUT ON PLAN. HEADERS TO BEAR ON (1) TRIMMER STUD WITH (1) KING STUD ADJACENT TO THE TRIMMER.

FRAMING PLAN

32" 0 32" 64"

3/16" = 1' U.N.O.

ADDENDUM NO. 1 –4/9/2025

RIFLE FALLS SFU

ISOLATION BUILDING

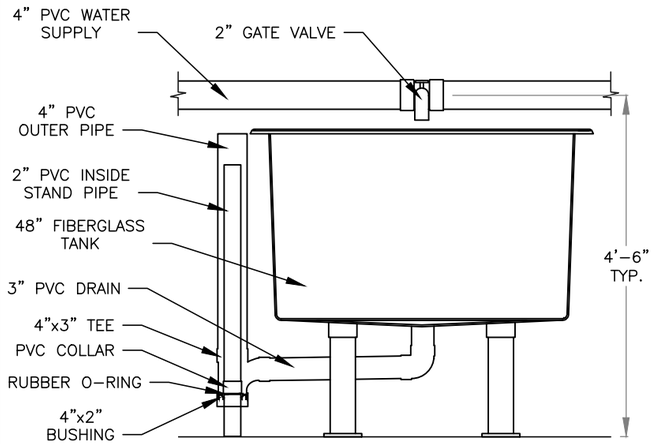
REVISIONS:	DATE	BY

DESIGNER:	JH
DRAFTER:	JH
CHECKED BY:	
APPROVED:	
CHIEF ENGR.:	
DATE	04/25

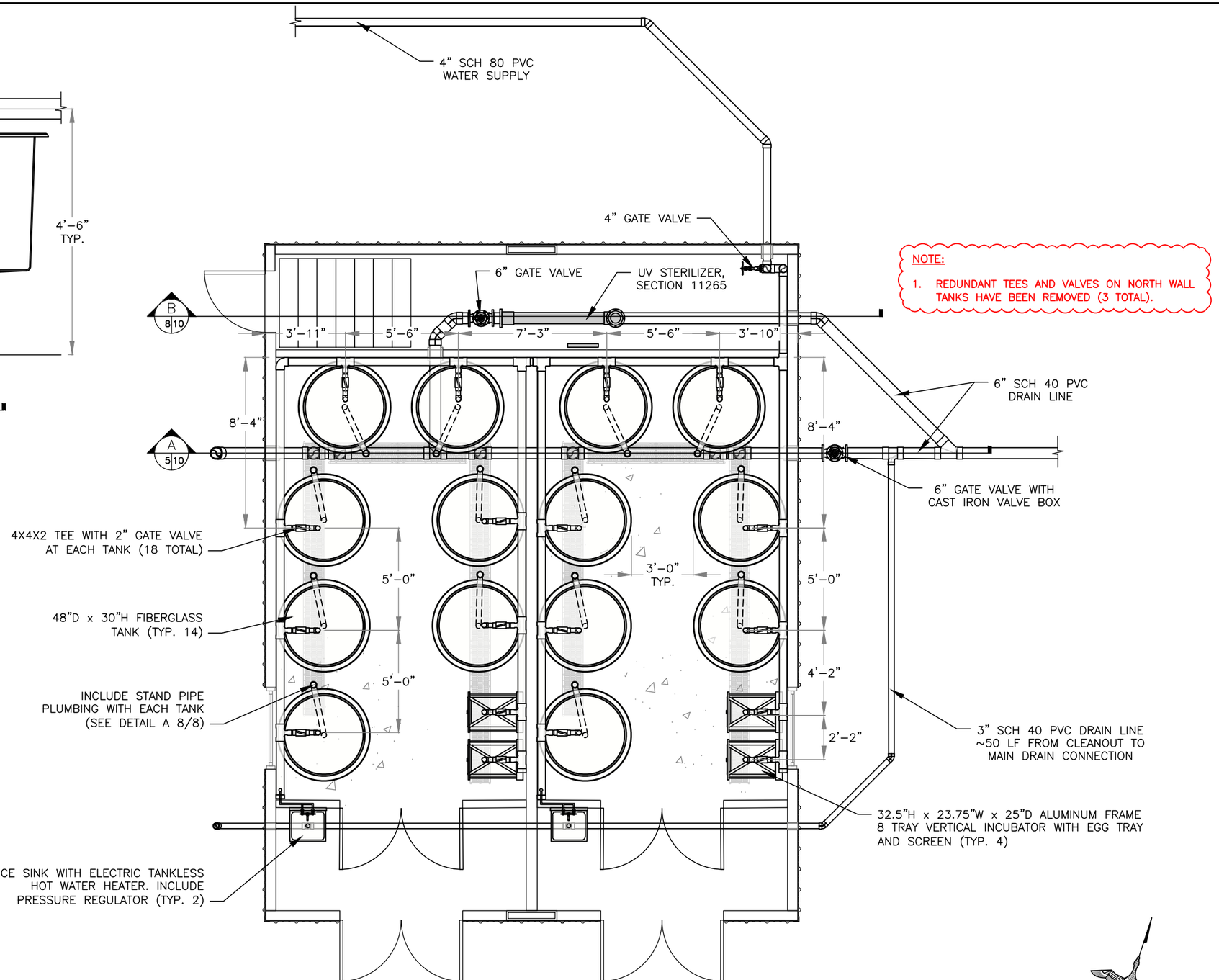
DATE	
PROJECT NO.	SCA23A
SHEET NO.	7
	OF 11

FINAL FOR BID

FRAMING PLAN



A 8|8 TANK DETAIL



NOTE:

1. REDUNDANT TEES AND VALVES ON NORTH WALL TANKS HAVE BEEN REMOVED (3 TOTAL).

N

PLUMBING PLAN

32" 0 32" 64"

3/16" = 1'

ADDENDUM NO. 1 -4/9/2025

RIFLE FALLS SFU

ISOLATION BUILDING

REVISIONS:	DATE	BY

DESIGNER:	JH
DRAFTER:	JH
CHECKED BY:	
APPROVED:	
CHIEF ENGR.:	
DATE	04/25
	04/25
PROJECT NO.	
SCA23A	
SHEET NO.	
8 OF 11	

FINAL FOR BID

PLUMBING PLAN

EQUIPMENT SCHEDULE

ID	FIXTURE DESCRIPTION	MANUF.	MODEL	ACTIVATION FLOW	INDIVIDUAL LINE SIZES		
					COLD WATER	HOT WATER	POWER (kW/V)
TWH	TANKLESS WATER HEATER	BOSCH	TRONIC 3000	0.3 GPM	3/4"	3/4"	3.6kW@120V

LIGHTING SCHEDULE

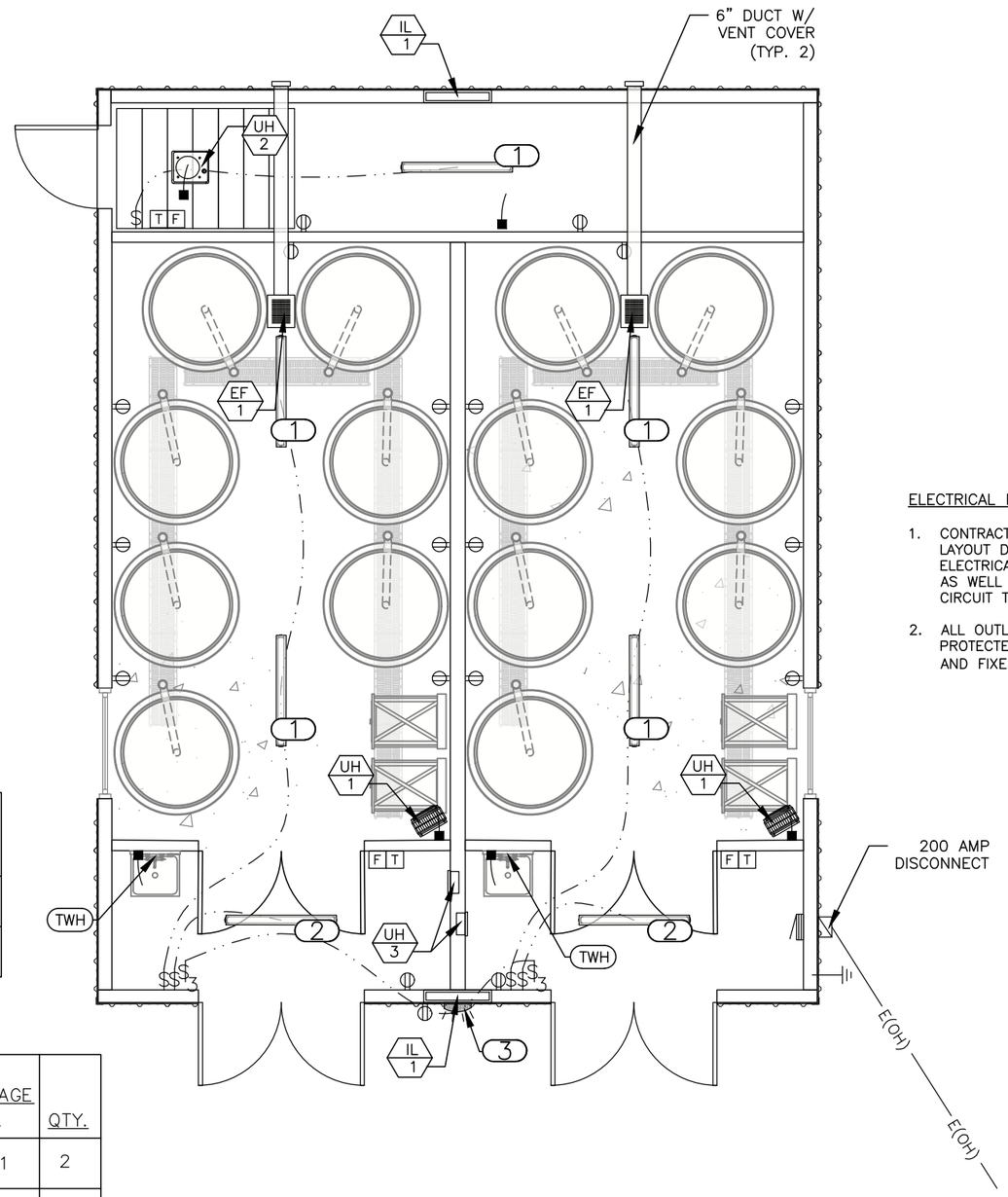
ID	DESCRIPTION	MANUF.	MODEL	LUMENS	COLOR TEMP	QTY.
1	LED LINEAR STRIP	NICOR	LS1-10H	5393	3997 K	5
2	LED LINEAR STRIP	NICOR	LS1-10S	2948	3932 K	2
3	LED WALL PACK	NICOR	OWG1050	5948	3997 K	1

EXHAUST FAN/LOUVER SCHEDULE

ID	MANUFACTURER	MODEL	WATTAGE OUTPUT (W)	AIR FLOW (CFM)	VOLTAGE (V)	AMPERAGE (A)	QTY.
EF 1	DAYTON	60KU30	172	195	115	2.2	2
IL 1	DAYTON	5NKJ2	N/A	744	N/A	N/A	2

WALL & CEILING UNIT HEATER SCHEDULE

ID	MANUFACTURER	MODEL	WATTAGE OUTPUT (kW)	HEATING CAPACITY (MBH)	AIR FLOW (CFM)	VOLTAGE (V)	AMPERAGE (A)	QTY.
UH 1	DAYTON	804T17	3.7, 5	12.6, 17	350	208/240	18, 21	2
UH 2	DAYTON	804T10	2.2, 3	7.5, 10.2	350	208/240	11, 12.5	1
UH 3	DAYTON	3ENC7	1	3.4	65	120	8.3	2



ELECTRICAL LEGEND

POWER
- STRAIGHT BLADE DUPLEX RECEPTACLE
- CONNECTION TO PRE-WIRED EQUIPMENT
- BREAKER PANEL
- GROUND CONNECTION

SWITCHING
- $ WALL MOUNTED SWITCH
  SUBSCRIPTS:
- $3 3-WAY SWITCH

HEATING/COOLING SYSTEM
- T WALL MOUNTED WIRED THERMOSTAT
- F FAN CONTROL

ELECTRICAL NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ELECTRICAL LAYOUT DRAWINGS AND PANNEL SCHEDULE FOR STATE ELECTRICAL PERMIT. CIRCUITS SHALL BE LABELED APPROPRIATELY AS WELL AS LABELS AT EACH OUTLET IDENTIFYING WHICH CIRCUIT THEY ARE CONNECTED TO.
2. ALL OUTLETS IN ISOLATION ROOMS SHALL BE GROUND FAULT PROTECTED AND RECESSED IN FRP WITH WEATHERPROOF BOXES AND FIXED 60" ABOVE FF.

N

ELECTRICAL PLAN

32" 0 32" 64"

3/16" = 1'

RIFLE FALLS SFU

ISOLATION BUILDING

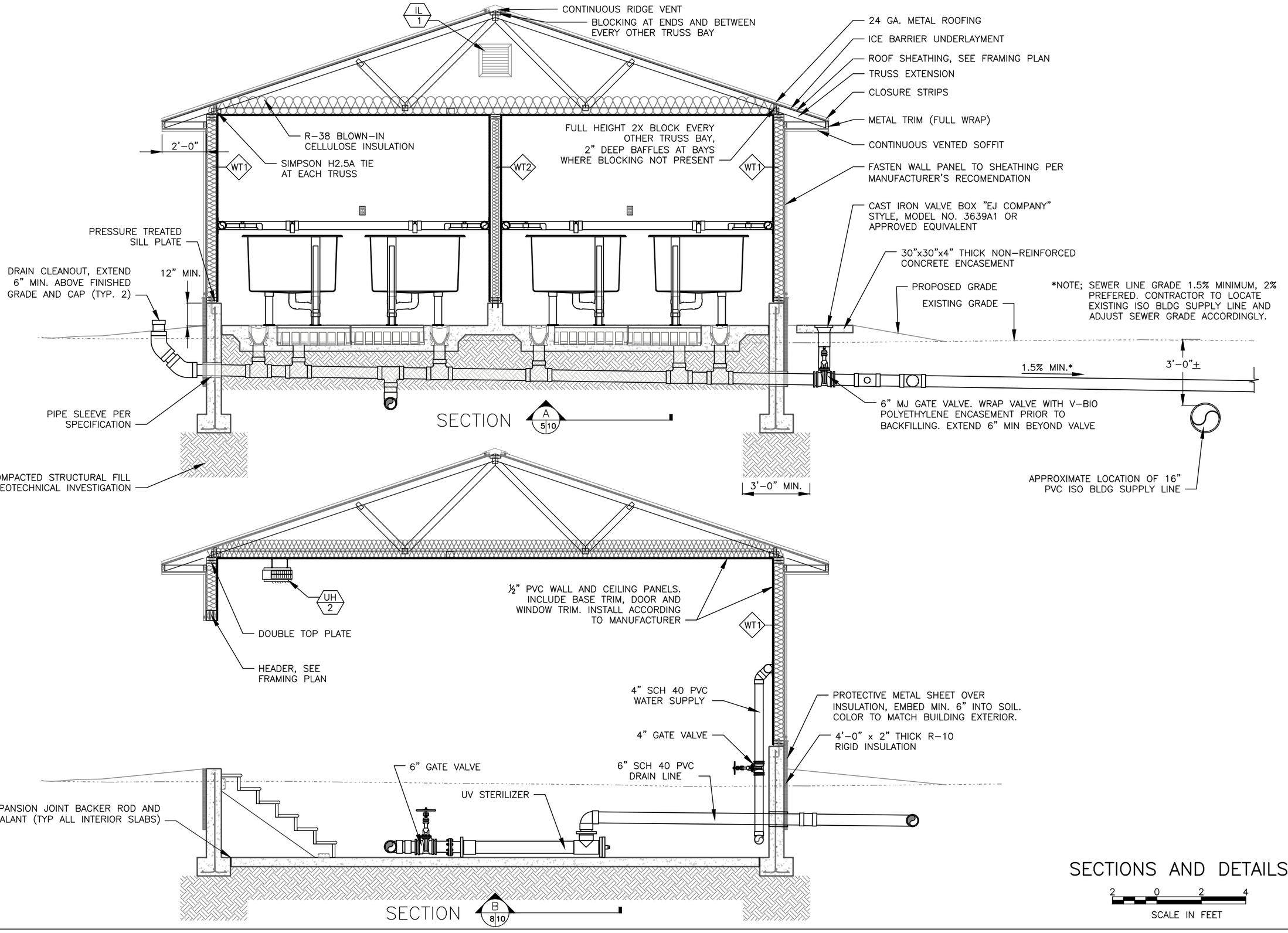
REVISIONS:	BY	DATE

DESIGNER:	JH
DRAFTER:	JH
CHECKED BY:	
APPROVED:	
APPROVED:	
CHIEF ENGR.:	

DATE	
PROJECT NO.	SCA23A
SHEET NO.	9 OF 11

FINAL FOR BID

ELECTRICAL PLAN



SECTIONS AND DETAILS

2 0 2 4

SCALE IN FEET

RIFLE FALLS SFU

ISOLATION BUILDING

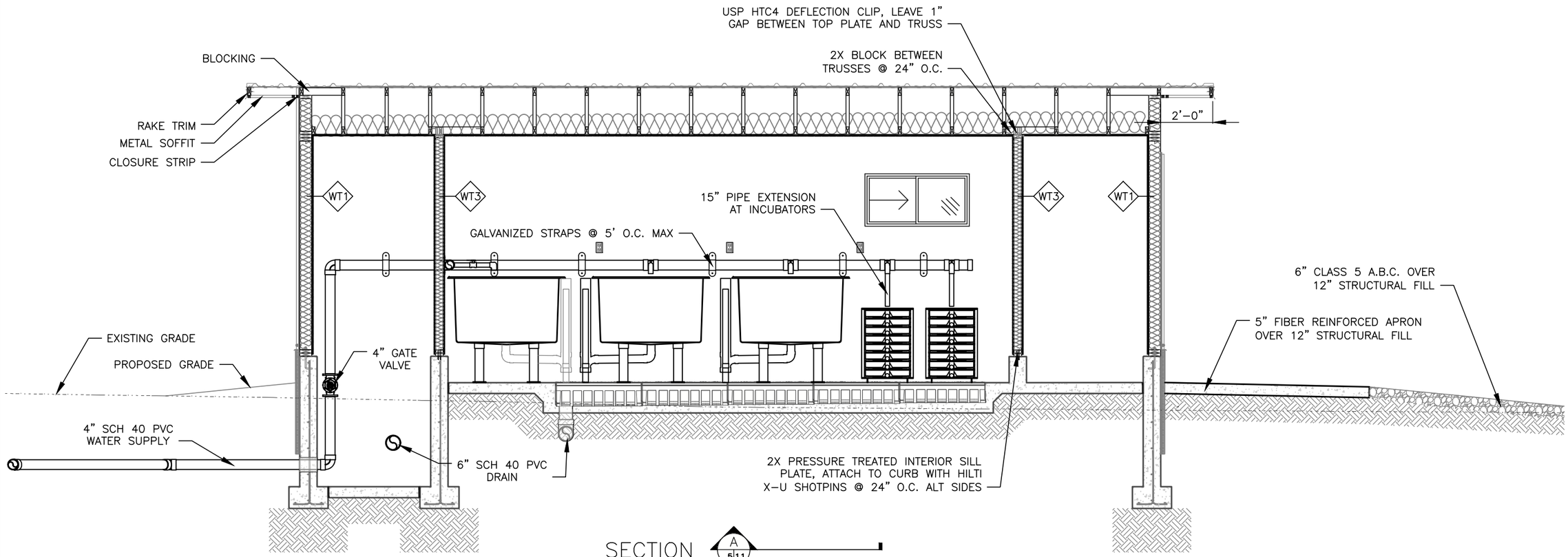
REVISIONS:	DATE	BY

DESIGNER:	JH	08/24
DRAFTER:	JH	08/24
CHECKED BY:		
APPROVED:		
APPROVED:		
CHIEF ENGR.:		

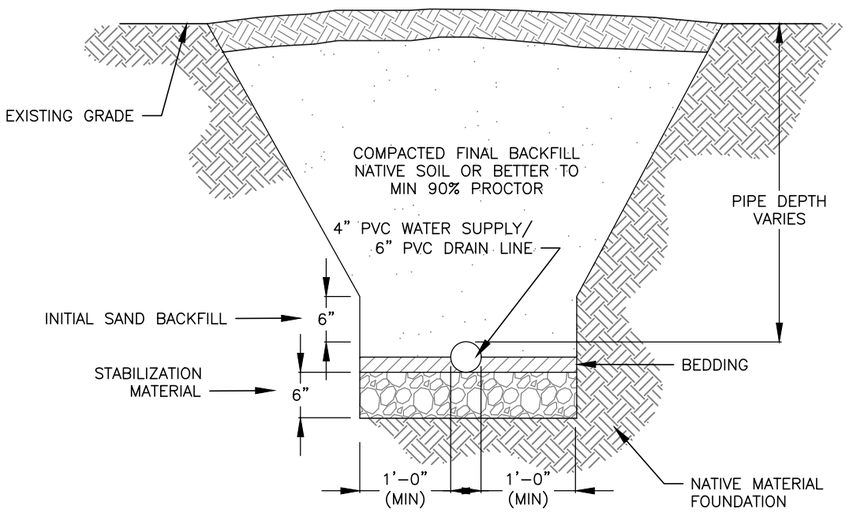
DATE	
PROJECT NO.	SCA23A
SHEET NO.	10 OF 11

FINAL FOR BID

SECTIONS AND DETAILS



SECTION A 5|11



B 11|11 TRENCH DETAIL

SECTIONS AND DETAILS (2)

2 0 2 4

SCALE IN FEET

RIFLE FALLS SFU

ISOLATION BUILDING

COLORADO WILDLIFE PARKS

REVISIONS:	DATE	BY

DESIGNER:	JH
DRAFTER:	JH
CHECKED BY:	
APPROVED:	
APPROVED:	
CHIEF ENGR.:	

DATE:	08/24
PROJECT NO.	08/24
SCA23A	
SHEET NO.	
11	
OF 11	

FINAL FOR BID

SECTIONS AND DETAILS (2)

COLORADO
Parks and Wildlife
Department of Natural Resources

Rifle Falls SFU - Isolation Building
PART 4 - APPENDICES

PROJECT I.D. NO. SCA23A
IFB1: 2025*169

PRE-BID CONFERENCE: April 2, 2025 at 11:00 AM

BID OPENING: April 16, 2025 at 1:00 PM

TABLE OF CONTENTS
Rifle Falls SFU - Isolation Building
SCA23A

PART 4 - APPENDICES

APPENDIX A – GEOTECHNICAL INVESTIGATION

Rifle Falls SFU - Isolation Building
SCA23A

Huddleston-Berry
Engineering & Testing, LLC

2789 Riverside Parkway
Grand Junction, Colorado 81501
Phone: 970-255-8005
Info@huddlestonberry.com

October 26, 2023
Project#01963-0010

Colorado Parks and Wildlife
6060 Broadway
Denver, Colorado 80216

Attention: Mr. Jordan Hasz

Subject: Geotechnical Investigation
Rifle Falls Iso Building
Rifle, Colorado

Dear Mr. Hasz,

This letter presents the results of a geotechnical investigation conducted by Huddleston-Berry Engineering & Testing, LLC (HBET) at the Rifle Falls Hatchery in Rifle, Colorado. The site location is shown on Figure 1. The scope of our investigation included evaluating the subsurface conditions at the site to aid in developing foundation recommendations for the proposed structure.

Site Conditions

At the time of the investigation, the site was occupied by miscellaneous hatchery infrastructure and East Rifle Creek. However, the proposed building site was relatively open with a general slight slope down to the south. Vegetation in the vicinity of the building site consisted primarily of weeds and grasses. The project site was located within Rifle Falls State Park.

Subsurface Investigation

The subsurface investigation included two test pits as shown on Figure 2 – Site Plan. The test pits were excavated to depths of 8.0 and 9.0 feet below the existing ground surface. Typed test pit logs are included in Appendix A.

As indicated on the logs, the subsurface conditions encountered in the test pits were fairly consistent. The test pits encountered 0.5 to 1.0 foot of topsoil above brown, moist, medium dense to loose silt with sand soils that extended to the bottom of TP-1 and to a depth of 7.0 feet in TP-2. The silt soils in TP-2 were underlain by brown, moist, loose silty sand soils to the bottom of the excavation. Groundwater was not encountered in the subsurface at the time of the investigation.

Laboratory Testing

Laboratory testing was conducted on samples of the native soils encountered in the test pits. The testing included grain size analysis, Atterberg limits determination, natural moisture content and density determination, swell/consolidation testing, and maximum dry density and optimum moisture content (Proctor) determination. The laboratory testing results are included in Appendix B.

The laboratory testing results indicated that the native silt soils are moderately plastic. In addition, the silt soils were indicated to be slightly collapsible, with up to approximately 2.0% collapse measured in the laboratory.

The silty sand soils were indicated to be non-plastic. In general, based upon the Atterberg limits and our experience with similar soils in the vicinity of the subject site, the native sand soils are also anticipated to be slightly collapsible.

Foundation Recommendations

Based upon the results of the subsurface investigation and nature of the proposed construction, shallow foundations are recommended. Spread footings and monolithic (turndown) structural slabs are both appropriate foundation alternatives. However, as discussed previously, the native soils were indicated to be slightly collapsible. Therefore, in order to provide a stable bearing stratum and limit the potential for excessive differential movements, it is recommended that the foundations be constructed above a minimum of 24-inches of structural fill.

The native soils are suitable for reuse as structural fill. Imported structural fill should consist of a granular, non-expansive, ***non-free draining*** material with greater than 10% passing the #200 sieve and Liquid Limit of less than 30. However, all proposed imported structural fill materials should be approved by HBET.

For spread footing foundations, the footing areas may be trenched. However, for monolithic slab foundations, the structural fill should extend across the entire building pad area to a depth of 24-inches below the turndown edges. Structural fill should extend laterally beyond the edges of the foundation a distance equal to the thickness of structural fill.

Prior to placement of structural fill, it is recommended that the bottoms of the foundation excavations be scarified to a depth of 6 to 8-inches, moisture conditioned, and re-compacted to a minimum of 95% of the standard Proctor maximum dry density, within ±2% of the optimum moisture content as determined in accordance with ASTM D698. Structural fill should be moisture conditioned, placed in maximum 8-inch loose lifts, and compacted to a minimum of 95% of the standard Proctor maximum dry density for fine grained soils or modified Proctor maximum dry density for coarse grained soils, within ±2% of the optimum moisture content as determined in accordance with ASTM D698 or D1557C, respectively.

Structural fill should be extended to within 0.1-feet of the bottom of the foundation. No more than 0.1-feet of gravel should be placed below the footings or turndown edge as a leveling course.

For structural fill consisting of approved imported granular materials and foundation building pad preparation as recommended, a maximum allowable bearing capacity of 1,500 psf may be used. In addition, a modulus of 150 pci may be used for structural fill consisting of the native soils and a modulus of 200 pci may be used for approved imported structural fill materials. Foundations subject to frost should be at least 36-inches below the finished grade.

Any stemwalls or retaining walls should be designed to resist lateral earth pressures. For backfill consisting of the native soils or imported granular, non-free draining, non-expansive material, we recommend that the walls be designed for an active equivalent fluid unit weight of 45 pcf in areas where no surcharge loads are present. An at-rest equivalent fluid unit weight of 65 pcf is recommended for braced walls. Lateral earth pressures should be increased as necessary to reflect any surcharge loading behind the walls.

Water soluble sulfates are common to the soils in Western Colorado. Therefore, at a minimum, Type I-II sulfate resistant cement is recommended for construction at this site.

Non-Structural Floor Slab and Exterior Flatwork Recommendations

In order to reduce the potential for excessive differential movements, it is recommended that non-structural floating floor slabs be constructed above a minimum of 18-inches of structural fill with subgrade preparation, structural fill materials, and fill placement be in accordance with the *Foundation Recommendations* section of this report. It is recommended that exterior flatwork be constructed above a minimum of 12-inches of structural fill.

Drainage Recommendations

Grading and drainage are critical for the long-term performance of the structure and grading around the structure should be designed to carry precipitation and runoff away from the structure. It is recommended that the finished ground surface drop at least twelve inches within the first ten feet away from the structure. It is also recommended that landscaping within five feet of the structure include primarily desert plants with low water requirements. In addition, it is recommended that irrigation, including drip lines, within ten feet of foundations be minimized.

HBET recommends that downspout extensions be used which discharge a minimum of 15 feet from the structure or beyond the backfill zone, whichever is greater. However, if subsurface downspout drains are utilized, they should be carefully constructed of solid-wall PVC and should daylight a minimum of 15 feet from the structure. In addition, an impermeable membrane is recommended below subsurface downspout drain lines. Dry wells should not be used.

General Notes

The recommendations included above are based upon the results of the subsurface investigation and on our local experience. These conclusions and recommendations are valid only for the proposed construction.

As discussed previously, the subsurface conditions encountered in the test pits were fairly consistent. However, the precise nature and extent of any subsurface variability may not become evident until construction. As a result, it is recommended that HBET provide construction materials testing and engineering oversight during the entire construction process.

It is important to note that the recommendations herein are intended to reduce the risk of structural movement and/or damage, to varying degrees, associated with volume change of the native soils. However, HBET cannot predict long-term changes in subsurface moisture conditions and/or the precise magnitude or extent of volume change. Where significant increases in subsurface moisture occur due to poor grading, improper stormwater management, utility line failure, excess irrigation, or other cause, either during construction or the result of actions of the property owner, several inches of movement are possible. In

addition, any failure to comply with the recommendations in this report releases Huddleston-Berry Engineering & Testing, LLC of any liability with regard to the structure performance.

We are pleased to be of service to your project. Please contact us if you have any questions or comments regarding the contents of this report.

Respectfully Submitted:
Huddleston-Berry Engineering and Testing, LLC

Michael A. Berry, P.E.
Vice President of Engineering

FIGURES

FIGURE 1
Site Location Map

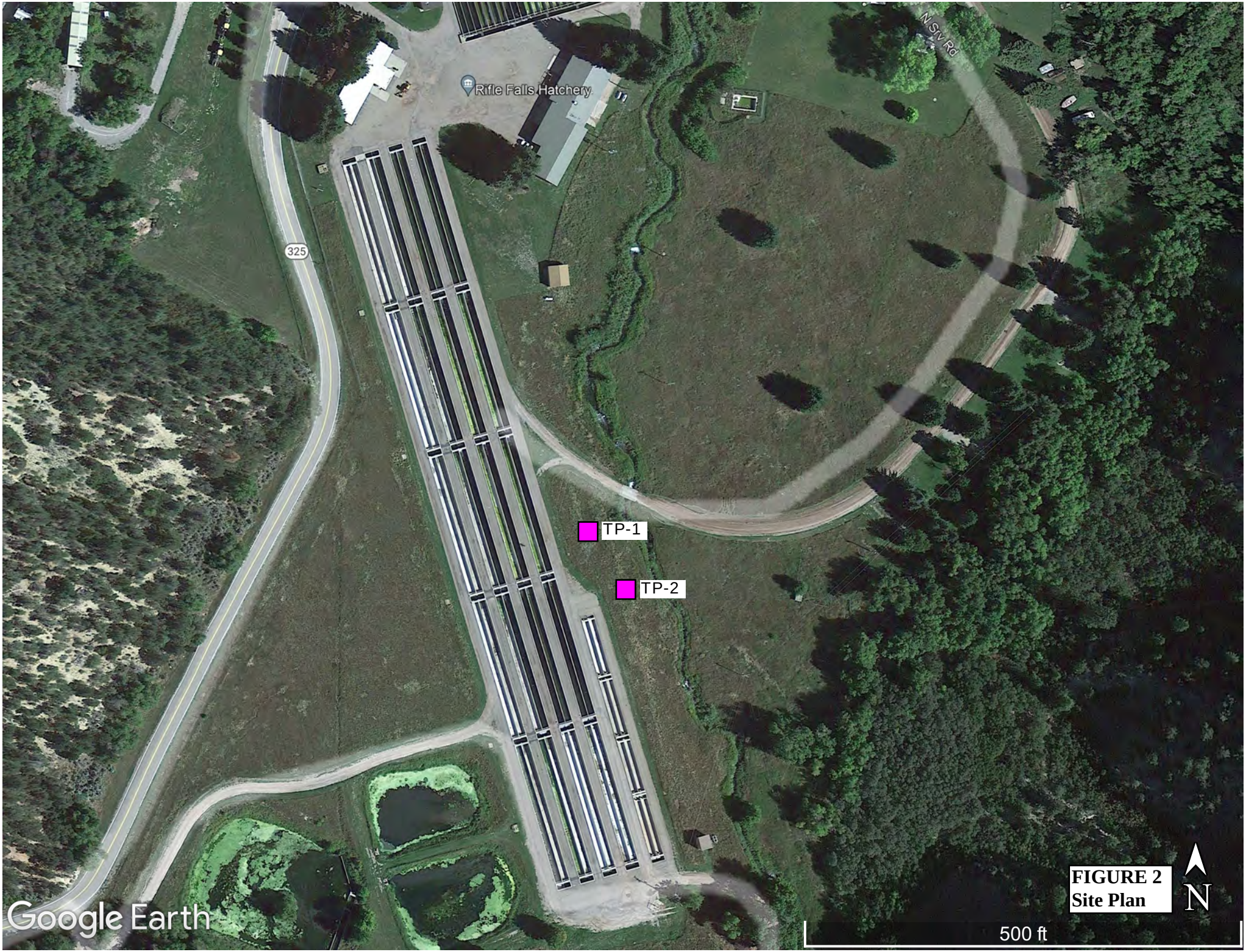


FIGURE 2
Site Plan

APPENDIX A
Typed Test Pit Logs

Huddleston-Berry Engineering & Testing, LLC
2789 Riverside Parkway
Grand Junction, CO 81501
970-255-8005

TEST PIT NUMBER TP-1

CLIENT Colorado Parks and Wildlife
PROJECT NAME Rifle Falls Iso Building
PROJECT NUMBER 01963-0010
PROJECT LOCATION Rifle, CO
DATE STARTED 9/21/23 **COMPLETED** 9/21/23
GROUND ELEVATION _____ **TEST PIT SIZE** _____
EXCAVATION CONTRACTOR Client
GROUND WATER LEVELS:
EXCAVATION METHOD Trackh/Backhoe
AT TIME OF EXCAVATION Dry
LOGGED BY TEC **CHECKED BY** MAB
AT END OF EXCAVATION Dry
NOTES _____
AFTER EXCAVATION ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		Sandy Silt with Organics (TOPSOIL)										
		SILT with Sand (ML), brown, moist, medium dense to loose										
			MC 1				67	7				
2.5		GB-1: Lab Classified	GB 1					7	32	31	1	77
5.0												
7.5												
		Bottom of test pit at 9.0 feet.										

Huddleston-Berry Engineering & Testing, LLC
2789 Riverside Parkway
Grand Junction, CO 81501
970-255-8005

TEST PIT NUMBER TP-2

CLIENT Colorado Parks and Wildlife
PROJECT NAME Rifle Falls Iso Building
PROJECT NUMBER 01963-0010
PROJECT LOCATION Rifle, CO
DATE STARTED 9/21/23 **COMPLETED** 9/21/23
GROUND ELEVATION _____ **TEST PIT SIZE** _____
EXCAVATION CONTRACTOR Client
GROUND WATER LEVELS:
EXCAVATION METHOD Trackh/Backhoe
AT TIME OF EXCAVATION Dry
LOGGED BY TEC **CHECKED BY** MAB
AT END OF EXCAVATION Dry
NOTES _____
AFTER EXCAVATION ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		Sandy Silt with Organics (TOPSOIL)										
		SILT with Sand (ml), brown, moist, medium dense to loose										
2.5												
5.0												
7.5		Silty SAND (SM), brown, moist, loose GB-1: Lab Classified	GB 1					10	NP	NP	NP	16
		Bottom of test pit at 8.0 feet.										

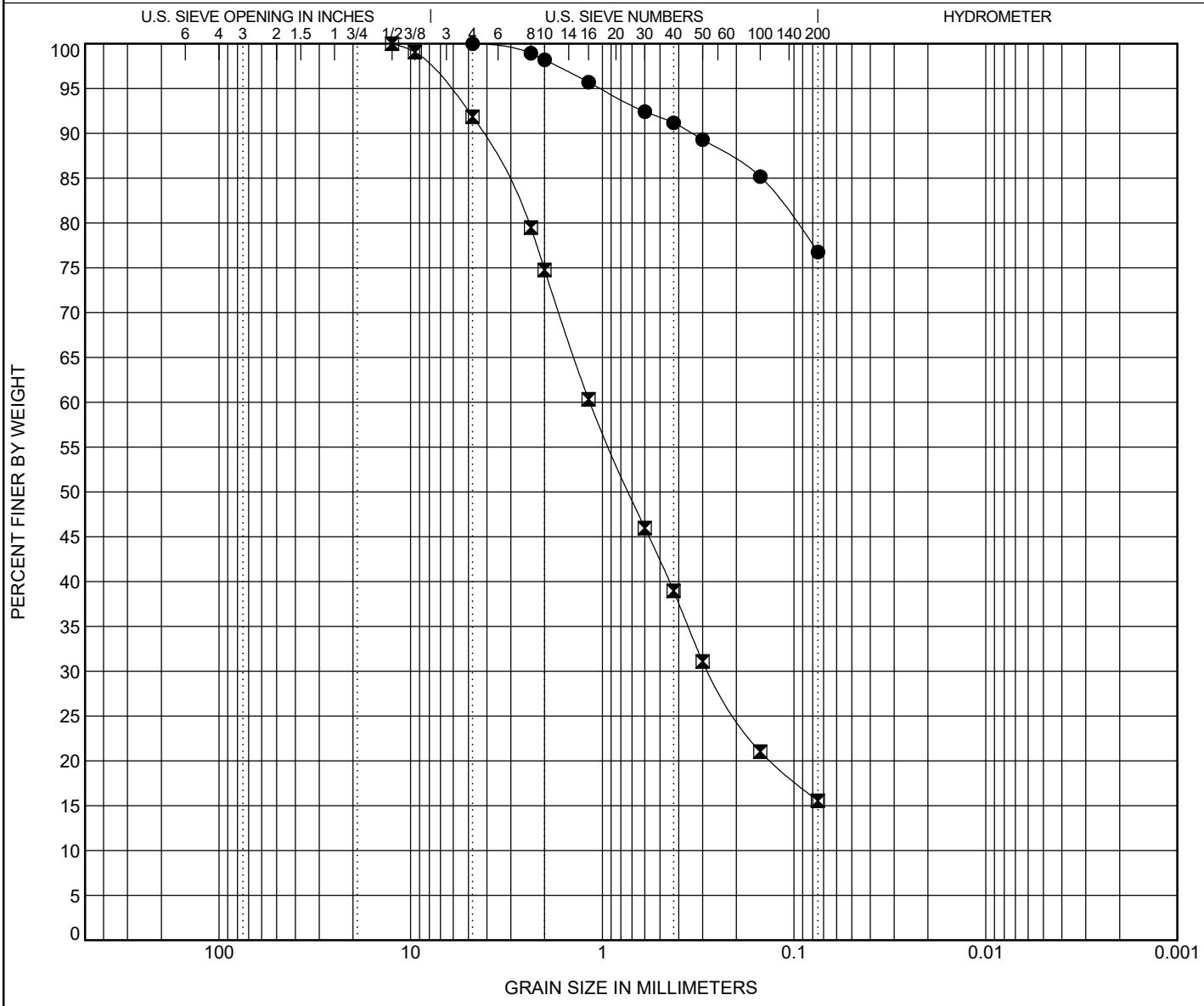
APPENDIX B
Laboratory Testing Results

Huddleston-Berry Engineering & Testing, LLC
2789 Riverside Parkway
Grand Junction, CO 81501
970-255-8005

GRAIN SIZE DISTRIBUTION

CLIENT Colorado Parks and Wildlife **PROJECT NAME** Rifle Falls Iso Building

PROJECT NUMBER 01963-0010 **PROJECT LOCATION** Rifle, CO



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● TP-1, GB-1 9/21	SILT with SAND(ML)	32	31	1		
⊠ TP-2, GB-1 9/21	SILTY SAND(SM)	NP	NP	NP		

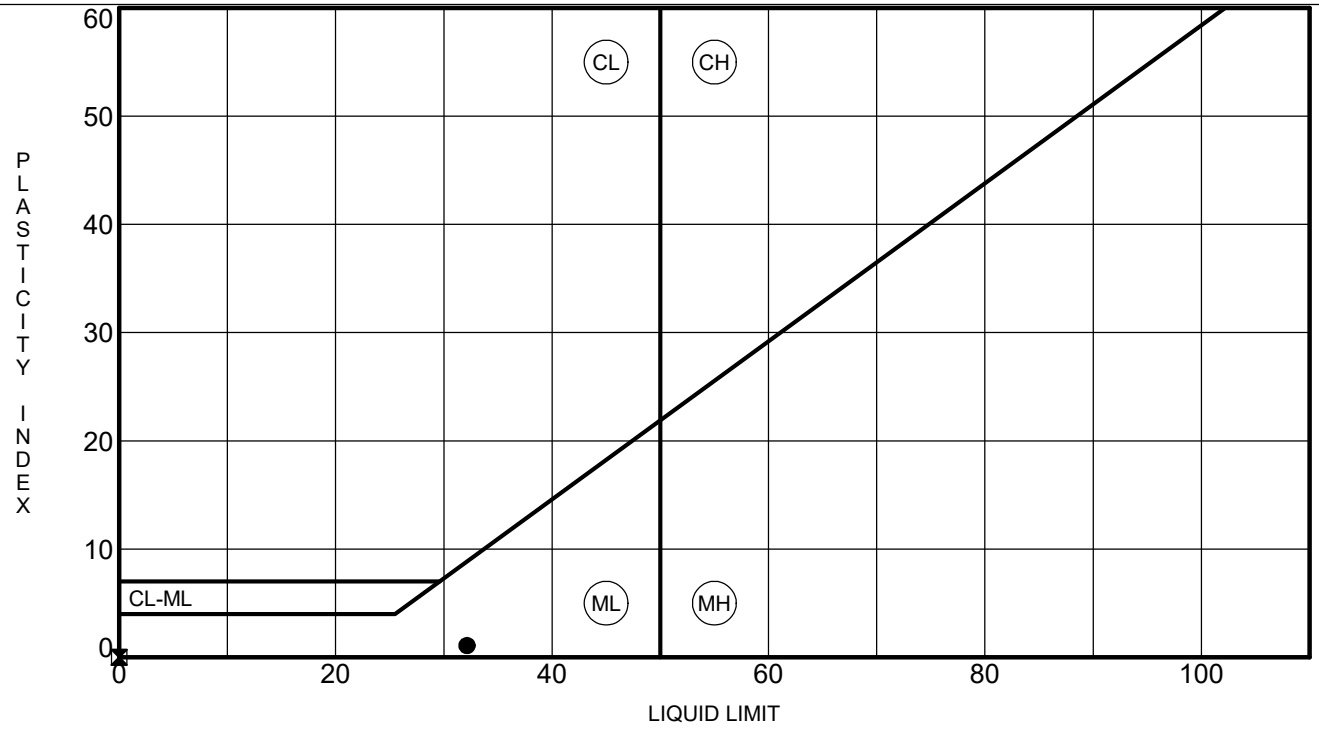
Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TP-1, GB-1 9/21	4.75				0.0	23.2	76.8	
⊠ TP-2, GB-1 9/21	12.5	1.162	0.279		8.1	76.3	15.6	

Huddleston-Berry Engineering & Testing, LLC
2789 Riverside Parkway
Grand Junction, CO 81501
970-255-8005

ATTERBERG LIMITS' RESULTS

CLIENT Colorado Parks and Wildlife **PROJECT NAME** Rifle Falls Iso Building

PROJECT NUMBER 01963-0010 **PROJECT LOCATION** Rifle, CO



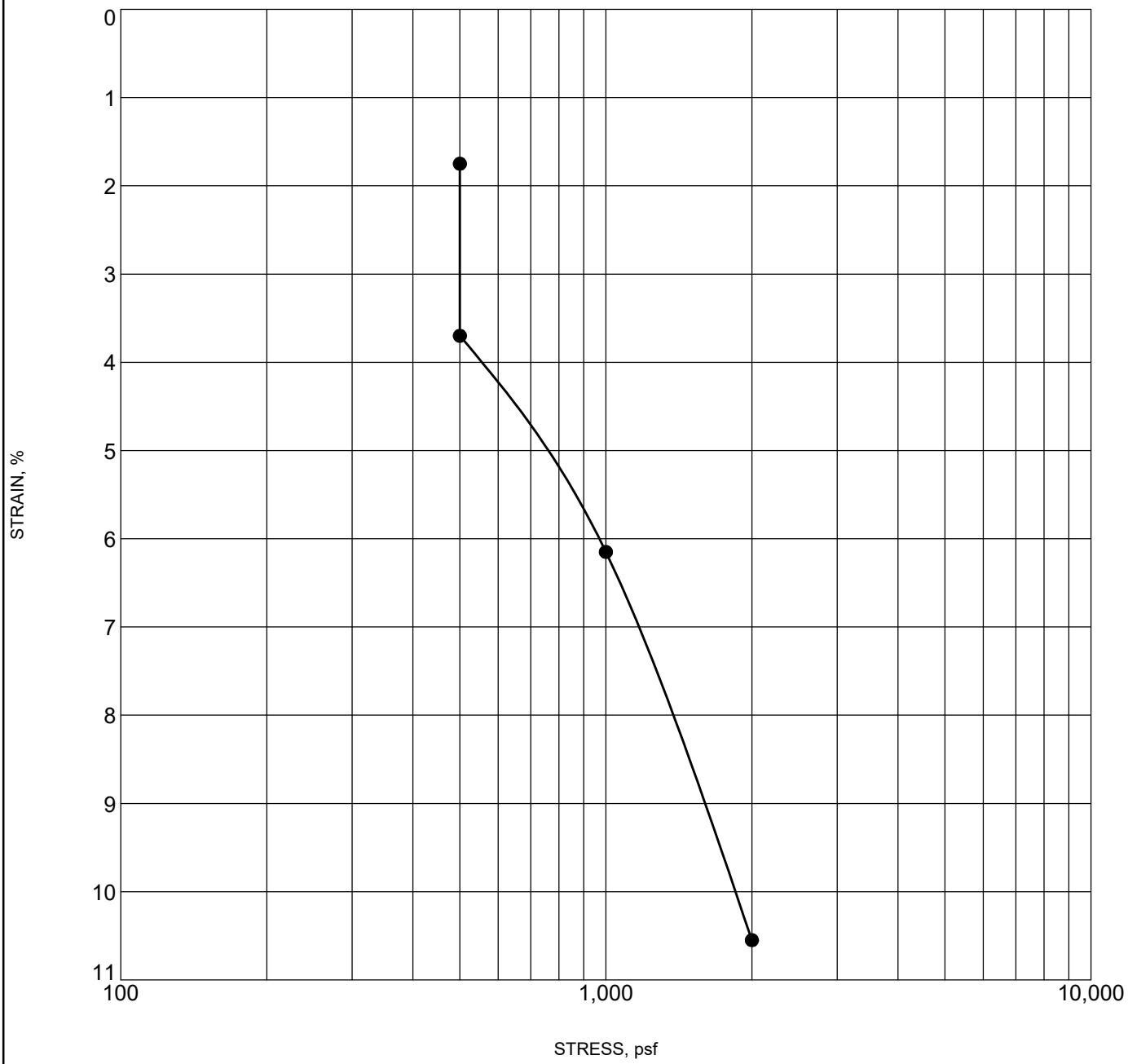
	Specimen Identification		LL	PL	PI	#200	Classification
●	**TP-1, GB-1**	**9/21**	**32**	**31**	**1**	**77**	**SILT with SAND(ML)**
⧓	**TP-2, GB-1**	**9/21**	**NP**	**NP**	**NP**	**16**	**SILTY SAND(SM)**

Huddleston-Berry Engineering & Testing, LLC
2789 Riverside Parkway
Grand Junction, CO 81501
970-255-8005

CONSOLIDATION TEST

CLIENT Colorado Parks and Wildlife **PROJECT NAME** Rifle Falls Iso Building

PROJECT NUMBER 01963-0010 **PROJECT LOCATION** Rifle, CO

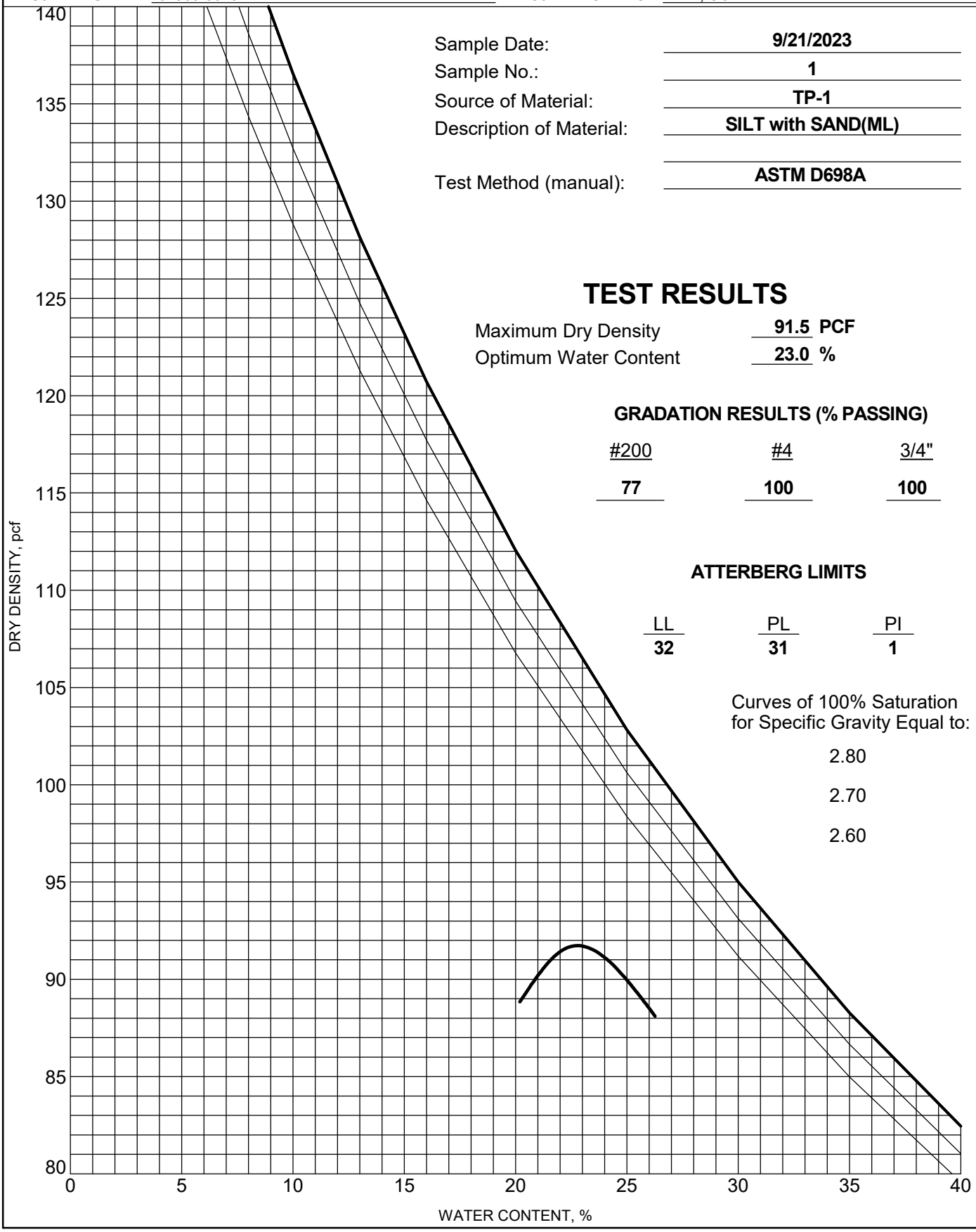


Specimen Identification	Classification	γ_d	MC%
● TP-1, MC-1 2.0		67	7

Huddleston-Berry Engineering & Testing, LLC
2789 Riverside Parkway
Grand Junction, CO 81501
970-255-8005

MOISTURE-DENSITY RELATIONSHIP

CLIENT Colorado Parks and Wildlife
PROJECT NAME Rifle Falls Iso Building
PROJECT NUMBER 01963-0010
PROJECT LOCATION Rifle, CO



Sample Date: **9/21/2023**
Sample No.: **1**
Source of Material: **TP-1**
Description of Material: **SILT with SAND(ML)**
Test Method (manual): **ASTM D698A**

TEST RESULTS

Maximum Dry Density **91.5** PCF
Optimum Water Content **23.0** %

GRADATION RESULTS (% PASSING)

#200	#4	3/4"
77	100	100

ATTERBERG LIMITS

LL	PL	PI
32	31	1

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

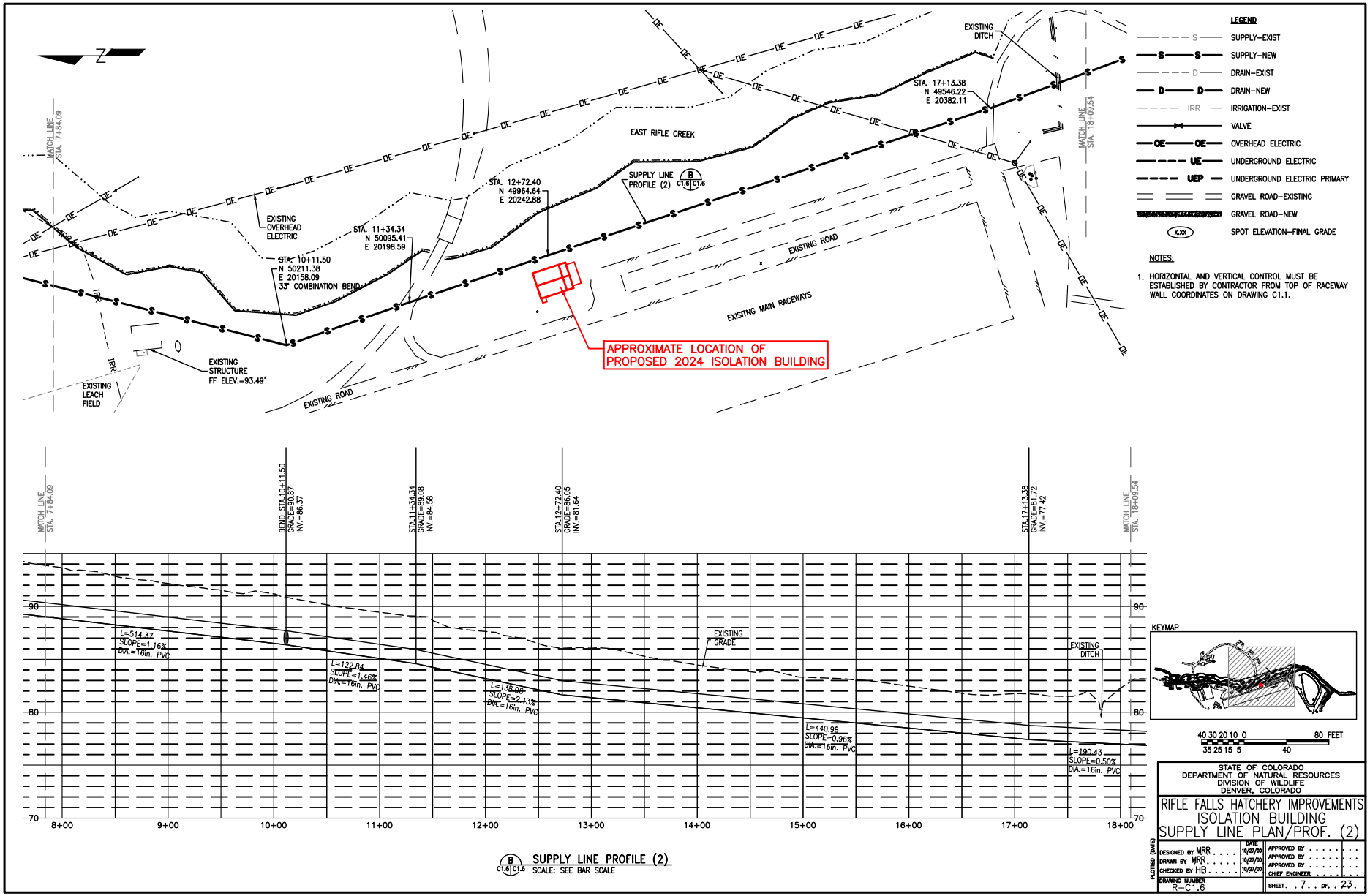
2.70

2.60

COMPACTION 01963-0010 RIFLE FALLS BUILDING.GPJ GINT US LAB.GDT 10/26/23

APPENDIX B – 2021 ISOLATION BUILDING SUPPLY ALIGNMENT

Rifle Falls SFU - Isolation Building
SCA23A



NOTES:

- THIS IS A PORTION OF THE 2001 ISOLATION BUILDING PROJECT BID DOCUMENTS, INTENDING TO SHOW THE APPROXIMATE ALIGNMENT OF THE EXISTING 16" PVC ISOLATION BUILDING SUPPLY LINE
- THE ALIGNMENT WAS INTENDED FOR ADVERTISEMENT PURPOSES ONLY, AND MAY NOT MATCH FIELD CONDITIONS
- ELEVATIONS CORRESPOND WITH THE 2024 ISOLATION BUILDING SITE PLAN WITH A 12.15' OFFSET

APPENDIX C – XCEL ENERGY SERVICE ORDER CONFIRMATION

Rifle Falls SFU - Isolation Building
SCA23A

414 Nicollet Mall
Minneapolis, MN 55401

May 02, 2024

JORDAN HASZ
11466 Highway 325
Rifle, CO-81650-9209

Re: Service Order Confirmation

App Reference#:	05790405
Service type:	Commercial Electric
Service Address:	11466, HIGHWAY 325 , RIFLE CO, 81650-9209
Legal Description:	Lot: Block:

Gas Installation* *Where Applicable.(Gas not available in TX, NM and SD)*
Prior to Xcel Energy service installation, please make sure the following are completed on your site:

- For builders, the site must be within 4”-6” of final grade in installation area.
- The path must be clear of all obstacles from the meter location to the distribution source.
- All private utilities must be clearly marked or identified including sprinkler systems, septic tanks, sewer lines, drain fields, invisible fences, electric lines, pipelines and water wells. Xcel Energy is not responsible for damage to these items if they are not clearly marked.

Prior to energizing the system:

- Customer piping must be inspected before gas is turned on in certain service territories

Electric Installation
Prior to Xcel Energy service installation, please make sure the following are completed on your site:

- For builders, the site must be within 4”-6” of final grade in installation area.
- All private utilities must be clearly marked or identified including sprinkler systems, septic tanks, sewer lines, drain fields, invisible fences, electric lines, pipelines and water wells. Xcel Energy is not responsible for damage to these items if they are not clearly marked.

Prior to energizing the system:

- Be sure all electrical approvals are completed and filed with Xcel Energy.

If there are any changes or addition to this information, please call the Builders Call Line at 1-800-628-2121 or email us at BCLCO@xcelenergy.com. Our representatives are available from 7AM to 5PM, Monday through Friday. Thank you for requesting service from Xcel Energy. We appreciate your business.

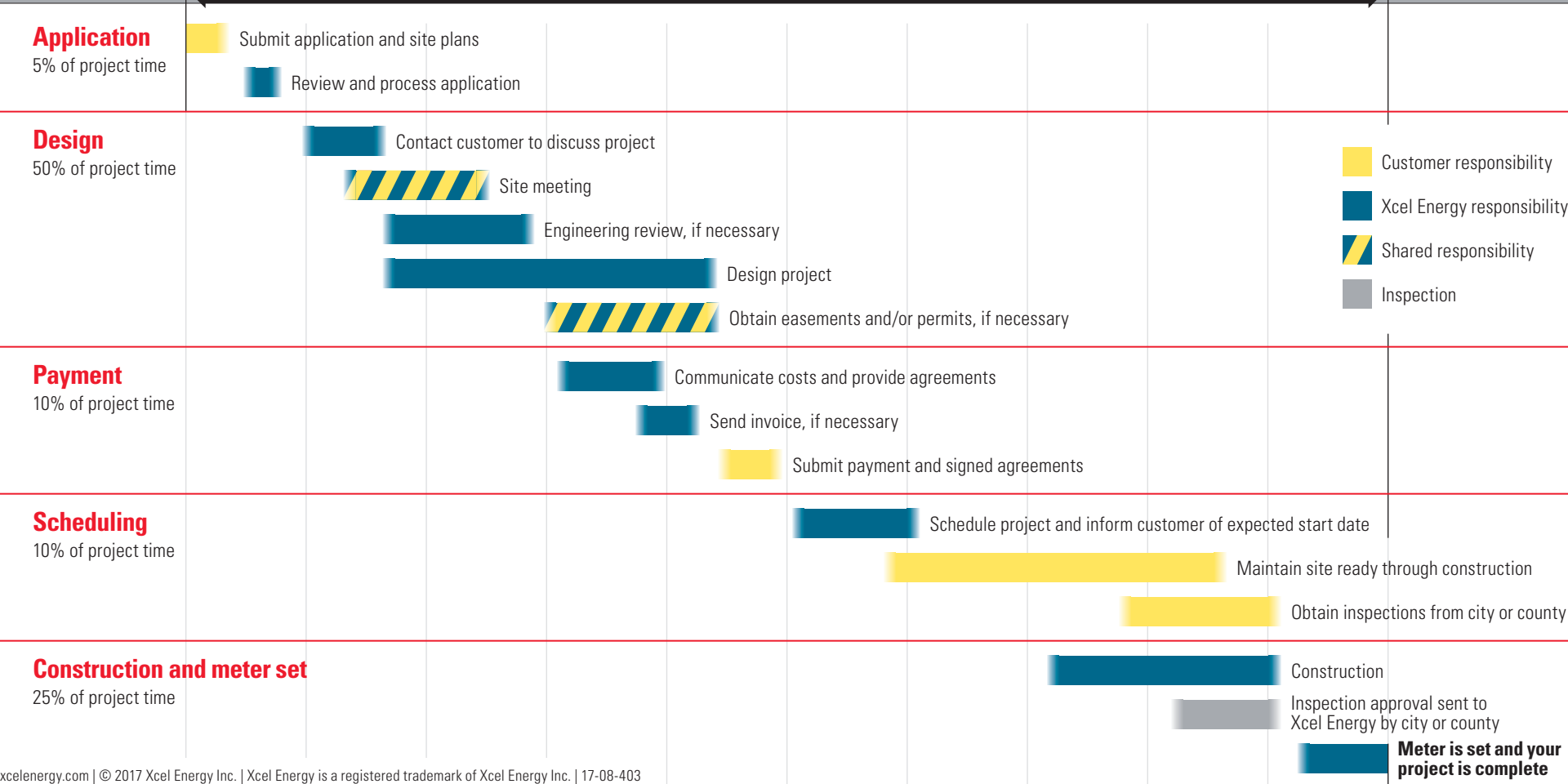
Sincerely,

Builder's Call Line
Xcel Energy

Installing and connecting service

Xcel Energy®
RESPONSIBLE BY NATURE®

Scope of work, required permits and weather conditions can impact the time frame. **Total project duration is typically three to six months.**



APPENDIX D – GENERAL CONDITIONS FOR CAPITAL CONSTRUCTION

Rifle Falls SFU - Isolation Building
SCA23A

General Conditions for Capital Construction

July 18, 2018

State of Colorado
Department of Natural Resources

Colorado Parks and Wildlife

TO ALL CONTRACTORS

The General Conditions for Capital Construction dated 2018 are a part of all contracts.

It shall be the responsibility of the Contractor to possess and retain this document for bidding purposes for all Colorado Parks and Wildlife projects.

GENERAL CONDITIONS
INDEX TO SECTION

SECTION 1 - DEFINITIONS AND TERMS

1.1 ABBREVIATIONS:

Wherever the following abbreviations are used in these Specifications or on the Plans they shall be construed the same as the respective expressions represented:

AAN	American Association of Nurserymen
AAR	Association of American Railroads
AASHTO	American Association of State Highway Officials
ACI	American Concrete Institute
AGC	Associated General Contractors of America
AGA	American Gas Association
AI	Asphalt Institute
AIEE	American Institute of Electrical Engineers
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ANSI	American National Standards Institute, Inc.
ARA	American Railway Association
AREA	American Railway Engineering Association
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating Refrigeration and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing and Materials
AWG	American Wire Gauge
AWPA	American Wood Preservers' Association
AWS	American Welding Society
AWWA	American Water Works Association
CDOT	Colorado Department of Transportation
CDPHE	Colorado Department of Health and Environment
CRS	Colorado Revised Statutes, 1973, as amended
CRSI	Concrete Reinforcing Steel Institute
DFPA	Douglas Fir Plywood Association
DIPRA	Ductile Iron Pipe Research Association
EIA	Electronic Industries Association
FHWA	Federal Highway Administration
FSS	Federal Specifications and Standards
GC	General Conditions for Capital Construction
GSA	General Services Administration
ICBO	International Conference of Building Officials
IEEE	Institute of Electrical and Electronics Engineers
IES	Illuminating Engineers Society
IMSA	International Municipal Signal Association
IPCEA	Insulated Power Cable Engineers Association
ITE	Institute of Transportation Engineers
NBS	National Bureau of Standards
NEC	National Electrical Code
NEMA	National Electrical Manufacturers' Association
OSHA	Occupation Safety and Health Association
IPC	International Plumbing Code
IBC	International Building Code
UL	Underwriters' Laboratories Incorporated

ADVERTISEMENT: A public announcement inviting Proposals for work to be performed or materials to be furnished.

AWARD: The acceptance by the Division of a Proposal.

BASIS OF PAYMENT: The terms under which "work" is paid, designated as a "Pay Item," which is paid for in accordance with the quantity measured and the "Pay Unit."

BID DOCUMENTS: All documents, whether attached or incorporated by reference, utilized for soliciting Proposals. The advertisement will indicate with reasonable accuracy the quantity and location of the work to be done or the character and quantity of the material to be furnished and the time and place of the opening of Proposals. These documents may be called Invitation for Bid (IFB), Documented Quotation (DQ) or Request for Proposal (RFP).

BIDDER: An individual, firm, corporation, or other legal entity submitting a Proposal for the advertised work. A contractor intending to contract with the Division for performance of prescribed work.

CALENDAR DAY: Each and every day shown on the calendar, beginning and ending at midnight.

CAPITAL PROGRAM MANAGER: The Capital Program Manager of the Division authorized by the Director to represent the Division in the functions of carrying out the capital construction program acting either directly or through authorized representatives.

CERTIFIED INVOICE: An invoice from a supplier which has been endorsed by the Contractor guaranteeing that the material, service or labor was purchased and received for the project and establishing the value of same for which reimbursement is to be made.

CHANGE ORDER: A written order issued to the Contractor by the Division covering contingencies, extra work, increases or decreases in contract quantities, and additions, deletions, or other alterations to the Bid Documents within the scope of the Contract, and establishing the basis of payment and time adjustments for the work affected by the changes. The Change Order is the only method authorized for changing the Contract.

CITY OR TOWN: A subdivision of the county used to designate or identify the location of the proposed work.

CONSTRUCTION REQUIREMENT: Specifications covering performance of work required for proper completion and acceptance.

CONTRACT: The written agreement between the Division and the Contractor setting forth the rights and obligations of the parties thereunder, including but not limited to the performance of the work, the furnishing of labor and materials and the basis of payment. The Contract Documents which may include but not limited to Purchase Order, Bid Documents, General Conditions for Capital Construction, Contract Proposal, Agreement, Bid Schedule, Contract Bond, Certificate of Insurance, Specifications, Special Conditions, general and detailed Plans, Letter of Award and Notice to Proceed, and any Change Orders and Amendments that are required to complete the construction of the work in an acceptable manner, including authorized extensions thereof, all of which constitute one instrument.

CONTRACT BOND: The approved form of security, executed by the Contractor and the Contractor Surety or Sureties, guaranteeing complete performance of the Contract and all Change Orders pertaining thereto and the payment of all legal obligations pertaining to the construction of the project.

CONTRACT ITEM (PAY ITEM): A specifically described unit of work for which a price is provided in the Contract.

CONTRACT TERM: The time from execution of the contract to the completion of the warranty period.

CONTRACTOR: The individual, firm, or corporation, or other legal entity contracting with the State of Colorado through the Colorado Parks and Wildlife for performance of prescribed work.

COUNTY: The county in which the work is to be done.

DEPARTMENT: State Department of Natural Resources, which is a department within the executive branch of the State of Colorado.

DIRECTOR: The Director of Colorado Parks and Wildlife.

DIVISION: Colorado Parks and Wildlife, which is a Division within the State Department of Natural Resources.

EQUIPMENT: All machinery and equipment, together with the necessary supplies for upkeep and maintenance, and also tools and apparatus necessary for the proper construction and acceptable completion of the work.

EXECUTIVE DIRECTOR: The Executive Director of the Colorado Department of Natural Resources.

EXPRESSION BY OR TO THE PROJECT MANAGER: In order to avoid cumbersome and confusing repetition of expressions in these Specifications, it is provided that whenever anything is, or is to be done, if, as, of, when, or where "contemplated, required, determined, directed, specified, interpretation, interpreted, authorized, ordered, given, designated, indicated, considered necessary, deemed necessary, permitted, reserved, suspended, established, approval, approved, disapproved, acceptable, unacceptable, suitable, accepted, satisfactory, unsatisfactory, sufficient, insufficient, rejected, or condemned" it shall be understood as if the expression were followed by the words "by the Project Manager" or "to the Project Manager."

EXTRA WORK: Work not provided for in the Contract as awarded but found by the Project Manager to be essential or appropriate to the satisfactory completion of the Contract within its intended scope.

HOLIDAYS: Holidays recognized by the State of Colorado are:

- New Year's Day
- Dr. Martin Luther King Jr.'s Birthday
- President's Day
- Memorial Day
- Independence Day
- Labor Day
- Columbus Day
- Veterans Day
- Thanksgiving Day
- Christmas Day

When New Year's Day, Independence Day, Veterans Day or Christmas Day fall on Saturday or Sunday, the following Monday or preceding Friday shall be considered a holiday.

Additional legal holidays, when designated by the Governor or the President of the United States, will also be recognized by the State.

INSPECTOR: The Project Manager's authorized representative assigned to make detailed inspections of contract performance.

LABORATORY: A testing laboratory certified or having expertise in the area of testing required and acceptable to the Project Manager.

MATERIALS: All components required for use in the construction of the project.

METHOD OF MEASUREMENT: The manner in which a "pay item" or "bid item" is measured to conform with the "Pay Unit."

NOTICE TO PROCEED: Written notice to the Contractor to proceed with the contract work including the date of beginning of contract time.

PERFORMANCE TIME: The number of calendar days allowed or specified date for completion of the Project as identified in the Bid Documents, including authorized time extensions. Where a calendar date of completion is specified, the Project shall be completed on or before that date.

PLANS: The drawings or reproductions provided by the Division which show the location, character, dimensions, and details of the work to be done.

PROJECT: The specific area of work together with all appurtenances and construction to be performed thereon under the Contract.

PROJECT MANAGER: The Director's duly authorized representative who is in direct charge of the work and is responsible for the administration and completion of the project under contract. The Project Manager is also responsible for acting on written appeals made by the Contractor relating to contract claims for additional compensation or extension of contract time.

PROPOSAL: The offer of a Bidder, on the prescribed form, to perform the work at the prices quoted. Also called Bid or Schedule.

PROPOSAL FORM: The documents furnished by the Division on which the offer of a Bidder is submitted. Also called Bid Proposal.

PROPOSAL GUARANTY (BID SURETY): The security furnished with a Proposal to guarantee that the Bidder will enter into the Contract if the Contractor's Proposal is accepted.

PURCHASE ORDER: A document, in a form prescribed by the Colorado State Controller, prepared and approved by an authorized employee of the State for the purpose of encumbering funds and securing construction services from the Contractor.

QUESTIONNAIRE: The specified forms on which the Contractor shall furnish required information as to the Contractor's ability to perform and finance the work.

SALVAGEABLE MATERIAL: Material that can be saved or salvaged. Unless designated or directed by the Project Manager or shown on the Plans, all salvageable materials shall remain the property of the Division.

SHUTDOWN: The authorized period of time when work is suspended.

SPECIAL CONDITIONS: Specifications covering conditions peculiar to an individual project.

SPECIFICATIONS: A general term applied to all directions, provisions and requirements pertaining to performance of the work.

SPECIFIED COMPLETION DATE: The date on which the contract work is specified to be completed.

STATE: The State of Colorado acting through its authorized representative.

STRUCTURES: Bridges, dams, culverts, catch basins, drop inlets, retaining walls, raceways, cribbing, manholes, buildings, sewers, service pipes, underdrains, foundation drains, and other features which may be encountered in the work.

SUBCONTRACTORS: An individual or entity to whom the Contractor sublets part of the Contract.

SUPERINTENDENT: The Contractor's authorized representative in responsible charge of the work.

SURETY: The corporation, partnership or individual, other than the Contractor, executing a Bond furnished by the Contractor.

TITLES OR HEADINGS: The titles or headings of the sections and subsections herein are intended for convenience of reference and shall not be considered as having any bearing on their interpretation.

WORK: The furnishing of all labor, materials, equipment, and incidentals necessary to successfully complete the project according to all duties and obligations imposed by the Contract.

WORKING DAY: Any day, exclusive of Saturdays, Sundays and holidays, on which weather and other conditions not under the control of the Contractor will permit construction operations to proceed with the normal working force engaged in performing those items controlling the completion of the work.

WORKING DRAWINGS: Stress sheets, shop drawings, erection plans, falsework plans, framework plans, cofferdam plans, bending diagrams for reinforcing steel, or any other supplementary plans or similar data which the Contractor is required to submit to the Project Manager for review and approval.

End of

DEFINITIONS AND TERMS

SECTION 2 - BIDDING REQUIREMENTS AND CONDITIONS

2.1 QUALIFICATIONS OF BIDDERS

Prior to Award to the low Bidder, when requested by the Division, the Bidder must file an experience questionnaire and a confidential financial statement. The statement shall include a complete report of the Bidder's financial resources and liabilities, equipment, past record and personnel.

2.2 PROPOSAL

(a) Contents of Proposal shall include those documents defined in the Bidding Documents as required in order for the bid to be considered responsive.

(b) The Plans, Specifications, GCs and other documents designated in the Proposal will be considered a part of the Proposal whether attached or not. None of these documents shall be modified by the Bidder.

2.3 DISQUALIFICATION OF PROPOSALS

The Division reserves the right to disqualify or refuse to accept a Proposal if in the opinion of the Division a Bidder is in default for any of the following reasons:

(1) Lack of competency and/or adequate machinery, plant and/or other equipment.

(2) Uncompleted work which, in the judgment of the Division, might hinder or prevent the prompt completion of additional work if awarded.

(3) Failure to pay or satisfactorily settle all bills due for labor and material on former contracts.

(4) Failure to comply with any qualification or regulation of the Division.

(5) Default under previous contracts.

(6) Unsatisfactory performance on previous work.

(7) Failure to make timely submittal of required forms per contract provisions on previous contract(s).

(8) More than one Proposal for the same work from an individual, firm or corporation under the same or different name.

(9) Evidence of collusion among the Bidders. Participants in such collusion will not receive recognition as Bidders for any future work of the Division.

2.4 INTERPRETATION OF QUANTITIES IN BID PROPOSAL

(a) Except as otherwise provided in this section and the method of measurement for individual items, the quantities appearing in the Bid proposal are estimates prepared for the comparison of Proposals. Payment to the Contractor will be made in accordance with the following procedures except as set out in Section 4.2 for variances from such estimates.

(b) Payment will be made for actual quantities measured and accepted.

(c) The estimated quantities of work to be performed and materials to be furnished may be increased, decreased, or omitted at the sole discretion of the Division.

2.5 EXAMINATION OF PLANS, SPECIFICATIONS, SPECIAL CONDITIONS AND SITE OF WORK

(a) The Bidder is expected to examine the site of the proposed work, the Proposal, Plans, Specifications, Special Conditions, and contract forms before submitting a Proposal. The submission of a Proposal will be considered conclusive evidence that the Bidder has made this examination and is aware of the conditions to be encountered in performing the work according to the Contract.

(b) Boring logs and other records of subsurface investigations (when existing) are available for inspection by Bidders. These logs and records are made available so that all Bidders have access to identical subsurface information that is available to the Division and is not intended as a substitute for personal investigation, interpretation and judgment of the Bidders.

(c) The Division does not warrant the adequacy of boring logs and other records of subsurface investigations, and such information is not considered to be a part of the Contract. When a log of testing borings is included in the subsurface investigation record, the data shown in the individual log of each test boring apply only to that particular boring and are not intended to be conclusive as to the character of any material between or around test borings. If Bidders use this information in preparing a Proposal it is used at their own risk, and Bidders are responsible for all conclusions, deductions, and inferences drawn from such information.

(d) Bidders may conduct subsurface investigations at the project site at Bidder's expense. The Division will afford them this opportunity prior to public opening of Proposals. The Contractor shall notify the Division of the Contractor's intention to investigate the site. The Project Manager shall review and approve the Contractor's plan (including insurance) prior to commencement of the investigation. Bidder is responsible for restoration of the site at the direction of the Project Manager.

(e) If a Bidder discovers an apparent error or omission in the Proposal form, estimated quantities, Plan, or Specifications, the Bidder shall immediately notify the Project Manager to enable the Division to make any necessary revisions.

2.6 PREPARATION OF PROPOSAL

(a) The Bidder shall submit their Proposal upon the forms furnished by the Division and shall include all required documentation as identified in the Bidding Documents. The Bidder shall specify a unit price for each pay item for which a quantity is given and shall also show the products of the respective unit price and quantities in the column provided for that purpose. The total amount of the Proposal obtained by adding the amounts of the several items shall be specified in words and figures. All the words and figures shall be in ink or typed. In cases of a discrepancy between the unit price multiplied by the quantity and the total amount, the result of the unit price multiplied by the quantity shall govern.

(b) When an item in the Proposal contains a choice to be made by the Bidder, the Bidder shall indicate the Contractor's choice in accordance with the Specifications for that particular item, and thereafter no further choice will be permitted.

The Bidder's Proposal must be signed by any agent of the Contractor legally qualified and acceptable to the State.

2.7 IRREGULAR PROPOSALS

Proposals (Bids) will be considered irregular and may be rejected for any of the following reasons:

(1) If the Proposal is on a form other than that prescribed by the Division, or if the form is altered or any part thereof is detached, or if the form does not contain original signatures.

(2) If there are unauthorized additions, conditional or alternate proposals, or irregularities of any kind that tend to make the Proposal incomplete, indefinite, or ambiguous.

(3) If the Bidder fails to acknowledge in the Proposal receipt of all addendums current on the date of opening of Proposals.

(4) If the Proposal does not contain a unit price for each pay item listed, except in the case of authorized alternative pay items, the mathematical products of the respective unit prices and the estimated quantities, and the total amount of the Bid obtained by adding such mathematical products.

(5) If the Division determines that any of the unit bid prices are materially unbalanced to the potential detriment of the Division. There are two types of unbalanced Bids: (1) mathematically unbalanced and, (2) materially unbalanced. The mathematically unbalanced Bid is a Bid containing lump sum or unit pay items which do not reflect reasonable actual costs plus a reasonable proportionate share of the Bidder's anticipated profit, overhead costs, and other indirect costs, but not necessarily to the detriment of the Division. These costs should all relate to the performance of the items in question. The materially unbalanced Bid is a Bid which the Division determines leaves reasonable doubt that award will result in the lowest ultimate cost to the Division, or that award is in the public interest.

(6) If the contractor submitting the Bid is affiliated with another contractor that has submitted a Bid on the same public project.

(7) If the Bidder has been found in default or asked in writing to show why it should not be found in default on a State contract.

(8) The Division reserves the right to reject any or all Bids, to waive technicalities or to advertise for new Bids, if in the judgment of the Division it is in the State's best interest.

2.8 PROPOSAL GUARANTY

A Proposal may be rejected if not accompanied by a guaranty (if applicable) and in an amount not less than the amount indicated in the Bidding Documents.

2.9 DELIVERY OF PROPOSALS

For projects identified as sealed bids, each Proposal not submitted through the State's electronic bid system shall be submitted in a sealed envelope. The envelope shall be marked to clearly indicate it iss a "SEALED BID" and identified by the bid number. When sent by mail the sealed Proposal shall be addressed to the Division at the address and in care of the official in whose office the Bids are to be received and enclosed in a separate outside envelope clearly to indicate its contents. All Proposals shall be filed prior to the time and at the place specified in the Bidding Documents. Proposals received after the time for opening of Bids will be returned to the Bidder unopened.

2.10 WITHDRAWAL OR REVISION OF PROPOSALS

A Bidder may withdraw or revise a Proposal after it has been deposited with the Division, but prior to the time set for opening of Bids. Withdrawal of Bids may be made either in writing or in person; however, any Bid withdrawn for the purpose of revision must be redeposited before the time set for opening of Bids.

2.11 COMBINATION OR CONDITIONAL PROPOSALS

(a) If Proposal forms are issued for projects in combination and separately, the Bidder may submit Proposals either on the combination or on separate units of the combination. The Division reserves the right to make awards on combination or separate Proposals to the advantage of the Division. Combination Proposals will be considered, only when specified.

(b) The Division may choose to add, reduce, or eliminate any bid item or combination of bid items so the construction contract shall not exceed the budgeted funds allocated for this project. The contract shall be awarded to the low bidder of the bid items selected by the Division.

(c) **DEDUCTIBLE ALTERNATES:** The lowest responsible Bid, taking into account the Colorado resident bidder preference provision of Colorado law, will be determined by and the contract will be awarded on the base bid combined with deductible alternates, deducted in numerical order in which they are listed in the alternates bid form provided by the Principal Representative. The subtraction of alternates shall result in a sum total within available funds. If this bid exceeds such amount, the right is reserved to reject all bids. An equal number of alternates shall be subtracted from the base bid of each bidder within funds available for purposes of determining the lowest responsible bidder.

(d) **ADDITIVE ALTERNATES:** The lowest responsible Bid, taking into account the Colorado resident bidder preference provision of Colorado law, will be determined by and the contract will be awarded on the base bid plus all additive alternates added in the numerical order in which they are listed in the alternates bid form provided by the Principal Representative. The addition of alternates shall result in a sum total within available funds. If this bid exceeds such amount, the right is reserved to reject all bids. An equal number of alternates shall be added to the base bid of each bidder within funds available for purposes of determining the lowest responsible bidder.

(e) BEST VALUE ALTERNATES: The State may, at its discretion award alternates in any order, if the award of the alternate items does not change the lowest successful base bidder.

(f) **DEDUCTIBLE AND ADDITIVE ALTERNATES:** Additive alternates will not be used if deductible alternates are used and deductible alternates will not be used if additive alternates are used.

2.12 PUBLIC OPENING OF PROPOSALS

Proposals will be opened and read publicly at the time and place indicated in the Bidding Documents. Bidders, their authorized agents, and other interested parties are invited to attend the bid opening.

2.13 MATERIAL GUARANTY

The successful Bidder may be required to furnish a complete statement of the origin, composition, and manufacture of materials used in the construction of the work together with samples, which have been tested for conformance with contract provisions.

End of

BIDDING REQUIREMENTS AND CONDITIONS

SECTION 3 - AWARDS AND EXECUTION OF CONTRACT

3.1 CONSIDERATION OF PROPOSALS

(a) After the Proposals are opened and read, they will be compared on the basis of the summation of the products of the quantities shown in the Bid proposal by the unit bid prices. The results of such comparison will be available to the public. In the event of a discrepancy between said unit prices and extensions, the unit bid price shall govern.

(b) The right is reserved to reject any or all Proposals, to waive technicalities or to advertise for new Proposals, if in the judgment of the awarding authority, the best interests of the Division will be promoted.

(c) The Division reserves the right to settle Bid discrepancies and irregularities as defined in this subsection and in Section 2.7 that occur in the low Bidder's Proposal at the time the Contract is awarded. Bid discrepancies will be settled with the understanding that the low Bidder waives any claims against the Division because of the Bidder's mistakes in the Bid Proposal.

3.2 AWARD OF CONTRACT

If the Contract is awarded, the Award will be made with reasonable promptness after the opening of Proposals to the lowest Bidder whose Proposal complies with all the requirements prescribed. The successful Bidder will be notified in writing of the acceptance of the Proposal and the Award of the Contract.

3.3 CANCELLATION OF AWARD

The Division reserves the right to cancel the Award of any Contract at any time before the signing of said Contract by all parties without any liability against the Division.

3.4 RETURN OF PROPOSAL GUARANTY

(a) All Proposal guaranties consisting of Bid Bonds will be retained by the Division.

(b) All Proposal guaranties consisting of certified checks or cashier's checks will be treated as follows:

(1) For the two lowest Bidders, the Proposal guaranty will be held until the successful Bidder has provided satisfactory Performance Bond. Proposal guaranty will then be returned immediately to the second lowest Bidder. The Proposal guaranty will not be returned to the successful Bidder until the Performance Bond has been furnished and the Contract has been executed.

(2) For all other Bidders, the Proposal guaranty will be returned promptly after the opening of Bids and verification of the Proposals.

3.5 BOND AND INSURANCE REQUIREMENTS

(a) If the Award is for more than one hundred and fifty thousand dollars ($150,000), the Contractor shall, duly execute and deliver to and file with the Division a good and sufficient Bond or other acceptable Surety approved by the Division in a penal sum equal to one-hundred percent of the total amount payable by the terms of the Contract. Such Bond shall be duly executed by a qualified corporate surety, conditioned for the due and faithful performance of the Contract, and in addition shall provide that if the Contractor or the Contractor's subcontractors fail to duly pay for any labor, materials, team hire, sustenance, provisions, provender or other supplies used or consumed by such Contractor or the Contractor's subcontractor in performance of the work contracted to be done, the Surety will pay the same in an amount not exceeding the sum specified in the Bond, together with interest at the rate of eight percent per annum. If the scope of work is changed resulting in an increase in the contract price, the amount of the Bond required shall be increased by a like amount. If

the change results in a decrease in the contract price, the amount of the Bond required may be decreased by a like amount.

(b) The Contractor shall deliver to the Division a Certificate of Insurance in the amounts designated on the Bid Documents.

3.6 EXECUTION AND APPROVAL OF CONTRACT

The Contract shall be signed and returned by the successful Bidder together with the Contract Bonds and certificate(s) of insurance within 15 calendar days after the date of Award. If the signed Contract, Bonds, and insurance certificate(s) are returned by the successful Bidder within 15 calendar days after award, and are technically correct, and if the Contract is not executed by the Division within 60 calendar days from date of receipt of a complete and accurate Contract Documents accepted by the Division, the Bidder shall have the right to withdraw the Proposal without penalty. The Contract will not be considered effective until it has been fully executed by all of the parties to the Contract.

3.7 FAILURE TO EXECUTE CONTRACT

Failure to execute the Contract and file acceptable Bonds and/or provide requisite Certificates of Insurance within 15 calendar days after the date of Award shall be just cause for the cancellation of the Award and the forfeiture of the Proposal guaranty, which shall become the property of the Division, not as a penalty, but in liquidation of damages sustained. Award may then be made to the next lowest responsible Bidder, or the work may be re-advertised or otherwise as the Division may decide.

End of

AWARDS AND EXECUTION OF CONTRACT

SECTION 4 - SCOPE OF WORK

4.1 INTENT OF CONTRACT

The intent of the Contract is to provide for the construction and completion in every detail of the work described. The Contractor shall furnish all labor, materials, equipment, tools, transportation and supplies required to complete the work in accordance with the Special Conditions, Plans, Specifications and terms of the Contract.

4.2 ALTERATIONS OF PLANS OR CHARACTER OF WORK AND VARIATIONS IN PLAN QUANTITIES

(a) Differing Site Conditions. During the progress of work, if subsurface or latent physical conditions are encountered at the site differing materially from those indicated in the Contract or if unknown physical conditions of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the Contract, are encountered at the site, the party discovering such conditions shall promptly notify the other party in writing of the specific differing conditions before the site is disturbed and before the affected work is performed.

Upon written notification, the Project Manager will investigate the conditions, and if the Project Manager determines that the conditions materially differ and cause an increase or decrease in the cost or time required for the performance of any work under the Contract, an adjustment, excluding loss of anticipated profits, will be made and the Contract modified in writing accordingly. The Project Manager will notify the Contractor of the determination whether or not an adjustment of the Contract is warranted. No contract adjustment which results in a benefit to the Contractor will be allowed unless the Contractor has provided the required written notice.

(b) Suspensions of Work Ordered by the Project Manager. If the performance of all or any portion of the work is suspended or delayed by the Project Manager in writing for an unreasonable period of time (not originally anticipated, customary, or inherent to the construction industry) and the Contractor believes that additional compensation and/or contract time is due as a result of such suspension or delay, the Contractor shall submit to the Project Manager in writing a request for adjustment within seven calendar days of receipt of the notice to resume work. The request shall set forth the reasons and support for such adjustment.

(1) Upon receipt, the Project Manager will evaluate the Contractor's request. If the Project Manager agrees that the cost and/or time required for the performance of the Contract has increased as a result of such suspension and the suspension was caused by conditions beyond the control of and not the fault of the Contractor, its suppliers, or subcontractors, and not caused by the weather, the Project Manager will make an adjustment (excluding profit) and modify the Contract in writing accordingly. Weather or climatic conditions are not justifiable reasons for contract price adjustments unless the Division has altered or increased the quantities as designated in Section 4.2(c) and 4.3 where the extension of time has delayed the Contactor in work completion. The Project Manager will notify the Contractor of the determination whether or not an adjustment of the Contract is warranted. No contract adjustment will be allowed unless the Contractor has submitted the request for adjustment within seven calendar days of receipt of the notice to resume work.

(2) No contract adjustment will be allowed under this clause to the extent that performance would have been suspended or delayed by any other cause, or for which an adjustment is provided for or excluded under any other term or condition of this Contract.

(3) No contract adjustment will be allowed if the suspension was caused or based in whole or in any part by the Contactor.

(c) Significant Changes in the Character of Work. The Project Manager reserves the right to make, in writing, at any time during the work, such changes in quantities and such alterations in the work as are necessary to satisfactorily complete the project. Such changes in quantities and alterations shall

not invalidate the Contract nor release the Surety, and the Contractor agrees to perform the work as altered.

(1) If the alterations or changes in quantities significantly change the character of the work under the Contract, whether such alterations or changes are in themselves significant changes to the character of the work, or by affecting other work cause such other work to become significantly different in character, an adjustment, excluding loss of anticipated profit, will be made to the Contract. The basis for the adjustment shall be agreed upon prior to the performance of the work. If a basis cannot be agreed upon, then an adjustment will be made either for or against the Contractor in such amount as the Project Manager may determine to be fair and equitable.

(2) If the alterations or changes in quantities do not significantly change the character of the work to be performed under the Contract, the altered work will be paid for as provided elsewhere in the Contract. The term "significant change" shall be construed to apply only to the following circumstances:

I. When the character of the work as altered differs materially in kind or nature from that involved or included in the original proposed construction, or

II. When the alterations increase or decrease the scope of the total project by more than 25 percent unless agreed by the Contractor.

4.3 EXTRA WORK

The Contractor shall perform unforeseen work, for which there is no price included in the Contract, whenever it is deemed necessary or desirable in order to complete fully the work as contemplated when authorized in writing by the Project Manager. Such work shall be performed in accordance with the Contract and as directed, and will be paid for as provided under Section 9.4 or at a price agreed upon in advance of the performance of the work.

4.4 RIGHTS IN AND USE OF MATERIALS FOUND ON THE WORK

The Project Manager may authorize the Contractor's use of materials found in the excavation for completing pay items other than excavation. Payment will be made for both the excavation of such materials at the corresponding contract unit price, and for the pay item for which the excavated material is used, unless otherwise negotiated and approved through a Change Order. The Division will not charge the Contractor royalty or additional cost of select material for the removed material. The Contractor shall not excavate or remove any material from within the construction area which is not within the grading limits, as indicated by the slope and grade lines, without written authorization from the Project Manager.

4.5 FINAL CLEANING UP

Before final acceptance, the work area and all ground occupied by the Contractor in connection with the work shall be cleaned of all rubbish, excess materials, temporary structures and equipment, and all parts of the work shall be left in an acceptable condition. The cost of final cleanup will not be paid for separately but shall be included in the work.

End of

SCOPE OF WORK

SECTION 5 - CONTROL OF WORK

5.1 AUTHORITY OF THE PROJECT MANAGER

(a) The Project Manager will decide all questions regarding the quality and acceptability of materials furnished, work performed, and the rate of progress of the work; all interpretation of the Plans and Specifications; and the acceptable fulfillment of the Contract.

(b) The Project Manager will, in writing, suspend the work, wholly or in part when the Contractor fails to correct conditions unsafe for the workers or the general public; for failure to carry out contract provisions; for failure to carry out orders; for periods of unsuitable weather; for conditions unsuitable for the prosecution of the work, or for any other condition or reason determined to be in the public interest.

5.2 PLANS AND SHOP DRAWINGS

(a) Plans will show details of construction lines, grades, typical cross sections, location and design of all structures. Only general features will be shown for steel and prestressed concrete structures.

(b) The Plans shall be supplemented by shop drawings as necessary to adequately control the work. Shop drawings may consist of drawings, diagrams, illustrations, schedules, calculations, and other data prepared by the Contractor, subcontractor, manufacturer, supplier, or distributor, which will illustrate how specific portions of the work shall be fabricated and/or installed in accordance with the Contract.

(c) Shop drawings are not part of the Contract Documents.

(d) The Contractor shall approve shop drawings prior to submission to the Project Manager for review. The Contractor's approval shall be recorded by an appropriate stamp with the date and signature on each drawing. Where design notes and catalog cuts are submitted, only the first sheet will require the approval stamp. Shop drawings received directly from fabricators or suppliers or from contractors without Contractor's approval will be returned without action for resubmittal in accordance with these Specifications.

(e) Shop drawings shall be submitted to the state electronically. After checking and review by the - Project Manager, will be returned for use by the Contractor and the fabricator or supplier.

(f) Shop drawings returned to the Contractor will be stamped and the stamp marked to indicate one of the following:

(1) NO EXCEPTION TAKEN - Signifies material or equipment represented by the Submittal conforms with the design concept and complies with the information given in the Contract Documents. Contractor is to proceed with fabrication or procurement of the items and with related work.

(2) MAKE CORRECTIONS NOTED - Signifies material or equipment represented by the submittal conforms with the design concept and complies with the information given in the Contract Documents and in accordance with Project Manager's notations. Contractor is to proceed with the Work in accordance with Project Manager's notations.

(3) REVISE AND RESUBMIT - Signifies material or equipment represented by the submittal conforms with the basic design concept, however, it does not comply with the information given in the Contract Documents. Contractor is to submit a revised submittal responsive to the notations marked on the returned submittal and to the information in the Contract Documents.

(4) REJECTED - Signifies material or equipment represented by the submittal does not conform with the design concept or comply with the information given in the Contract Documents and is not acceptable for use in the Work. Contractor is to submit material or equipment responsive to the

Contract Documents.

(g) Checking is only for general conformance with the design concept of the project and general compliance with the information given in the contract documents. Any action shown is subject to the requirements of the plans and specifications. Contractor is responsible for: dimensions which shall be confirmed and correlated at the job site; fabrication processes and techniques of construction; coordination of the Contractor's work with that of all other trades and the satisfactory performance of the Contractor's work. Changes to the reviewed shop drawings required additional review by the Project Manager.

(h) Review of the shop drawings shall not relieve the Contractor of the obligation to meet all requirements of the Contract and shall not relieve the Contractor of the responsibility for the correctness of the shop drawings. Changes to the approved shop drawings requires re-approval.

(i) The time required for the Division's approval of each submittal will not exceed four weeks after shop drawings are received by the Project Manager.

(j) If the Contractor's controlling operations are delayed or interfered with by reason of the Division's failure to return shop drawings within the specified four weeks' time, an extension of contract completion time commensurate with the delay in completion of the work thus caused will be granted.

(k) All shop drawings shall be submitted electronically, the Contractor may be required to submit hard copies of submittals at the Project Manager's discretion.

(l) Any work performed on the project, regarding work requiring shop drawings, will not be accepted until after the shop drawings have been reviewed by the Project Manager and the work is in conformance with the drawings and the provisions of the Contract.

(m) The Contractor shall keep one set of Plans and shop drawings available on the project site at all times.

(n) Payment for preparing and furnishing all shop drawings will not be paid for separately but shall be included in the work.

5.3 CONFORMITY WITH PLANS AND SPECIFICATIONS

(a) All work performed and all materials furnished shall conform to the lines, grades, cross sections, dimensions, and material requirements, including tolerances, shown in the Contract.

(b) For those items of work where working tolerances are not specified, the Contractor shall perform the work in a manner consistent with reasonable and customary manufacturing and construction practices.

(c) When the Project Manager finds that the materials furnished, the work performed, or the finished product does not conform with the Contract but that reasonably acceptable work has been produced, the Project Manager will determine the extent the work will be accepted and remain in place. If accepted, the Project Manager will (1) document the basis for acceptance by Change Order which will provide for an appropriate adjustment in the contract price for such work or materials not otherwise provided for in this subsection or (2) notify the Contractor in writing that the Contract unit price will be adjusted; (3) in lieu of a price adjustment, permit correction or replacement of the finished product provided the correction or replacement does not adversely affect the work.

(d) When the Project Manager finds the materials furnished, work performed, or the finished product are not in conformity with the Contract and has resulted in an inferior or unsatisfactory product, the work or materials shall be removed and replaced or otherwise corrected by and at the expense of the Contractor. The Project Manager shall promptly notify the Contractor of such unacceptable materials, work or finished product.

5.4 COORDINATION OF PLANS, SPECIFICATIONS, AND SPECIAL CONDITIONS

(a) The Specifications, the Plans, Special Conditions, these GC's, and all supplementary documents are essential parts of the Contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work.

(b) In case of discrepancy the order of precedence is as follows:

(1) Contract or Purchase Order, Change Orders or Amendments
(2) Purchase Order
(3) Special Conditions
(4) Specifications
(5) Detailed Plans
(6) Standard Plans
(7) Calculated dimensions will govern over scaled dimensions
(8) GCs

(c) If the manufacturer of an approved product's specifications is more stringent than those contained in the Contract, the manufacturer's specification shall govern.

(d) The Contractor shall not take advantage of any apparent error or omission in the Contract. If the Contractor discovers an error or omission, the Project Manager shall immediately be notified. The Project Manager will make corrections and interpretations as necessary to fulfill the intent of the Contract.

5.5 COOPERATION BY CONTRACTOR

(a) The Contractor shall give the work the constant attention necessary to facilitate the progress thereof, and shall cooperate with the Project Manager, the Division's inspectors, and other contractors in every way possible.

(b) The Contractor shall have on the site at all times, as the Contractor's agent, a competent superintendent capable of reading and thoroughly understanding the Plans and Specifications and thoroughly experienced in the type of work being performed. The superintendent shall have full authority to execute orders or directions of the Project Manager without delay, and to promptly supply such materials, equipment, tools, labor and incidentals as may be required. Such superintendent shall be furnished regardless of the amount of work sublet.

(c) When circumstances dictate that the Superintendent cannot physically be at the work site the Contractor shall provide the Project Manager with a minimum 2 days notice of the method, times and places where the Superintendent can be contacted or alternatively provide an individual who has the authority to act in the Superintendent's absence for the Project Manager's approval.

5.6 PROTECTION OF UTILITIES

(a) The Contractor's attention is directed to the importance of protecting all utilities encountered on all projects. These may include, but are not limited to, communication and power lines, water lines, sewer lines, gas lines, railroad tracks and other overhead and underground utilities.

(b) Before any excavation is begun in the vicinity of the water lines, railroad tracks, structures, sewer lines, gas lines, or other conduits, each utility company concerned must be notified in advance of such excavation, and such excavation shall not be made until an authorized representative or the owner of the utility is on the site and has designated the location of their facilities.

(c) The Contractor shall be responsible for all damages to any and all public utilities encountered on a project, which damages are due to the Contractor's negligence. Such damages shall include all physical damages to utilities and also all damages due to interruption of service of such utilities, when such damages and interruptions are caused by Contractor's negligence.

(d) Where alterations or moving of utilities is not required to permit construction of the project, the Contractor shall take such measures as necessary in properly protecting these utilities throughout the Contractor's construction operations, and shall cooperate at all times with the proper authorities and owners in maintaining service on railroads, conduits, pole lines, transmission lines, pipelines, sewers, etc., affected by the project.

(e) The cost of damages due to Contractor's non-negligent operation, or cost of protecting utilities where alteration or moving is not required to permit construction of the project, shall be included in the original contract prices for the project.

(f) Should pipe lines, water lines, or gas mains, electrical conduits, sewer pipes, overhead wiring, telephone lines, telegraph lines, power lines or any other such utilities not specifically mentioned and provided for elsewhere as a part of this Contract, have to be moved, repaired, reconditioned or revised due to the construction, or moved temporarily to permit construction of the project, the party or parties owning or operating such utilities shall perform the actual work of moving, repairing, reconditioning or revising such utilities. The cost of this work shall be borne by the Division or the utility companies involved unless the Contract provides otherwise. The Division will make the determination as to whether the Division or the utility company will be responsible.

5.7 COOPERATION BETWEEN CONTRACTORS

(a) The Division reserves the right to contract for and perform other or additional work on or near the work covered by the Contract.

(b) When separate contracts are let within the limits of any one project, each contractor shall conduct the work without interfering or hindering the progress or completion of the work being performed by other contractors. Contractors working on the same project shall cooperate with each other as directed.

(c) Each contractor involved shall assume all liability, financial or otherwise, in connection with the Contract and shall protect and save harmless the Division from any and all damages or claims that may arise because of inconvenience, delay, or loss because of the presence and operations of contractors working within the limits of the same or adjacent project.

5.8 CONSTRUCTION STAKES, LINES AND GRADES

(a) Construction work shall not be performed until adequate lines and grades have been established by the Division or by the Contractor.

(b) Contractor Surveying: Unless otherwise state the Division will provide control points and bench marks as described in the Contract. The Contractor shall furnish and set construction stakes establishing lines and grades. The Project Manager may order extra surveying which will be paid for at an agreed upon rate.

(c) Division Surveying: If identified in the contract documents that the Division will provide surveying, then the Division will furnish one set of construction stakes and marks establishing lines and grades for proper prosecution of the work.

(d) The Contractor shall be responsible for the accuracy of all the vertical and horizontal control it transfers and establishes. The Contractor shall be held responsible for the preservation of all stakes and marks, and if any are destroyed, disturbed or removed by the Contractor, subcontractors, or suppliers, the cost of replacing them will be charged against the Contractor.

(e) A minimum of five working days will be required as advance notice to the Project Manager to provide project control staking.

5.9 AUTHORITY AND DUTIES OF PROJECT MANAGER

(a) As the direct representative of the Division, the Project Manager has immediate charge of the details of each construction project. The Project Manager is responsible for the administration and completion of the project. The Project Manager has the authority to reject defective material and to suspend any work that is being improperly performed, and to otherwise accept or reject work in accordance with Sections 5.12 and 5.16.

(b) The Project Manager is responsible for initial decisions relating to Contractor claims for additional compensation or extension of contract time.

5.10 AUTHORITY AND DUTIES OF THE INSPECTOR

(a) Inspectors employed by the Division are authorized to inspect all work done and materials furnished. This inspection may extend to all or any part of the work and to the preparation, fabrication or manufacture of the materials to be used.

(b) The inspector is not authorized to alter or waive the provisions of the Contract. The inspector is not authorized to issue instructions contrary to the provisions of the Contract or to act as foreman for the Contractor. The inspector is not authorized to accept or reject work.

5.11 INSPECTION OF WORK

(a) All materials and each part of detail of the work shall be subject to inspection by the Project Manager or their delegate. The Project Manager shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

(b) If the Project Manager requests it, the Contractor at any time before acceptance of the work, shall remove or uncover portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the Specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing and the replacing of the covering or making good of the parts removed, will be paid for as extra work; but should the work so exposed or examined prove unacceptable, the covering or removing and the replacing of the covering or making good of the parts removed will be at the Contractor's expense.

(c) Any work done or materials used without supervision or inspection by an authorized Division representative may be ordered removed and replaced at the Contractor's expense unless the Division's representative failed to inspect after having been given reasonable notice in writing that the work was to be performed.

(d) When any third party is to pay a portion of the cost of the work covered by the Contract, its representative shall have the right to inspect the work. Such inspection shall not make any unit of that third party a party to the Contract, and shall not interfere with the rights of either party to the Contract.

(e) All inspections and all tests conducted by the Division are for the convenience and benefit of the Division. These inspections and tests do not constitute acceptance of the materials or work tested or inspected, and the Division may reject or accept any work or materials at any time prior to the inspection pursuant to Section 5.16 whether or not previous inspections or tests were conducted by the Project Manager or authorized representative.

5.12 REMOVAL OF UNACCEPTABLE AND UNAUTHORIZED WORK

(a) Unacceptable work is work that does not conform to the requirements of the Contract.

(b) Unacceptable work, resulting from any cause, found to exist prior to the final acceptance of the work, shall be removed and replaced in an acceptable manner at the Contractor's expense. The fact

that the Project Manager or an inspector may have overlooked the unacceptable work shall not constitute an acceptance of any part of the work.

(c) Unauthorized work is work that was done without adequate lines and grades having been established by the Project Manager or by the Contractor, work done contrary to the instructions of the Project Manager, work done beyond the lines shown on the Plans, or extra work done without the Project Manager's written authorization. Unauthorized work will not be paid for under the provisions of the Contract, and may be ordered removed or replaced at the Contractor's expense.

(d) If the Contractor fails to comply with any order of the Project Manager made under the provisions of this subsection, the Project Manager will have authority to cause unacceptable work to be remedied or removed and replaced, and unauthorized work to be removed. The Project Manager will deduct the costs from any monies due or to become due the Contractor.

5.13 LOAD RESTRICTIONS

(a) The Contractor shall comply with all legal load restrictions in the hauling of equipment or materials on public roads beyond the limits of the project. A special permit will not relieve the Contractor of liability for damage resulting from the moving of equipment or material.

(b) The operation of equipment or hauling loads which cause damage to structures, the roadway or any other construction will not be permitted. Hauling of materials over the base course or surface course under construction shall be limited by the Contractor to methods and equipment that will prevent damage to the pavement structure. Loads will not be permitted on a concrete pavement or structure before the expiration of the curing period. The Contractor shall be responsible for the repair of all damage and related expense resulting from hauling equipment and construction operations.

(c) If a vehicle's gross weight exceeds the legal limit, and the material transported by the vehicle is delivered to the project, the material and the scale ticket (certificate of correct weight) will not be accepted, except a 500 lbs tolerance will be allowed for overweight loads.

5.14 MAINTENANCE DURING CONSTRUCTION

The Contractor shall maintain the site during construction (including daily clean-up) and until the project is accepted or the Division takes possession. This maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces to the end that the project or structure is kept in satisfactory condition at all times. All cost of maintenance work during construction and before the project is accepted shall be included in the unit prices bid on the various pay items and the Contractor will not be paid an additional amount for such work.

5.15 FAILURE TO MAINTAIN PROJECT OR STRUCTURE

If the Contractor, at any time, fails to comply with the provisions of Section 5.14, the Project Manager will immediately notify the Contractor of such non-compliance. If the Contractor fails to remedy unsatisfactory maintenance within 24 hours after receipt of such notice, the Project Manager may immediately proceed to maintain the project, and the entire cost of this maintenance will be deducted from monies due or to become due the Contractor on the contract.

5.16 ACCEPTANCE

(a) Substantial Completion:

The terms “Substantial Completion” or “Substantially Complete” mean the stage in the progress of the work when the construction is sufficiently complete, in accordance with the Contract Documents as modified by any Change Orders, so that the Work, or at the discretion of the Project Manager, any designated portion thereof, is available for its intended use by the Division and a Notice of Substantial Completion can be issued. Portions of the Project may, at the discretion of the Project Manager, be designated as Substantially Complete.

(b) Partial Acceptance: If at any time during prosecution of the project the Contractor completes a unit or portion of the project, such as a structure, or a section of road that can be used advantageously, s/he may request the Project Manager to make final inspection of that unit. If the Project Manager finds upon inspection that in the Project Manager's judgment the unit has been completed in compliance with the Contract, s/he may accept that unit as being completed and the Contractor may be relieved of further responsibility for that unit. Such partial acceptance shall in no way void or alter any of the terms of the Contract.

(c) Final Acceptance:

(1) Upon due notice from the Contractor of presumptive completion of the entire project, the Project Manager will make an inspection. If all construction provided for and contemplated by the Contract is found completed to the Contractor's satisfaction, that inspection shall constitute the final inspection and the Project Manager will make the final acceptance as of the date of the final inspection as specified in Section 9.8.

(2) If any Change Orders are necessary, the Project Manager will prepare the final forms as specified in Section 9.8.

(3) If, however, the inspection discloses any work, in whole or in part, as being unsatisfactory, the Project Manager will give the Contractor the necessary instruction for correction of same, and the Contractor shall immediately comply with and execute such instructions. Upon correction of the work another inspection will be made which shall constitute the final inspection provided the work has been corrected as required and no Change Orders are necessary. In such event, the Project Manager will make the final acceptance.

5.17 CLAIMS FOR ADJUSTMENT AND DISPUTES

(a) All claims filed by the Contractor based upon:

(1) Work or materials not clearly defined in the Contract,

(2) Extra work not ordered by the Project Manager in accordance with Section 4.3

(3) Extensions of time made pursuant to Section 8.5, or

(4) Any other cause, resulting in requests for additional compensation or time, or in the suspension or termination of the Contract, shall be governed by this subsection.

(b) Upon discovery of any facts which formulate the basis of a potential claim, the Contractor shall give immediate oral and written notice to the Project Manager prior to commencing with work to enable the Division to obtain its independent evidence of these facts.

(c) Within seven calendar days after the discovery of the facts giving rise to a claim, the Contractor shall formally notify the Project Manager in writing of the intent to file a claim as defined in Section 5.17(a). The Contractor's formal notification of intent to file a claim shall describe the contractual and legal basis of the claim and factual evidence supporting the claim.

(d) If immediate and formal notifications are not properly given by the Contractor according to these GC's, the Contractor shall not be entitled to any additional compensation or extension of time for any cause related to the claim, including any act or failure to act by the state, and the Contractor shall not be entitled to any claim. Any claim based upon any cause, for which prior and formal notifications to file a claim are not properly given by the Contractor, will be considered invalid and will be denied by the Project Manager on the basis that proper notifications as required herein, were not given. The Contractor's prior and formal notifications of intent to file a claim and subsequent Division acknowledgement of those notifications shall not be construed as proving or substantiating the validity of the Contractor's claim as related to the contractual basis of the claim, factual information

related to the claim, or cost, or amount of time extension related to the claim.

(e) When the Contractor provides immediate and formal notifications of intent to file a claim pursuant to Section 5.17(b), the claim will be reviewed by the Project Manager who will render a written decision to the Contractor to either affirm the claim as valid or deny the claim, in whole or in part, in accordance with all Contract Documents and the following procedure:

(1) At any time prior to final acceptance of the project, made pursuant to Section 5.16(c), and regardless of what correspondence or documents have been previously transmitted, the Contractor shall formally submit to the Project Manager a complete claim package including a quantification of all alleged costs and time impacts, and all supporting documents which represent the final position the Contractor wishes to have considered by the Division. The time period within which the Contractor is to provide such written documentation may be extended by the Project Manager if requested by the Contractor and if the Project Manager determines an extension would enhance the claim record and improve the potential for resolution of the claim. If the Contractor fails to provide such written documentation prior to final acceptance of the project, or within an extended time period authorized by the Project Manager, the Project Manager will base the decision upon the information previously submitted in the Contractor's notification of intent to file a claim and pertinent Specification and Contract Documents.

(2) It will be the responsibility of the Contractor to keep full and complete records of the costs and additional time incurred for any claim. The Contractor shall permit the Project Manager to examine and copy those records and any other records as may be required by the Project Manager to determine the facts or contentions involved in the claim. The Contractor shall retain those records until there is a final resolution of the claim or for three years after final acceptance of the project, whichever is longer.

(3) The Project Manager:

I. Will review the information in the Contractor's written notification of intent to file a claim,

II. Will review all written documents as submitted by the Contractor in support of the claim, and may consider any other information available in rendering a decision.

III. Will assemble and maintain a claim record comprised of all written documents submitted by the Contractor in support of the claim and all other written documents considered by the Project Manager in reaching a decision. All documentation the Contractor wants considered shall be made available to the Project Manager and will be made a part of the claim record during the review of the claim. Once the claim record has been assembled by the Project Manager, the submission of additional information, other than clarification and data supporting previously submitted documentation, at any subsequent levels of review by anyone, will not be permitted.

IV. Will provide a copy of the complete claim record along with the written decision to the Contractor describing the contractual basis and factual information considered by the Project Manager in reaching a decision.

(4) The Project Manager will render a written decision to the Contractor within 60 days from the receipt of the Contractor's submission of all written documentation supporting the claim. If more than one claim has been filed by the Contractor on the project, the Project Manager will have the right to consolidate claims and issue one decision on all such claims provided that consolidation of claims does not extend the time period within which the Project Manager is to render a decision. If the Project Manager fails to render a written decision to the Contractor within the specified 60 day time period, or within any extended time period as agreed to by both parties, the Contractor must either (1) accept this as a denial of the claim, or file a contract dispute in accordance with C.R.S. 24-109-106.

(f) If the Contractor disagrees with the written decision of the Project Manager, the Contractor must

either:

(1) Accept the Project Manager's decision as final,

(2) File a contract dispute in accordance with C.R.S. 24-109-106.

End of

CONTROL OF WORK

SECTION 6 - CONTROL OF MATERIAL

6.1 SOURCE OF SUPPLY AND QUALITY REQUIREMENTS

(a) The materials used on the work shall meet all quality requirements of the Contract. In order to expedite the inspection and testing of materials, the Contractor shall notify the Project Manager of the Contractor's proposed sources of materials prior to delivery. At the option of the Project Manager, materials may be approved at the source of supply before delivery is started. If it is found after trial that sources of supply for previously approved materials do not produce uniform and satisfactory products, or if the product from any source proves unacceptable at any time, the Contractor shall furnish materials from other sources.

(b) When alternative materials are permitted for an item in the Contract, the Contractor will be required to state in writing the material s/he intends to furnish for that item.

(c) Reference on the Plans and/or Specifications to a particular product, or to the product of a specific manufacturer, followed by the phrase "or approved equal" is intended only to establish a standard of quality, durability and design, and shall not be construed as limiting competition. Products of other manufacturers will be acceptable provided such products, in the Project Manager's judgment, are equal to that specified; the burden of proof shall be the Contractor's responsibility. Product availability and date of delivery will be a factor in determining the acceptance of an approved equal.

(d) Product submittal shall require approval for specified manufacturers' products as well as approved "or equal" products.

6.2 SAMPLES, TESTS, CITED SPECIFICATIONS

(a) It is the intent of the Division and these GC's that all materials or the finished product in which the materials are used will be inspected and tested. Any work in which untested and unacceptable materials are used without approval or written permission of the Project Manager, shall be performed at the Contractor's risk and may be considered as unacceptable and unauthorized and will not be paid for.

(b) Unless otherwise designated, when ACI, ASTM or other specifications or other methods are cited, the reference shall be to latest edition as revised or updated by approved supplements or interim editions published and issued prior to the date of Bidding Documents.

6.3 PLANT INSPECTION

(a) The Project Manager may inspect the materials at the source. In the event plant inspection is made, the following conditions shall be met:

(1) The Project Manager shall have the cooperation and assistance of the Contractor and the producer with whom s/he has contracted for materials.

(2) The Project Manager shall have full entry at all times to such parts of the plant as may concern the manufacture or reproduction of the materials being furnished.

(3) Adequate safety measures shall be provided and maintained.

(b) It is understood that the Division reserves the right to retest all materials prior to incorporation into the work which have been tested and accepted as the source of supply after the same have been delivered and to reject all materials which, when retested, do not meet the requirements of these GC's or those established for the specific project.

6.4 STORAGE OF MATERIALS

Materials shall be stored to assure the preservation of their quality and fitness for the work. Stored materials, even though approved before storage, may again be inspected prior to their use in the work. Stored materials shall be located so as to facilitate their prompt inspection. Approved portions of the project may be used for storage purposes and for placing of the Contractor's plant and equipment, but any additional space required therefore must be provided by the Contractor at the Contractor's expense. Private property shall not be used for storage purposes without written permission of the owner or lessee, and if requested by the Project Manager, copies of such written permission shall be furnished him/her. All storage sites shall be restored to their original conditions by the Contractor at the Contractor's expense. This shall not apply to the stripping or storing of topsoil, or other materials salvaged from the work.

6.5 HANDLING MATERIALS

All materials shall be handled in such manner as to preserve their quality and fitness for the work. Aggregates shall be transported from the storage site to the work in vehicles so constructed as to prevent loss or segregation of materials.

6.6 UNACCEPTABLE MATERIALS

All materials not conforming to the requirements of the Specifications at the time they are used shall be considered as unacceptable and all such materials will be rejected and shall be removed immediately from the site of the work unless otherwise instructed by the Project Manager. Rejected material, the defects of which have been corrected, shall not be used until approval has been given.

6.7 DIVISION FURNISHED MATERIALS

(a) Material furnished by the Division will be made available to the Contractor at the points specified in the Contract.

(b) The cost of handling and placing materials after they are made available to the Contractor shall be included in the contract price for the item.

(c) The Contractor will be held responsible for all material received until it is incorporated in the work and accepted.

(d) Any charges resulting from the Contractor's failure to accept the material at the designated time and point of delivery will be deducted from monies due the Contractor.

End of

CONTROL OF MATERIAL

SECTION 7 - LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

7.1 LAWS TO BE OBSERVED

The Contractor shall keep fully informed of all federal and state laws, all local laws, ordinances, and regulations and all orders and decrees of bodies or tribunals having any jurisdiction of authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. The Contractor shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the State and its representatives against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order or decree, whether by the Contractor or the Contractor's employees. Preferences for Colorado labor are applicable to the Contract if public works are undertaken thereunder and financed in whole or in part with State funds, in accordance with the provisions of 8-17-101 and 102, CRS.

7.2 PERMITS, LICENSES, AND TAXES

(a) Licenses, Permits, and Other Authorizations Contractor shall secure, prior to the Effective Date, and maintain at all times during the term of the Contract, at its sole expense, all licenses, certifications, permits, and other authorizations required to perform its obligations under the Contract, and shall ensure that all employees, agents and Subcontractors secure and maintain at all times during the term of their employment, agency or subcontract, all license, certifications, permits and other authorizations required to perform their obligations in relation to the Contract.

(b) Prior to beginning work on the project, the Contractor shall furnish the Project Manager a written list of all permits required for the proper completion of the project. The list shall clearly identify the type of permit or permits that must be obtained before work on any particular phase or phases of work can be started. Copies of the fully executed permits shall be furnished to the Project Manager.

(c) The State is exempt from federal excise taxes under I.R.C. Chapter 32 (26 U.S.C., Subtitle D, Ch. 32) (Federal Excise Tax Exemption Certificate of Registry No. 84-730123K) and from Colorado state and local government sales and use taxes under §§39-26-704(1), et seq. C.R.S. (Colorado Sales Tax Exemption Identification Number 98-02565). The State shall not be liable for the payment of any excise, sales, or use taxes, regardless of whether any political subdivision of the state imposes such taxes on Contractor. Contractor shall be solely responsible for any exemptions from the collection of excise, sales or use taxes that Contractor may wish to have in place in connection with this Contract.

7.3 PATENTED DEVICES, MATERIALS AND PROCESSES

If the Contractor employs any design, device, material or process covered by letters of patent or copyright and not specifically required by the Contract, s/he shall provide for such use by suitable legal agreement with the patentee or owner. The Contractor and the Surety shall indemnify and save harmless the State, any affected third party, or political subdivision from any and all claims for infringement by reason of the use of any such patented design, device, material or process, or trademark or copyright, and shall indemnify the State for any costs, expenses and damages which it may be obligated to pay by reason of any infringement, at any time during the prosecution or after the completion of the work.

7.4 FEDERAL AID PROVISIONS

(a) When the United States government participates in the cost of a project, the federal laws and the rules and regulations made pursuant to such laws must be observed by the Contractor, and the work shall be subject to the inspection of the appropriate federal agency.

(b) Such inspection shall not make the United States government a party to the Contract and shall not interfere with the rights of the parties to the Contract.

7.5 SANITARY PROVISIONS

The Contractor shall observe all rules and regulations of federal, state and local health officials. The Contractor shall not require any worker to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to health or safety.

7.6 PUBLIC CONVENIENCE AND SAFETY

The Contractor shall at all times so conduct the work as to assure the least possible obstruction to traffic. The safety and convenience of the general public and the residents adjacent to the project and the protection of persons and property shall be provided for by the Contractor.

7.7 BARRICADES AND WARNING SIGNS

The Contractor shall provide, erect, and maintain all necessary barricades, suitable and sufficient lights, danger signals, signs and other traffic control devices, and shall take all necessary precautions for the protection of the work and safety of the public in accordance with applicable regulations and guidelines. Access closed to traffic shall be protected by effective barricades, and obstructions shall be illuminated during hours of darkness. Suitable warning signs shall be provided to properly control and direct traffic.

7.8 USE OF EXPLOSIVES

(a) When explosives are utilized in the prosecution of the work, the Contractor shall not endanger life, property, or new work. The Contractor shall be responsible for all damage resulting from the use of explosives.

(b) The Contractor's explosives shall be stored in a secure manner in compliance with laws and ordinances, and storage places shall be clearly marked. When electric blasting caps are used, stored or moved in the vicinity of the work, warning signs prohibiting the use of radio transmitters and mobile telephones shall be posted on all roads within 350 feet of the blasting operation.

(c) The Contractor shall notify property owners and public utility companies having structures in the proximity of the work of the intention to use explosives. Notice shall be given sufficiently in advance to enable them to protect their property.

(d) In advance of doing any blasting work involving the use of electric blasting caps within 200 feet of any railroad's track or structures, the Contractor shall notify the proper authority of the company as to the location, date, time and approximate duration of such blasting operations.

(e) At the conclusion of each day of blasting, all spent surface blasting components shall be removed. At the conclusion of blasting and excavation work, the Contractor shall properly dispose of all spent blasting components. At the completion of final grading, the Contractor shall inspect the project and remove all exposed blasting components.

7.9 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE

(a) The Contractor shall preserve private and public property and protect it from damage. Land monuments and property marks shall not be disturbed or moved until their location has been witnessed or referenced and their removal approved.

(b) The Contractor shall be responsible for the damage or injury to property resulting from (1) the Contractor's neglect, misconduct, or omission in the manner or method of execution or non-execution of the work, or (2) the Contractor's defective work or the use of unacceptable materials.

(c) The Contractor's responsibility shall not be released until the work has been completed in compliance with the Contract. The Contractor shall restore damaged or injured property, at the Contractor's expense, to a condition similar or equal to that existing before the damage or injury occurred, by repairing, rebuilding, or restoring the property.

(d) Existing trees, shrubs, bushes or grass outside the designated work areas but inside project limits that are damaged due to the Contractor's operations shall be replaced in kind at the Contractor's expense.

7.10 FOREST PROTECTION

(a) The Contractor shall comply with all regulations of the State Department of Natural Resources, the National Forest Supervisor, or other authority having jurisdiction governing the protection of forests, and shall observe all sanitary laws and regulations with respect to the performance of work within or adjacent to State or National Forests. The Contractor shall keep the areas in an orderly condition, dispose of all refuse, obtain permits for the construction and maintenance of all construction camps, stores, warehouses, residences, latrines, cesspools, septic tanks, and other structures in accordance with the regulations and instructions issued by the Forest Supervisor.

(b) The Contractor shall take all reasonable precaution to prevent forest fires, and shall make every possible effort to notify a forest official at the earliest possible moment of the location and extent of any fire seen by the Contractor. The Contractor, subcontractors, and their employees shall prevent and suppress forest fires and provide assistance in this effort as directed by forest officials.

7.11 RESPONSIBILITY FOR DAMAGE CLAIMS

(a) The Contractor shall indemnify and save harmless the Division, its officers, and employees from suits, actions, or claims of any type or character brought because of any and all injuries or damage received or sustained by any person, persons, or property on account of the operations of the Contractor; or failure to comply with the provisions of the Contract; or on account of or in consequence of neglect of the Contractor in safeguarding the work; or through use of unacceptable materials in constructing the work; or because of any act or omission, neglect, or misconduct of the Contractor; or because of any claims or amounts recovered from any infringements of patent, trademark, or copyright, unless the design, device, material or process involved is specifically required by the Contract; or from any claims or amounts arising or recovered under the Worker's Compensation Act, or other law, ordinance, order, or decree. The Division may retain as much of any monies due the Contractor under the Contract as may be determined by the Division to be in the public interest.

(b) The Contractor shall procure and maintain, until final acceptance of the project, insurance as directed by the Division.

7.12 CONTRACTOR'S RESPONSIBILITY FOR WORK

Until final written acceptance of the project by the Project Manager, the Contractor shall be responsible and shall protect the work against injury or damage from all causes whether arising from the execution or the non-execution of the work, including but not limited to action of the elements, traffic, fire, theft, vandalism, or third party negligence. The Contractor shall rebuild, repair, restore or replace all work that is injured or damaged prior to final acceptance at no cost to the Division. Loss, injury, or damage to the Work due to unforeseeable causes beyond the control of and without fault or negligence of the Contractor, including but not restricted to acts of God, such as earthquakes, tornado, or other cataclysmic phenomenon of nature, or acts of the public enemy or of governmental authorities, shall be restored by the Contractor under the provision of Section 4.2 or 4.3, as applicable. During periods that work is suspended, the Contractor shall be responsible for the work under the Contract and shall prevent damage to the project, provide for drainage, and shall erect necessary temporary structures, signs, or other facilities required to maintain the project. During the suspension period, the Contractor shall maintain in a growing condition all newly established plantings, seeding, and sodding furnished under the Contract, and shall protect new tree growth and other vegetative growth against injury.

7.13 CONTRACTOR'S RESPONSIBILITY FOR UTILITY PROPERTY AND SERVICES

(a) At points where the Contractor's operations are adjacent to properties of railways, communication and power companies or are adjacent to other property, damage to which might result in considerable expense, loss or inconvenience, work shall not be commenced until all arrangements

necessary for the protection thereof have been made.

(b) The Contractor shall cooperate with the owners of any underground or overhead utility lines in removal and rearrangement operations in order that these operations may progress in a reasonable manner that duplication of rearrangement work may be reduced to a minimum, and that services rendered by those parties will not be unnecessarily interrupted.

(c) In the event of interruption to water or utility services as a result of accidental breakage or as a result of being exposed or unsupported, the Contractor shall promptly notify the proper authority and shall cooperate with the said authority in the restoration of service. If water service is interrupted, repair work shall be Continuous until the service is restored.

7.14 FURNISHING RIGHT OF WAY

The Division will be responsible for the securing of all necessary right-of-way in advance of construction. Any exceptions will be indicated in advance in the Contract.

7.15 PERSONAL LIABILITY OF PUBLIC OFFICIALS

The Project Manager or authorized representatives are acting solely as agents and representatives of the Division when carrying out and exercising the power or authority granted to them under the Contract. There shall not be any liability on them either personally or as employees of the Division.

7.16 NO WAIVER OF LEGAL RIGHTS

(a) Upon completion of the Project, the Division will make final inspection and notify the Contractor of acceptance. Final acceptance shall not preclude the Division from correcting any measurement, estimate, or certificate made before or after completion of the Contract, nor from recovering from the Contractor or Surety or both, overpayment sustained because the Contractor failed to fulfill the obligations under the Contract. A waiver on the part of the Division of any breach of any part of the Contract shall not be held to be a waiver of any other or subsequent breach.

(b) The Contractor, without prejudice to the terms of the Contract, shall be liable to the Division, for latent defects, fraud, or such gross mistakes as may amount to fraud, or as regards the Division's rights under any warranty or guaranty.

7.17 AFFIDAVIT RELATIVE TO COLLUSION

The Contractor may be required to file a sworn statement executed by, or on behalf of, the person, firm, association or corporation to whom such Contract is to be awarded, certifying that such person, firm, association or corporation has not, either directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with such Contract. This sworn statement shall be by the successful Bidder before such persons as are authorized by the laws of the State to administer oaths. The original of such sworn statement shall be filed with the Division prior to award of the Contract or at any time thereafter.

7.18 ARCHAEOLOGICAL AND PALEONTOLOGICAL DISCOVERIES

When the Contractor's operations encounter plant or animal fossils, remains of prehistoric or historic structures, prehistoric or historic artifacts (bottle dumps, charcoal from subsurface hearths, old pottery, potsherds, stone tools, arrowheads, etc.), the Contractor's affected operations shall immediately cease. The Contractor shall notify the Project Manager of the discovery of these materials. When ordered to proceed, the Contractor shall conduct operations in the vicinity of the discoveries as directed. The work will be paid for by the Division as provided in Section 4.2 when contract unit prices exist, or as extra work as provided in Section 4.3 when no unit prices exist. Delays to the Contractor because of the materials encountered may be cause for extension of contract time in accordance with Section 8.5.

7.19 AIR AND WATER POLLUTION

In accordance with the requirements pertaining to "Legal Relations and Responsibility to the Public," the Contractor's attention is directed to the "Colorado Air Quality Control Act," Title 25, Article 7 CRS and regulations promulgated thereunder and to the "Colorado Water Quality Control Act," Title 25, Article 8 CRS and regulations promulgated thereunder. The Contractor will be required to comply with these acts and to the following additional requirements in connection therewith:

(a) If the Contractor anticipates, or if construction activities result in any change from or noncompliance with permits or certifications, then the Contractor shall detail the anticipated changes or noncompliance in a written report to the Project Manager, and revise existing permits or certifications or obtain new permits or certifications as necessary. The report shall be submitted within two days from the time the Contractor becomes aware of the change or noncompliance. Within five days after receipt of the report, the Project Manager will approve or reject the request for change in writing, or detail a course of action.

(b) Unless called for on the Plans, excavation from the roadway, channel changes, cofferdams, etc., shall not be deposited in or near to rivers, streams or impoundments, so that it will be washed away by high water runoff.

(c) The Contractor shall comply with the "Protection of Fishing Streams," Title 33, Article 5 CRS; "Clean Water Act," 33 USC 1344 and regulations promulgated; certifications issued.

(d) Frequent fording of live streams with construction equipment will not be permitted. Temporary bridges or other structures shall be used wherever stream crossings are deemed necessary. Unless otherwise approved in writing, mechanized equipment shall not be operated in live streams except as may be required to construct channel changes and structures.

(e) Rivers, streams and impoundments shall be promptly cleared of all falsework, piling, debris, or other obstructions placed therein or caused by the construction operations.

(f) The Contractor may be legally required to obtain permits associated with specific activities within, or off the project site, such as borrow pits, concrete or asphalt plant sites, waste disposal sites, or other facilities. It is the Contractor's responsibility to obtain these permits. The Contractor shall consult with the Project Manager, or contact the Colorado Department of Public Health and Environment or other appropriate federal, state, or local agency to determine the need for any permit, but it is the Contractor’s sole responsibility to make the final determination as to the need for such permits.

(g) The Contractor shall conduct the work in a manner that minimizes pollution of any waters, including wetlands.

(h) Required dewatering of excavations shall be conducted in a manner that avoids pollution and erosion. Water from dewatering operations shall not be directly discharged into any state waters including wetlands, irrigation ditches, canals, or storm sewers, unless allowed by a permit. Discharge into sanitary sewers will not be allowed unless written permission is obtained from the owner or controlling authority and this disposal method is approved in writing by the Project Manager. Unless prohibited by law or otherwise specified in the Contract, the water from dewatering operations shall be contained in basins for dissipation by infiltration or evaporation, shall be hauled away from the project for disposal in accordance with applicable laws and regulations, or shall be land applied to approved non-wetland vegetated areas and allowed to soak into the soil. Depending upon the quality of the water, land application of water to vegetated areas may require a written concurrence or permit from CDPHE. Based on guidelines and criteria from CDPHE, the Contractor shall determine the quality of the water, obtain applicable concurrences or permits, and furnish copies of the concurrences or permits obtained to the Project Manager.

(i) At least 15 days prior to commencing dredging or fill operations in a watercourse, the Contractor shall provide written notification to owners or operators of domestic or public water supply intakes or diversion facilities, if these facilities are within five miles downstream from the dredging or fill

operations.

(j) Upon completion of wetland or in-stream construction activities, all temporary fills shall be removed in their entirety and disposed of in an upland location outside of flood plains unless otherwise specified in the Contract. Affected areas shall be returned to their pre-existing elevation unless otherwise specified in the Contract.

(k) Construction operations in state waters, including wetlands, shall be restricted to:

(1) Channel change areas designated in the Contract.

(2) Areas designated in the Contract which must be entered to construct structures.

(3) Areas where water must be forded no more than four times per day to facilitate construction. Fording waters more than four times per day will not be permitted. Whenever fording waters more than four times per day is necessary, a temporary bridge or other structure shall be used.

(4) Areas authorized by the Corps of Engineers.

(l) Work in, or near, wetlands shall be performed in a manner that will minimize harm to the wetlands. Wetland areas outside of the project site shall not be used for storage, parking, waste disposal, access, borrow material, or any other construction support activity.

(m) Pollutant by-products of construction, plastic concrete, asphalt, solids, sludges, pollutants removed in the course of treatment of wastewater, excavation or excess fill material, and material from sediment traps shall be handled, stockpiled, and disposed of in a manner that prevents entry into state waters, including wetlands.

(n) The use of chemicals such as soil stabilizers dust palliatives, herbicides, growth inhibitors, fertilizers, deicing salts, etc., during construction shall be in accordance with the manufacturer's recommended application rates, frequency, and instructions. These chemicals shall not be used, stored, or stockpiled within 50 horizontal feet (15 m) of the ordinary high water line of any state waters, including wetlands, except when otherwise specified in the Contract.

(o) Construction waste or salvable material, excess excavated material, fill material, construction equipment, fuels, lubricants, and other petroleum distillates shall not be stored or stockpiled within 50 horizontal feet (15 m) of any wetland, state waters, or the ordinary high water line of any state waters. Equipment fueling and servicing shall occur only within accepted designated areas.

(p) The quantity of materials stored on the project shall be limited, as much as practical, to that quantity required to perform the work in an orderly sequence. All materials stored on-site shall be stored in a neat, orderly manner, in their original containers, with the original manufacturer's label. Materials shall not be stored in a location where they may be carried into a state water at any time.

(q) Spill prevention and containment measures shall be used at storage, and equipment fueling and servicing areas to prevent the pollution of any state waters, including wetlands. All spills shall be cleaned up immediately after discovery, or contained until appropriate cleanup methods can be employed. Manufacturer's recommended methods for spill cleanup shall be followed, along with proper disposal methods.

(r) Use of heavy equipment in or around state waters, including wetlands, will not be allowed, except as specified in the Contract and permits, unless otherwise directed by the Project Manager. If any such work is allowed, the equipment shall be of such type that will produce minimal environmental damage. For allowed work in wetlands, the equipment shall be on fiber, wooden, earthen, or metallic mats to prevent undue disturbance and damage to the wetlands area. Where practical, equipment shall be operated from banks or shoulder above riparian and wetland areas.

(s) The Contractor shall prevent grass or brush fires that will expose areas of soil to erosion.

(t) The construction activity shall not block the movement of those species of aquatic life indigenous to the waterbody.

(u) The construction activities shall not impair Indian tribal rights, including, but not limited to, water rights, and treaty fishing and hunting rights.

(v) Discharges of pollutants into breeding areas of migratory waterfowl, or into fish spawning areas during spawning seasons shall not be permitted unless allowed by permits from appropriate regulatory agencies.

(w) The Contractor shall be liable for any penalty (including monetary fines) charged to the Division caused by the Contractor's noncompliance with any water quality permit or certification. Monetary fines shall be deducted from any money due to the Contractor. If the monetary fine is in excess of all the money due to the Contractor, then the Contractor shall pay to the Division the amount of such excess.

(x) The Contractor will not receive additional compensation, or time extensions, for any disruption of work or loss of time caused by any actions brought against the Contractor for failure to comply with water quality controls.

(y) In the event that a spill occurs as a direct result of the Contractor's actions or negligence, the clean-up of such spill shall be performed by the Contractor at the Contractor's expense.

(z) The Contractor shall be liable for any monitoring or testing as required in the permits.

7.20 ANTI DISCRIMINATION

The Contractor agrees to comply with the letter and spirit of the Colorado Anti-discrimination Act of 1957, as amended, and other applicable laws respecting discrimination and unfair employment practices (24-34-402, CRS, as amended), and as required by Executive Orders, Equal Opportunity and Affirmative Action, and other legislation.

7.21 GENERAL

(a) The laws of the State of Colorado and rules and regulations issued pursuant thereto shall be applied in the interpretation, execution and enforcement of this Contract. Any provisions of this Contract whether or not incorporated herein by reference which provides for arbitration by an extra-judicial body or person or which is otherwise in conflict with said laws, rules and regulations shall be considered null and void. Nothing contained in any provision incorporated herein by reference which purports to negate this or any other Special Provision in whole or in part shall be valid or enforceable or available in any action at law whether by way of complaint, defense or otherwise. Any provision rendered null and void by the operation of this provision will not invalidate the remainder of this Contract to the extent that the Contract is capable of execution.

(b) The signatories to the Contract Document aver that they are familiar with 18-8-301, et seq., (Bribery and Corrupt Influences) and 18-8-401, et seq., (Abuse of Public Office), CRS as amended, and that no violation of such provisions is present.

(c) The signatories aver that to their knowledge, no State employee has any personal or beneficial interest whatsoever in the service or property described in the Contract Documents.

(d) CORA Disclosure: To the extent not prohibited by federal law, the Contract and the performance measures and standards required under Section 24-103.5-101 CRS, if any, are subject to public release through the CORA.

End of

LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

SECTION 8 - PROSECUTION AND PROGRESS

8.1 SUBLETTING OF CONTRACT

(a) Contractor's rights and obligations under the Contract are personal and may not be transferred or assigned without the prior, written consent of the State. Any attempt at assignment or transfer without such consent shall be void. Any assignment or transfer of Contractor's rights and obligations approved by the State shall be subject to the provisions of the Contract

(b) The Contractor shall not subcontract any portion of the Contract without written notification to the Project Manager. No subcontract, shall release the Contractor of liability under the Contract and Bonds.

8.2 NOTICE TO PROCEED

(a) The "Notice to Proceed" will stipulate the date on which it is expected the Contractor will begin the construction and from which date Performance Time will be charged. Commencement of work on the site by the Contractor will be deemed and taken as a waiver on the Contractor's part of this notice and contract time will commence.

(b) The Contractor shall commence work under the Contract on or prior to the 10th day following the date of Notice to Proceed, or in accordance with the selected start date allowed in the Contract.

8.3 PROSECUTION AND PROGRESS

The Contractor shall furnish the Project Manager with a schedule for approval in accordance with the Bid Documents.

8.4 CHARACTER OF WORKERS, METHODS AND EQUIPMENT

(a) The Contractor shall employ resources for completing work to full completion in the manner and time required by the Contract.

(b) All workers shall have skill and experience to perform the work assigned to them.

(c) Any person employed by the Contractor or by any subcontractor who does not perform the work in a proper and skillful manner shall, at the written request of the Project Manager, be removed by the Contractor or subcontractor and shall not be employed on the project without the approval of the Project Manager.

(d) Should the Contractor fail to remove this person or persons or fail to furnish skilled and experienced personnel for the proper prosecution of the work, the Project Manager may suspend the work by written notice until compliance is achieved.

(e) All equipment used on the project shall be of size and mechanical condition to meet requirements of the work and to produce a satisfactory quality of work. Equipment used shall not cause injury to roadways, adjacent property, or other structures.

(f) When the methods and equipment to be used are not prescribed in the Contract, the Contractor shall use any methods or equipment that will accomplish the contract work in conformity with the Contract requirements.

(g) When the methods and equipment to be used are specified in the Contract, other methods and equipment shall not be used in the performance of the work unless the Contractor receives written authorization from the Project Manager.

(h) If the Contractor desires to use a method or equipment other than specified in the Contract, the Con-

tractor may request approval from the Project Manager. The request shall include a full description of the methods and equipment proposed to be used and the Contractor's explanation for the proposed change. The Contractor will be fully responsible for producing work in conformity with Contract requirements. If the substituted methods or equipment do not produce results conforming to Contract requirements, the Contractor shall complete the remaining construction with the originally specified methods and equipment. Deficient work shall be removed, repaired, or replaced to conform to the specified quality by and at the Contractor's expense. No increase will be made in the basis of payment for the construction items involved nor in contract time when a change in methods or equipment is authorized.

8.5 DETERMINATION AND EXTENSION OF PERFORMANCE TIME

(a) The number of calendar days allowed or specified date for the completion of the work included in the Contract will be stated in the Bid Documents.

(b) No extension of time will be granted for any adverse weather conditions unless in the sole discretion of the Project Manager the weather conditions in question prevented safe and workmanlike prosecution of work.

(c) The Contractor shall not carry on construction operations on Saturdays, Sundays, or Holidays unless previously arranged with Project Manager, except for pre-wetting, making emergency repairs and providing proper protection of the work. Saturdays, Sundays and Holidays will be counted against the Performance Time.

(d) The Performance Time in the Contract as awarded is based on the original quantities as defined in Section 2.4. If satisfactory fulfillment of the Contract requires performance of work in greater quantities than those set forth in the Proposal, the Performance Time allowed for the Project may be increased on a basis commensurate with the amount and difficulty of the added work after written request by the Contractor.

(e) If the Contractor finds it impossible for reasons beyond the Contractor’s control to complete the work within the Performance Time as specified or as extended, the Contractor may at any time prior to the expiration of the Performance Time, make a written request to the Project Manager for an extension of time setting forth therein the Contractor’s reasons which the Contractor believes will justify the granting of the Contractor’s request.

(f) The Contractor's plea that insufficient time was specified is not a valid reason for extension of time. If the Project Manager finds that the work was delayed because of conditions beyond the control and without the fault of the Contractor, the Project Manager may extend the time for completion in such amount as the conditions justify and approved in accordance with these GC’s. The extended time for completion shall then be in full force and affect the same as though it were the original time for completion.

(g) Delays due to slow delivery of materials or of fabrication scheduling for reasons of late ordering, financial considerations or other causes which could have been foreseen and prevented, will be considered as within the Contractor's control, and each day of such delay will count against Performance Time. However, delay in the delivery of materials to the Contractor, due to some unusual market condition such as those caused by industry-wide strike, national disaster, area-wide shortage or other reason beyond the control of the Contractor, which affects the completion time shall be considered a basis for extension of contract time.

(h) Certified copies of correspondence between the Contractor and the Contractor’s supplier, pertinent to the delay claimed by the Contractor will be considered in determining extension of contract time. All such correspondence shall be submitted by the Contractor in sufficient time so that time adjustments can be made concurrently with the delay.

(i) When Final Acceptance has been duly made by the Project Manager as prescribed in Section 5.16(c) the daily time charge will cease.

(j) If flooding, unusual water conditions, or unanticipated construction problems beyond the Contractor's control alter the work schedule or work conditions in such a manner that prosecution of work would cause harm to the site or construction, the Contractor may request that work be temporarily Shutdown (the duration of an authorized shutdown is not assessed against the contract time) until the conditions which precluded prosecution of the work no longer exist.

(k) The Contractor's request shall set forth the reasons s/he believes the work should be temporarily halted and the estimate of the time of work suspension.

(l) The Contractor shall not suspend the work until s/he has received written approval from the Project Manager and shall resume with the work promptly when notified to resume operations.

(m) The Division shall have the authority to suspend the work, either in whole or in part for such period or periods as may be deemed necessary due to unsuitable weather, faulty workmanship, improper superintendence, Contractor's failure to carry out orders or to perform provisions of the Bid Documents, or other legal items or circumstances as directed by the Project Manager.

8.6 FAILURE TO COMPLETE WORK ON TIME

(a) The parties agree that time is of the essence of the Contract and of the Specifications wherever a definite and certain length of time is fixed for the performance of any act. A daily charge will be made against the Contractor for each working day, or calendar day, that any work remains uncompleted after the elapse of contract time. This daily charge will be deducted from any money due the Contractor. This deduction will not be considered a penalty but as liquidated damages.

(b) The liquidated damages set forth below is an amount, agreed to by the Contractor and the Division, as reasonably representing additional construction engineering and administration costs incurred by the Division, if the Contractor fails to complete the Project within the Performance Time. The liquidated damages set forth do not include any additional actual loss or damage that the Division might incur as a result of the Contractor's delay, such as but not limited to increased costs to other contractors.

(c) Refer to the Special Conditions for the amount of liquidated damages. If an amount of liquidated damages does not appear in the Special Conditions, liquidated damages shall be charged at $150 per day, which is a reasonable estimate of the additional expense incurred by the Division. The Special Conditions may specify higher liquidated damages amounts due to the particular circumstances of the Project, such as but not limited to the potential loss of revenue to the Division.

(d) Due account shall be taken of any adjustment of the Performance Time for completion of the work granted under the provisions of Section 8.5.

(e) Permitting the Contractor to continue and finish the work or any part thereof after elapse of Performance Time will not operate as a waiver on the part of the Division of any of its rights under the Contract.

(f) Any deduction assessed as liquidated damages under this subsection shall not relieve the Contractor from additional liability for any actual damages or costs resulting from delays to other contractors on the project or other projects caused by a failure of the assessed Contractor to complete the work according to Performance Time.

8.7 DEFAULT OF CONTRACT

(a) If the Contractor:

(1) Fails to begin the work under the Contract within the time specified in the Notice to Proceed, or

(2) Fails to perform the work with sufficient workers and equipment or with sufficient materials to

assure the prompt completion of said work, or

(3) Fails to perform the work in accordance with Contract requirements or refuses to remove and replace rejected materials or unacceptable work, or

(4) Discontinues the prosecution of the work, or

(5) Fails to resume work which has been discontinued within a reasonable time after notice to do so, or

(6) Becomes insolvent or is declared bankrupt, or commits any act of bankruptcy or insolvency, or

(7) Allows any final judgment to remain unsatisfied for a period of 10 days, or

(8) Makes an assignment for the benefit of creditors, or

(9) Fails to comply with Contract requirements regarding minimum wage payments or EEO requirements, or

(10) Is a party to fraud, or

(11) For any other cause whatsoever, fails to carry on the work in an acceptable manner;

(b) The Project Manager will give notice in writing to the Contractor and the Surety of such delay, neglect or default.

(c) If the Contractor or Surety does not correct such default and proceed with the Contract within 10 days after the date of the Project Manager's notice, the Division will have full power and authority, without violating the Contract, to take the prosecution of the work from the Contractor. The Division may appropriate or use the Contractor's materials and equipment, and may enter into an agreement for the completion of the Contract according to the terms and provisions thereof, or use other methods as, in the opinion of the Project Manager, will be required for the completion of the Contract.

(d) All costs and charges incurred by the Division, together with the cost of completing the work under contract, will be deducted from any monies due or which may become due said Contractor. If such expense exceeds the sum which would have been payable under the Contract, then the Contractor and the Surety shall be liable and shall pay to the Division the amount of such excess.

8.8 TERMINATION OF CONTRACT

(a) Termination Notice: The Division may terminate work under the Contract in whole or in part if the Project Manager determines that termination is in the Division's best interest. Contract termination will be initiated by the Project Manager's written Contract Termination Notice to the Contractor. The notice will specify the effective date.

(b) Cancelled Commitments: The Contractor, after receiving the Contract Termination Notice, shall cancel any outstanding commitments for procurement of materials, supplies, equipment, and miscellaneous items. In addition, the Contractor shall use reasonable effort to cancel or divert any outstanding subcontract commitments to the extent they relate to any work terminated. With respect to such cancelled commitments the Contractor shall:

(1) Settle all outstanding liabilities and all claims arising out of these canceled commitments. Such settlements will be approved by the Project Manager and shall be final; and

(2) Assign to the Division all of the rights, title and interest of the Contractor under the terminated orders and subcontracts, as directed by the Project Manager. The Division will then have the right to settle or pay any or all claims arising out of the termination of these commitments.

(c) Termination Claim: The Contractor shall submit the termination claim to the Project Manager within 90 days after the termination notice effective date. During the 90 day period, the Contractor may make a written request for a time extension in preparing the claim. Any time extension must be approved by the Project Manager. If the Contractor fails to submit the termination claim within the time allowed, the Project Manager may determine the amount due the Contractor by reason of the termination.

(d) Payment:

(1) Subject to paragraph (c) above, the Contractor and Project Manager may agree upon the whole or any part of the amount to be paid to the Contractor because of the termination. The amount may include reasonable cancellation charges incurred by the Contractor. The amount may also include any reasonable loss upon outstanding commitments for subcontracts which the Contractor is unable to cancel, provided the Contractor has made reasonable effort to divert the commitments to other activities. The amount agreed upon shall be embodied in a Contract Amendment and the Contractor shall be paid that amount.

(2) Payments claimed and agreed to pursuant to termination shall be based on the contract unit prices. Payment for partially completed lump sum items may be made in the proportion that the partially completed work is to the total lump sum item. Where work performed is of a nature that it is impossible to separate the costs of uncompleted work from completed units, the Contractor will be paid the actual cost incurred for the necessary preparatory work and other work accomplished.

(3) The Division may, from time to time, under terms and conditions it may prescribe, make partial payments against costs incurred by the Contractor in connection with the Contract termination. The total of such payments shall not exceed the amount, as determined by the Project Manager, the Contractor will be entitled to hereunder.

(e) Disposition of Work and Inventory: The Contractor shall transfer title and deliver to the Division, as directed by the Project Manager, such items which, if the Contract had been completed, would have been furnished to the Division including:

(1) Completed and partially completed work; and

(2) Materials or equipment produced or in process or acquired in connection with the performance of the work terminated by the notice.

(f) Other than the above, any termination inventory resulting from the Contract termination may, with written approval of the Project Manager, be sold or acquired by the Contractor under the conditions prescribed by and at prices approved by the Project Manager. The proceeds of any such disposition shall be applied to reduce any payments to the Contractor under the Contract, or shall otherwise be credited to the cost of work covered by the Contract, or paid in a manner as directed by the Project Manager. Until final disposition, the Contractor shall protect and preserve all the material related to the Contract which is in the Contractor's possession and in which the Division has or may acquire an interest.

(g) Cost Records: The Contractor agrees to make cost records available to the extent necessary to determine the validity and amount of each item claimed.

(h) Contractual Responsibilities: Termination of a Contract or portion thereof shall not relieve the Contractor of contractual responsibilities for the work completed, nor shall it relieve the Surety of its obligation for and concerning any just claim arising out of the work performed.

End of

PROSECUTION AND PROGRESS

SECTION 9 - MEASUREMENT AND PAYMENT

9.1 MEASUREMENT OF QUANTITIES

(a) All work completed under the Contract will be measured by the Project Manager according to United States standard measure.

(b) A station when used as a definition or terms of measurement will be 100 linear feet.

(c) A method of measurement and computations to be used in determination of quantities of material furnished and of work performed under the Contract will be those methods generally recognized as conforming to good engineering practice.

(d) Unless otherwise specified, longitudinal measurements for area computations will be made horizontally. Unless otherwise specified, transverse measurements for area computations will be the neat dimensions shown on the Plans or as altered by the Project Manager to fit field conditions.

(e) All items which are measured by the linear foot, such as pipe, culverts, guardrail, underdrains, etc., will be measured parallel to the base of foundation upon which such structures are placed unless otherwise shown on the Plans.

(f) In computing volumes of excavation, the average end area method or other acceptable methods will be used.

(g) The term "gage" when used in connection with the measurement of plates, will mean the U.S. Standard Gage.

(h) When the term "gage" refers to the measurement of wire, it will mean the wire gage specified in AASHTO M 32.

(i) The term "ton" will mean the short ton consisting of 2,000 lbs.

(j) Trucks used to haul material being paid for by weight shall be weighed empty at such times as the Project Manager directs, and each truck shall bear a plainly legible identification mark.

(k) Materials to be measured by volume in the hauling vehicle shall be hauled in approved vehicles and measured therein at the point of delivery. Vehicles for this purpose may be of any size or type acceptable to the Project Manager, provided that the body is of such shape that the actual contents may be readily and accurately determined. All vehicles shall be loaded to at least their water level capacity and loads shall be leveled when the vehicle arrives at the point of delivery.

(l) The weight of inherent moisture in the material will not be deducted. Water added for the Contractor's convenience will not be paid for.

(m) Rental of equipment will be measured by time in hours of actual working time and necessary traveling time of the equipment within the limits of the project unless special equipment has been ordered by the Project Manager in connection with force account work, in which case travel time and transportation to the project will be measured. If equipment has been ordered held on the job on a standby basis by the Project Manager, standby rental rates will be paid for the equipment.

(n) When requested by the Contractor and approved by the Project Manager in writing, material specified to be measured by the cubic yard may be weighed and such weights will be converted to cubic yards for payment purposes. Factors for conversion from weight measurement to volume measurement and vice versa will be determined by the Project Manager and shall be agreed to by the Contractor before such method of measurement of pay quantities is used.

(o) The term "lump sum" when used as an item of payment will mean complete payment for the work de-

scribed in the Contract.

(p) When a complete structure or structural unit (in effect, "lump sum" work) is specified as the unit of measurement, the unit will include all necessary fittings and accessories.

(q) When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these are identified by gage, unit weight, section dimensions, etc., such identification shall be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited Specifications, manufacturing tolerances established by the industries involved will be accepted.

9.2 SCOPE OF PAYMENT

(a) The Contractor shall receive and accept compensation provided for in the Contract as full payment for furnishing all materials and for performing all work under the Contract in a complete and acceptable manner and for all risk, loss, damage or expense of whatever character arising out of the nature of the work or the prosecution thereof, subject to the provisions of Section 7.16.

(b) Work or materials for which there are pay items and which are to be paid for separately will be included in the appropriate pay item. Work or materials that are essential to the project but for which there are no pay items will not be measured and paid for separately but shall be included in the appropriate pay item. Payment for any pay item listed in the Bid proposal of approximate quantities in the Contract Documents include all work necessary for their proper completion.

(c) The State shall pay each invoice within 45 days following the State's receipt of that invoice, so long as the amount invoiced correctly represents work completed by the Contractor and previously accepted by the State during the term that the invoice covers. Receipt of an invoice shall not constitute acceptance of any Work performed or deliverables provided under the Contract.

(d) Amounts not paid by the State within 45 days of the State's acceptance of the invoice shall bear interest on the unpaid balance beginning on the 45th day at the rate of 1% per month, as required by Section 24-30-202(24)(a), CRS, until paid in full; provided, however, that interest shall not accrue on unpaid amounts that the State disputes in writing. Contractor shall invoice the State separately for accrued interest on delinquent amounts, and the invoice shall reference the delinquent payment, the number of day's interest to be paid and the interest rate.

(e) The State is prohibited by law from making commitments beyond the term of the current State fiscal year. Payment to Contractor beyond the current State fiscal year is contingent on the appropriation and continuing availability of contract funds in any subsequent year (as provided in the Colorado Special Provisions). If federal funds or funds from any other non-State funds constitute all or some of the contract funds the State's obligation to pay Contractor shall be contingent upon such non-State funding continuing to be made available for payment. Payments to be made pursuant to this Contract shall be made only from contract funds, and the State's liability for such payments shall be limited to the amount remaining of such contract funds. If State, federal or other funds are not appropriated, or otherwise become unavailable to fund this Contract, the State may, upon written notice, terminate this Contract, in whole or in part, without incurring further liability. The State shall, however, remain obligated to pay for Services and Goods that are delivered and accepted prior to the effective date of notice of termination, and this termination shall otherwise be treated as if the Contract were terminated in the public interest as described in Section 8.8.

(f) If the State determines that the amount of any invoice is not correct, then the invoice shall be corrected prior to payment. The State may recover, at the State's discretion, payments made to Contractor in error for any reason, including, but not limited to, overpayments or improper payments, and unexpended or excess funds received by Contractor. The State may recover such payments by deduction from subsequent payments under this Contract, deduction from any payment due under any other contracts, grants or agreements between the State and Contractor, or by any other appropriate method for collecting debts owed to the State.

9.3 COMPENSATION FOR ALTERED QUANTITIES

(a) When the accepted quantities of work vary from the quantities in the Bid Documents, the Contractor shall accept as payment in full, so far as contract items are concerned, payment at the original contract prices for the accepted quantities of work done. Allowance, except as provided in Section 4.2, will not be made for any increased expense, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor resulting either directly from such alterations or indirectly from unbalanced allocation among the contract items of overhead expense on the part of the Bidder and subsequent loss of expected reimbursements therefore or from any other cause.

(b) Should any such alteration directly cause the loss of any work or materials already furnished by the Contractor under the terms of the original Contract, s/he will be reimbursed for the actual cost of such work or of salvaging such materials. Any such materials may, at the option of the Division, be purchased at the actual cost to the Contractor, as evidenced by certified invoices.

9.4 EXTRA AND FORCE ACCOUNT WORK

(a) Extra work performed in accordance with the requirements and provisions of Section 4.3 will be paid for at the unit prices or lump sum stipulated in the order authorizing the work, or the Division may require the Contractor to do such work on a force account basis to be compensated in the following manner:

(1) Labor: For all labor and foremen in direct charge of the specific operations, the Contractor shall receive the rate of wage (or scale) paid and agreed upon in writing before beginning work for each and every hour that said labor and foreman are actually engaged in the work.

(2) The Contractor shall receive the actual costs paid to, or in behalf of, workers by reason of subsistence and travel allowances as evidenced by receipts but not to exceed State of Colorado per diem rates or other employment contract generally applicable to the classes of labor employed on the work.

(3) An amount equal to 67 percent of the sum of the above items will also be paid the Contractor to cover overhead, general superintendence, additional bond, property damage and liability insurance, workmen's compensation insurance premiums, unemployment insurance contributions, and social security.

(4) Should the Contractor allow the Superintendent to engage in the physical performance of construction work the Superintendent shall be compensated at the rate at which s/he is performing (laborer, operator, etc.), however, the 67 percent multiplier rate as designated above will not be applied.

(b) In addition to the 67 percent stated above, the actual amount of fringe benefits will be paid to the Contractor for those work classifications which may carry fringe benefits, as certified in writing by the Contractor. (Fringe benefits are those payments made by the Contractor to a third party or trustee to cover such things as, but not limited to, health and welfare, pensions, vacations and apprenticeship programs, etc.).

(c) The Project Manager shall have the authority to approve the manpower as to type and numbers.

(d) Materials: For materials accepted by the Project Manager and used, the Contractor or subcontractor shall receive the actual cost of such materials delivered on the work, including transportation charges paid by him/her, exclusive of machinery rentals as hereinafter set forth, to which cost 15 percent will be added.

(e) Subcontractor: When extra work on a force account basis is performed by a subcontractor on the project, in accordance with the provisions of an extra work order, a percentage based on the

following table will be allowed as additional to the percentages in (a) and (b) above, to reimburse the prime Contractor for the administrative expenses incurred in connection with the work. Bid items in the original Contract are not to be considered.

(1)	To $1,000	10 percent
(2)	Over $1,000 to $10,000	$100 plus 5 percent of excess over $1,000
(3)	Over $10,000	$550 plus 3 percent of excess over $10,000

Approval of this additional percentage will be made after receipted invoices are furnished by the Contractor.

(f) Equipment: For any machinery or special equipment (other than small tools) including fuel and lubricants, plus transportation costs, the use of which has been authorized by the Project Manager, the Contractor shall receive the rental rates agreed upon in writing before such work is begun for the actual time that such equipment is in operation on the work.

(g) Miscellaneous: No additional allowance will be made for general superintendence, the use of small tools or other costs for which no specific allowance is herein provided.

(h) Compensation: The Contractor's representative and the Project Manager shall compare records of the cost of work done as ordered on a force account basis.

(i) Statements: No payment will be made for work performed on force account basis until the Contractor has furnished the Project Manager with itemized statements of cost of such force account work including certified payrolls.

Statements shall be accompanied and supported by certified invoices for all materials used and transportation charges. However, if materials used on the force account work are not specifically purchased for such work but are taken from the Contractor's stock, then in lieu of the invoices, the Contractor shall furnish an affidavit certifying that such materials were taken from the Contractor's stock, that the quantity claimed was actually used, and that the price and transportation claimed represent the actual cost to the Contractor.

9.5 ELIMINATED ITEMS

Should any items contained in the Contract be found unnecessary for the proper completion of the work, the Project Manager will notify the Contractor in writing to eliminate the item. Such action will not invalidate the Contract. The Contractor, by Change Order, will be reimbursed for actual work done and all costs incurred, including mobilization of materials and equipment prior to the elimination of the items.

9.6 PARTIAL PAYMENTS

(a) Standard Amount Retained:

(1) Requests for partial payment will be accepted from the Contractor once each month as the work progresses. Said payments will be based upon estimates prepared by the Project Manager of the value of the work performed and materials placed in accordance with Section 9.7. The Division will deduct money from the partial payments in amounts considered necessary to protect the interests of the State (pursuant to Section 24-91-103 CRS), and will retain this money until after completion of the entire Contract.

(2) If the total Contract Amount exceeds $150,000.00 then the State will retain a portion of each payment to the Contractor. Unless it is determined that a larger amount is necessary to protect the interests of the State, the amount to be retained from partial payments will be five percent (5%) of the value of the work performed to date. If the State fails to retain 5% of any payment the State may withhold a higher amount of a subsequent payment in order to offset such omission.

(3) The withheld percentage of the contract price of any such work, improvement, or construction shall be retained until the Contract is completed satisfactorily and finally accepted by the Project Manager.

(b) Subcontractor and Supplier Claims:

The Division may withhold, in addition to the standard amount, funds for all claims against the Contractor filed by subcontractors and suppliers, pursuant to Sections 38-26-107 and 24-91-103, CRS.

9.7 PAYMENT FOR MATERIAL ON HAND

(a) Partial payments may be made to the extent of the delivered cost of materials to be incorporated in the work as evidenced by certified invoices, when produced on the project, delivered on the project or stored in acceptable storage places in the State of Colorado in which case the Contractor must furnish evidence to the Project Manager that such materials are stored subject to or under the control of the Division. Payment for such materials will not relieve the Contractor of responsibility for loss or damage of the stored materials.

(b) Partial payment will not be made on living or perishable plant materials until planted on the project.

9.8 ACCEPTANCE AND FINAL PAYMENT

(a) When the project has been accepted as provided in Section 5.16, the Project Manager will prepare the final estimate (pay application) of the quantities of the various classes of work performed. After acceptance of such final estimate by the Contractor and all appropriate State officials and receipt of proof of advertisement in accordance with notice provisions contained in 38-26-107, CRS, s/he will be paid the entire sum found to be due after deducting all previous payments and all amounts to be retained or deducted under the provisions of the Contract and the appropriate statutes.

(b) All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

(c) Final payment, based on the final estimate and subject to all provisions of the Contract, shall be made after the Contractor has indicated, by signature or other written acknowledgement of the final estimate form. The Contractor's signature or other written acknowledgement indicates that the Project is full and complete, and the Contractor releases the Division and Department from all claims or damages arising from the prosecution of work under the Contract.

9.9 CORRECTION OF WORK AFTER FINAL PAYMENT (WARRANTY PERIOD)

Neither the final advertisement, nor payment nor any provisions in the Contract shall relieve the Contractor of responsibility for faulty materials or workmanship. Contractor shall be liable for defects in concrete work which appear within a period of two years from the date of final acceptance of the project and one year for all other construction work from the date of final acceptance (unless otherwise indicated in the Bid Documents) unless defects are discovered after the one or two year period which are the result of faulty materials or workmanship, in which case the provisions of the first sentence of this paragraph shall apply. The Project Manager will give notice to the Contractor of observed defects with reasonable promptness.

End of

MEASUREMENT AND PAYMENT

APPENDIX E – SAMPLE CONSTRUCTION AGREEMENT

Rifle Falls SFU - Isolation Building
SCA23A

STATE OF COLORADO CONSTRUCTION AGREEMENT

SIGNATURE PAGE
THE PARTIES HERETO HAVE EXECUTED THIS CONTRACT

Each person signing this Contract represents and warrants that he or she is duly authorized to execute this Contract and to bind the Party authorizing his or her signature.

CONTRACTOR Contractor's Full Legal Name Signature: _____ Printed Name: _____ Title: _____ Date: _____	**STATE OF COLORADO** Jared S. Polis, Governor Colorado Department of Natural Resources Dan Gibbs, Executive Director Colorado Parks and Wildlife Signature: _____ Printed Name: _____ Title: _____ Date: _____
2nd State or Contractor Signature if Needed _____ By: Name & Title of Person Signing for Signatory Date: _____	**LEGAL REVIEW** Phil Weiser, Attorney General By:_____ Assistant Attorney General Date: _____

In accordance with §24-30-202 C.R.S., this Contract is not valid until signed and dated below by the State Controller or an authorized delegate.

STATE CONTROLLER
Robert Jaros, CPA, MBA, JD

Signature: _____

Printed Name: _____

Title: _____

Effective Date: _____

Project Summary Table

State Agency Department of Natural Resources Colorado Parks and Wildlife 6060 Broadway Denver, Colorado 80203	**Bid Number:** IFB1 PMAA 2025*
Contractor Contractor's Full Legal Name Address	**Project Name and Purpose** 4291, Rifle Falls SFU – Isolation Building and the purpose of the contract is to construct a 26'x33' hatchery building.
Contract Maximum Amount	**Performance Time** 90 Calendar Days

1. PARTIES

This Contract is entered into by and between Contractor named above and on the Signature Page for this Contract (the "Contractor"), and the State of Colorado acting by and through the State agency named above and on the Project Summary Table for this Contract (the "State" or "CPW"). Contractor and the State agree to the terms and conditions in this Contract.

2. TERM AND EFFECTIVE DATE

a. The Effective Date for this Contract is the date on which this Contract is approved and signed by the Colorado State Controller or designee, as shown on the Signature Page for this Contract.
b. This Contract shall not be valid or enforceable until the Effective Date. The State shall not be bound by any provision of this Contract before the Effective Date, and shall have no obligation to pay Contractor for any work performed or expense incurred before the Effective Date or after the expiration or earlier termination of this Contract.
c. Contractor's performance under this Contract will not begin until the issuance of the Notice to Proceed as specified in the General Conditions (the "GCs").
d. The State is entering into this Contract to serve the public interest of the State of Colorado as determined by its Governor, General Assembly, or Courts. If this Contract ceases to further the public interest of the State, the State, in its discretion, may terminate this Contract in whole or in part.

3. AUTHORITY

Authority for the State to enter into this Contract exists in 33-10-107(1)(d) C.R.S. The Contractor was selected under the procurement code, 24-103-202 C.R.S.

4. CONTRACT DOCUMENTS

The GCs and the Contract Documents described therein are all incorporated by reference and made a part of this Contract.

In the event of a conflict or inconsistency between this Contract and any Exhibit or attachment, such conflict or inconsistency shall be resolved by reference to the documents in the following order of priority

1. The Colorado Special Provisions included in the main body of this agreement
2. Contract or Purchase Order, Change Orders or Amendments
3. Purchase Order
4. Special Conditions
5. Specifications

6. Detailed Plans
7. Standard Plans
8. Calculated dimensions will govern over scaled dimensions
9. GCs

5. CONTRACTOR PERFORMANCE

a. Contractor shall perform its obligations under this Contract in accordance with the professional standards of care, skill and diligence in Contractor's industry, trade, or profession to the satisfaction of the State and its Project Manager in strict accordance with the provisions of the Contract Documents.

b. The Contractor shall furnish all the work, labor and materials and perform all the work required for the complete and prompt execution of everything described or shown in, or reasonably implied from the Contract Documents above described project.

c. The Contractor shall complete the entire project within the Performance Time as shown in the Project Summary Table. The Contractor shall begin work within ten days from the Notice to Proceed and to prosecute the work with due diligence to completion. The Contractor agrees that the completion of the project within the Performance Time is an essential feature of this Contract nd agrees to proceed with due diligence, taking all precautions and making all necessary arrangements to ensure the completion of the work within the prescribed time.

d. The Contractor agrees that failure to complete the work within the time allowed shall be considered as a breach of the Contract and entitle the State of Colorado to collect liquidated damages for delay in completion, in accordance with the bid documents.

6. PAYMENT

The State shall pay the Contractor an amount not to exceed the Contract Maximum Amount specified in the Project Summary Table for performance of this Contract, subject to any additions or deductions as provided in the Contract Documents. Payments under this Contract are subject to the terms and conditions outlined in the GCs.

7. INSURANCE

Contractor shall obtain and maintain, and ensure that each Subcontractor shall obtain and maintain, insurance as specified in this section at all times during the term of this Contract. All insurance policies required by this Contract shall be issued by insurance companies as approved by the State.

A. Workers' Compensation

Workers' compensation insurance as required by state statute, and employers' liability insurance covering all Contractor or Subcontractor employees acting within the course and scope of their employment.

B. General Liability

Commercial general liability insurance covering premises operations, fire damage, independent contractors, products and completed operations, blanket contractual liability, personal injury, and advertising liability with minimum limits as follows:

i. $1,000,000 each occurrence;

ii. $1,000,000 general aggregate;

iii. $1,000,000 products and completed operations aggregate; and

iv. $50,000 any one fire.

C. Automobile Liability

Automobile liability insurance covering any auto (including owned, hired and non-owned autos) with a minimum limit of $1,000,000 each accident combined single limit.

D. Pollution Liability Insurance

Pollution liability policy with minimum limits of $1,000,000 each occurrence and $1,000,000 Annual Aggregate covering any environmental damage caused by the contractor or subcontractor during the Work with the State included as an additionally insured party.

E. Additional Insured

The State shall be named as additional insured on all commercial general liability policies (leases and construction contracts require additional insured coverage for completed operations) required of Contractor and Subcontractors.

F. Primacy of Coverage

Coverage required of Contractor and each Subcontractor shall be primary and noncontributory over any insurance or self-insurance program carried by Contractor or the State.

G. Cancellation

The above insurance policies shall include provisions preventing cancellation or non-renewal, except for cancellation based on non-payment of premiums, without at least 30 days prior notice to Contractor and Contractor shall forward such notice to the State in accordance with **§14** within seven days of Contractor's receipt of such notice.

H. Subrogation Waiver

Except with respect to Professional Liability Insurance, all insurance policies secured or maintained by Contractor or its Subcontractors in relation to this Contract shall include clauses stating that each carrier shall waive all rights of recovery under subrogation or otherwise against Contractor or the State, its agencies, institutions, organizations, officers, agents, employees, and volunteers.

I. Public Entities

If Contractor is a "public entity" within the meaning of the Colorado Governmental Immunity Act, §§24-10-101, *et seq.*, C.R.S. (the "GIA"), Contractor shall maintain, in lieu of the liability insurance requirements stated above, at all times during the term of this Contract such liability insurance, by commercial policy or self-insurance, as is necessary to meet its liabilities under the GIA. If a Subcontractor is a public entity within the meaning of the GIA, Contractor shall ensure that the Subcontractor maintains at all times during the terms of this Contract, in lieu of the liability insurance requirements stated above, such liability insurance, by commercial policy or self-insurance, as is necessary to meet the Subcontractor's obligations under the GIA.

J. Certificates

Contractor shall provide to the State certificates evidencing Contractor's insurance coverage required in this Contract within seven Business Days following the Effective Date. Contractor shall provide to the State certificates evidencing Subcontractor insurance coverage required under this Contract within seven Business Days following the Effective Date, except that, if Contractor's subcontract is not in effect as of the Effective Date, Contractor shall provide to the State certificates showing Subcontractor insurance coverage required under this Contract within seven Business Days following Contractor's execution of the subcontract. No later than 15 days before the expiration date of Contractor's or any Subcontractor's coverage, Contractor shall deliver to the State certificates of insurance evidencing renewals of coverage. At any other time during the term of this Contract, upon request by the State, Contractor shall, within seven Business Days following the request by the State, supply to the State evidence satisfactory to the State of compliance with the provisions of this section.

8. GENERAL PROVISIONS

a. Binding Effect

Except as otherwise provided in the GCs, all provisions of this Contract, including the benefits and burdens, shall extend to and be binding upon the Parties' respective successors and assigns.

b. Captions and References
The captions and headings in this Contract are for convenience of reference only, and shall not be used to interpret, define, or limit its provisions. All references in this Contract to sections (whether spelled out or using the § symbol), subsections, exhibits or other attachments, are references to sections, subsections, exhibits or other attachments contained herein or incorporated as a part hereof, unless otherwise noted.

c. Counterparts
This Contract may be executed in multiple, identical, original counterparts, each of which shall be deemed to be an original, but all of which, taken together, shall constitute one and the same agreement.

d. Entire Understanding
This Contract represents the complete integration of all understandings between the Parties related to the project, and all prior representations and understandings related to the project, oral or written, are merged into this Contract. Prior or contemporaneous additions, deletions, or other changes to this Contract shall not have any force or effect whatsoever, unless embodied herein.

e. Jurisdiction and Venue
All suits or actions related to this Contract shall be filed and proceedings held in the State of Colorado and exclusive venue shall be in the City and County of Denver.

f. Modification
Except as otherwise provided in this Contract, any modification to this Contract shall only be effective if agreed to in a formal amendment to this Contract, properly executed and approved in accordance with applicable Colorado State law and State Fiscal Rules.

g. Statutes, Regulations, Fiscal Rules, and Other Authority
Any reference in this Contract to a statute, regulation, State Fiscal Rule, fiscal policy or other authority shall be interpreted to refer to such authority then current, as may have been changed or amended since the Effective Date of this Contract.

h. Severability
The invalidity or unenforceability of any provision of this Contract shall not affect the validity or enforceability of any other provision of this Contract, which shall remain in full force and effect, provided that the Parties can continue to perform their obligations under this Contract in accordance with the intent of the Contract.

i. Survival of Certain Contract Terms
Any provision of this Contract that imposes an obligation on a Party after termination or expiration of the Contract shall survive the termination or expiration of the Contract and shall be enforceable by the other Party.

j. Third Party Beneficiaries
Except for the Parties' respective successors and assigns described in this §7, this Contract does not and is not intended to confer any rights or remedies upon any person or entity other than the Parties. Enforcement of this Contract and all rights and obligations hereunder are reserved solely to the Parties. Any services or benefits which third parties receive as a result of this Contract are incidental to the Contract, and do not create any rights for such third parties.

k. Waiver
A Party's failure or delay in exercising any right, power, or privilege under this Contract, whether explicit or by lack of enforcement, shall not operate as a waiver, nor shall any single or partial exercise of any right, power, or privilege preclude any other or further exercise of such right, power, or privilege.

l. Indemnification

To the extend authorized by law, Contractor shall indemnify, save, and hold harmless the State, its employees, agents and assignees (the "Indemnified Parties"), against any and all costs, expenses, claims, damages, liabilities, court awards and other amounts (including attorneys' fees and related costs) incurred by any of the Indemnified Parties in relation to any act or omission by Contractor, or its employees, agents, Subcontractors, or assignees in connection with this contract.

9. COLORADO SPECIAL PROVISIONS (COLORADO FISCAL RULE 3-3)

These Special Provisions apply to all contracts except where noted in italics.

A. STATUTORY APPROVAL. §24-30-202(1), C.R.S.

This Contract shall not be valid until it has been approved by the Colorado State Controller or designee. If this Contract is for a Major Information Technology Project, as defined in §24-37.5-102(2.6), then this Contract shall not be valid until it has been approved by the State's Chief Information Officer or designee.

B. FUND AVAILABILITY. §24-30-202(5.5), C.R.S.

Financial obligations of the State payable after the current State Fiscal Year are contingent upon funds for that purpose being appropriated, budgeted, and otherwise made available.

C. GOVERNMENTAL IMMUNITY.

Liability for claims for injuries to persons or property arising from the negligence of the State, its departments, boards, commissions committees, bureaus, offices, employees and officials shall be controlled and limited by the provisions of the Colorado Governmental Immunity Act, §24-10-101, et seq., C.R.S.; the Federal Tort Claims Act, 28 U.S.C. Pt. VI, Ch. 171 and 28 U.S.C. 1346(b), and the State's risk management statutes, §§24-30-1501, et seq. C.R.S. No term or condition of this Contract shall be construed or interpreted as a waiver, express or implied, of any of the immunities, rights, benefits, protections, or other provisions, contained in these statutes.

D. INDEPENDENT CONTRACTOR.

Contractor shall perform its duties hereunder as an independent contractor and not as an employee. Neither Contractor nor any agent or employee of Contractor shall be deemed to be an agent or employee of the State. Contractor shall not have authorization, express or implied, to bind the State to any agreement, liability or understanding, except as expressly set forth herein. **Contractor and its employees and agents are not entitled to unemployment insurance or workers compensation benefits through the State and the State shall not pay for or otherwise provide such coverage for Contractor or any of its agents or employees. Contractor shall pay when due all applicable employment taxes and income taxes and local head taxes incurred pursuant to this Contract. Contractor shall (i) provide and keep in force workers' compensation and unemployment compensation insurance in the amounts required by law, (ii) provide proof thereof when requested by the State, and (iii) be solely responsible for its acts and those of its employees and agents.**

E. COMPLIANCE WITH LAW.

Contractor shall comply with all applicable federal and State laws, rules, and regulations in effect or hereafter established, including, without limitation, laws applicable to discrimination and unfair employment practices.

F. CHOICE OF LAW, JURISDICTION, AND VENUE.

Colorado law, and rules and regulations issued pursuant thereto, shall be applied in the interpretation, execution, and enforcement of this Contract. Any provision included or incorporated herein by reference which conflicts with said laws, rules, and regulations shall be null and void. All suits or actions related to this Contract shall be filed and proceedings held in the State of Colorado and exclusive venue shall be in the City and County of Denver.

G. PROHIBITED TERMS.

Any term included in this Contract that requires the State to indemnify or hold Contractor harmless; requires the State to agree to binding arbitration; limits Contractor's liability for damages resulting from death, bodily injury, or damage to tangible property; or that conflicts with this provision in any way shall be void ab initio. Nothing in this Contract shall be construed as a waiver of any provision of §24-106-109 C.R.S.

H. **SOFTWARE PIRACY PROHIBITION.**

State or other public funds payable under this Contract shall not be used for the acquisition, operation, or maintenance of computer software in violation of federal copyright laws or applicable licensing restrictions. Contractor hereby certifies and warrants that, during the term of this Contract and any extensions, Contractor has and shall maintain in place appropriate systems and controls to prevent such improper use of public funds. If the State determines that Contractor is in violation of this provision, the State may exercise any remedy available at law or in equity or under this Contract, including, without limitation, immediate termination of this Contract and any remedy consistent with federal copyright laws or applicable licensing restrictions.

I. **EMPLOYEE FINANCIAL INTEREST/CONFLICT OF INTEREST. §§24-18-201 and 24-50-507, C.R.S.**

The signatories aver that to their knowledge, no employee of the State has any personal or beneficial interest whatsoever in the service or property described in this Contract. Contractor has no interest and shall not acquire any interest, direct or indirect, that would conflict in any manner or degree with the performance of Contractor's services and Contractor shall not employ any person having such known interests.

J. **VENDOR OFFSET AND ERRONEOUS PAYMENTS. §§24-30-202(1) and 24-30-202.4, C.R.S.**

[*Not applicable to intergovernmental agreements*] Subject to §24-30-202.4(3.5), C.R.S., the State Controller may withhold payment under the State's vendor offset intercept system for debts owed to State agencies for: **(i)** unpaid child support debts or child support arrearages; **(ii)** unpaid balances of tax, accrued interest, or other charges specified in §§39-21-101, *et seq.*, C.R.S.; **(iii)** unpaid loans due to the Student Loan Division of the Department of Higher Education; **(iv)** amounts required to be paid to the Unemployment Compensation Fund; and **(v)** other unpaid debts owing to the State as a result of final agency determination or judicial action. The State may also recover, at the State's discretion, payments made to Contractor in error for any reason, including, but not limited to, overpayments or improper payments, and unexpended or excess funds received by Contractor by deduction from subsequent payments under this Contract, deduction from any payment due under any other contracts, grants or agreements between the State and Contractor, or by any other appropriate method for collecting debts owed to the State.

APPENDIX F – PERFORMANCE BOND TEMPLATE

Rifle Falls SFU - Isolation Building
SCA23A

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

COLORADO

PERFORMANCE BOND

Institution/Agency: Colorado Parks and Wildlife Department of Natural Resources
Project No./Name: SCA23A 4291, Rifle Falls SFU – Isolation Building

BONDING COMPANY: DO NOT MAKE ANY CHANGES TO THE LANGUAGE IN THIS BOND.

KNOW ALL PERSONS BY THESE PRESENTS:

That the Contractor

as Principal and hereinafter called "Principal,"

and

as Surety and hereinafter called "Surety," a corporation organized and existing under the laws of

_____ are held and firmly bound unto **the STATE OF COLORADO** acting by and through the Institution/Agency identified above hereinafter called the "Principal Representative", in the sum of:

_____ Dollars ($_____)
(Written Amount) (Numerical Amount)

for the payment whereof the Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly, by these presents.

WHEREAS, the Principal and the State of Colorado acting by and through the Principal Representative have entered into a certain Contract, hereinafter called "Contract," dated

_____ for the construction of a PROJECT
(Leave blank, to be completed by Institution/Agency)

identified above, which Contract is hereby by reference made a part hereof;

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION, is such that, if the Principal shall promptly, fully and faithfully perform all the undertakings, covenants, terms, conditions and agreements of said Contract during the original term of said Contract any extensions thereof that may be granted by the Principal Representative with or without notice to the Surety, and during the life of any guaranty required under the Contract, and shall also well and truly perform and fulfill all undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of said Contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

AND THE SAID SURETY, for value received hereby stipulates and agrees that whenever the Principal shall be, and declared by the Principal Representative to be in default under said Contract, the State of Colorado having performed its obligations thereunder, the Surety may promptly remedy the default or shall promptly (1) Complete the Contract in accordance with its terms and conditions, or (2) Obtain a bid or bids for submittal to the Principal Representative for completing the Contract in accordance with its terms and conditions, and upon determination by the Principal Representative and Surety of the lowest responsible bidder, arrange for a contract between such bidder and the State of Colorado acting by and through the Principal Representative and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion, less the balance of the contract price but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount hereinbefore set forth. The term “balance of the contract price” as herein used shall mean the total amount payable to the Principal under the Contract and any amendments thereto, less the amount properly paid by the State of Colorado to the Contractor.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the State of Colorado.

IN WITNESS WHEREOF said Principal and Surety have executed this Bond, on

_____
(If left blank, the Institution/Agency will date this bond to match the Contract date)

(Corporate Seal)

THE PRINCIPAL

_____

ATTEST:

By: _____

_____ Title: _____
Secretary

(Corporate Seal)

SURETY

_____

By: _____
Attorney-in-fact

THIS BOND MUST BE ACCOMPANIED BY POWER OF ATTORNEY, EFFECTIVELY DATED

Note: This bond is issued simultaneously with another bond conditioned for the full and faithful payment for all labor and material of the contract.

APPENDIX G – LABOR AND MATERIAL BOND TEMPLATE

Rifle Falls SFU - Isolation Building
SCA23A

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

COLORADO

LABOR AND MATERIAL BOND

Institution/Agency: Colorado Parks and Wildlife Department of Natural Resources
Project No./Name: SCA23A 4291, Rifle Falls SFU – Isolation Building

BONDING COMPANY: DO NOT MAKE ANY CHANGES TO THE LANGUAGE IN THIS BOND.

KNOW ALL PERSONS BY THESE PRESENTS:

That the Contractor

as Principal and hereinafter called “Principal,”

and

as Surety and hereinafter called “Surety,” a corporation organized and existing under the laws of

_____ are held and firmly bound unto **the STATE OF COLORADO** acting by and through the Institution/Agency identified above hereinafter called "Principal Representative," and to all subcontractors and any others who have supplied or furnished or shall supply or furnish materials, rental machinery, tools, or equipment actually used in the performance of the hereinafter identified Contract, or who have performed or shall perform labor in the performance of or in connection with said Contract, hereinafter called "Obligees" in the sum of:

_____ Dollars ($_____)
(Written Amount) (Numerical Amount)

together with interest at the rate of eight per cent (8%) per annum on all payments becoming due in accordance with said Contract, from the time such payments shall become due until such payment shall be made, for the payment of which, well and truly made to the Obligees, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly, by these presents.

WHEREAS, the Principal and the State of Colorado acting by and through the Principal Representative have entered into a certain Contract, hereinafter called "Contract," dated

_____ for the construction of a PROJECT
(Leave blank, to be completed by Institution/Agency)

identified above, which Contract is hereby by reference made a part hereof;

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Principal and the Surety shall fully indemnify and save harmless the State of Colorado and the Principal Representative from and against any and all costs and damages, including patent infringements, which either may suffer by reason of any failure or failures of the Principal promptly and faithfully to perform all terms and conditions of said Contract and shall fully reimburse and repay the State of Colorado and the Principal Representative all outlay and expense which the State of Colorado and the Principal Representative may incur in making good any such failure or failures, and further, if the Principal and his subcontractors shall duly and promptly pay for any and all labor, materials, team hire, sustenance, provisions, provender, rental machinery, tools, or equipment and other supplies which have been or shall be used or consumed by said Principal or his subcontractors in the performance of the work of said Contract , and it said Principal shall duly and promptly pay all his subcontractors the sums due them for any and all materials, rental machinery, tools, or equipment and labor that have been or shall be furnished, supplied, performed or used in connection with performance of said Contract, and shall also fully indemnify and save harmless the State of Colorado and the Principal Representative to the extent of any and all expenditures which either or both of them may be required to make by reason of any failures or defaults by the Principal or any subcontractor in connection with such payments; then this obligation shall be null and void, otherwise it shall remain in full force and effect.

It is expressly understood and agreed that any alterations which may be made in the terms of said Contract or in the work to be done under said Contract, or any extension(s) of time for the performance of the Contract, or any forebearance on the part of either the State of Colorado or the Principal to any of the others, shall not in any way release the Principal and the Surety, or either of them, their heirs, executors, administrators, successors or assigns from their liability hereunder, notice to the Surety of any such alteration, extension or forbearance being hereby waived.

IN WITNESS WHEREOF, the Principal and the Surety have executed this Bond, , on

_____
(If left blank, the Institution/Agency will date this bond to match the Contract date)

(Corporate Seal)

THE PRINCIPAL

_____

ATTEST:

By: _____

_____ Title: _____
Secretary

(Corporate Seal)

SURETY

_____

By: _____
Attorney-in-fact

THIS BOND MUST BE ACCOMPANIED BY POWER OF ATTORNEY, EFFECTIVELY DATED

Note: This bond is issued simultaneously with another bond conditioned for the full and faithful performance of the contract.