CONSTRUCTION SPECIFICATIONS

[Projectname] Project

Reclamation Construction

[Countyname] County, Utah

[Season, Year]

DISCLAIMER:

This document contains the Utah Abandoned Mine Reclamation Program's (AMRP) "boilerplate" construction contract specifications. It has dummy fields (usually indicated by square brackets, pound signs, zeroes, and/or asterisk strings) as placeholders for project-specific information that will be added later for particular projects. This document is not a complete or final bid package, but may be considered to show the typical content and format of one.

This document is intended to allow prospective bidders to become familiar with the general bidding procedures and construction requirements for AMRP reclamation projects. It is **not** intended to be used for bidding purposes. Bidders should use the project-specific complete and final bid package posted on the Utah Public Procurement Place.

Final specifications for a project may differ significantly from these sample specifications.

The contents of the site-specific requirements (Chapter 4) are set up for a typical AMRP mine closure project. Other types of projects may have substantially different requirements and organization. Specific terms and conditions vary from project to project.

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
Division of Oil, Gas & Mining
Abandoned Mine Reclamation Program
Salt Lake City, Utah

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS & MINING
ABANDONED MINE RECLAMATION PROGRAM

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DOGM Project Name: [Projectname]
DOGM Project Number: AMR/000/900

Date Specifications Completed: April 10, 2024 (Website Sample Version)

DOGM Document Filenames:

MS Word Files:

000900_Specs_text.docx	Text only (no drawings or maps)

Adobe Acrobat Files:

000900_Specs_text.pdf	Text only (no drawings or maps)
000900_Specs_complete.pdf	Complete specifications (text, drawings, maps)
000900_Specs_chap1234.pdf	Chapters 1-4 (text content minus bid documents)
000900_Specs_chap5-BidDocs.pdf	Chapter 5 bid documents formatted as fillable form
000900_Specs_chap6.pdf	Chapter 6 (image content: drawings)
000900_Specs_chap7.pdf	Chapter 7 (image content: maps)

MS Excel Files:

000900_BidSchedule.xlsx	Bid schedule

DOGM Master Specs Version: 03/29/2024

Note: This document is paged for duplex printing. It has occasional even-numbered (lefthand) pages inserted and intentionally left blank to yield righthand title pages.

Save paper: print two-sided.

CONSTRUCTION SPECIFICATIONS

[Projectname] Project

Reclamation Construction

[Countyname] County, Utah

[Season, Year]

State of Utah
Department of Natural Resources
Division of Oil, Gas and Mining
Abandoned Mine Reclamation Program
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P.O. Box 145801
Salt Lake City, Utah 84114-5801
http://ogm.utah.gov/amr/

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Chapter 1: INSTRUCTIONS

Contents

Contents

Instructions to Bidders

1. Request for Bids

The Utah Division of Purchasing is accepting bids for the [Projectname] Project. The WORK consists of [***number] mine closures, [***site grading and earthwork, runoff control,] and revegetation of disturbed areas at abandoned [***commodity] mines in [Countyname] County, Utah. Details of the WORK are contained in these Specifications. "OWNER" in these Specifications is defined as the Utah Division of Oil, Gas and Mining.

Bidders should refer to the materials posted at the Division of Purchasing's online procurement service website and the Division of Purchasing's instructions contained in this solicitation packet for relevant dates and deadlines, instructions on how to submit a bid, and other bidding requirements.

Note that the complete bid solicitation packet has additional documents (cover sheet, Invitation to Bid form, instructions, Standard Terms and Conditions, etc.) besides the Division of Oil, Gas and Mining's project specifications. Also, please note that electronic specifications may be organized into more than one file. Files or responses may be added to the solicitation after the initial posting. Bidders should make sure that they have the entire bid package and all necessary documents before bidding.

2. Drawings and Specifications

Specifications are only available through the Division of Purchasing's online procurement service. Specifications are no longer provided by the Division of Oil, Gas and Mining.

3. Pre-bid Meeting

Date/Time: [***day, ***month, ***date, 20## at 00:00 a.m.]
Location: Meet at the [***location]. ***Bidders will then travel to other sites.

The meeting is expected to last [***duration: ## hours/most of the day] and will involve driving and hiking over rugged terrain. High-clearance four-wheel-drive vehicles are recommended. ***Please observe COVID-19 risk reduction precautions (face masks and distancing).

This meeting is mandatory. Attendance is required to bid. Abandoned mine closure work is different from standard residential or commercial construction. It requires specialized work in unusual conditions and unique circumstances. *Because of the special nature of abandoned mine closure work, bidders are required to attend one of the pre-bid meetings.* Bids from firms not on record as attending the entire meeting will be considered nonresponsive. Bidders should supplement the pre-bid meeting by examining the project on their own time. Abandoned mines are hazardous. Do not enter the mines.

4. Contract and Bond

The contract agreement will be in the form of a Purchase Order referencing this bid solicitation. The completion date for construction will be as indicated in the Supplemental Bid Information form. The successful bidder, within 14 days after the award of contract, will be required to furnish a performance bond and a payment bond in an amount equal to one hundred percent (100%) of the contract price. Said bonds shall be secured from a company satisfactory to OWNER. **The surety company must be a U.S. Department of Treasury (Circular 570) listed company.**

5. Qualifications of Bidders

All CONTRACTORS must be currently licensed in Utah for the type of work to be done. This means the CONTRACTOR must hold an E100 license unless other licensing is specified in Section 0300: Specific Site Requirements.

The CONTRACTOR's past performance, organization, equipment, and ability to perform and complete their contracts in the manner and within the time limit specified will be elements that are considered as a matter of CONTRACTOR responsibility. All CONTRACTORS who have previously performed WORK on a Utah Abandoned Mine Reclamation Program (UAMRP) project have been evaluated using the Contractor Performance Rating Form (Chapter 2). Performance ratings may be used in determining responsibility.

6. Qualifications of Subcontractors

The experience and responsibility of Subcontractors may have bearing on the selection of a CONTRACTOR by the OWNER. The CONTRACTOR shall require all of his or her Subcontractors to comply with the license laws as required by the State of Utah.

The Subcontractor's past performance, organization, equipment, and ability to perform and complete their contracts in the manner and within the time limit specified will be elements that may also be considered in determining contractor responsibility.

OWNER may withhold award of CONTRACT to any particular bidder if one or more of his or her proposed Subcontractors are considered by the OWNER to be non-responsible.

7. Listing of Subcontractors

Bidders shall submit with the bid a list of the names of Subcontractors to be furnished for each of the principal parts of the work and the corresponding dollar amounts. Each principal part shall mean a subcontract dollar value in excess of $5,000. Such list shall be binding upon the CONTRACTOR; however, OWNER has a right to reject any or all Subcontractors listed or unlisted which OWNER feels are unqualified to do the work.

8. Interpretation of Plans and Specifications

ALL questions concerning this bid or the meaning of any part of the drawings, specifications or other proposed CONTRACT documents must be submitted through the Division of Purchasing's online procurement service. The OWNER will not be responsible for any other explanations or interpretations of the proposed documents. **Do not contact the DOGM project manager or Purchasing by phone or e-mail to ask questions.**

9. Addenda or Bulletins

Any addenda or bulletins issued during the time of bidding shall become part of the documents issued to the bidders for the preparation of the bid, shall be covered in the bid, and shall be made a part of the CONTRACT.

10. Bid Schedule

Bidding CONTRACTORS shall examine the specifications and the Bid Schedule and *fill in all blanks* of the CONTRACTOR's Bid and Bid Schedule and submit all required information contained in the bid, including required submittals, or have the bid subject to disqualification.

11. Award of CONTRACT

The CONTRACT will be awarded as soon as possible to the lowest responsible bidder, provided the bid is reasonable and is in the interests of the OWNER to accept. For bidders who have previously performed WORK on a UAMRP project, evaluation of the responsibility of the bidder will also include consideration of past performance on AMR contracts for OWNER. Both the Lump Sum Amount and the Variation in Quantities Unit Price for all work items will be considered in awarding the CONTRACT. Lump Sum Amounts do not have to equal the product of the estimated quantity times the Variation in Quantity Unit Price, but OWNER may reject a bid if unit prices are

substantially out of line with the Lump Sum Amount. The OWNER reserves the right to waive any technicalities or formalities in any bid or in the bidding.

12. Cost Breakdown

The CONTRACTOR shall, before starting WORK, submit to OWNER a cost breakdown showing the cost of various segments of the WORK according to a specification heading, the total amount equaling the CONTRACT price. This breakdown shall be used as the basis for the payment of estimates as stated in the contract documents.

13. Right to Reject Bids

The OWNER reserves the right to reject any or all bids.

14. Time is Essence and Award of CONTRACT

Time is of the essence in award of the CONTRACT.

15. Withdrawal of Bids

Bids may be withdrawn upon written or electronic request received from bidders prior to the time fixed for opening. Electronic request via fax or e-mail must be received by OWNER in written form before bid opening. Negligence on the part of the bidder in preparing the bid confers no right for the withdrawal of the bid after it has been opened.

16. Build America Buy America Act

Compliance with the Build America Buy America Act is required for this project. The Act, 2 CFR Part 184, requires the use of domestically produced iron or steel products, manufactured products, and construction materials.

17. Applicant Violator System (AVS) Eligibility Check

Federal regulations require all successful bidders on contracts funded through Title IV of the Surface Mining Control and Reclamation Act (SMCRA) of 1977 to be eligible to receive a permit to conduct surface coal mining operations. In general, this means that the OWNER may not hire a contractor who is or whose company is associated with a coal mine operator with outstanding unpaid fines under SMCRA. The regulations further require that contractor eligibility be confirmed by the Applicant/Violator System (AVS) at the U.S. Office of Surface Mining Reclamation and Enforcement (OSMRE). Compliance checks are also required for all subcontractors receiving 10% or more of the total contract amount.

To comply with this rule, the apparent low bidder shall submit to DOGM within 24 hours (excluding weekends and holidays) of the bid opening their company ownership and control information. See “Applicant/Violator System Eligibility Check” in Chapter 5, page 5:5 for more information.

18. Davis-Bacon Act

Compliance with the Davis-Bacon Act [***__**is/is not**__] required for this project. The Davis-Bacon Act sets forth minimum wages for various job categories along with required reporting documentation. Davis-Bacon Act compliance also applies to Subcontractors. The Bid Price amount and unit prices must be sufficient to comply with the required wage rates. See Chapter 2, Davis-Bacon Act Wage Requirements, of these Specifications for more information.

CONSTRUCTION SPECIFICATIONS

[Projectname] Project

Reclamation Construction

[Countyname] County, Utah

[Season, Year]

Chapter 2: CONTRACT TERMS, CONDITIONS, and FORMS

Scope of Work
DOGM Construction Terms and Conditions
General Conditions for Abandoned Mine Projects
AML Contractor Information Form (Sample)
Davis-Bacon Act Wage Requirements
U.S. Department of Labor Wage and Hour Form SF-1444 (Conformance)
U.S. Department of Labor Wage Hour Form 347 (Certified Payroll and Statement of Compliance)
Certificate of Substantial Completion
Certificate of Final Acceptance
Daily Construction Progress Report
As-Built Drawing Form
Certificate of WNS Compliance (Pre-Construction)
Certificate of WNS Compliance (Post-Construction)
Contractor Performance Rating
Record of Individual Exposure to Radon

Scope of Work

SCOPE OF WORK, hereinafter the WORK, to be performed is that contained in the Drawings and Technical Specifications prepared by: the Division of Oil, Gas & Mining and entitled *CONSTRUCTION SPECIFICATIONS: [Projectname] Project Reclamation Construction* and the General Specifications prepared by the Division of Oil, Gas and Mining entitled *GENERAL CONDITIONS FOR ABANDONED MINE RECLAMATION PROJECTS* contained therein.

The CONTRACTOR agrees to furnish all labor, materials and equipment to complete the WORK as described in the Drawings, Specifications, and addenda to the specifications which are hereby made a part of this CONTRACT by reference. It is understood and agreed by the parties hereto that all WORK will be performed as required in the Drawings and Specifications and will be subject to inspection and approval prior to final acceptance by the OWNER. The relationship of the CONTRACTOR to the OWNER hereunder is that of an independent CONTRACTOR.

DIVISION OF OIL, GAS AND MINING

Construction Terms and Conditions

ARTICLE 1. TIME OF COMPLETION: The WORK under this CONTRACT shall be commenced upon notice to proceed and shall be completed within [***number] calendar days after the date of email delivery, date of hand delivery, or date marked on registered mail receipt of said Notice to Proceed and no later than [***MONTH DAY, YEAR]. WORK delays caused by weather may, at the discretion of the OWNER, extend the completion date. CONTRACTOR also agrees to the liquidated damages provisions of Article 12.

ARTICLE 2. PAYMENT: OWNER will promptly pay for services performed by the CONTRACTOR. Vouchers for reimbursement of expenditures under this Agreement must be filed promptly with OWNER's Representative by the tenth day of the month following the month in which WORK has been performed. OWNER will withhold from payment an amount not to exceed 5% of the total CONTRACT cost, except for Mobilization, which will have 40% withheld, until all WORK has been performed by the CONTRACTOR and is approved and accepted by OWNER.

ARTICLE 3. INDEBTEDNESS: Before final payment is made, the CONTRACTOR must submit evidence including lien waivers, satisfactory to the OWNER that all payrolls, materials bills, subcontracts and outstanding indebtedness in connection with the WORK have been paid or that arrangements have been made for their payment. Payment will be made without unnecessary delay after receipt of such evidence as mentioned above and Final Acceptance of the WORK by the OWNER.

ARTICLE 4. ADDITIONAL WORK: It is understood and agreed by the parties hereto that no money will be paid to the CONTRACTOR for any additional WORK, labor or materials furnished unless a new CONTRACT in the form of a Change Order or a modification hereof for such additional materials or labor has been executed by OWNER and CONTRACTOR. The OWNER specifically reserves the right to modify or amend this CONTRACT and the total sum due hereunder either by enlarging or restricting the WORK through a change order.

ARTICLE 5. ACCEPTANCE: The WORK will be inspected for acceptance by the OWNER promptly upon receipt of notice from the CONTRACTOR that the WORK is complete and ready for inspection.

ARTICLE 6. DISPUTES PERTAINING TO PAYMENT FOR WORK: Any disputes which may arise respecting the value of any WORK done, or any WORK omitted, or of any ADDITIONAL WORK which CONTRACTOR may be required to perform, or respecting any other elements involved in this CONTRACT, will be decided by the Director of the Division of Oil, Gas & Mining, acting as the OWNER.

ARTICLE 7. TERMINATION OF CONTRACT:

a. If the CONTRACTOR is adjudged bankrupt or if the CONTRACTOR makes a general assignment for the benefit of CONTRACTOR'S creditors or if a receiver is appointed on account of CONTRACTOR'S insolvency, or if CONTRACTOR or any of his/her Subcontractors violates any of the provisions of this CONTRACT, or if the CONTRACTOR does not perform the WORK according to the Specifications, the OWNER may serve written notice upon CONTRACTOR of its intention to terminate the CONTRACT; and unless within ten (10) days after the serving of the notice, the violation ceases, the OWNER then may take over the WORK and at the expense of the CONTRACTOR, complete it by contract or by any other method it may deem advisable. The CONTRACTOR will be liable to the OWNER for any excess cost incurred by the OWNER and the OWNER may, without liability for so doing, take possession of and utilize in completing the WORK, such materials, appliances, paint, and any other property belonging to the CONTRACTOR as may be on the site of the WORK.

b. OWNER may terminate this Agreement upon thirty days written notice to CONTRACTOR in the event the U.S. Department of the Interior fails to grant to OWNER sufficient funds to meet its obligations under this Agreement. In such event, CONTRACTOR will be entitled to receive just and equitable compensation for any satisfactory WORK completed up to the time of termination.

ARTICLE 8: OWNER'S RIGHT TO WITHHOLD CERTAIN AMOUNT AND MAKE APPLICATION THEREOF: The OWNER may withhold from payment to the CONTRACTOR an amount or amounts as, in the OWNER'S judgment, may be necessary to pay just claims against the CONTRACTOR or any Subcontractor for labor and services rendered and materials furnished in and about the WORK. The OWNER in its discretion may apply the withheld amounts on the payment of such claims. In so doing the OWNER will be deemed the agent of the CONTRACTOR and payments so made by the OWNER will be considered as a payment made under the CONTRACT by the OWNER to the CONTRACTOR and the OWNER will not be liable to the CONTRACTOR for any such payments made in good faith. Such payments may be made without prior determination of the claim or claims.

ARTICLE 9: INDEPENDENT CONTRACTOR: The CONTRACTOR will be considered an independent contractor, and, as such, has no authorization, expressed or implied, to bind the State of Utah or the OWNER to any agreement, settlement, liability or understanding whatsoever, nor to perform any acts as agent for the State of Utah, except as herein expressly set forth. The compensation provided for herein will be the total compensation payable hereunder by the State of Utah or the OWNER.

ARTICLE 10: LIABILITY AND INDEMNIFICATION: It is agreed that the CONTRACTOR will at all times protect and indemnify and save harmless, the State of Utah and all institutions, agencies, departments, authorities and instrumentalities of the State of Utah and any member of their governing bodies or of their boards or commissions or any of their elected or appointed officers or any of their employees or authorized volunteers, or the private landowners who have consented to reclamation construction and/or have consented to allow ingress or egress to a reclamation site, as described in the general conditions of the project specifications which are included herein by reference, from any and all claims, damages of every kind and nature made, rendered or incurred by or in behalf of any person or corporation whatsoever, including the parties hereto and their employees that may arise, occur or grow out of any acts, actions, work or other activity done by the CONTRACTOR in the performance and execution of this CONTRACT.

ARTICLE 11. SUBCONTRACTOR: No part of this CONTRACT may be sublet by the CONTRACTOR without the prior written approval of the OWNER. The CONTRACTOR and the OWNER for themselves, their heirs, successors, executors, and administrators, hereby agree to the full performance of the covenants herein contained.

ARTICLE 12. LIQUIDATED DAMAGES: In the event the CONTRACTOR fails to complete the WORK within the time agreed upon in CONTRACTOR's schedule as set forth in Article 1, or within such additional time as may have been allowed by the OWNER, there will be deducted from any

moneys due or that may become due the CONTRACTOR the sum of $781.00 per day for each and every calendar day beyond the agreed or extended completion day that the WORK remains uncompleted. Such sum is fixed and agreed upon by the OWNER and the CONTRACTOR as liquidated damages due the OWNER by reason of the inconvenience and added costs of administration, engineering and supervision resulting from the CONTRACTOR's default, and not as a penalty.

Permitting the CONTRACTOR to continue and finish the WORK or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, in no way operates as a waiver on the part of the OWNER of any of OWNER'S rights under the CONTRACT.

ARTICLE 13. DEFAULT: In the event of default by the CONTRACTOR, termination may be executed as described by the Termination for Default Clause of the DIVISION OF OIL, GAS AND MINING GENERAL CONDITIONS FOR ABANDONED MINE RECLAMATION PROJECTS.

ARTICLE 14. NONAPPROPRIATION OF FUNDS: Financial obligations of the OWNER payable after the current fiscal year are contingent upon funds for the purpose being appropriated, budgeted or otherwise made available. If funds are not appropriated or otherwise available to continue the payment, this contract may be terminated without penalty by giving thirty (30) days written notice.

ARTICLE 15. CERTIFICATIONS:
PART A: *Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions.* 1) The CONTRACTOR certifies that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction (contract), by any Federal department or agency. 2) Where the CONTRACTOR is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.
PART B: *Certification Regarding Lobbying.* The undersigned certifies, to the best of his or her knowledge and belief, that: 1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress and officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement. 2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

The CONTRACTOR was selected for this contract in accordance with the State of Utah, Division of Purchasing's Regulations for the Procurement of Construction and Professional Services.

General Conditions
for
Abandoned Mine Reclamation Projects

CONTENTS

DIVISION OF OIL, GAS AND MINING
GENERAL CONDITIONS FOR
ABANDONED MINE RECLAMATION PROJECTS

1. Definitions:

A. The CONTRACT documents consist of the agreement, the general conditions of the CONTRACT, the drawings and specifications, including all modifications thereof incorporated in the documents before their execution. These form the CONTRACT.

B. The OWNER and the CONTRACTOR or pronouns used in place thereof, are those mentioned as such in the agreement. They are treated throughout the CONTRACT documents as if each were in the singular number.

C. The term "Subcontractor," as employed herein, includes anyone having a direct CONTRACT with anyone except the OWNER to provide material and/or labor under this CONTRACT, and it includes one who furnishes material worked to a special design according to the plans and/or specifications of this WORK, but does not include one who merely furnishes material not so worked.

D. The word "state," or pronoun used in place thereof, is to designate the State of Utah, as represented by the Division of Oil, Gas & Mining.

E. The word "OWNER," or pronoun used in place thereof, is to designate the State of Utah, as represented by the Division of Oil, Gas & Mining.

F. The term "WORK" of the CONTRACTOR or subcontractor includes labor or materials or both, and the SCOPE OF WORK.

G. The term "site" shall be used to refer to all areas where the WORK is to be performed.

H. The term "engineer" shall be used to refer to a consultant representing the OWNER or a designated representative of the OWNER.

I. The term "Procurement Officer" shall be used to refer to the procurement officer for the State of Utah [R33-1-1(5)] or a designated representative thereof.

J. The applicable laws and regulations of the State of Utah shall govern the execution of the WORK embodied in the contract documents.

2. Authority:

Provisions of this CONTRACT are pursuant to the authority set forth in Sections 63-56 UCA 1953 as amended, the Utah State Procurement Rules (Utah Administrative Code, Section R33), and related statutes which permit the OWNER to purchase certain specified services and other approved purchases for the State.

3. Correlation and Intent of Documents:

The CONTRACT documents are complementary, and what is called for by any one shall be as binding as if called for by all. The intention of the documents is to include all labor and materials, equipment, and transportation necessary for the proper and complete execution of the WORK, and equal in quality and workmanship to the highest standards. The CONTRACTOR is to abide by and comply with the true intent and meaning of all drawings and specifications taken as a whole and is not to avail himself to the detriment of the WORK, of any manifestly unintentional error or omission, should any exist. All minor details of WORK which are not shown on the plans, as well as such items as are not specifically mentioned in the specifications but are obviously necessary for the proper completion of the WORK, shall be considered as incidental and as being part of the WORK.

4. Separability Clause:

The declaration by any court or any other binding legal source that any provision of this CONTRACT is illegal and void shall not affect the legality and enforceability of any other provision of this CONTRACT unless the provisions are mutually dependent.

5. Conflicting Conditions:

Any provision in any of the CONTRACT documents which may be in conflict or inconsistent with any of the paragraphs in these general conditions shall be void to the extent of such conflict or inconsistency. In the event of conflicts of plans and specifications, the CONTRACTOR shall follow the most stringent requirements as approved by the OWNER.

6. Statement Clarification of Terms:

The Division of Oil, Gas & Mining will assume responsibility for design and engineering on this project and will provide inspection. See General Conditions 51, 52, and 53.

7. Copies Furnished:

Unless otherwise provided in the CONTRACT documents, the OWNER will furnish the CONTRACTOR, free of charge to the CONTRACTOR, copies of drawings and specifications, reasonably necessary for the execution of the WORK.

8. Detail Drawings and Instructions:

The OWNER shall furnish, with reasonable promptness, additional instructions, by means of drawings or otherwise, necessary for the proper execution of the WORK. All such drawings and instructions shall be consistent with the CONTRACT documents, true developments thereof, and reasonably inferable therefrom. The WORK shall be executed in conformity with the drawings and instructions. Any WORK performed by the CONTRACTOR in advance of these drawings and instructions shall be entirely at the CONTRACTOR's risk.

9. Ownership of Drawings:

All copies of drawings and specifications furnished the CONTRACTOR by the OWNER are the property

of the OWNER. They are not to be used by the CONTRACTOR on other work, and are to be returned to the OWNER, upon request, at the completion of the WORK.

10. Dimensions:

Where no figures or memoranda are given, the drawings shall be accurately followed according to their scale, but figures or memoranda are to be preferred to the scale, in all cases of difference, and the larger scale details shall take preference over those of smaller scale.

11. Substitutions:

Where reference is made to one or more propriety products but restrictive descriptive material of one or more manufacturer(s) is used, it is understood that the products of other manufacturers will be accepted, provided they equal or exceed the standards set forth in the plans and specifications and are compatible with the intent and purpose of the design, subject to the written approval of the OWNER and the CONTRACT REPRESENTATIVE prior to the opening of bids. Requests for and information pertaining to said approval must be submitted to the OWNER no later than four (4) working days (not including Saturday, Sunday or state holidays) prior to bid opening. If the descriptive material is not restrictive, the products of other manufacturers specified will be accepted without prior approval provided they are compatible with the intent and purpose of the design.

The CONTRACTOR may propose the substitution of any material as a supplement to his/her bid with the monetary amount, additive or deductive as may be the case, clearly stated and shall include the manufacturer's complete descriptive information with the proposed substitution. This shall be completely apart and separate from the BID PRICE quotation and shall be solely for the information of the OWNER and the use of such proposed substitutions shall be strictly at the decision of the OWNER. If substitution is accepted by the OWNER, the CONTRACT sum shall be adjusted from the BID PRICE either up or down as indicated on the supplementary list by change order after award.

12. Samples:

The CONTRACTOR shall furnish to the OWNER for approval, all samples as directed. The WORK shall be in accordance with approved samples.

13. Drawings and Specifications on the WORK:

The CONTRACTOR shall keep at the jobsite one copy of all drawings and specifications on the WORK in good order, available to the OWNER and their representatives.

14. Shop Drawings/As-Built Drawings:

The CONTRACTOR shall submit to the OWNER, with such promptness as to cause no delay in his/her WORK or in that of any other contractor, six copies of all shop/as built drawings or setting drawings and schedules required for the WORK of the various trades and the OWNER shall pass upon them with reasonable promptness. The CONTRACTOR shall submit to the OWNER, with such promptness, making desired corrections. Said corrections shall pertain to conformance with the basic design concepts embodied in the CONTRACT documents. The CONTRACTOR shall make any corrections required by the OWNER. The OWNER shall distribute the corrected drawings as follows: Two drawings to the OWNER; three drawings back to the general CONTRACTOR; and one drawing to the project inspector (if one is assigned to the job). The OWNER's approval of such drawings or schedules shall not relieve the CONTRACTOR from responsibility for deviations from drawings or specifications, unless he/she has in writing called the OWNER's attention to such deviations at the time of submission, and has received the OWNER's written approval of such deviation; nor shall it relieve him/her from responsibility for errors of any sort in shop/as built drawings or schedules.

15. Materials, Appliances, Employees:

Unless otherwise stipulated, the CONTRACTOR shall provide and pay for all materials, labor, water, tools, equipment, light, power, transportation, and other facilities and services necessary for the execution and completion of the WORK.

Unless otherwise specified, all materials shall be new, and both workmanship and materials shall be of high quality. The CONTRACTOR shall, if required, furnish satisfactory evidence as to the kind and quality of materials.

The CONTRACTOR shall at all times enforce strict discipline and order among his/her employees, and shall not employ on the WORK any unfit person or anyone not skilled in the work assigned to him/her.

16. Superintendence and Supervision:

The CONTRACTOR shall keep on the WORK, during its progress, a competent superintendent and any necessary assistants, all satisfactory to the OWNER. The superintendent shall represent the CONTRACTOR in his/her absence, and all directions given to superintendent shall be as binding as if given to the CONTRACTOR.

The CONTRACTOR shall give efficient supervision to the WORK, using his/her best skill and attention. CONTRACTOR shall carefully study and compare all drawings, specifications and other instructions, and shall at once report to the OWNER any error, inconsistency, or omission which CONTRACTOR may discover, but shall not be held responsible for their existence or discovery.

17. Surveys, Permits and Regulations:

The OWNER shall furnish surveys necessary to establish site boundaries and existing topography. The OWNER shall provide those surveys necessary for laying out the WORK.

The CONTRACTOR shall give all notices and comply with all applicable laws, ordinances, rules and regulations bearing on the conduct of the WORK as drawn and specified. If the CONTRACTOR observes that the drawings and specifications are at variance therewith, he/she shall promptly notify the OWNER in writing, and any necessary changes shall be adjusted as provided in

the contract for changes in the WORK. If the CONTRACTOR performs any work knowing it to be contrary to such laws, ordinances, rules and regulations and without such notice to the OWNER, he/she shall bear all costs arising therefrom.

Inasmuch as the WORK under this contract will be performed for the State of Utah, it will not be necessary to take out local building permits, electrical permits and plumbing permits, nor will it be necessary to pay fees for inspections pertaining thereto; however, it will be necessary to obtain a permit from the city, county, and or Department of Transportation having jurisdiction whenever the WORK involves their property. The CONTRACTOR shall cooperate as necessary with these jurisdictions to comply with all their requirements, which may include a bond and permit fee.

Fees for connection to utilities such as water and power must be borne by the CONTRACTOR.

18. Protection of Work and Property:

The CONTRACTOR shall continuously maintain adequate protection of all his/her WORK from damage and shall protect the OWNER's property from injury or loss arising in connection with this CONTRACT. CONTRACTOR shall make good any such damage, injury, or loss, except such as may be directly due to errors in the CONTRACT documents or caused by agents or employees of the OWNER. CONTRACTOR shall adequately protect adjacent property as provided by law and the CONTRACT documents.

The CONTRACTOR shall take all necessary precautions for the safety of employees on the WORK and shall comply with all applicable provisions of federal, state and municipal safety laws and building codes to prevent accidents or injury to persons on, about, or adjacent to the premises where the WORK is being performed. CONTRACTOR shall erect and properly maintain at all times, as required by the conditions and progress of the WORK, all necessary safeguards for the protection of workers and the public and shall post danger signs warning against hazardous conditions.

19. Inspection of Work:

The OWNER and the representatives thereof and authorized federal government inspectors shall at all times have access to the WORK, and the CONTRACTOR shall provide proper facilities for such access and for inspection.

If the specifications or the OWNER requires any work to be specially tested or approved, the CONTRACTOR shall give the OWNER timely notice of its readiness for inspection. Inspections shall be promptly made and, where practicable, at the source of supply. If any WORK should be covered up without approval or consent of the OWNER, it must, if required by the OWNER, be uncovered for examination at the CONTRACTOR's expense.

20. Access to Records:

The CONTRACTOR agrees to provide the OWNER, the U.S. Office of Surface Mining, The Comptroller General of the United States, or any of their duly authorized representatives access to any books, documents, papers, and records which are directly pertinent to this CONTRACT for the purpose of making audit, examination, excerpts, and transcriptions. Such access will be made during normal business hours, or by appointment.

21. Retention of Records:

The CONTRACTOR agrees to retain and preserve any books, documents, papers, and records which are directly pertinent to this CONTRACT for a period of four years from the date of final payment for the WORK or from the date of Final Acceptance, whichever is later.

22. Liability Insurance:

To protect against liability, loss, or expense arising from damage to property or injury or death of any person or persons incurred in any way out of, in connection with or resulting from the WORK provided hereunder, CONTRACTOR shall obtain at its own expense from reliable insurance companies acceptable to OWNER's Risk Manager and authorized to do business in the state in which the work is to be performed, and shall maintain in full force during the entire period of this contract the following or equivalent insurance:

(a) Workers' Compensation Insurance and Employers' Liability Insurance providing statutory benefits.

(b) Comprehensive General Liability Insurance, including premises-operations; explosion; collapse and underground hazards; products and completed operation hazards; blanket contractual; broad form property damage; independent CONTRACTORs; and personal injury including employees with limits not less than $1,000,000 combined single limit per occurrence.

(c) Comprehensive Automobile Liability Insurance including owned, hired and non-owned automobiles with limits not less than $1,000,000 combined single limit per occurrence.

(d) CONTRACTOR using its own aircraft, or employing aircraft in connection with the WORK performed under this contract shall maintain Bodily Injury and Property Damage Liability coverage with a combined single limit of not less than $1,000,000 per occurrence.

Any policy required by this section may be arranged under a single policy for the full limit required, or by a combination of underlying policies with the balance provided by an Excess or Umbrella Liability policy.

OWNER may accept equivalent self-insured programs in lieu of insurance upon specific approval of OWNER's Risk Manager.

Irrespective of the requirements as to insurance to be carried by CONTRACTOR as provided herein, insolvency, bankruptcy or failure of any insurance company to pay all claims accruing, shall not be held to relieve CONTRACTOR of any obligations hereunder.

The State of Utah and all Institutions, Agencies, Departments, Authorities and Instrumentalities of the State of Utah, and while acting within the scope of their duties as such: any member of their governing bodies, or of their boards, commissions, or advisory committees, or any of their elected or appointed officials, or any of their employees or authorized volunteers shall be listed as additional insureds under each of the policies required to be purchased and maintained by CONTRACTOR, with the exception of Workers' Compensation. Each policy so required shall be primary to the aforesaid additional insureds listed above, and shall apply to the full policy limits prior to any other insurance coverage which the aforesaid additional insureds may have in the event of claim under any of said policies, but, only with respect to WORK being performed by CONTRACTOR on behalf of the aforesaid additional insureds.

Before the WORK is commenced, certificates evidencing that satisfactory coverage of the type and limits set forth above are in effect, shall be furnished to the OWNER. Such insurance policies shall contain provisions that no alteration, cancellation or material change therein shall become effective except upon thirty (30) days prior written notice to OWNER's Risk Manager as evidenced by return of registered or certified letter sent to OWNER's Risk Manager.

Any and all deductibles in the above described policies shall be assumed by, for the account of, and at sole risk of CONTRACTOR.

23. Property Insurance:

OWNER shall provide "all risk" property insurance to protect OWNER, as well as all CONTRACTORs, Subcontractors and sub-subcontractors with respect to WORK performed hereunder at OWNER's own cost and expense, according to the policy forms currently in force with insurance carriers selected by OWNER's Risk Manager. OWNER's Risk Manager will furnish, upon request, all parties in interest with copies of said policies authenticated by authorized agents of the insurers or the State Risk Management Fund.

The above described policies shall be subject to a total deductible of $500.00 per loss occurrence, which shall be assumed by all insureds in proportion to their share of the total amount of an insured loss occurrence.

Any insured property loss is to be adjusted with the OWNER's Risk Manager, and made payable to the OWNER's Risk Manager as trustee for the insureds, as their interests may appear, subject to the requirements of any applicable loss payable clause.

CONTRACTOR and OWNER hereby waive all rights against each other for damages caused by perils insured against under the property insurance provided by OWNER, except such rights as CONTRACTOR may have to the proceeds of such insurance held by the OWNER's Risk Manager as trustee.

If the CONTRACTOR requests in writing that insurance for special hazards be included in the property insurance policy, the OWNER's Risk Manager shall, if possible, include such insurance, and the cost thereof shall be charged to the CONTRACTOR by appropriate change order.

24. Indemnification:

"Indemnities" shall be defined for the purposes of this section: the State of Utah and all institutions, agencies, departments, authorities, and instrumentalities of the State of Utah, and any member of their governing bodies, or of their boards or commissions, or any of their elected or appointed officers, or any of their employees or authorized volunteers.

The CONTRACTOR will protect, indemnify and hold harmless indemnities from every kind and character of damages, losses, expenses, demands, claims and causes of action arising against indemnities and their Subcontractors, their officers, agents, employees or any other person, firm or corporation whatsoever from, against, or on account of any and all claims damages, losses, demands causes of action and expenses (including attorney's fees) arising out of or resulting from any violation or alleged violation by CONTRACTOR, his officers, agents and employees, or his Subcontractors or their officers, agents and employees of any federal, state or local law, statute or ordinance, relating to the WORK to be performed by the CONTRACTOR on the project growing out of or incident to the WORK to be performed and operations to be conducted by CONTRACTOR, or his Subcontractors, under this agreement, whether such claims, death or damages, result from or are claimed to have resulted from the negligence of CONTRACTOR, his officers, agents or employees, or his Subcontractors, their officers, agents, employees, or whether resulting from or alleged to have resulted from the concurrent negligence of indemnities and/or CONTRACTORs, their officers, agents or employees. The CONTRACTOR, at his own expense, shall defend any suit or action brought against OWNER based on any such alleged injury, death or damage, and shall pay all damages, costs and expenses, including attorney's fees in connection therewith or in any manner resulting therefrom. Such damages will include all the injuries or damages occasioned by the failure of, use of, or misuse of any and all kinds of equipment, whether owned or rented by CONTRACTOR or furnished by a Subcontractor.

The OWNER shall be fully informed by the CONTRACTOR of settlement negotiations regarding any matter referred to in the preceding paragraph and shall first approve any settlement to be made by CONTRACTOR. Any such settlement shall include a release of all claims relating to OWNER. The form copy of all releases obtained shall be furnished by OWNER. If CONTRACTOR is unable to make settlement of any such claims within fifteen (15) days after the final completion date, the OWNER reserves the right, at his/her option, to either make settlement of the claim and charge the amount to CONTRACTOR or to withhold the dollar amount, in whole or in part, of the claim or claims in question from payment to CONTRACTOR until OWNER receives a release for such claim or claims.

In any and all claims against indemnities by any employee or CONTRACTOR, any Subcontractor, anyone directly or indirectly employed by any of

them or anyone for whose acts any of them may be liable, the indemnification obligation under this article shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for CONTRACTOR or any Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

The CONTRACTOR shall indemnify and hold harmless indemnities from all claims, demands, causes of action or suits of whatever nature arising out of services, equipment, supplies, materials and/or labor furnished by CONTRACTOR or its Subcontractors under this agreement; from all labor and/or mechanic or materialmen liens upon the real property upon which the work is located arising in favor of laborers and/or materialmen, Subcontractors and suppliers, out of services, equipment, supplies, materials and/or labor furnished by CONTRACTOR or any of his/her Subcontractors from all liens, claims and encumbrances arising from the performance of CONTRACTOR or his/her Subcontractors.

25. Changes:

1. Change Order. The Procurement Officer, at any time, and without notice to the sureties, in a signed writing designated or indicated to be a change order, may order:

   (a) Changes in the WORK within the scope of the CONTRACT; and

   (b) Changes in the time for performance of the CONTRACT that do not alter the scope of the CONTRACT

2. Adjustment of Price or Time for Performance. If any such change order increases or decreases the CONTRACTOR's cost of, or the time required for, performance of any part of the WORK under this CONTRACT, whether or not changed by the order, an adjustment shall be made and the contract modified in writing accordingly. Any adjustment in contract price made pursuant to this clause shall be determined in accordance with the Price Adjustment Clause of this contract.

   Failure of the parties to agree to an adjustment shall not excuse a CONTRACTOR from proceeding with the contract as changed, provided that the State promptly and duly makes such provisional adjustments in payments or time for performance as may be reasonable.

3. Written Certification. The CONTRACTOR shall not perform any change order which increases the CONTRACT amount unless it bears, or the CONTRACTOR has separately received, a written certification, signed by the fiscal officer of the entity responsible for funding the project or CONTRACT or other official responsible for monitoring and reporting upon the status of the costs of the total project or contract budget that funds are available therefor; and, if acting in good faith, the CONTRACTOR may rely upon the validity of such certification.

4. Time Period for Claim. Within 30 days after receipt of a written change order under Paragraph (1) (Change Order) of this clause, unless such period is extended by the Procurement Officer in writing, the CONTRACTOR shall file notice of intent to assert a claim for an adjustment.

5. Claim Barred after Final Payment. No claim by the contractor for an adjustment hereunder shall be allowed if notice is not given prior to final payment under this contract.

6. Claims Not Barred. In the absence of such a change order, nothing in this clause shall restrict the CONTRACTOR's right to pursue a claim arising under the CONTRACT, if pursued in accordance with the clause entitled 'Claims Based on a Procurement Officer's Actions or Omissions Clause' (General Condition 33) or for breach of contract.

[Reference: Utah Admin Code R33-5-420]

26. Variations in Estimated Quantities:

1 Variations Requiring Adjustments. Where the quantity of a pay item in this CONTRACT is an estimated quantity and where the actual quantity of such pay item varies more than 15% above or below the estimated quantity stated in this CONTRACT, an adjustment in the CONTRACT price shall be made upon demand of either party. The adjustment shall be based upon any increase or decrease in costs due solely to the variation above 15% or below 85% of the estimated quantity. If the quantity variation is such as to cause an increase in the time necessary for completion, the Procurement Officer shall, upon receipt of a timely written request for an extension of time, prior to the date of final settlement of the CONTRACT, ascertain the facts and make such adjustment for extending the completion date as in the judgment of the Procurement Officer the findings justify.

2. Adjustments of Price. Any adjustment in CONTRACT price made pursuant to this clause shall be determined in accordance with the Price Adjustment Clause (General Condition 28) of this CONTRACT.

[Reference: Utah Admin Code R33-5-430]

27. Differing Site Conditions: Price Adjustments:

1. Notice. The CONTRACTOR shall promptly, and before such conditions are disturbed, notify the Procurement Officer of:

   (a) subsurface or latent physical conditions at the site differing materially from those indicated in this CONTRACT; or

   (b) Unknown physical conditions at the site of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in WORK of the character provided for in this CONTRACT.

2. Adjustments of Price or Time for Performance. After receipt of such notice, the Procurement Officer shall promptly investigate the site, and if it is found that such conditions do materially so differ and cause an increase in the CONTRACTOR's cost of, or the time required for, performance of any part of the WORK under this contract, whether or not changed as a result of such conditions, an adjustment shall be made and the CONTRACT modified in writing accordingly. Any adjustment in CONTRACT price made pursuant to this clause shall be determined in accordance with the Price Adjustment Clause (General Condition 28) of this CONTRACT.

3. Timeliness of Claim. No claim of the CONTRACTOR under this clause shall be allowed unless the CONTRACTOR has given the notice required in this clause; provided, however, that the time prescribed therefor may be extended by the Procurement Officer in writing.

4. No Claim After Final Payment. No claim by the CONTRACTOR for an adjustment thereunder shall be allowed if asserted after final payment under this CONTRACT.

5. Knowledge. Nothing contained in this clause shall be grounds for an adjustment in compensation if the CONTRACTOR had actual knowledge of the existence of such conditions prior to the submission of bids.

[Reference: Utah Admin Code R33-5-450]

28. Price Adjustment:

1. Price Adjustment Methods. Any adjustment in CONTRACT price pursuant to any clause in this CONTRACT shall be made in one or more of the following ways:

   (a) by agreement on a fixed price adjustment before commencement of the pertinent performance or as soon thereafter as practicable;

   (b) by unit prices specified in the CONTRACT or subsequently agreed upon;

   (c) by the costs attributable to the event or situation covered by the clause, plus appropriate profit or fee, all as specified in the CONTRACT or subsequently agreed upon;

   (d) in such other manner as the parties may mutually agree; or

   (e) in the absence of agreement between the parties, by a unilateral determination by the Procurement Officer of costs attributable to the event or situation covered by the clause, plus appropriate profit or fee, all as computed by the Procurement Officer in accordance with generally accepted accounting principles and applicable sections of the rules promulgated under Section 63G-6-415 (Cost Principles) and subject to the provisions of Part H (Legal and Contractual Remedies) of the Utah Procurement Code.

2. Submission of Cost or Pricing Data. The CONTRACTOR shall submit cost or pricing data for any price adjustments subject to the provisions of Section 63G-6-415 (Cost Principles) of the Utah Procurement Code.

[Reference: Utah Admin Code R33-5-460]

29. Suspension of WORK:

1. Suspension for Convenience. The Procurement Officer may order the CONTRACTOR in writing to suspend, delay or interrupt all or any part of the WORK for such period of time as the Procurement Officer may determine to be appropriate for the convenience of the State.

2. Adjustment of Cost. If the performance of all or any part of the WORK is, for an unreasonable period of time, suspended, delayed, or interrupted by an act of the Procurement Officer in the administration of this CONTRACT, or by the failure of the Procurement Officer to act within the time specified in this CONTRACT (or if no time is specified, within reasonable time), an adjustment shall be made for any increase in the cost of performance of this CONTRACT necessarily caused by such unreasonable suspension, delay, or interruption and the CONTRACT modified in writing accordingly. However, no adjustment shall be made under this clause for any suspension, delay, or interruption to the extent:

   (a) that performance would have been so suspended, delayed or interrupted by any other cause, including the fault or negligence of the CONTRACTOR; or

   (b) for which an adjustment is provided for or excluded under any other provision of this CONTRACT.

3. Time Restriction on Claim. No claim under this clause shall be allowed:

   (a) for any costs incurred more than 20 days before the contractor shall have notified the Procurement Officer in writing of the act or failure to act involved (but this requirement shall not apply as to a claim resulting from a suspension order); and

   (b) unless the claim is asserted in writing as soon as practicable after the termination of such suspension, delay, or interruption, but not later than the date of final payment under the CONTRACT.

4. Adjustments of Price. Any adjustment in contract price made pursuant to this clause shall be determined in accordance with the Price Adjustment Clause (General Condition 28) of this CONTRACT.

[Reference: Utah Admin Code R33-5-440]

30. Termination for Default for Nonperformance or Delay Damages for Delay-Time Extensions:

1. Default. If the CONTRACTOR refuses or fails to prosecute the WORK, or any separable part thereof, with such diligence as will assure its completion within the time specified in this CONTRACT, or any extension thereof, fails to complete said WORK within such time, or commits any other substantial breach of this CONTRACT, and further fails within fourteen (14) days after receipt of written notice from the Procurement Officer to commence and continue correction of such refusal or failure with diligence and promptness, the Procurement Officer may, by written notice to the CONTRACTOR, declare the CONTRACTOR in breach and terminate the CONTRACTOR 's right to proceed with the WORK or such part of the WORK as to which there has been delay. In such event, the State may take over the WORK and prosecute the same to completion, by contract or otherwise, and may take possession of, and utilize in completing the WORK, such materials, appliances, and plant as may be on the site of the WORK and necessary therefor. Whether or not the CONTRACTOR 's right to proceed with the WORK is terminated, the CONTRACTOR and the CONTRACTOR 's sureties shall be liable for any damage to the State resulting from the CONTRACTOR 's refusal or failure to complete the WORK within the specified time.

2. Liquidated Damages Upon Termination. If fixed and agreed liquidated damages are provided in the CONTRACT, and if the State so terminates the CONTRACTOR 's right to proceed, the resulting damage will consist of such liquidated damages for such reasonable time as may be required for final completion of the WORK.

3. Liquidated Damages in Absence of Termination. If fixed and agreed liquidated damages are provided in the CONTRACT, and if the State does not terminate the CONTRACTOR's right to proceed, the resulting damage will consist of such liquidated damages until the WORK is completed or accepted.

4. Time Extension. The CONTRACTOR 's right to proceed shall not be so terminated nor the CONTRACTOR charged with resulting damage if:

   (a) the delay in the completion of the work arises from causes such as: acts of God; acts of the public enemy; acts of the State and any other governmental entity in either a sovereign or contractual capacity; acts of another contractor in the performance of a contract with the State; fires; floods; epidemics; quarantine restrictions; strikes or other labor disputes; freight embargoes; unusually severe weather; delays of subcontractors due to causes similar to those set forth above; or shortage of materials; provided, however, that no extension of time will be granted for a delay caused by a shortage of materials, unless the CONTRACTOR furnishes to the Procurement Officer proof that the CONTRACTOR has diligently made every effort to obtain such materials from all known sources within reasonable reach of the work, and further proof that the inability to obtain such materials when originally planned did in fact cause a delay in final completion of the entire WORK which could not be compensated for by revising the sequence of the CONTRACTOR 's operations; and

   (b) the CONTRACTOR, within ten days from the beginning of any such delay (unless the Procurement Officer grants a further period of time before the date of final payment under the CONTRACT), notifies the Procurement Officer in writing of the causes of delay. The Procurement Officer shall ascertain the facts and the extent of the delay and extend the time for completing the WORK when, in the judgment of the Procurement Officer, the findings of fact justify such an extension.

5. Erroneous Termination for Default. If, after notice of termination of the CONTRACTOR 's right to proceed under the provisions of this clause, it is determined for any reason that the CONTRACTOR was not in default under the provisions of this clause, or that the delay was excusable under the provisions of this clause, the rights and obligations of the parties shall, if the CONTRACT contains a clause providing for termination for convenience of the State, be the same as if the notice of termination had been issued pursuant to such clause. If, in the foregoing circumstances, this CONTRACT does not contain a clause providing for termination for convenience of the State, the CONTRACT shall be adjusted to compensate for such termination and the contract modified accordingly.

6. Additional Rights and Remedies. The rights and remedies of the State provided in this clause are in addition to any other rights and remedies provided by law or under this CONTRACT.

[Reference: Utah Admin Code R33-5-480]

31. Termination for Convenience:

1. Termination. The Procurement Officer may, when the interests of this State so require, terminate this CONTRACT in whole or in part, for the convenience of the State. The Procurement Officer shall give written notice of the termination to the CONTRACTOR specifying the part of the CONTRACT terminated and when termination becomes effective.

2. CONTRACTOR 's Obligations. The CONTRACTOR shall incur no further obligations in connection with the terminated WORK and on the date set in the notice of termination, the CONTRACTOR will stop work to the extent specified. The CONTRACTOR shall also terminate outstanding orders and subcontracts as they relate to the terminated

WORK. The CONTRACTOR shall settle the liabilities and claims arising out of the termination of subcontracts and orders connected with the terminated WORK. The Procurement Officer may direct the CONTRACTOR to assign the CONTRACTOR's right, title, and interest under terminated orders or subcontracts to the State. The CONTRACTOR shall still complete the WORK not terminated by the notice of termination and may incur obligations as necessary to do so.

3. Right to Construction and Supplies. The Procurement Officer may require the CONTRACTOR to transfer title and deliver to the State in the manner and to the extent directed by the Procurement Officer:

   (a) any completed construction; and

   (b) such partially completed construction, supplies, materials, parts, tools, dies, jigs, fixtures, plans, drawings, information, and contract rights (hereinafter called "construction material") as the CONTRACTOR has specifically produced or specially acquired for the performance of the terminated part of this CONTRACT.

   The CONTRACTOR shall protect and preserve property in the possession of the CONTRACTOR in which the State has an interest. If the Procurement Officer does not exercise this right, the CONTRACTOR shall use best efforts to sell such construction, supplies, and construction materials in accordance with the standards of Uniform Commercial Code Section 2-706. This in no way implies that the State has breached the CONTRACT by exercise of the Termination for Convenience Clause.

4. Compensation.

   (a) The CONTRACTOR shall submit a termination claim specifying the amounts due because of the termination for convenience together with cost or pricing data, submitted to the extent required by Section 63G-6-415 (Cost or Pricing Data) of the Utah Procurement Code, bearing on such claim. If the CONTRACTOR fails to file a termination claim within one year from the effective date of termination, the Procurement Officer may pay the CONTRACTOR, if at all, an amount set in accordance with Subparagraph (c) of this Paragraph.

   (b) The Procurement Officer and the CONTRACTOR may agree to a settlement provided the CONTRACTOR has filed a termination claim supported by cost or pricing data submitted as required by Section 63G-6-601 (Cost or Pricing Data) of the Utah Procurement Code and that the settlement does not exceed the total CONTRACT price plus settlement costs reduced by payments previously made by the State, the proceeds of any sales of construction, supplies, and construction materials under Paragraph (3) of this clause, and the CONTRACT price of the work not terminated.

   (c) Absent complete agreement under Subparagraph (b) of this paragraph, the Procurement Officer shall pay the CONTRACTOR the following amounts, provided payments under Subparagraph (b) shall not duplicate payments under this paragraph:

      (i) with respect to all CONTRACT WORK performed prior to the effective date of the notice of termination, the total (without duplication of any items) of:

         (A) the cost of such WORK plus a fair and reasonable profit on such portion of the WORK (such profit shall not include anticipatory profit or consequential damages) less amounts paid or to be paid for completed portions of such WORK; provided, however, that if it appears that the CONTRACTOR would have sustained a loss if the entire CONTRACT would have been completed, no profit shall be allowed or included and the amount of compensation shall be reduced to reflect the anticipated rate of loss;

         (B) costs of settling and paying claims arising out of the termination of subcontracts or orders pursuant to paragraph (2) of this clause. These costs shall not include costs paid in accordance with subparagraph (c)(i)(A) of this paragraph;

         (C) the reasonable settlement costs of the CONTRACTOR including accounting, legal, clerical, and other expenses reasonably necessary for the preparation of settlement claims and supporting data with respect to the terminated portion of the CONTRACT and for the termination and settlement of subcontracts thereunder, together with reasonable storage, transportation, and other costs incurred in connection with the protection or disposition of property allocable to the terminated portion of this CONTRACT.

      The total sum to be paid the CONTRACTOR under this paragraph shall not exceed the total CONTRACT price plus the reasonable settlement costs of the CONTRACTOR reduced by the amount of any sales of construction, supplies, and construction materials under paragraph (3) of this clause, and the CONTRACT price of work not terminated.

   (d) Cost claimed, agreed to, or established under subparagraphs (b) and (c) of this paragraph shall be in accordance with Section R33-3-8.

[Reference: Utah Admin Code R33-5-495]

32. Termination for Breach, Etc.:

If the CONTRACTOR shall be adjudged bankrupt, or if CONTRACTOR should make a general assignment for the benefit of his/her creditors, or if a receiver should be appointed on account of CONTRACTOR's insolvency, or if CONTRACTOR or any of his/her Subcontractors should violate any of the provisions of this CONTRACT, the OWNER may serve written notice upon CONTRACTOR of its intention to terminate said CONTRACT; and unless within ten (10) days after the serving of such notice, such violation shall cease, the OWNER then may take over the WORK and prosecute same to completion by CONTRACT or by any other method it may deem advisable for the amount and at the expense of the CONTRACTOR. The CONTRACTOR shall be liable to the OWNER for any excess cost occasioned the OWNER thereby and in such event, the OWNER may, without liability for so doing, take possession of and utilize in completing the WORK, such materials, appliances, paint, and any other property belonging to the CONTRACTOR as may be on the site of the work and necessary therefor.

33. Claims Based on a Procurement Officer's Actions or Omissions:

1. Notice of Claim. If any action or omission on the part of a Procurement Officer or designee of such officer, requiring performance changes within the scope of the CONTRACT and which are not covered by other clauses of this CONTRACT, constitutes the basis for a claim by the CONTRACTOR for additional compensation, damages, or an extension of time for completion, the CONTRACTOR shall continue with performance of the CONTRACT in compliance with the directions or orders of such officials, but by so doing, the CONTRACTOR shall not be deemed to have prejudiced any claim for additional compensation, damages, or an extension of time for completion; provided:

   (a) The CONTRACTOR shall have given written notice to the Procurement Officer or designee of such officer:

   (i) prior to the commencement of the WORK involved, if at that time the CONTRACTOR knows of the occurrence of such action or omission;

   (ii) Within thirty (30) days after the CONTRACTOR knows of the occurrence of such action or omission, if the CONTRACTOR did not have such knowledge prior to the commencement of the WORK; or

   (iii) within such further time as may be allowed by the Procurement Officer in writing.

   This notice shall state that the CONTRACTOR regards the act or omission as a reason which may entitle the CONTRACTOR to additional compensation, damages, or an extension of time. The Procurement Officer or designee of such officer, upon receipt of such notice, may rescind such action, remedy such omission, or take such other steps as may be deemed advisable in the discretion of the Procurement Officer or designee of such officer;

   (b) The notice required by Subparagraph (a) of this Paragraph describes as clearly as practicable at the time the reasons why the CONTRACTOR believes that additional compensation, damages, or an extension of time may be remedies to which the CONTRACTOR is entitled; and

   (c) The CONTRACTOR maintains and, upon request, makes available to the Procurement Officer within a reasonable time, detailed records to the extent practicable, of the claimed additional costs or basis for an extension of time in connection with such changes.

2. Limitation of Clause. Nothing herein contained, however, shall excuse the CONTRACTOR from compliance with any rules of law precluding any State officers and any contractors from acting in collusion or bad faith in issuing or performing change orders which are clearly not within the scope of the CONTRACT.

3. Adjustments of Price. Any adjustment in the CONTRACT price made pursuant to this clause shall be determined in accordance with the Price Adjustment Clause (General Condition 28) of this CONTRACT.

[Reference: Utah Admin Code R33-5-470]

34. Liquidated Damages:

The CONTRACTOR is referred to Attachment C, Article 12 of the CONTRACT for conditions of liquidated damages.

35. Remedies:

Any dispute arising under or out of this CONTRACT is subject to the provisions of Part H (Legal and Contractual Remedies) of the Utah Procurement Code.

[Reference: Utah Admin Code R33-5-497]

36. Delays and Extension of Time:

If the CONTRACTOR is significantly delayed at any time in the progress of the WORK by any act or neglect of the OWNER, or of any employee of either, or by any separate CONTRACTOR employed by the OWNER, or by significant changes ordered in the WORK or by strikes, lockouts, fire, unavoidable casualties or any causes beyond the CONTRACTOR's control, or by any cause which the OWNER shall decide justifies the delay, then the time of completion shall be extended for such reasonable time as the OWNER may decide. No action shall lie against the OWNER for damages or other claims due to losses attributable to hindrances or delays from any cause whatsoever, including

acts and omissions of the OWNER or its agents; however, the CONTRACTOR may receive an extension of time in which to complete the WORK under this CONTRACT as provided above. The right to apply for such an extension of time shall be the exclusive remedy available to the CONTRACTOR or any Subcontractor as against the OWNER for such loss.

Any request for extension of time shall be made to the OWNER in writing within seven (7) days from the time of occurrence of cause for delay. In case of a continuing cause of delay, only one claim is necessary.

37. Balancing and Testing:

It is the intent of this specification that the site, when presented to the OWNER for final acceptance, be complete and operable in all respects, including, but not limited to, mechanical, utilities, and other systems which are tuned, tested, and balanced to the satisfaction of the OWNER, or his/her appropriate engineers and consultants. Any and all testing and balancing necessary shall be done as part of the CONTRACT with the state.

During, or in connection with the inspection of the WORK, the CONTRACTOR or his/her appropriate Subcontractor(s) shall perform such tests and/or demonstrations of the operation of the systems, or its components, as may be requested by the OWNER, or his/her appropriate engineers and consultants, as necessary to adequately determine the acceptability of the installation.

38. Substantial Completion:

The OWNER will conduct inspections to determine the dates of substantial completion and final payment, will receive written guarantees and related documents required by the CONTRACT and assembled by the CONTRACTOR and submit these to the OWNER, and will issue a final certificate for payment.

The date of substantial completion of the WORK or designated portion thereof is the date certified by the OWNER when construction is sufficiently complete in accordance with the CONTRACT documents so the OWNER may occupy the site or designated portion thereof for the use for which it is intended. When the CONTRACTOR determines that the WORK, or a designated portion thereof acceptable to the OWNER, is substantially complete, the OWNER shall prepare a list of items to be completed or corrected. The failure to include any item on such list does not alter the responsibility of the CONTRACTOR to complete all WORK in accordance with the contract documents. When the OWNER, on the basis of an inspection, determines that this WORK is substantially complete, the CONTRACT REPRESENTATIVE then will prepare a Certificate of Substantial Completion which shall establish the date of substantial completion; shall state the responsibilities of the OWNER and the CONTRACTOR for maintenance, heat, utilities and insurance; and shall fix the time within which the CONTRACTOR shall complete the items listed therein, said time to be within the CONTRACT time unless extended pursuant to Article, "Delays and Extension of Time." The certificate of substantial completion shall be submitted to the OWNER and the CONTRACTOR for their written acceptance of the responsibilities assigned to them in such certificate. A sample form of the certificate of substantial completion is included in the specifications.

If within one year after the date of substantial completion or within such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the CONTRACT documents, any of the WORK is found to be defective or not in accordance with the CONTRACT documents, the CONTRACTOR shall correct it promptly after receipt of written notice from the OWNER to do so unless the OWNER has previously given the CONTRACTOR a written acceptance of such condition. The OWNER shall give such notice promptly after discovery of the condition.

39. Application for Payments:

The CONTRACTOR shall submit an application monthly for progress payments to the OWNER for approval. The CONTRACT REPRESENTATIVE shall approve the payment, and obtain the signature of the inspector for payment. Receipts or other vouchers showing payments for the materials and labor, including payments to Subcontractors, for the preceding month shall be submitted with the application if required.

If payments are made on valuation of WORK done, such application shall be submitted at least ten days before each payment falls due. The CONTRACTOR shall, before the first application, submit to the OWNER, a schedule of values for the various parts of the WORK, including quantities, aggregating the total sum of the CONTRACT, divided so as to facilitate payments as outlined above and made out in such form as the OWNER and the CONTRACTOR may agree upon, and supported by such evidence as to its correctness as the OWNER may direct. This schedule, when approved by the OWNER, shall be used as a basis for payment, unless it be found to be in error. In applying for payments, the CONTRACTOR shall submit in duplicate a statement based upon this schedule and itemized in such form and supported by such evidence as the OWNER may direct, showing CONTRACTOR's right to the payment claimed.

In making payments to the CONTRACTOR for completed WORK or for materials stored on site, it is understood between the OWNER and the CONTRACTOR that proportionate parts of such payments as are made to the CONTRACTOR for completed WORK of Subcontractors and/or suppliers will be transmitted to such Subcontractors and/or suppliers in the form of payments for completed WORK within ten (10) days after receipt of such payments by the CONTRACTOR. The submittal of an application by a CONTRACTOR for a progress payment shall constitute prima facie representation by that CONTRACTOR that all previous proportionate payments made by the OWNER to the CONTRACTOR for completed WORK of Subcontractors and/or suppliers have been transmitted to all appropriate Subcontractors and/or suppliers for their completed WORK within ten (10) days after receipt of respective payments.

The CONTRACTOR may request retainage to be paid to an escrow agent for interest to accrue to the CONTRACTOR's benefit. See OWNER for forms and more information.

40. OWNER's Right to Withhold Certain Amounts and Make Application Thereof:

The OWNER may withhold from payment to the CONTRACTOR such an amount or amounts as, in its judgment, may be necessary to pay just claims against the CONTRACTOR or any Subcontractor for labor and services rendered and materials furnished in and about the WORK. The OWNER may apply such withheld amounts on the payment of such claims in its discretion. In so doing, the OWNER shall be deemed the agent of the CONTRACTOR and payments so made by the OWNER shall be considered as a payment made under the CONTRACT by the OWNER to the CONTRACTOR and the OWNER shall not be liable to the CONTRACTOR for any such payments in good faith made. Such payments may be made without prior determination of the claim or claims.

Neither the final certificate of payment nor any provision in the CONTRACT documents, nor partial or entire occupancy of the premises by the OWNER shall constitute an acceptance of WORK not done in accordance with the contract documents or relieve the CONTRACTOR of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The CONTRACTOR shall remedy any defects in the WORK and pay for any damage to other WORK resulting therefrom, which shall appear within a period of one year from the date of the certificate of substantial completion of the WORK, unless a longer period is specified. The OWNER will give notice of observed defects with reasonable promptness.

41. Deductions for Uncorrected Work:

If the OWNER deems it inexpedient to correct WORK damaged or done not in accordance with the CONTRACT, an equitable deduction from the CONTRACT price shall be made therefor.

42. Correction of WORK Before Final Payment:

The CONTRACTOR shall promptly remove from the premises all WORK condemned by the OWNER as failing to conform to the CONTRACT, whether incorporated or not, and the CONTRACTOR shall promptly replace and reexecute his/her own WORK in accordance with the CONTRACT and without expense to the State of Utah and shall bear the expense of making good all WORK of other CONTRACTORS destroyed or damaged by such removal or replacement.

If the CONTRACTOR does not remove such condemned WORK within a reasonable time, fixed by written notice, the OWNER may have the materials removed and stored at the expense of the CONTRACTOR.

43. Correction of WORK After Final Payment:

Neither the final certificate of payment nor any provision in the CONTRACT documents nor partial or entire occupancy of the premises by the OWNER shall constitute an acceptance of WORK not done in accordance with the CONTRACT documents or relieve the CONTRACTOR of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The CONTRACTOR shall remedy any defects in the WORK and pay for any damage to other WORK resulting therefrom which shall appear within a period of one year from the date of substantial completion of the WORK, unless a longer period is specified. The OWNER will give notice of observed defects with reasonable promptness.

44. Liens:

Neither the final payment nor any part of the retained percentage shall become due until the CONTRACTOR, if required, shall deliver to the OWNER a complete release of all liens arising out of this CONTRACT, or receipts in full in lieu thereof, and, if required in either case, an affidavit that so far as CONTRACTOR has knowledge or information the releases and receipts include all the labor and materials for which a lien could be filed, but the CONTRACTOR may, if any Subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the OWNER to indemnify him/her against any lien. If any lien remain unsatisfied after all payments are made, the CONTRACTOR shall refund to the OWNER all moneys that the latter may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fee.

45. Assignment:

The CONTRACTOR shall not assign the CONTRACT or sublet it as a whole without the written consent of the OWNER, nor shall the CONTRACTOR assign any moneys due or to become due to CONTRACTOR hereunder, without the previous written consent of the OWNER.

46. Separate Contracts:

The OWNER reserves the right to let other CONTRACTS in connection with this WORK. The CONTRACTOR shall afford other CONTRACTORs reasonable opportunity for the introduction and storage of their materials and the execution of their work and shall properly connect and coordinate his/her WORK with theirs.

If any part of the CONTRACTOR's WORK depends for proper execution or results upon the WORK of any other CONTRACTOR, the CONTRACTOR shall inspect and promptly report to the OWNER any defects in such WORK that render it unsuitable for such proper execution and results. His/her failure so to inspect and report shall constitute an acceptance of the other CONTRACTOR's work as fit and proper for the reception of his/her work, except as to defects which may develop in the other CONTRACTOR's WORK after the execution of his/her WORK. To insure the proper execution of his/her subsequent WORK, the CONTRACTOR shall measure WORK already in place and shall at once report to the OWNER any discrepancy between the executed WORK and the drawings.

47. Mutual Responsibility of Contractors:

Should the CONTRACTOR cause damage to any separate CONTRACTOR on the WORK, the CONTRACTOR agrees, upon due notice, to settle with such CONTRACTOR by agreement or

arbitration, if he/she will so settle. If such separate CONTRACTOR sues the OWNER on account of any damage alleged to have been so sustained, the OWNER shall notify the CONTRACTOR, who shall defend such proceedings at his/her own expense, and if any judgment against the OWNER arises therefrom, the CONTRACTOR shall pay or satisfy it in its entirety.

48. Subcontractors:

The two apparent low bidders shall furnish to the OWNER, within twenty-four (24) hours after the opening of bids, a list of the Subcontractors by name and amounts where Subcontractors' bids are in excess of $5,000 and shall not employ any that the OWNER may, within a reasonable time, object to as incompetent or unfit. Bidders shall not list themselves or "self" under any category as Subcontractor unless the bidder intends to perform as the Subcontractor for which he/she lists "self," and unless he/she generally and regularly performs that type of subcontract WORK. The OWNER shall, on request, furnish to any Subcontractor, wherever practicable, evidence of the amounts certified on this account.

The CONTRACTOR agrees that CONTRACTOR is as fully responsible to the OWNER for the acts and omissions of his Subcontractors and of persons either directly or indirectly employed by them, as he/she is for the acts and omissions of persons directly employed by CONTRACTOR.

Nothing contained in the CONTRACT documents shall create any contractual relation between any Subcontractor or supplier and the OWNER.

49. Relations of CONTRACTOR and Subcontractor:

The CONTRACTOR agrees to bind every Subcontractor and every Subcontractor agrees to be bound by the terms of the agreement, the general conditions, and the drawings and specifications as far as applicable to his/her WORK. Nothing in this article shall create any obligation on the part of the OWNER to pay or to see to the payment of any sums to any Subcontractor.

50. Subcontractor's Financial Bid Limits and License Classification:

The CONTRACTOR shall verify the license classification and bid limit of each of his/her Subcontractors. Regulations prohibit work of the above Subcontractors exceeding their respective bid limit and working outside of license classification as determined by the Division of Occupational and Professional Licensing, Department of Commerce.

In the event the bid limit or classification is not complied with, the respective Subcontractor(s) mentioned above will be disqualified by the OWNER, and the CONTRACTOR shall be responsible to provide a suitable and properly qualified Subcontractor as approved by the OWNER without a change in the contract price.

51. CONTRACT REPRESENTATIVE Status:

The OWNER shall appoint a CONTRACT REPRESENTATIVE who shall have general supervision of the work and he/she is the agent of the OWNER to the extent provided in the CONTRACT documents and when in special instances he/she is authorized by the OWNER to so act.

As the CONTRACT REPRESENTATIVE is, in the first instance, an interpreter of the conditions of the CONTRACT and a judge of its performance, he/she shall side neither with the OWNER nor with the CONTRACTOR, but shall use his/her powers under the CONTRACT to enforce its faithful performance by both.

52. CONTRACT REPRESENTATIVE's Decisions:

The CONTRACT REPRESENTATIVE shall, within a reasonable time, make decisions on all claims of the OWNER or CONTRACTOR and on all other matters relating to the execution and progress of the WORK or the interpretation of the CONTRACT documents.

53. State's Inspection:

The OWNER, at his/her option, may assign a inspector to the project. Such staff inspector will cooperate with the CONTRACT REPRESENTATIVE and design engineer in noting deviations from, or necessary adjustments to, the CONTRACT documents or of deficiencies or defects in the construction. The staff inspector's presence on the project, however, shall in no way relieve the CONTRACT REPRESENTATIVE of the prime responsibilities as set forth herein.

54. Monthly Progress Meetings:

Monthly progress meetings may be held at the discretion of the OWNER or the general CONTRACTOR, at which time the Subcontractors and/or suppliers will be required to be present.

55. Guarantee Bonds:

The CONTRACTOR shall include in his/her bid, as part of the quoted total, all costs involved in securing and furnishing the following bonds based on the completed cost of the CONTRACT:

(a) A full 100% performance bond covering the faithful execution of the CONTRACT; and

(b) A full 100% payment bond of all obligations arising thereunder.

56. Taxes:

The CONTRACTOR shall include in his/her BID PRICE the cost of social security, unemployment compensation, and sales and use taxes as required by federal and state laws.

57. Cash Allowances:

The CONTRACTOR shall include in the BID PRICE all allowances named in the CONTRACT documents and shall cause the WORK so covered to be done by such CONTRACTORs and for such sums as the CONTRACT REPRESENTATIVE may specify and certify, the BID PRICE being adjusted in conformity therewith, upon approval of the OWNER.

58. Royalties and Patents:

The CONTRACTOR shall pay all royalties and license fees. He/she shall defend all suits or claims for infringement of any patent rights and shall save the OWNER harmless from loss on account thereof.

59. Examination of Site:

The CONTRACTOR shall visit the site and examine for himself/herself the site conditions. He/she shall furnish all labor and materials necessary for preparation of the site for the execution of this CONTRACT.

60. Construction Risks:

The construction and all materials and WORK connected therewith shall be at the CONTRACTOR's risk until they are accepted, and he/she will be held responsible for and liable for their safety in the amount paid to him/her by the OWNER on account thereof.

61. Use of Premises:

The CONTRACTOR shall confine apparatus, the storage of materials and the operations of his/her workers to limits indicated by law, ordinances, permit or directions of the CONTRACT REPRESENTATIVE and shall not unreasonably encumber the premises with his/her materials. The CONTRACTOR shall not load or permit any part of the equipment or structure to be loaded with a weight that will endanger its safety or the safety of any person on the premises.

62. Laying Out WORK:

The CONTRACTOR shall be held strictly responsible for the accuracy of the laying out of his/her WORK and for its strict conformity with the existing conditions of the building and shall determine all changes and chases and openings before WORK is commenced.

63. Cutting, Patching and Digging:

The CONTRACTOR shall do all cutting, patching or fitting of his/her WORK that may be required to make its several parts come together properly and fit it to receive or be received by WORK of other CONTRACTORs shown upon, or reasonably implied by, the drawings and specifications for the completed structure, and he shall make good after them as the CONTRACT REPRESENTATIVE may direct.

Any cost caused by defective or ill-timed work shall be borne by the party responsible therefor. The CONTRACTOR shall not endanger any WORK by cutting, digging or otherwise, and shall not cut or alter the WORK of any other CONTRACTOR save with the consent of the CONTRACT REPRESENTATIVE.

64. Cleaning Up:

The CONTRACTOR shall at all times keep the premises free from accumulations of waste material or rubbish caused by his/her employees or WORK. At the completion of the WORK, CONTRACTOR shall remove all rubbish from and about the building and all tools, scaffolding and surplus materials and shall leave his/her WORK "broom-clean" or its equivalent, unless more exactly specified. In case of dispute, the OWNER may remove the rubbish and charge the cost to the several CONTRACTORs as the CONTRACT REPRESENTATIVE may determine to be just.

65. Testing of Materials:

In case the CONTRACT REPRESENTATIVE directs that any materials be tested or analyzed, then the CONTRACTOR shall furnish a sample for the test, such sample being selected according to the directions of the CONTRACT REPRESENTATIVE. The cost of testing or analysis of such sample or samples shall be borne by the manufacturer or supplier of the product. This provision shall not apply to the testing of concrete. The cost of testing shall be borne by the OWNER.

66. Temporary Enclosing, Drying Out, Etc.:

If applicable when openings are made in exterior walls, the CONTRACTOR shall, if required by the OWNER on account of weather or security conditions, close up all exterior openings (except one or more which are to be provided with battened doors, padlocks, etc.) with temporary frames covered with approved material.

The CONTRACTOR must, at all times, protect the building from damage from weather, surface water or subsoil drainage. He/she must keep the excavations dry, if necessary, by pumping, while concrete or masonry is being laid.

67. Storage and Care of Materials:

The CONTRACTOR shall provide, maintain and remove when directed, suitable, substantial, watertight storage sheds upon the premises where directed, in which he/her shall store his/her materials. All cement, lime and other materials affected by moisture shall be covered and protected to keep from damage while it is being transported to the site.

68. Temporary Appurtenances and Conveniences:

The CONTRACTOR shall provide well-fastened ladders and other means to facilitate inspection of the work.

69. Scaffolding, Tools, Etc.:

The CONTRACTOR shall provide and erect all the necessary platforms, scaffolds and supports of ample strength required for the handling of the materials and other loading to be imposed. The same shall apply to all derricks and hoisting machinery, all appliances and materials, ladders, horses, poles, plants, ropes, wedges, centers, moulds, and other tools and materials, and the cartage thereof to and from the site as may become necessary for the performance of his/her contract.

70. Sanitary Provisions:

The CONTRACTOR shall provide a chemical toilet for his workers' use. The CONTRACTOR shall keep the toilet clean, neat and in first-class condition at all times.

71. Refuse:

Refuse barrels are to be provided by the CONTRACTOR for the workers' lunch boxes and papers.

72. Rubbish Disposal:

Rubbish, trash, etc., shall not be burned on premises unless approved by the local fire authority, but rather, hauled from the site and legally disposed of or other methods as specified by OWNER.

73. Removing Water:

The CONTRACTOR shall remove, at his/her expense from all excavations and/or from the site, all unwanted water appearing from any cause during any stage of the WORK until the site is accepted by the OWNER. All excavations shall be free from water before any concreting or other WORK is done in them.

74. Safety:

The CONTRACTOR shall institute a safety program at the start of construction to minimize accidents; such program to continue to the end of the job and conform to the latest general safety orders of the State Industrial Commission. The CONTRACTOR shall post signs, erect barriers, etc., as necessary to implement this program. The CONTRACTOR shall have all workers and all visitors on site wear safety hard hats and obey all safety rules and regulations and statutes as soon as the CONTRACTOR proceeds. The CONTRACTOR shall post a sign regarding hats in a conspicuous location and furnish extra hats at his/her expense for visitors.

75. Emergencies:

In an emergency affecting the safety of life, or of the structure or of adjoining property, then the CONTRACTOR, without special instruction or authorization from the OWNER, shall act at his/her discretion to prevent such threatened loss or injury. Any compensation claimed to be due him/her therefrom shall be determined as provided for under Article 17, "Changes."

76. Normal Daylight Hours:

Contractor shall perform WORK on the premises during normal daylight hours and shall not perform WORK on the site when artificial light would be required to safely perform the WORK.

77. Normal Working Days:

CONTRACTOR shall perform the WORK during normal working days and shall not work during Sundays, or recognized national and state holidays. CONTRACTOR may take the option of working on Saturdays if the WORK is scheduled regularly to be performed on Saturdays and is approved by OWNER.

78. Use of Explosives

The storage, possession or use of explosives on the site shall be strictly prohibited unless expressly authorized by the OWNER and approved by the State.

79. Code Requirements:

The provisions of the 1979 Uniform Building Code, and the 1980 Supplement to Uniform Building Code and Uniform Building Code Standards, the 1981 National Electrical Code, except as specific variances therewith may be authorized by the OWNER, and the 1979 Utah Plumbing Code as amended, shall apply.

If the drawings and specifications fail to meet the minimum standards of the above-mentioned codes, it shall be the responsibility of the CONTRACTOR to bring such information to the attention of the OWNER having jurisdiction. Subcontractors shall also inform the CONTRACTOR of any infractions of the above-mentioned codes regarding their own particular trades.

In the event that workmanship or incidental materials are not specified or indicated, they shall at least conform to the above-mentioned codes and shall be incorporated into the work without any additional cost to the OWNER. If the plans and specifications call for items or workmanship which exceed the codes, the plans and specifications hold precedence over any code requirements.

80. Conflict of Interest:

CONTRACTOR represents that none of its officers or employees are officers or employees of the State of Utah, unless disclosure has been made in accordance with Section 67-16-8, UCA 1953, as amended.

81. Other Prohibited Interests:

No official of the OWNER who is authorized in such capacity and on behalf of the OWNER to negotiate, make, accept or approve, or to take part in negotiating, making, accepting, or approving any architectural engineering, inspection, construction or material supply contract or any subcontract in connection with the construction of the project, shall become directly interested personally in the CONTRACT or in any part hereof.

No officer, employee, attorney, engineer or inspector of or for the OWNER who is authorized in such capacity and on behalf of the OWNER to exercise any legislative, executive, supervisory or other similar functions in connection with the construction of the project shall become directly or indirectly interested personally in this contract or in any part thereof, any material supply contract, subcontract, insurance contract, or any other contract pertaining to the project.

82. Debarment:

The CONTRACTOR certifies that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this CONTRACT by any governmental department or agency.

83. Citizens Preferred:

Preference shall be given in hiring citizens of the United States or those having declared their intention of becoming citizens; failure to comply may

result in the OWNER declaring the contract void.

84. Equal Opportunity:

The CONTRACTOR agrees to abide by the provisions of Titles VI and VII of the Civil Rights Act of 1964 (42 USC 2000e) which prohibits discrimination against any employee or applicant for employment or any applicant or recipient of services on the basis of race, religion, color, or national origin. CONTRACTOR further agrees to abide by the following directives: Executive Order No. 11246, as amended, which prohibits discrimination on the basis of sex; federal regulation 45 CFR 90, which prohibits discrimination on the basis of age; Section 504 of the Rehabilitation Act of 1973 (29 USC 701 et seq), which prohibits discrimination on the basis of handicap; and Utah's Executive Order, dated June 30, 1989, which prohibits sexual harassment in the workplace.

85. Nondiscrimination - Equal Employment Opportunity:

In order to comply with the provisions of the Utah Anti-Discrimination Act of 1965, relating to unfair employment practices, the CONTRACTOR agrees as follows:

A. The CONTRACTOR will not discriminate against any employee or applicant for employment because of race, color, sex, religion ancestry or natural origin.

B. In all solicitations or advertisements for employees, the CONTRACTOR will state that all qualified applicants will receive consideration without regard to race, color, sex, religion, ancestry or national origin.

C. The CONTRACTOR will send to each labor union or workers' representative notices to be provided, stating the CONTRACTOR's responsibilities under the statute.

D. The CONTRACTOR will furnish such information and reports as requested by the division for the purpose of determining compliance with the statute.

E. Failure of the CONTRACTOR to comply with the statute, the rules and regulations promulgated thereunder and this nondiscrimination clause shall be deemed a breach of contract and it may be canceled, terminated or suspended in whole or in part.

F. The CONTRACTOR shall include the provisions of the above Paragraphs A through E in all subcontracts for this project.

86. Affirmative Action:

The CONTRACTOR will take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to the following: employment; upgrading; demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

At its discretion, the OWNER may perform a compliance review at the office and project of the CONTRACTOR to check on compliance in hiring practices, record-keeping, contracting of agencies and unions, advertising, informing of personnel of the requirements under this provision, etc. If the visit to the project site or other information received indicates need to perform a compliance review more frequently on a project, this will be done. The size of the project, complaint situation, and past record of CONTRACTOR will determine the frequency of on-the-job compliance reviews.

87. Compliance with Copeland Regulations

The CONTRACTOR shall comply with the Copeland Regulations of the Secretary of Labor (29 CFR Part 3) which are incorporated herein by reference.

88. Overtime Compensation

1. The CONTRACTOR or Subcontractor shall not require or permit any laborer or mechanic in any workweek in which he or she is employed under this CONTRACT to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek, whichever is the greater number of overtime hours.

2. In the event of any violation of the provisions of paragraph (a), the CONTRACTOR or Subcontractor shall be liable to any affected employee for any amounts due, and to the State of Utah for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the provisions of paragraph (a) in the sum of $10 for each calendar day on which such employee was required or permitted to work in excess of the standard forty hour workweek without payment of the overtime wages required by paragraph (a).

89. Clean Air and Water

The CONTRACTOR shall use best efforts to comply with all requirements and applicable regulations, standards, and implementation plans under the Clean Air Act (42 USC 7401 et seq.) and the Clean Water Act (33 USC 1251 et seq.). No part of the WORK shall be performed in a facility listed on the U.S. Environmental Protection Agency List of Violating Facilities during the term of the CONTRACT. CONTRACTOR further agrees to insert the substance of this clause in any Subcontract.

Clean air and water standards include any enforceable rules, regulations, guidelines, orders, or other requirements issued under the Clean Air Act, Clean Water Act, or Executive Order 11738; applicable approved implementation plans described in Sections 110(d), 111(c&d), or 112(d) of the Clean Air Act; and requirements contained in permits issued by the U.S. Environmental Protection Agency or state or local governments authorized by Sections 402 or 307 of the Clean Water Act. "Facility," as used here, means any building, plant,

structure, mine, location, or site of operations owned, leased, or supervised by the CONTRACTOR or Subcontractor in the performance of the CONTRACT.

DOGM General Conditions
[Last Revised: October 27, 2010.]

AML Contractor Information Form (Sample)

(Facsimile—actual form may vary)

OMB #1029-0119
Expiration Date:
10/31/2024

ABANDONED MINE LANDS (AML) CONTRACTOR INFORMATION FORM

You must complete this form for your AML contracting officer to request an eligibility evaluation from the Office of Surface Mining Reclamation and Enforcement (OSMRE) to determine if you are eligible to receive an AML contract. This requirement can be found under OSMRE'S regulations at 30 CFR 874.16. **NOTE:** This form must be signed and **dated within 30 days** of submission to be considered for a current bid.

Part A: General Information

Business Name: _____
Tax ID #: _____
Address: _____
City, State, & Zip: _____
Phone Number: _____
Email Address: _____

Part B: Obtain an Organizational Family Tree (OFT) from the Applicant Violator System (AVS)

If you plan to certify the existing AVS information or submit updates under Part C, you must include an OFT. Instructions for downloading an OFT from AVS can be found at: https://www.osmre.gov/programs/regulating-coal-mines/avs.
If you require assistance you may contact the AVS Office by phone at: 800-643-9748, or email at: avshelp@osmre.gov.

Part C: Certifying and updating information in the AVS

Select one of the options, follow the instructions for the selected option, sign and date below.

I, _____, have the express authority to certify that:
(Print Name)

☐ 1. Our business is listed in the AVS. The information is accurate, complete, and up-to-date. (If you select this option, you must attach an Entity OFT from AVS to this form). Do not complete Part D.

☐ 2. Our business is in the AVS. The information needs to be updated. (If you select this option, you must attach an Entity OFT from AVS to this form). Complete Part D to provide the missing or corrected information.

☐ 3. Our business is not listed in the AVS. The information needs to be added. Complete Part D to provide the informaton.

_____ _____ _____
Date Signature Title

OMB #1029-0119
Expiration Date:
10/31/2024

Part D: OFT Information

Contractor's Business Name: _____

If the current Entity OFT information for your business is incomplete in the AVS, or if there is no information in AVS for your business, you must provide all of the following information as it applies to your business. Please include additional copies of this page if the space below is not sufficient to capture all information.

- Every officer (President, Vice President, Secretary, Treasurer, etc.);
- All Directors, Partners, and Members;
- All persons performing a function similar to a Director;
- Every person or business that owns 10% or more of the voting stock in your business;
- Any other person(s) who has the ability to determine the manner in which the AML reclamation project is being conducted.
- **Please list an end date for any person no longer with your business.**

Name:		Name:	
Address:		Address:	
City, State, Zip:		City, State, Zip:	
Begin Date:		Begin Date:	
End Date:		End Date:	
% Ownership:		% Ownership:	
Position/Title:		Position/Title:	
Phone Number:		Phone Number:	
Name:		Name:	
Address:		Address:	
City, State, Zip:		City, State, Zip:	
Begin Date:		Begin Date:	
End Date:		End Date:	
% Ownership:		% Ownership:	
Position/Title:		Position/Title:	
Phone Number:		Phone Number:	

PAPERWORK REDUCTION STATEMENT

The Paperwork Reduction Act of 1995 (44 U.S.C. 3501) requires us to inform you that: Federal Agencies may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a current valid OMB control number. This information is necessary for all successful bidders prior to the distribution of AML funds, and is required to obtain a benefit.

Public reporting burden for this form is estimated to range from 15 minutes to one hour, with an average of 30 minutes per response, including time for reviewing instructions, gathering and maintaining data and completing and reviewing the form. You may direct comments regarding the burden estimate or any other aspect of this form to the Information Collection Clearance Officer, Office of Surface Mining Reclamation and Enforcement, 1849 C Street, NW, Room 4559, Washington, D.C. 20240.

DOGM AML Contractor Information Form Facsimile (revised 07/11/22)
Source: OSMRE AML Contractor Information Form (OMB #1029-0119)

Davis-Bacon Act Wage Requirements

The [Projectname] Project [requires/does not require] compliance with the Davis-Bacon Act, 40 U.S.C. §276(a) *et seq.*, as supplemented by the Department of Labor regulations, 29 CFR Part 5.5, and any other applicable federal labor or workplace laws (also known as Certified Payroll). CONTRACTOR shall pay no less than the minimum salaries and wages as set forth in the Wage Determination included herein on this project. General requirements are provided for convenience in the paragraphs that follow. CONTRACTOR is fully responsible for compliance and knowledge of the Davis-Bacon Act. See 29 CFR 5.5, Contract Provisions and Related Matters, below, for details.

The CONTRACTOR must initiate a conformance process if a job classification that is required to complete the scope of work is not included in the wage determination. The CONTRACTOR must complete the applicable sections of U.S. Department of Labor Standard Form 1444 and provide it to the OWNER prior to issuance of Notice to Proceed for the Work. See Standard Form 1444 provided in this chapter.

CONTRACTOR must provide the OWNER certified payrolls and statements of compliance on a weekly basis once construction activities are initiated. All certified payrolls and statements of compliance must comply with the requirements of the Davis-Bacon Act and the Labor Standard Provisions for Federal and Federally Assisted Contracts. Though not required, the CONTRACTOR is encouraged to utilize Wage Hour Form 347 (WH-347) in preparing the requisite certified payroll information and statements of compliance. See the Wage Hour Form 347 provided in this chapter.

The weekly certified payrolls and statements of compliance may be submitted electronically; however, certified electronic signatures are required on the documents. A scan of an ink signature will not be accepted.

CONTRACTOR shall post the Davis-Bacon poster (WH–1321) and the General Wage Determination, including modifications, on the job site. General Wage Determinations are available from the United States Department of Labor (DOL) at: https://sam.gov The current General Wage Decision for [Countyname] County is provided in Appendix C of Chapter 4 of these Specifications.

29 CFR Part 5 – Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction

CFR 5.5 Contract Provisions and Related Matters

(a) The Agency head shall cause or require the contracting officer to insert in full in any contract in excess of $2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public work, or building or work financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in §5.1, the following clauses (or any modifications thereof to meet the particular needs of the agency, *Provided,* That such modifications are first approved by the Department of Labor):

(1) *Minimum wages.*

(i) All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages

and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in §5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided,* That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH–1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii)

(A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(*1*) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(*2*) The classification is utilized in the area by the construction industry; and

(*3*) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided,* That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(2) *Withholding.* The (write in name of Federal Agency or the loan or grant recipient) shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) *Payrolls and basic records.*

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made, and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)

(A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the (write in name of appropriate federal agency)

if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to the (write in name of agency). The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead, the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at *http://www.dol.gov/esa/whd/forms/wh347instr.htm* or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the (write in name of appropriate federal agency) if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit them to the applicant, sponsor, or owner, as the case may be, for transmission to the (write in name of agency), the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsoring government agency (or the applicant, sponsor, or owner).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(*1*) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(*2*) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(*3*) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the (write the name of the agency) or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore,

failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) *Apprentices and trainees —*

(i) *Apprentices.* Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) *Trainees.* Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on

the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) *Equal employment opportunity.* The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) *Compliance with Copeland Act requirements.* The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) *Subcontracts.* The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the (write in the name of the Federal agency) may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) *Contract termination: debarment.* A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) *Compliance with Davis-Bacon and Related Act requirements.* All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) *Disputes concerning labor standards.* Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

(10) *Certification of eligibility.*

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

(b) *Contract Work Hours and Safety Standards Act.* The Agency Head shall cause or require the contracting officer to insert the following clauses set forth in paragraphs (b)(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by §5.5(a) or 4.6 of part 4 of this title. As used in this paragraph, the terms *laborers* and *mechanics* include watchmen and guards.

(1) *Overtime requirements.* No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) *Violation; liability for unpaid wages; liquidated damages.* In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (b)(1) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.

(3) *Withholding for unpaid wages and liquidated damages.* The (write in the name of the Federal agency or the loan or grant recipient) shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) *Subcontracts.* The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.

(c) In addition to the clauses contained in paragraph (b), in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in §5.1, the Agency Head shall cause or require the contracting officer to insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Agency Head shall cause or require the contracting officer to insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

(The information collection, recordkeeping, and reporting requirements contained in the following paragraphs of this section were approved by the Office of Management and Budget:

Paragraph	OMB Control Number
(a)(1)(ii)(B)	1235-0023
(a)(1)(ii)(C)	1235-0023
(a)(1)(iv)	1235-0023
(a)(3)(i)	1235-0023,
(a)(3)(ii)(A)	1235-0023
	1235-0008
(c)	1235-0023,

[48 FR 19540, Apr. 29, 1983, as amended at 51 FR 12265, Apr. 9, 1986; 55 FR 50150, Dec. 4, 1990; 57 FR 28776, June 26, 1992; 58 FR 58955, Nov. 5, 1993; 61 FR 40716, Aug. 5, 1996; 65 FR 69693, Nov. 20, 2000; 73 FR 77511, Dec. 19, 2008; 81 FR 43450, July 1, 2016; 82 FR 2225, 2226, Jan. 9, 2017; 83 FR 12, Jan2, 2018; 84 FR 218, Jan. 23, 2019; 87 FR 2334, Jan. 14, 2022; 88 FR 2215, Jan. 13, 2023]

U.S. Department of Labor Form SF-1444

REQUEST FOR AUTHORIZATION OF ADDITIONAL CLASSIFICATION AND RATE

CHECK APPROPRIATE BOX
☐ SERVICE CONTRACT
☐ CONSTRUCTION CONTRACT

OMB Control Number: 9000-0066
Expiration Date: 5/31/2025

Paperwork Reduction Act Statement - This information collection meets the requirements of 44 U.S.C. § 3507, as amended by section 2 of the Paperwork Reduction Act of 1995. You do not need to answer these questions unless we display a valid Office of Management and Budget (OMB) control number. The OMB control number for this collection is 9000-0066. We estimate that it will take .5 hours to read the instructions, gather the facts, and answer the questions. Send only comments relating to our time estimate, including suggestions for reducing this burden, or any other aspects of this collection of information to: U.S. General Services Administration, Regulatory Secretariat Division (M1V1CB), 1800 F Street, NW, Washington, DC 20405.

INSTRUCTIONS: THE CONTRACTOR SHALL COMPLETE ITEMS 3 THROUGH 16, KEEP A PENDING COPY, AND SUBMIT THE REQUEST, IN QUADRUPLICATE, TO THE CONTRACTING OFFICER.

1. TO:	2. FROM: *(REPORTING OFFICE)*
ADMINISTRATOR, WAGE AND HOUR DIVISION U.S. DEPARTMENT OF LABOR WASHINGTON, DC 20210	

3. CONTRACTOR	4. DATE OF REQUEST

5. CONTRACT NUMBER	6. DATE BID OPENED *(SEALED BIDDING)*	7. DATE OF AWARD	8. DATE CONTRACT WORK STARTED	9. DATE OPTION EXERCISED (IF APPLICABLE) *(SERVICE CONTRACT ONLY)*

10. SUBCONTRACTOR *(IF ANY)*

11. PROJECT AND DESCRIPTION OF WORK *(ATTACH ADDITIONAL SHEET IF NEEDED)*

12. LOCATION *(CITY, COUNTY, AND STATE)*

13. IN ORDER TO COMPLETE THE WORK PROVIDED FOR UNDER THE ABOVE CONTRACT, IT IS NECESSARY TO ESTABLISH THE FOLLOWING RATE(S) FOR THE INDICATED CLASSIFICATION(S) NOT INCLUDED IN THE DEPARTMENT OF LABOR DETERMINATION

NUMBER: _____ DATED: _____

a. LIST IN ORDER: PROPOSED CLASSIFICATION TITLE(S); JOB DESCRIPTION(S); DUTIES; AND RATIONALE FOR PROPOSED CLASSIFICATIONS *(Service contracts only)* *(Use reverse or attach additional sheets, if necessary)*	b. WAGE RATE(S)	c. FRINGE BENEFITS PAYMENTS

14. SIGNATURE AND TITLE OF SUBCONTRACTOR REPRESENTATIVE *(IF ANY)*	15. SIGNATURE AND TITLE OF PRIME CONTRACTOR REPRESENTATIVE	
16. SIGNATURE OF EMPLOYEE OR REPRESENTATIVE	TITLE	CHECK APPROPRIATE BOX-REFERENCING BLOCK 13. ☐ AGREE ☐ DISAGREE

TO BE COMPLETED BY CONTRACTING OFFICER *(CHECK AS APPROPRIATE - SEE FAR 22.1019 (SERVICE CONTRACT LABOR STANDARDS) OR FAR 22.406-3 (CONSTRUCTION WAGE RATE REQUIREMENTS))*

☐ THE INTERESTED PARTIES AGREE AND THE CONTRACTING OFFICER RECOMMENDS APPROVAL BY THE WAGE AND HOUR DIVISION. AVAILABLE INFORMATION AND RECOMMENDATIONS ARE ATTACHED.

☐ THE INTERESTED PARTIES CANNOT AGREE ON THE PROPOSED CLASSIFICATION AND WAGE RATE. A DETERMINATION OF THE QUESTION BY THE WAGE AND HOUR DIVISION IS THEREFORE REQUESTED. AVAILABLE INFORMATION AND RECOMMENDATIONS ARE ATTACHED.
(Send 3 copies to the Department of Labor)

SIGNATURE OF CONTRACTING OFFICER OR REPRESENTATIVE	TITLE AND COMMERCIAL TELEPHONE NUMBER	DATE SUBMITTED

AUTHORIZED FOR LOCAL REPRODUCTION
PREVIOUS EDITION IS USABLE

STANDARD FORM 1444 (REV. 4/2013)
Prescribed by GSA-FAR (48 CFR) 53.222(f)

U.S. Department of Labor Form WH-347

U.S. Department of Labor
Wage and Hour Division

PAYROLL

(For Contractor's Optional Use; See Instructions at www.dol.gov/whd/forms/wh347instr.htm)

Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number.

U.S. Wage and Hour Division
Rev. Dec. 2008

NAME OF CONTRACTOR ☐ OR SUBCONTRACTOR ☐	ADDRESS	OMB No.:1235-0008 Expires: 07/31/2024
PAYROLL NO. / FOR WEEK ENDING	PROJECT AND LOCATION	PROJECT OR CONTRACT NO.

(1) NAME AND INDIVIDUAL IDENTIFYING NUMBER (e.g., LAST FOUR DIGITS OF SOCIAL SECURITY NUMBER) OF WORKER	(2) NO. OF WITHHOLDING EXEMPTIONS	(3) WORK CLASSIFICATION	OT. OR ST.	(4) DAY AND DATE — HOURS WORKED EACH DAY	(5) TOTAL HOURS	(6) RATE OF PAY	(7) GROSS AMOUNT EARNED	(8) DEDUCTIONS: FICA	WITH-HOLDING TAX			OTHER	TOTAL DEDUCTIONS	(9) NET WAGES PAID FOR WEEK
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While completion of Form WH-347 is optional, it is mandatory for covered contractors and subcontractors performing work on Federally financed or assisted construction contracts to respond to the information collection contained in 29 C.F.R. §§ 3.3, 5.5(a). The Copeland Act (40 U.S.C. § 3145) contractors and subcontractors performing work on Federally financed or assisted construction contracts to "furnish weekly a statement with respect to the wages paid each employee during the preceding week." U.S. Department of Labor (DOL) regulations at 29 C.F.R. § 5.5(a)(3)(ii) require contractors to submit weekly a copy of all payrolls to the Federal agency contracting for or financing the construction project, accompanied by a signed "Statement of Compliance" indicating that the payrolls are correct and complete and that each laborer or mechanic has been paid not less than the proper Davis-Bacon prevailing wage rate for the work performed. DOL and federal contracting agencies receiving this information review the information to determine that employees have received legally required wages and fringe benefits.

Public Burden Statement

We estimate that it will take an average of 55 minutes to complete this collection, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. If you have any comments regarding these estimates or any other aspect of this collection, including suggestions for reducing this burden, send them to the Administrator, Wage and Hour Division, U.S. Department of Labor, Room S3502, 200 Constitution Avenue, N.W. Washington, D.C. 20210

(over)

Date _____

I, _____ _____
(Name of Signatory Party) (Title)

do hereby state:

(1) That I pay or supervise the payment of the persons employed by

_____ on the
(Contractor or Subcontractor)

_____; that during the payroll period commencing on the
(Building or Work)

_____ day of _____, _____, and ending the _____ day of _____, _____,
all persons employed on said project have been paid the full weekly wages earned, that no rebates have been or will be made either directly or indirectly to or on behalf of said

_____ from the full
(Contractor or Subcontractor)

weekly wages earned by any person and that no deductions have been made either directly or indirectly from the full wages earned by any person, other than permissible deductions as defined in Regulations, Part 3 (29 C.F.R. Subtitle A), issued by the Secretary of Labor under the Copeland Act, as amended (48 Stat. 948, 63 Stat. 108, 72 Stat. 967; 76 Stat. 357; 40 U.S.C. § 3145), and described below:

_____

_____

_____

_____

(2) That any payrolls otherwise under this contract required to be submitted for the above period are correct and complete; that the wage rates for laborers or mechanics contained therein are not less than the applicable wage rates contained in any wage determination incorporated into the contract; that the classifications set forth therein for each laborer or mechanic conform with the work he performed.

(3) That any apprentices employed in the above period are duly registered in a bona fide apprenticeship program registered with a State apprenticeship agency recognized by the Bureau of Apprenticeship and Training, United States Department of Labor, or if no such recognized agency exists in a State, are registered with the Bureau of Apprenticeship and Training, United States Department of Labor.

(4) That:

(a) WHERE FRINGE BENEFITS ARE PAID TO APPROVED PLANS, FUNDS, OR PROGRAMS

☐ – In addition to the basic hourly wage rates paid to each laborer or mechanic listed in the above referenced payroll, payments of fringe benefits as listed in the contract have been or will be made to appropriate programs for the benefit of such employees, except as noted in section 4(c) below.

(b) WHERE FRINGE BENEFITS ARE PAID IN CASH

☐ – Each laborer or mechanic listed in the above referenced payroll has been paid, as indicated on the payroll, an amount not less than the sum of the applicable basic hourly wage rate plus the amount of the required fringe benefits as listed in the contract, except as noted in section 4(c) below.

(c) EXCEPTIONS

EXCEPTION (CRAFT)	EXPLANATION

REMARKS:

NAME AND TITLE	SIGNATURE

THE WILLFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION. SEE SECTION 1001 OF TITLE 18 AND SECTION 3729 OF TITLE 31 OF THE UNITED STATES CODE.

Certificate of Substantial Completion

UTAH DIVISION OF OIL, GAS AND MINING

PROJECT: [Projectname] **PROJECT NO.:** AMR/000/900
CONTRACT/PO NO.: 00-0000

The WORK performed under the subject CONTRACT has been reviewed on this date and found to be substantially completed.

DEFINITION OF SUBSTANTIAL COMPLETION

The date of substantial completion of a project or specified area of a project is the date when the construction is sufficiently completed in accordance with the Contract Documents, as modified by any change orders agreed to by the parties, so that the OWNER can occupy the project or specified area of the project for the use for which it was intended.

A list of items to be completed or corrected, prepared by the Division of Oil, Gas & Mining and verified by the OWNER, is appended hereto. This list may not be exhaustive, and the failure to include an item on it does not alter the responsibility of the CONTRACTOR to complete all the WORK in accordance with the Contract Documents, including authorized changes thereof.

Division of Oil, Gas & Mining _____ _____
OWNER INSPECTOR DATE

The CONTRACTOR will complete or correct the work on the list of items appended hereto within _____ days from the above date of issuance of this Certificate.

_____ _____
CONTRACTOR AUTHORIZED REPRESENTATIVE DATE

The OWNER accepts the project or specified area of the project as substantially complete and will assume full possession of the project or specified area of the project at _____ P.M. (time) on _____, 20__ (date).

Division of Oil, Gas & Mining _____ _____
OWNER CONTRACT REPRESENTATIVE DATE

_____
ADMINISTRATOR, AMRP DATE

RESPONSIBILITIES AND/OR EXCEPTIONS:

This form used by permission of A.I.A.
DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT

Certificate of Final Acceptance

UTAH DIVISION OF OIL, GAS AND MINING

PROJECT: [Projectname] **PROJECT NO.:** AMR/000/900
CONTRACT/PO NO.: 00-0000

The WORK performed under the subject CONTRACT has been reviewed on this date and found to be completed.

DEFINITION OF FINAL ACCEPTANCE

The date of final acceptance of a project is the date when the construction is completed in accordance with the Contract Documents, as modified by any change orders agreed to by the parties, so that the OWNER can occupy the project for the use for which it was intended.

Items listed on the Certificate of Substantial Completion, as prepared by the Division of Oil, Gas & Mining, have been completed or corrected and verified by the OWNER as having been completed or corrected.

Division of Oil, Gas & Mining
OWNER _____ INSPECTOR _____ DATE

CONTRACT REPRESENTATIVE _____ DATE

CONTRACTOR _____ AUTHORIZED REPRESENTATIVE _____ DATE

The OWNER accepts the project as complete and will assume full possession of the project or specified area of the project at _____ P.M. (time) on _____, 20__ (date).

Division of Oil, Gas & Mining
OWNER _____ ADMINISTRATOR, AMRP _____ DATE

Daily Construction Progress Report

AMR/000/900/C

DAILY CONSTRUCTION PROGRESS REPORT
-- CONTRACTOR --

[Projectname] Project

Start Time:		Date:	
End Time:		Day of Week:	

Crew Size:		Supervisor:	
Crew Names:			

Equipment:	

Item of Equipment	Time down	Reason

General description of work performed, equipment/material deliveries, etc:
(Attach as-built drawings as required.)

Mine Closures:

Tag No.	Closure	Work Status	Mon. No.

DAILY CONSTRUCTION PROGRESS REPORT
-- CONTRACTOR --

WORK items approved:

Problems/delays and proposed or actual resolution.	DOGM action required?	Yes	No

Insert additional rows as needed.

Visitors & purpose:

Temp: 10..-..20..-..30..-..40..-..50..-..60..-..70..-..80..-..90..-..100
Sky: fair pc mc cldy ovrcst rain snow
Ground: dry wet muddy snow ___" frozen

Weather/Ground Conditions Comments:

Project is approximately

	on schedule
	days behind schedule
	days ahead of schedule

Contract expires:

thru Change Order #00

Contractor: _____ ___/___/___
[Company name]

Project Mgr: _____ ___/___/___

AMR Admin: _____ ___/___/___

As-Built Drawing Form

As-Built Drawing Form	Show cross-section, plan view, and front view. Indicate scale and North arrow.	**[Projectname] Project** AMR/000/000

UTAH NATURAL RESOURCES Division of Oil, Gas & Mining Abandoned Mine Reclamation Program	Contractor: Drawn By: Closure Code: Date Closed:	Tag No. Monument No. ⊗ indicates monument location Sheet of

Certificate of WNS Compliance (Pre-Construction)

UTAH DIVISION OF OIL, GAS AND MINING

PROJECT: [Projectname]

PROJECT NO.: AMR/000/900
CONTRACT/PO NO.: 00-0000

CONTRACTOR ACKNOWLEDGEMENT OF COMPLIANCE WITH WHITE NOSE SYNDROME (WNS) PRE-CONSTRUCTION PROTOCOL

White nose syndrome (WNS) is a disease affecting hibernating bats and is named for the white fungus that appears on their muzzles and other body parts. WNS is devastating bat populations in the United States and Canada. WNS has spread rapidly since first being documented in New York in the winter of 2006-2007 and is now confirmed in 36 states.

To help prevent the spread of WNS it is important that workers entering mines know and follow the current United States National White-Nose Syndrome Decontamination Protocol (published at www.whitenosesyndrome.org) prior to the TRANSPORT or USE of ANY clothing or gear onto the project area.

NO TOOLS, HEAVY EQUIPMENT, SAFETY EQUIPMENT (INCLUDING ROPES), BOOTS, GLOVES, CAMERAS, CLOTHING, OR GEAR USED IN CAVES OR MINES IN A STATE DESIGNATED AS "ENDEMIC" OR "INTERMEDIATE" IN THE NATIONAL WNS PROTOCOL ARE ALLOWED ON A PROJECT ADMINISTERED BY THE UTAH ABANDONED MINE RECLAMATION PROGRAM FOR WORK IN ABANDONED MINE OPENINGS.

By signing below the CONTRACTOR acknowledges intent to comply with the WNS pre-construction decontamination protocol currently being followed by the Utah Abandoned Mine Reclamation Program, specifically that no heavy equipment, hand tools, footwear, or personal clothing/equipment to be used for this project have been previously used for work in mines or caves in a state designated as an "Endemic" or Intermediate" WNS Management Area.

CONTRACTOR

AUTHORIZED REPRESENTATIVE DATE

NAME, PRINTED

Revised: January 15, 2019

Certificate of WNS Compliance (Post-Construction)

UTAH DIVISION OF OIL, GAS AND MINING

PROJECT: [Projectname]

PROJECT NO.: AMR/000/900
CONTRACT/PO NO.: 00-0000

CONTRACTOR ACKNOWLEDGEMENT OF COMPLIANCE WITH WHITE NOSE SYNDROME (WNS) PROTOCOL DURING WORK

White nose syndrome (WNS) is a disease affecting hibernating bats and is named for the white fungus that appears on their muzzles and other body parts. WNS is devastating bat populations in the United States and Canada. WNS has spread rapidly since first being documented in New York in the winter of 2006-2007 and is now confirmed in 36 states.

To help prevent the spread of WNS it is important that workers entering mines know and follow the current United States National White-Nose Syndrome Decontamination Protocol (published at www.whitenosesyndrome.org) prior to the TRANSPORT or USE of ANY clothing or gear onto the project area.

NO TOOLS, HEAVY EQUIPMENT, SAFETY EQUIPMENT (INCLUDING ROPES), BOOTS, GLOVES, CAMERAS, CLOTHING, OR GEAR USED IN CAVES OR MINES IN A STATE DESIGNATED AS "ENDEMIC" OR "INTERMEDIATE" IN THE NATIONAL WNS PROTOCOL ARE ALLOWED ON A PROJECT ADMINISTERED BY THE UTAH ABANDONED MINE RECLAMATION PROGRAM FOR WORK IN ABANDONED MINE OPENINGS.

By signing below the CONTRACTOR acknowledges compliance with the WNS decontamination protocol currently being followed by the Utah Abandoned Mine Reclamation Program during this project, specifically that all tools or workers that have been in a mine opening (adit or shaft) for inventory work, internal surveys, exclusion construction, or construction of closures have followed the current National WNS Decontamination Protocol.

CONTRACTOR

AUTHORIZED REPRESENTATIVE DATE

NAME, PRINTED

Revised: January 15, 2019

Contractor Performance Rating

CONTRACTOR PERFORMANCE RATING

Contractor: _____

Project: [Projectname] AMR/000/900/C

Contract/PO#: 00-0000

Start Date: mm/dd/yyyy
End Date: mm/dd/yyyy Duration: ____ days

Rating: Satisfactory= 1; Unsatisfactory= 0

_____ 1. Achieved the specified level of project quality and quantity.

_____ 2. Prompt, diligent, and systematic prosecution of work.

_____ 3. Adequate personnel (number and skill level).

_____ 4. Adequate equipment (number, type, and operating condition).

_____ 5. Effective onsite management and supervision of work.

_____ 6. Cooperation, responsiveness, and communication with inspector and project manager.

_____ 7. Cooperation and timely response in negotiation of contract changes.

_____ 8. Cooperation in negotiation of claims.

_____ 9. Record of prompt payment for labor, materials, equipment, and subcontract work.

_____ 10. On-time submission of necessary documents and reports.

_____ 11. Compliance with all applicable federal, state, and local laws and regulations.

_____ 12. Minimized the adverse effect of construction activities on the public and the environment.

_____ 13. Cooperation with landowners and/or utilities.

_____ = Total = Performance Rating

Attach explanations of all "Unsatisfactory" ratings.

Rated by: _____ Date_____

Reviewed by: _____ Date_____

[DOGM Contractor Performance Rating Form 07/20/88, Revised 06/28/12]

Record of Individual Exposure to Radon

RECORD OF INDIVIDUAL EXPOSURE TO RADON

[SAMPLE]

[Projectname] Project

[Countyname] County, Utah

Contractor	Employee Name	Employee EIN
Smith Construction	Hank Jones	000-00-0000

DATE	WORK AREA	RADON CONC. IN AREA (WL)	EMPLOYEE TIME IN AREA (HR)	EXPOSURE LEVEL* (WLH)
03/15/2001	3211519HO002	0.5	4	2
03/15/2001	3211519HO003	1.0	4	4
03/16/2001	3211518HO001	0.2	8	1.6
03/17/2001	3211518HO002	1.0	2	2
03/17/2001	3211518HO003	0.5	4	2
03/17/2001	3211518HO001	0.2	2	0.4
		TOTAL	24	12

*Calculate Exposure Level by multiplying the working level in column 3 times the exposure time in column 4.

Convert Working Level Hours (WLH) to Working Level Months (WLM) by dividing by 173:

CUMULATIVE EXPOSURE = TOTAL EXPOSURE/173 = 12 /173 = 0.07 WLM

CONSTRUCTION SPECIFICATIONS

[Projectname] Project

Reclamation Construction

[Countyname] County, Utah

[Season, Year]

Chapter 3: GENERAL TECHNICAL SPECIFICATIONS

Chapter 3: GENERAL TECHNICAL SPECIFICATIONS

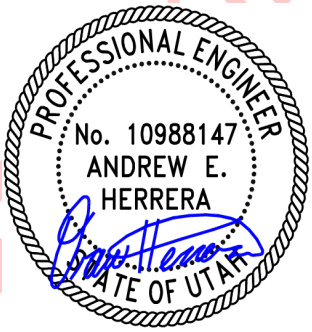
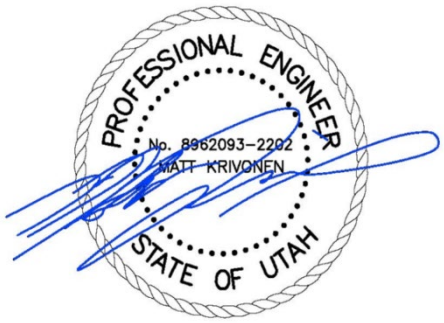
This chapter in its entirety was revised on February 22, 2011.

Professional engineering review of this entire chapter was performed on February 22, 2011, by:

Bill Maehl, P.E. Utah Professional Engineer #372254 Spectrum Engineering, Inc. Billings, MT	Wes Krivonen, P.E. Montana Professional Engineer #7601E Krivonen Associates, P.C. Billings, MT
	

Sections 0250, 0251, 0252, 0253, and 0254 of this chapter were subsequently revised on June 1, 2020. The 2020 revision of these sections supersedes the 2011 version.

Professional engineering review of Sections 0250, 0251, 0252, 0253, and 0254 of this chapter was performed on June 1, 2020, by:

Andrew Herrera, P.E. Utah Professional Engineer # 10988147-2202 Spectrum Engineering & Environmental, LLC. Billings, MT	Matt Krivonen, P.E. Utah Professional Engineer #8962093-2202 Krivonen Associates, P.C. Billings, MT
	

The designs and specifications contained in this chapter in Sections 0200 through 2040 and 0270 through 0295 (version dated February 22, 2011) and Sections 0250 through 0254 (version dated June 1, 2020) conform to accepted engineering standards.

The administrative record of the engineering reviews with supporting documentation and original copies of this chapter with original PE stamps and signatures for all versions is on file with the OWNER.

0200 General Site Information

PART 1 - GENERAL

1.01 WORK INCLUDED

The WORK consists of reclamation of abandoned mine features as described in Section 0300. The General Technical Specifications, Sections 0200 through 0299, outline WORK broadly applicable to all abandoned mine reclamation situations and that may not be required at each mine site in this project. Section 0300 provides the site-specific detail. Where there is a conflict between Section 0300 and the General Technical Specifications (0200's), Section 0300 shall govern.

1.02 SUBMITTALS

A. Submittals requested in the Technical Specifications to be submitted *with the Bid* shall be included in and submitted with the secure electronic bid delivered to the Division of Purchasing.

B. Submittals requested in the Technical Specifications to be submitted *after award of the CONTRACT or during construction* shall be delivered to the designated representative for the Division of Oil, Gas and Mining (DOGM), referred to in these Specifications as the OWNER.

C. CONTRACTOR shall submit *within five (5) days after award of the CONTRACT* a calendar of WORK for performing the WORK, including routine workdays and hours, anticipated holidays, and days that the project will remain idle. Schedule shall also indicate WORK schedules for subcontractors and their estimated start and completion days. Allowance in the schedule shall be made for routine delays due to weather or other site conditions as they occur. The OWNER shall approve said schedule. Any significant deviation from that schedule shall be submitted in writing to the OWNER in the form of an updated schedule as the WORK progresses.

D. CONTRACTOR shall submit *during construction or within fifteen (15) days after Final Acceptance* as-built drawings or records of the completed WORK, when specified in Section 0300: Specific Site Requirements. Such submittals shall provide a complete and accurate record of the WORK performed and shall include the type and volume of fill or backfill placed, the location and dimensions of excavations, the quantity and nature of buried materials, dates of activities, and similar data.

1.03 RELATED WORK

A. Section 0220: Mobilization/Demobilization
B. Section 0225: Radiological Protection
C. Section 0230: Access Improvement
D. Section 0240: Demolition and Clean-up
E. Section 0250: Mine Closures
F. Section 0251: Cast-in-Place Concrete
G. Section 0252: Concrete Reinforcement
H. Section 0253: Bat Gate & Shaft Grate Installation
I. Section 0254: Polyurethane Foam Mine Closures
J. Section 0270: Site Grading/Earthwork
K. Section 0275: Material Transport
L. Section 0280: Drainage Control & Stream Protection
M. Section 0285: Streambank Rehabilitation
N. Section 0290: Revegetation
O. Section 0294: Rebar Barricade

P. Section 0295: Barbed Wire Fencing
Q. Section 0300: Specific Site Requirements

1.04 CONDITIONS AND RESTRICTIONS

A. The project area and vicinity may contain several abandoned mine and/or town sites, but WORK will be limited to items specifically identified in Section 0300: Specific Site Requirements.

B. *The pre-bid meeting is either mandatory or optional as indicated in Chapter 1: Instructions.* Due to the unique nature of the WORK at these sites, the CONTRACTOR is required to participate in the *entire* pre-bid site tour and meeting for mandatory pre-bid meetings in order to submit a responsible bid. The CONTRACTOR is strongly encouraged to participate in optional pre-bid meetings. The CONTRACTOR shall acknowledge in the bid that the site conditions have been examined and that the measurements and evaluations necessary to plan and bid the WORK have been made.

C. Certified Person: Due to the hazards associated with abandoned mines, all WORK on mine portals shall be conducted under the supervision of a person qualified to monitor safety conditions, particularly with regard to mine atmospheres and rock stability. This person is referred to as the "Certified Person" in these specifications hereafter.

For work at coal mines, the Certified Person must have current certification under 30 CFR Part 75 Subpart B.

For work at mines other than coal mines, alternative qualifications for the Certified Person besides those in 30 CFR Part 75 Subpart B may be considered, subject to OWNER's approval. In order to be considered for approval as Certified Person, the candidate must qualify as an 'experienced miner' under 30 CFR Part 48 Subpart A and satisfy the following requirements:

- The candidate must have twelve months documented underground mining employment experience with job duties including direct responsibility for the safety of others. This work experience must have involved the evaluation of roof and rib stability as well as monitoring for the presence of dangerous atmospheric conditions. The candidate must provide at least two written references from the employer that can confirm this employment.
- The candidate must be able to operate and interpret readings from a standard four-gas air sampler that measures concentrations of oxygen, carbon monoxide, methane, and hydrogen sulfide. When appropriate, the candidate must be competent in the detection and monitoring of radioactive materials.
- The candidate must possess a current 40-hour Mining Safety and Health Administration (MSHA) training for underground mining certification.

OWNER may consider and approve candidates for the position of the Certified Person on a case-by-case basis. CONTRACTOR is ultimately responsible for the safety of all persons on-site during WORK activities. The CONTRACTOR agrees to indemnify, save harmless, and release the State of Utah, and all its officers, agents, volunteers, and employees from and against any and all loss, damages, injury, liability, suits, and proceedings arising out of the performance of any WORK in or near mine portals which are caused in whole or in part by the negligence of the CONTRACTOR's officers, agents, volunteers, or employees, but not for claims arising from the State's sole negligence.

D. No person shall be permitted to enter a mine opening unless the atmosphere of the opening is tested, the back and ribs (roof and sides of the opening) are tested and adequately supported, and only at the direction of the Certified Person. No smoking or open flames shall be permitted within 100 feet of any mine opening. Welding in or near a mine opening is permitted only with the approval of the Certified Person.

E. CONTRACTOR shall identify and develop rapid communication procedures with the closest available emergency medical response units and medical centers. All workers, foremen, superintendents, and managers shall be indoctrinated to emergency response procedures. CONTRACTOR shall keep a record of each person entering or leaving the worksite.

F. CONTRACTOR shall be aware that underlying mine workings exist in the areas to be disturbed by the CONTRACTOR. The location, extent, and condition of the underground workings at each mine site are not well known. These workings or voids where workings have caved may be encountered unexpectedly during the course of the WORK and present a hazard to equipment operators and other workers at the site. The CONTRACTOR shall take every precaution to protect the safety of the workers during WORK on the project. Any voids or openings excavated or discovered shall be brought to the immediate attention of the OWNER.

G. The WORK shall stop and the OWNER shall be notified immediately if an accident occurs or upon discovery of a hazard that threatens the safety of workers or the public. The OWNER shall be notified immediately of any situation that may cause environmental damage.

H. CONTRACTOR shall provide, erect, and maintain temporary barriers, signs, and security devices as necessary to ensure the safety of the CONTRACTOR's personnel, the OWNER's personnel, and the general public.

I. WORK shall occur normally during daylight hours and shall not be performed when darkness or other conditions require the use of artificial light to safely perform the WORK, without the prior written approval of the OWNER.

J. WORK shall be performed during weekdays and shall not be performed during weekends or legal State and Federal holidays without the prior written approval of the OWNER. A schedule of holidays is available from the OWNER.

K. WORK shall be conducted with minimum interference to public or private thoroughfares. Egress and access shall be maintained at all times.

L. Roadways shall not be closed or obstructed without permits. The CONTRACTOR will close and lock gates at the landowner's request.

M. All trucks transporting materials and debris shall be covered with tarps or other suitable coverings if necessary to eliminate loss of debris during transportation to off-site disposal areas.

N. CONTRACTOR shall provide water and an adequate water supply system for dust suppression where dust will cause a public nuisance or as directed by OWNER. The CONTRACTOR will pay the cost of water and dust suppression.

O. No materials shall be placed in or be situated such that they may enter any stream, tributary, or drainage channel.

P. Relics, antiques, artifacts and similar objects as identified by the OWNER remain the property of the OWNER. CONTRACTOR shall notify the OWNER upon discovery of cultural features and obtain direction from OWNER regarding handling of features that interfere with performing the WORK. Relics and antiques include, but are not limited to:
    1. Cornerstone and contents
    2. Commemorative plaques
    3. Archaeological relics or paleontological finds
    4. Historical relics

Q. CONTRACTOR shall remove and promptly dispose of any contaminated, vermin infested, or dangerous materials encountered. Transformers, oil-filled electrical equipment, or other toxic materials shall be called immediately to the attention of the OWNER. Disposal of such items shall be the responsibility of the CONTRACTOR and at the direction of the OWNER in accordance with EPA and State Health requirements.

R. CONTRACTOR shall remove from site all debris created during construction.

S. Materials shall not be burned on site without appropriate permits and the approval of the OWNER.

T. Blasting shall be permitted only with prior written approval of the OWNER and following submission by the CONTRACTOR of a blasting plan.

U. Existing utilities, benchmarks, trees, vegetation, and landscaping materials which are not to be demolished, relocated, or otherwise disturbed shall be protected.

V. Wildlife of any kind (except Norway rats) encountered during the WORK shall be left unharmed or, if captured, released unharmed offsite. Snakes, including rattlesnakes, shall not be harmed. Any wildlife inadvertently killed by the CONTRACTOR will be turned over to the OWNER to be disposed of under the Certificate of Registration (COR Number 6COLL5414) issued to the OWNER by the Utah Division of Wildlife Resources. CONTRACTOR shall immediately notify OWNER of any bats found in mine openings.

W. CONTRACTOR shall compensate employees at a rate of no less than 1.5 times the base rate of pay for work beyond 40 hours in one week.

X. CONTRACTOR shall submit to OWNER each week daily logs indicating the following: 1) weather conditions, 2) crew size, 3) hours worked, 4) equipment used, 5) work completed, 6) WORK approved, 7) delays, 8) equipment downtime, 9) injuries, 10) visitors, 11) access problems, etc. OWNER has provided a form for these logs in Chapter 2.

Y. Should onset of adverse winter or extreme summer weather conditions force construction to stop prior to completion of the WORK, the sites shall be left in a condition that minimizes safety hazards and risk of erosion. Temporary erosion control structures may be required. Revegetation may be postponed to the fall if necessary.

Z. Depending upon the bid submittals and the overall CONTRACTOR selection process, CONTRACTOR WORK may precede, follow, or occur during work by other CONTRACTORS at the same site and/or other sites in the Project Area.

AA. CONTRACTOR shall select from a pre-determined number of staging areas identified in the specifications and secure all necessary permits, including camping permits, from the applicable land management agency.

1.05 QUALITY ASSURANCE

A. CONTRACTOR shall use only quality materials in performing the WORK.

B. Quality of the WORK performed by the CONTRACTOR shall be subject to approval by the OWNER. CONTRACTOR shall assure that the WORK has been performed to the specifications and standards as described herein. The OWNER shall inspect and accept or reject the WORK as the WORK progresses. Payment shall be made only for WORK accepted and approved by the OWNER. CONTRACTOR shall warrant the WORK for a period of one year following final acceptance except that such material warranties and guarantees from manufacturers and suppliers that may be longer than one year shall carry for their term.

PART 2 – PRODUCTS/MATERIALS

2.01 GENERAL

Products and materials used in the WORK shall be as required in these Specifications.

2.02 DELIVERY, STORAGE AND HANDLING

A. CONTRACTOR shall be responsible for the delivery, storage and handling of all items and materials used in performing the WORK.

B. CONTRACTOR shall be responsible for all materials used in conjunction with the WORK until said WORK is accepted and approved by the OWNER and shall warrant all materials as required by Part 1.05, Quality Assurance.

PART 3 - EXECUTION

3.01 PREPARATION

A. Upon receipt of notice to proceed, the CONTRACTOR shall perform the WORK as required by these Specifications and Construction Drawings.

B. CONTRACTOR shall obtain and provide proof of all licenses, permits, bonds, insurance and other such items as may be required by these Specifications and local, regional, State and Federal jurisdictions prior to execution of the WORK. CONTRACTOR shall select from a pre-determined set of staging areas identified in the specifications and secure all necessary permits, including camping permits, from the applicable land management agency.

C. Upon receipt by the CONTRACTOR of the NOTICE TO PROCEED, the CONTRACTOR shall notify the OWNER of the starting date and execution of the WORK shall commence in accordance with the General Specifications as included with the Agreement and the Technical Specifications as presented herein. CONTRACTOR shall provide the OWNER with a schedule for the proposed WORK in calendar, bar chart, or critical path schedule form.

PART 4 - FORM OF AGREEMENT

4.01 CONTRACT AGREEMENT

The CONTRACT agreement will be in the form of that included in the bid package. This agreement may be administered as a Division of Purchasing Purchase Order. If administered as a purchase order, the purchase order will reference the bid package, and all the terms and conditions of the solicitation, including the contract form, general conditions, technical specifications, and addenda will apply to the agreement.

4.02 CHANGES TO THE AGREEMENT

A. When these services are procured by an agency contract, OWNER shall require amendments to the Agreement to be in the form of a contract change order, signed by both parties. When these services are procured by a Division of Purchasing Purchase Order, amendments shall be on Form DP-28 "Purchase Order Change Request" or on any other form deemed appropriate by the Division of Purchasing.

B. Change orders or Form DP-28's (or equivalent) shall become attached to and part of the Agreement under the terms of the Agreement with changes as stipulated on the change order or Form DP-28. Change orders or Form DP-28's shall not release the

CONTRACTOR from any other terms or conditions that apply and are a part of the Agreement.

C. Any additional WORK must be authorized by the OWNER and must be in the form of a contract change order or Form DP-28 as an amendment to the Agreement. The change order or Form DP-28 must be fully executed prior to the CONTRACTOR undertaking any additional WORK.

PART 5 - MEASUREMENT, PAYMENT, AND WORK INCLUDED

5.01 GENERAL

A. The WORK included and measurement of and payment for that WORK shall be as described within each Section of the Technical Specifications and General Condition #26.

B. Total contract amount, including any change orders, shall constitute full compensation for the WORK.

C. Payments shall only be made for those items shown on the Bid Schedule. All other costs or incidentals shall be reflected in the Bid Schedule or shall be paid at the CONTRACTOR's expense.

D. Payment for performance and payment bonds shall be based on the completed (i.e. final) cost of the CONTRACT (see General Condition #28). The standard practice among sureties is to base premiums charged to contractors as a percentage of the contract amount and to settle premiums at the close of the contract-- if the final contract amount is less than the original, premium overpayments are refunded, if more, the premium is increased. If the CONTRACT amount changes, the lump sum line item for bonds in the Cost Schedule shall be adjusted accordingly at a fixed percentage rate. CONTRACTOR shall indicate in the place provided on the Bid Schedule the percentage rate to be used for calculating adjustments to the Cost Schedule lump sum item for bonds (Variation in Contract Bond Rate).

5.02 RETAINAGE

Unless stated otherwise in the specific section of the Specifications, all final bid item payments shall have five percent withheld as retainage until successful completion of the CONTRACT. The retainage shall be made from each progress payment, and be released upon written Final Acceptance by the OWNER.

5.03 PENALTIES

A. The OWNER reserves the right to levy a penalty payment for areas unnecessarily disturbed during the WORK. These areas include any archeological sites, paleontological sites, or undisturbed vegetation areas.

B. The penalty for unnecessary disturbance to archeological sites, paleontological, or undisturbed vegetation areas will be based on the per acre disturbance at the CONTRACTOR's bid amount for revegetation of adjacent sites.

END OF SECTION 0200

0220 Mobilization/Demobilization

PART 1 - GENERAL

1.01 WORK INCLUDED

The item for payment for mobilization/demobilization is intended to compensate the CONTRACTOR for operations including, but not limited to, those necessary for the movement of personnel, equipment, supplies, and incidentals to and from the project area, movement between the various mine sites included within the project area, and for all other WORK and operations which must be performed or costs incurred prior to the initiation of meaningful work at the site.

1.02 SUBMITTALS

CONTRACTOR shall submit *prior to the start of construction activities* copies of any required permits.

PART 2 – PRODUCTS/MATERIALS

2.01 DRINKING WATER AND SANITARY FACILITIES

CONTRACTOR shall provide and maintain safe drinking water and sanitary facilities for all employees, all subcontractors' employees, and the OWNER. Drinking water and sanitary facilities shall comply with all regulations of the local and state departments of health and be approved by the OWNER.

PART 3 - EXECUTION

3.01 PERMITS

A. Preparation for the WORK shall include obtaining all permits and other such incidentals as necessary to execute the WORK. CONTRACTOR shall select from a pre-determined set of staging areas identified in the specifications and secure all necessary permits, including camping permits, from the applicable land management agency.

B. Permits shall be posted or readily available prior to start of construction activities as required by municipal, State, or Federal regulations.

3.02 EQUIPMENT PREPARATION

Vehicles and heavy equipment shall be thoroughly washed with a high pressure sprayer prior to entering the project area to prevent the introduction and spread of noxious weeds.

3.03 MOBILIZATION

Upon receipt by the CONTRACTOR of due NOTICE TO PROCEED, the CONTRACTOR shall notify the OWNER of the starting date and execution of the WORK shall commence in accordance with the General Specifications as included with the Agreement and the Technical Specifications as presented herein. CONTRACTOR shall provide the OWNER with a schedule for the proposed WORK in calendar, bar chart, or critical path schedule form.

3.04 DEMOBILIZATION

Upon completion of the WORK, the CONTRACTOR shall remove all equipment, leftover construction materials, and trash from staging areas, work areas, and campsites. Disturbed

areas shall be reseeded. Final Acceptance will not be issued until all equipment and supplies have been removed from the project area.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS FOR PAYMENT

Mobilization/Demobilization is bid and paid on a lump sum basis. The lump sum BID PRICE for mobilization/demobilization shall be full compensation for WORK under this section and will include complete mobilization, demobilization, and moves between sites regardless of the number of times equipment is moved or additional equipment is transported to or from the construction site. No additional payments will be made for multiple equipment moves due to weather-related suspensions of WORK, unless specifically itemized in the Bid Schedule or authorized by a Change Order. The BID PRICE will also include those incidental costs as required by the CONTRACTOR in order to commence the WORK such as permits, lodging, sanitary facilities, and other such items as may be required to perform the WORK.

4.02 MEASUREMENT

Mobilization/Demobilization is a lump sum bid item that does not require measurement of quantities for payment.

4.03 PAYMENT

The lump sum BID PRICE for mobilization/demobilization will be paid in two prorated payments determined by the amount of completed WORK approved and accepted by the OWNER. When 10 percent of the overall BID PRICE has been earned from other bid items, the CONTRACTOR may submit on the invoice sixty percent (60%) of the BID PRICE for mobilization/demobilization. On completion of the CONTRACT and issuance of the Certificate of Substantial Completion, the CONTRACTOR may claim the remaining forty percent (40%) of the BID PRICE for mobilization/demobilization. Payments for mobilization/demobilization are not subject to withholding of retainage. The total BID PRICE amount for mobilization/demobilization shall be full compensation for all labor, materials, tools, equipment, services, and all other costs necessary to perform the WORK under this section.

END OF SECTION 0220

0225 Radiological Protection

PART 1 - GENERAL

1.01 INTRODUCTION

A. This Radiological Protection Plan describes the methods to be employed for health and safety at abandoned uranium mine sites. The guidelines in this plan are generic and allow for variations in site-specific conditions.

B. The main radiological concerns while working on this project are dust control, personal hygiene, and monitoring exposure. The object of this Technical Specification Section is to provide all personnel working on this project with information on how to reduce dust while the work is conducted, reduce the spread of contaminated dust between workers, and prevent the ingestion and inhalation of dust.

C. The procedures in this Radiological Protection Plan are based on the principles of time, distance, and shielding. This is the idea that a person's exposure to radiation, and the potential health risks associated with that exposure, can be controlled by managing the length of time of exposure, distance from the source, and/or protective barriers between the person and the source of radiation. CONTRACTOR shall strive to manage all construction activities at uranium mines with the goals of minimizing worker time in radioactive areas, keeping workers away from radioactive materials, and shielding workers from radiation with protective clothing.

1.02 SUBMITTALS

CONTRACTOR shall submit *upon completion of the WORK* the records of exposure to radon and the results of the thermoluminescent dosimeter (TLD) badge analyses for each employee.

1.03 RELATED WORK

A. Section 0250: Mine Closures
B. Section 0253: Bat Gate and Shaft Grate Installation
C. Section 0300: Specific Site Requirements

1.04 SAFETY TRAINING

A. The CONTRACTOR and crew are required to attend a Health and Safety Training meeting after the bid is awarded and before construction begins. This meeting will be arranged by the CONTRACTOR. The trainer and course content are subject to OWNER's approval. It shall include radiological safety and cover risk reduction, hygiene, protective clothing, respirators, decontamination protocols, and exposure standards. All on-site crew members must go through the training. New workers hired or brought to the project after the start of construction must go through equivalent training before working on the project.

B. The CONTRACTOR is required to hold a mandatory Health and Safety meeting once a week during the course of the work.

1.05 PROJECT SPECIFIC INFORMATION

Radiation measurements for the project are presented in Section 0300.

PART 2 - DEFINITIONS

2.01 RADIOLOGICAL TERMS

A. Rad (acronym for Radiation Absorbed Dose) is the deposition of energy into soft tissue (human body) by a specific form and energy level of radiation.

B. Roentgen (R) is a unit for measuring the amount of radiation passing through air that an individual would be subjected to if he or she were to stand in that spot. It is defined as 1 electrostatic unit per cubic centimeter of air.

C. Rem (acronym for Roentgen Equivalent Man) is the estimation of the biological risk associated with the radiation exposure regardless of the type of radiation or its energy level. Roentgen and Rem are considered equal measurements and are often used interchangeably.

D. Radiation levels encountered in the field are usually very small fractions of the defined units. To simplify the expression of very small numbers, the following prefixes and symbols are commonly used:

mR stands for milli-Roentgen (R).
1 milli-Roentgen = 10^{-3} Roentgen = 0.001 Roentgen = 1000 µR

µR stands for micro-Roentgen (R).
1 micro-Roentgen = 10^{-6} Roentgen = 0.000001 Roentgen = 0.001 mR

E. Working Level (WL) is a unit for measuring the concentration of radon gas and radon daughters in an atmosphere. One working level is equal to 200 pCi/l (pico-curies per liter of air). Exposure to radon gas is measured in working level months (WLM) or working level hours (WLH). Radon exposure is calculated by multiplying the exposure time (in hours or months) by the radon concentration (working level). For working level calculations, a month is defined as 173 hours. A WLM is thus equal to 173 WLH, or the equivalent of 173 hours exposure in a 1 WL area, 346 hours exposure in a 0.5 WL area, etc.

2.02 PERSONAL PROTECTION PRODUCTS/TERMS

A. Coveralls. Coveralls shall have a full body and sleeves. Suspender type coveralls are not acceptable unless they are worn with a long sleeve jacket. Coveralls may be made of cotton or polyester fabric or some blend thereof. Coveralls must not have torn seams or holes. If coveralls tear during the course of the work they shall be mended or replaced. The CONTRACTOR may choose to wear Tyvek® suits instead of coveralls.

B. Work Gloves. Leather and rubber-coated work gloves shall not have holes or broken seams. If gloves develop holes or broken seams during execution of the WORK they shall be immediately removed and replaced with new gloves.

C. Glove Liners. Cotton glove liners shall be worn under the leather or rubber work gloves while personnel are within the Exclusion Zone. Cotton liners shall be changed regularly.

D. Respirators. Respirators shall be NIOSH/MSHA approved. Cartridges shall be rated for radon daughters. Standard paper or fabric dust masks are not acceptable.

E. TLD. A thermoluminescent dosimeter (TLD) is a badge worn to monitor gamma radiation dose. All personnel shall wear a TLD while working within the project boundary (not just within the Exclusion Zones). TLDs are available through the company listed below. For other vendors contact the Utah Department of Environmental Quality, Radiation Control at (801) 536-4250.

Mirion Technologies (GDS), Inc.
104 Union Valley Rd
Oak Ridge, TN 37830
phone: 800-251-3331 or 949-419-1000
https://www.mirion.com

F. Exclusion Zone. The Exclusion Zone is a restricted work area within which protective measures are required. The Exclusion Zone typically encompasses the mine dump and shaft or adit. This area may be delineated with flagging or staking. The Exclusion Zone shall have a single entrance/exit point, which should be clearly indicated. The size of the Exclusion Zone shall be dictated by the mine closure method. If the mine is to be backfilled, the Exclusion Zone shall include the area between the mine opening and the dump. All workers shall be aware of the Exclusion Zone. Only equipment and personnel actively engaged in mine closure work are allowed within the Exclusion Zone. All personnel working within the Exclusion Zone shall wear cotton coveralls or Tyvek® suits, safety boots, safety glasses, ANSI approved hard hats, and leather work gloves with cotton glove liners underneath. All personnel and equipment leaving the Exclusion Zone must be decontaminated.

G. Decontamination Station. A Decontamination Station shall be set up in the Exclusion Zone entrance/exit. The location shall meet the OWNER's approval. This station shall be placed upwind of dust-generating activities if possible. All personnel entering and exiting the Exclusion Zone shall pass through this area to remove soil from boots, and to remove, dispose of, and store personal protective equipment. The CONTRACTOR shall provide the decontamination station with all materials necessary for personnel exiting the Exclusion Zone to clean boots, wash hands and wipe faces, and store protective gear.

H. Wash Station. A Wash Station shall be set up in the Exclusion Zone entrance/exit at the decontamination station. The CONTRACTOR shall supply the Wash Station with liquid hand soap, paper towels, moist towelettes, water, and wash tubs. All personnel leaving the Exclusion Zone shall wash dust from exposed skin surfaces before being allowed to exit.

PART 3 - EXECUTION

3.01 RADIOLOGIC PROTECTION STANDARDS

A. CONTRACTOR shall comply with all applicable standards of the Mine Safety and Health Administration (MSHA) published in "Safety and Health Standards Applicable to Underground Metal and Nonmetal Mining and Milling Operations" (30 CFR Part 57), in particular sections 57.5037 through 57.5047.

B. The OWNER shall regularly measure concentrations of radon progeny and gamma radiation in each mine opening and at the mine dump. The date, location, and results obtained shall be recorded and submitted to the CONTRACTOR. CONTRACTOR shall maintain these records for at least two years.

C. CONTRACTOR shall calculate and record complete individual exposures to radon daughters using the MSHA form "Record of Individual Exposure to Radon Daughters" (Form 4000-9) or acceptable equivalent. A suitable form is provided in Chapter 2. Forms shall be submitted to the OWNER within 30 days of Substantial Completion and shall be made available to the exposed workers. CONTRACTOR shall maintain these records for at least two years.

D. No worker shall be permitted to receive a radon daughter exposure in excess of 0.40 WLM (working level months) in any calendar year. The 0.4 WLM exposure limit is equal to 69.2 WLH (working level hours), or equivalent to 69.2 hours of work in a 1 WL area.

E. All construction workers are required to wear TLDs to monitor their exposure to gamma radiation during the project. Readings will be recorded on a quarterly basis. All exposure information will be supplied to OWNER.

F. No worker shall be permitted to receive a radiation exposure in excess of 100 mR in any calendar year.

G. Workers shall wear respirators whenever dust is generated, when working under the brow of a mine, and during welding activities. No worker shall be exposed to air containing radon daughter concentrations exceeding 1.0 WL (working level) without a respirator. Where radon daughter concentrations exceed 10 WL, respirator protection against radon gas shall be provided by supplied air.

H. The CONTRACTOR and all others on site must comply with the Health and Safety Plan developed for this project and these specifications.

3.02 SMOKING AND EATING RESTRICTIONS

A. Smoking is prohibited within 300 feet of the Exclusion Zone due to the synergistic health effects of smoking and radiation.

B. Eating, drinking, and chewing gum and tobacco are prohibited within 300 feet of the Exclusion Zone to prevent ingestion of radioactive dust.

3.03 DUST CONTROL

A. Dust control is mandatory for all excavation and mine backfill work, whether done with machinery or manual labor. To minimize muddy conditions and maximize dust control at each mine site, small pesticide-type canister sprayers or similar devices shall be used to allow for local application of water for dust control. Water trucks may be used as long as the amount of water applied does not create a muddy work area (Exclusion Zone). During windy conditions work will be temporarily suspended until dust generation is minimized.

B. Dust control is required for all rock drilling. Wet drilling (controlling dust with a light water spray) is the preferred method. A pesticide-type canister sprayer shall be used to mist rock drill sites with water while drilling holes for bat gate and grate anchor pins. Enough water shall be applied to keep the area damp, but not enough to make the site drip. Dry dust control systems (e.g. vacuum collectors) may be used with OWNER'S approval.

3.04 MINE VENTILATION

A. A fan system or other device shall be installed in mine adits to circulate fresh outside air with the mine air to reduce worker exposure to radon gas during construction of bat gates and walls. Adequate ventilation is particularly important while welding due to the smoke and fumes generated. Fans should not be used in a way that stirs up dust. It may be necessary to dampen the work area to keep dust controlled.

B. The CONTRACTOR may hang plastic sheeting or use other material to block the mine inside the brow to reduce radon gas levels at the brow of the mine where welding or other activities will take place.

3.05 BAT GATE OR BLOCK WALL INSTALLATION

A. The CONTRACTOR shall wear respirators while working under the brow of the mine and during welding activities in accordance with Part 3.01.G of this Section.

B. The CONTRACTOR shall reduce dust from drilling and site preparation and maintain adequate work area ventilation in accordance with Parts 3.03 and 3.04 of this Section.

C. During bat gate construction the welder shall not wear Tyvek® suits because they melt when sparks land on them. The welder shall wear some type of polyester/cotton blend coverall with welding leather.

3.06 USE OF PERSONAL PROTECTIVE GEAR

A. All construction workers are required to wear TLDs to monitor their exposure to gamma radiation during the project. Workers shall wear a TLD while working within the project boundary (not just within the Exclusion Zones). TLDs are to be worn underneath the coveralls to keep dust out of the badge to prevent a false radiation exposure reading.

B. Cotton coveralls shall be worn while conducting the WORK described in these specifications. Coveralls must not have torn seams or holes. If coveralls tear during the course of the work they shall be mended or replaced. Coveralls shall be stored individually in heavy (8 mil) plastic bags or equivalent when not in use. This is to prevent cross-contamination with coveralls worn by other workers. Coveralls shall be laundered regularly during the course of the WORK.

C. If the CONTRACTOR opts to wear Tyvek® suits instead of cotton coveralls they shall be provided by the CONTRACTOR and worn while conducting the WORK described in these specifications. Tyvek® suits shall be removed and thrown away whenever they become torn or overly dirty. Tyvek® suits shall be removed at lunch time, breaks, and between shifts. Clean Tyvek® suits shall be donned before entering the Exclusion Zone and removed when leaving the Exclusion Zone at the Decontamination Station. A Tyvek® suit shall not have holes or open seams. If a Tyvek® suit is torn during execution of the WORK, the worker shall immediately go to the Decontamination Station to remove the torn suit and don another.

D. Leather and rubber-coated work gloves shall be worn with cotton glove liners. Cotton liners shall be provided by the CONTRACTOR and replaced daily. Each pair of work gloves shall be stored in individually assigned self-sealing bags (e.g. Ziplock®) when not in use to prevent cross-contamination with gloves worn by other workers. Work gloves shall be replaced when holes wear through them or seams come undone.

E. Workers shall wear respirators whenever dust is generated, when working under the brow of a mine, and during welding activities. No worker shall be exposed to air containing radon daughter concentrations exceeding 1.0 WL (working level) without a respirator. Where radon daughter concentrations exceed 10 WL, respirator protection against radon gas shall be provided by supplied air.

F. Respirator cartridges shall be changed as needed. Respirators shall be maintained, kept free of dust, and individually stored in a self-sealing plastic bag when not in use. Respirators shall not be shared by multiple workers.

G. Used Tyvek® suits, gloves, glove liners, respirator cartridges, towels, towelettes, plastic bags, and other disposable contaminated items shall be stored in plastic garbage bags and taken to a licensed landfill for disposal.

H. Reusable clothing items (coveralls, glove liners) may be laundered and reused if they are contaminated at less than twice the background radiation level. Laundering may be done in a standard washing machine, but contaminated items should be washed separately from other laundry. Clothing contaminated at more than twice the background radiation level shall be stored in plastic garbage bags and taken to a licensed landfill for disposal.

3.07 DECONTAMINATION (DECON) PROCEDURE FOR PERSONNEL

A. A designated area (Decon Station) shall be set up by the CONTRACTOR, with the approval of the OWNER, for the removal of gloves and coveralls and for brushing dirt off of boots. The Decon Station shall be at or near the entrance/exit to the Exclusion Zone. At the Decon Station, containers for gloves, coveralls, and respirators shall be left so that personnel can properly store these items as they leave the Exclusion Zone. Brushes and water shall be supplied to brush and/or rinse boots off.

B. The order of decontamination shall be as follows:

1. Soil and dust shall be brushed and/or rinsed off of boots.

2. Leather gloves shall be removed and stored in a sealed plastic container.

3. While still wearing the cotton glove liners, remove coveralls by rolling the inside away from the body, turning the coveralls inside out. This is done to contain dust on the outside of the coveralls. Store coveralls in a separate sealed plastic container or bag.

4. While still wearing the cotton glove liners the respirator shall be removed and wiped free of dust. If the cartridges need to be changed, the used ones can be disposed of at this time. The respirator shall be stored in a sealed plastic container. Used cartridges shall be disposed of at a licensed landfill.

5. The cotton gloves shall then be scanned for beta and gamma radiation. If the reading is below twice the background levels the cotton gloves may be kept in a separate bag and used again. If they measure twice the background level or higher they are to be stored in a plastic bag and disposed of at a licensed landfill.

6. Proceed from this Decon Station to the Wash Station.

7. ALL PERSONNEL will wash at the Wash Station whenever leaving the Exclusion Zone to remove dust from exposed skin surfaces. This is the final decon step before leaving the Exclusion Zone.

C. Coveralls shall occasionally be frisked with a beta and gamma probe to determine level of contamination.

3.08 DECONTAMINATION (DECON) PROCEDURE FOR EQUIPMENT

A. Tools used within the Exclusion Zone do not have to be decontaminated between mine sites if they are transported or stored in an open truck bed. If they are stored inside an enclosed storage area or inside a vehicle, all tools used in the Exclusion Zone shall be rinsed with water at the same Decon Station personnel pass through to remove all soil and dust particles. All tools shall be decontaminated before demobilizing at the end of the project.

B. The interior and exterior of heavy equipment shall be decontaminated with a pressure washer prior to final demobilization. The wastewater created by washing shall be contained on site for evaporation or infiltration into the soil on the project site. Wash Station sites and equipment shall be situated so that heavy equipment and vehicles do not drive through mud created by the washing process.

C. No extra precautions in the handling of equipment air filters beyond standard practice is required because on-site dust shall be controlled at all times.

D. All vehicles (passenger and other) driven to a mine site and not used as part of the WORK at the site shall be parked up-wind of dust-generating activities with the windows rolled up. These vehicles should be vacuumed and washed at a car wash before proceeding with off-site or weekend activities.

E. Workers will occasionally have to drive between mine sites. Coveralls may be worn inside the vehicle if the seats and floors are covered with plastic sheeting provided by the CONTRACTOR. This will minimize getting dust in the upholstery.

F. Equipment operators may tram between mine sites without going through the decon station, as long as they decontaminate themselves before leaving the last mine site. Operators must, however, go through Decon procedures before leaving the site at lunchtime or at the end of the day.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS FOR PAYMENT

Radiological Protection is bid and paid on a lump sum basis. The lump sum BID PRICE will only cover costs of items and services purchased to comply with this specification and the costs of implementation of the specified measures. These items include, but are not limited to: respirators, respirator cartridges, plastic sheeting, liquid hand soap, paper towels, wet wipes, plastic tubs, stiff bristle brushes, leather and rubber work gloves, cotton glove liners, coveralls, car wash, laundry, storage containers, plastic bags, landfill charges, TLDs and readings, water, canister sprayers, flagging, and radiological specialist.

4.02 MEASUREMENT

Radiological Protection is a lump sum bid item that does not require measurement of quantities for payment. At each site, the OWNER must approve and accept radiological protection WORK as set forth above before any payment on radiological protection can be requested. The OWNER must also accept and approve of all project WORK before full payment of Section 0225 WORK can be requested.

4.03 PAYMENT

The lump sum BID PRICE for radiological protection will be paid in two prorated payments determined by the amount of completed WORK approved and accepted by the OWNER. When 10 percent of the overall BID PRICE has been earned from other bid items, the CONTRACTOR may submit on the invoice sixty percent (60%) of the BID PRICE for radiological protection. On completion of the CONTRACT and issuance of the Certificate of Substantial Completion, the CONTRACTOR may claim the remaining forty percent (40%) of the BID PRICE for radiological protection. Payments for radiological protection are not subject to withholding of retainage. The total BID PRICE amount for radiological protection shall be full compensation for all labor, materials, tools, equipment, services, and all other costs necessary to perform the WORK under this section.

END OF SECTION 0225

0230 Access Improvement

PART 1 - GENERAL

1.01 WORK INCLUDED

This item for payment is to develop and maintain site access or improve existing site access. Improvement is limited to the extent required to complete WORK at each mine site. It is not the intent of this WORK to construct roads. The WORK shall include temporary site access to reach sites of construction, and maintenance of existing permanent roads that must be used for movement of equipment, materials and labor. CONTRACTOR shall minimize disturbance resulting from site access improvements. In areas in which a passable road did not previously exist, the CONTRACTOR shall reclaim the access improvement in accordance with this Section upon completion of the WORK. Existing, permanent roads shall be left in a condition at a minimum as good as that prior to the WORK.

1.02 SUBMITTALS

The CONTRACTOR shall submit *with the Bid* a description of access improvements to be performed at each site and shall not deviate from this plan without the written approval of the OWNER. For sites not easily accessible, the CONTRACTOR may choose to gain equipment access, do hand work, or access with a helicopter.

1.03 RELATED WORK

A. Section 0240: Demolition and Clean-up
B. Section 0250: Mine Closures
C. Section 0253: Bat Gate & Shaft Grate Installation
D. Section 0254: Polyurethane Foam Mine Closures
E. Section 0270: Site Grading/Earthwork
F. Section 0300: Specific Site Requirements

PART 2 – PRODUCTS/MATERIALS

2.01 CONTRACTOR may utilize local resistant materials or import road base materials to maintain access and minimize damage to the environment. If wet weather conditions prevail, OWNER may require CONTRACTOR to stockpile road base material at work sites in order to maintain the schedule.

2.02 CONTRACTOR may choose to temporarily place corrugated steel pipe or other conveyance structures in the access improvement. The CONTRACTOR shall comply with Section 0280: Drainage Control and Stream Protection unless otherwise directed by the OWNER.

PART 3 - EXECUTION

3.01 The location, alignment and grade of any temporary access improvement shall be in accordance with Section 0300: Specific Site Requirements, subject to Section 0280: Drainage Control and Stream Protection, and subject to the approval of the OWNER.

3.02 Temporary access improvements shall be constructed so as to minimize disturbance to existing vegetation, and to minimize potential erosion.

3.03 Where temporary site access crosses perennial or intermittent streams, the CONTRACTOR shall maintain the drainage by providing a temporary crossing in accordance with Section 0280: Drainage Control and Stream Protection, and subject to the OWNER'S approval. Upon completion of the WORK, CONTRACTOR shall restore drainages to approximate original condition, subject to the acceptance and approval of the OWNER.

3.04 When no longer required by the CONTRACTOR, temporary access improvements will be reclaimed in the following manner. Existing passable access shall be left in or returned to approximate original condition. Access previously impassable or newly created access shall be restored to blend with surrounding contours and reclaimed for erosion control as shown on the Drawings. The surfaces of such access shall be scarified and revegetated in accordance with Section 0290: Revegetation.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS FOR PAYMENT

Access Improvement is bid and paid on a lump sum basis. The lump sum BID PRICE for access improvement shall be full compensation for WORK under this section. The lump sum BID PRICE will also include those incidental costs as required by the CONTRACTOR in order to perform the WORK.

4.02 MEASUREMENT

Access Improvement is a lump sum bid item that does not require measurement of quantities for payment. At each site, the OWNER must approve and accept access improvement WORK as set forth above before any payment on access improvement can be requested.

4.03 PAYMENT

Payments shall be made at the lump sum BID PRICE for each item of access improvement WORK on the Bid Schedule. The lump sum BID PRICE for access improvement will be paid in two prorated payments determined by the amount of completed access improvement WORK approved and accepted by the OWNER at each location itemized on the Bid Schedule. When access development work to an itemized location on the Bid Schedule has been completed and accepted by the OWNER, the CONTRACTOR may submit on the invoice fifty percent (50%) of the lump sum BID PRICE for access improvement for that location. On completion of the site WORK and approval of site access reclamation, the CONTRACTOR may claim the remaining fifty percent (50%) of the BID PRICE for access improvement for that location. Payment of this item is subject to withholding of the retainage. The total BID PRICE amount for access improvement shall be full compensation for all labor, materials, tools, equipment, services, and all other costs necessary to perform the WORK under this section.

END OF SECTION 0230

0240 Demolition And Clean-Up

PART 1 - GENERAL

1.01 WORK INCLUDED

The WORK consists of the demolition and clean-up of designated structures and areas including, but not limited to, those indicated in Section 0300: Specific Site Requirements. The WORK shall include, but not be limited to, the removal and disposition of concrete slabs and foundations, miscellaneous wood, metal, stone and masonry structures, and debris associated with the abandoned mine operation or generated during construction. All of the miscellaneous debris exposed at the surface and randomly scattered across any site has not been specifically itemized due to the impracticality of such extensive identification. However, it is the intent of these Specifications to require removal and disposal of all surface debris associated with the abandoned mine operations. Such removal and disposal shall be included in the CONTRACTOR's scope of WORK.

1.02 SUBMITTALS

A. CONTRACTOR shall submit *with the Bid* demolition and removal procedures and schedule for approval. This should indicate if blasting is to be used in structure demolition.

B. CONTRACTOR shall submit *after execution of the CONTRACT and prior to disposal* proof of permission for debris disposal off site at a licensed disposal site.

1.03 RELATED WORK

A. Section 0270: Site Grading and Earthwork
B. Section 0300: Specific Site Requirements

1.04 CONDITIONS AND RESTRICTIONS

A. Demolition shall be conducted to minimize dust generation and public nuisance.

B. CONTRACTOR shall provide, erect, and maintain temporary barriers and security devices as necessary to ensure safety of CONTRACTOR's personnel, the OWNER's personnel, and the general public.

C. Debris burial in, mixing with, or covering by fill material is not allowed on site unless otherwise specified in Section 0300: Specific Site Requirements, described on the Drawings or approved in writing by OWNER.

D. Debris placement in mine openings is only allowed with site by site approval from the OWNER.

E. Materials shall not be burned on site unless otherwise specified in Section 0300: Specific Site Requirements, described on the Drawings or approved in writing by OWNER.

PART 2 – PRODUCTS/MATERIALS

CONTRACTOR may require materials for demolition and clean-up, such as wrappings or impermeable coverings as specified in Section 0300: Specific Site Requirements or described on the Drawings.

PART 3 - EXECUTION

3.01 PREPARATION

CONTRACTOR shall secure any and all required permits for the demolition and clean-up WORK at his or her expense.

3.02 EXECUTION

A. CONTRACTOR shall demolish only those structures and appurtenances indicated. Demolition shall be performed in an orderly and careful manner. CONTRACTOR shall clean up and dispose of all debris exposed at the surface.

B. Except for materials identified and reserved by the OWNER, demolished materials of every nature shall become the property of the CONTRACTOR and shall be disposed of away from the site or at locations indicated in Section 0300: Specific Site Requirements or on the Drawings.

C. Relics, antiques, artifacts and similar objects as identified by the OWNER remain the property of the OWNER. CONTRACTOR shall notify the OWNER prior to removal and obtain acceptance regarding method of removal. Relics and antiques include, but are not limited to:
    1. Cornerstone and contents
    2. Commemorative plaques
    3. Archaeological relics or paleontological finds
    4. Historical relics

D. CONTRACTOR shall remove and promptly dispose of any contaminated, vermin-infested, or dangerous materials encountered. Transformers, oil-filled electrical equipment or other toxic materials shall be called immediately to the attention of the OWNER. Disposal of such items shall be at the direction of the OWNER in accordance with EPA and State Health requirements.

E. CONTRACTOR shall remove foundation walls and footings to a minimum three feet below finished grade as indicated in the Drawings unless otherwise directed in Section 0300: Specific Site Requirements.

F. CONTRACTOR shall remove all concrete slabs on grade as indicated in the Drawings unless otherwise directed in Section 0300: Specific Site Requirements.

G. CONTRACTOR shall provide water and an adequate water supply system for dust suppression for haul roads and demolition WORK where dust will cause a public nuisance or as directed by the OWNER. The cost of water will be paid by the CONTRACTOR.

H. Depressions resulting from demolition operations shall be filled with materials, approved by the OWNER, from on the site or from designated borrow areas unless located in an area where further excavation is required to yield the reclamation contours shown in the Drawings. The fill material shall be in accordance with Section 0270: Site Grading/Earthwork.

I. CONTRACTOR shall grade and compact areas affected by demolition to maintain site grades and contours. In no case shall slopes exceed 3h:1v or natural site contours.

J. CONTRACTOR shall remove demolished materials from site in an orderly fashion. CONTRACTOR shall leave site in clean condition for reclamation grading and earthwork.

K. CONTRACTOR shall remove from site all debris created during construction.

L. Final shape and completeness of the WORK shall be subject to approval by the OWNER.

3.03 SALVAGING MATERIALS

All salvaged materials shall become the property of the CONTRACTOR with the exception of relics, antiques or artifacts identified by the OWNER or landowner. Salvaged materials from the structures may be stored onsite temporarily, but not beyond the date specified for completion of the CONTRACT. Any value of salvaged materials or costs associated with the removal of equipment, structures, or materials shall be reflected in the bid price amount for Demolition and Clean-up.

PART 4 – MEASUREMENT AND PAYMENT

4.01 BASIS FOR PAYMENT

A. Demolition and Clean-Up is bid and paid on a lump sum basis. Estimated quantities are provided in Section 0300, the appendices, and on the Bid Schedule to serve as a guide in outlining the scope of work, but bidding is not on a unit price basis. The lump sum BID PRICE need not equal the product of the estimated quantity times a unit price. Variation in Quantity Unit Prices are requested on the Bid Schedule for the purpose of adjusting the lump sum BID PRICE in cases where the actual quantity of WORK performed differs from the estimated quantity.

B. The actual final quantities for the major tasks or categories of materials may differ from the estimated quantities shown in the site-specific information in Section 0300, the appendices, or the Bid Schedule. The estimated quantities are based on information gathered and interpreted from surface investigations.

C. Should the CONTRACTOR estimate the quantity of demolition and clean-up to be greater than 15% above the estimated quantity shown in the Bid Schedule, the CONTRACTOR must negotiate a CHANGE ORDER with the OWNER for additional WORK prior to undertaking the additional WORK. The adjustment to the lump sum BID PRICE will be based on the Variation in Quantity Unit Price on the Bid Schedule and the variance above 115% of the estimated quantity. The method of measurement for quantities shall be determined prior to undertaking the additional WORK.

D. When the actual quantity of demolition and clean-up completed as determined by measurement is greater than 15% below the estimated quantity on the Bid Schedule, the OWNER will negotiate a reduction in the lump sum BID PRICE based on the Variation in Quantity Unit Price on the Bid Schedule and the variance below 85% of the estimated quantity. This price adjustment shall be executed by a CHANGE ORDER.

4.02 MEASUREMENT

A. Demolition and Clean-Up is a lump sum bid item that does not require measurement of quantities for payment. At each mine site or mine feature itemized for WORK in the Bid Schedule, the OWNER must approve and accept the WORK as set forth above before any payment on that item can be requested.

B. Dust control and regrading will not be measured for direct payment but will be considered subsidiary to demolition and clean-up. Costs for these subsidiary products or tasks are to be absorbed into the lump sum BID PRICE for the associated demolition and clean-up as described in this section. The lump sum BID PRICE amount for demolition and clean-up, as modified by any CHANGE ORDERS, shall be full compensation for all labor, materials, tools, equipment, services, and all other costs necessary to perform the WORK as described in this section.

4.03 PAYMENT

A. Payment for demolition and clean-up will be for each itemized mine site or mine feature at the lump sum BID PRICE, as modified by any CHANGE ORDERS. Payment will only be made for completed WORK that is accepted and approved by the OWNER. No partial payments will be made for individual items of WORK.

B. Payment at the lump sum BID PRICE, as modified by any CHANGE ORDERS, shall be full compensation for all labor, materials, tools, equipment, services, and all other costs and incidentals necessary to perform the WORK in this section in accordance with the Standard Drawings and Specifications.

END OF SECTION 0240

0250 Mine Closures

PART 1 - GENERAL

1.01 WORK INCLUDED

This section describes the various types of mine closures to be used to seal mine openings. The WORK described in this Section also includes preparation, excavation and backfilling of subsidence openings into mine voids. The requirements for furnishing and placing stone and block closures and backfill closures are described here and are indicated on the Drawings. The WORK includes all preparation, labor, materials, furnishing and placing materials, equipment and incidentals necessary to complete the mine closures.

1.02 SUBMITTALS

A. CONTRACTOR shall submit *with the Bid* a list of equipment to be used to complete this section of the WORK.

B. CONTRACTOR shall submit *with the Bid* the proposed construction procedures in writing.

C. CONTRACTOR shall submit *after the award of CONTRACT and before Notice to Proceed* a copy of the certification of the Certified Person (see Section 0200, Part 1.04.C) for approval by the OWNER.

D. CONTRACTOR shall furnish the OWNER *upon completion of the WORK* a set of as-built drawings which shall be required for release of the retainage. Such submittals shall provide a complete and accurate record of the WORK performed and shall include the type and volume of backfill placed, the location and dimensions of constructed closures (walls, gates, grates, PUF plugs, etc.), dates of activities, and all related data.

1.03 RELATED WORK

A. Section 0251: Cast-in-Place Concrete
B. Section 0252: Concrete Reinforcement
C. Section 0253: Bat Gate and Shaft Grate Installation
D. Section 0254: Polyurethane Foam Mine Closures
E. Section 0290: Revegetation
F. Section 0300: Specific Site Requirements

1.04 PROTECTION

A. CONTRACTOR shall exercise precautions appropriate to working near, over, or in areas prone to subsidence. Such known areas should be flagged by the CONTRACTOR prior to the commencement of the WORK. Personnel shall be informed of special safety procedures for equipment usage and general work in these areas.

B. Before any personnel enter any openings a check for explosive and toxic gases shall be made by the Certified Person (see Section 0200, Part 1.04.C). Continuing checks shall be made throughout the closure operation by the Certified Person.

C. Personnel shall not enter any mine opening unless under the direction of the Certified Person.

D. No personnel shall be allowed to work under an unstable mine roof. Prior to entry by other personnel, the Certified Person (see Section 0200, Part 104.C) will test the mine roof, will perform any immediate scaling, and will determine temporary roof support

requirements. Temporary support shall be installed by qualified personnel under the direction of the Certified Person. Mine closure work will proceed only after the Certified Person has determined that the work area within the mine is safe for entry.

E. CONTRACTOR shall inspect openings for old dynamite prior to construction activities.

F. Smoking or any open flame in or within 100 feet of the mine openings is prohibited.

G. Personnel shall wear safety harnesses and be properly and securely anchored to a fixed anchor point while working within 15 feet of vertical openings, unless otherwise approved in writing by the OWNER.

PART 2 – PRODUCTS/MATERIALS

2.01 CONCRETE BLOCK

Solid concrete block shall be high strength with a minimum compressive strength of 3,000 pounds per square inch.

2.02 STONE

Stone used for wall construction shall be dense, sound, durable, homogeneous, resistant to abrasion, and shall be free from cracks, seams, or other defects. Angular or tabular rock is preferred. Rocks susceptible to solution or disintegration upon contact with water shall not be used. Surfaces shall be free of loose mud, moss, or other materials that would prevent a bond with mortar. Source and quality of stone shall be approved by OWNER.

2.03 BACKFILL

Backfill material shall normally consist of mineral soil, subsoil (including broken rock), a blend of mineral soil and subsoil, or mine waste rock. Backfill material shall be free from combustible materials. This shall include but not be limited to coal, wood, wood products, trash and vegetation.

2.04 MORTAR

Mortar shall be either Masonry Cement, 1:3 mix, Type S, or Portland Cement and Lime, 1:1:6 mix, Type N. Precautions must be taken to prepare and protect mortar during cold weather. Mortar will have a 28 day minimum compressive strength for 2-inch cubes of 1500 psi.

2.05 STEEL PLATING

Steel shall conform to the requirements of ASTM A36, a minimum of ¼-inch thick.

2.06 ANGLE IRON

Steel shall conform to the requirements of ASTM A36.

2.07 GRATE CROSSBARS

Rebar or smooth round stock used for grate cross bars shall be weldable and shall be Grade 60 #8 bars minimum meeting the ASTM A706 standard.

2.08 CONCRETE

Concrete shall be in accordance with Section 0251: Cast-in-Place Concrete.

2.09 REINFORCEMENT BAR

Steel used as concrete block wall reinforcement or as footing reinforcement shall be mild steel rebar meeting the requirements of ASTM A 615. These bars shall be Grade 60 #4 bars (½ inch diameter).

2.10 REINFORCEMENT SPLICES

Mechanical couplers used to butt splice rebar for block wall reinforcement shall be the DS Bar-Lock® coupler system manufactured by Dayton Superior Corp. or approved equivalent (http://www.daytonsuperior.com/a09_BarLockLockshear01_DS_Coupler.html).

2.11 FILTER CLOTH

Filter cloth shall be a non-woven geotextile fabric having a minimum thickness of 15 mil in accordance with ASTM D-1777 and a minimum permeability of 10^{-2} centimeters per second, such as Fibertex 150 manufactured by Crown Zellerbach, or an approved equivalent.

2.12 TEMPORARY MINE ROOF SUPPORTS

A. Mine roof supports shall be wooden posts or approved equal that have the following minimum requirements:
   1. 4½ inch minimum diameter.
   2. Spruce or pine with a specific gravity between 0.35 and 0.48.
   3. Moisture content between 10.8 and 14 percent.
   4. Allowable unit stress of extreme fiber in bending of 750 psi for spruce or 700 psi for pine.
   5. Maximum diameter of knots on one surface no greater than ½ inch.

B. Caps and wedges shall be used for installation of roof supports.

C. Mine roof jacks may be substituted for wooden posts with the approval of the OWNER.

2.13 EPOXY RESIN GROUT

Epoxy resin grout shall conform to the requirements of ASTM C881, Type IV, Grade 3, such as Simpson ET Epoxy-Tie®, Hilti HIT HY 200 epoxy or approved equivalent.

PART 3 - EXECUTION

3.01 BAT EXCLUSION

A. CONTRACTOR shall exclude bats from mine workings prior to installation of permanent airtight closures as required in these specifications. Mines requiring bat exclusion are identified in Section 0300: Specific Site Requirements.

B. The preferred method for exclusion of bats from an adit or shaft is to block the portal or shaft opening with 1-inch diameter chicken wire. The wire permits bats to escape and fly out of the mine, but they will not fly back through the wire into the mine. The wire should completely seal the opening and be free of gaps. The wire should be placed over the entrance at least a week in advance and shall be left in place until the date of the closure. The wire should be removed during the day of closure and closure should take place immediately.

C. The length of the exclusion period may be reduced from one week to three fair weather days with OWNER's approval. Rainy or cold weather inhibits bat activity and will increase the length of the exclusion accordingly, up to the one week maximum.

D. The exclusion process is effective only in warm seasons when bats are active. The exclusion process must be conducted when bats are flying but before young bats are born or in the fall prior to the swarming behavior that leads to hibernation. An attempt to close mines before the warm season may entomb hibernating bats that cannot fly. To prevent entombing hibernating bats, sites specified as requiring exclusion prior to closure shall not be closed during the cold season. Closure of these sites shall be postponed to the following warm season. For bat exclusion purposes, the cold season is considered to be when the daily minimum temperature is consistently below 40°F. The cold season in Utah runs roughly from mid-November to mid-March. The warm season is the rest of the year. Warm season exclusion work shall not be conducted between mid-May and mid-September at mines where there is maternity activity. Seasons and birthing dates vary depending on geographic location. Variations in exclusion dates shall be in accordance with the Memorandum of Understanding between the OWNER and the Utah Division of Wildlife Resources and should be specified by a qualified bat biologist. Cold season closures may be performed following an internal inspection for hibernating bats. Internal inspections shall be performed by the OWNER and are subject to the availability of the OWNER's bat inspection team.

E. Chicken wire seals damaged or removed by vandals during the exclusion period shall be replaced and the exclusion period started over.

F. Vertical shafts covered with chicken wire for bat exclusion shall be flagged with warning tape where human activity in the area is likely.

G. The “slow fill” method of bat protection may be used with OWNER’s approval at selected vertical shafts where chicken wire placement is impractical or unsafe. A small amount of fill is dropped down the shaft to try to flush any roosting bats from the mine. Bats should be given several minutes to react to the disturbance and for dust to clear. The process should be repeated several times to provide an adequate opportunity for bats to leave the mine before filling is commenced.

3.02 PREPARATION FOR MINE CLOSURES

A. CONTRACTOR shall clear and grub the face area of mine openings of all vegetation, wood and debris to the extent shown on the Drawings. CONTRACTOR shall inspect, scale and secure the mine openings to a degree that will make the WORK safe to perform. Particular care shall be taken to make WORK conditions safe in instances where, due to the condition of the opening and the probability of loose soil and rock above the opening, there is danger of a rockfall. For openings to be backfilled the CONTRACTOR shall excavate the brow back to a stable condition prior to initiation of closure operations, unless otherwise directed by the OWNER.

B. The roof and ribs of the mine openings may contain loose rock. Such loose materials shall be scaled by use of tools or equipment extended into the openings before personnel enter the opening for placement of mine roof supports or for any other reason.

C. Loose, unstable materials typically exist just inside the opening. These materials shall be removed from the working surface inside of the mine openings so a solid working surface exists on which to build the mine closures. The working surface shall be inspected, accepted and approved by the OWNER.

D. Temporary mine roof supports shall be installed as determined by the Certified Person before any personnel enter the opening for construction purposes.

E. CONTRACTOR shall construct work pad as required.

3.03 INSTALLATION OF MINE CLOSURES

A. WALL CLOSURE (BLOCK OR STONE)

1. CONTRACTOR shall construct walls in the adits as specified in Section 0300: Specific Site Requirements. Variation of the location of the walls will be allowed so that CONTRACTOR can select a suitable location for the walls, with approval of OWNER. Parameters for suitable location of the walls shall be as follows:

    a. Select an area in which competent rock is found in the back and ribs (roof and walls) of the adit. A competent rock sill (floor) is preferred, but not required if a concrete foundation (footer) is built to support the wall.

    b. Utilize irregularities in the ribs and back where possible such that the wall can be "keyed" into the rock to provide more strength and integrity to the wall.

    c. Locate the wall as far into the adit as is reasonable to reduce visibility of the wall from outside the opening and a maximum of 10 feet within the competent brow unless otherwise approved by the OWNER. Allowance for the location of the walls is discussed in Section 0300. Where the remaining portion of the adit left open is unstable or unsafe, backfill shall be placed from the brow to the wall unless otherwise approved by the OWNER.

2. CONTRACTOR shall scale down the back and ribs (roof and sides) of the adit, removing any loose rock from the area in which the wall is to be constructed and along access to bulkhead. Any mud, clay, moss or other materials shall be removed where the wall is to be constructed which would be deleterious to the integrity of the wall and would not allow good bonding of the mortar to the rock. CONTRACTOR shall excavate sill (floor) of adit to solid rock where the wall is to be constructed. Drainage shall be provided for any water that tends to accumulate on either side of the bulkhead as described in Part 3.02.A.7 of this Section. Excavated materials shall be cast into the adit behind the bulkhead to minimize surface disturbance in the area.

3. Concrete foundations shall be constructed unless competent foundation rock is encountered which is not friable, subject to deterioration, or otherwise unacceptable. The foundation rock must be approved by OWNER. The foundation shall typically be 12-18 inches in vertical depth, or as approved by OWNER and permitted by field conditions. The foundation shall be a minimum of 24 inches wide to accommodate a 16-inch thick concrete block wall or 32 inches wide to accommodate a 24-inch thick stone wall. The foundations shall be made of concrete as specified in Section 0251: Cast-In-Place Concrete. Concrete shall be reinforced with No. 4 rebar as shown on the Drawings and as specified in Section 0252: Concrete Reinforcement.

4. CONTRACTOR shall construct walls from foundation or solid rock base if approved by OWNER. Walls shall be constructed of concrete block, native stone, or imported stone. Concrete block walls shall be a minimum of 16 inches thick. Native stone and imported stone walls shall be constructed to a minimum thickness of 24 inches at the base and 20 inches at the top. The wall shall be free of any voids within the wall structure and shall be 100 percent block/rock and mortar construction. Mortar shall be free of voids and air pockets and shall be firmly packed along ribs and roof of the opening to maintain the integrity of the wall and to make an effective seal.

5. CONTRACTOR shall use the natural shape and irregularities of the mine opening to "key" the wall to the mine opening to provide strength and protection of the wall from damage due to vandalism.

6. Walls scheduled for backfill (Wall and Backfill Closure) shall be anchored and reinforced during construction as specified in Part 3.03.D below.

7. Designated openings shall require the installation of a drainage pipe as specified by a Utah certified professional engineer, to include an appropriate P-trap. The drainage pipe shall be located near the base of the stone wall within 15 inches of the intersection of the floor material in the approximate center of the wall or near a low spot along the base. The drain pipe shall extend through the foundation or the base of the wall and a trap shall be formed outby the wall near the brow as shown on the drawings. The drain pipe shall protrude a minimum of 12 inches on either side of the wall and shall be made from 6-inch nominal diameter, Schedule 80 PVC pipe. The inside end of the pipe shall be firmly supported by block or natural stone. Both the inside and outside ends of the pipes shall be clear of any obstructions which would impair or restrict flow. Pipes shall be sloped a minimum of 2 percent to drain. Both ends of the pipe shall be covered with a protective screen mesh. Gravel shall be installed over the ends of the pipes to protect the pipe from roof falls and plugging. Gravel shall form a drain and cover the top of the pipe with a minimum of 8 inches of material. The gravel drain shall be no less than 18 inches wide and shall extend to and from the end of the pipes a minimum of two feet. Gravel used in the drain channels shall be selected material ranging from ¾ to 6 inches in size. CONTRACTOR shall extend a drainage channel away from the bulkhead if it is situated such that water could impound near the base. The One Way Wildlife Trap Door as shown in the Drawings (Drawing 21) is not acceptable for use as a drain pipe.

8. CONTRACTOR shall construct bat windows as directed by the OWNER. Bat windows shall be constructed from ¼-inch thick steel plate that meets ASTM 36 standard. Number 8 rebar ATSM A706 shall be used to anchor the bat window between the brick walls and the mortar. The outby flange shall be a minimum of 2 inches wide. Maximum window openings shall be 5 ¾-inches tall and typically 24-inches wide.

9. Reinforced concrete block walls shall be reinforced with a minimum of no. 4 rebar on a 16 inch on center spacing. The center reinforced concrete section shall be a minimum of 6 ½ inches thick with at least 3 inches of cover on each side and keyed into the footer. Pilasters shall be installed for every 15 feet of opening width.

10. As further protection, grout shall be used to seal the base of the bulkhead and shall be placed to partially cover the drainpipe. Grout should extend one foot to either side of the base of the wall.

11. The portal areas shall be cleared of all building materials, trash and debris. The site shall be left in a clean and finished appearance.

12. Revegetation of sites shall be completed as specified in Section 0290: Revegetation.

13. Final acceptance of the WORK shall be subject to field inspection by the OWNER.

B. <u>BACKFILL CLOSURE</u>

1. CONTRACTOR shall backfill mine openings as described in Section 0300: Specific Site Requirements or as directed by the OWNER. Backfill shall contain sufficient fines to minimize void space.

2. Drainage lines shall be extended, if required, to the projected limits of the backfill. The drain line shall be placed on a minimum slope of 2 percent and firmly bedded with well-compacted sand and gravel. The end of the pipe shall be protected as described in Part 3.03.A.7.

3. Backfill shall be placed in mine openings to minimum dimensions described and in a manner to eliminate voids. CONTRACTOR shall construct a work pad in front of the opening as required to allow for uniform access to ram the backfill into the opening utilizing a ram or backhoe bucket. Care should be taken not to push the wall out if one has been installed. Materials which require compaction shall be tamped to achieve compaction such that any additional settlement of the fill will not result in reopening of the portal.

4. Final shape of the fill shall be mounded over the opening and blended into surrounding contours as much as practical. Runoff and snowmelt shall be diverted away from and across the fill by use of small channels containing light riprap so that the fill does not erode or impound water.

5. Revegetation of sites shall be completed as specified in Section 0290: Revegetation.

6. The portal areas shall be cleared of all building materials, trash and debris. The site shall be left in a clean and finished appearance.

7. Final acceptance of the WORK shall be subject to field inspection by the OWNER.

C. HAND BACKFILL CLOSURE METHOD

1. Hand Backfill Closure Method shall be used only in places inaccessible to heavy equipment as designated in Section 0300: Specific Site Requirements. The backfill requirements of Section 0250: Mine Closures, Part 3.03.B apply except as provided for equipment or approved by the OWNER.

2. CONTRACTOR shall obtain backfill materials from areas specified in Section 0300: Specific Site Requirements, or as directed by the OWNER.

3. Backfill materials shall be placed in 12-inch thick horizontal lifts in the locations and to the extent shown on the Drawings. Backfill shall completely fill the mine opening, with the top lift fitting tightly against the mine roof. The fill shall be free of voids.

D. WALL AND BACKFILL CLOSURE

1. Designated mine openings shall be backfilled after the installation of the wall. Walls shall be installed and mine backfilled per Section 0250, 3.03 A, B, and C.

2. Walls greater than 7 feet high shall be constructed of concrete block and reinforced with horizontal rebar as shown in the Drawings. Vertical spacing of the horizontal reinforcement shall be as scheduled below:

Wall Height (feet)	Horizontal Reinforcement Spacing
0 – 7	Not Required
7 – 8	48 inches O.C.
8 – 10	24 inches O.C.
10 – 12	16 inches O.C.
12+	Consult engineer

3. Wall reinforcement shall be #4 (½-inch) rebar doweled a minimum of 12 inches into each rib and secured in place with epoxy resin. The CONTRACTOR shall determine the means of drilling into the rock and submit the method to the OWNER for approval prior to the start of the drilling operations. Anchor pins shall protrude from the rib and be spliced to rebar spanning the width of the wall using the DS Bar-Lock®

coupler system manufactured by Dayton Superior Corp. or approved equivalent. Reinforcement shall be installed tight against the interior wall surface.

4. Drainage lines shall be extended, if required, to the projected limits of the backfill. The drain line shall be placed on a minimum slope of 2 percent and firmly bedded with well-compacted sand and gravel. The end of the pipe shall be protected as described in Part 3.03.A.7.

5. Bring backfill to the grades shown in the Drawings or as designated in Section 0300: Specific Site Requirements to blend with natural contours.

E. VERTICAL SHAFT BACKFILL CLOSURE METHOD

1. CONTRACTOR shall inspect the collar of the opening and determine required precautions for safe completion of WORK. Installation of a short conveyor belt or a ramp may be required.

2. Timber and debris shall be removed from openings to the extent safely possible so that fill can fall freely to the bottom of the shaft without bridging or hanging up and to reduce the potential for voids and timber in the fill.

3. The backfill shall be well-graded with a mix of fine and large material to minimize the voids in the fill. The maximum particle size shall be approximately 2 feet in diameter.

4. Filter cloth shall be installed as shown on the Drawings.

5. CONTRACTOR shall place and compact the backfill starting five feet below the surface. Suitable compaction energy shall be applied in this zone in one-foot lifts by either pressure from the back of the backhoe bucket or other means accepted and approved by the OWNER. The upper five feet of backfill shall not contain any material that may have elevated sulfate concentrations.

6. The backfill shall be mounded above the adjacent grade to direct drainage away from the opening and provide for settling. The mound shall be a minimum of 24 inches above the adjacent grade, or shall be sloped at 3h:1v and extend a minimum 3 feet horizontally beyond the edge of the shaft, whichever is greater.

3.04 MINE CLOSURE GRADING

A. CONTRACTOR shall bring backfill to the grades shown on the Drawings or to blend with natural contours. Backfill shall be free of voids and shall be compacted by mechanized equipment or hand-held mechanical compactors in one foot lifts.

B. CONTRACTOR shall extend the drainage line (if required) to the projected limits of the backfill. The drain line shall be placed at a minimum slope of 2 percent and firmly bedded with well compacted sand and gravel. The end of the pipe shall be protected as described in Part 3.03.A.7.

C. The backfilled slopes shall be covered with a minimum of 6 inches of soil/rock fill available on site from areas designated by the OWNER.

D. Revegetation and mulching of the disturbed areas shall be performed in accordance with Section 0290: Revegetation.

E. Final shape and completeness of the WORK shall be subject to approval by the OWNER.

3.05 MINE LOCATION MONUMENTS

A. CONTRACTOR shall install at each mine closure a permanent monument (aluminum survey cap). OWNER will provide and CONTRACTOR will install the survey cap.

B. At backfill closures, monuments shall be installed on rebar stakes. Stakes shall be #5 (5/8-inch diameter) rebar, normally 3 to 4 feet long. The rebar shall be securely anchored in the ground with the end extending above the final grade 2 to 6 inches. CONTRACTOR may opt to use soil plates, deadmen, bends, or other devices to ensure that the rebar is securely anchored. The exposed end of the rebar shall be squarely cut and free of bends, flaring, mushrooming, or burrs that would prevent proper seating of the survey cap. Seating of the cap onto the rebar shall be done taking precautions not to mar the text. Where site conditions permit and with approval of OWNER, monuments may be set directly into bedrock with epoxy resin as described below.

C. At structural closures (bulkheads or steel grates), monuments may be set in concrete footers, grade beams, or seams while the concrete is wet or set in bedrock with epoxy resin. Installation in bedrock requires drilling a 1¼-inch diameter by 2-inch deep hole to receive the cap.

D. The placement of the monument will be determined by the OWNER, but typically it will be centered in or adjacent to the mine opening for backfill closures. Monuments should not be placed where it is necessary to climb onto the closures to read them. Monument positioning should consider the potential for vandalism and the potential for siltation that could bury the cap. Monuments may be installed inby grate closures, but not so deep that they cannot be easily read.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF PAYMENT

A. Mine Closure is bid and paid on a lump sum basis. Estimated quantities are provided in Section 0300, the appendices, and on the Bid Schedule to serve as a guide in outlining the scope of work, but bidding is not on a unit price basis. The lump sum BID PRICE need not equal the product of the estimated quantity times a unit price. Variation in Quantity Unit Prices are requested on the Bid Schedule for the purpose of adjusting the lump sum BID PRICE in cases where the actual quantity of WORK performed differs from the estimated quantity.

B. The actual final quantities for the major tasks or categories of materials may differ from the estimated quantities shown in the site-specific information in Section 0300, the appendices, or the Bid Schedule. The estimated quantities are based on information gathered and interpreted from surface investigations.

C. Should the CONTRACTOR estimate the quantity of mine closure to be greater than 15% above the estimated quantity shown in the Bid Schedule, the CONTRACTOR must negotiate a CHANGE ORDER with the OWNER for additional WORK prior to undertaking the additional WORK. The adjustment to the lump sum BID PRICE will be based on the Variation in Quantity Unit Price on the Bid Schedule and the variance above 115% of the estimated quantity. The method of measurement for quantities shall be determined prior to undertaking the additional WORK.

D. When the actual quantity of mine closure completed as determined by measurement is greater than 15% below the estimated quantity on the Bid Schedule, the OWNER will negotiate a reduction in the lump sum BID PRICE based on the Variation in Quantity Unit Price on the Bid Schedule and the variance below 85% of the estimated quantity. This price adjustment shall be executed by a CHANGE ORDER.

4.02 MEASUREMENT

A. Mine Closure is a lump sum bid item that does not require measurement of quantities for payment. At each mine site or mine feature itemized for WORK in the Bid Schedule, the OWNER must approve and accept the WORK as set forth above before any payment on that item can be requested.

B. Bat exclusion, site preparation, roof support, drainage work, foundation work, monument installation, and grading will not be measured for direct payment but will be considered subsidiary to mine closure. Costs for these subsidiary products or tasks are to be absorbed into the lump sum BID PRICE for the associated mine closure as described in this section. The lump sum BID PRICE amount for mine closure, as modified by any CHANGE ORDERS, shall be full compensation for all labor, materials, tools, equipment, services, and all other costs necessary to perform the WORK as described in this section.

C. Measurement of mine closure for adjustments to the lump sum BID PRICE as described in Part 4.01.C and D above shall be as follows:

1. Areas of walls will be expressed in square feet and measured by taking the product of the average height above the footer times the average width. Unusually shaped walls not roughly rectangular may be approximated as the sum of equivalent rectangles and triangles.

2. Volumes of backfill will be expressed in cubic yards. Shafts will be measured by taking the depth of the backfill times the cross-sectional area of the shaft (i.e. by approximating the backfill as a rectangular prism or cylinder). Adits will be measured by taking the depth of the internal backfill times the cross-sectional area of the adit and adding an allowance for fill mounded outby the brow (i.e. by approximating the internal backfill as a rectangular prism and the external fill as a triangular prism).

4.03 PAYMENT

A. Payment for mine closure will be for each itemized mine site or mine feature at the lump sum BID PRICE, as modified by any CHANGE ORDERS. Payment will only be made for completed WORK that is accepted and approved by the OWNER. No partial payments will be made for individual items of WORK.

B. Payment at the lump sum BID PRICE, as modified by any CHANGE ORDERS, shall be full compensation for all labor, materials, tools, equipment, services, and all other costs and incidentals necessary to perform the WORK in this section in accordance with the Standard Drawings and Specifications.

END OF SECTION 0250

0251 Cast-in-Place Concrete

PART 1 - GENERAL

1.01 WORK INCLUDED

Cast-in-place concrete shall be used in the WORK for mine closures. This Section provides the material standards, procedures and quality control that shall be required for cast-in-place concrete.

1.02 SUBMITTALS

A. Concrete

1. CONTRACTOR shall submit *with the Bid* laboratory reports indicating that the supplier's concrete ingredients meet requirements specified.

2. CONTRACTOR shall submit *before use of cast-in-place concrete in WORK* design mixes and laboratory test reports indicating that the concrete ingredients and proportions will result in concrete mixes meeting requirements specified.

B. Batch Tickets

CONTRACTOR shall submit, *with each batch delivered*, delivery tickets from the concrete supplier setting forth the following information:

1. Name of Supplier
2. Name of batching plant and location
3. Date
4. Serial number of ticket
5. Truck number and batch number
6. Contract number and location
7. Volume of concrete (cubic yards)
8. Maximum size of aggregate
9. Type and brand of cement
10. Weight of cement
11. Maximum size of aggregate
12. Weights of fine and coarse aggregates
13. Types and amounts of admixtures
14. Weight of water, or, alternatively, the water:cement ratio

1.03 RELATED WORK

A. Section 0250: Mine Closures
B. Section 0252: Concrete Reinforcement
C. Section 0253: Bat Gate & Shaft Grate Installation
D. Section 0254: Polyurethane Foam Mine Closures

1.04 QUALITY ASSURANCE/DESIGN CRITERIA

A. Portland Cement Concrete Mixture

Concrete for closures and structural slabs shall have a minimum compressive strength of 3,000 psi in 28 days. The concrete shall be proportioned in accordance with ACI 211. The type of cement used shall be Portland, Type II (ASTM C150). Air entrainment shall be furnished in all concrete. Air content shall be 5% ± 1%.

B. Formwork

As outlined in ACI 301, Chapter 4.

C. Reference Standards (Latest Editions)

1. ACI 211 Recommended Practice for Selecting Proportions for Normal Weight Concrete
2. ACI 301 Structural Concrete for Buildings
3. ACI 302 Guide for Concrete Floor and Slab Construction
4. ACI 304 Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete
5. ACI 305 Recommended Practice for Hot Weather Concreting
6. ACI 306 Recommended Practice for Cold Weather Concreting
7. ASTM C 31 Standard Method of Making and Curing Concrete Test Specimens in the Field
8. ASTM C 33 Specification for Concrete Aggregates
9. ASTM C 39 Test for Compressive Strength of Cylindrical Concrete Specimens
10. ASTM C 94 Specification for Ready-Mixed Concrete
11. ASTM C 150 Specification for Portland Cement
12. ASTM C 172 Sampling Fresh Concrete
13. ASTM C 494 Specification for Chemical Admixtures for Concrete

PART 2 – PRODUCTS/MATERIALS

2.01 CEMENT

Cement shall be Type II Portland cement, conforming to ASTM C 150, unless otherwise approved by the OWNER.

2.02 FINE AND COARSE AGGREGATE

Shall conform to ASTM C 33.

2.03 WATER

Water shall be potable.

2.04 ADMIXTURES

A. Chemical Admixtures: ASTM C 494.

B. Calcium Chloride will not be permitted.

2.05 FORMWORK

Form ties, fabricated so that portion remaining in the structure is at least two inches back from concrete surface.

PART 3 - EXECUTION

3.01 FORMWORK

A. Forms shall be provided for all concrete except where instructed by the OWNER.

B. Form surfaces which will be in contact with concrete shall be treated with an effective bond-breaking coating. Such coating shall also effectively prevent the absorption of water from the concrete by plywood forms.

3.02 MIXING

A. Concrete may be mixed at the job site or delivered as "ready mix" at the CONTRACTOR's option.

B. If mixed on the site, equipment and mixing procedures shall conform to ACI 301, Chapter 7.

C. If "ready mixed" concrete is used, it shall be mixed and transported in accordance with ASTM C 94.

3.03 HOT WEATHER CONCRETING

Conform to the requirements of ACI 305.

3.04 COLD WEATHER CONCRETING

Conform to the requirements of ACI 306.

3.05 PLACING

A. Concrete shall be placed in accordance with the requirements of ACI 304, Chapter 6.

B. Concrete shall be placed in forms in horizontal layers of 12 to 18 inches as near as possible to its final location.

C. Each horizontal layer shall be consolidated by using a mechanical vibrator. The vibrator shall extend into the underlying layer to weld the two layers together. The use of vibrators to move concrete horizontally within the forms shall not be permitted.

D. Concrete shall not be allowed to free fall more than 6 feet within the confines of the form work. Use tremies, hoses, chutes, or other devices where greater distance is required.

3.06 FIELD QUALITY CONTROL

The OWNER may require random samples for the purpose of quality control. CONTRACTOR shall take sample specimens of the concrete in cylindrical containers in accordance with ASTM C 31 at the point of deposit as follows:

1. One sampling, consisting of a minimum of three cylinders, shall be made for each batch of ready-mix concrete. At least one sampling shall be made for each 50 cubic yards of concrete or for each day of placing.

2. The samples shall be taken in accordance with ASTM C 172.

3. All three sample cylinders will be taken at the same time: one cylinder to be used for a 7-day test and two for a 28-day test. The average of the 28-day test results will be used for determining acceptance.

4. The 7-day and 28-day tests shall be performed in accordance with ASTM C 39.

3.07 CURING

Comply with the requirements of ACI 301.

3.08 PATCHING

All damaged and honeycombed areas shall be repaired in accordance with ACI 301, Chapter 9.

3.09 FINISH

A. Formed Surfaces - After removal of forms, patch tie holes and defects. Remove fins from surfaces.

B. Unformed Surfaces - Screed surfaces to indicated dimensions.

3.10 CONSTRUCTION JOINTS

A. Before placement of fresh concrete, CONTRACTORS shall clean reinforcing steel, welded wire fabric and joint surfaces of hardened concrete.

B. Construction joints shall be prepared and bonded as provided in Section 6 of ACI 301 for elevated slabs and ACI 302 for slabs on grade.

PART 4 - MEASUREMENT AND PAYMENT

Supplying and placing cast-in-place concrete will not be measured and paid for directly. It shall be considered incidental to Section 0250: Mine Closure, Section 0253: Bat Grate & Shaft Grate Installation, and Section 0254: Polyurethane Foam Mine Closures work. As such, cast-in-place concrete costs should be included in the bid items associated with Section 0250, Section 0253, and Section 0254.

END OF SECTION 0251

0252 Concrete Reinforcement

PART 1 - GENERAL

1.01 WORK INCLUDED

Concrete reinforcement is used in various parts of the WORK, described in Part 1 of Section 0251: Cast-in-Place Concrete. This section describes the requirements for concrete reinforcement in concrete structures. Placement of concrete reinforcement shall be as shown on the Drawings.

1.02 RELATED WORK

A. Section 0250: Mine Closures
B. Section 0251: Cast-in-Place Concrete

1.03 QUALITY ASSURANCE

Reference Standards (Latest Editions)

ACI 318	Building Code Requirements for Reinforced Concrete
ASTM A 615	Specifications for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement

PART 2 - PRODUCTS/MATERIALS

2.01 Reinforcing steel shall be made from plain or deformed new billet stock and shall conform to ASTM A 615, Grade 60.

2.02 Reinforcement chairs, hangers, spacers, or other supports shall be non-corrosive.

2.03 All reinforcement shall be free from oil, mill scale and excessive rust, or other coatings that will destroy or reduce bond.

PART 3 - EXECUTION

3.01 Reinforcement shall be accurately formed to the dimensions indicated.

3.02 All bars shall be bent cold and shall not be straightened in a manner which will injure the material.

3.03 Bars shall be spaced and positioned as shown on the Drawings.

3.04 Three (3) inches of concrete cover shall be provided for main reinforcement.

3.05 Reinforcement shall be spliced and tied in accordance with the requirements of ACI 318, and as shown in the Drawings.

PART 4 - MEASUREMENT AND PAYMENT

No separate measurement and payment shall be made for concrete reinforcement. OWNER will ascertain that concrete reinforcement meets the requirements of this section and is sized and placed in accordance with the Drawings and these Specifications. OWNER's approval for pay items including concrete reinforcement will require the OWNER's acceptance and approval of the concrete reinforcement.

END OF SECTION 0252

0253 Bat Gate & Shaft Grate Installation

PART 1 - GENERAL

1.01 WORK INCLUDED

A. CONTRACTOR shall construct steel gates or grates in the portals and shafts as specified in Section 0300: Specific Site Requirements and in accordance with this section. The purpose of the gates and grates is to maintain airflow and wildlife access while preventing human access into the mine.

B. This work shall consist of fabricating and installing steel bat gate or rebar shaft grate closures within specific mine adits and shafts. Work shall include excavation of loose material and trimming of the mine opening; drilling, placing, and grouting anchors; concrete footers; and fabrication, installation, and welding of steel gates or grates in accordance with these specifications. Refer to the Drawings for construction details.

C. The dimensions shown on Standard Drawings are generic and based upon a standard design. Actual dimensions will be determined by the mine opening size and site preparation. The CONTRACTOR shall make the necessary measurements and adjustments to ensure that a competent gate or grate is constructed that will prevent human access. Very large or irregularly shaped openings may require custom fitting or modification of the generic design in consultation with the OWNER. Minor variations in the location of the bat gate will be allowed so that the CONTRACTOR may select a stable location for the bat gate, with the approval of the OWNER.

1.02 RELATED WORK

A. Section 0250: Mine Closures
B. Section 0251: Cast-in-Place Concrete
C. Section 0252: Concrete Reinforcement
D. Section 0254: Polyurethane Foam Mine Closures
E. Section 0300: Specific Site Requirements

PART 2 – PRODUCTS/MATERIALS

2.01 BAT GATE STEEL COMPONENTS

All steel used for bat gate closure construction shall be weldable steel that meets A706 and ASTM 36 standards. or equivalent. Round stock used for horizontal crossbars, perimeter supports, anchor pins, and supplemental vertical bars shall be #8 bars (1 inch diameter) grade 60. Flat stock used for vertical supports, roof anchor plates, gussets, and lock boxes shall be a minimum of ¼" thick plate. Welding rod shall be suitable for use on steel.

2.02 REBAR SHAFT/ADIT GRATE STEEL COMPONENTS

Steel used for shaft grate crossbars and anchor pins shall be mild steel rebar meeting the requirements of ASTM A 706. Bars shall be Grade 60. Rebar used for shaft grate crossbars and anchor pins shall be #8 bars (1 inch diameter).

2.03 REBAR SHAFT GRATE I-BEAM SUPPORTS

Steel used for supplemental I-beam supports for shaft grates (see Part 3.03.E) shall be rolled steel and shall meet the requirements of ASTM A 992. I-beams shall have a minimum yield strength of 50 ksi. I-beam size is dependent on the length of the span. I-beams shall be sized as scheduled in the following table:

Beam Span Length (feet)	I-Beam Size
0 – 10	Not Required
11 – 15	W8 x 10
15 – 20	W10 x 15
20 – 25	W10 x 22
25 – 30	W10 x 33
30+	Consult engineer

2.04 ANGLE IRON

Angle Iron shall conform to ASTM A36 standards.

2.05 METAL BAR GRATING

Pre-engineered galvanized metal bar grating shall have a 500-pound point load rating over a 36-inch span.

2.06 CORRUGATED METAL PIPE (CMP)

Corrugated metal pipe shall be fabricated of 16 gauge (0.064-inch thickness) steel and shall have 2-inch by 2-inch corrugations. Fabrication shall be riveted (5/16-inch/ single rivet), welded, or helical. Continuous lap seam and continuous welded seam shall be considered equivalent in strength to two fasteners per corrugation seam. Fabrication must meet AWS "Structural Welding Codes" and AASHTO 1977 Standard Specifications for Highway Bridges. CMP galvanization shall meet the requirements of ASTM A386 for assemble products for ASTM A123 for rolled, pressed, and forged steel shapes. Galvanizing repair paint shall meet specification MIL-P-21035. All pipe couplings and hardware shall be compatible with CMP.

2.07 CONCRETE REINFORCEMENT

Steel used for concrete reinforcement shall be mild steel rebar meeting the requirements of ASTM A 615. Bars other than ties shall be Grade 60. Ties shall be Grade 40 or Grade 60. Rebar used for concrete reinforcement shall be #4 bars (½ inch diameter). All reinforcing steel shall be free from rust, scale, or other coating that will destroy or reduce the bond with the concrete.

2.08 CONCRETE

Concrete shall consist of a mixture of sand, aggregate, and cement capable of attaining a compressive strength of 3,000 psi in 28 days. Maximum size of coarse aggregate shall be ¾ inch.

2.09 EPOXY RESIN GROUT

Epoxy resin grout shall conform to the requirements of ASTM C881, Type IV, grade 3, such as Simpson ET Epoxy-Tie®, HILTI HIT HY 200 Epoxy®, or approved equivalent.

2.10 PADLOCKS

Padlocks for locking bat gates shall have a minimum 3/8" diameter shackle. Padlocks shall be heavy duty, such as the Master® No. 5D or equivalent. All locks shall be keyed the same.

PART 3 - EXECUTION

3.01 GENERAL

CONTRACTOR shall construct steel gate closures in adits and steel grate closures in shafts as specified below, as shown on the Drawings, and as specified in Section 0300: Specific Site Requirements. The final design, fabrication, and erection of the gate or grate closure shall conform to the guidelines established with these specifications and the drawings. The final design shall be the responsibility of the CONTRACTOR, subject to OWNER's approval.

3.02 BAT GATE INSTALLATION

A. Location. Variation of the bat gate closure location will be allowed so that the CONTRACTOR can select a suitable location as approved by OWNER. Parameters for suitable location shall be as follows:

1. Select an area in which competent rock is found in the roof, ribs, and floor of the adit.
2. Utilize smooth, non-fractured faces in the ribs and roof, where possible, such that the gate can be "keyed" into the rock to provide more strength and integrity to the closure.
3. Locate the bar gate closure a minimum of three feet into the adit or as approved by the OWNER.

B. Preparation. The CONTRACTOR shall scale down the roof and ribs of the adit, removing any loose rock from the area in which the bat gate closure is to be constructed and along access to the closure. The portal shall be cleaned and shaped as directed by OWNER. Historic structural features shall be preserved and maintained.

C. The concrete footer shall be poured in a trench excavated to the dimensions shown on the Drawings. Concrete shall be reinforced with #4 (½-inch) rebar on 12-inch centers with a minimum 3-inch concrete cover on all surfaces. Concrete shall not be poured until the gate steel and rebar have been installed. Concrete shall be mounded as necessary so that the gap between the top of the footer and the bottom crossbar of the gate is no larger than 4 inches. Forms will not be required unless called for by sloping conditions or deep unconsolidated floor material. If used, forms shall be sufficiently braced to prevent movement or dislocation during or after setting the gate steel and rebar in place. Forms shall be removed upon completion of the closure. Concrete construction shall be done in accordance with Section 0251: Cast-In-Place Concrete and Section 0252: Concrete Reinforcement.

D. Anchor pins shall be doweled into the adit walls a minimum of 12 inches and secured into place with epoxy resin. The CONTRACTOR shall determine the means of drilling into the rock and submit the method to the OWNER for approval prior to the start of the drilling operations. Anchor pins shall protrude from the adit ribs to attach the perimeter supports and roof anchor plates. Anchor pins shall be fillet welded to the perimeter bars. Roof anchor plates shall be 4 inches by 8 inches (typical) and welded with a continuous bead to the top of the vertical supports and the anchor pins. There shall be at least two anchor pins on each side of the adit and at least one pin for each roof anchor plate. Anchor pins shall be located in competent rock affording the most secure placement. Anchor plate and pin locations and dimensions may be adjusted to fit site conditions with approval of OWNER.

E. Perimeter bars shall be fillet welded to the anchor pins to provide a continuous steel lining on the adit ribs. Perimeter bars shall be bent or cut into segments to conform closely to irregular surfaces, with a maximum gap of 6 inches between the rib and the bar. If cut into segments, ends of segments shall be butt-welded to each other to form a continuous piece. Perimeter bars shall be installed on the outby side of the gate or as directed by OWNER. However, the perimeter bar at the position of the removable

locking bar (crossbars 4 and 5, perimeter bar welded to crossbars 3 and 6) must be on the inby side of the gate.

F. The vertical supports shall have 1⅓-inch diameter holes at the required spacing to accept the horizontal crossbars with a minimum of play. Vertical supports shall extend into the concrete footer and shall be positioned as close to the adit ribs as possible, with a maximum gap of 16 inches between the rib and the vertical support. Vertical supports shall be plumbed as directed by OWNER. The tops of the vertical supports shall be welded to the roof anchor plates with a continuous ¼-inch weld around the support.

G. Horizontal crossbars below a height of 48 inches above the top of the footer shall be spaced on 5-inch centers for a maximum gap between bars of 4 inches. Horizontal crossbars over 48 inches high shall be spaced on 6½-inch centers for gaps between bars of 5½ inches. With vertical supports and supplemental vertical bars in place, no opening in the bars below 48 inches high shall be larger than 24 inches by 4 inches. There shall be at least one opening in the top tier of bars that is 24 inches by 5½ inches, but no opening in the bars above 48 inches high shall be larger than this. Ends of horizontal crossbars shall be installed to within one inch of the adit rib surface. Except for the removable locking bar, horizontal crossbars shall be fillet welded at each intersection with the perimeter bars and supplemental vertical bars and spot welded at each intersection with the vertical supports.

H. Supplemental vertical bars shall be installed on the outby side of the horizontal crossbars on 24½-inch centers as necessary so that no gate opening is greater than 24 inches wide. Supplemental vertical bars shall be fillet welded to horizontal crossbars at each intersection. Supplemental vertical bars shall extend down to the concrete footer.

I. The lock box shall be constructed to the shape and dimensions shown on the drawings with ¼-inch fillet welds at all joints. The box shall be welded onto the vertical support at the position of the fourth and fifth horizontal crossbars from the bottom. Tolerances for the lock mechanism construction shall be sufficient to prevent vandals from accessing the padlock with common hand tools. Supplemental shields may be required to protect the mechanism.

J. The fourth and fifth horizontal crossbars shall be welded together with spacers and gussets to form a single removable, lockable unit as shown on the Standard Drawings. Gussets 4 inches square shall be fillet welded to the crossbars and spacers on both sides with a ¼-inch minimum continuous bead. The lockbox ends of the crossbars shall be shaped as shown on the drawings to accept the padlock. The free ends of the crossbars of the removable unit, when installed, shall not extend beyond the vertical support more than 18 inches. Any remaining gap between the ends of the removable crossbars and the adit rib shall be filled with immovable crossbars and vertical bars as required, following the same pattern as the rest of the gate.

K. Upon completion, soil or rock excavated for the closure preparation and footer trench shall be replaced or scattered to blend with the surroundings. The portal area shall be cleared of all construction materials, formwork, and construction-generated trash and debris. The site shall be left with a clean and finished appearance.

L. All horizontal crossbars shall be continuous. Joints, if required, shall be butt joints, with bar ends welded to each other to form a continuous piece.

M. Additional bars or plates may be required to close gaps due to irregularities in the adit rib surface or as supplemental supports, gussets, or lock shields.

N. All field welds shall be in accordance with the requirements of the American Welding Society (AWS) D.1.1.

O. Variation in the generic design or custom fitting may be required to accommodate site-specific conditions. Section 0300: Specific Site Requirements may specify alternate materials, dimensions, or design modifications for specific mine openings.

3.03 ANGLE IRON BAT GATE INSTALLATION

A. Location. Variation of the angle iron gate closure location will be allowed so that the CONTRACTOR can select a suitable location as approved by OWNER. Parameters for suitable location shall be as follows:

1. Select an area in which competent rock is found in the roof, ribs, and floor of the adit.
2. Utilize smooth, non-fractured faces in the ribs and roof, where possible, such that the gate can be "keyed" into the rock to provide more strength and integrity to the closure.
3. Locate the bar gate closure a minimum of three feet into the adit or as approved by the OWNER.

B. Preparation. The CONTRACTOR shall scale down the roof and ribs of the adit, removing any loose rock from the area in which the bat gate closure is to be constructed and along access to the closure. The portal shall be cleaned and shaped as directed by OWNER. Historic structural features shall be preserved and maintained.

C. When required a footer shall be poured in a trench excavated to the dimensions shown on the Drawings. Concrete shall be reinforced with #4 (½-inch) rebar on 12-inch centers with a minimum 3-inch concrete cover on all surfaces. Forms will not be required unless called for by sloping conditions or deep unconsolidated floor material. If used, forms shall be sufficiently braced to prevent movement or dislocation during or after setting the gate steel and rebar in place. Forms shall be removed upon completion of the closure. Concrete construction shall be done in accordance with Section 0251: Cast-In-Place Concrete and Section 0252: Concrete Reinforcement.

D. Vertical support columns shall be made of 4 inch by 3/8 inch angle iron. A minimum of 2 columns shall be placed at the openings greatest width but not exceeding 15-feet. Anchor brackets shall be secured to either competent rock or concrete footer. Anchor brackets shall be welded to the vertical support column top and bottom.

E. Horizontal bar support hangers shall be made of 6 inch by 6 inch by 3/8 inch angle iron and welded to the vertical support columns to support and secure the horizontal bars.

F. Horizontal bars shall be made of 4 inch by 4 inch by 3/8 inch angle iron. Stiffeners made of 1½ inch by 1½ inch by ¼ inch angle iron shall be added at the direction of the OWNER. Horizontal bars shall be placed so openings are no greater than 5 ¾ inches. Select horizontal bars will be welded to anchor brackets set in competent rock.

F. A removable bar will be required to be in an accessible location. The opening should be no less than 24 inches wide by 14 inches tall, allowing a loaded rescue litter to be passed through the gate in an emergency. The removable bar shall be lockable

G. The lock box shall be constructed to the shape and dimensions shown on the drawings with ¼-inch fillet welds at all joints. The box shall be welded onto the vertical support. Tolerances for the lock mechanism construction shall be sufficient to prevent vandals from accessing the lock with common hand tools. Supplemental shields may be required to protect the mechanism.

H. Upon completion, soil or rock excavated for the closure preparation and footer trench shall be replaced or scattered to blend with the surroundings. The portal area shall be cleared of all construction materials, formwork, and construction-generated trash and debris. The site shall be left with a clean and finished appearance.

I. Additional bars or plates may be required to close gaps due to irregularities in the adit rib surface or as supplemental supports, gussets, or lock shields.

J. All field welds shall be in accordance with the requirements of the American Welding Society (AWS) D.1.1.

K. Variation in the generic design or custom fitting may be required to accommodate site-specific conditions. Section 0300: Specific Site Requirements may specify alternate materials, dimensions, or design modifications for specific mine openings.

3.04 REBAR ADIT GRATE INSTALLATION

A. Location. Variation of the rebar adit grate closure location will be allowed so that the CONTRACTOR can select a suitable location as approved by OWNER. Parameters for suitable location shall be as follows:

1. Select an area in which competent rock is found in the roof, ribs, and floor of the adit.
2. Locate the bar gate closure a minimum of three feet into the adit or as approved by the OWNER.

B. Preparation. The CONTRACTOR shall scale down the roof and ribs of the adit, removing any loose rock from the area in which the rebar adit grate closure is to be constructed and along access to the closure. The portal shall be cleaned and shaped as directed by OWNER. Historic structural features shall be preserved and maintained.

C. When required a concrete footer shall be poured in a trench excavated to the dimensions shown on the Drawings. Concrete shall be reinforced with #4 (½-inch) rebar on 12-inch centers with a minimum 3-inch concrete cover on all surfaces. Forms will not be required unless called for by sloping conditions or deep unconsolidated floor material. If used, forms shall be sufficiently braced to prevent movement or dislocation during or after setting the gate steel and rebar in place. Forms shall be removed upon completion of the closure. Concrete construction shall be done in accordance with Section 0251: Cast-In-Place Concrete and Section 0252: Concrete Reinforcement.

D. As needed a rebar perimeter shall be secured to the adit walls with 1-inch round anchor dowels embedded 12 inches into competent rock or 8 inches into the optional footer.

E. The 8-inch grid of #8 rebar shall either be welded to the perimeter bar or directly embedded into the competent rock.

F. Upon completion, soil or rock excavated for the closure preparation and footer trench shall be replaced or scattered to blend with the surroundings. The portal area shall be cleared of all construction materials, formwork, and construction-generated trash and debris. The site shall be left with a clean and finished appearance.

G. Additional bars or plates may be required to close gaps due to irregularities in the adit rib surface or as supplemental supports, gussets, or lock shields.

H. All field welds shall be in accordance with the requirements of the American Welding Society (AWS) D.1.1.

I. Variation in the generic design or custom fitting may be required to accommodate site-specific conditions. Section 0300: Specific Site Requirements may specify alternate materials, dimensions, or design modifications for specific mine openings.

3.05 REBAR SHAFT GRATE INSTALLATION

A. Location. Variation of the location of the shaft grate will be allowed so that CONTRACTOR can select a suitable location for the shaft grate, with approval of OWNER. Parameters for suitable location of the rebar shaft grate shall be as follows:

1. Select an area in which competent rock is found around the collar of the shaft, if possible.
2. Select an area with minimum irregularities in the collar to avoid excessive site preparation for the construction of the grade beam around the collar.
3. Locate the grade beam at a reasonable distance (typically 3 feet minimum, or as directed by the OWNER) from the shaft collar to reduce the possibility of collapse of the collar of the shaft.
4. Grates at shafts with competent rock collars where grade beams are omitted shall be installed at grade or inside the opening to a maximum depth of 3 feet below grade.

B. Preparation. CONTRACTOR shall excavate to solid rock where the grade beam is to be constructed where the depth does not exceed two feet to bedrock. Any mud, clay, moss, or other materials where the grade beam is to be constructed which would be deleterious to the integrity of the grate or grade beam and would not allow good bonding of the concrete to the rock shall be removed. Historic structural features shall be preserved and maintained. Drainage shall be provided for any water that would accumulate on either side of the grade beam. Excavated materials shall be set aside for replacement later.

C. Where possible, concrete grade beams shall be constructed on competent foundation rock which is not friable, subject to deterioration, or otherwise unacceptable and the foundation rock is approved by OWNER. The grade beam shall be a minimum of 12 inches high and 12 inches wide. Grade beams for grates that require supplemental support as specified in Part 2.03 shall be a minimum of 18 inches high and 12 inches wide, or as directed by OWNER. Grade beams shall be pinned to the foundation rock using #8 rebar anchor pins installed a minimum of 18 inches into the rock, grouted, and set 2 inches below the upper surface of the grade beam. Rebar anchor pins shall be located on 32-inch centers maximum.

D. Forms will be required for all grade beams. Forms shall be sufficiently braced to prevent movement or dislocation during or after setting the grate steel and rebar in place. Concrete shall be reinforced with #4 rebar as shown on the Drawings. Concrete shall not be poured until the grate steel and rebar have been installed when not using angle ledger bracket to support grate. Concrete shall be poured in one continuous operation and shall be free of cold joints. The grade beam shall be free of any voids within the beam structure and shall be 100 percent concrete construction. Concrete construction shall be done in accordance with Section 0251: Cast-In-Place Concrete and Section 0252: Concrete Reinforcement.

E. Grates larger than 10 feet on the short-dimension side (measured from the interior sides of the grade beam) shall be constructed with one or more supplemental supports for the grate as specified in Part 2.03 above and Section 0300: Specific Site Requirements. The supports shall be rolled steel I-beams centered. The I beam shall typically run across the short dimension (“L” Side) span. For when the long dimension (“B” Side) span is greater than 20 feet but less than twice the size of the “L” side and less than 30 feet, the I beam shall run along the (“B” Side) span. The OWNER may specify the location and orientation of I beam(s) for cupola placement. The I-beam supports shall be positioned directly beneath the crossbars and will be either embedded into the grade beam, placed on a minimum of 12 inches of competent rock, or placed on a hanger bracket that is secured to a grade beam or competent rock. The height of the grade beam will be adjusted as needed to accommodate additional height of the I-beam supports.

F. Crossbars shall be installed in the grade beams running each direction on 8-inch centers to form a square grid. Crossbars shall be positioned a minimum of 4 inches below the top surface of the grade beam. Crossbars running the short dimension of the grate shall be placed underneath, except where there is a supplemental I-beam support. Each intersection of the crossbar grid shall be fillet welded on the upper side.

G. In shafts with competent collars, grade beams may be omitted with approval of the OWNER. Rebar anchor pins shall be installed a minimum of 12 inches into the collar. At least 4 anchor pins shall be installed, with a maximum spacing of 32 inches between pins. Support bars shall be welded to the anchor pins. Grate crossbars shall be installed on the support bars, running each direction on 8-inch centers to form a square grid. Each intersection of the crossbar grid and each contact with the support bars shall be fillet welded on the upper side.

H. Crossbars shall be continuous. Lap joints, if required, shall be a minimum of 5 inches with continuous fillet welds along both sides of the lap joint.

I. Rebar cage shall be used when needing to elevate the top of the closure structure. The cage can be formed into an irregular geometry for complex structures. A grade beam will be placed around the collar of the shaft. All rebar embedded into the grade beam shall maintain 3 inches of concrete cover. All vertical sides will need a horizontal bar directly beneath to support the top of the cage. For cages over 2½ feet above the grade beam, vertical angle iron supports are recommended for additional strength. For larger openings requiring an I-Beam, see the drawing for supports used.

J. All field welds shall be in accordance with the requirements of the American Welding Society (AWS) D.1.1.

K. Upon completion, the collar areas shall be cleared of all construction materials, formwork, and construction-generated trash and debris. Material excavated for the grade beam preparation shall be backfilled against the beam. Excess material shall be blended into the surrounding area. The site shall be left with a clean and finished appearance.

L. Variation in the generic design or custom fitting may be required to accommodate site-specific conditions. Section 0300: Specific Site Requirements may specify alternate materials, dimensions, or design modifications for specific mine openings.

M. CONTRACTOR shall construct bat cupolas as directed by the OWNER. Bat cupolas shall be placed on angle iron supports that are aligned with the grate system. Angle iron support will be embedded into the grade beam OR attached to hangers mounted on the grade beam OR perimeter rebar support OR I-beam. Standard bat cupola dimension shall be 4 feet by 4 feet by 2½ feet tall made of angle iron supports and either round stock or rebar to form bat flyways. Bat flyways shall be 5¾ inches tall and can vary in width but must be a minimum of 24 inches. Flyways may be placed on any side of the cupola. At the direction of the OWNER, an 8-inch on center grid of #8 rebar may be placed on any side of the cupola.

3.06 CMP BAT GATE (ADIT GATE) INSTALLATION

A. Bat gates shall be installed in CMP culverts in unstable locations where gates cannot be anchored directly to competent rock. Culverts may be round or elliptical. Culvert diameters and lengths will be specified in Section 0300: Specific Site Requirements. Culverts will typically be the largest diameter that will fit the opening. Culverts will typically extend inby the brow to competent rock or a minimum distance of twice the adit height. Culverts will typically extend outby the brow 2 feet past the backfill line.

B. Adit Preparation. The CONTRACTOR shall scale down the roof and ribs of the adit, removing any loose rock from the area in which the CMP bat gate closure is to be constructed and along access to the closure. The portal shall be cleared of obstructions, trimmed, and shaped as directed by OWNER to receive the culvert. Historic structural features shall be preserved and maintained.

C. Pipe Bed. A pipe bed of sand, crushed rock, fine mine dump material (minus 3-inch) or equivalent shall be placed a minimum 4 inches thick on the adit floor. The bed shall have a constant grade and shall provide continuous support for the culvert along its entire length. Where the height of the adit is substantially greater than the culvert diameter, unclassified fill may be placed in the adit to raise the culvert to the desired elevation. Pipe bedding will then be placed on the unclassified fill.

D. Culvert Installation. The culvert shall be slipped into position in the adit onto the pipe bed. The culvert shall be supported by bedding along its entire length when in place. Care shall be taken to avoid buckling or joint separation during handling and subsequent backfilling operations.

E. Bat Gate Installation. The bat gate may be installed before or after placement of the culvert in the adit. The bat gate shall be installed as described in Part 3.02 above, with the following changes: the vertical supports and horizontal crossbars extend through the culvert a minimum of 6 inches and extend beyond the culvert to within 3 inches of the outer perimeter of the concrete headwall (collar). Perimeter bars are not required. All crossbars shall be spaced on 5-inch centers for a maximum gap between bars of 4 inches. No opening in the bars shall be larger than 24 inches by 4 inches.

F. Headwall. A concrete headwall shall be constructed around the culvert and bat gate. The headwall shall be a minimum of 12 inches thick and shall extend out from the culvert a minimum of 12 inches in each direction. The headwall shall be centered on the bat gate. The concrete shall be reinforced with a single mat of #4 (½-inch) rebar on 12-inch centers. Concrete shall not be poured until the gate steel and rebar have been installed. Concrete shall be poured in one continuous operation and shall be free of cold joints. The headwall shall be free of any voids and shall be 100 percent concrete construction. Concrete construction shall be done in accordance with Section 0251: Cast-In-Place Concrete and Section 0252: Concrete Reinforcement.

G. Backfill. The gap between the culvert and the adit walls shall be completely backfilled for the full length and full circumference of the culvert. Polyurethane foam (PUF) shall be used to plug the interior reach of the gap. PUF application shall be in accordance with section 0254: Polyurethane Foam Mine Closures. PUF can be injected through holes drilled in the culvert every three feet to reach inaccessible areas. Worker area shall be adequately ventilated during PUF installation. Unclassified fill shall be used to fill the exterior reach of the gap. Earthen backfill shall extend a minimum of 4 feet inby the brow. Backfill shall be placed by hand and tamped. Backfill outby the brow may be place by machine and shall be placed in 12-inch lifts and compacted until reaching the top of the pipe. The area around the culvert and headwall shall be backfilled to blend with the adjacent slopes. Final grade shall provide positive drainage away from the adit.

H. Upon completion, the area shall be cleared of all construction materials, formwork, and construction-generated trash and debris. The site shall be left in a clean and finished appearance.

I. Variations in the generic design or custom fitting may be required to accommodate site-specific conditions. Section 0300: Specific Site Requirements may specify alternate materials, dimensions, or design modifications for specific mine openings.

3.07 ANGLE IRON BAT CUPOLA INSTALLATION

A. Location. Variation of the location of the shaft grate will be allowed so that CONTRACTOR can select a suitable location for the shaft grate, with approval of OWNER. Parameters for suitable location of the rebar shaft grate shall be as follows:

1. Select an area in which competent rock is found around the collar of the shaft, if possible.
2. Select an area with minimum irregularities in the collar to avoid excessive site preparation for the construction of the grade beam around the collar.
3. Locate the grade beam at a reasonable distance (typically 3 feet minimum, or as directed by the OWNER) from the shaft collar to reduce the possibility of collapse of the collar of the shaft.

B. Preparation. CONTRACTOR shall excavate to solid rock where the grade beam is to be constructed where the depth does not exceed two feet to bedrock. Any mud, clay, moss, or other materials where the grade beam is to be constructed which would be deleterious to the integrity of the grate or grade beam and would not allow good bonding of the concrete to the rock shall be removed. Historic structural features shall be preserved and maintained. Drainage shall be provided for any water that would accumulate on either side of the grade beam. Excavated materials shall be set aside for replacement later.

C. Where possible, concrete grade beams shall be constructed on competent foundation rock which is not friable, subject to deterioration, or otherwise unacceptable and the foundation rock is approved by OWNER. The grade beam shall be a minimum of 12 inches high and 12 inches wide. Grade beams shall be pinned to the foundation rock using #8 rebar anchor pins installed a minimum of 18 inches into the rock, grouted, and set 2 inches below the upper surface of the grade beam. Rebar anchor pins shall be located on 32-inch centers maximum. Vertical support column pins using #8 rebar shall be embedded in the grade beam a minimum of 8 inches and will stick out of the grade beam a minimum of 1 inch. The pins will be placed in the approximate location of the vertical support columns and main cross bars.

D. Forms will be required for all grade beams. Forms shall be sufficiently braced to prevent movement or dislocation during or after setting the rebar in place. Concrete shall be reinforced with #4 rebar as shown on the Drawings. Concrete shall be poured in one continuous operation and shall be free of cold joints. The grade beam shall be free of any voids within the beam structure and shall be 100 percent concrete construction. Concrete construction shall be done in accordance with Section 0251: Cast-In-Place Concrete and Section 0252: Concrete Reinforcement.

E. Grates larger than 10 feet on the short-dimension side (measured from the interior sides of the grade beam) shall be constructed with one or more supplemental supports for the grate as specified in Part 2.03 above and Section 0300: Specific Site Requirements. The supports shall be rolled steel I-beams centered or equally. The I beam shall typically run across the short dimension (“L” Side) span. For when the long dimension (“B” Side) span is greater than 20 feet but less than twice the size of the “L” side and less than 30 feet, the I beam shall run along the “B” span. The OWNER may specify the location and orientation of the I beam(s). The I-beam supports shall be place on a vertical support column as specified in Part 3.05 Section F

F. Vertical support columns

1. I-beam support columns shall be 4-inch by 3/8-inch metal square tubing. Base plates shall be made of 10-inch square by ½-inch plate with holes drilled onsite to accepts the vertical support column pins. Four ¾-inch round all thread rods shall be embedded 8 inches into the collar and set with HILTI HIT HY 200 Epoxy or

equivalent. Bearing plates shall be used between the I-beam and the vertical support column.

2. All other vertical support columns (not I-beam bearing) shall be made of 4-inch by 3/8-inch angle iron. The columns shall be placed on 120-inch centers along the shortest spanning side ("L" side) direction and 36-inch centers on the greatest spanning side ("B" Side). Six-inch by 8-inch steel plate shall be used as a sill plate with holes drilled in to accept the vertical support column pins. Sill plates shall be welded to the vertical support column pins. Columns shall be welded to the sill plates using 3/16-inch rod. The "B" side exterior top bar shall be made of 4-inch by 3/8-inch square tubing and welded directly on top of the vertical support columns.

3. Horizontal bar supports shall be made of 6-inch by 3/8-inch angle iron and welded to the vertical support columns to support and secure the horizontal bars. Horizontal bars shall be placed so openings are no greater than 5¾ inches.

G. Main cross bars shall typically be installed parallel to the "L" side. Main cross bars shall be made of 4-inch by 3/8-inch thick angle iron and can either be butt spliced on the I-beam or run continuous with tabs cut out to accept the I-beam. The main cross bars shall be placed on 36-inch centers approximately above the vertical support columns. The ends of the main cross bars shall be coped to fit around the "B" side exterior top bar and welded in both the horizontal and vertical directions. Angle blocking made of 4-inch by 3/8-inch angle iron shall be installed between the main cross bars on 60-inch centers. The angle blocking must fit tightly between the main cross bars but do not have to coped. The angle blocking shall be welded in place with 3/16-inch field welds on each end.

H. Rebar anchor pins shall be installed a minimum of 12 inches into the collar. At least 4 anchor pins shall be installed, with a maximum spacing of 32 inches between pins. Support bars shall be welded to the anchor pins. Grate crossbars shall be installed on the support bars, running each direction on 8-inch centers to form a square grid. Each intersection of the crossbar grid and each contact with the support bars shall be fillet welded on the upper side.

I. Pre-engineered galvanized metal bar grating (i.e. McNichols Bar Grating GW-125 bar height 1¼ inches by bar thickness $^{3}/_{16}$ inch) rated for 500 LBS point load over 36-inch span shall be welded to top of main cross bars and blocking.

J. All field welds shall be in accordance with the requirements of the American Welding Society (AWS) D.1.1.

K. Upon completion, the collar areas shall be cleared of all construction materials, formwork, and construction-generated trash and debris. Material excavated for the grade beam preparation shall be backfilled against the beam. Excess material shall be blended into the surrounding area. The site shall be left with a clean and finished appearance.

L. Variation in the generic design or custom fitting may be required to accommodate site-specific conditions. Section 0300: Specific Site Requirements may specify alternate materials, dimensions, or design modifications for specific mine openings.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS FOR PAYMENT

A. Bat Gate and Shaft Grate Installation is bid and paid on a lump sum basis. Estimated quantities are provided in Section 0300, the appendices, and on the Bid Schedule to serve as a guide in outlining the scope of work, but bidding is not on a unit price basis.

The lump sum BID PRICE need not equal the product of the estimated quantity times a unit price. Variation in Quantity Unit Prices are requested on the Bid Schedule for the purpose of adjusting the lump sum BID PRICE in cases where the actual quantity of WORK performed differs from the estimated quantity.

B. The actual final quantities for the major tasks or categories of materials may differ from the estimated quantities shown in the site-specific information in Section 0300, the appendices, or the Bid Schedule. The estimated quantities are based on information gathered and interpreted from surface investigations.

C. Should the CONTRACTOR estimate the quantity of bat gate and shaft grate installation to be greater than 15% above the estimated quantity shown in the Bid Schedule, the CONTRACTOR must negotiate a CHANGE ORDER with the OWNER for additional WORK prior to undertaking the additional WORK. The adjustment to the lump sum BID PRICE will be based on the Variation in Quantity Unit Price on the Bid Schedule and the variance above 115% of the estimated quantity. The method of measurement for quantities shall be determined prior to undertaking the additional WORK.

D. When the actual quantity of bat gate and shaft grate installation completed as determined by measurement is greater than 15% below the estimated quantity on the Bid Schedule, the OWNER will negotiate a reduction in the lump sum BID PRICE based on the Variation in Quantity Unit Price on the Bid Schedule and the variance below 85% of the estimated quantity. This price adjustment shall be executed by a CHANGE ORDER.

4.02 MEASUREMENT

A. Bat Gate and Shaft Grate Installation is a lump sum bid item that does not require measurement of quantities for payment. At each mine site or mine feature itemized for WORK in the Bid Schedule, the OWNER must approve and accept the WORK as set forth above before any payment on that item can be requested.

B. Site preparation, roof support, grade beam construction, I-beam placement, drainage work, monument installation, and grading will not be measured for direct payment but will be considered subsidiary to bat gate and shaft grate installation. Costs for these subsidiary products or tasks are to be absorbed into the lump sum BID PRICE for the associated bat gate and shaft grate installation as described in this section. The lump sum BID PRICE amount for bat gate and shaft grate installation, as modified by any CHANGE ORDERS, shall be full compensation for all labor, materials, tools, equipment, services, and all other costs necessary to perform the WORK as described in this section.

C. Measurement of bat gate and shaft grate installation for adjustments to the lump sum BID PRICE as described in Part 4.01.C and D above shall be as follows:

1. Areas of bat gates will be expressed in square feet and measured by taking the product of the average height above the footer times the average width.

2. Areas of rebar shaft grates will be expressed in square feet and measured by taking the product of the average length times the average width. Unusually shaped grates not roughly rectangular may be approximated as the sum of equivalent rectangles and triangles. Grade beam grates will be measured from the inside surface of the grade beam (i.e. dimensions of exposed steel grate).

4.03 PAYMENT

A. Payment for bat gate and shaft grate installation will be for each itemized mine site or mine feature at the lump sum BID PRICE, as modified by any CHANGE ORDERS.

Payment will only be made for completed WORK that is accepted and approved by the OWNER. No partial payments will be made for individual items of WORK.

B. Payment at the lump sum BID PRICE, as modified by any CHANGE ORDERS, shall be full compensation for all labor, materials, tools, equipment, services, and all other costs and incidentals necessary to perform the WORK in this section in accordance with the Standard Drawings and Specifications.

END OF SECTION 0253

0254 Polyurethane Foam Mine Closures

PART 1 - GENERAL

1.01 DESCRIPTION

The polyurethane foam (PUF) closure of adits consists of installing a bulkhead form, installing PUF to specifications, and backfilling over the PUF with random fill. In shafts, the closure work consists of installing a bottom form, installing PUF to specifications, installing drainage material, topping the PUF with a layer of concrete, and backfilling over the PUF to the specified level with random fill. For shafts, one ventilation/drainage pipe is required. Refer to the drawings for construction details.

1.02 SUBMITTALS

CONTRACTOR shall submit *with the Bid* the proposed construction procedures, including a description of the form materials to be used and the foam application equipment or method.

1.03 RELATED WORK

A. Section 0250: Mine Closures
B. Section 0251: Cast-In-Place Concrete
C. Section 0252: Concrete Reinforcement
D. Section 0300: Specific Site Requirements

PART 2 - PRODUCTS/MATERIALS

2.01 FORMWORK

A. The forms and cross members may consist of any commonly available building materials capable of sustaining the initial lift of two to four feet of PUF. Examples of acceptable forms and cross members include but are not limited to, the following:

Cross-Member & Bottom Form
Rebar & Plywood
2x4s & Cardboard or Chicken Wire
Dowels & Paneling
Cardboard Tubes & Carpeting
Blocks of PUF (generated onsite)
Waterbed Mattresses (inflated remotely in the shaft with a hose and air compressor)

B. Any combination of the above noted materials that achieves the required performance will be acceptable. Alternate bottom forms will be acceptable upon approval by the OWNER.

C. Any breach in the bottom form caused by vandals or rock fall is required to be repaired before the arrival of the PUF applicators to the site. The CONTRACTOR is responsible for the integrity of the bottom form, and the loss of any polyurethane should it fail.

2.02 POLYURETHANE FOAM (PUF)

PUF is required to have a minimum installed density of 1.85 pounds per cubic foot (pcf). PUF characteristics shall conform to the minimum following standards:

PUF CHARACTERISTIC	STANDARD	SPECIFIED IN
Density	1.85 pcf, nominal	
Closed cell content	90%	ASTM D-2856

PUF CHARACTERISTIC	STANDARD	SPECIFIED IN
Compressive strength	25 psi	ASTM D-1621
Tensile strength	40 psi	ASTM D-1623
Shear strength	25 psi	ASTM C-273
Water absorption	0.10 lb/sq ft	ASTM D-2842
Exothermic Reaction Rate	Low	

Polyurethane foam used shall be 100% water-blown and may not contain any CFC's (chlorinated fluorocarbons) or other low boiling point hydrocarbon solvents.

2.03 PROPORTIONING UNIT

A. The proportioning unit shall be capable of attaining a minimum temperature of 125°F. The proportioning unit shall be Gusmer Model H-11 or equivalent. For remote sites, or with approval of the OWNER, smaller capacity proportioners will be acceptable. In this event, the proportioner shall be the Gusmer FF, or equivalent.

B. Minimum heated hose length from proportioner to gun shall be 80 feet. The hose shall maintain or increase component temperature from the proportioner. Longer heated hose lengths may be required depending upon distance from the proportioning unit to the reclamation site.

2.04 APPLICATION GUN

The application gun shall be capable of mixing plural components in the proper ratio at the minimum acceptable output of four pounds per minute. The gun shall be a Gusmer AR mechanically self-cleaning design, or equivalent.

2.05 PREPACKAGED, PRE-PROPORTIONED PUF KITS

PUF products consisting of factory prepared kits that are designed to combine and dispense pre-measured quantities of components in the proper ratios may be used in place of an onsite proportioning unit and application gun, with the approval of OWNER. One such product is the foam closure bag manufactured by Foam Concepts Inc. (see Part 2.10 below). PUF kits shall be used according to the manufacturer's specifications.

2.06 CEMENT PLUG

Concrete for the cement plug shall have a minimum compressive strength of 3,000 psi in 28 days. The concrete shall be proportioned in accordance with ACI 211. The type of cement used shall be Portland, Type II (ASTM C150). Air entrainment shall be furnished in all concrete. Air content shall be 5%± 1%. Water/cement (W/C) ratio is approximately 0.49 with minimum cement content of 564 lbs/CY. Concrete mixed at the jobsite shall be in accordance with ACI 301, chapter 7. Ready mix concrete shall be in accordance with ASTM C94.

2.07 FILTER CLOTH

The filter cloth, either woven or non-woven at the CONTRACTOR's option, shall have a minimum thickness of 15 mil in accordance with ASTM D-1777 and a minimum permeability of 10^{-2} cm/sec, such as Fibertex 150® manufactured by Crown Zellerbach or equivalent approved by OWNER. Prior to installation, the CONTRACTOR shall provide the OWNER with documentation that the filter cloth furnished meets the chemical, physical and manufacturing requirements of this Section.

2.08 VENTILATION/DRAIN PIPE

The ventilation/drain pipe shall consist of 2-inch diameter steel pipe. Plastic pipe shall not be used because the heat of the foam reaction can melt it.

2.09 RANDOM FILL MATERIAL

Random fill material shall consist of native on-site soils and rock. The types of miscellaneous fill material to be used shall be approved by the OWNER prior to initiating the work.

2.10 SUPPLIERS OF PUF

Potential suppliers of polyurethane foam (PUF) are:

Foam Concepts, LLC
29 9th Street North
P.O. Box 217
Cloquet, MN 55720
4255 South Eagleson Road
Boise, ID 83705
(800) 556-9641
(218) 327-1196 FAX
E-mail: sales@foamconceptsllc.com
http://www.foamconceptsllc.com
Vendor of Equipment-less Foam Sealant™.

Utah Foam Products
Ernest Wilson Co.
3609 South 700 West
Salt Lake City, Utah 84119
Contact: Dennis Beckstead
(801) 269-0600 Utah Foam Products
(801) 265-9444 Ernest Wilson Co.
(801) 269-0620 FAX
E-mail: info@utahfoam.com
UFP is a supplier of raw materials. EWC is the contracting arm of the company.

Ron Walker
Azco Construction
2055 West US Highway 50 East
Penrose, Colorado 81240-9575
(719) 372-6872
General contractor with PUF equipment.

A Urethane Service and Supply
2200 West 2300 South
West Valley City, Utah 84119
(801) 974-0995
(801) 974-3058 FAX
E-mail: urethane@qwest.net
Roofing contractor.

T&W Wilson Spray Urethane
7200 South 2700 West
West Jordan, Utah 84084
Contact: Terry Wilson
(801) 566-1020
(801) 566-6620 FAX
Roofing contractor.

Mine Seal, LLC
P.O. Box 231329
Las Vegas, NV 89123
(480) 229-3149
(480) 782-1615 FAX
Mine closure consulting firm.
www.mine-seal.com

Paul Johnson
NCFI Polyurethanes
P.O. Box 1528
Mount. Airy, NC 27030
(602) 329-0124
http://www.NCFI.com

Most roofing contractors that apply PUF roofing should be capable of providing the appropriate product for mine closure use.

These names are provided for the convenience of bidders. Other vendors may exist. The OWNER does not endorse or warrant the reliability or product of any of these vendors.

PART 3 - SAFETY

3.01 WORKER PROTECTIONS

A. PUF shall be applied by workers wearing organic respirator masks and safety glasses or goggles. State or Federal regulations requiring additional equipment shall supersede these specifications.

B. There shall be no welding, smoking, or open flame within 100 feet of PUF application. A minimum 15-pound, class ABC fire extinguisher must be on site at the mine opening where the PUF is being applied during foam application.

C. Oxygen Content of Working Area

1. An oxygen meter must be used to test air before and during installation of the bottom forms. The oxygen meter will be supplied by the CONTRACTOR and operated only by the Certified Person. Refer to Section 0200, Part 1.04.C and Section 0250, Part 1.04.

2. Oxygen Meter. The oxygen meter shall be a National Mine Service (NMS) OX231 oxygen meter or equivalent. The oxygen meter shall continuously monitor oxygen levels and have an audible warning. If the oxygen content falls below 19%, all personnel must withdraw from the working area in the mine until the oxygen content increases to safe levels.

3. Any remedy for increasing oxygen content of the working area and/or providing ventilation from the surface must be determined in consultation with the OWNER and the Certified Person.

3.02 MATERIAL HANDLING AND TRANSPORT

A. Materials shall be stored per the manufacturer's specifications. All safety precautions outlined by the Polyurethane Division of the Society of Plastics Industries, NFPA, OSHA, EPA and the manufacturer's Material Safety Data Sheets (MSDS) shall be observed. MSDS and technical data sheets shall be on-site and available at all times.

B. The CONTRACTOR shall follow all applicable State and local regulations for transport and use of PUF and chemicals required for cleanup. The CONTRACTOR shall also obtain any necessary permits for transportation. The CONTRACTOR shall be aware of agencies and jurisdictions requiring notification in the event of a component leak or spill. In the event of a leak or spill, the CONTRACTOR shall notify the appropriate parties.

PART 4 - EXECUTION

4.01 SHAFT CLOSURE INSTALLATION

A. CLEARING DEBRIS

Clear debris other than fixed, attached or permanent structures from the shaft before PUF is installed *as directed by the OWNER*. Historic structural features shall be preserved and maintained. Any historic debris removed shall be placed neatly to the side of the opening.

B. FORMWORK

1. The formwork shall be installed below the surface of the shaft at the bottom of the foam depth level. The depth of foam required to plug a shaft shall be determined by the following formulas, where *"a"* is the smaller dimension of a rectangular shaft opening and *"b"* is the larger dimension:

a. for shafts where $a = b$, the depth of foam should be: $2a$.
b. for shafts where $a < b < 3a$, the depth of foam should be: $2a + ½(b-a)$.
c. for shafts where $b > 3a$, the depth of foam should be: $3a$.

2. Cross-member supports may be placed at an angle not more than 20 degrees from horizontal as long as both ends are seated in the shaft. The bottom form shall be set

over the cross-members. Formwork may be suspended from ropes or attached to and lowered on the ventilation/drain pipe to avoid placing personnel inside the shaft.

3. Bottom forms shall be completed prior to application of any polyurethane foam. Depending on the particular chemical components and application system used, foam reactions times will vary. PUF may still be a liquid when it hits the bottom form. Experience has shown that there can be a substantial loss of PUF to leakage through holes in the form or gaps between the edge of the form and the shaft walls in the 10-20 seconds it takes for the PUF to expand and seal the bottom. The CONTRACTOR is responsible for the integrity of the bottom form and for the loss of any polyurethane should it fail.

4. The installed depth to bottom form shall be indicated on the as-built drawings for polyurethane foam closures, if required.

C. VENTILATION/DRAIN PIPE

1. The ventilation/drain pipe shall be placed over a portion of the bottom form unobstructed by cross-members. The ventilation/drain pipe shall be open to the shaft after installation of the foam. The ventilation/drain pipe shall be supported by a tripod or other load-bearing device such that the load is not placed on the bottom form and secured so that the pipe does not move.

2. The 2-inch steel ventilation/drain pipe shall be installed into the approximate center of the PUF installation and shall extend vertically to the lines and grades as shown on the Standard Drawings.

3. The steel ventilation/drain pipe shall extend up through the entire PUF and concrete plug installation to provide ventilation and a watercourse through the entire structure. The 2-inch steel pipe shall be cut off level at the top of the concrete plug.

D. POLYURETHANE FOAM (PUF) APPLICATION

1. PUF shall be applied in lifts with a maximum rise of 1.5 feet. Installed PUF lifts shall pass through the tack free stage before applying the next lift. At no time shall sprayed or poured PUF cut into rising foam. The PUF shall be applied in such a manner that the entire void is filled, and that shadow zones or voids are not created during PUF application, and does not raise the temperature to unsafe levels. At the discretion of the OWNER, thermocouples may be used to monitor exothermic generation. PUF application shall cease if heating or off-ratio foam is observed. The CONTRACTOR shall remedy off-ratio foam and demonstrate proper quality PUF to the OWNER before application resumes. See Part 4.03 below for characteristics of off-ratio foam.

The PUF cooling and curing time shall adhere to the following table:

AREA OF OPENING BEING PUF'ED (SQUARE FEET)	COOLING/CURING TIME BETWEEN 18-INCH LIFTS	ADDITIONAL COOLING/CURING TIME AFTER FOUR CONTINUOUS 18-INCH LIFTS (6 FEET)
0-20	20 minutes	20 minutes
21-50	30 minutes	30 minutes
51-90	35 minutes	35 minutes
Greater than 90	45 minutes	45 minutes

[This paragraph revised 10/23/13.]

2. The surface of the void to be filled shall be as free as possible of grease and standing water. PUF shall not be applied to surfaces with running water. Remedial action for such situations shall be specified by the OWNER. Polyurethane foam shall not be applied directly to a debris plug, but must be applied to a bottom form of known physical and chemical properties. PUF shall not be applied during rain unless the foam is protected from interaction with water by a physical barrier.

3. If off-ratio PUF is observed, the applicator must stop, correct the imbalance and continue application with the proper ratio PUF. Correction and determination of the foam ratio shall be done on a plastic sheet away from the work area. Any lift of off-ratio PUF comprising over two percent (2%) of the intended PUF column height shall be removed. An amount of off-ratio PUF less than two percent (2%) of the specified volume may remain if allowed to cool, and if the outer perimeter of off-ratio foam is removed.

4. The CONTRACTOR shall be responsible for any lost or damaged equipment. In addition, damages or claims arising from PUF overspray shall be the responsibility of the CONTRACTOR. Under no circumstances shall foreign material be placed in the PUF unless specifically authorized by the OWNER. Non-PUF materials must be non-toxic, non-hazardous and not compromise the strength or water saturation characteristics of the PUF.

5. Upon reaching the specified grade as shown on the Standard Drawings, the CONTRACTOR shall clean up PUF operations and wait a minimum of one hour before initiating construction of the concrete plug.

E. CONCRETE PLUG

1. The concrete plug shall be placed directly on top of the polyurethane foam (PUF) as shown on the Standard Drawings and be one foot thick unless otherwise specified in Section 0300, covering the entire width of the opening. There shall be complete contact along the entire perimeter of the plug with the opening walls.

2. The CONTRACTOR shall determine the means of concrete plug placement and submit it to the OWNER for approval prior to the start of construction.

3. The top of the concrete plug shall be reasonably smooth and completed to provide drainage to the 2-inch steel ventilation/drain pipe.

4. Placement of backfill on top of the concrete plug will not be allowed until the structure has cured for a minimum of 24 hours.

F. FILTER CLOTH

1. The geotextile filter cloth shall be placed in all required structures in a manner acceptable to the OWNER.

2. Fabric shall be rejected at the time of installation if it has defects, rips, holes, flaws, deterioration or damage incurred during manufacture, transportation or storage. Fabric damaged before or during the installation shall be replaced at the CONTRACTOR's expense.

3. The fabric shall be placed without stretching and shall lie smoothly in contact with the concrete plug surface. Each strip shall be continuous in width with no joints. The fabric shall be placed with overlapping seams perpendicular to the long axis of the opening. When end overlapping of strips is necessary, the joints shall be overlapped a minimum of two feet and pieces laid out to minimize the number and length of

overlaps. The work shall be scheduled so that not more than one day elapses between the placement of the fabric and the time it is covered with the specified material.

4. The filter cloth shall be installed over the top of the concrete plug and 2-inch PVC ventilation/drain pipe so that free drainage is possible.

G. RANDOM FILL MATERIAL

1. Random fill material shall consist of on-site, native materials as approved by the OWNER. Fill material shall be placed to the thickness shown on the Standard Drawings.

2. Materials for random fill material shall be placed by methods to produce a uniform mass. The first two-foot lift shall be placed by hand or bucket to lower the velocity of impact against the concrete plug. The final surface of the backfilled opening shall be mounded a minimum of one foot above the original ground. Care should be taken not to plug the drain pipe with fill material.

H. SITE CLEAN-UP

All construction-generated trash and debris, such as scrap materials and spilled PUF or concrete, shall be cleaned up and removed. CONTRACTOR shall avoid spraying foam at undesignated targets. Improperly applied PUF and overspray shall be removed.

I. MODIFIED PUF CLOSURE (RECESSED SURFACE)

The standard PUF closure design may be modified for certain shafts designated as historically significant. For these openings, the top surface of the random fill material shall be recessed inside the shaft opening to within three feet of the adjacent ground surface. The minimum thickness of the random fill layer shall be two feet. The positions of the bottom form, PUF, and concrete are lowered accordingly. The intent of the recessed fill is to maintain the original appearance of the opening while still eliminating a serious fall hazard. Surfaces of the shaft collar and any structural elements such as timber cribbing or skip guides that will remain exposed above the PUF plug shall be masked with plastic sheeting during the PUF application to keep spatters off those surfaces. Shafts designated as historically significant and requiring a recessed closure are listed in Section 0300: Specific Site Requirements and/or the appendices.

J. ANGLE IRON CUPOLA FOR PUF CLOSURES

1. Concrete grade slabs shall be constructed on top of completed PUF. The slab shall be a minimum of 12 inches thick. For CMP 30-inch or less, the slab shall be 72 inches by 72 inches; CMP 48-inch to 30-inch, the slab shall be 120 inches by 120 inches.

2. Forms will be required for all slabs. Forms shall be sufficiently braced to prevent movement. Concrete shall be reinforced with #4 rebar as shown on the Drawings. Concrete shall be poured in one continuous operation and shall be free of cold joints. The slab shall be free of any voids within the slab structure and shall be 100 percent concrete construction. Concrete construction shall be done in accordance with Section 0251: Cast-In-Place Concrete and Section 0252: Concrete Reinforcement.

3. Vertical support columns shall be made of 4-inch by 3/8-inch angle iron. The columns shall be placed on 28-inch centers on all sides. Six-inch by 8-inch steel plate shall be used as a sill plate with holes drilled in to accept the vertical support column pins. Sill plates shall be welded to the vertical support column pins. Columns shall be welded to the sill plates using 3/16-inch rod.

4. Horizontal bar supports shall be made of 6-inch by 3/8-inch angle iron and welded to the vertical support columns to support and secure the horizontal bars. Horizontal bars shall be placed so openings are no greater than 5¾ inches.

5. Main cross bars shall be installed parallel to each other and aligned with vertical supports. Main cross bars shall be made of 4-inch by 3/8-inch thick angle iron.

6. Angle blocking shall be installed between main cross bars with a tight fit and align with vertical supports when applicable. Angle blocking shall be made of 4-inch by 3/8-inch thick angle iron.

7. Pre-engineered metal grating rated for 500 LBS point load over 36-inch span shall be welded to top of main cross bars and blocking.

8. All field welds shall be in accordance with the requirements of the American Welding Society (AWS) D.1.1.

4.02 ADIT PUF CLOSURE INSTALLATION

A. CLEARING DEBRIS

Clear debris other than fixed, attached, or permanent structures from the adit before PUF is installed as directed by the OWNER. Historic structural features shall be preserved and maintained. Any historic debris removed shall be placed neatly to the side of the opening.

B. FORMWORK

1. The formwork shall be installed inby the brow of the adit to allow for a minimum foam thickness of two feet.
2. Cross-member supports may be placed at an angle not more than 20 degrees from vertical as long as both ends are seated in the adit.
3. Forms shall be completed prior to application of any polyurethane foam. Any breach in the form caused by vandals or rock fall shall be repaired prior to arrival of PUF applicators at that site. The CONTRACTOR is responsible for the integrity of the form, and the loss of any polyurethane should it fail. The installed depth to form shall be indicated on the as-built drawing for polyurethane foam closures, if required.

C. VENTILATION/DRAIN PIPE

Designated openings shall require the installation of a drainage pipe as specified by a Utah certified professional engineer, to include an appropriate P-trap. The drainpipe shall be located near the base of the closure within 15 inches of the floor in the approximate center of the closure or near a low spot along the base. The drainpipe shall extend through the base of the closure. The drainpipe shall protrude a minimum of 12 inches on either side of the seal and shall be made from 6-inch nominal diameter steel pipe. The inside end of the pipe shall be firmly supported by block or natural stone. Both the inside and outside ends of the pipe shall be clear of any obstructions which would impair or restrict flow. Both ends of the pipe shall be covered with a protective screen mesh. Gravel shall be installed over the ends of the pipes to protect the pipe from roof falls and plugging. Gravel shall form a drain and cover the top of the pipe with a minimum of 8 inches of material. The gravel drain shall be no less than 18 inches wide and shall extend to and from the end of the pipes a minimum of two feet. Gravel used in the drain channels shall be selected material ranging from ¾ to 6 inches in size. CONTRACTOR shall extend a drainage channel away from the bulkhead if it is situated such that water could impound near the base.

D. POLYURETHANE FOAM (PUF) APPLICATION

1. PUF shall be applied in lifts with a maximum rise of 1.5 feet. Installed PUF lifts shall pass through the tack-free stage before applying the next lift. At no time shall sprayed or poured PUF cut into rising foam. The PUF shall be applied in such a manner that the entire void is filled, and that shadow zones or voids are not created during PUF application, and does not raise the temperature to unsafe levels. At the discretion of the OWNER, thermocouples may be used to monitor exothermic generation. PUF application shall cease if heating or off-ratio foam is observed. The CONTRACTOR shall remedy off-ratio foam and demonstrate proper quality PUF to the OWNER before application resumes. See Part 5 below for characteristics of off-ratio foam.

   The PUF cooling and curing time shall adhere to the following table:

AREA OF OPENING BEING PUF'ED (SQUARE FEET)	COOLING/CURING TIME BETWEEN 18-INCH LIFTS	ADDITIONAL COOLING/CURING TIME AFTER FOUR CONTINUOUS 18-INCH LIFTS (6 FEET)
0-20	20 minutes	20 minutes
21-50	30 minutes	30 minutes
51-90	35 minutes	35 minutes
Greater than 90	45 minutes	45 minutes

   [This paragraph revised 10/23/13.]

2. The surface of the void to be filled shall be as free as possible of grease and standing water. PUF shall not be applied to surfaces with running water. Remedial action for such situations shall be specified by the OWNER. Polyurethane foam shall not be applied directly to a debris plug, but must be applied to a form of known physical and chemical properties. PUF shall not be applied during rain unless the foam is protected from interaction with water by a physical barrier.

3. If off-ratio PUF is observed, the applicator must stop, correct the imbalance, and continue application with the proper ratio PUF. Correction and determination of the foam ratio shall be done on a plastic sheet away from the work area. Any lift of off-ratio PUF comprising over two percent (2%) of the intended PUF column height shall be removed. An amount of off-ratio PUF less than two percent (2%) of the specified volume may remain if allowed to cool, and if the outer perimeter of off-ratio foam is removed.

4. The CONTRACTOR shall be responsible for any lost or damaged equipment. In addition, damages or claims arising from PUF overspray shall be the responsibility of the CONTRACTOR. Under no circumstances shall foreign material be placed in the PUF unless specifically authorized by the OWNER. Non-PUF materials must be non-toxic, non-hazardous and not compromise the strength or water saturation characteristics of the PUF.

5. Upon reaching the specified grade as shown on the Standard Drawing, the CONTRACTOR shall clean up PUF operations and wait a minimum of one hour before initiating construction of the concrete plug.

E. RANDOM FILL MATERIAL

1. Random fill material shall consist of on-site, native materials as approved by the OWNER. Fill material shall be placed to a minimum thickness of three feet.

2. Materials for random fill material shall be placed by methods to produce a uniform mass. The material may be placed by hand or equipment. The final surface of the backfilled opening shall be graded to blend with the surrounding contour.

F. SITE CLEAN-UP

All construction-generated trash and debris, such as scrap materials and spilled PUF shall be cleaned up and removed. CONTRACTOR shall avoid spraying foam at undesignated targets. Improperly applied PUF and overspray shall be removed.

4.03 FIELD QUALITY CONTROL

A. Periodic checks of the quality of PUF applied shall be made by the OWNER. The main check on quality will be visual. Acceptable PUF shall be tan-white to buff in color with no vesicles and a smooth to coarse orange peel surface. Any one of the following conditions shall cause PUF application to cease, and efforts to correct the off-ratio condition begin.

CONDITION	POSSIBLE CAUSE
Dark PUF Color Smooth and Glassy Friable or Brittle PUF Improper Density	Excess A Component
Light to White in Color Bad Cell Structure Mottled Appearance Blowholes or Pinholes	Excess B Component
Slow rise Poor Cell Structure Frequent Equipment Clogging Slow Curing Bad Physical Properties	Bad Material

B. At any time during PUF application, the OWNER may call for a density test. The applicator shall fill a container provided by the OWNER for this purpose, and the sample will be tested for density. The density of the sample shall be within fifteen percent (15%) of the nominal 2 pounds per cubic foot density, with a minimum installed density of 1.70 pounds per cubic foot. Density tests indicating PUF installed is not within the minimum specified density shall cause corrective action resulting in PUF within the acceptable nominal range, less deviation due to barometric pressure changes from STP (Standard Temperature and Pressure).

C. Density tests of PUF shall be conducted at no cost to the OWNER. At the discretion of the OWNER, density tests showing PUF in the acceptable range may be taken in the center of the cavity to which PUF is being applied. A sampling box constructed of sheet aluminum and lined with polyethylene may be lowered into the cavity to take a representative sample of PUF just above the level of installed polyurethane.

PART 5 - MEASUREMENT AND PAYMENT

5.01 BASIS FOR PAYMENT

A. Polyurethane Foam Mine Closures is bid and paid on a lump sum basis. Estimated quantities are provided in Section 0300, the appendices, and on the Bid Schedule to serve as a guide in outlining the scope of work, but bidding is not on a unit price basis. The lump sum BID PRICE need not equal the product of the estimated quantity times a unit price. Variation in Quantity Unit Prices are requested on the Bid Schedule for the purpose of adjusting the lump sum BID PRICE in cases where the actual quantity of WORK performed differs from the estimated quantity.

B. The actual final quantities for the major tasks or categories of materials may differ from the estimated quantities shown in the site-specific information in Section 0300, the appendices, or the Bid Schedule. The estimated quantities are based on information gathered and interpreted from surface investigations.

C. Should the CONTRACTOR estimate the quantity of polyurethane foam mine closures to be greater than 15% above the estimated quantity shown in the Bid Schedule, the CONTRACTOR must negotiate a CHANGE ORDER with the OWNER for additional WORK prior to undertaking the additional WORK. The adjustment to the lump sum BID PRICE will be based on the Variation in Quantity Unit Price on the Bid Schedule and the variance above 115% of the estimated quantity. The method of measurement for quantities shall be determined prior to undertaking the additional WORK.

D. When the actual quantity of polyurethane foam mine closures completed as determined by measurement is greater than 15% below the estimated quantity on the Bid Schedule, the OWNER will negotiate a reduction in the lump sum BID PRICE based on the Variation in Quantity Unit Price on the Bid Schedule and the variance below 85% of the estimated quantity. This price adjustment shall be executed by a CHANGE ORDER.

5.02 MEASUREMENT

A. Polyurethane Foam Mine Closures is a lump sum bid item that does not require measurement of quantities for payment. At each mine site or mine feature itemized for WORK in the Bid Schedule, the OWNER must approve and accept the WORK as set forth above before any payment on that item can be requested.

B. Bat exclusion, site preparation, roof support, installation of PUF, supply and fabrication of the concrete plug, supply and placement of filter cloth and ventilation/drain pipes, backfill, and clean-up will not be measured for direct payment but will be considered subsidiary to polyurethane foam mine closures. Costs for these subsidiary products or tasks are to be absorbed into the lump sum BID PRICE for the associated polyurethane foam mine closures as described in this section. The lump sum BID PRICE amount for polyurethane foam mine closures, as modified by any CHANGE ORDERS, shall be full compensation for all labor, materials, tools, equipment, services, and all other costs necessary to perform the WORK as described in this section.

C. Measurement of polyurethane foam mine closures for adjustments to the lump sum BID PRICE as described in Part 4.01.C and D above shall be as follows:

1. Volumes of PUF will be expressed in cubic feet and measured by taking the thickness or depth of the foam layer times the area of the shaft (i.e. by approximating the foam layer as a rectangular prism or cylinder).

5.03 PAYMENT

A. Payment for polyurethane foam mine closures will be for each itemized mine site or mine feature at the lump sum BID PRICE, as modified by any CHANGE ORDERS. Payment will only be made for completed WORK that is accepted and approved by the OWNER. No partial payments will be made for individual items of WORK.

B. Payment at the lump sum BID PRICE, as modified by any CHANGE ORDERS, shall be full compensation for all labor, materials, tools, equipment, services, and all other costs and incidentals necessary to perform the WORK in this section in accordance with the Standard Drawings and Specifications.

C. No payment shall be made for off-ratio PUF.

END OF SECTION 0254

0270 Site Grading/Earthwork

PART 1 - GENERAL

1.01 WORK INCLUDED

This section covers the WORK necessary for general earthwork and site grading. The principal items of WORK include, but are not limited to, grading and/or burial of mine dumps, placement of soil material over mine dumps, transportation and placement of mine dump material, installation of riprap ditches and placement of soil materials.

1.02 SUBMITTALS

A. CONTRACTOR shall submit *with the Bid* a list of equipment to be used to complete this section of the WORK.

B. CONTRACTOR shall submit *with the Bid* locations of borrow areas for fill and topsoil for the approval of the OWNER when such areas are not shown on the Drawings.

1.03 RELATED WORK

A. Section 0250: Mine Closures
B. Section 0280: Drainage Control & Stream Protection
C. Section 0290: Revegetation
D. Section 0300: Specific Site Requirements

1.04 PROTECTION

CONTRACTOR shall conduct grading and earthwork operations in a fashion to minimize erosion during and after construction. This shall include limiting disturbance of existing vegetation, working equipment parallel to contours, use of temporary drainage control where appropriate, and other practices as directed by the OWNER. Drainage and irrigation ditches shall be kept clear.

PART 2 – PRODUCTS/MATERIALS

2.01 VEGETATION

Naturally occurring plant growth including: trees, shrubs, grasses, weeds, sagebrush, etc.

2.02 TOPSOIL

Mineral soils, with organic matter, free of large roots, rocks, debris, and large weeds, obtained from the areas and to the maximum depths specified on the Drawings.

2.03 SUBSOIL

Mineral soils, free of organic matter and excessive amounts of construction debris and rubble, naturally or artificially (fill) occurring between topsoil and bedrock, including rocks and boulders.

2.04 MINE DUMP MATERIAL

Material produced in the process of mining, generally found on the site in waste piles and spread over subsoils and fill in thin veneers. The dump material typically consists of overburden materials, ore and fines, and intermixed subsoils. Material size ranges from silts and sands to rock greater than 18 inches in diameter.

2.05 RANDOM FILL

Artificially placed material consisting of mine dump material, excavated subsoils and unclassified materials. Material for use as random fill shall be free of wood, roots, weeds, construction debris, and other combustible materials. Random fill shall not contain material sizes or gradations which preclude compaction.

2.06 UNCLASSIFIED EXCAVATION

As described by these Specifications, excavation is unclassified and includes in-situ soils as well as buried rubble and construction debris. It is not the intent of these Specifications to require the excavation of bedrock. Should bedrock be encountered, the OWNER shall be immediately notified so that field adjustments to the reclamation contours as shown in the Drawings can be made.

2.07 SOIL/ROCK FILL

Locally available material consisting of organic-free rock and coarse soils. Materials for use as soil/rock fill shall be designated on site by the OWNER.

PART 3 - EXECUTION

3.01 STRIP VEGETATION

WORK shall consist of removing vegetation, roots, and surficial debris from areas of reclamation as directed by the OWNER. The resulting debris shall be disposed of offsite, or may be buried onsite in an area approved by the OWNER. However, in no case may combustible materials be buried or otherwise placed in coal refuse.

3.02 SITE GRADING

A. GENERAL

The intent of this WORK is to develop the reclaimed contours shown in the Drawings and to establish favorable drainage conditions and erosion protection at all sites. Random fill shall be placed directly to meet the specified reclamation surface contours. Lines and grades as defined on the Drawings are subject to modification, dependent on the field conditions encountered. Unless identified on the Drawings or Specifications, the lower limit of excavation shall be the top of competent bedrock. The steepest allowable slope of reclaimed areas shall be 3:1, unless otherwise stated in these Specifications or shown on the Drawings. Site grading shall be performed to provide a reclamation area that blends well with natural conditions in adjacent areas.

B. DRAINAGE GRADING

1. At the location of each mine opening, CONTRACTOR shall grade the existing topography to allow surface water to drain freely away from the mine closure. Efforts shall be made to minimize the extent of this grading and limit the disturbance of existing vegetation.

2. Regraded surfaces for waste dump reclamation, burial of mine dump material, and reshaping of drainage channels shall be sloped to drain freely and shall include water bars, intermediate benches, and other such devices as shown on the Drawings to control precipitation runoff and prevent erosion.

C. STRIP MINE DUMP MATERIAL TO MINERAL SOILS

In the areas designated on the Drawings, CONTRACTOR shall strip existing mine dump material to sufficient depth to expose natural soils. Refuse from these areas shall be utilized as fill for site grading. Stripping depths shown are approximate only, and all mine dump material present shall be removed from the area. After mine dump material removal, soils within the stripped area shall be regraded to approximate the reclamation contours shown on the Drawings. CONTRACTOR shall not be required to import fill to the stripped area to create the contours shown.

D. EXCAVATION

CONTRACTOR shall excavate to the lines and grades shown on the Drawings or as directed by the OWNER. Excavated materials conforming to the definition of random fill, including subsoils, mine dump material, and unclassified materials, shall be placed directly as fill in designated fill areas. Concrete and other inert materials may be buried at depth greater than 36 inches with the approval of the OWNER. CONTRACTOR shall be responsible for all surveying necessary to perform the WORK and determine pay quantities. CONTRACTOR shall confirm that the survey base used is consistent with the plans provided by the OWNER. The OWNER shall have surveys performed at its discretion for confirmation purposes.

E. FILL

Where fill is required, CONTRACTOR shall use excavated material acceptable as either random fill or soil/rock fill. Rocks and boulders greater than 12 inches in diameter shall be removed for use as riprap, buried in fill in accordance with grading tolerances below, or left on finished grade either individually or in groupings to blend with the natural surroundings. Construction debris may be incorporated in the fill providing such materials are properly broken down and placed in such a manner that no open voids exist. The placement of debris in the fill shall be subject to the approval of the OWNER. The distribution of materials throughout a fill shall be such that there shall be no lenses, pockets, streaks or layers of material differing substantially in texture and gradation from the surrounding material in the fill. Fill materials to be compacted with hauled or self-propelled compactors shall be placed and spread in horizontal lifts not exceeding 24 inches loose measure. Fill materials to be compacted by hand-guided or hand-operated equipment shall be placed and spread in horizontal lifts not exceeding 12 inches loose measure.

F. FILL COMPACTION

Each lift of material placed as fill shall be compacted by a minimum three (3) passes of a compactor exerting a minimum pressure of one hundred (100) pounds per square inch or as specified in Section 0300: Specific Site Requirements. Water shall be used as necessary in the compaction operation for dust control and to achieve the required compaction.

G. GRADING TOLERANCES

1. The reclaimed surface shall be constructed to produce the contours shown on the Drawings within a tolerance of plus or minus one foot. Where field conditions warrant a modification in the grading plan, top of subgrade shall be as directed by the OWNER. The top two feet of the subgrade shall consist only of clean subsoils or coal refuse which have been cleaned of cobbles and boulders exceeding twelve (12) inches in diameter.

2. Abrupt changes in grade shall be rounded to provide a pleasant visual effect.

3. Depressed areas shall be graded to prevent ponding or standing water.

H. SCARIFICATION

Scarification or discing shall be completed when the veneer of coal refuse or waste rock is generally less than 6 inches thick. Scarification shall be accomplished with a tractor or bulldozer-hauled scarifier, ripper, or disc-harrow. Where inaccessibility precludes the use of mechanized equipment, scarification shall be completed manually with hoes and mattocks.

I. TOPSOIL PLACEMENT

1. Areas to be covered with topsoil shall be scarified to a minimum depth of 4 inches.

2. Following completion of regrading and earthwork to the contours required by these specifications, designated disturbed areas shall be covered with topsoil placed to a minimum thickness of 12 inches unless otherwise directed by the OWNER. On slopes steeper than 3h:1v, the topsoil surface shall be stabilized by means of erosion control blanket, vegetation, riprap, or as otherwise directed by the OWNER. The topsoil shall be obtained only from the borrow areas shown and to the maximum depths specified on the Drawings.

J. DEBRIS BURIAL

Construction debris may be incorporated in fill providing such materials are properly broken down and placed in such a manner that no open voids exist. The placement of debris in fill shall at all times be subject to the approval of the OWNER.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS FOR PAYMENT

A. Site Grading/Earthwork is bid and paid on a lump sum basis. Estimated quantities are provided in Section 0300, the appendices, and on the Bid Schedule to serve as a guide in outlining the scope of work, but bidding is not on a unit price basis. The lump sum BID PRICE need not equal the product of the estimated quantity times a unit price. Variation in Quantity Unit Prices are requested on the Bid Schedule for the purpose of adjusting the lump sum BID PRICE in cases where the actual quantity of WORK performed differs from the estimated quantity.

B. The actual final quantities for the major tasks or categories of materials may differ from the estimated quantities shown in the site-specific information in Section 0300, the appendices, or the Bid Schedule. The estimated quantities are based on information gathered and interpreted from surface investigations.

C. Should the CONTRACTOR estimate the quantity of site grading/earthwork to be greater than 15% above the estimated quantity shown in the Bid Schedule, the CONTRACTOR must negotiate a CHANGE ORDER with the OWNER for additional WORK prior to undertaking the additional WORK. The adjustment to the lump sum BID PRICE will be based on the Variation in Quantity Unit Price on the Bid Schedule and the variance above 115% of the estimated quantity. The method of measurement for quantities shall be determined prior to undertaking the additional WORK.

D. When the actual quantity of site grading/earthwork completed as determined by measurement is greater than 15% below the estimated quantity on the Bid Schedule, the OWNER will negotiate a reduction in the lump sum BID PRICE based on the Variation in Quantity Unit Price on the Bid Schedule and the variance below 85% of the estimated quantity. This price adjustment shall be executed by a CHANGE ORDER.

4.02 MEASUREMENT

A. Site Grading/Earthwork is a lump sum bid item that does not require measurement of quantities for payment. At each mine site or mine feature itemized for WORK in the Bid Schedule, the OWNER must approve and accept the WORK as set forth above before any payment on that item can be requested.

B. Grubbing and scarification will not be measured for direct payment but will be considered subsidiary to site grading/earthwork. Costs for these subsidiary products or tasks are to be absorbed into the lump sum BID PRICE for the associated site grading/earthwork as described in this section. The lump sum BID PRICE amount for site grading/earthwork, as modified by any CHANGE ORDERS, shall be full compensation for all labor, materials, tools, equipment, services, and all other costs necessary to perform the WORK as described in this section.

C. Measurement of site grading/earthwork for adjustments to the lump sum BID PRICE as described in Part 4.01.C and D above shall be as follows:

1. Volumes of site grading/earthwork will be expressed in cubic yards and measured using before and after surveys at the CONTRACTOR's expense. Volume of material removed or placed shall be calculated digitally (grid, TIN) from pre- and post-excavation surface models or by the average end area method based on cross sections developed from CONTRACTOR's surveys. The OWNER will have surveys performed at OWNER's discretion for confirmation purposes.

2. Volume of site grading/earthwork for small coal refuse piles buried in place will be expressed in cubic yards and be based on the volume of coal buried, regardless of the total quantity of material (coal or soil) excavated or the number of times material is handled in the course of the burial.

3. Other methods of measurement, such as loader bucket counts or truck trip logs, may be used as appropriate to the situation and as mutually agreeable to CONTRACTOR and OWNER.

4.03 PAYMENT

A. Payment for site grading/earthwork will be for each itemized mine site or mine feature at the lump sum BID PRICE, as modified by any CHANGE ORDERS. Payment will only be made for completed WORK that is accepted and approved by the OWNER. No partial payments will be made for individual items of WORK, unless authorized in Section 0300.

B. Payment at the lump sum BID PRICE, as modified by any CHANGE ORDERS, shall be full compensation for all labor, materials, tools, equipment, services, and all other costs and incidentals necessary to perform the WORK in this section in accordance with the Standard Drawings and Specifications.

END OF SECTION 0270

0275 Material Transport

PART 1 - GENERAL

1.01 WORK INCLUDED

This WORK consists of the transport on public roads of designated earth materials and other products including, but not limited to, those indicated in Section 0300, Specific Site Requirements. The work shall include, but not be limited to, the loading, transport, and unloading of coal, coal refuse, fly ash, soil, riprap, random fill, tailings, and debris associated with the abandoned mine site or needed to reclaim the site.

1.02 SUBMITTALS

A. The CONTRACTOR shall submit *with the Bid* a list of equipment to be used to complete this section of the WORK.

B. The CONTRACTOR shall submit *prior to receiving Notice to Proceed* evidence of the appropriate Department of Transportation and/or Interstate Commerce Commission licensing, including coal exemptions, if required to complete this section of the WORK. If a Subcontractor will be used for material transport, CONTRACTOR shall submit evidence of the Subcontractor's DOT and/or ICC licensing.

1.03 RELATED WORK

A. Section 0270: Site Grading/Earthwork
B. Section 0300: Specific Site Requirements

PART 2 - PRODUCTS/MATERIALS

OWNER may require materials for transport, such as coverings or chemical binders not otherwise called for in other sections of these Specifications.

PART 3 - EXECUTION

3.01 GENERAL

A. Hard hats, steel toed shoes, and safety glasses shall be worn by all drivers whenever out of the cab of the truck. Dust masks shall be worn whenever there are high levels of airborne dust.

B. All equipment and trucks shall be equipped with fire extinguishers.

C. All trucks shall be equipped with towing hooks the on front end.

D. CONTRACTOR may be required to provide two-way radios with each unit to be used to communicate with other vehicles on private and public roads for coordinating traffic on those roads.

3.02 PREPARATION

A. CONTRACTOR shall secure any and all required permits for the transport WORK at his/her expense.

3.03 LOADING

A. If necessary or required by OWNER, coal refuse and other fine-grained materials shall be lightly sprayed with water during loading to minimize the generation of airborne dust. Water usage shall be kept to the minimum required to suppress dust. Ponding of water on, or saturation of, coal refuse is not allowed.

B. Truck drivers shall remain in their trucks while underneath buildings, conveyors, or galleries.

3.04 TRANSPORT

A. Maximum gross weight (includes tractor, trailer, and load) shall not exceed limits as imposed by the Utah Department of Transportation or any other state agency, "frost law" weight restriction included.

B. CONTRACTOR shall comply with all applicable federal, state, county and local regulations, guidelines and ordinances pertaining to the truck transport of coal or other materials.

C. If at any time any special operating laws are imposed on any federal, state, or county roads used by the CONTRACTOR and/or subcontractor in transport of coal or other materials to the disposal site by any applicable federal, state or county agency, these operating laws will be strictly adhered to by the CONTRACTOR or subcontractor.

D. The maximum allowable temperature of coal or coal refuse to be transported shall be 130ºF.

3.05 UNLOADING

A. CONTRACTOR shall unload materials at the location and in the manner specified in Section 0300: Specific Site Requirements. CONTRACTOR is responsible for cleaning up and removing all material improperly dumped.

B. Truck drivers shall remain in their trucks while underneath buildings, conveyors, or galleries.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS FOR PAYMENT

A. Material Transport is bid and paid on a lump sum basis. Estimated quantities are provided in Section 0300, the appendices, and on the Bid Schedule to serve as a guide in outlining the scope of work, but bidding is not on a unit price basis. The lump sum BID PRICE need not equal the product of the estimated quantity times a unit price. Variation in Quantity Unit Prices are requested on the Bid Schedule for the purpose of adjusting the lump sum BID PRICE in cases where the actual quantity of WORK performed differs from the estimated quantity.

B. The actual final quantities for the major tasks or categories of materials may differ from the estimated quantities shown in the site-specific information in Section 0300, the appendices, or the Bid Schedule. The estimated quantities are based on information gathered and interpreted from surface investigations.

C. Should the CONTRACTOR estimate the quantity of material transport to be greater than 15% above the estimated quantity shown in the Bid Schedule, the CONTRACTOR must negotiate a CHANGE ORDER with the OWNER for additional WORK prior to undertaking the additional WORK. The adjustment to the lump sum BID PRICE will be

based on the Variation in Quantity Unit Price on the Bid Schedule and the variance above 115% of the estimated quantity. The method of measurement for quantities shall be determined prior to undertaking the additional WORK.

D. When the actual quantity of material transport completed as determined by measurement is greater than 15% below the estimated quantity on the Bid Schedule, the OWNER will negotiate a reduction in the lump sum BID PRICE based on the Variation in Quantity Unit Price on the Bid Schedule and the variance below 85% of the estimated quantity. This price adjustment shall be executed by a CHANGE ORDER.

4.02 MEASUREMENT

A. Material Transport is a lump sum bid item that does not require measurement of quantities for payment. At each mine site or mine feature itemized for WORK in the Bid Schedule, the OWNER must approve and accept the WORK as set forth above before any payment on that item can be requested.

B. Loading and unloading will not be measured for direct payment but will be considered subsidiary to material transport. Costs for these subsidiary products or tasks are to be absorbed into the lump sum BID PRICE for the associated material transport as described in this section. The lump sum BID PRICE amount for material transport, as modified by any CHANGE ORDERS, shall be full compensation for all labor, materials, tools, equipment, services, and all other costs necessary to perform the WORK as described in this section.

C. Measurement of material transport for adjustments to the lump sum BID PRICE as described in Part 4.01.C and D above shall be by one of the following methods mutually agreeable to CONTRACTOR and OWNER:

1. Before and after surveys at the CONTRACTOR's expense of any site grading or earthwork, where excavated or fill material is transported. Volume of material removed or placed shall be calculated digitally (grid, TIN) from pre- and post-excavation surface models or by the average end area method based on cross sections developed from CONTRACTOR's surveys. The OWNER will have surveys performed at OWNER's discretion for confirmation purposes.

2. Direct volume measurements of the trailer or truck bed in conjunction with a truck count.

3. Random selection of four trucks per shift (or not more than 10%) to be weighed at a certifiable scale. The average weight of these trucks would be applied to all trucks for that shift.

4. Use of portable truck scales at the loading site.

5. Use of a bucket recording weight meter on the loaders.

6. Use of belt scales at the loading site.

7. Any other method acceptable to both the CONTRACTOR and OWNER.

D. Quantities of material transport shall be expressed in units of cubic yards or tons as appropriate to the material being transported and as listed on the Bid Schedule.

4.03 PAYMENT

A. Payment for material transport will be for each itemized mine site or mine feature at the lump sum BID PRICE, as modified by any CHANGE ORDERS. Payment will only be

made for completed WORK that is accepted and approved by the OWNER. No partial payments will be made for individual items of WORK, unless authorized in Section 0300.

B. Payment at the lump sum BID PRICE, as modified by any CHANGE ORDERS, shall be full compensation for all labor, materials, tools, equipment, services, and all other costs and incidentals necessary to perform the WORK in this section in accordance with the Standard Drawings and Specifications.

END OF SECTION 0275

0280 Drainage Control & Stream Protection

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Drainage control shall be required for a number of applications in the WORK, backfilling subsidence openings, and site grading/earthwork. This section covers the WORK necessary for construction of permanent and temporary drainage control including ditches, water bars, road crossings, stream crossings and energy dissipators.

B. This item also consists of WORK to be performed for protection of the aquatic environment while performing any WORK on site. The specific goal of the item is to limit additional sedimentation of the aquatic environment during construction activities and while vegetation is reestablishing. Streams of primary concern are those listed in the Utah State Health Department's Wastewater Disposal Regulations Part II and those identified by OWNER. Streams of concern in the project area are specified in Section 0300: Specific Site Requirements. For streams of primary concern, any increase in turbidity must be limited to no more than 10 Nephelometric Turbidity Units (NTU) above background conditions when they range from 0 to 100. If background NTU is greater than 100, then maximum allowable increase in turbidity cannot exceed 10 percent.

1.02 SUBMITTALS

A. CONTRACTOR shall submit *with the Bid* the schedule and plan for implementing drainage control measures and for utilizing riprap, gabion mattress, or a combination of systems in accordance with these Specifications and Drawings. If a combination of systems is planned, specific locations for each item shall be identified. Also included shall be specifications of riprap or gabion mattress fill material if supplied as import, and specifications for gabion mattress to be used.

B. The CONTRACTOR shall submit *with the Bid* a description of and location of stream protection measures to be used at each site.

C. CONTRACTOR shall submit *with the Bid* the location of borrow areas intended for riprap unless otherwise specified in Section 0300: Specific Site Requirements, or the Drawings.

D. CONTRACTOR shall submit *with the Bid* the specifications for materials and installation if either culverts or bridges are proposed for use.

1.03 RELATED WORK

A. Section 0230: Access Improvement
B. Section 0240: Demolition and Clean-up
C. Section 0270: Site Grading/Earthwork
D. Section 0285: Streambank Rehabilitation
E. Section 0290: Revegetation
F. Section 0300: Specific Site Requirements

1.04 PROTECTION

A. CONTRACTOR shall conduct the WORK in a manner to minimize disturbance of existing trees and vegetation.

B. CONTRACTOR shall conduct the WORK in a manner not to increase surface erosion due to alteration of natural drainage patterns.

PART 2 – PRODUCTS/MATERIALS

2.01 DEFINITIONS

The terms Random Fill, Topsoil, and Coal Refuse shall be as defined in Section 0270: Site Grading/Earthwork.

2.02 RIPRAP

A. Riprap shall be rock that is dense, sound, and resistant to abrasion and shall be free from cracks, seams, and other defects that would tend to unduly increase its destruction by water and frost actions. The rock shall be solid, angular or sub-angular fragments of quarry stone. Round, riverbed-type rock is not acceptable. Neither breadth nor thickness of a single stone shall be less than one-third its length. The unit weight of stone shall be no less than 155 pounds per cubic foot. Rocks susceptible to solution and disintegration upon contact with standing or flowing water shall not be used as riprap.

B. Riprap shall be reasonably well-graded with rock diameters specified below, or as specified in Section 0300 or on the Drawings:

Rock Size	Percent Finer by Weight
2 inch	15 percent (D_{15})
12 inch	50 percent (D_{50})
15 inch	100 percent (D_{100})

C. The thickness of the riprap should be at least as large as the largest diameter stone in the riprap.

2.03 GRAVEL FILTER BLANKET

A. Materials used for the underlining gravel filter for riprap and culverts shall be clean gravel composed of hard, durable stone and shall be free of fine sand, silt, or clay.

B. The allowable particle size shall be between 0.8 and 2.0 inches. Alternative gradations shall be only at the OWNER'S approval.

2.04 GEOTEXTILE FILTER BLANKET

Geotextile fabric used in the lining of drainage channels as a filter blanket beneath riprap shall consist of Mirafi 500X or equivalent (such as DuPont Typar 3401, Polyfelt TS800, or Trevira 1135).

2.05 IN-STREAM FABRIC CHECK DAM

Fabric check dams shall consist of Mirafi 140N, UV resistant fabric or equivalent supported with 6 inch x 6 inch mesh (or smaller) fence anchored into the stream bottom with steel posts.

2.06 SILT FENCE

Silt fences shall consist of Mirafi 500X, UV resistant fabric or equivalent supported with steel fence posts and/or 6 inch mesh fence.

2.07 WATER BARS

Water bars shall be elongated mounds of compacted soil constructed at an angle with respect to the slope of the terrain so that runoff is conveyed away from disturbed areas thereby alleviating rill and gully erosion.

2.08 STRAW BALE CHECK DAMS

Straw bale check dams shall consist of straw bales supported with steel stakes (T-posts, rebar, mine roof bolts). Wooden stakes are not acceptable as they tend to rot and do not penetrate stony ground well.

PART 3 - EXECUTION

3.01 GENERAL

A. All earthwork associated with construction of drainage control shall be in accordance with Section 0270: Site Grading/Earthwork.

B. Wherever possible the CONTRACTOR shall install permanent drainage prior to the initiation of earthwork to minimize the need for temporary drainages.

C. Two types of stream protection structures shall be used: in-stream check dams and silt fences between construction areas and streams.

3.02 TEMPORARY DRAINAGE DITCHES

A. Prior to the initiation of earthwork, the CONTRACTOR shall effect temporary drainage control in the form of swales or ditches upgradient of WORK areas to minimize erosion during construction. Such drainage will be constructed with minimum disturbance to existing vegetation, and upon completion of work shall be graded to blend with surrounding contours and revegetated per Section 0290: Revegetation.

B. On inclined surfaces, temporary access roads shall be cut or crowned to slope in toward the hillside at a grade of not less than 2 percent. At the intersection of the inside edge of the access road with the slope, a shallow ditch shall be formed. Water bars shall be installed across the access road and roadside ditch. If the WORK is scheduled during wet weather, a catch basin and culvert shall be constructed at the base of the access road as directed by OWNER.

3.03 FABRIC CHECK DAMS

A. In-stream fabric check dams, when approved by OWNER, shall consist of at least three sets of dams constructed immediately downstream from temporary stream crossings and major construction activities adjacent to streams. Spacing of the fabric dams shall be designated by OWNER. The bottom of the fabric of the dam shall be anchored with rock. For added stability, the top of the dam can be anchored onto a pole laid horizontally across the stream. Holes should be cut approximately 6 inches long with a knife at the approximate normal water level to allow flow of water through the dam. Fabric check dams shall be placed with the approval of the OWNER at locations on the watercourse that maximize sediment settling between dams.

B. CONTRACTOR shall install dams before any other WORK begins on site including access improvement. CONTRACTOR shall inspect dams at least every other day and after every storm and clean them when necessary to the approval of the OWNER. Sediments pulled from behind the dams shall be disposed of in a designated fill area and not on the streambank. Fabric shall be replaced when necessary to maintain the integrity of the dam.

3.04 SILT FENCES

A. Silt fence fabric shall be supported either on minimum 6 inch mesh hog wire fence anchored with steel posts spaced no more than six feet apart or with steel fence posts alone spaced no more than three feet apart. At least 12 inches of the lower edge of the

fabric shall be securely anchored with rocks or buried with soil material. The fabric shall be attached with at least four wire ties to the posts. In situations where the silt fence will be in use past the construction season, the wire fence backing shall be used. In all cases, guy wire shall be used to support the fabric top. The height of the silt fence shall be no more than three feet high. About 9 to 12 inches of the fabric shall be draped over the top of the wire fence and fastened to fence posts with wire. On slopes of disturbed areas, distances between lengths of silt fences shall not exceed 100 feet. With the approval of the OWNER, silt fences may be positioned to take advantage of natural drainage at sites in order to minimize the length of the fence.

B. At the discretion of the OWNER, the fences shall be maintained for one year after all construction activity has been completed at each site. The CONTRACTOR shall maintain fences until final demobilization from the project area. After demobilization, the OWNER will be responsible for maintenance and removal.

3.05 STRAW BALE CHECK DAMS

A. Straw bale check dams shall be installed as required in ditches and swales to provide temporary erosion control.

B. Straw bale check dams consist of a series of straw bales placed end to end and anchored with stakes. The bales should be placed on their sides so that the straw fibers are vertical and the binder twine is not in contact with the ground. The bales should be keyed into a shallow (4-6 inches deep) trench so that there is no gap between the bales and the ground surface. The excavated soil from the trench should be banked against the upslope side of the bales for an additional seal. Adjacent bales should be placed tightly together and anchored with at least two stakes per bale to prevent the bales from turning. Loose straw shall be stuffed between bales to fill any gaps.

C. Straw bale check dams should extend far enough to each side from the center of the ditch so that the elevations of the bases of the end bales are higher than the top of the center bale (that is, so impounded water overflows at the center of the dam instead of at the ends).

D. Rotted, silt-clogged, or broken bales should be replaced as necessary. The CONTRACTOR shall maintain straw bale check dams until final demobilization from the project area. After demobilization, the OWNER will be responsible for maintenance and removal.

3.06 TEMPORARY DRAINAGE CROSSINGS (LOW WATER CROSSINGS)

A. Temporary crossings shall be designated on a site-specific basis depending on stream classification, time of year intended for use, the frequency and duration of use, discharge of stream and number of vehicles to cross. The design of such crossings shall at all times be subject to the approval of the OWNER.

B. In the drainages, the preferred crossing shall consist of the placement of 6 to 9 inch nominal size clean rock in the channel to facilitate equipment access. The clean gravel shall be placed only to the extent necessary to provide a stable base for equipment crossing. Alternative temporary crossings shall be made only with the approval of the OWNER. These may include the construction of temporary bridges and culverts. In areas where access improvement is not required, stream crossings shall be made only with the approval of the OWNER.

C. All crossings will be installed after required dams and fences are in place and in accordance with Section 0280, Part 3.03 and 3.04. Temporary bridge and culvert crossings must be removed as soon as possible after the construction activity is complete. Gravel crossings shall be left in place.

3.07 PERMANENT DRAINAGE CONTROL

A. Ditches shall be constructed at the locations and to the dimensions shown on the Drawings.

B. Where ditches cross areas of coal refuse, the bottom and sides shall be covered with a minimum of 24 inches of compacted soil.

C. Place riprap or gabion mattresses in the locations and to the dimensions shown on the Drawings.

3.08 GEOTEXTILE FILTER BLANKET PLACEMENT

The geotextile fabric filter blanket shall be placed in the incised channel commencing at the downstream end and working upstream using care not to stretch or tear the material. At least a foot of the fabric shall be keyed into the sideslopes near the top of the channel and covered with soil. In channels where the width of the fabric material is less than the channel itself, the fabric must be overlapped in the channel bottom at least two feet. In addition, end lengths of the fabric shall be also overlapped at least two feet. Care shall be exercised in the placement of gravel or riprap on the surface of the fabric to prevent tearing.

3.09 GRAVEL FILTER BLANKET PLACEMENT

The gravel filter blanket shall be placed in the incised channel beneath all riprap and gabion materials as directed by the OWNER. The gravel shall be placed in one operation using methods that will not cause segregation of particle sizes. The surface of the finished layer should be reasonably even and free from mounds and windrows. The gravel need not be compacted in place, but shall be placed in such a manner as will result in uniform layers of material for riprap of the specified thickness.

3.10 RIPRAP PLACEMENT

A. Before riprap is placed, the surface to be covered shall be fully compacted and graded to the required slope as shown on the Drawings. Cut-off trenches shall be excavated to the dimensions shown on the Drawings.

B. Geotextile fabric filter and/or gravel filter blanket shall be placed to the dimensions shown on the Drawings.

C. Riprap shall be placed directly on the filter blanket in the locations and to the contours shown on the Drawings. Riprap placement shall be done in a manner which will produce a reasonably well-graded mass of stone with the minimum practicable percentage of voids. The entire mass of stone should be placed in conformance with the lines, grades, and thickness shown on the Drawings. The riprap should be placed to its full course thickness at one operation and in such a manner as to avoid displacing the underlying material. Care should be exercised to prevent mixture of embankment and riprap materials.

D. Riprap should typically be placed by end dumping to prevent segregation by sizes. It should be dumped from a vertical height of no more than 5 feet and should never be pushed downhill with a dozer, placed in layers, or conveyed down a chute as these operations cause segregation of particles. Where riprap is placed directly on filter fabric, the dump height should be no more than 3 feet to prevent tearing of fabric. Torn fabric shall be replaced with proper overlap as required.

E. The large stones should be well distributed and the entire mass of stone should conform to the gradation specified. The riprap should be placed and distributed so that there will be no large accumulations of either the larger or smaller sizes of stone.

F. Some roughness of the surface is acceptable and desirable, but the mass should be fairly compact with all sizes of material placed in their proper proportions. Hand placing or rearranging of individual stones by equipment may be required to achieve the results specified.

3.11 WATER BARS

A. CONTRACTOR shall construct water bars on temporary access roads, in water courses, and at such other locations as shown on the Drawings or as directed by the OWNER.

B. Water bars shall be constructed perpendicular to the gradient in order to deflect surface runoff toward catchments and drainage ditches or to otherwise reduce the velocity of runoff below the erosion threshold.

C. Water bars shall consist of gravel-filled trenches excavated to a depth of 12 inches and a minimum width of 18 inches. The trenches shall be backfilled 4 to 6 inches above adjacent site grade. The surface of water bars on access roads shall be as directed by the OWNER.

D. Unless otherwise specified, water bars shall be spaced at intervals of not more than 500 feet on slopes that are flatter than 15:1 (horizontal:vertical) and 300 feet on slopes between 15h:1v and 10h:1v. On steeper slopes, the spacing of water bars shall be as directed by the OWNER.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS FOR PAYMENT

A. Drainage Control and Stream Protection is bid and paid on a lump sum basis. Estimated quantities are provided in Section 0300, the appendices, and on the Bid Schedule to serve as a guide in outlining the scope of work, but bidding is not on a unit price basis. The lump sum BID PRICE need not equal the product of the estimated quantity times a unit price. Variation in Quantity Unit Prices are requested on the Bid Schedule for the purpose of adjusting the lump sum BID PRICE in cases where the actual quantity of WORK performed differs from the estimated quantity.

B. The actual final quantities for the major tasks or categories of materials may differ from the estimated quantities shown in the site-specific information in Section 0300, the appendices, or the Bid Schedule. The estimated quantities are based on information gathered and interpreted from surface investigations.

C. Should the CONTRACTOR estimate the quantity of drainage control and stream protection to be greater than 15% above the estimated quantity shown in the Bid Schedule, the CONTRACTOR must negotiate a CHANGE ORDER with the OWNER for additional WORK prior to undertaking the additional WORK. The adjustment to the lump sum BID PRICE will be based on the Variation in Quantity Unit Price on the Bid Schedule and the variance above 115% of the estimated quantity. The method of measurement for quantities shall be determined prior to undertaking the additional WORK.

D. When the actual quantity of drainage control and stream protection completed as determined by measurement is greater than 15% below the estimated quantity on the Bid Schedule, the OWNER will negotiate a reduction in the lump sum BID PRICE based on the Variation in Quantity Unit Price on the Bid Schedule and the variance below 85% of the estimated quantity. This price adjustment shall be executed by a CHANGE ORDER.

4.02 MEASUREMENT

A. Drainage Control and Stream Protection is a lump sum bid item that does not require measurement of quantities for payment. At each mine site or mine feature itemized for WORK in the Bid Schedule, the OWNER must approve and accept the WORK as set forth above before any payment on that item can be requested.

B. Site preparation, placement of filter cloth and bedding, and maintenance of drainage structures will not be measured for direct payment but will be considered subsidiary to drainage control and stream protection. Costs for these subsidiary products or tasks are to be absorbed into the lump sum BID PRICE for the associated drainage control and stream protection as described in this section. The lump sum BID PRICE amount for drainage control and stream protection, as modified by any CHANGE ORDERS, shall be full compensation for all labor, materials, tools, equipment, services, and all other costs necessary to perform the WORK as described in this section.

C. Measurement of drainage control and stream protection for adjustments to the lump sum BID PRICE as described in Part 4.01.C and D above shall be as follows:

1. Volumes of riprap and bedding will be expressed in cubic yards and measured by taking the product of the plan view area of the installed material times the thickness. Plan view area shall be determined by direct measurement in the field or by planimetry of maps or aerial photos.

2. Areas of geotextile filter blanket will be expressed in square yards and measured by direct measurement in the field of the completed structure.

3. Lengths of ditches and silt fence will be expressed in lineal feet and measured by direct measurement in the field of the completed structure.

4. Straw bale check dams, fabric check dams, and water bars will be expressed as individual units and measured by counting.

5. Other methods of measurement may be used as appropriate to the situation and as mutually agreeable to CONTRACTOR and OWNER.

4.02 PAYMENT

A. Payment for drainage control and stream protection will be for each itemized mine site or mine feature at the lump sum BID PRICE, as modified by any CHANGE ORDERS. Payment will only be made for completed WORK that is accepted and approved by the OWNER. No partial payments will be made for individual items of WORK.

B. Payment at the lump sum BID PRICE, as modified by any CHANGE ORDERS, shall be full compensation for all labor, materials, tools, equipment, services, and all other costs and incidentals necessary to perform the WORK in this section in accordance with the Standard Drawings and Specifications.

END OF SECTION 0280

0285 Streambank Rehabilitation

PART 1 - GENERAL

1.01 WORK INCLUDED

This section covers the WORK necessary for construction of permanent and temporary streambank rehabilitation structures including conifer revetments, root wad revetments, rock and log streambarbs, and vortex rock weirs. Streambank rehabilitation techniques use structures and vegetation to manipulate the hydrologic processes of erosion and deposition to restore degraded reaches of streams.

1.02 SUBMITTALS

A. CONTRACTOR shall submit *with the Bid* the location of sources of rock material for rock streambarbs and vortex rock weirs unless otherwise specified in Section 0300: Specific Site Requirements, or the Drawings.

B. CONTRACTOR shall submit *with the Bid* the location of sources of live or dead plant materials intended for revetments and streambarbs unless otherwise specified in Section 0300: Specific Site Requirements, or the Drawings.

C. CONTRACTOR shall submit *prior to execution of the WORK* a permit or other evidence of permission to cut junipers at a location approved by the OWNER.

1.03 RELATED WORK

A. Section 0270: Site Grading/Earthwork
B. Section 0280: Drainage Control and Stream Protection
C. Section 0290: Revegetation
D. Section 0300: Specific Site Requirements

1.04 PROTECTION

A. CONTRACTOR shall conduct the WORK in a manner to minimize disturbance of existing trees and vegetation.

B. CONTRACTOR shall conduct the WORK in a manner not to increase surface erosion due to alteration of natural drainage patterns.

PART 2 - PRODUCTS/MATERIALS

2.01 DEFINITIONS

The terms Riprap, Gravel Filter Blanket, and Geotextile Filter Blanket shall be as defined in Section 0280: Drainage Control and Stream Protection. Rock used for streambank rehabilitation structures shall conform to the riprap definition.

2.02 JUNIPER TREES

A. Trees used for conifer revetments shall be Rocky Mountain junipers (*Juniperus scopulorum*). Trees shall be alive when cut and between six and ten feet tall, cone shaped, with an even taper and intact branches. Branches at the base of the trees should spread to approximately four feet in diameter. Trunks shall be at least four inches in diameter. Trees shall be approved by the OWNER. Sparsely branched or thin trees may be rejected or necessitate using two trees per bank section.

B. Junipers shall be cut within three months of use. Trunks shall be cut or trimmed within 6 inches of the main lower branches. Trees shall be handled carefully to avoid breaking branches.

2.03 ANCHORS

A. Rods used to anchor trees to the streambank in conifer revetments shall be mining roof bolts at least five feet long. Rebar 5/8-inch in diameter may be substituted for roof bolts with OWNER's approval. If rebar is used, one end shall be fixed with a blunt, nonhazardous head or bend comparable to a roof bolt head.

B. Commercial wire cable anchors consisting of a looped cable attached to a deadman may be substituted for steel rods with OWNER's approval.

C. Wire used to tie tree to anchors and to tie adjacent trees to each other shall be galvanized steel, eight gauge minimum.

2.04 ROOT WADS AND LOGS

Trees used for revetments and log streambarbs should be a minimum of 10 inches in diameter, sound, and not excessively rotten. Dead and down or standing snags should be selected first. Live trees may be used, if necessary, if no more than 25% of the live trees in a stand are removed. Standing trees should be pushed over in a way that keeps as many roots as possible attached. Root wads for revetments shall have approximately 10 feet of trunk. Logs should be cut into appropriate lengths as shown on the Drawings and limbed.

PART 3 - EXECUTION

3.01 GENERAL

All earthwork associated with construction of streambank rehabilitation structures or activities shall be in accordance with Section 0270: Site Grading/Earthwork.

3.02 STREAM PROTECTION

A. CONTRACTOR shall perform WORK in accordance with Section 0280: Drainage Control and Stream Protection.

B. CONTRACTOR shall take necessary precautions to minimize adding sediment to streams, to avoid disturbance of surrounding native areas, and to minimize travel on undisturbed soils.

C. All installation of rehabilitation structures shall be done between August 1 and May 1 to facilitate anchoring trees at low water and to avoid disturbing incubating fish eggs.

3.03 LOCATION OF BANK SECTIONS

A. Sections of streambank requiring streambank rehabilitation structures are shown on the Drawings and shall be marked in the field by the OWNER.

3.04 SITE PREPARATION

A. All site grading or earthwork in the sections of streambank to be treated shall be completed prior to installation of the rehabilitation structures. Streambanks will typically be graded to a slope of 2h:1v at the location of the rehabilitation structure, or as directed by OWNER. Large rock within the bank area to be treated shall be removed and stockpiled for later use.

B. Disturbance of existing vegetation shall be kept to the minimum necessary to conduct the WORK.

C. Heavy equipment shall not be used in the stream bed.

3.05 CONIFER REVETMENT INSTALLATION

A. Beginning with the downstream end of the bank segment, individual trees shall be laid parallel to the streambank, butt end upstream and top pointing downstream. Trees shall be placed and anchored one at a time.

B. Each tree shall be held to the bank by a crew member while another drives the anchor rods securely into the bank at a 45° angle. Either post drivers or an air hammer may be used. The butt of the tree shall be securely tied to the anchor with wire. It is expected and allowable that some of the branches between the bank and the trunk may be broken in the process of anchoring the tree. Breakage of outer branches should be avoided. No heavy equipment shall be used in the stream bed.

C. The next tree shall be placed upstream with its top (apex) to the stream side of the previous tree in an overlapping, shingled manner. Trees in each row shall be overlapped a 50-70% of their height and sufficiently to prevent the butt end from being pulled from the bank by water force. The overlapping tip of each tree shall be tied to the butt end of the adjacent tree with a length of wire to prevent floating.

D. Additional offset rows shall be placed up the bank, covering the bank from the channel bottom to the vertical height specified in Section 0300: Specific Site Requirements. Upper rows shall be wired to the lower rows.

E. At the upstream end of the revetment segment, rock shall be placed to provide protection to the butt ends of the last trees. These rocks shall be placed so that a smooth transition occurs between the untreated bank and the juniper revetment.

3.06 ROOT WAD REVETMENT INSTALLATION

Root wad revetments shall be installed as shown on the Drawings. Root wad revetments will be aligned and spaced as shown on the Drawings. Where root wad revetments are used in conjunction with rock streambarbs, the revetments will fill in the space between the barbs. Where the ends of logs are buried, at least 24 inches of the log will be covered with soil or streambed material.

3.07 ROCK STREAMBARB INSTALLATION

A. The subgrade for the placement of each rock streambarb shall be excavated to the depth and width shown on the Drawings to allow keying of the streambarb into the bank. Excavated materials shall be disposed of at sites above the normal high water line as directed by OWNER.

B. The rock shall be placed by equipment. The rock shall be placed to the full course thickness and width in a single operation and in such a manner that will ensure that the barb has a homogenous section, with larger rocks uniformly distributed and firmly in contact with each other and with smaller rocks filling the void spaces between the larger rocks. Hand chinking may be required to provide a tightly interlocked rock surface. End dumping or dozer placement of rock is not permitted.

3.08 LOG STREAMBARB INSTALLATION

Log streambarbs shall be installed as shown on the Drawings. Log streambarbs will be aligned as shown on the Drawings. Log streambarb spacing will be determined in the field,

but will not typically exceed 30 feet between the barbs. Where the ends of logs are buried, at least 24 inches of the log will be covered with soil or streambed material.

3.09 VORTEX ROCK WEIR INSTALLATION

A. The subgrade for the placement of each vortex rock weir shall be excavated to the depth and width shown on the Drawings to allow keying of the streambarb into the bank. Excavated materials shall be disposed of at sites above the normal high water line as directed by OWNER.

B. The rock shall be placed by equipment. The rock shall be placed to the full course thickness and width in a single operation and in such a manner that will ensure that the weir has a homogenous section, with larger rocks uniformly distributed and firmly in contact with each other and with smaller rocks filling the void spaces between the larger rocks. Supplemental hand chinking and placement of rocks may be required to provide a tightly interlocked rock surface. End dumping or dozer placement of rock is not permitted.

C. Rock for vortex rock weirs shall be individually placed to achieve spacing between rocks. Footer rocks shall be placed to allow final placement of surface rock as shown on the Drawings. Footer rocks act to prevent scour from undercutting the higher rocks. Footer rocks should be placed so that they achieve this function.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS FOR PAYMENT

A. Streambank Rehabilitation is bid and paid on a lump sum basis. Estimated quantities are provided in Section 0300, the appendices, and on the Bid Schedule to serve as a guide in outlining the scope of work, but bidding is not on a unit price basis. The lump sum BID PRICE need not equal the product of the estimated quantity times a unit price. Variation in Quantity Unit Prices are requested on the Bid Schedule for the purpose of adjusting the lump sum BID PRICE in cases where the actual quantity of WORK performed differs from the estimated quantity.

B. The actual final quantities for the major tasks or categories of materials may differ from the estimated quantities shown in the site-specific information in Section 0300, the appendices, or the Bid Schedule. The estimated quantities are based on information gathered and interpreted from surface investigations.

C. Should the CONTRACTOR estimate the quantity of streambank rehabilitation to be greater than 15% above the estimated quantity shown in the Bid Schedule, the CONTRACTOR must negotiate a CHANGE ORDER with the OWNER for additional WORK prior to undertaking the additional WORK. The adjustment to the lump sum BID PRICE will be based on the Variation in Quantity Unit Price on the Bid Schedule and the variance above 115% of the estimated quantity. The method of measurement for quantities shall be determined prior to undertaking the additional WORK.

D. When the actual quantity of streambank rehabilitation completed as determined by measurement is greater than 15% below the estimated quantity on the Bid Schedule, the OWNER will negotiate a reduction in the lump sum BID PRICE based on the Variation in Quantity Unit Price on the Bid Schedule and the variance below 85% of the estimated quantity. This price adjustment shall be executed by a CHANGE ORDER.

4.02 MEASUREMENT

A. Streambank Rehabilitation is a lump sum bid item that does not require measurement of quantities for payment. At each mine site or mine feature itemized for WORK in the Bid

Schedule, the OWNER must approve and accept the WORK as set forth above before any payment on that item can be requested.

B. Site preparation, tree cutting, and tree transport will not be measured for direct payment but will be considered subsidiary to streambank rehabilitation. Costs for these subsidiary products or tasks are to be absorbed into the lump sum BID PRICE for the associated streambank rehabilitation as described in this section. The lump sum BID PRICE amount for streambank rehabilitation, as modified by any CHANGE ORDERS, shall be full compensation for all labor, materials, tools, equipment, services, and all other costs necessary to perform the WORK as described in this section.

C. Measurement of streambank rehabilitation for adjustments to the lump sum BID PRICE as described in Part 4.01.C and D above shall be as follows:

1. Volumes of riprap and bedding will be expressed in cubic yards and measured by taking the product of the plan view area of the installed material times the thickness. Plan view area shall be determined by direct measurement in the field or scaling from maps.

2. Lengths of conifer revetments will be expressed in lineal feet and measured by direct measurement in the field from the furthest upstream tree butt to the furthest downstream branch tip.

3. Root wad revetments, rock streambarbs, log streambarbs, and vortex rock weirs will be expressed as individual units and measured by counting.

4. Other methods of measurement may be used as appropriate to the situation and as mutually agreeable to CONTRACTOR and OWNER.

4.03 PAYMENT

A. Payment for streambank rehabilitation will be for each itemized mine site or mine feature at the lump sum BID PRICE, as modified by any CHANGE ORDERS. Payment will only be made for completed WORK that is accepted and approved by the OWNER. No partial payments will be made for individual items of WORK.

B. Payment at the lump sum BID PRICE, as modified by any CHANGE ORDERS, shall be full compensation for all labor, materials, tools, equipment, services, and all other costs and incidentals necessary to perform the WORK in this section in accordance with the Standard Drawings and Specifications.

END OF SECTION 0285

0290 Revegetation (broadcast only)

PART 1 - GENERAL

1.01 WORK INCLUDED

The WORK consists of revegetation of the disturbed areas, including areas disturbed by the WORK. Revegetation shall include:

A. Site preparation
B. Seedbed preparation
C. Topsoil placement as required
D. Seeding

1.02 SUBMITTALS

A. CONTRACTOR shall submit *with the Bid* the names of one seed supplier, and alternate, to be used for the seed mixtures required by these specifications.

B. CONTRACTOR shall submit *with the Bid* a written description indicating equipment to be used to perform the work required in this section.

C. CONTRACTOR shall submit *during construction* empty container labels, tags, and receipts for seed for verification of materials being used.

1.03 RELATED WORK

A. Section 0230: Access Improvement
B. Section 0250: Mine Closures
C. Section 0270: Site Grading/Earthwork
D. Section 0300: Specific Site Requirements

1.04 DELIVERY, STORAGE, AND HANDLING

CONTRACTOR shall deliver seed in original containers showing analysis of seed mixture, percentage of pure live seed (PLS), year of production, net weight, date of packaging and location of packaging. Seed must be stored under dark, cool, and dry conditions. Damaged packages are not acceptable.

PART 2 - PRODUCTS/MATERIALS

2.01 PLANT MATERIALS

A. The use of the plant materials shall be in accordance with Section 0300: Specific Site Requirements and as shown on the Drawings.

B. CONTRACTOR shall make a concerted effort to obtain all components of the plant materials mixture. Seed and nursery sources may require greater than six weeks notice to obtain specific species. More than one source may be required to furnish all seed or plant varieties. If all sources have been exhausted, or if available seed or stock of a given species is of unacceptable quality, that species may be deleted or another species substituted. Any changes in the seed mixture shall require the written approval of the OWNER prior to execution of the contract.

C. CONTRACTOR must submit name of company and alternate that will supply seed, see Section 1.02. A.

2.02 SEED

A. The species composition and planting rates of the seed mixtures to be used are specified in Section 0300: Specific Site Requirements. Unless specified otherwise, seeding rates given are for broadcast seeding.

B. All seed mixes shall be fresh, clean, new crop seed.

2.03 TOPSOIL

Mineral soils, with organic matter, free of large roots, rocks, debris, and large weeds, obtained from the areas and to the maximum depths specified on the Drawings, as defined in Section 0270: Site Grading/Earthwork.

PART 3 - EXECUTION

3.01 GENERAL

A. Areas to be revegetated are all those which have been disturbed during reclamation construction. Those areas shall include, but are not limited to, portal closure areas, subsidence areas, grading areas, access routes, staging areas, and other areas disturbed by CONTRACTOR in performing the WORK.

B. CONTRACTOR shall take necessary precautions to avoid disturbance of surrounding native areas and will not travel on previously undisturbed soil, unless directed by OWNER.

C. When machinery is specified, all operations will be conducted along the contour. On level sites (area permitting) all equipment operations shall be conducted perpendicular to the prevailing wind direction when wind erosion potential is considered to be high.

3.02 SITE PREPARATION

A. CONTRACTOR shall remove and bury foreign materials and debris collected during topsoil spreading. Tree stumps and large shrubs may also be removed, buried, or stockpiled for distribution on the site following top-soiling, as specified in Section 0300 or as directed by OWNER.

B. Areas that are not fill areas with imported topsoil shall be chiseled or ripped to a depth of 12 inches. This particularly applies to areas that have soils compacted from construction activities and includes haul roads and site access roads. Ripping shall be repeated until the compacted area is loose and friable.

C. Areas of fill to be covered with imported topsoil shall be chiseled or ripped to a depth of 12 inches. Ripping of fill materials shall be completed by a bulldozer equipped with single or a twin set of ripper shanks. Ripping shall be done on 4-foot centers to a depth of 12 inches and shall follow final grading and precede seedbed material (topsoil) application. Ripping shall be completed at a speed which maximizes ripper shank action and promotes soil material disruption to the specified depth. Ripping shall be repeated until the compacted area is loose and friable.

D. Topsoil shall be placed on fill areas immediately following ripping to a minimum depth of 24 inches, or other minimum depth as specified in Sections 0270 or 0300, in all areas designated by the OWNER.

3.03 SEEDBED PREPARATION/SURFACE ROUGHENING

A. AFTER topsoil placement and PRIOR to seeding, the ground surface shall be roughened and gouged to create hummocks and depressions with up to 12 inches of relief. This relief will reduce ground surface wind disturbance and create water catchment basins. Roughening can be achieved by gouging with a backhoe or excavator bucket. Surface roughness can also be created during topsoil distribution by leaving intact the mounds and windrows from each dump truck or loader bucket dump. Furrows, basins, and ridges created by the roughening should run predominantly along the contour to minimize runoff. CONTRACTOR shall exhibit caution during the gouging and roughening process to ensure that subsurface coal refuse or other unsuitable material is not uncovered or brought up to the surface.

B. Boulders, both large and small, may be left on site after topsoiling and prior to seeding, either individually or in groupings to blend with the natural surroundings, as directed by OWNER. OWNER may require that additional boulders be placed on site prior to seeding to enhance visual variation and provide wildlife habitat.

C. Seedbed preparation shall be considered to be complete when the soil surface is completely roughened.

D. Unless the soil is severely compacted, seedbed preparation shall not be required for discontinuous, isolated areas of disturbance less than 0.05 acres (approximately 2500 square feet or 50 feet by 50 feet), such as areas around mine portal closures.

3.04 SEEDING

A. All seeding shall be by broadcasting as directed by OWNER. When broadcast seeding, passes shall be made over the site to be seeded such that even distribution of seed shall be obtained. Broadcast seeding shall take place immediately following the completion of final seedbed preparation. Broadcast seeding shall not be conducted when wind velocities would prohibit even seed distribution. Broadcast seeding shall be followed by hand raking, manual use of a drag chain, or sweeping with sturdy tree or shrub branches to cover seed. This shall be done over the entire site but will not be so extreme as to reduce the extent of soil relief.

B. Broadcast seeding of large areas shall be done using hand-operated "cyclone-type" mechanical seeders. All seeding equipment used shall be equipped with a metering device and set to the appropriate seeding rate.

C. Broadcast seeding of small areas of disturbance less than 0.05 acres (approximately 2500 square feet or 50' x 50') may be done by hand scattering. Raking of small areas is not necessary if there is sufficient surface roughness to ensure that seeds will fall into crevices and other micro-topographic depressions so that weather and gravity will cause them to be covered and stay in place.

D. After completion of the broadcast seeding and seed covering, organic debris such as logs, tree stumps, and grubbed vegetation shall be randomly redistributed across the sites. This shall be done at the OWNER's direction for the purpose of creating visual variation and production of wildlife habitat. Care shall be exhibited to avoid leveling the soil surface.

E. Seeding shall normally occur in the fall after September 15, or otherwise as directed by OWNER or as specified in Section 0300: Specific Site Requirements. In the case of spring construction, a temporary cover crop of annual grass may be required, as specified in Section 0300: Specific Site Requirements. Local conditions, including elevation and weather at the time of construction, may influence seeding dates.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS FOR PAYMENT

A. Revegetation is bid and paid on a lump sum basis. Estimated quantities are provided in Section 0300, the appendices, and on the Bid Schedule to serve as a guide in outlining the scope of work, but bidding is not on a unit price basis. The lump sum BID PRICE need not equal the product of the estimated quantity times a unit price. Variation in Quantity Unit Prices are requested on the Bid Schedule for the purpose of adjusting the lump sum BID PRICE in cases where the actual quantity of WORK performed differs from the estimated quantity.

B. The actual final quantities for the major tasks or categories of materials may differ from the estimated quantities shown in the site-specific information in Section 0300, the appendices, or the Bid Schedule. The estimated quantities are based on information gathered and interpreted from surface investigations.

C. Should the CONTRACTOR estimate the quantity of revegetation to be greater than 15% above the estimated quantity shown in the Bid Schedule, the CONTRACTOR must negotiate a CHANGE ORDER with the OWNER for additional WORK prior to undertaking the additional WORK. The adjustment to the lump sum BID PRICE will be based on the Variation in Quantity Unit Price on the Bid Schedule and the variance above 115% of the estimated quantity. The method of measurement for quantities shall be determined prior to undertaking the additional WORK.

D. When the actual quantity of revegetation completed as determined by measurement is greater than 15% below the estimated quantity on the Bid Schedule, the OWNER will negotiate a reduction in the lump sum BID PRICE based on the Variation in Quantity Unit Price on the Bid Schedule and the variance below 85% of the estimated quantity. This price adjustment shall be executed by a CHANGE ORDER.

4.02 MEASUREMENT

A. Revegetation is a lump sum bid item that does not require measurement of quantities for payment. At each mine site or mine feature itemized for WORK in the Bid Schedule, the OWNER must approve and accept the WORK as set forth above before any payment on that item can be requested.

B. Site preparation will not be measured for direct payment but will be considered subsidiary to revegetation. Costs for these subsidiary products or tasks are to be absorbed into the lump sum BID PRICE for the associated revegetation as described in this section. The lump sum BID PRICE amount for revegetation, as modified by any CHANGE ORDERS, shall be full compensation for all labor, materials, tools, equipment, services, and all other costs necessary to perform the WORK as described in this section.

C. Measurement of revegetation for adjustments to the lump sum BID PRICE as described in Part 4.01.C and D above shall be as follows:

1. Areas of revegetation will be expressed in acres and measured by planimetry of maps or aerial photos.

2. Other methods of measurement may be used as appropriate to the situation and as mutually agreeable to CONTRACTOR and OWNER.

D. Revegetation may be treated as subsidiary to mine closures and not be measured for direct payment in projects where the primary task is mine closures and the total area of

disturbance requiring revegetation is small. This alternative will be specified in Section 0300: Specific Site Requirements.

4.03 PAYMENT

A. Payment for revegetation will be for each itemized mine site or mine feature at the lump sum BID PRICE, as modified by any CHANGE ORDERS. Payment will only be made for completed WORK that is accepted and approved by the OWNER. No partial payments will be made for individual items of WORK.

B. Payment at the lump sum BID PRICE, as modified by any CHANGE ORDERS, shall be full compensation for all labor, materials, tools, equipment, services, and all other costs and incidentals necessary to perform the WORK in this section in accordance with the Standard Drawings and Specifications.

C. No payment shall be made without seed testing certification, certification to be submitted with invoice.

END OF SECTION 0290

0290 Revegetation (complete)

PART 1 - GENERAL

1.01 WORK INCLUDED

The WORK consists of revegetation of the disturbed areas, including areas disturbed by the WORK. Revegetation shall include:

A. Site preparation
B. Seedbed preparation
C. Topsoil placement as required
D. Seeding
E. Mulching
F. Erosion control netting
G. Seedling and cutting planting

1.02 SUBMITTALS

A. CONTRACTOR shall submit *with the Bid* the names of one seed supplier, and alternate, to be used for the seed mixtures required by these specifications.

B. CONTRACTOR shall submit *with the Bid* a written description indicating equipment to be used to perform the work required in this section.

C. CONTRACTOR shall submit *during construction* empty container labels, tags, and receipts for mulch material and seed for verification of materials being used.

D. CONTRACTOR shall submit, if mulch is specified, *during construction and prior to applying mulch* the Phytosanitary Certificate required by the Utah Department of Agriculture.

1.03 RELATED WORK

A. Section 0230: Access Improvement
B. Section 0250: Mine Closures
C. Section 0270: Site Grading/Earthwork
D. Section 0300: Specific Site Requirements

1.04 DELIVERY, STORAGE, AND HANDLING

A. CONTRACTOR shall deliver seed in original containers showing analysis of seed mixture, percentage of pure live seed (PLS), year of production, net weight, date of packaging and location of packaging. Seed must be stored under dark, cool, and dry conditions. Damaged packages are not acceptable.

B. Erosion control netting shall be stored out of direct sunlight.

PART 2 – PRODUCTS/MATERIALS

2.01 PLANT MATERIALS

A. A combination of plant materials that may include seed, seedlings, containerized stock, and cuttings shall be used in revegetation. The use of the plant materials shall be in accordance with Section 0300: Specific Site Requirements and as shown on the Drawings.

B. CONTRACTOR shall make a concerted effort to obtain all components of the plant materials mixture. Seed and nursery sources may require greater than six weeks notice to obtain specific species. More than one source may be required to furnish all seed or plant varieties. If all sources have been exhausted, or if available seed or stock of a given species is of unacceptable quality, that species may be deleted or another species substituted. Any changes in the seed mixture shall require the written approval of the OWNER prior to execution of the contract.

C. CONTRACTOR must submit name of company and alternate that will supply seed, see Section 1.02. A.

2.02 SEED

A. The species composition and planting rates of the seed mixtures to be used are specified in Section 0300: Specific Site Requirements. Unless specified otherwise, seeding rates given are for broadcast seeding.

B. All seed mixes shall be fresh, clean, new crop seed.

2.03 SEEDLINGS

A. Seedlings include containerized stock, tubelings, and bare-root stock obtained from nurseries. The species composition and planting rates of the seedlings to be used are specified in Section 0300: Specific Site Requirements.

B. Seedlings must be healthy and vigorous and not desiccated at time of planting. OWNER reserves the right to refuse payment for decadent plants.

C. Bare-root stock shall have roots that are not withered, dry, or partially dead due to improper transport and/or storage by the CONTRACTOR. All bare-root stock shall be stored and delivered with roots in a damp medium.

2.04 DORMANT PLANT MATERIALS

A. Dormant plant materials will be used for riparian area revegetation. Dormant plant materials include cuttings of live logs, twigs, or whips from wild tree stock.

B. CONTRACTOR shall obtain dormant materials only from areas identified by the OWNER, and the OWNER shall approve and accept or reject the individual material cut. CONTRACTOR shall cut plant materials just prior to the breaking of dormancy, usually late March to early April. As dormancy is partially a function of temperature, cutting and planting of the materials may be required at a moment's notice (dependent on spring weather) to ensure material is planted while still in a dormant state.

C. CONTRACTOR shall be responsible for all rooting hormones, sealants, paints, and shock-reducing vitamins.

D. All dormant vegetative plant materials shall be alive and dormant and not dried or otherwise damaged. Payment will not be made for substandard plant material, as determined by OWNER.

E. Dormant plant materials shall consist of the following species planted at the indicated spacing, unless otherwise specified in Section 0300: Specific Site Requirements:

Common Name	Scientific Name	Spacing
Cottonwood	*Populus fremontii* (or) *Populus angustifolia*	1 every 20 feet
Endemic Willow	*Salix* spp.	2 rows on 3-foot centers - offset

2.05 MULCH

A. Mulch, when required, shall consist of native hay or straw free of noxious weeds or any foreign material detrimental to plant life. Alfalfa will not be permitted.

B. Mulch must meet the requirements of the Utah Noxious Weed Act (4-17-3, UCA; Regulation A700-04-09) and the Utah Phytosanitation Act. Mulch must be tested and found clean by an official Utah Department of Agriculture Inspector. CONTRACTOR shall contact the state inspector and arrange testing. Payment will not be made without certificate of inspection from Agricultural Inspector. Untested mulch may be used only with the prior written approval of the OWNER.

C. Hay used as mulch may be old, but it shall be dry and not moldy.

2.06 EROSION CONTROL BLANKET

A. Uniform, open weave, erosion control blanket which combines mat of seasoned wood excelsior of consistent thickness with photodegradable plastic mesh (AMXCO Curlex Blankets or equivalent) shall be used on slopes of 2h:1v or greater. The blanket shall be used in combination with straw mulch on sites where slope, soil texture, drainage pattern, or exposure will lead to excessive soil loss from erosion.

B. Staples for installation of erosion control blanket shall be made of wire (diameter 0.091 inches or greater), U-shaped with 6-inch legs and 1-inch groin. Size and gauge of staples may vary with soil conditions.

2.07 TOPSOIL

Mineral soils, with organic matter, free of large roots, rocks, debris, and large weeds, obtained from the areas and to the maximum depths specified on the Drawings, as defined in Section 0270: Site Grading/Earthwork.

PART 3 - EXECUTION

3.01 GENERAL

A. Areas to be revegetated are all those which have been disturbed during reclamation construction. Those areas shall include, but are not limited to, portal closure areas, subsidence areas, grading areas, access routes, staging areas, and other areas disturbed by CONTRACTOR in performing the WORK.

B. CONTRACTOR shall take necessary precautions to avoid disturbance of surrounding native areas and will not travel on previously undisturbed soil, unless directed by OWNER.

C. When machinery is specified, all operations will be conducted along the contour. On level sites (area permitting) all equipment operations shall be conducted perpendicular to the prevailing wind direction when wind erosion potential is considered to be high.

3.02 SITE PREPARATION

A. CONTRACTOR shall remove and bury foreign materials and debris collected during topsoil spreading. Tree stumps and large shrubs may also be removed, buried, or stockpiled for distribution on the site following top-soiling, as specified in Section 0300 or as directed by OWNER.

B. Areas that are not fill areas with imported topsoil shall be chiseled or ripped to a depth of 12 inches. This particularly applies to areas that have soils compacted from construction

activities and includes haul roads and site access roads. Ripping shall be repeated until the compacted area is loose and friable.

C. Areas of fill to be covered with imported topsoil shall be chiseled or ripped to a depth of 12 inches. Ripping of fill materials shall be completed by a bulldozer equipped with single or a twin set of ripper shanks. Ripping shall be done on 4-foot centers to a depth of 12 inches and shall follow final grading and precede seedbed material (topsoil) application. Ripping shall be completed at a speed which maximizes ripper shank action and promotes soil material disruption to the specified depth. Ripping shall be repeated until the compacted area is loose and friable.

D. Topsoil shall be placed on fill areas immediately following ripping to a minimum depth of 24 inches, or other minimum depth as specified in Sections 0270 or 0300, in all areas designated by the OWNER.

3.03 MULCHING

A. All sites not designated for erosion control blanket shall be mulched unless otherwise specified by the OWNER in Section 0300: Specific Site Requirements.

B. Mulching shall be performed AFTER topsoil is in place, and PRIOR to seeding. Mulch shall be spread by hand or mechanical blower, in an even manner, at a rate of 2,000 pounds per acre over the site to be mulched. Mulch application shall be initiated at the top of the slope, working downhill, where possible.

C. Mulch shall be crimped with hand tools where equipment cannot gain access or where soil surface roughness (see Part 3.05 below) is already adequate following topsoil distribution and further equipment activity would level the surface.

3.04 SEEDBED PREPARATION/SURFACE ROUGHENING

A. AFTER topsoil placement and mulching, and PRIOR to seeding, the ground surface shall be roughened and gouged to create hummocks and depressions with up to 12 inches of relief. This relief will reduce ground surface wind disturbance and create water catchment basins. Roughening can be achieved by gouging with a backhoe or excavator bucket or with a mechanical pitter designed for the purpose. Surface roughness can also be created during topsoil distribution by leaving intact the mounds and windrows from each dump truck or loader bucket dump. Furrows, basins, and ridges created by the roughening should run predominantly along the contour to minimize runoff. The roughening process should incorporate the mulch into the top of the soil and some will be buried; however, care should be taken to minimize the mulch buried at depth. CONTRACTOR shall exhibit caution during the gouging and roughening process to ensure that subsurface coal refuse or other unsuitable material is not uncovered or brought up to the surface.

B. Boulders, both large and small, may be left on site after topsoiling and prior to seeding, either individually or in groupings to blend with the natural surroundings, as directed by OWNER. OWNER may require that additional boulders be placed on site prior to seeding to enhance visual variation and provide wildlife habitat.

C. Seedbed preparation shall be considered to be complete when the soil surface is completely roughened.

D. Unless the soil is severely compacted, seedbed preparation shall not be required for discontinuous, isolated areas of disturbance less than 0.05 acres (approximately 2500 square feet or 50 feet by 50 feet), such as areas around mine portal closures.

3.05 SEEDING

A. All seeding shall be broadcasting as directed by OWNER. When broadcast seeding, passes shall be made over the site to be seeded such that even distribution of seed shall be obtained. Broadcast seeding shall take place immediately following the completion of final seedbed preparation. Broadcast seeding shall not be conducted when wind velocities would prohibit even seed distribution. Broadcast seeding shall be followed by hand raking, manual use of a drag chain, or sweeping with sturdy tree or shrub branches to cover seed. This shall be done over the entire site but will not be so extreme as to reduce the extent of soil relief.

B. Broadcast seeding of large areas shall be done using hand-operated "cyclone-type" mechanical seeders. All seeding equipment used shall be equipped with a metering device and set to the appropriate seeding rate.

C. Broadcast seeding of small areas of disturbance less than 0.05 acres (approximately 2500 square feet or 50' x 50') may be done by hand scattering. Raking of small areas is not necessary if there is sufficient surface roughness to ensure that seeds will fall into crevices and other micro-topographic depressions so that weather and gravity will cause them to be covered and stay in place.

D. After completion of the broadcast seeding and seed covering, organic debris such as logs, tree stumps, and grubbed vegetation shall be randomly redistributed across the sites. This shall be done at the OWNER's direction for the purpose of creating visual variation and production of wildlife habitat. Care shall be exhibited to avoid leveling the soil surface.

E. Seeding shall normally occur in the fall after September 15, or otherwise as directed by OWNER or as specified in Section 0300: Specific Site Requirements. In the case of spring construction, a temporary cover crop of annual grass may be required, as specified in Section 0300: Specific Site Requirements. Local conditions, including elevation and weather at the time of construction, may influence seeding dates.

3.06 SEEDLING PLANTING

A. Planting of bare-root and/or containerized plant seedling stock, when required, shall occur following ground surface roughening. No seedling planting shall be attempted in frozen seedbed material. Seedling spacing shall be as stated in the Section 0300 revegetation plans. Seedling stock shall be delivered to the planting site as close to the time of planting as possible.

B. At each individual planting site, a circular area (planting circle) shall be cleared of mulch materials or inhibiting debris. The size of the circle shall be approximately 12 inches in diameter. The receiving hole shall then be dug with the depth of the hole extending 2 to 4 inches deeper than necessary for planting. The hole shall be of sufficient size to allow positioning the seedling and tamping the backfill. After the hole has been formed, it shall be partially backfilled with loose soil to allow planting at the proper depth. The seedling shall then be placed in the hole and the hole half backfilled. The hole shall then be filled with water and the remainder of the seedbed material backfilled into the hole as rapidly as possible without displacing water from the hole. The backfill shall be firmly tamped around the seedling. Planting depth shall not exceed the depth at which the seedling was grown in the container.

C. A basin, which slopes gently from the outside of the planting circle to the seedling stem, shall be formed in the soil to aid in water catchment. The basin shall be mulched with straw (or the mulch replaced when a seedling is planted into a mulched site) and the straw anchored with gravel and seedbed material. Planting holes may be dug by hand or

with a power auger. Planting shall be completed randomly over the disturbed area in clumps, as specified in Section 0300.

3.07 WILLOW CUTTINGS

A. Willow Cuttings shall be planted along the borders of watercourses as designated in Section 0300: Specific Site Requirements. Cuttings shall be gathered and planted in the spring (April or May) of the year.

B. Cuttings shall be collected from locally occurring, dormant plants free from disease. All cuttings shall be of stem material and be approximately two (2) to six (6) feet long. Stem material, 2 to 4 years old at the maximum, shall be considered acceptable for use. The basal cut shall be made at an angle immediately below a node. Cuttings shall be planted immediately after collection, keeping the cuttings moist throughout the process. Should storage be necessary, cuttings shall be placed in a plastic bag with a wet paper towel or cloth wrapped around the bases to prevent desiccation.

C. To complete the planting procedure, the base end of the cutting shall be pushed into a prepared seedbed such that 1 to 2 feet of cutting remains above the seedbed surface. The base must be in contact with the water table. A metal bar may need to be pounded into the soil to develop a pathway for the willow cutting to follow. The base end shall be dipped into a solution of "Rootone F" prior to planting to aid in root formation.

3.08 DORMANT LOG PLANTING

A. OWNER shall be responsible for locating and securing the necessary permits for obtaining dormant log materials. OWNER shall also identify and tag all materials to be cut, and be on site during the cutting process. CONTRACTOR shall be responsible for cutting, transporting, and handling dormant plant material; site preparation for planting; application of all rooting hormones, transplant shock reducers, paints, and sealers; and placing the plants into the ground at the locations specified in Section 0300.

B. Dormant logs may be a mix of Narrowleaf Cottonwood, *Populus angustifolia*, and Fremont Cottonwood, *Populus fremontii*. All logs shall be alive and dormant, and not dried or otherwise damaged. All logs shall be between 2 and 6 inches in diameter at the base, and 6 to 18 feet in length. All dormant logs shall be cut at an angle at the base (rooting) end and flat at the top (vegetative) end. The bottom two feet of the log shall be scored with an ax to expose the cambium layer (see drawing). Side limbs will be removed from the logs and all exposed cuts including the top saw cut shall be sealed with an accepted tree paint.

C. Holes for dormant logs shall be augured to a depth that reaches into the water table. Planting areas adjacent to streams and rivers may be composed entirely of river rock, or closely packed, competent rock. Auguring through this material into the water table may be extremely difficult. An auger with a chisel bit operating off of a power take off (PTO), some other drilling rig, or a backhoe with a narrow bucket may be necessary. Dormant logs shall be planted in holes that barely accommodate the diameter of the logs. If larger holes are necessary because of digging conditions, the excess volume shall be carefully backfilled under the direction of the OWNER. Dormant log spacing shall be as stated in Section 0300. Planting shall occur in the spring (March, April, or May) of the year.

D. CONTRACTOR shall make every effort to minimize damage to vegetation and environmental disturbance at the tree source area. Unused or excess brush, branch trimmings, logs, etc. shall be disposed of properly. CONTRACTOR shall leave the site neat and in a condition acceptable to OWNER and the landowner.

3.09 EROSION CONTROL BLANKET

A. The area to be covered shall be properly prepared and seeded prior to application of erosion control blanket. All roads and debris shall be removed prior to seeding and installation.

B. Seeded slopes shall be covered with excelsior-type erosion control blanket where shown on the Drawings.

C. CONTRACTOR shall roll blanket down over slopes without stretching or pulling and lay blanket smoothly on soil surface, burying and securing the top end of each section in a narrow (6-inch) trench. CONTRACTOR shall leave 12 inches overlap from top roll over bottom roll and four inches overlap over adjacent section. The blanket shall be placed with the netting on top and the fibers in contact with the soil over the entire area.

D. The staples shall be installed per erosion control netting manufacturer's recommendations and spaced over the blanket on no less than 6-foot intervals. Outside edges and overlaps shall be at 36-inch intervals.

E. CONTRACTOR shall lightly dress slopes (manually) with topsoil and cobbles to ensure close contact between blanket and soil.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS FOR PAYMENT

A. Revegetation is bid and paid on a lump sum basis. Estimated quantities are provided in Section 0300, the appendices, and on the Bid Schedule to serve as a guide in outlining the scope of work, but bidding is not on a unit price basis. The lump sum BID PRICE need not equal the product of the estimated quantity times a unit price. Variation in Quantity Unit Prices are requested on the Bid Schedule for the purpose of adjusting the lump sum BID PRICE in cases where the actual quantity of WORK performed differs from the estimated quantity.

B. The actual final quantities for the major tasks or categories of materials may differ from the estimated quantities shown in the site-specific information in Section 0300, the appendices, or the Bid Schedule. The estimated quantities are based on information gathered and interpreted from surface investigations.

C. Should the CONTRACTOR estimate the quantity of revegetation to be greater than 15% above the estimated quantity shown in the Bid Schedule, the CONTRACTOR must negotiate a CHANGE ORDER with the OWNER for additional WORK prior to undertaking the additional WORK. The adjustment to the lump sum BID PRICE will be based on the Variation in Quantity Unit Price on the Bid Schedule and the variance above 115% of the estimated quantity. The method of measurement for quantities shall be determined prior to undertaking the additional WORK.

D. When the actual quantity of revegetation completed as determined by measurement is greater than 15% below the estimated quantity on the Bid Schedule, the OWNER will negotiate a reduction in the lump sum BID PRICE based on the Variation in Quantity Unit Price on the Bid Schedule and the variance below 85% of the estimated quantity. This price adjustment shall be executed by a CHANGE ORDER.

4.02 MEASUREMENT

A. Revegetation is a lump sum bid item that does not require measurement of quantities for payment. At each mine site or mine feature itemized for WORK in the Bid Schedule, the

OWNER must approve and accept the WORK as set forth above before any payment on that item can be requested.

B. Site preparation, tree cutting and transport, surface roughening, and mulching will not be measured for direct payment but will be considered subsidiary to revegetation. Costs for these subsidiary products or tasks are to be absorbed into the lump sum BID PRICE for the associated revegetation as described in this section. The lump sum BID PRICE amount for revegetation, as modified by any CHANGE ORDERS, shall be full compensation for all labor, materials, tools, equipment, services, and all other costs necessary to perform the WORK as described in this section.

C. Measurement of revegetation for adjustments to the lump sum BID PRICE as described in Part 4.01.C and D above shall be as follows:

1. Areas of revegetation will be expressed in acres and measured by planimetry from maps or aerial photos.

2. Areas of erosion control blanket will be expressed in square yards and measured by planimetry from maps or aerial photos or by direct measurement in the field.

3. Willow cuttings and dormant log plantings will be expressed as individual units and measured by counting.

4. Other methods of measurement may be used as appropriate to the situation and as mutually agreeable to CONTRACTOR and OWNER.

4.03 PAYMENT

A. Payment for revegetation will be for each itemized mine site or mine feature at the lump sum BID PRICE, as modified by any CHANGE ORDERS. Payment will only be made for completed WORK that is accepted and approved by the OWNER. No partial payments will be made for individual items of WORK.

B. Payment at the lump sum BID PRICE, as modified by any CHANGE ORDERS, shall be full compensation for all labor, materials, tools, equipment, services, and all other costs and incidentals necessary to perform the WORK in this section in accordance with the Standard Drawings and Specifications.

C. No payment shall be made without:

1. Seed: seed testing certification, certification to be submitted with invoice, and

2. Mulch [only if specified]: Phytosanitary Certificate for certification of compliance with the Utah Noxious Weed Act. Certification shall be submitted with invoice.

END OF SECTION 0290

0294 Rebar Barricade

PART 1 - GENERAL

1.01 WORK INCLUDED

A. CONTRACTOR shall construct steel rebar barricades around shafts as specified in Section 0300: Specific Site Requirements and in accordance with this section. The purpose of the rebar barricade is to provide a physical barrier to warn the public of a vertical fall hazard. This barricade does not prevent human access into the mine shaft area.

B. This work shall consist of fabricating and installing steel rebar barricades adjacent to specific mine shafts. Work shall include minimal excavation of loose material around the mine opening; drilling, placing, and grouting anchors; concrete footers; and fabrication, installation, and welding of rebar barricades in accordance with these specifications. Refer to the Drawings for construction details.

C. The dimensions shown on Standard Drawings are generic and based upon a standard design. Actual dimensions will be determined by the mine opening size and site preparation. The CONTRACTOR shall make the necessary measurements and adjustments to ensure that a competent rebar barricade is constructed that will provide a physical barrier to warn of a vertical fall hazard. Very large or irregularly shaped openings may require custom fitting or modification of the generic design in consultation with the OWNER. Minor variations in the location of the rebar barricade will be allowed so that the CONTRACTOR may select a stable location for the rebar barricade, with the approval of the OWNER.

1.02 RELATED WORK

A. Section 0250: Mine Closures
B. Section 0251: Cast-in-Place Concrete
C. Section 0300: Specific Site Requirements

PART 2 – PRODUCTS/MATERIALS

2.01 REBAR BARRICADE STEEL COMPONENTS

Steel used for rebar barricade rails, posts and bracing (if necessary) shall be mild steel rebar meeting the requirements of ASTM A 615. Bars shall be Grade 60. Rebar used for barricades shall be #8 bars (1 inch diameter).

2.02 CEMENT-GROUT

Cement-grout shall consist of a mixture of sand, aggregate, and cement capable of attaining a compressive strength of 3,000 psi in 28 days. Maximum size of coarse aggregate shall be ¾ inch.

2.03 EPOXY RESIN GROUT

Epoxy resin grout shall conform to the requirements of ASTM C881, Type IV, grade 3, such as Simpson ET Epoxy-Tie® or approved equivalent.

2.04 WIRE BARRIER FABRIC

Wire fabric attached to the barricade as a supplemental barrier, when specified, shall be woven wire field fence (12.5 gauge or heavier, galvanized, 6 inch maximum mesh size, 36

inch minimum width) or chain link fence fabric (11.5 gauge or heavier, galvanized, 2.25 inch mesh, 36 inch width) or equivalent as approved by a Utah certified professional engineer.

PART 3 - EXECUTION

3.01 GENERAL

CONTRACTOR shall construct rebar barricades around in shafts as specified below, as shown on the Drawings, and as specified in Section 0300: Specific Site Requirements. The final design, fabrication, and erection of the rebar barricade shall conform to the guidelines established with these specifications and the drawings. The final design shall be the responsibility of the CONTRACTOR, subject to OWNER's approval.

3.02 REBAR BARRICADE INSTALLATION

A. Location. Variation of the location of the rebar barricade will be allowed so that CONTRACTOR can select a suitable location for the rebar barricade, with approval of OWNER. Parameters for suitable location of the rebar barricade shall be as follows:

1. Select an area in which competent rock is found around the collar of the shaft, if possible.

2. Select an area with minimum irregularities in the collar to avoid excessive site preparation for the construction of the rebar barricade around the collar.

3. Select an area that maximizes the effectiveness of the barricade by taking into account likely public access routes to the shaft and the effects of vegetation and terrain on the visibility of the shaft and barricade.

4. Locate the rebar barricade at a reasonable distance (typically 5 feet minimum, or as directed by the OWNER) from the shaft collar to reduce the possibility of the collar of the shaft collapsing or eroding beyond the barricade.

B. Preparation. The CONTRACTOR shall scale the collar area, removing any loose rock from the area in which the rebar barricade is to be constructed and along access to the barricade. The collar shall be cleaned and shaped as directed by OWNER. Historic structural features shall be preserved and maintained.

C. Where possible, rebar barricades shall be constructed on competent foundation rock which is not friable, erodible, subject to deterioration, or otherwise unacceptable and the foundation rock is approved by OWNER.

D. Installation in Bedrock. Posts and/or anchor pins shall be doweled into the bedrock a minimum depth of 12 inches and grouted into place with either cement or epoxy resin. The CONTRACTOR shall determine the means of drilling into the rock and submit the method to the OWNER for approval prior to the start of the drilling operations.

E. Installation in Soil. Posts and/or anchor pins shall be installed in soil, gravel, mine dumps, and other unconsolidated materials a minimum depth of 36 inches and anchored securely in place. Anchoring may be done by digging a posthole 36 inches deep, placing the post in the hole with a soil anchor plate or bend at the bottom end, and backfilling the hole with hand tamped fill. Alternatively, a posthole 18 inches deep may be dug, the post driven to a total depth of 36 inches, and the hole around the post filled with concrete. These or other methods of anchoring posts are subject to OWNER's approval.

F. Horizontal perimeter bars shall be fillet welded to the anchor posts to provide a continuous steel lining around the shaft. Perimeter bars shall be bent or cut into segments to conform closely to irregular surfaces, with a maximum post spacing of eight

feet. If cut into segments, ends of segments shall be butt-welded to each other to form a continuous piece. All connections shall be smooth and even and free of projections.

G. Supplemental vertical posts shall be installed as necessary to minimize sagging of the perimeter bar. Supplemental vertical posts shall be fillet welded to horizontal perimeter bars at each intersection.

H. All horizontal perimeter bars shall be continuous. Joints, if required, shall be butt joints, with bar ends welded to each other to form a continuous piece.

I. All field welds shall be in accordance with the requirements of the American Welding Society (AWS) D.1.1.

J. Variation in the generic design or custom fitting may be required to accommodate site-specific conditions. Section 0300: Specific Site Requirements may specify alternate materials, dimensions, or design modifications for specific mine openings.

K. Rebar barricades installed on federal land administered by the U.S. Bureau of Land Management shall have wire barrier fabric attached. Fabric shall be secured with wire ties at three points on each post and at midpoints on the perimeter bars. Chain link fabric shall be installed "knuckles up." If 36-inch fabric is used, it shall be installed with the top edge even with the top perimeter bar. The use of equivalent products or variation in installation methods shall be as specified and approved by a Utah certified professional engineer.

L. The CONTRACTOR shall install "DANGER OPEN SHAFT" signs on all four sides of the rebar barricade or as directed by the OWNER using wire ties. Signs shall be secured snugly for minimum play in the wind. The signs will be supplied by the OWNER.

M. Upon completion shaft collar area shall be cleared of all construction materials and construction-generated trash and debris. The site shall be left with a clean and finished appearance.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS FOR PAYMENT

A. Rebar Barricade is bid and paid on a lump sum basis. Estimated quantities are provided in Section 0300, the appendices, and on the Bid Schedule to serve as a guide in outlining the scope of work, but bidding is not on a unit price basis. The lump sum BID PRICE need not equal the product of the estimated quantity times a unit price. Variation in Quantity Unit Prices are requested on the Bid Schedule for the purpose of adjusting the lump sum BID PRICE in cases where the actual quantity of WORK performed differs from the estimated quantity.

B. The actual final quantities for the major tasks or categories of materials may differ from the estimated quantities shown in the site-specific information in Section 0300, the appendices, or the Bid Schedule. The estimated quantities are based on information gathered and interpreted from surface investigations.

C. Should the CONTRACTOR estimate the quantity of rebar barricade to be greater than 15% above the estimated quantity shown in the Bid Schedule, the CONTRACTOR must negotiate a CHANGE ORDER with the OWNER for additional WORK prior to undertaking the additional WORK. The adjustment to the lump sum BID PRICE will be based on the Variation in Quantity Unit Price on the Bid Schedule and the variance above 115% of the estimated quantity. The method of measurement for quantities shall be determined prior to undertaking the additional WORK.

D. When the actual quantity of rebar barricade completed as determined by measurement is greater than 15% below the estimated quantity on the Bid Schedule, the OWNER will negotiate a reduction in the lump sum BID PRICE based on the Variation in Quantity Unit Price on the Bid Schedule and the variance below 85% of the estimated quantity. This price adjustment shall be executed by a CHANGE ORDER.

4.02 MEASUREMENT

A. Rebar Barricade is a lump sum bid item that does not require measurement of quantities for payment. At each mine site or mine feature itemized for WORK in the Bid Schedule, the OWNER must approve and accept the WORK as set forth above before any payment on that item can be requested.

B. Site preparation, barrier fabric attachment, and warning sign installation will not be measured for direct payment but will be considered subsidiary to rebar barricade. Costs for these subsidiary products or tasks are to be absorbed into the lump sum BID PRICE for the associated rebar barricade as described in this section. The lump sum BID PRICE amount for rebar barricade, as modified by any CHANGE ORDERS, shall be full compensation for all labor, materials, tools, equipment, services, and all other costs necessary to perform the WORK as described in this section.

C. Measurement of rebar barricade for adjustments to the lump sum BID PRICE as described in Part 4.01.C and D above shall be as follows:

1. Lengths of rebar barricade will be expressed in lineal feet and measured by direct measurement of the completed barricade around its full perimeter.

4.03 PAYMENT

A. Payment for rebar barricade will be for each itemized mine site or mine feature at the lump sum BID PRICE, as modified by any CHANGE ORDERS. Payment will only be made for completed WORK that is accepted and approved by the OWNER. No partial payments will be made for individual items of WORK.

B. Payment at the lump sum BID PRICE, as modified by any CHANGE ORDERS, shall be full compensation for all labor, materials, tools, equipment, services, and all other costs and incidentals necessary to perform the WORK in this section in accordance with the Standard Drawings and Specifications.

END OF SECTION 0294

0295 Barbed Wire Fencing

PART 1 - GENERAL

1.01 WORK INCLUDED

A. The WORK consists of the construction of barbed-wire fences around hazardous mine openings and reclaimed areas.

1.02 SUBMITTALS

A. CONTRACTOR shall submit *with the Bid* the names of one or more suppliers to be used for fencing required by these specifications.

B. CONTRACTOR shall submit *with the Bid* a written description indicating equipment to be used to perform the work required in this section.

C. CONTRACTOR shall submit *during construction* labels, tags, and receipts for fencing materials and supplies being used.

1.03 RELATED WORK

A. Section 0230: Access Improvement
B. Section 0270: Site Grading/Earthwork
C. Section 0290: Revegetation
D. Section 0300: Specific Site Requirements

1.04 DELIVERY, STORAGE, AND HANDLING

CONTRACTOR shall deliver to the site and store the materials in a safe fashion to protect the environment and public.

PART 2 – PRODUCTS/MATERIALS

2.01 BARBED WIRE

Barbed wire shall be composed of two strands of galvanized No. 12.5 steel wire, with 14 gauge galvanized steel 2-point barbs. Spacing of barbs shall be approximately 4 to 5 inch centers.

2.02 STEEL CORNER, END AND BRACE POSTS, GATE POSTS FOR WIRE GATES

Steel corner posts, end posts, brace posts and gate posts for wire gates shall be 2-inch by 3-inch standard steel angle fence posts, 4.10 pounds per foot, with a minimum length of 7 feet for 4-foot high fences and 8 feet for 5-foot high fences. Braces for these posts shall be 2-inch by 2-inch by 3-inch structural steel angles of proper length to provide adequate bracing.

2.03 STEEL LINE POSTS

Steel line posts shall be standard T-, U- or Y-shaped steel fence posts, with a minimum length of 5.5 feet for 4-foot high fences and 6.5 feet for 5-foot high fences, and minimum nominal weight of 1.25 pounds per foot. All steel line posts shall have an anchor plate. Posts shall have studs to hold the wire in the proper position and prevent slipping. Steel line posts shall be painted with green enamel.

2.04 WOODEN LINE POSTS

Wooden line posts shall be straight, sound and seasoned with ends sawed off square. All knots shall be trimmed flush with the surface. Posts shall be treated with either Pentachlorophenol, creosote oil or creosote-petroleum solution, meeting the requirements of AASHTO M 133. Posts shall be treated by standards, except that the net retention shall be at least five pounds of preservative per cubic foot of wood. All wooden line posts shall have a minimum diameter of four inches (4"). All wooden line posts must be a minimum of six feet (6') in length.

2.05 CONCRETE

Concrete shall be mixed one part Portland II cement to two parts sand and 3.5 parts gravel, with not more than 6 gallons of water per 94-pound sack of cement.

2.06 GATE BARS

Gate bars shall be 2-inch by 4-inch standard dimension lumber, 4 feet long. Gate spacers shall be 2-inch by 2-inch standard dimension lumber, 3.5 feet long.

2.07 MANUFACTURED GATES

Manufactured gates shall be 18 feet long by 52 inches high, constructed of 15 gauge, 1½-inch square tubing similar in quality to the "Heavy Duty Cattle Gate" as manufactured by Titan West Inc., Linn, Kansas 66953. These gates shall be furnished with all necessary hinges and appurtenances. The gate shall have at least one finish coat of green enamel so as to match standard steel fence posts.

PART 3 - EXECUTION

3.01 GENERAL

A. Areas to be fenced are those that have been disturbed during reclamation construction as described in Section 0300 or shown on the site-specific maps or drawings. Those areas shall include, but are not limited to, portal closure areas, grading areas, access areas, and other areas disturbed by CONTRACTOR in performing the WORK.

B. Fences shall be constructed with good workmanship conforming to accepted fencing standards.

C. CONTRACTOR shall take necessary precautions to avoid disturbance of surrounding native areas and to minimize travel on undisturbed soils.

3.02 STEEL LINE POSTS

A. Steel line posts shall be driven 1.5 feet into the ground or to the top of the anchor plate. All posts shall be set to the minimum depths specified above unless bedrock or other restrictive layer prohibits it. In such cases, line jacks or other suitable type of anchoring shall be acceptable, or posts may be set in pre-drilled holes at least 12 inches deep and backfilled with concrete. Line posts shall be spaced uniformly, as shown on the Drawings.

B. Fences shall be straight between corners. Some tree branch or brush cutting may be required to maintain alignment. Reasonable deviation in alignment will be permitted where rocky ground or steep slopes make it necessary.

3.03 WOODEN LINE POSTS

A. Wooden line posts shall be inserted into a hole dug a minimum of 28 inches deep. The backfill material must be thoroughly compacted by tamping so that the installed post has minimal play. Maximum wooden post spacing is eighteen (18) feet for a 4-wire fence, and sixteen (16) feet for a 5-wire fence.

B. Fences shall be straight between corners. Some tree branch or brush cutting may be required to maintain alignment. Reasonable deviation in alignment will be permitted where rocky ground or steep slopes make it necessary.

3.04 CORNER POSTS

Unless otherwise specified, corner posts shall be installed at all corners and at all points where the fence alignment changes horizontally 15 degrees or more as shown on the Drawings.

3.05 END POSTS WITH BRACES

End posts with braces shall be built as shown on the Drawings at both sides of all wire gates, at all fence ends, and where fences cross large water courses or below rock structures. A 12 inch x 12 inch x 24 inch concrete block or durable rock of equal size may be used as a deadman anchor in lieu of braces to fit site conditions.

3.06 LINE BRACES

Line braces shall be installed in accordance with the Drawings at the following locations:

1. In straight fence sections, at intervals of no more than 800 feet.
2. At any point where the vertical angle described by two adjacent reaches of wire is upward and exceeds 15 degrees.
3. At the beginning and end of each curve.

3.07 ATTACHING FENCING TO POSTS

A. The fence shall be 4-wire, barbed, or 5-wire, barbed, as shown on the Drawings.

B. The fencing shall be mechanically stretched taut and attached to posts as follows:

1. The fencing shall be placed on the side of the post opposite the area being protected, except on curves.

2. The fencing shall be placed on the outside of curves.

3. The fencing shall be fastened to each end post, corner post, and pull post by wrapping each horizontal strand around the post and tying it back on itself with not less than three tightly wound wraps.

4. Each strand of barbed wire shall be attached to each post as shown on the Drawings.

5. The fencing shall be fastened to steel line posts with either two turns of 14 gauge galvanized steel wire or the post manufacturer's special wire fasteners.

6. The fencing shall be fastened to wooden line posts using one-inch (1") staples.

7. Wire shall be spliced by means of a Western Union splice or by suitable splice sleeves applied with a tool designed for the purpose. The Western Union splice

shall have no less than 8 wraps of each end about the other. All wraps shall be tightly wound and closely spaced. Splices made with splice sleeves shall have a tensile strength no less than 80 percent of the strength of the wire.

8. Stays shall be attached to the fencing in a manner to ensure maintenance of the proper spacing of the fence wire strands.

3.08 CROSSINGS AT DEPRESSIONS AND WATERCOURSES

A. Where the fence crosses a draw, drainageway, or water course less than 30 feet wide, or where the bottom of the draw will be more than 20 inches below the bottom wire, 7-foot long steel fence posts shall be driven on each side of the water course and a deadman anchor shall be fastened to the fence as shown on the Drawings to maintain the required wire spacing interval. An acceptable alternate to the deadman anchor is a 52-inch long standard fence post driven into the slope at a 30 degree to 45 degree angle as shown on the Drawings. Additional wires shall be added for short distances, as necessary.

B. Where the fence crosses water courses wider than 30 feet and/or below rock structures, a 3-inch x 3-inch x 7-foot long structural steel angle post shall be set 22 inches into a concrete base, either 12 inches circular or square, on both sides of the water course. The posts shall be anchored with either a structural steel brace or deadman anchor, as shown on the Drawings. Line fence shall be tied off at the post and the fence across the watercourse shall be tied to each post. Twisted wire stays shall be spaced on 8-foot centers. Additional wire or 3-inch cable may be used as necessary. Floating deadmen shall be 2-inch x 8-inch timbers tied to all wires so as to equalize stress.

3.09 GATES

Wire gates to allow for passage of vehicles or livestock shall be installed at the locations shown on the Drawings and/or as directed by the OWNER. The materials shall conform to the kinds, grades, and sizes of the new fence, and shall include the necessary fittings, stays, and Number 9 smooth wire closure. Gate posts for wire gates shall be included in the length of fence for measurement and payment.

3.10 GATE POSTS

Gate posts, for all gates other than wire gates, shall be 6 inch diameter seamless steel pipe, standard weight (Schedule 40), 9 feet long in a 3 feet x 3 feet x 3.5 feet concrete base. After installation, the entire pipe shall be filled with concrete. The exposed metal surfaces shall be thoroughly cleaned of all rust, grease, and other foreign substances and painted with one coat of metal primer and two coats of green enamel so as to match standard steel fence posts.

3.11 MANUFACTURED GATES

Manufactured gates shall be installed at locations marked on the Drawings and/or as directed by the OWNER. Gates shall be fastened to 6-inch diameter steel pipe gate posts with 13-inch pipe and 1-inch pins similar to those furnished with the "Heavy Duty Cattle Gate" manufactured by Titan West Inc., Linn, Kansas. Gaps in fence for manufactured gates will not be measured for payment of the fence.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS FOR PAYMENT

A. Barbed Wire Fencing is bid and paid on a lump sum basis. Estimated quantities are provided in Section 0300, the appendices, and on the Bid Schedule to serve as a guide in outlining the scope of work, but bidding is not on a unit price basis. The lump sum BID

PRICE need not equal the product of the estimated quantity times a unit price. Variation in Quantity Unit Prices are requested on the Bid Schedule for the purpose of adjusting the lump sum BID PRICE in cases where the actual quantity of WORK performed differs from the estimated quantity.

B. The actual final quantities for the major tasks or categories of materials may differ from the estimated quantities shown in the site-specific information in Section 0300, the appendices, or the Bid Schedule. The estimated quantities are based on information gathered and interpreted from surface investigations.

C. Should the CONTRACTOR estimate the quantity of barbed wire fencing to be greater than 15% above the estimated quantity shown in the Bid Schedule, the CONTRACTOR must negotiate a CHANGE ORDER with the OWNER for additional WORK prior to undertaking the additional WORK. The adjustment to the lump sum BID PRICE will be based on the Variation in Quantity Unit Price on the Bid Schedule and the variance above 115% of the estimated quantity. The method of measurement for quantities shall be determined prior to undertaking the additional WORK.

D. When the actual quantity of barbed wire fencing completed as determined by measurement is greater than 15% below the estimated quantity on the Bid Schedule, the OWNER will negotiate a reduction in the lump sum BID PRICE based on the Variation in Quantity Unit Price on the Bid Schedule and the variance below 85% of the estimated quantity. This price adjustment shall be executed by a CHANGE ORDER.

4.02 MEASUREMENT

A. Barbed Wire Fencing is a lump sum bid item that does not require measurement of quantities for payment. At each mine site or mine feature itemized for WORK in the Bid Schedule, the OWNER must approve and accept the WORK as set forth above before any payment on that item can be requested.

B. Site preparation and bracing will not be measured for direct payment but will be considered subsidiary to barbed wire fencing. Costs for these subsidiary products or tasks are to be absorbed into the lump sum BID PRICE for the associated barbed wire fencing as described in this section. The lump sum BID PRICE amount for barbed wire fencing, as modified by any CHANGE ORDERS, shall be full compensation for all labor, materials, tools, equipment, services, and all other costs necessary to perform the WORK as described in this section.

C. Measurement of barbed wire fencing for adjustments to the lump sum BID PRICE as described in Part 4.01.C and D above shall be as follows:

1. Lengths of barbed wire fencing will be expressed in lineal feet and measured by direct measurement of the completed fence along the top of the fence from the post at the beginning point to the post at the end point of the constructed section.

2. Installed manufactured gates will be expressed as individual units and measured by counting.

4.03 PAYMENT

A. Payment for barbed wire fencing will be for each itemized mine site or mine feature at the lump sum BID PRICE, as modified by any CHANGE ORDERS. Payment will only be made for completed WORK that is accepted and approved by the OWNER. No partial payments will be made for individual items of WORK.

B. Payment at the lump sum BID PRICE, as modified by any CHANGE ORDERS, shall be full compensation for all labor, materials, tools, equipment, services, and all other costs

and incidentals necessary to perform the WORK in this section in accordance with the Standard Drawings and Specifications.

END OF SECTION 0295

CONSTRUCTION SPECIFICATIONS

[Projectname] Project

Reclamation Construction

[Countyname] County, Utah

[Season, Year]

Chapter 4: PROJECT-SPECIFIC TECHNICAL SPECIFICATIONS

Section 0300: Specific Site Requirements
Appendix A: Site Descriptions & Mine Closure Schedule
Appendix B: Revegetation Seed Mix
Appendix C: Davis-Bacon Act General Wage Determination
Appendix X: Earthwork Schedule [*** or other appendices as required, etc.]
Appendix X: Stormwater Pollution and Prevention Plan (SWPPP)
Appendix X: Stream Alteration Permit

0300 Specific Site Requirements

PART 1 - GENERAL

1.01 WORK INCLUDED

A. This section describes the location, the features present, and the WORK to be performed at the [Projectname] Project located in [Countyname] County, Utah. The items of the WORK shall be performed according to the appropriate sections of these specifications.

B. It is the intent of these Specifications that the site-specific scope of WORK is as described in this Section. The General Technical Specifications, Sections 0200 through 0290, outline WORK broadly applicable to all abandoned mine reclamation situations and that may not be required at each mine site in this project. Where there is a conflict between Section 0300 and the General Technical Specifications (0200's), Section 0300 shall govern.

C. The access, site description and specific requirements for each closure are described in this Section. Details and dimensions are shown on the Drawings in Chapter 6. CONTRACTOR shall be aware that the dimensions on the Drawings are shown as typical. CONTRACTOR shall also be aware that minimum or maximum dimensions on the Drawings or given in the Specifications are specific and are to be adhered to unless the OWNER approves changes in writing. The quantities presented in the specific site sections should be considered an estimate with a tolerance of plus or minus 15 percent. CONTRACTOR shall visit each site and determine the quantities and amounts required in performing the WORK as intended in these Specifications and on the Drawings.

D. Licensing: CONTRACTOR shall hold a Utah [***E100] license.

1.02 PROJECT LOCATION AND DESCRIPTION

A. The [Projectname] Project area is located in ***direction [Countyname] County about ### miles ***direction of ***City at the [insert general location]. General reclamation area boundaries of the [Projectname] Project are shown on the attached location maps (see Chapter 7, Maps ***1 and 2) and are described in this section.

B. The [Projectname] Project consists of approximately ### abandoned ***type [hardrock precious and base metal/uranium/coal] mine openings or related features in the [geographic area]. The project takes in [insert general extent/description of project].

C. Access: To reach the [Projectname] Project area from ***City, [road directions]

D. The formal project boundary takes in the following sections, although mines occur in only a portion of this area: [sections]

E. The [Projectname] Project is mapped on the *** USGS 7.5 minute quadrangle and on the *** USGS 30’x60’ (1:100k) quadrangle.

USGS Quad Index

Quad name	Quad name
Quad name	Quad name

1.03 MINE OPENING LOCATIONS AND DESCRIPTIONS

A. The [Projectname] Project area consists of approximately ***### identified abandoned mine openings or other mining features. The mine openings consist of adits, inclines, vertical shafts, exposed stopes, prospect pits, trenches, and subsidence holes. The openings occur in a wide range of sizes, configurations, and conditions. Of the ***### inventoried features, ***### are classified as “open” sites and of these, ***### are specified for closure.

B. Locations, descriptions, approximate dimensions, UTM coordinates, closure methods, and map references of each mine opening (site) are provided in the table in Appendix A. Detailed locations of the sites are presented on the maps in Chapter 7. Note that mine symbols may be plotted on the maps offset slightly from their true locations due to terrain interference with GPS surveys and the way the mapping software treats adit symbols.

C. Site ID Numbers (Tag Numbers): Each mine opening or feature is identified by a unique site identification number such as 3411308HO002. The ID number consists of seven digits, two letters, and three digits. The first digit indicates the quadrant around the Salt Lake baseline and meridian (or the Uinta special meridian). Townships south and east of the SLBM are coded "4." The second and third digits indicate the township, the fourth and fifth digits indicate the range, and the sixth and seventh digits indicate the section. These numbers are followed by letters indicating the type of mine opening or feature (H = horizontal adit, I = inclined adit, V = vertical shaft, SH = subsidence hole, PR = prospect, TR = trench, PT = open pit,) and, in the case of shafts and adits, letters indicating whether the mine is open (O) or closed (C). These letters are followed by numbers that are sequential numbers assigned as the openings were encountered during the field inventory. Thus, site number 4060318HO003 is the third horizontal opening (HO) inventoried in Township 6 South, Range 3 East, Section 18. The leading zeros in the sequential number part of the ID number are frequently omitted (i.e. HO3 instead of HO003).

D. Identifying Sites: Sites in the field are marked two ways, with wooden stakes and steel washers. The 1"x2" wooden stakes have the full ID number written in ink. The washers are 1½" diameter and are bolted to rock with masonry anchors. They are stamped with only the opening ID, without the numbers for quadrant, township, range, and section (e.g. just "HO3"). Because of vandalism or weather, many mine ID markers are illegible or are missing altogether. Some mine features, particularly small prospects, are not marked. In a very few cases, sites have been renumbered, and ID numbers on tags may not match the ID number in these Specifications. CONTRACTOR will have to rely on the site location maps and the descriptions in Appendix A to identify mine sites. OWNER's Contract Representative will provide assistance in identifying the mine openings.

E. There are ### small, shallow prospects and caved mine features in the project area that have been inventoried and assigned tag numbers with opening types HC, VC, PR, PT, PH, PV, or TR. These “closed” mine features are not scheduled for closure. They are not included in the descriptions of the mine openings in Appendix A. They have been plotted on the maps as navigational aids, but they are not labeled to reduce clutter.

F. There are a few small, shallow prospects in the project area that have not been assigned tag numbers or been plotted on the maps. Some of these may be noted in the descriptions of the mine openings in Appendix A, but most are not. No untagged mines are scheduled for closure. There may be additional hazardous mines in the area that were missed by the inventory and are not tagged. CONTRACTOR shall notify OWNER if new mines are discovered.

G. Although the project boundary includes sections in four townships, there are no duplicate section numbers in the project. Therefore, sites may be identified without confusion using only the section number and the opening ID, without the initial five digits. These

specifications may refer to sites by this shorthand notation, e.g. 31HO001 (or 31HO1) for 3071731HO001.

1.04 PROJECT SITE GROUPINGS

A. The mine sites in the [Projectname] Project have been organized into ***### subgroups or areas based on geographical proximity and access considerations. These subareas are the basis for the area detail maps in Chapter 7 and the site groupings in the Bid Schedule and Appendix A. The ***### groups or subareas are: [names]. The descriptions that follow have adequate directions to get to the areas mapped on the area detail maps. The maps can then be used to locate each individual mine site. All of the directions start from ***[specify location].

1.05 PROJECT AREA ACCESS

A. The project area is served with dirt roads and foot trails. The dirt roads have varying degrees of passability and upkeep. Most are not maintained. High clearance and/or four-wheel-drive vehicles are mandatory for travel in most of the project area, particularly in wet weather and [other specified conditions/locations]. Many of the mine sites are accessible only by foot. CONTRACTOR shall select from a pre-determined number of staging areas identified in the specifications and secure all necessary permits, including camping permits, from the applicable land management agency.

B. Roads on the maps in Chapter 7 are symbolized as Paved, 2WD, 4WD, ATV, and Foot. Roads symbolized as Paved or 2WD are maintained and should be passable to all types of vehicles in all weather. Roads symbolized as 4WD are wide enough for a standard truck or SUV, but may have ruts, gully crossings, or other obstacles requiring high clearance and/or four-wheel-drive. Roads symbolized as ATV are either too narrow, too steep, or too rocky for full sized vehicles but are suitable for ATV's. Some ATV roads may be also suitable for tracked equipment. Roads symbolized as Foot are too steep, narrow, washed out, or boulder strewn for vehicles, although some may be passable to single-track vehicles (dirt bikes).

C. Vehicle travel on some roads is subject to restrictions (see Part 2.08 below).

1.06 LAND STATUS

A. The [Projectname] Project area contains land owned or controlled by several parties. OWNER is responsible for obtaining the necessary rights of entry to perform the reclamation work. OWNER will have maps showing boundaries of property tracts available during construction for consultation.

B. Approximately ### of the ### sites occur on public land managed by the Bureau of Land Management (BLM). These include sites on unpatented mining claims and sites on other public land. Approximately ### of the ### BLM sites are scheduled for closure. For more information, contact:

[Name, Title]
[Field Office Name] Field Office
Bureau of Land Management
[Address]
[City], Utah [ZIP]
[Telephone #]

C. Approximately ### of the ### sites occur on state land administered by the UtahTrust Lands Administration (TLA). ### of the ### TLA sites are scheduled for closure.

D. The remaining sites (### sites, ### scheduled for closure) are on private land held by a number of different interests.

E. ***At time of project bidding, OWNER has secured written landowner consent for right of entry for ### of the ### openings on private land scheduled for closure. Owners of most of the remaining sites have indicated their intent but have not provided written consent. OWNER anticipates having all private land written rights of entry in place by the time the Notice to Proceed is issued.

F. *CONTRACTOR shall not perform WORK on any site until OWNER has obtained landowner consent for that site.*

G. CONTRACTOR shall not perform WORK on sites on BLM administered land until OWNER has obtained authorization from BLM (expected prior to Notice to Proceed).

1.07 SUBMITTALS

CONTRACTOR shall comply with the submittal schedule presented below after bidding.

A. To be submitted following award of contract and to be approved prior to Notice to Proceed:

Spec Section	Submittal
General Cond. 22	Proof of insurance
Chapter 2	U.S. Department of Labor Conformance Form SF-1444 (if needed)
0200 1.02.C	Work Schedule
0220 1.02	Copies of required permits
0250 1.02.C	Credentials of Certified Person
0275 1.02.B	Public Service Commission and/or Interstate Commerce Commission licensing
0300 2.09.A	Health and Safety Plan
0300 2.12	Fugitive Dust Control Plan
0300 3.01.D.13	Excavation Plan
0300 2.09.I	COVID-19 Mitigation Protocols
0300 3.01.x.x	SWPPP fee payment and NOI filing

B. To be submitted following Notice to Proceed but before performing related Work:

Spec Section	Submittal
0240 1.02.B	Proof of permission for off-site refuse disposal at a licensed disposal site
0251 1.02.A.1	Concrete test reports
0285 1.02.C	Proof of permission to cut trees
0290 1.02.D	Phytosanitary Certificate
0296 1.02.A	PVC Pipe Installation Plan
0296 1.02.B	Complete manufacturer specifications and quality control test data for all PVC pipe and fittings
0297 1.02.C	Statement of field check of all OWNER-provided horizontal and vertical control
0300 2.03.B	Contractor Acknowledgement of Compliance with WNS Pre-Construction Protocol
0300.2.07.A	Range fire prevention and fire response plan
0300 3.01.C.8	Refuse Sampling, testing, transportation, and disposal plan

C. To be submitted during active construction/Work:

Spec Section	Submittal

Chapter 2	Weekly Davis-Bacon Act compliance documentation (Certified Payroll/Statement of Compliance)

D. To be submitted promptly after performing related Work:

Spec Section	Submittal
0225 1.02	Radiological exposure data. Record of individual exposure to radon forms, TLD badge results
0251 1.02.B	Concrete batch tickets
0290 1.02.C	Empty container labels, tags, and receipts for mulch material and seed
0295 1.02.C	Labels, tags, and receipts for fence materials
0296 1.02.C	Field testing results for hydrostatic pressure test results for pressurized sections.
0297 1.02.A	Survey data. Submittals to be signed and sealed by a Professional Engineer or Professional Land Surveyor licensed in the State of Utah
0300 2.03.B	Contractor Acknowledgement of Compliance with WNS Protocol During Work
0300 2.11	As-built drawings

PART 2 - SPECIAL CONDITIONS AND RESTRICTIONS

2.01 CULTURAL RESOURCE PROTECTION

A. The [Projectname] Project area has ### mine openings determined to be on significant historical sites eligible for listing on the National Register of Historic Places. All reclamation activities shall be conducted in a manner sensitive to the historic values and resources found in the area. CONTRACTOR shall ensure that all construction crew members are aware of the cultural sensitivity of the area and the cultural resource protection requirements.

B. While features such as cabins, headframes, and ore chutes are obviously important, many of the historically important features present in the project area are not readily apparent. For example, ore sorting areas may appear simply as a patch of differently colored rock on a dump. Much of what is significant at [location] might typically be dismissed as "trash" somewhere else. Often, the mine opening itself, or cribbing within an opening, is important and needs to be treated appropriately.

C. Access improvement, excavation, and other ground disturbing activities shall be limited to the minimum necessary to achieve the goals of the WORK. Alteration or removal of structures or structural elements of mine openings, such as props, lagging, cribbing, retaining walls, foundations, and doorways shall be limited to the minimum necessary to safely and effectively install the closure. Any such alteration shall be planned in consultation with and executed as directed by the OWNER.

D. One of the key features of the project area that makes the [District Name] mining district historically important is its surviving "historic landscape", the overall appearance of the terrain dotted with mine dumps and workings offering a glimpse of the past. To preserve this historic appearance, when possible mine dumps used as a source of backfill shall be excavated in a way that maintains the outer lines and grades of the dump. This can be done by uniformly removing material from all surfaces, by removing material from the top down, by slightly "hollowing out" the dump, or by removing one lobe of a multi-lobed dump. The idea is to avoid leaving the dump with an uneven, gouged look.

E. Removal of historic or prehistoric artifacts or rock specimens is prohibited. This includes, but is not limited to, bottles, bottle fragments, china and glass fragments, tools, tin cans, buckets, pipe, wire, nails, spikes, bolts, track, machinery, ore cars, vehicles, lumber and other wood, arrowheads and other stone tools, ore samples, petrified wood, and fossils.

F. CONTRACTOR shall stop work and notify OWNER immediately if human burial remains are discovered.

2.02 BAT CONSERVATION (EXCLUSION)

A. OWNER has performed surveys to determine which mines are used for bat habitat. Where bats are present in a mine, they will be excluded from the mine prior to installing airtight closures (see Section 0250, Part 3.01). Sites requiring exclusion prior to closure are indicated in Appendix A.

B. The exclusion process is effective only when bats are active in warm seasons. To prevent entombing bats, sites indicated in Section 3.01, THE WORK, as requiring exclusion prior to closure shall not be closed in the cold season during hibernation or in the warm season during the maternity roost. Guidance from the Utah Division of Wildlife Resources (DWR) allows bat exclusion in the spring season between **March 15 and May 15** and in the fall season between **September 15 and November 15**. Bat exclusion at any other time of the year requires the OWNER's approval in consultation with the DWR.

C. Direct visual inspection of the mine interior by the OWNER or the "slow fill" method of shaft backfilling may be used with OWNER's approval as an alternative to the chicken wire exclusion process.

2.03 BAT CONSERVATION (WNS)

A. White-nose syndrome (WNS) is a disease responsible for massive die-offs at bat roosts across eastern North America. WNS takes its name from a white fungus that appears on the muzzle and other body parts of hibernating bats. WNS is spreading westward and has been detected in the Great Plains and Washington state. To prevent the spread of WNS, biologists recommend limiting the spread of soils that could contain fungal spores from one roost site to another. This is done by thoroughly cleaning and disinfecting clothing, tools, and equipment between uses at different locations.

B. The science of WNS and its control is evolving while the range of the disease is spreading. The OWNER refers to the White-nose Syndrome Response Team, a US/Canadian collaboration of government agencies and non-governmental organizations, for current knowledge of the disease. The WNS Response Team maintains the "US National White-nose Syndrome Decontamination Protocol," which is continuously updated as conditions change.

C. Decontamination procedures designed to prevent the spread of WNS are described in the "US National White-nose Syndrome Decontamination Protocol." This WNS decontamination protocol is published online at: www.whitenosesyndrome.org (follow the "Decontamination Information" link from the home page). CONTRACTOR shall follow the current national protocols outlined there for all internal mine work, including inventory, exclusion installation, internal surveys, and closure construction. Decontaminate all gear and personnel that have been inside mine openings.

D. CONTRACTOR may request a waiver from the OWNER to modify the WNS decontamination protocol based on site conditions. Any modification of the protocol shall be done in consultation with and with the approval of the OWNER.

E. Costs for decontamination supplies, disposable clothing, disinfectants, worker time, equipment washing, and other expenses related to implementation of the WNS protocol shall be included on the WNS Protocol Compliance line item on the Bid Schedule. Invoicing and payment shall be made on a 60/40 basis as done for Mobilization/Demobilization.

2.04 BIRD CONSERVATION

A. A number of state and federal laws or policies protect several bird species. CONTRACTOR shall avoid or minimize disturbance to protected birds as outlined in this section. Generally this is done by scheduling work to avoid sensitive breeding activity and by minimizing habitat disturbance.

B. During spring nesting and fledging (January 15 to August 31) OWNER will perform line-of-site visual surveys for raptor nests in the vicinity of the mine sites. If nests are found, CONTRACTOR shall reschedule work at those sites until after August 31.

C. ### bird species designated as threatened and protected under the Endangered Species Act may occur in the project area, although it is extremely unlikely. They are the [species names]. Should these birds be sighted, WORK may be stopped or rescheduled in that area, pending consultation with wildlife authorities.

2.05 RARE PLANT CONSERVATION

A. ### plant species listed as endangered or threatened under the Endangered Species Act may occur in the project area. They are:

[list names of plant species and status as threatened or endangered]

B. OWNER will survey work areas for these plants prior to construction. Any plants found shall be flagged by OWNER and avoided by the work crews. CONTRACTOR and crew shall notify OWNER of any [other sensitive plant species] found in work areas.

2.06 LAND PROTECTION

A. Trash, containers, wrappings, empty mortar and concrete mix bags, concrete block fragments, rebar cuttings, welding rod scraps, waste PUF, pallets, water jugs, buckets, broken tools, discarded materials, food wrappers, beverage containers, paper towels, and other such litter generated by the reclamation activities shall be kept contained during construction and shall be cleaned up and removed from the site upon completion.

B. Fuel, lubricants, hydraulic fluid, PUF components, and similar products shall be properly contained and handled to prevent spills.

C. CONTRACTOR shall be responsible to reimburse landowners or lease holders for livestock or other property lost, injured, or damaged by CONTRACTOR's operations on access roads.

2.07 FIRE PREVENTION AND CONTROL

A. CONTRACTOR shall submit a written range fire prevention and fire response plan to OWNER at the start of construction.

B. CONTRACTOR shall exercise care with open flames and sparks when welding or cutting to avoid starting range fires or igniting mine timbers or wooden mine structures (shaft collar cribbing, headframes, etc.). Lifts of PUF shall be given adequate time for the reaction heat to dissipate to avoid excessive heat build-up within the foam.

C. CONTRACTOR shall call 911 immediately in the event of a fire. Callers should be able to relay the location and status of the fire.

D. In the event of a fire, personal safety is the first priority. CONTRACTOR shall initiate fire suppression to the extent that it can be done safely. If a fire spreads beyond the capability of the workers and available tools, crews shall cease suppression and evacuate the area on previously identified routes.

E. CONTRACTOR shall comply with all federal, state, or local rules and regulations regarding the use, prevention, and suppression of fires, including any fire prevention orders that may be in effect. CONTRACTOR may be held liable for the costs of fire suppression, stabilization, and rehabilitation.

F. Vehicles and equipment shall be equipped with shovels, water, and fire extinguishers with a minimum rating of ABC –10 pounds. Internal and external combustion engines shall be equipped with properly maintained, unmodified spark arresters (see 36 CFR 261.52).

G. Recent projects by the OWNER on public land have been interrupted or delayed by fire restrictions issued by the BLM. CONTRACTOR shall be aware of the possibility that the current work schedule may be affected by similar orders. See Part 3.02 below.

2.08 ACCESS RESTRICTIONS

A. Vehicles shall stay on existing roadways as much as possible and avoid cross-country trips across undisturbed areas except where necessary.

B. CONTRACTOR shall select from a pre-determined number of staging areas identified in the specifications and secure all necessary permits, including camping permits, from the applicable land management agency.

2.09 WORKER HEALTH AND SAFETY

A. CONTRACTOR shall submit to OWNER prior to Notice to Proceed and keep onsite a copy a Health and Safety Plan describing the policies and procedures used to protect worker health and safety.

B. CONTRACTOR is required to hold regular safety meetings and is encouraged to have a response plan in place in the event of accidents, personal injury, animal bites, or other medical emergency.

C. All of [Countyname] County is covered by 911 emergency telephone service, but the project area has *****[cell phone status] no reliable cell phone coverage.

D. Abandoned mines can possess an array of potential hazards to worker health and safety. Subsurface conditions are often unknown. Mine reclamation carries unique risks for workers beyond those normally associated with construction work. The CONTRACTOR shall comply with all applicable occupational health and safety rules and regulations.

E. The heavy reliance on manual labor for this project and the steep, rugged terrain increase the risk of orthopedic and trauma injuries. Standard safety gear (hard hat, steel-toed shoes) are required for all personnel. Fatigue, heat stress, and dehydration are inherent medical risks of heavy manual labor in desert environments. Frostbite and hypothermia are risks of winter work. Workers should take appropriate precautions for the site conditions.

F. Mining districts often contain ores for minerals besides the primary target commodities. These secondary minerals may be present in mine dumps and can include heavy metals or other materials with potential health effects. Excavation of mine dumps for backfill can generate dust that can create the potential for ingestion, inhalation, or skin contact exposure to contaminants. Workers should take appropriate precautions. Forty hour HAZWOPER certification is recommended for all CONTRACTOR workers. The CONTRACTOR is responsible for worker safety.

G. [Degree of] sampling of mine dumps in the [Projectname] Project area has shown that some dumps have elevated levels of [contaminants]. It is reasonable to infer that these metals may be present elsewhere in the project. ****or**** Sampling for contaminants at mines and dumps in the [Projectname] Project area has not been done. The presence and concentrations of any potential contaminants is not known.

H. Rodents often nest in abandoned mines and leave accumulations of droppings and nest debris. In theory, these nests and droppings could host the potentially lethal hantavirus, although no mine closure work has ever been linked to a case of hantavirus. As a precaution, workers should avoid stirring up dust or rodent droppings in mines and use standard hygiene and sanitation practices (washing before eating, etc.). Workers are encouraged to learn to recognize the symptoms of hantavirus infection and seek proper medical attention if indicated.

I. CONTRACTOR shall submit to OWNER prior to Notice to Proceed and keep onsite a copy of protocols addressing the mitigation of the spread of COVID-19 during construction, travel to and from the project site, within the community (hotels, meals, and gas), and when obtaining supplies and materials.

2.10 CONSTRUCTION RECORDS/AS-BUILTS

CONTRACTOR shall submit keep and submit records (as-built drawings, photos, or equivalent) of WORK performed in accordance with Section 0200: General Site Information, Part 1.02.D, for the following tasks: [****specify work requiring as-builts]

*** the following section is for uranium mines only ***

2.11 RADIOLOGICAL SAFETY

A. The [Projectname] Project area contains uranium mines and radioactive minerals. CONTRACTOR shall comply with the radiation health and safety protocols of Section 0225: Radiological Protection.

B. CONTRACTOR shall comply with all applicable standards of the Mine Safety and Health Administration (MSHA) published in "Safety and Health Standards Applicable to Underground Metal and Nonmetal Mining and Milling Operations" (30 CFR Part 57), in particular sections 57.5037 through 57.5047.

C. CONTRACTOR shall have a Radiological Specialist in charge of preparing a radiological protection program, preparing a site specific Health and Safety Plan, and conducting the required pre-construction Health and Safety Training Meeting. The Radiological Specialist is subject to the OWNER's approval.

D. CONTRACTOR shall be responsible for providing radiological monitoring equipment and personal protection equipment for their workers with the exception of continuous radon monitors. OWNER will provide continuous radon monitors for up to two separate crews. The radon monitors are provided because the OWNER has found that they can be in limited supply and difficult to obtain on short notice. CONTRACTOR shall be responsible for the use, care, and maintenance, loss, or damage of the radon monitors through the duration of the WORK.

E. Alpha and gamma radiation measurements were collected at each mine opening at the time of the project inventory in [year20##]. The measurements were taken inby the brow of most openings where conditions allowed. Radiological measurements are provided in Appendix [X]. These measurements are provided for planning purposes only. At the time of the project inventory, the highest alpha level recorded was ##.## WL and the highest gamma level recorded was ### µR/hr. Typical radon measurements at the openings are well below 1 WL, however, radon concentrations can fluctuate daily. Average background gamma radiation is ## to ## µR/hr.

PART 3 - EXECUTION

3.01 THE WORK

The WORK at the [Projectname] Project area shall include closure of approximately ### mine openings and revegetation of areas disturbed by reclamation work. Additional mine closures may be added to the WORK as the project progresses if new mine openings are found or sites are re-evaluated.

A. Mobilization/Demobilization. Mobilize labor, equipment, and supplies to the site in accordance with Section 0220: Mobilization/Demobilization, and as follows:

1. Previously disturbed areas should be selected for staging and activity areas as much as possible. Road shoulders or wide spots (outside traffic lanes), mine dumps, established campsites, and similar disturbed areas should be used for offloading and temporary storage of equipment and materials and for camping. Vegetation grubbing and topsoil stripping and stockpiling shall not be done in staging areas. [specify designated staging areas]

2. Camping onsite is permitted to maintain security or reduce commuting time. Landowner consent is required. Camping on BLM-administered land is limited to 14 consecutive days in any one location.

3. Vehicles and heavy equipment shall be thoroughly washed with a high pressure sprayer prior to entering the project area to prevent the introduction and spread of noxious weeds.

4. [Specify availability of services in project area]

B. Access Improvement. Improve access for labor, equipment, and supplies to the individual mine sites in accordance with Section 0230: Access Improvement, and as follows:

1. Access to the project area is possible on the existing dirt roads and requires little or no additional improvement. The secondary dirt roads inside the project area are subject to washouts, ruts, and rockfalls. Modest access improvement is anticipated to be needed in some localized areas. This would likely be limited to rolling rockfalls aside and spot grading of short segments of eroded roads.

2. No new access road construction will be allowed. Improve access to the individual mine openings by upgrading the existing dirt roads, ATV trails, and foot paths to the minimum degree required to conduct the WORK. Site access should require no or minimal improvement work in most areas. CONTRACTOR should generally expect to select the mode of transportation to fit the existing ground conditions rather than changing the ground to accommodate a vehicle. Access to many sites will require cross-country traverses. Access routes should be selected to avoid or minimize disturbance to vegetation and cultural resources. Access routes and improvements are subject to approval by OWNER. Except on main roads, work should be organized to minimize the number of repeat trips on a particular route to reduce trail wear and tear

(this applies to foot traffic as well as to vehicles and equipment). Where possible, "one trip in, one trip out" is the goal.

3. CONTRACTOR shall obliterate footprints, truck and ATV tire tracks, and crawler tracks by raking or similar means as directed by OWNER in areas where access routes deviate from existing established open roads. Severe trail wear or compaction may require mechanical scarification and reseeding.

4. CONTRACTOR shall remove access improvements and return roads to their pre-construction condition upon completion of work.

*** the following item is for uranium mines only ***

5. CONTRACTOR shall install temporary signage on the access to each active work area to include:
   - 24” x 30” ROAD CLOSED (K-6725),
   - 18” x 24” RESTRICTED AREA NO ADMISSION WITHOUT RADIATION BADGE, and
   - 24” x 24” DANGER HAZARDOUS AREA AUTHORIZED PERSONNEL ONLY.

   The CONTRACTOR shall install and maintain these signs in locations as directed by the OWNER at all active work areas.

C. Mine Closure. Close all identified mine openings, subsidence holes, and pits in accordance with the technical specifications in Sections 0250 through 0254, and as follows:

1. Use the closure method specified for each site in the "Closure Method" column of the table in Appendix A. Estimated closure dimensions and/or construction quantities (cubic yards of backfill; square feet of masonry wall, bat gate, or rebar grate) for each closure are provided in Appendix A. Use the technical specification section and standard drawing referenced in Appendix A for each closure.

2. Backfill closures specified in Appendix A are noted as either hand work or equipment work. These designations reflect OWNER’s expectation for the backfill method, but are not binding. Mine openings scheduled for equipment backfill may be backfilled by hand and mine openings scheduled for hand backfill may be closed by equipment depending on circumstances on the ground. The choice of hand or machine backfill methods shall be determined in consultation with OWNER and is subject to OWNER's approval. Cost adjustments to the Bid Price may be made when backfill methods are changed. Cost adjustments will be negotiated based on the Variation in Quantity Unit Prices in the bid schedule for comparable work.

3. Wall closures specified in Appendix A are noted as either stone or concrete block. These designations reflect OWNER’s expectation for the wall material, but are not binding. The designations are based on assessments of the onsite availability of suitable stone and the difficulty of transporting block to remote locations. Mine openings scheduled for stone walls may be closed with block walls, and vice versa. The choice of wall material shall be determined in consultation with OWNER and is subject to OWNER's approval. Cost adjustments to the Bid Price will not be made when a wall material is changed.

4. Concrete block walls shall be treated on the outer surface to blend with the adjacent native rock. Suitable treatments include facing the block wall with a layer of rock or plastering or stucco-ing with mortar mixed with local sand or soil. The intent is to camouflage the wall by matching the color and texture of the native rock. Camouflage treatments may be omitted at some sites at OWNER's direction depending on the visibility of the wall.

5. ### shafts to be backfilled have wood cribbing or other structural elements that shall be protected from damage. These sites are [list site tag numbers]. CONTRACTOR shall rig a temporary chute or funnel of plywood or sheet metal or otherwise protect the top few feet of the wood structures at these sites from damage from rock impact and abrasion while the shaft is being filled.

6. Site specific variations to the generic closure methods are required at some mine openings. Many of these special requirements or customized details are noted in Appendix A. Not all such special requirements are so noted in Appendix A. Sites without such notes may still require site-specific variations to be determined during construction.

7. Where present in a mine, bats will be excluded from the mine prior to installing the closure (see Section 0250, Part 3.01 and Section 0300, Part 2.02). Mine sites requiring exclusion prior to closure are indicated in the "Special Conditions" column in the table in Appendix A.

8. New sites not on the inventory are commonly found during the course of reclamation. OWNER anticipates adding closures at newly discovered sites to the contract by means of contract change orders as engineering is completed. Costs for additional work will be negotiated based on the Variation in Quantity Unit Prices in the bid schedule for comparable work. Sites designated "None" in Appendix A (### "open" sites, ### "closed" sites) are not expected to require closure work. In addition, some sites currently specified for closure may be dropped from the WORK if re-evaluation shows that they do not warrant closure.

D. Revegetation Revegetate all areas disturbed by reclamation activities in accordance with Section 0290: Revegetation, and as follows.

1. Disturbed areas include staging areas, access routes, backfilled portals and shafts, regraded areas, and backfill borrow areas. Areas of bare rock, rock ledges, and rocky outslopes of mine dumps do not need to be revegetated.

2. Use the [Projectname] seed mixture (Appendix B). A total area estimated at ### acres will need to be revegetated. The actual revegetation area will vary depending on the CONTRACTOR's diligence in executing the work and limiting disturbance.

3. Revegetation shall be considered incidental to access improvement and installation of the mine closures. Revegetation costs shall be incorporated into the costs for Access Improvement and Mine Closure. Revegetation is not included as a separate bid or pay item, but is considered subsidiary to the other items of WORK. No separate payment shall be made for Revegetation.

4. Mulch and fertilizer shall not be required.

3.02 CONSTRUCTION SCHEDULING

A. Notice to proceed with construction is contingent upon OWNER receiving authorizations from the BLM and from the U.S. Office of Surface Mining Reclamation and Enforcement. [OWNER expects both authorizations to be in place by the *** bid date]. However, if either is lacking, WORK will be postponed accordingly.

B. Recent projects by the OWNER on public land have been interrupted or delayed by fire restriction issued by the BLM. CONTRACTOR shall be aware of the possibility that the current work schedule may be significantly affected by such orders. These orders have prohibited metal hot work (welding, cutting, grinding) and vehicles or gas-powered equipment (e.g. generators, chain saws) without spark arrestors. Past restrictions have been in effect from early summer to late fall (October or November).

C. The start-up date for resumption of WORK suspended due to adverse weather, fire restrictions, or other conditions will be determined by OWNER in consultation with CONTRACTOR and will depend upon the nature of the uncompleted WORK.

END OF SECTION 0300

Appendix A: Site Descriptions & Mine Closure Schedule

Note: Refer to Section 0300, Part 1.03.C of the Specifications for a description of the site ID numbering (tag number) system.

Use the following technical specification section and standard design drawing in Chapter 6 for each closure method referenced in Appendix A:

Closure Method	Specification Section	Standard Mine Closure Design Drawing Chapter 6
BACKFILL (ADIT): Hand or Equipment	0250, Part 3.03	1, 39
BACKFILL (SHAFT): Hand or Equipment	0250, Part 3.03	2
WALL (BLOCK)	0250, Part 3.03	3, 5
WALL (BLOCK), REINFORCED	0250, Part 3.03	4, 8
WALL (STONE)	0250, Part 3.03	6
WALL & BACKFILL	0250, Part 3.03	7, 8
BAT GATE (ROUND BAR)	0253, Part 3.02	9, 10
BAT GATE (ROUND BAR) w/DOOR	0253, Part 3.02	11, 12
BAT GATE (ANGLE IRON)		13-15
BAT GATE (ROUND BAR), CMP INSTALLATION	0253, Part 3.04	17, 18
CMP TRENCH CLOSURE		19, 20
REBAR GRATE (ADIT INSTALLATION)	0253, Part 3.03	16
REBAR GRATE (GRADE BEAM)	0253, Part 3.03	21, 25
REBAR GRATE (GRADE BEAM) & I-BEAM	0253, Part 3.03	22, 31
REBAR GRATE (GRADE BEAM) & CUPOLA	0253, Part 3.03	23, 24, 31
REBAR GRATE (PINNED)	0253, Part 3.03.G	26, 28, 30
REBAR GRATE (PINNED) & I-BEAM	0253, Part 3.03	27, 29, 30
REBAR GRATE (PINNED) & CUPOLA	0253, Part 3.03	28, 29, 31
REBAR GRATE (GRADE BEAM) w/CAGE	0253, Part 3.03	37
ANGLE IRON BAT CUPOLA		32-36, 38
PUF SHAFT PLUG	0254, Part 4.01	40
PUF SHAFT PLUG w/CMP	0254, Part 4.01	42
PUF SHAFT PLUG w/CMP & CUPOLA	0254, Part 4.01	43, 45
CONCRETE SLAB (PUF SHORING)	0254, Part 4.01	41
CONCRETE SLAB (PUF SHORING) w/CMP & CUPOLA	0254, Part 4.01	44, 46
REBAR BARRICADE	0294	47

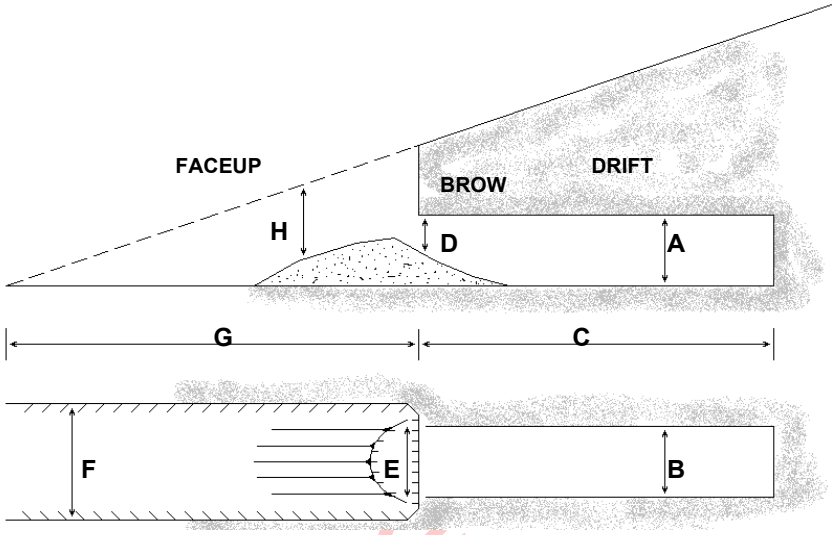
Estimated quantities for construction are given in square feet (sf) for walls, gates, and grates; cubic yards (cy) for backfills; and cubic feet (cf) for PUF and concrete. *Do not confuse units.*

A note about the mine descriptions:

Adits are typically "faced up" when they are driven into a hillside. That is, an open cut or trench is dug into the hill far enough for the brow over the portal to support itself. After the mine is abandoned, soil from the side of the faceup trench and brow often sloughs into the trench, partially filling the trench and creating a mound or berm of soil and rock blocking the entrance to the mine. Shafts collared in deep soil or mine dump material will erode after the original timber supports rot away. This leaves them with a funnel- or cone-shaped collar that is larger than the lower shaft.

In the mine descriptions that follow in Appendix A, a simplified shorthand notation is used to briefly describe the key dimensions of the mine. The internal height, width, and depth of the mine workings (drift or shaft) are usually given first, followed the dimensions of the current opening at the brow, collar, or ground surface (if different than the internal dimensions), and then the dimensions of the faceup trench. Dimensions are in feet; tic marks (˝ or ´) as symbols for inches or feet are omitted for mine dimensions, but may be used in reference to structures or lumber.
High/height, *wide/width*, *long/length*, *deep/depth*, and *by* are abbreviated as *h*, *w*, *l*, *d*, and *x*.

See the illustrations below.

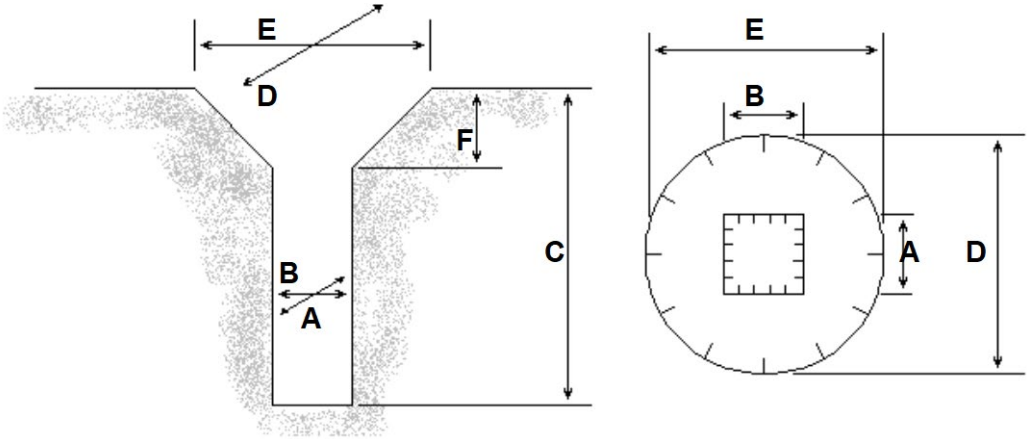


Schematic diagram of a "typical" mine adit with a partially caved opening.

Top: Lengthwise cross section.

Bottom: Plan view.

An adit that has the "typical" shape as shown in the cross-section and plan view diagrams above would be described like this: Ah x Bw x Cd; opening caved to Dh x Ew; faceup Fw x Gl x Hd.



Schematic diagram of a "typical" mine shaft with an eroded collar. Left: Cross section. Right: Plan view.

A shaft that has the "typical" shape as shown in the cross-section and plan view diagrams above would be described like this: A x B x Cd; collar D x E x Fd.

Appendix A
Site Descriptions & Mine Closure Schedule

Bid Item	Site ID/Tag No.	UTM Coordinates	Description of Mine Opening Dimensions/Key Features	Special Conditions	Closure Method/Comment	Estimated Quantity
1	#######HO001	###,### mE #,###,### mN	7h x 4-6w x 116d; opening caved to 4h x 4w; 8w at sill for first 8d, then narrows; very steep climb to access	Bat Excl	BACKFILL (Hand) Use nearby scree slope for fill. Very difficult access up steep slope.	28 cy
2	#######HO002	###,### mE #,###,### mN	4.5h x 3w x 13.5d; located at base of large rock outcrop		None	na
3	#######VO001	###,### mE #,###,### mN	5 x 5.5 x 55+d; timbered to 10d; collar sloughing to 7d on N side; off vertical	Bat Excl	BACKFILL (Equip)	60 cy
4	#######HO001	###,### mE #,###,### mN	5h x 5w x 55d; opening caved to 0.5h x 1.5w; faceup trench 8w x 16l x 10d; timbers	NR Elig* Bat Excl	BACKFILL (Equip)	25 cy

Locations and dimensions are approximate and have not been field verified. Construction quantities are estimated and will be confirmed at time of construction. Construction quantities are stated in square feet (sf) for walls, gates, and grates; cubic yards (cy) for backfills; and cubic feet (cf) for PUF and concrete. UTM coordinates are all in Zone 12, NAD83. Dimensions are in feet. h=high/height, w=wide/width, l=long/length, d=deep/depth, diam=diameter, unk=unknown, x=by, est=estimated, w/=with, ~ or approx=approximately, deg=degree, na=not applicable. Compass directions=N, NW, E, SE, S, etc. *Special conditions:* Bats Excl=Bat exclusion required, NR Elig=National Register eligible site.

SITES LISTED BY CLOSURE TYPE AND ESTIMATED QUANTITY

BACKFILL (Hand) Total: 40 sites, 760 cy

3271312HO002	1 cy	3271323HO023	41 cy
3271323HO013	1 cy	3271323IO002	41 cy
3271323HO019	1 cy	3271322VO011	45 cy
3271316VO001	33 cy	3271315VO014	62 cy
3271315VO023	41 cy	3271314VO001	97 cy

BACKFILL (Machine) Total: 32 sites, 1433 cy

3271314HO008	2 cy	3271315VO021	82 cy
3271312HO001	5 cy	3271301IO001	95 cy
3271323HO009	5 cy	3271323VO023	120 cy
3271323HO018	5 cy	3271312VO003	160 cy
3271323VO019	78 cy	3271311VO004	205 cy

BAT GATE Total: 14 sites, 440 sf + 1 CMP gate

3271323HO020	1 ls	36" CMP	3271323HO017	42 sf	7'h x 6'w
3271314HO010	20 sf	5'h x 4'w	3271309HO001	56 sf	7'h x 8'w

PUF Total: 11 sites, 118 cy

3271302VO001	6 cy	3271323VO009	14 cy
3271323VO008	6 cy	3271323VO026	23 cy

REBAR GRATE (Beam) Total: 13 sites, 3968 sf

3271207VO003	165 sf	11' x 15'	3271323VO020	325 sf	13' x 25'
3271311VO001	196 sf	14' x 14'	3271322VO007	352 sf	16' x 22' ++
3271323VO038	196 sf	14' x 14'	3271323VO024	360 sf	12' x 30'
3271323VO003	285 sf	15' x 19' ++	3271316VO011	440 sf	20' x 22' ++
3271321VO001	324 sf	18' x 18' ++	3271316VO009	621 sf	23' x 27' ++

The 5 grates requiring an I-beam are indicated with a “++” sign.

REBAR GRATE (Pinned) Total: 27 sites, 2301 sf

3271315HO006	0 sf	*	3271316VO010	160 sf	10' x 16’
3271323VO001	24 sf	3' x 8’	3271322VO017	168 sf	12' x 14’
3271316VO012	25 sf	5' x 5’	3271314VO010	208 sf	13' x 16’
3271316VO003	160 sf	10' x 16’	3271315VO005	225 sf	9' x 25’

WALL (Block) Total: 3 sites, 72 sf

3271316HO005	18 sf	6'h x 3'w
3271322HO010	24 sf	6'h x 4'w

3271322HO011	30 sf	5'h x 6'w

WALL (Stone) Total: 5 sites, 133 sf

3271323HO005	20 sf	5'h x 4'w
3271323HO006	24 sf	6'h x 4'w
3271316HO007	25 sf	5'h x 5'w
3271323HO004	28 sf	7'h x 4'w
3271323HO007	36 sf	6'h x 6'w

COMPOUND 6 sites

3271322HO009	Wall-S + BFH	59 sf wall, 5" cy fill
3271314HO006	PUF + BFH	12 cy PUF, 23 cy fill
3271323VO018	PUF + BFH	30 cy PUF, 16 cy fill
3271323HO014	PUF + BFH	5 cy PUF, 4 cy fill
3271323VO037	Grate-P + Rebar Barricade	35 sf grate (5' x 7'), 20 lf barricade
3271326VO006	Grate-B + BFM	50 cy fill, 240 sf grate (12' x 20')

No Action (No mine closure work required)
Total: 73 sites inventoried as "open" features (tag number feature codes: HO, IO, VO).

3271302VO002	3271323VO025	3271323VO032	3271323VO036
3271311VO002	3271323VO028	3271323VO033	3271323VO039
3271314VO005	3271323VO029	3271323VO034	
3271323VO007	3271323VO031	3271323VO035	

No Action (No mine closure work required)
Total: 213 sites inventoried as "closed" features (tag number feature codes: HC, VC, HP, VP, TR). These sites are shown on the maps (as small yellow triangles) as navigational aids, but are not labeled.

3271207HP001
3271326VP004
3271326VP005
3271326VP006
3271326VP007
3271326VP008
3271327VP001

Appendix B: Revegetation Seed Mix

[Projectname] Seed Mix

Seed Mix Species Composition

Common Name	Scientific name	Preferred Variety	Pounds PLS/Acre
Grasses			
Purple Three-awn	*Arisitida purpurea*		0.5
Galleta Grass	*Hilaria jamesii*		0.5
Needle and Thread	*Stipa comata*		1.0
Indian Ricegrass	*Achnatherum hymenoides*		1.0
Alkali Sacoton	*Sporobolus airoides*	Merit	0.3
Sand Dropseed	*Sporobolus cryptandrus*	Bromar	0.1
Bottlebrush Squirreltail	*Elymus elymoides*		0.25
Forbs			
White Yarrow	*Achillea millefolium*		0.25
Basket Flower	*Gaillardia aristata*		1.0
Blue Flax	*Linum lewisii*		1.5
Shrubs			
Big Sagebrush	*Artemisia tridentata tridentata*		0.1
Four-wing Saltbush	*Atriplex canescens*		4.0
Shadscale	*Atriplex confertifolia*		4.0
Nevada Mormontea	*Ephedra nevadensis*		2.0
Rubber Rabbitbrush	*Chrysothamnus nauseosus*		0.5
			====
TOTAL			17.0

The planting rate indicated (pounds PLS/acre) is for broadcast seeding.

PLS= Pure Live Seed

Because packaged seed contains nonviable seed, chaff, and other inert materials in addition to live seed, the actual application rate of total seed material will be greater than ### pounds per acre.

Seed Mix Quantity Estimate

estimated acres @ ### lbs PLS/acre = ### lbs PLS mix required.

Because packaged seed contains nonviable seed, chaff, and other inert materials, the actual quantity of seed material received from the supplier will be greater than ### pounds.

Appendix C: Davis-Bacon Act General Wage Determination

The following General Decision, # [insert number], was obtained from the Bureau of Labor at https://beta.sam.gov/search?index=wd on [insert date]. It is CONTRACTOR's responsibility to comply with all Federal labor laws and reporting requirements.

"General Decision Number: UT20210017 01/01/2021

Superseded General Decision Number: UT20200017

State: Utah

Construction Type: Heavy

Counties: Beaver, Emery, Grand, Kane, Piute and Wayne Counties in Utah.

Including Natural Gas Pipeline Construction

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.95 for calendar year 2021 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.95 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2021. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/01/2021

* ENGI0003-046 07/01/2020

Excluding Natural Gas Pipeline Construction

	Rates	Fringes
OPERATOR: Power Equipment		
(3)Backhoe/Excavator	$ 30.78	16.09

ENGI0003-054 07/01/2013

Natural Gas Pipeline Construction Only

	Rates	Fringes
OPERATOR: Power Equipment		
Backhoe/Excavator/Trackhoe, Blade/Grader, Boom, Bulldozer, Crane, Mechanic, Trencher	$ 35.68	17.57
Oiler	$ 22.03	11.88

LABO0295-018 07/01/2014

Natural Gas Pipeline Construction Only

	Rates	Fringes
LABORER		
Chain Saw and Power Drill	$ 20.85	8.65
Common or General, Nail gun, Pipelayer, Pot Tender	$ 20.59	8.65
Formworker	$ 20.85	8.65
Powderman	$ 21.65	8.65
Sandblaster	$ 20.85	8.65

TEAM0222-003 07/01/2018

NATURAL GAS PIPELINE CONSTRUCTION ONLY

ZONE 1 - Kane, Piute, and Wayne County (Western Half)
ZONE 2 - Beaver, Emery, Grand, and Wayne County (Eastern Half)

	Rates	Fringes
TRUCK DRIVER		
ZONE 1:		
Group 1	$ 36.88	12.12
Group 2	$ 36.30	12.12
Group 3	$ 35.95	12.12
ZONE 2:		
Group 1	$ 41.27	12.12
Group 2	$ 40.72	12.12
Group 3	$ 37.05	12.12

Group 1: Articulated End Dump, Low Boy, Rollagon or Similar type Equipment, Truck Mechanic.

Group 2: A-Frame, Challenger(For transportation purposes), Forklift, Fuel Truck, Gin Pole, Rubber-Tired Tractor, Tandem Float (4 & 5 Axle), Track Truck/All-Track Dumper

Equipment, Vacuum Truck, Winch Truck.

Group 3: Ambulance , Bus, Dump Truck (2 and 3 axle), Flatbed Truck (2 and 3 axle), Grease Truck, Hot Pass Truck (3 axle), Jeep, Pick-up, Single Axle Float (3 axle), Skid Truck (2 and 3 axle), Station Wagon, Stringer Bead & Hot Pass (2 axle), Swamp Buggy/ Marsh Buggy, or similar type equipment, Team Driver, Water Truck (2 and 3 axle).

Premium Pay:

Add $2.25 to the above Rate for the following classifications

Group 1: Low Boy and Truck Mechanic
Group 2: Stringer Truck

SUUT2008-033 08/19/2008

	Rates	Fringes
CARPENTER, Includes Form Work (Excludes Natural Gas Pipeline Construction Form Work)	$ 14.75	3.03
CEMENT MASON/CONCRETE FINISHER	$ 14.00	0.56
LABORER: Mason Tender - Cement/Concrete	$ 9.00	0.36
LABORER: Common or General (Excluding Natural Gas Pipeline Construction)	$ 10.92	0.00
LABORER: Pipelayer (Excluding Natural Gas Pipeline Construction)	$ 9.00	0.00
OPERATOR: Grader/Blade, Excludes Natural Gas Pipeline Construction	$ 13.61	0.00
OPERATOR: Loader (Front End)	$ 11.38	0.00
OPERATOR: Roller (Dirt and Grade Compaction)	$ 10.89	0.00
OPERATOR: Trackhoe (Excluding Natural Gas Pipeline Construction)	$ 13.63	0.00
TRUCK DRIVER (Excluding Natural Gas Pipeline Construction)	$ 12.00	0.00

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION
"

Appendix X: Storm Water Pollution Prevention Plan

[Included when applicable]

STORMWATER POLLUTION AND PREVENTION PLAN (SWPPP)

[PROJECTNAME] RECLAMATION PROJECT

[COUNTYNAME] COUNTY, UTAH

[SEASON, YEAR]

PREPARED FOR:
Utah Abandoned Mine Reclamation Program
Division of Oil, Gas, and Mining
1594 West North Temple Street
Salt Lake City, Utah 84116

PREPARED BY:
[CompanyName]
[Address]
[City, State, ZIP]
[Company Job # if applicable]

[Reformatted by DOGM/AMRP from [Companyname]. original.]

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1.0 OVERVIEW

1.1 PURPOSE

This Stormwater Pollution and Prevention Plan (SWPPP) defines stormwater pollution prevention activities associated with the [Projectname] Project in the ***[location] in [Countyname] County, Utah.

1.2 SWPPP ORGANIZATION

This SWPPP has been developed to meet the requirements of the Utah Pollutant Discharge Elimination System (UPDES) Stormwater General Permit for Construction Activities (Permit No. UTR30000). A copy of this permit is found in Attachment A-1. The table below identifies the requirements of the Permit and what section of the SWPPP adequately addresses the corresponding requirements.

Table 1. SWPPP Requirements According to UPDES Stormwater General Permit for Construction Activities (Permit No. UTR30000)

Permit Part	Description	Section in SWPPP
Part 3.5.1	**Site Description**	
3.5.1.a	Describe the nature of the construction activity.	2.2
3.5.1.b	Describe the proposed sequence of major activities.	2.3
3.5.1.c	Estimates of the total area of the site and the total area of the site that is expected to be disturbed by excavation, grading, or other activities, including areas for construction support.	2.5
3.5.1.d	An estimate of the runoff coefficient of the site after construction activities are completed and existing data describing the soil or the quality of any discharge from the site.	Not applicable
3.5.1.e	Site Maps	Figure A-2
3.5.1.e.1	Drainage patterns and approximate slopes anticipated after major grading activities.	Figure A-3
3.5.1.e.2	Construction boundaries and a description of existing vegetation prior to grading activities.	Figure A-3
3.5.1.e.3	Areas of soil disturbance and areas of no disturbance.	Figure A-2 and Sec 2.5
3.5.1.e.4	The location of major structures and nonstructural controls identified in the SWPPP.	Figure A-3
3.5.1.e.5	Locations of areas used for construction support.	Figure A-2, Figure A-3
3.5.1.e.6	The location of areas where stabilization practices are expected to occur.	Not applicable
3.5.1.e.7	The location of surface waters (including wetlands).	2.4.3
3.5.1.e.8	Locations where stormwater is discharged or will discharge to a surface water.	Figure A-3
3.5.1.f	A description of any discharge associated with industrial activity other than construction at the site (including stormwater discharges from dedicated portable asphalt plants and dedicated portable concrete plants), whether or not those discharges are covered by the Permit; and the location of that activity.	Not applicable
3.5.1.g	The name of the receiving water(s), and aerial extent of wetland acreage at the site.	Not applicable
3.5.1.h	A copy of the UPDES Stormwater General Permit for Construction Activities	Attachment A-1

Permit Part	Description	Section in SWPPP
3.5.2	**Controls**	
3.5.2.a	**Erosion and Sediment Controls**	
3.5.2.a.1	A description of installation, maintenance, and design of controls, and management of storage areas and litter, debris, and construction chemicals.	Sections 3.0 and 4.0
3.5.2.a.2	A description of existing interim and permanent stabilization practices, including site-specific scheduling of the implementation of the practices.	3.1.5
3.5.2.a.3	A description of structural practices that divert flows from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site to the degree attainable.	3.1
3.5.2.b	A description of measures that will be installed during the construction process to control pollutants in stormwater discharges that will occur after construction operations have been completed.	Not applicable
3.5.2.c	A description of other controls such as waste disposal, septic, waste, and sanitary sewer disposal, exposure to construction materials, and support areas.	3.1.1, 4.0
3.5.2.d	A description of any other laws and requirements, such as local stormwater control requirements, threatened or endangered species and historic properties, and variance of permit requirements.	Not applicable
3.5.3	**Maintenance**	
3.5.3	A description of procedures to ensure the timely maintenance of the erosion and sediment control measures shall be identified in the SWPPP.	3.2.3
3.5.4	**Inspections**	
3.5.4.a, b, c	A description of inspection frequency requirements.	3.2.1
3.5.4.d	A description of qualified personnel requirements.	3.2.2
3.5.4.e	A description of inspection areas.	3.2.3
3.5.4.f	A description of inspection requirements at construction sites involving utility line installation, pipeline construction, and other long, narrow, linear construction.	Not applicable
3.5.4.g	A description of inspection reporting requirements.	Attachment A-4
3.5.4.h	A description of inspection record keeping requirements.	3.2.1
3.5.5	**Non-Stormwater discharges**	
3.5.5	A description of sources of non-stormwater listed in Part 1.5 that are combined with stormwater discharges associated with industrial activity.	Not applicable

1.3 PLAN LOCATION

During construction, a copy of the SWPPP will be kept on site for the duration of this project. A record copy will also be kept with the responsible individual identified below. The SWPPP shall include a copy of the Permit, the Notice of Intent (NOI) (Attachment A-1), and any amendments to this Plan (Attachment A-2).

1.4 CONTACT INFORMATION

The individual responsible for implementing, maintaining, and revising the SWPPP is identified below.

[contractor name, title] – *to be completed following award of contract*
[company name]
[address]
[city, state, zip]

1.5 SWPPP REVISIONS

Any modifications to the design, construction, operation, or maintenance described in this SWPPP shall be recorded in an amendment to this SWPPP. Amendments shall be documented in Attachment A-2 of this Plan.

2.0 SITE BACKGROUND AND DESCRIPTION OF CONSTRUCTION ACTIVITIES

2.1 SITE DESCRIPTION

The [Sitename] site is located in [location], [Countyname] County, Utah [insert specific project location information and description].

2.2 NATURE OF CONSTRUCTION ACTIVITY

This SWPPP covers reclamation construction activities to be conducted on behalf of the Utah Division of Oil, Gas, and Mining (DOGM) Abandoned Mine Reclamation Program (AMRP) for the [Projectname] Project in [Countyname] County, Utah. Reclamation will include [describe proposed activities.]

Following coal refuse disposal and site regrading, disturbed areas will be revegetated with native plant species. Temporary and permanent erosion controls will be installed in order to encourage revegetative success.

2.3 PROPOSED SEQUENCE OF MAJOR ACTIVITIES

The major activities of the [Projectname] are shown in Table 2 below. The exact schedule of the construction activities has not been determined, but this will be provided as a submittal by the selected contractor. This SWPPP will be updated when the construction schedule is determined. The project is expected to be completed within [length of time] during the [season] of [year].

Table 2. Proposed Construction Schedule*

Task	Expected Date
Mobilize equipment to site, construct staging and area	TBD
Install temporary runoff protections around perimeter of staging area and areas to be disturbed	TBD
Excavate and remove coal/non-coal refuse	TBD
Site regrading	TBD
Install additional runoff protections as areas are disturbed during construction	TBD
Install permanent erosion controls	TBD
Revegetate the site	TBD
Demobilize	TBD
Monitor the site	TBD

TBD = To Be Determined

The implementation of this SWPPP will occur before the reclamation activities begin. Some of the control structures in this SWPPP will be removed after construction is finished and others will be left in place until vegetation is established. The sequence of the Best Management Practices (BMPs) installation and development is described below. A description of each BMP is provided in Sections 3 and 4. Construction details are provided in Drawing A-1.

Before Reclamation Construction Activities Begin

1. Install silt fence at areas to be disturbed during reclamation.

End of Construction/Final Stabilization

1. Perform surface roughening followed by seeding and installation of erosion control matting, turf reinforcement.
2. Wait for establishment of vegetation.
3. Remove silt fencing.
4. Apply final seeding of areas where BMPs were removed.
5. Monitor stabilized areas and reseed as needed until final stabilization is reached

2.4 SITE FEATURES

The site features relevant for this SWPPP are described below.

2.4.1 Site Topography or Stormwater Drainage Patterns

[Project description]

Site topography will not significantly change as part of the reclamation work.

2.4.2 Vegetation and Ground Cover

Vegetation at the site [describe vegetation].

After construction, the project area will be revegetated with a native seed mix as shown in Attachment A-3.

2.4.3 Surface Waters

[Describe surface waters]

Silt fencing placed around the perimeter of the disturbed areas and above the [Stream name] Stream Channel will control adverse discharge associated with construction activities.

2.5 AREA OF SITE DISTURBANCE

The maximum area of site disturbance is estimated to be ### acres as shown in Figure A-2.

2.6 POTENTIAL POLLUTION SOURCES

A potential source of sediment pollution to stormwater runoff includes grading and site excavation, particularly the migration of coal refuse material.

Potential sources of other pollutants to stormwater runoff include minor equipment maintenance and fueling activities at staging areas.

3.0 EROSION AND SEDIMENT CONTROL BMPS

Erosion and sediment control BMPs will be conducted as described in the following sections in order to control off-site impacts from reclamation activities.

3.1 BEST MANAGEMENT PRACTICES

Figure A-3 shows the location of the construction site boundary, the area of disturbance, and proposed BMPs. The proposed BMPs include:

1. Silt fencing

2. Surface roughening and revegetation

Details for each BMP are provided in Drawing A-1.

3.1.1 Silt Fencing

Silt fencing will be required in the following locations:

- Along the downslope edge of work area

Heavy duty silt fencing consisting of staked geotextile will be placed in all locations (see Figure A-3). Drawing A-1 shows the construction details for the silt fence.

3.1.2 Surface Roughening and Revegetation

Following site regrading, topsoil will be spread over the ground surface. Reclaimed areas with slopes less than 2H:1V will be pocked (extreme surface roughening) to control surface runoff, encourage revegetation, and discourage motorized access at the site. The site will be revegetated with the native species seed mix shown in Attachment A-3. Surface roughening and revegetation shall be applied as soon as practicable as a permanent erosion protection measure in exposed soil areas where activities have permanently ceased.

3.2 BMP INSPECTION

3.2.1 Frequency Requirements

The UPDES Stormwater General Permit for Construction Activities outlines different requirements for inspections of erosion and sediment control measures identified in this SWPPP. The following schedules for inspection are outlined in the Permit:

1. At least once every seven days, or
2. At least once every 14 calendar days and within 24 hours of any precipitation and/or snow melt event which exceeds 0.5 inches.

This SWPPP requires that the site be inspected on a weekly basis. If the scheduled inspection cannot be conducted due to severe weather or other dangerous conditions, an inspection form shall be completed to document the conditions delaying the inspection. The inspection shall be performed as soon as conditions allow. A site inspection report form is provided in Attachment A-4. Completed inspection forms shall be stored in Attachment A-5 of the on-site copy of the SWPPP. A record of inspection shall be retained for at least three years from the date that permit coverage expires or is terminated.

3.2.2 Qualified Personnel

Only qualified personnel shall perform inspections of the erosion and sediment control measures identified in this SWPPP. As defined in Part 3.5.4.d of the Permit (Attachment A-1), qualified personnel is defined as “a person knowledgeable in the principles and practice of erosion and sediment controls who possesses the skills to assess conditions at the construction site that could impact stormwater quality and to assess the effectiveness of any sediment and erosion control measures selected to control the quality of stormwater discharges from the construction activity”. Until the permanent erosion protection is established and the site stabilized, site monitoring should be performed by qualified personnel to evaluate the effectiveness of the erosion control measures and to monitor for any required maintenance while vegetation becomes established.

3.2.3 Maintenance Procedures

The BMPs shall be maintained continuously in an effective operating condition until they are removed. Specific instructions for maintenance and repairs for each BMP are provided below.

3.2.3.1 Silt Fence

Silt fences shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50 percent of the fabric height.

3.2.3.2 Surface Roughening and Revegetation

Post-reclamation inspections will be performed once during the spring, summer, and fall seasons until vegetation becomes re-established. During these inspections, areas requiring earthwork repairs and/or spot revegetation will be identified.

4.0 OPERATIONAL CONTROLS

4.1 HOUSEKEEPING BMPS

No chemicals or fertilizers will be stored on site. The weekly maintenance of BMPs will ensure that litter, debris, and sediment do not leave the construction site. If litter and construction debris exposed to stormwater have the potential of becoming a pollutant source, it shall be picked up prior to any storm event.

4.2 SANITARY FACILITIES

Sanitary facilities will be installed within the area of disturbance during construction activities. These facilities will be operated and maintained in accordance with all applicable state and local waste disposal, sanitary sewer, or septic system regulations.

4.3 PETROLEUM PRODUCT BULK STORAGE

There will be no petroleum bulk storage at the construction site.

4.4 CONCRETE OR ASPHALT BATCH PLANTS

There will not be a temporary concrete/asphalt batch plant at the construction site. No concrete washout is needed because there will be no delivery of mixed concrete to the site.

5.0 CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

[Name], P.E.
[Title]
[Company name]

_____
Signature Date

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Responsible Individual
[Name]
Project Manager
Abandoned Mine Reclamation Program
Utah Division of Oil, Gas & Mining

_____
Signature Date

SWPPP Figures and Drawings

The SWPPP figures and drawings have been placed in Chapter 7: Maps and Drawings of the construction specifications to keep all graphic content detailing the WORK and oversized pages collated together. Note that the SWPPP figures and drawings are duplicates of the construction maps and drawings. Only one copy of each is included in the construction specifications.

SWPPP Attachments

Attachment A-1:
Utah Pollutant Discharge Elimination System (UPDES) Stormwater General Permit for Construction Activities (Permit No. UTR30000)
Notice of Intent (NOI)

The 26-page general permit is incorporated by reference but omitted from the construction specifications. Copies are available from the OWNER on request or may be obtained online from the Utah Division of Water Quality at:
www.waterquality.utah.gov/UPDES/docs/2008/07Jul/GeneralConstructionPermiUTR3000000t.pdf

Attachment A-2:
SWPPP Amendments

No content. Place holder for future amendments.

Attachment A-3:
Seed Mix

The seed mix in SWPPP Attachment A-3 is incorporated by reference but omitted from the construction specifications. The seed mix duplicates the seed mix provided in Appendix B of the construction specifications.

Attachment A-4:
Inspection Form

See the following page.

Attachment A-5:
Future Completed Inspection Forms

No content. Place holder for future inspection forms after completion.

Inspection Form

INSPECTION REPORT			
Project:	[Projectname] Project		
Inspected by: _____	Title: _____	Date: _____	
Yes	No	N/A	
☐	☐	☐	Are there any Best Management Practices called for in the SWPPP that are either not installed or installed improperly?
☐	☐	☐	Is all trash not being cleaned up?
☐	☐	☐	Are fiber rolls not functioning properly
☐	☐	☐	Are speed limits not being adhered to, and other measures not being taken to limit dust?
☐	☐	☐	Are disturbed areas not being watered to create a crust in a timely manner?
☐	☐	☐	Are disturbed areas not being seeded as specified?
☐	☐	☐	Are final slope surfaces, not accessible to the seed drill, not being adequately roughed up?
☐	☐	☐	Are vehicles/equipment coming on-site unwashed and not fueled up?
☐	☐	☐	Are there any visible leaks or spills?
☐	☐	☐	Does the SWPPP require revisions?
If the answer is YES to any of the above, explain necessary maintenance actions or plan revisions (attach additional sheets if necessary):			
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the systems, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.			
Signature:		Date:	

Appendix X: Stream Alteration Permit

State of Utah
Stream Alteration Permit
Number [*****20-91-01SA]
[*****Date, 202***]

[Copy of permit inserted here if applicable]

CONSTRUCTION SPECIFICATIONS

[Projectname] Project

Reclamation Construction

[Countyname] County, Utah

[Season, Year]

Chapter 5: BID DOCUMENTS

Supplemental Bid Information
Bidder's Proposed Subcontractors, Suppliers & Vendors List
Minority and Woman Business Enterprise Representation
Applicant/Violator System Eligibility Check
Summary Bid Schedule
Bid Schedule
Required Submittals

Note:

These bid documents have been formatted as a fillable PDF form. Depending on your version of Adobe Acrobat (or Reader), fields to complete will be highlighted (or click the "Highlight Fields" button). Mandatory fields are outlined in color. Text fields are open-ended; scroll bars will appear if content exceeds the size of the box.

For the Bid Schedule, use the Excel spreadsheet provided separately. It has formulas to automatically calculate subtotals and totals. These fields cannot be overwritten. The Excel spreadsheet provides the necessary supporting bid detail. No other cost data are needed in the PDF bid documents file.

When completed, save and upload the files as instructed.

Supplemental Bid Information
[Projectname] Project

Name of Bidder:	

COMPLETION TIME:

I/We guarantee to complete the WORK within _[###]_ calendar days after receipt of Notice to Proceed, should I/we be the successful bidder.

LICENSING:

CONTRACTOR's License Number for Utah:	
License Classification(s):	
Expiration Date:	

Copy of license must be enclosed with hard copy bid or uploaded with electronic bid.

Type of Organization:	

(Corporation, Co-Partnership, Individual, etc.)

AVS CERTIFICATION:

If applicable, the CONTRACTOR shall certify that all reclamation fees or civil penalty assessments required by the provision of the Surface Mining Control and Reclamation Act of 1977, P.L. 95-87, 30 U.S.C. Sec 1201 et seq., have been paid. Provided further, this certification requirement shall also apply to all Subcontractors utilized by the successful bidders.

Bidder's Proposed Subcontractors, Suppliers & Vendors List
[Projectname] Project

We submit the following list of first-tier subcontractors, suppliers and vendors for OWNER approval. We recognize this list as binding on us, and acknowledge OWNER'S right to reject any or all subcontractors, suppliers or vendors listed or unlisted which the OWNER feels are unqualified to do the work.

SUBCONTRACTOR	CONTRACT AMOUNT	STATE CONTRACTOR'S LICENSE NO	LICENSE LIMIT
Excavation:			
Concrete Fabrication:			
Masonry:			
Demolition:			
Steel Fabrication:			
Revegetation:			
Trucking/Transport:			
Polyurethane Foam Installation:			
Other:			
Other:			
Other:			

BIDDER'S PROPOSED SUBCONTRACTORS, SUPPLIERS & VENDORS LIST
Page 2

SUPPLIER/VENDOR	AMOUNT	PRODUCT
Ready-Mix:		
Cement/Block:		
Steel:		
Polyurethane Foam Supplies:		
Seed:		
Other:		
Other:		

By submitting a bid under this solicitation, we certify that:

1. This list includes all subcontractors, suppliers and vendors whose bids exceed $5,000 (for prime contractor bids less than $250,000) or $25,000 (for prime contractor bids of $250,000 or more).
2. Where we have listed "Self" it is our intent to perform said work and that we generally and regularly perform that type of work, and are appropriately licensed.
3. Any approved change in sub-bidders, suppliers or vendors which results in a lower contract price for sub-bid work shall accordingly reduce the total sum of the prime contract.

Note: *Failure to submit this form properly completed and signed may be grounds for OWNER'S refusal to enter into a written CONTRACT with BIDDER. Action will be taken against BIDDER'S bid bond or cashier's check as deemed appropriate by OWNER. Timely notice of unacceptable subcontractors, suppliers or vendors will be given to the BIDDER. Reporting of subcontractors may be required for conformance with 63A-5-208 UCA.*

Minority and Woman Business Enterprise Representation
[Projectname] Project

The offeror represents that it [_]is [_]is not a minority business enterprise.

A minority business enterprise is defined as a concern that:

1) is at least 51 percent owned by one or more individuals who are socially and economically disadvantaged, or a publicly owned business having at least 51 percent of its stock owned by one or more individuals who are socially and economically disadvantaged individuals; and
2) has its management and daily business controlled by one or more such individuals.

Qualified groups. The offeror shall presume that socially and economically disadvantaged individuals include Black Americans, Hispanic Americans, Native Americans, Asian-Pacific Americans, Asian-Indian Americans, and other individuals found to be qualified by the Small Business Administration under 13 CFR 124.l.

The offeror represents that it [_]is [_]is not a woman business enterprise.

A woman business enterprise is defined as a concern that:

1) is at least 51 percent owned by one or more women, or a publicly owned business having at least 51 percent of its stock owned by one or more women; and
2) has its management and daily business controlled by one or more of the women owners.

Business firms that are 51 percent owned by minorities or women, but are in fact managed and operated by non-minority individuals do not qualify as minority or woman business enterprises.

The offeror represents that the following proposed subcontractor(s) is (are) a minority or woman business enterprise:

This information is requested for Federal reporting purposes only.
Minority/woman status has no bearing on the selection of a contractor.

Applicant/Violator System Eligibility Check
[Projectname] Project

(Data to be submitted after Bid Opening)

Federal regulations (30 CFR 874.16) effective July 1, 1994, require all successful bidders on contracts funded through Title IV of the Surface Mining Control and Reclamation Act (SMCRA) of 1977 to be eligible under 30 CFR 773.15(b)(1) to receive a permit to conduct surface coal mining operations. In general, this means that the Utah Abandoned Mine Reclamation Program may not hire a contractor who is or whose company is associated with a coal mine operator with outstanding unabated violations under SMCRA. The regulations further require that contractor eligibility be confirmed by the Applicant/Violator System (AVS) at the U.S. Office of Surface Mining Reclamation and Enforcement (OSMRE). Compliance checks are also required for all subcontractors receiving 10% or more of the total contract amount.

To comply with these rules, the apparent low bidder must provide the Division of Oil, Gas and Mining with information on the ownership and control of the firm for AVS review. A bidder must receive a recommendation of "Issue" or "Conditional Issue" from the OSM AVS office to be awarded the contract.

The apparent low bidder shall submit to DOGM within 24 hours (excluding weekends and holidays) of the bid opening a completed copy of the "AML Contractor Information Form." This form is used to provide, correct, or update your company's ownership and control information in OSMRE's AVS database. DOGM will provide forms for these submissions (a facsimile is provided in Chapter 2). DOGM will submit the ownership and control information to OSMRE for AVS review. OSMRE's review will be completed within 72 hours if the ownership and control data entry is complete.

The following information is required for the "AML Contractor Information Form":

- Contractor's identity (name, address, telephone, fax, e-mail address, tax payer ID number).
- Contractor's legal structure (sole proprietorship, partnership, corporation).
- Identities (name, address, telephone, title, % ownership, dates with the company) of every officer, general partner, shareholder (≥10% voting stock), director, or other controlling entity.
- All of the above information for any subcontractor with ≥10% of the contract amount.

Summary Bid Schedule
[Projectname] Project

This bid schedule is provided in the specifications for information only. For bidding, use the Excel spreadsheet (XLSX file) provided separately with the online bid solicitation. The Excel spreadsheet provides the necessary supporting bid detail. No other cost data are needed in this PDF bid form.

Bid Item	Lump Sum Amount
RECLAMATION CONSTRUCTION SUBTOTAL *(carried over from Detailed Bid Schedule)*	$
WNS PROTOCOL COMPLIANCE	$
INSURANCE	$
BONDS *(see note below)*	$
TOTAL CONTRACT BID PRICE	$

Variation in Contract Bond Rate: ____ %

TOTAL CONTRACT BID PRICE WRITTEN:

By submitting a bid under this solicitation, I/we acknowledge that I/we have examined the site conditions and have made the measurements and evaluations necessary to plan and bid the WORK.

Notes:
The total contract bid price entered here MUST match the total bid price entered in the item section on Purchasing's online bid form. If the amounts are different, the bid price entered in the item section of the online bid form will be considered the correct bid and will be considered the official bid to be evaluated with other bids received.

The "Variation in Quantity Unit Price" on the Bid Schedule will be used for adjustments to the CONTRACT amount where the actual WORK quantity varies by more than 15% from the estimated quantity listed in the Bid Schedule (see Supplemental General Condition No. 26: Variation in Estimated Quantities). The "Variation in Quantity Unit Price" will also be used as the basis for determining costs for tasks not currently specified in the WORK that may be added in the future by change order.

Award of CONTRACT will be based on the base "Bid Price." Contractors are cautioned to submit accurate unit prices for any variations in quantities. Verified quantities can go either up or down from the original estimated quantities. If a unit price appears high at the time of any change order, the OWNER reserves the right to negotiate that unit price down to a reasonable amount regardless of the unit prices quoted in this section.

The "Variation in Contract Bond Rate" will be used to adjust the Lump Sum Amount for bonds when the CONTRACT amount changes (see Section 0200, Part 5.01.D).

Bid Schedule
[Projectname] Project

This bid schedule is provided in the specifications for information only. For bidding, use the Excel spreadsheet (XLSX file) provided separately with the online bid solicitation. The Excel spreadsheet provides the necessary supporting bid detail. No other cost data are needed in this PDF bid form.

***Area Name				
Site ID/Tag No	Specified Closure	Estimated Quantity	Bid Price Amount	Variation in Quantity Unit Price
3100604HO002	BACKFILL (Equip)	30 cy	$	$ /cy
3100609HC007	BACKFILL (Hand)	5 cy	$	$ /cy
3100609HO00	BAT GATE	30 sf	$	$ /sf
SUBTOTAL (Carry over to Mine Closure Summary)			$	

Note: Sites are listed here in the same sequence as they are listed in the Mine Closure Schedule in Appendix A, that is, sorted by detail map number and then by tag number. Sites with no mine closure specified ("Closure Method" listed as "None" in Appendix A) are not included in the Bid Sheets.

Note: Revegetation is required at mine closure locations, but is considered incidental to the mine closure task. Costs for revegetation of mine closure locations should be incorporated into the mine closure bid. No separate bidding or payment will be made for mine closure revegetation. Revegetation is a separate bid and payment item only at the sites scheduled for site grading and earthwork and itemized on the Bid Schedule.

Note: Estimated quantities for site grading and earthwork are based on the volume of mine dump material to be buried and do not reflect the total volume of material that must be moved in order to bury the dump (burial pit excavation, cover material stockpiling, dump grading, cover material spreading).

Note: If a unit price appears to be excessive based on the market, OWNER reserves the right to negotiate that unit price for any change order. Otherwise the unit prices will be as bid.

Required Submittals
[Projectname] Project

Provide the requested information in the space provided.

Instructions to Bidders, Item 5: Contractor's License
Enter the license number, class, and expiration date in the spaces provided on the Supplemental Bid Information form. Also attach a copy of the license as instructed elsewhere in this document.

Chapter 2: Davis-Bacon Act Wage Determination – Worker Classification

CONTRACTOR shall submit *with the Bid* the worker classification of all workers I.E. Laborers, Operators etc. CONTRACTOR shall specify any classifications that are not listed on the wage determination.

Section 0230: Access Improvement

1.02 The CONTRACTOR shall submit *with the Bid* a description of access improvements to be performed at each site and shall not deviate from this plan without the written approval of the OWNER.

Section 0240: Demolition and Clean-up

1.02 A. CONTRACTOR shall submit *with the Bid* demolition and removal procedures and schedule for approval. This should indicate if blasting is to be used in structure demolition.

Section 0250: Mine Closures

1.02 A. CONTRACTOR shall submit *with the Bid* a list of equipment to be used to complete this section of the WORK.

1.02 B. CONTRACTOR shall submit *with the Bid* the proposed construction procedures in writing.

Section 0251: Cast-In-Place Concrete

1.02 A. 1. CONTRACTOR shall submit *with the Bid* laboratory reports indicating that the supplier's concrete ingredients meet requirements specified.

Section 0254: Polyurethane Foam Mine Closures

1.02 CONTRACTOR shall submit *with the Bid* the proposed construction procedures, including a description of the form materials to be used and the foam application equipment or method.

Section 0270: Site Grading/Earthwork

1.02 A. CONTRACTOR shall submit *with the Bid* a list of equipment to be used to complete this section of the WORK.

1.02 B. CONTRACTOR shall submit *with the Bid* locations of borrow areas for fill and topsoil for the approval of the OWNER when such areas are not shown on the Drawings.

Section 0275: Material Transport

1.02 A. The CONTRACTOR shall submit *with the Bid* a list of equipment to be used to complete this section of the WORK.

0280: Drainage Control & Stream Protection

1.02 A. CONTRACTOR shall submit *with the Bid* the schedule and plan for implementing drainage control measures and for utilizing riprap, gabion mattress, or a combination of systems in accordance with these Specifications and Drawings. If a combination of systems is planned, specific locations for each item shall be identified. Also included shall be specifications of riprap or gabion mattress fill material if supplied as import, and specifications for gabion mattress to be used.

1.02 B. The CONTRACTOR shall submit *with the Bid* a description of and location of stream protection measures to be used at each site.

1.02 C. CONTRACTOR shall submit *with the Bid* the location of borrow areas intended for riprap unless otherwise specified in Section 0300: Specific Site Requirements, or the Drawings.

1.02 D. CONTRACTOR shall submit *with the Bid* the specifications for materials and installation if either culverts or bridges are proposed for use.

Section 0285: Streambank Rehabilitation

1.02 A. CONTRACTOR shall submit *with the Bid* the location of sources of rock material for rock streambarbs and vortex rock weirs unless otherwise specified in Section 0300: Specific Site Requirements, or the Drawings.

1.02 B. CONTRACTOR shall submit *with the Bid* the location of sources of live or dead plant materials intended for revetments and streambarbs unless otherwise specified in Section 0300: Specific Site Requirements, or the Drawings.

Section 0290: Revegetation

1.02 A. CONTRACTOR shall submit *with the Bid* the names of one seed supplier, and alternate, to be used for the seed mixtures required by these specifications.

1.02 B. CONTRACTOR shall submit *with the Bid* a written description indicating equipment to be used to perform the work required in this section.

Section 0295: Barbed Wire Fencing

1.02 A. CONTRACTOR shall submit *with the Bid* the names of one or more suppliers to be used for fencing required by these specifications.

1.02 B. CONTRACTOR shall submit *with the Bid* a written description indicating equipment to be used to perform the work required in this section.

Section 0300: Specific Site Requirements

0.00 A. CONTRACTOR shall submit *with the Bid* the [insert requirement for specific site(s)].

CONSTRUCTION SPECIFICATIONS

[Projectname] Project

Reclamation Construction

[Countyname] County, Utah

[Season, Year]

Chapter 6: STANDARD MINE CLOSURE DESIGN DRAWINGS

Chapter 6: STANDARD MINE CLOSURE DESIGN DRAWINGS

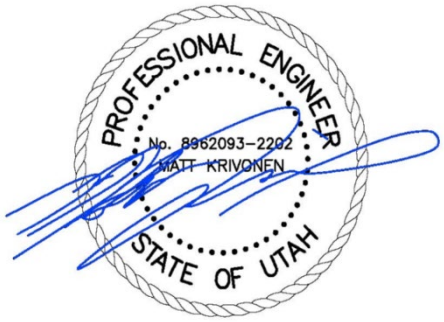
Index of Drawings

Note: In electronic versions of these specifications, the Standard Mine Closure Design Drawings may occur as a separate file or be collated in a different part of the document.

Chapter 6: STANDARD MINE CLOSURE DESIGN DRAWINGS

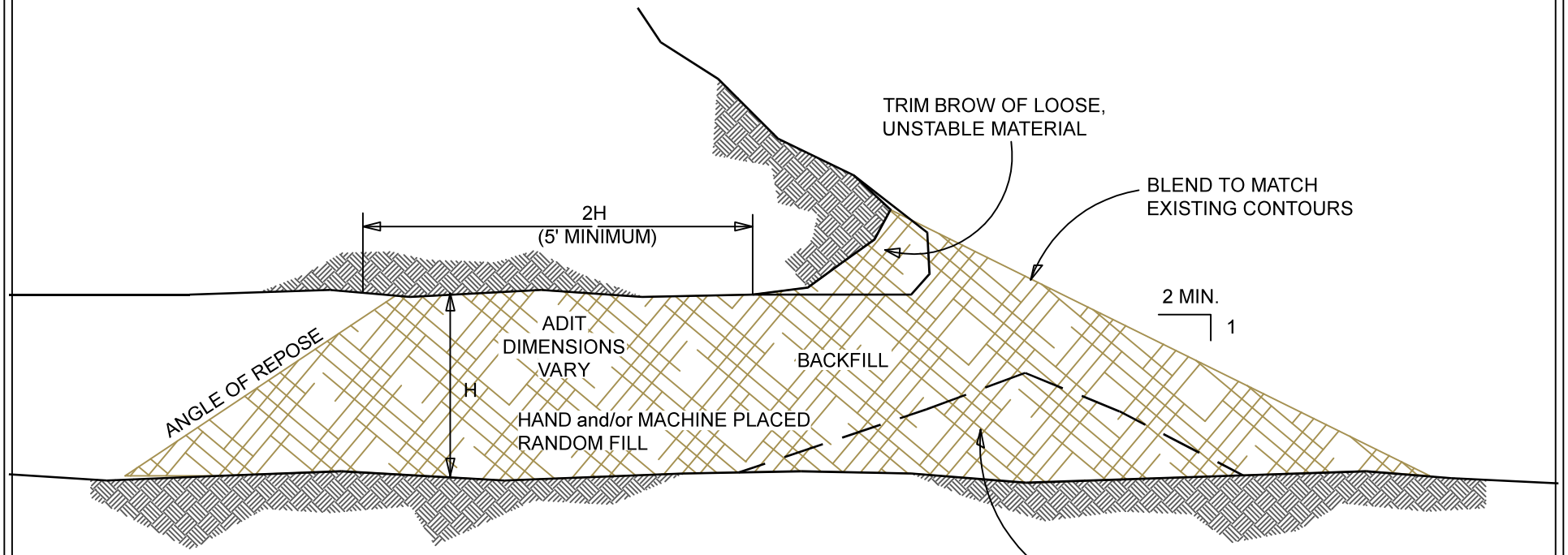
The standard mine closure design drawings in this chapter were previously revised on February 22, 2011. The standard mine closure design drawings in this chapter were subsequently substantially revised on June 1, 2020, with additional mine closure designs and drawings. Additional revisions were made on February 1, 2021. The 2020 and 2021 revisions of these drawings supersede the 2011 version.

Professional engineering review of Standard Mine Closure Design Drawings 1 through 47 of this chapter was performed on June 1, 2020, by:

Andrew Herrera, P.E. Utah Professional Engineer # 10988147-2202 Spectrum Engineering & Environmental, LLC. Billings, MT	Matt Krivonen, P.E. Utah Professional Engineer #8962093-2202 Krivonen Associates, P.C. Billings, MT
	

The Standard Mine Closure Design Drawings 1 through 47 (versions dated June 1, 2020 and February 1, 2021) conform to accepted engineering standards.

The administrative record of the engineering reviews with supporting documentation and original copies of this chapter with original PE stamps and signatures is on file with the OWNER.



PROFESSIONAL ENGINEER
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MATT KRIVONEN
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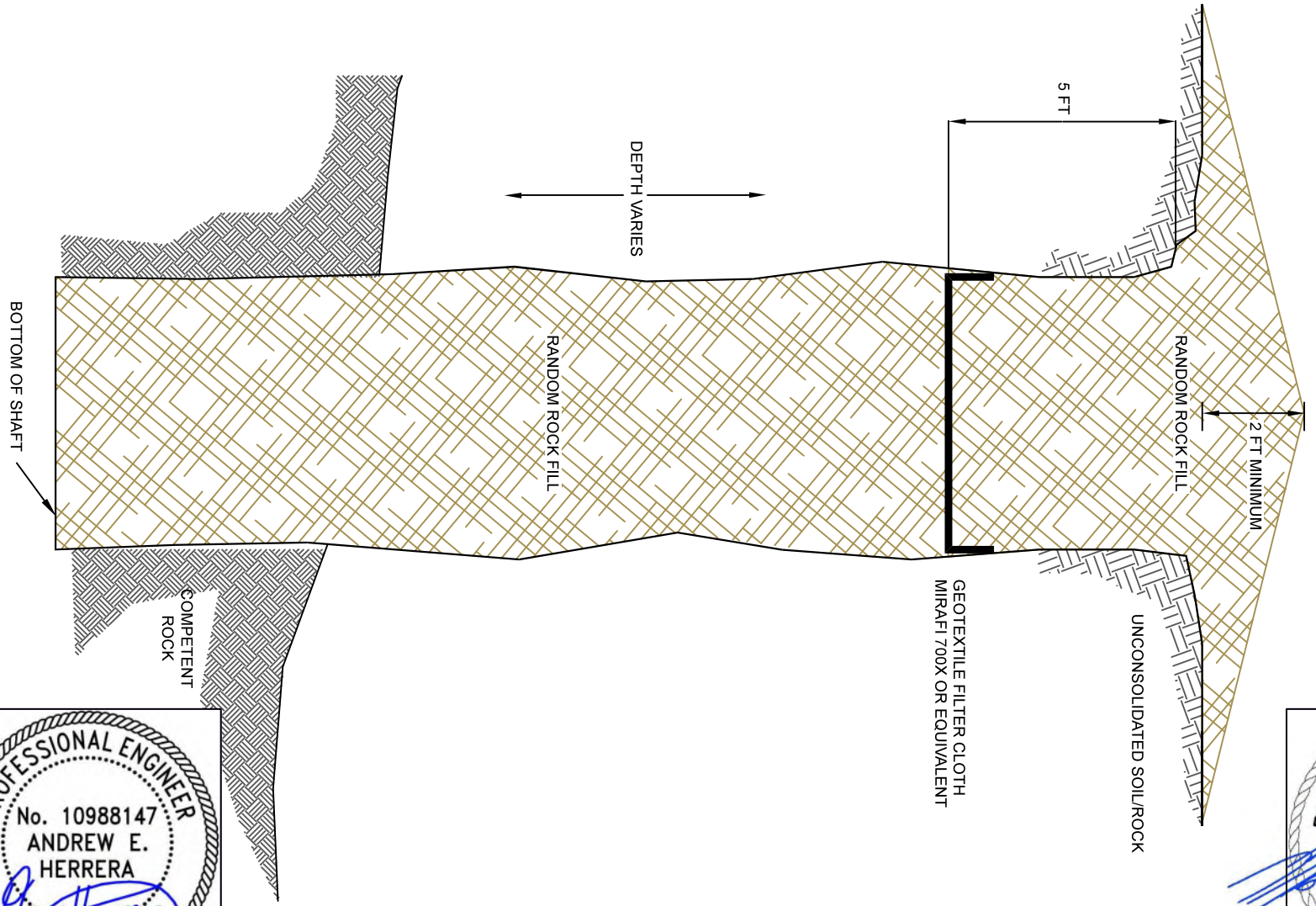
UTAH DNR OIL, GAS & MINING **STATE OF UTAH** **NATURAL RESOURCES** **Oil, Gas and Mining** Abandoned Mine Reclamation Program	**RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS** **CHAPTER 6: DESIGN DRAWINGS**	Original design (LAA) and drafting (JCR) by DOGM/AMRP Designed by Krivonen Associates, P.C. Structural Consultants In Association with: Spectrum Engineering and Environmental, LLC Billings, Montana 59101	**ADIT BACKFILL CLOSURE**	
			REFER TO SPEC SECTIONS 0250	DRAWING: 1 of 47
			REVISION: 06-01-2020	SCALE: AS NOTED



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UTAH DNR OIL, GAS & MINING

STATE OF UTAH
NATURAL RESOURCES
Oil, Gas and Mining
Abandoned Mine
Reclamation Program

RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS

CHAPTER 6:
DESIGN DRAWINGS

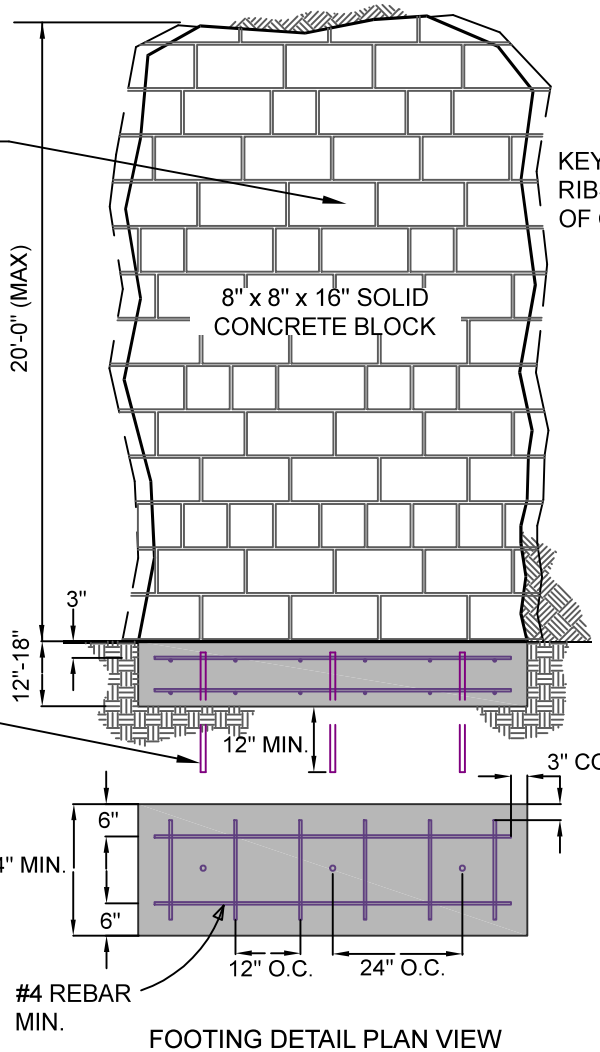
Original design (LAA) and drafting (JCR) by DOGM/AMRP

Designed by
Krivonen Associates, P.C. Structural Consultants
In Association with:
Spectrum Engineering and Environmental, LLC
Billings, Montana 59101

SHAFT BACKFILL CLOSURE

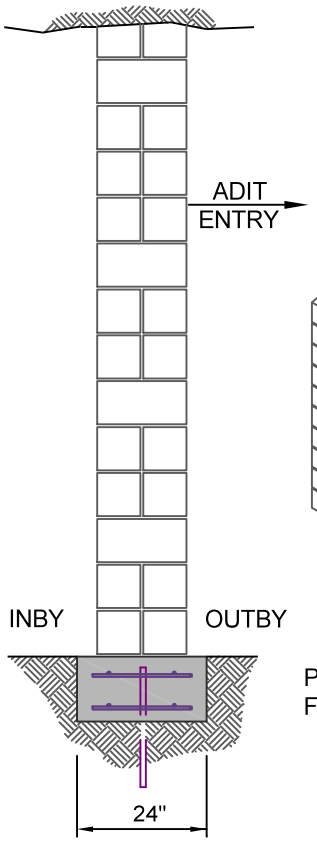
REFER TO SPEC SECTIONS	0250	DRAWING: 2 of 47
REVISION:	06-01-2020	SCALE: AS NOTED

TYPICAL ELEVATION



FOOTING DETAIL PLAN VIEW

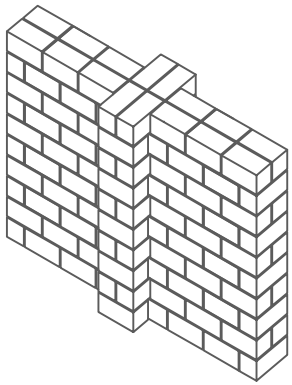
TYPICAL SECTION



CONCRETE FOOTER MAY BE OMITTED WITH OWNER'S APPROVAL WHERE THE SILL IS COMPETENT ROCK

PROVIDE FOR EXISTING DRAINAGE (AS REQUIRED) SEE SECTION 0250 AND SECTION 0300

PILASTER DETAIL



PROVIDE A PILASTER FOR EVERY 15' OF WIDTH

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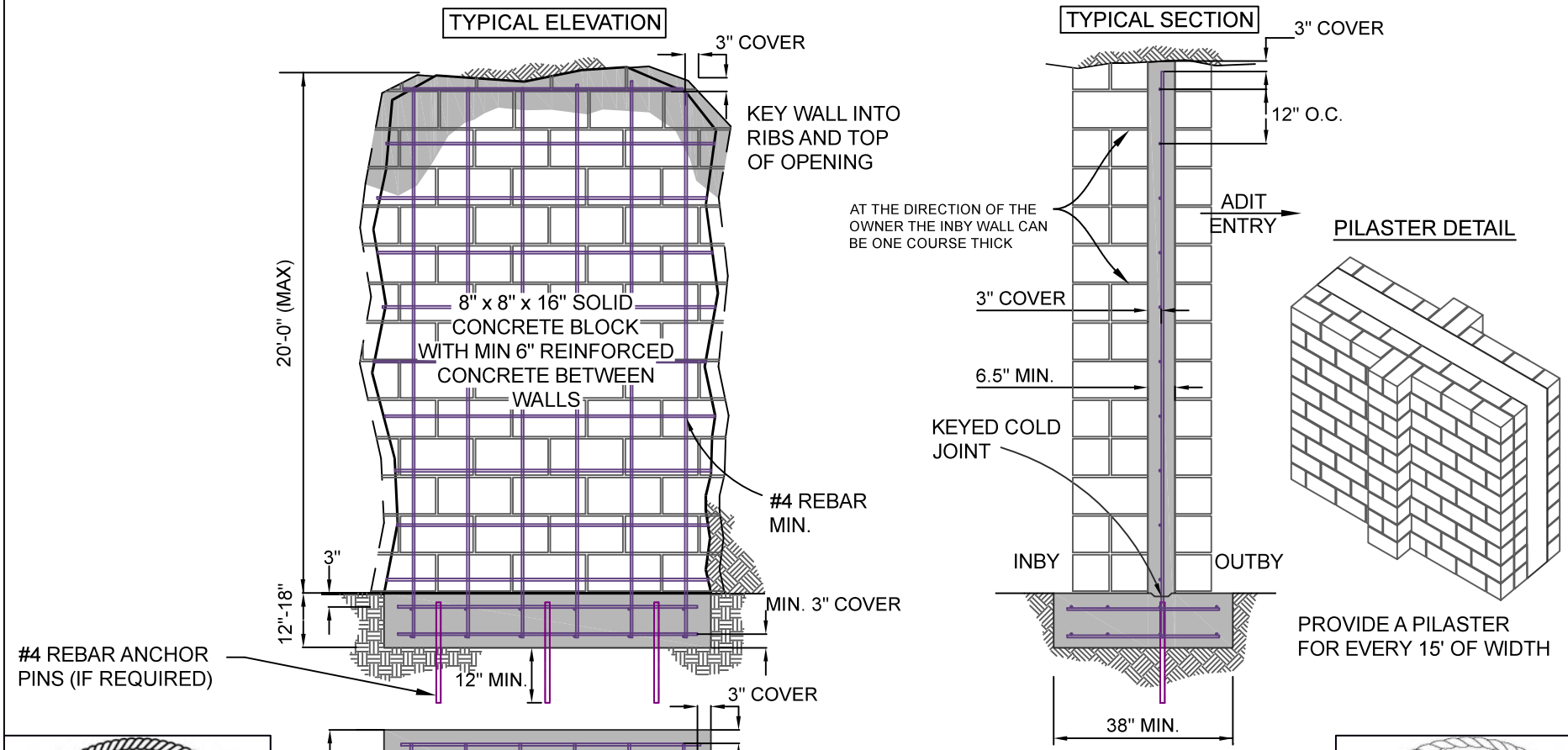
UTAH DNR OIL, GAS & MINING **STATE OF UTAH** **NATURAL RESOURCES** **Oil, Gas and Mining** Abandoned Mine Reclamation Program	**RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS** **CHAPTER 6: DESIGN DRAWINGS**	Original design (LAA) and drafting (JCR) by DOGM/AMRP Designed by Krivonen Associates, P.C. Structural Consultants In Association with: Spectrum Engineering and Environmental, LLC Billings, Montana 59101	**BLOCK WALL CLOSURE** REFER TO SPEC SECTIONS 0250-0252 — DRAWING: 3 of 47 REVISION: 06-01-2020 — SCALE: AS NOTED



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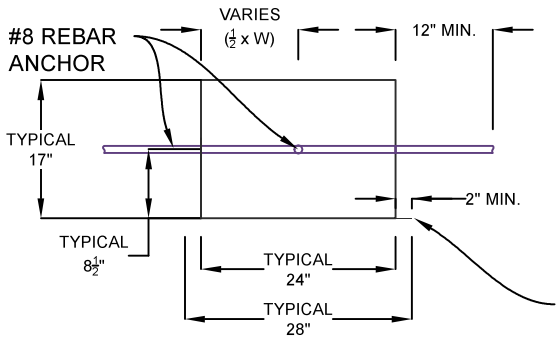
UTAH DNR OIL, GAS & MINING **STATE OF UTAH** **NATURAL RESOURCES** **Oil, Gas and Mining** Abandoned Mine Reclamation Program	**RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS** **CHAPTER 6: DESIGN DRAWINGS**	**Original design (LAA) and drafting (JCR) by DOGM/AMRP** **Designed by** **Krivonen Associates, P.C. Structural Consultants** **In Association with:** **Spectrum Engineering and Environmental, LLC** **Billings, Montana 59101**	**REINFORCED BLOCK WALL CLOSURE** REFER TO SPEC SECTIONS 0250-0252 / DRAWING: 4 of 47 REVISION: 06-01-2020 / SCALE: AS NOTED

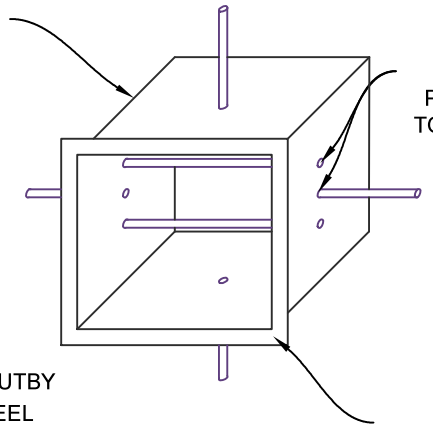
BAT WINDOW WILL FOLLOW SECTIONS 0250 OF THE SPECIFICATIONS

WINDOW DIMENSIONS MAY VARY BY SITE

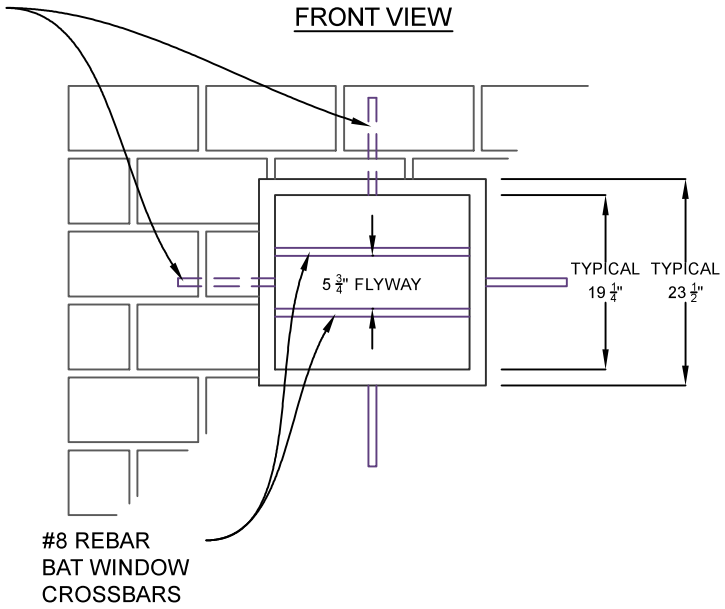
TOP VIEW



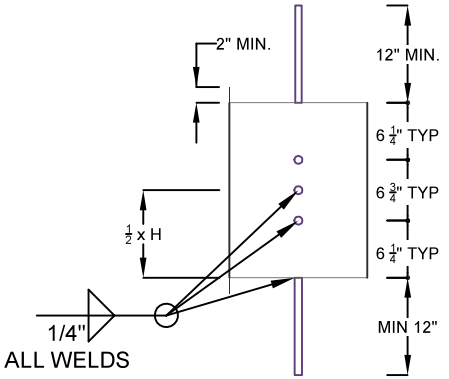
OBLIQUE VIEW



FRONT VIEW



SIDE VIEW



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RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS

CHAPTER 6: DESIGN DRAWINGS

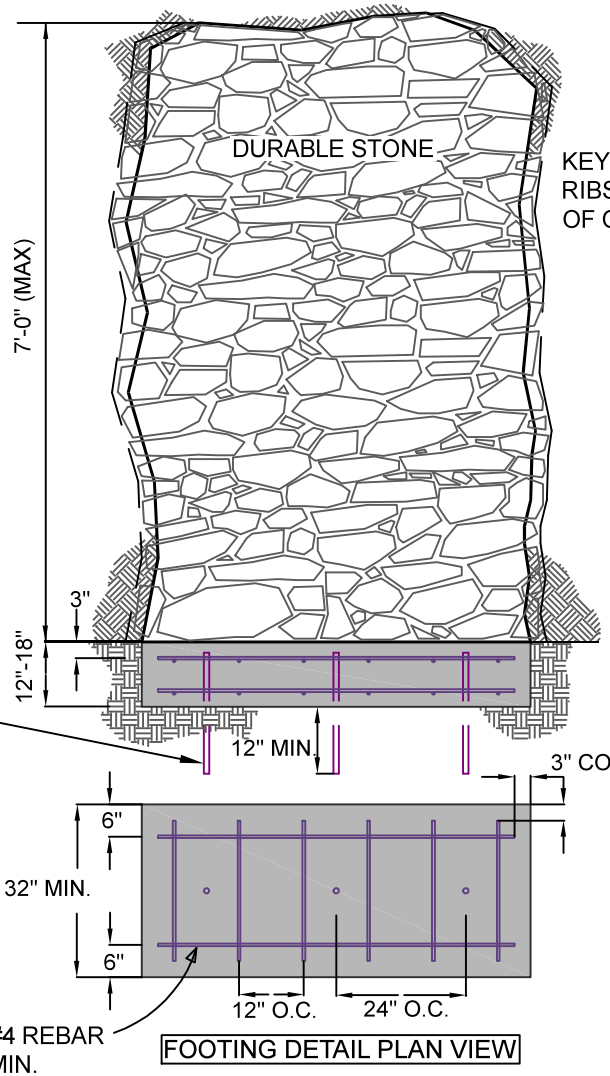
Original design (LAA) and drafting (JCR) by DOGM/AMRP

Designed by
Krivonen Associates, P.C. Structural Consultants
In Association with:
Spectrum Engineering and Environmental, LLC
Billings, Montana 59101

BAT WINDOW DETAIL

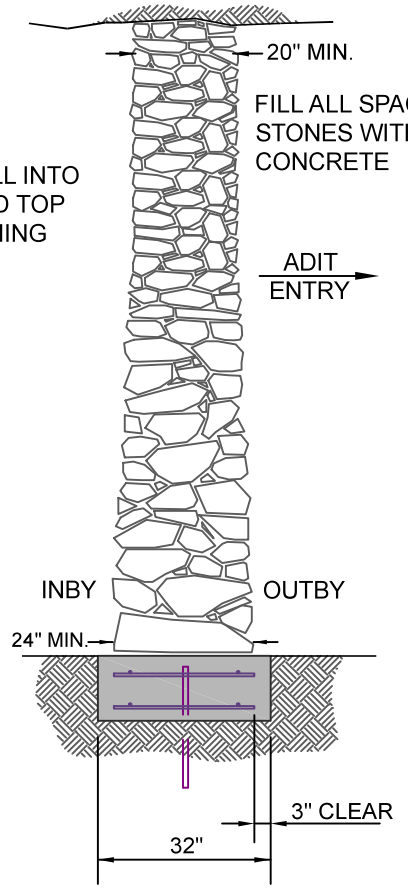
REFER TO SPEC SECTIONS	0250	DRAWING: 5 of 47
REVISION:	06-01-2020	SCALE: AS NOTED

TYPICAL ELEVATION



FOOTING DETAIL PLAN VIEW

TYPICAL SECTION



CONCRETE FOOTER MAY BE OMITTED WITH OWNER'S APPROVAL WHERE THE SILL IS COMPETENT ROCK

PROVIDE FOR EXISTING DRAINAGE (AS REQUIRED) SEE SECTION 0250 AND SECTION 0300

PROFESSIONAL ENGINEER
No. 10988147
ANDREW E. HERRERA
STATE OF UTAH

PROFESSIONAL ENGINEER
No. 8962093-2202
MATT KRIVONEN
STATE OF UTAH

UTAH DNR OIL, GAS & MINING

STATE OF UTAH
NATURAL RESOURCES
Oil, Gas and Mining
Abandoned Mine
Reclamation Program

RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS

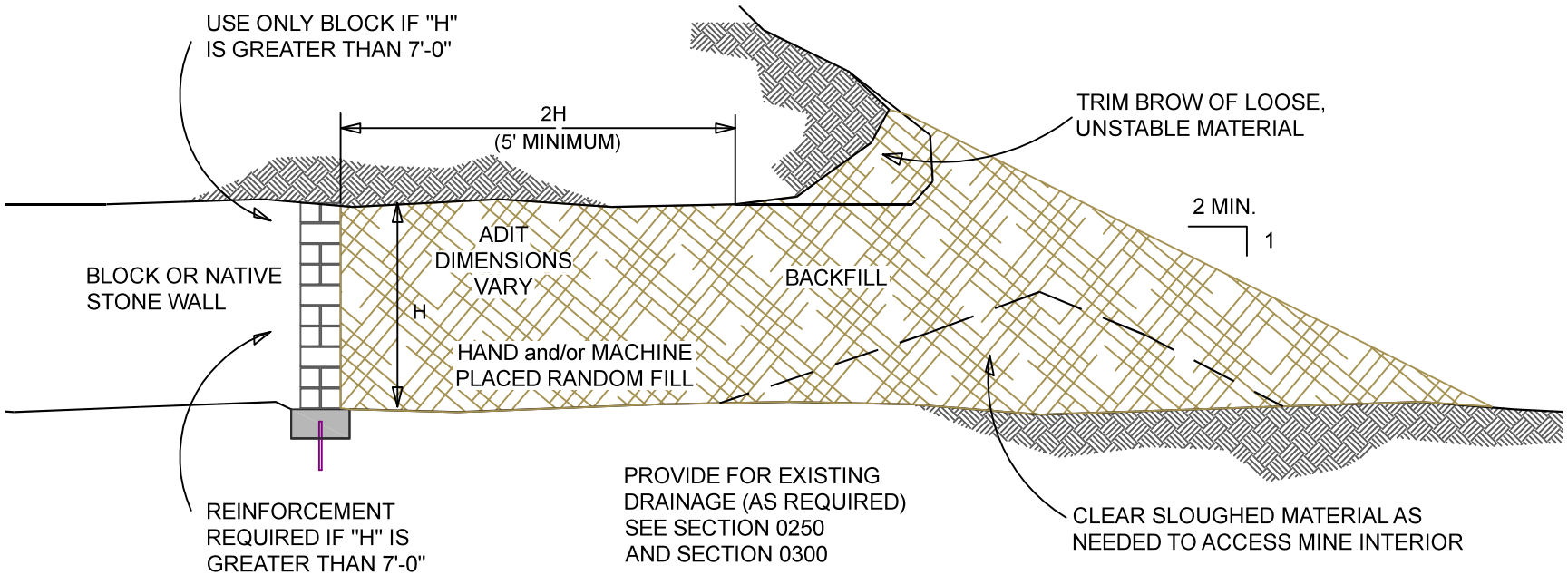
CHAPTER 6: DESIGN DRAWINGS

Original design (LAA) and drafting (JCR) by DOGM/AMRP

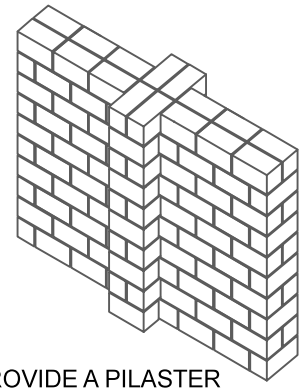
Designed by
Krivonen Associates, P.C. Structural Consultants
In Association with:
Spectrum Engineering and Environmental, LLC
Billings, Montana 59101

NATIVE STONE WALL CLOSURE

REFER TO SPEC SECTIONS 0250-0252	DRAWING: 6 of 47
REVISION: 06-01-2020	SCALE: AS NOTED



PILASTER DETAIL



PROVIDE A PILASTER
FOR EVERY 15' OF WIDTH

PROFESSIONAL ENGINEER
No. 10988147
ANDREW E.
HERRERA
STATE OF UTAH

HORIZONTAL REINFORCEMENT SCHEDULE:
(#4 REBAR PIN SPACING)

WALL HEIGHT	
0' to 7' = none	FOR OPENINGS GREATER THAN
7' to 8' = 48"O.C.	12'-0" IN HEIGHT CONSULT A
8' to 10' = 24"O.C.	PROFESSIONAL ENGINEER
10' to 12' = 16"O.C.	

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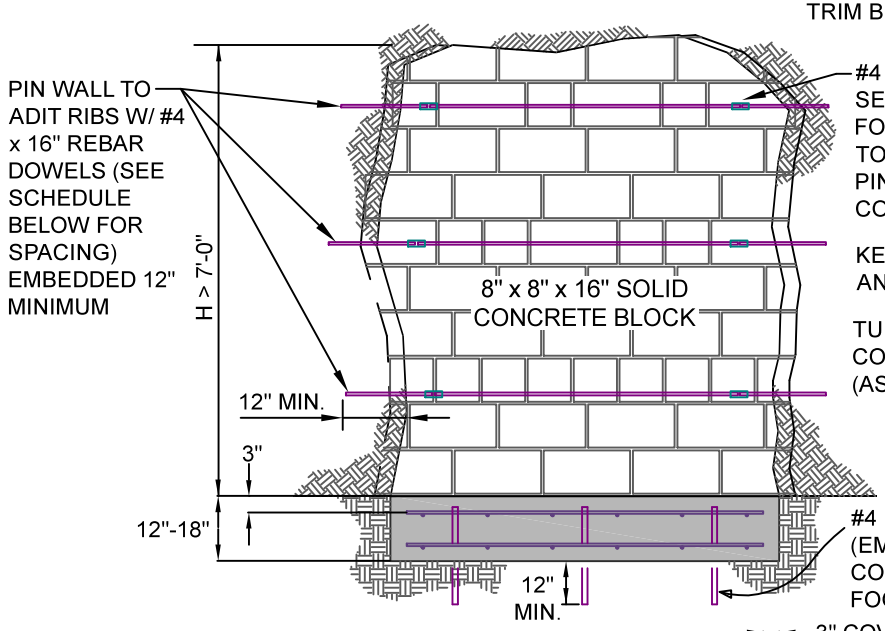
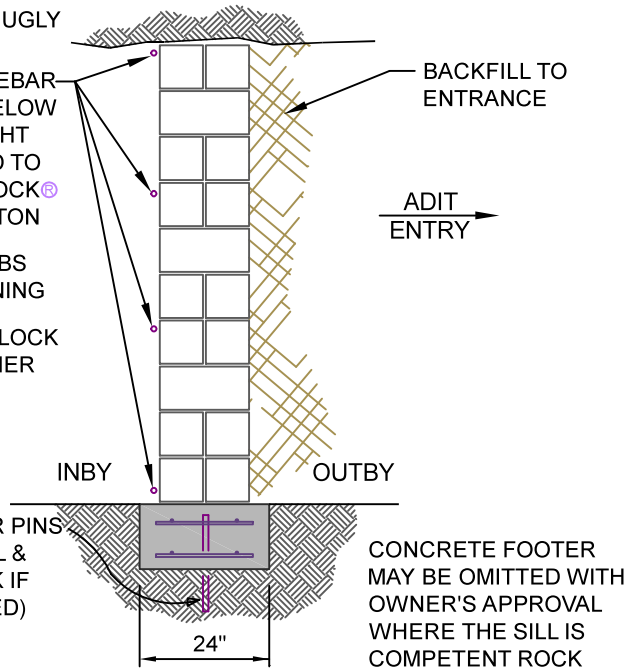
WALL & BACKFILL CLOSURE

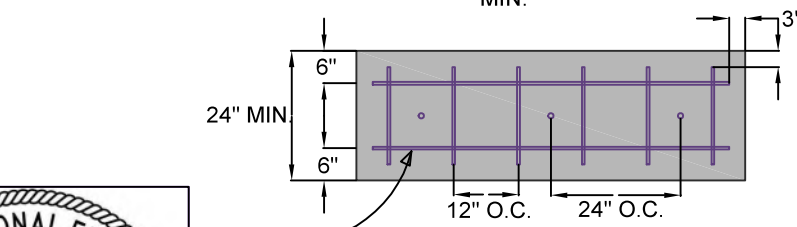
REFER TO SPEC SECTIONS	0250-0252	DRAWING: 7 of 47
REVISION:	06-01-2020	SCALE: AS NOTED

TYPICAL ELEVATION



TYPICAL SECTION





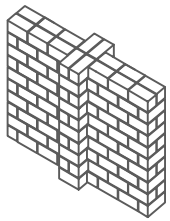
FOOTING DETAIL PLAN VIEW

ALL DOWELS EMBEDDED INTO ROCK AS SHOWN & SET W/ ET Epoxy-Tie® EPOXY SYSTEM

HORIZONTAL REINFORCEMENT SCHEDULE:
(#4 REBAR PIN SPACING)

WALL HEIGHT	
0' to 7' = none	FOR OPENINGS GREATER THAN 12'-0" IN HEIGHT CONSULT A PROFESSIONAL ENGINEER
7' to 8' = 48" O.C.	
8' to 10' = 24" O.C.	
10' to 12' = 16" O.C.	

PILASTER DETAIL



PROVIDE A PILASTER FOR EVERY 15' OF WIDTH

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No. 10988147
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PROFESSIONAL ENGINEER
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UTAH DNR OIL, GAS & MINING

STATE OF UTAH
NATURAL RESOURCES
Oil, Gas and Mining
Abandoned Mine
Reclamation Program

RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS

CHAPTER 6: DESIGN DRAWINGS

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In Association with:
Spectrum Engineering and Environmental, LLC
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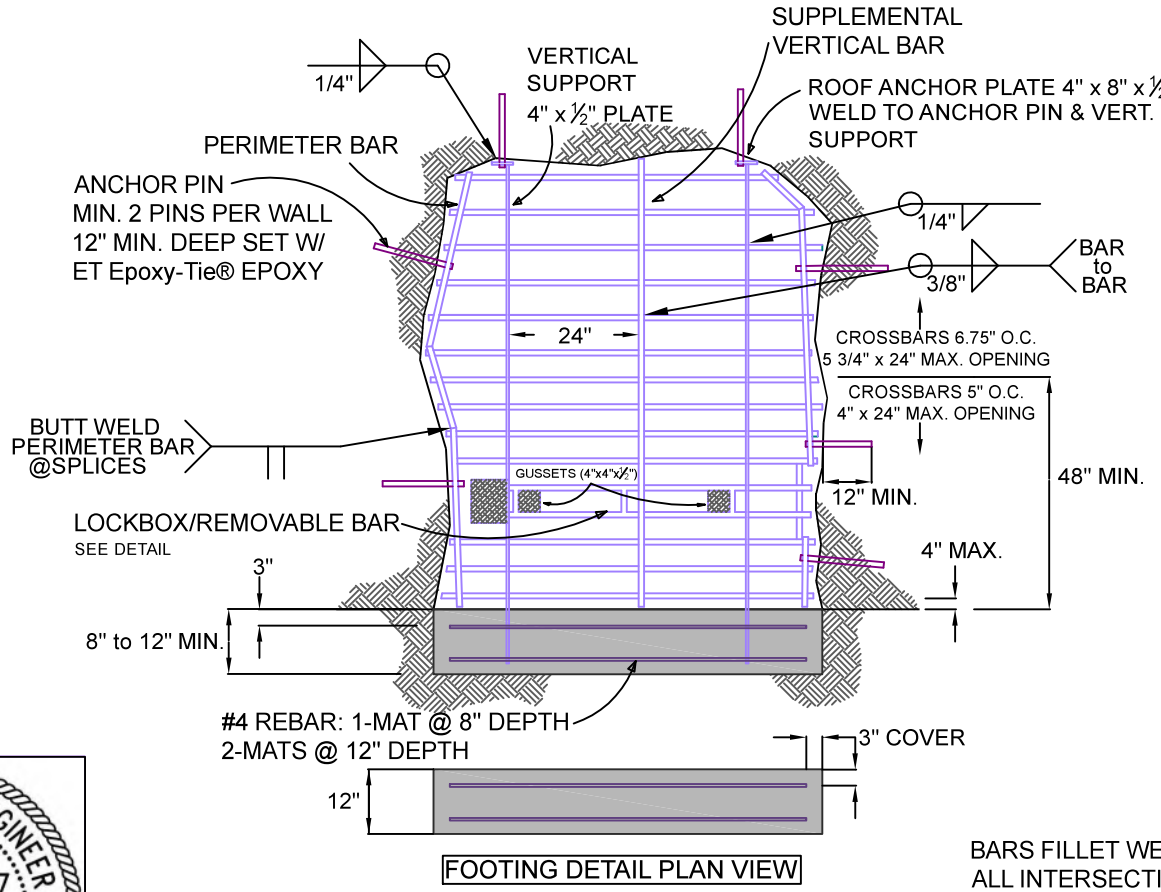
WALL& BACKFILL CLOSURE BLOCK WALL REINFORCEMENT DETAIL

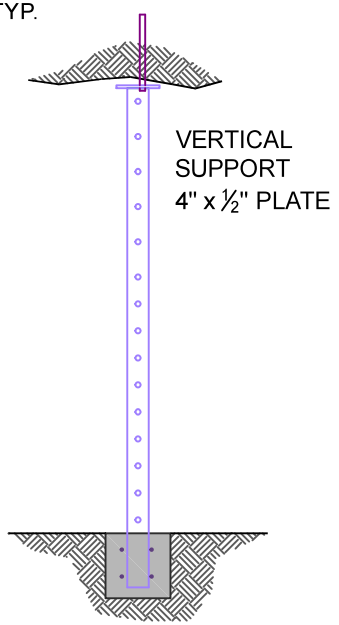
REFER TO SPEC SECTIONS	0250-0250	DRAWING: 8 of 47
REVISION:	06-01-2020	SCALE: AS NOTED

TYPICAL ELEVATION



FOOTING DETAIL PLAN VIEW

TYPICAL SECTION



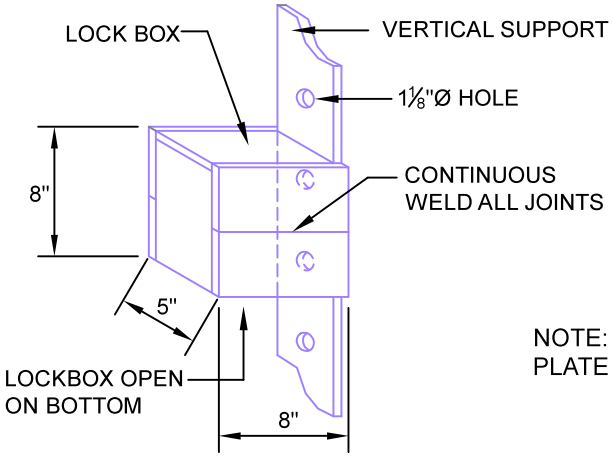
BARS FILLET WELD ALL INTERSECTIONS

NOTE:
STEEL PLATE ASTM 36
A706 REBAR MAY BE USED FOR ROUND STOCK
ALL ROUND STOCK TO BE 1"Ø
ALL FLAT STOCK TO BE 4" x ½"

PROFESSIONAL ENGINEER No. 10988147 ANDREW E. HERRERA STATE OF UTAH

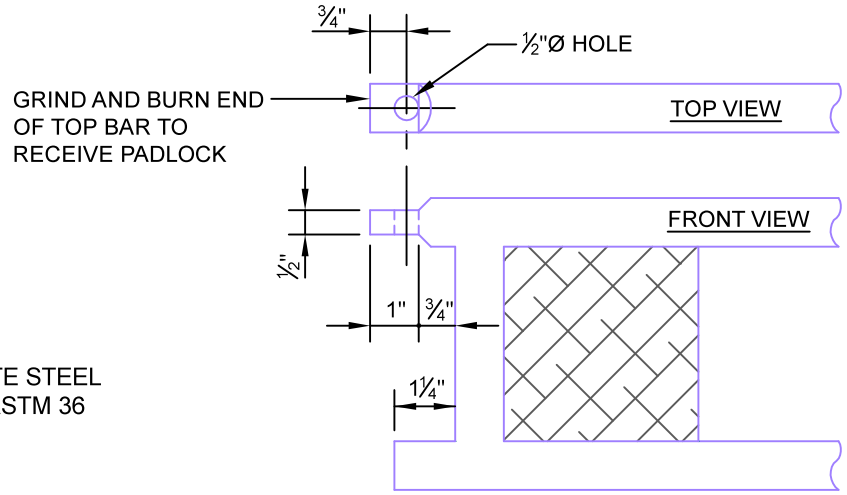
PROFESSIONAL ENGINEER No. 8962093-2202 MATT KRIVONEN STATE OF UTAH

UTAH DNR OIL, GAS & MINING **STATE OF UTAH** **NATURAL RESOURCES** **Oil, Gas and Mining** Abandoned Mine Reclamation Program	**RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS** **CHAPTER 6: DESIGN DRAWINGS**	Original design (LAA) and drafting (JCR) by DOGM/AMRP Designed by Krivonen Associates, P.C. Structural Consultants In Association with: Spectrum Engineering and Environmental, LLC Billings, Montana 59101	**BAT GATE CLOSURE**	
			REFER TO SPEC SECTIONS 0251-0253	DRAWING: 9 of 47
			REVISION: 06-01-2020	SCALE: AS NOTED

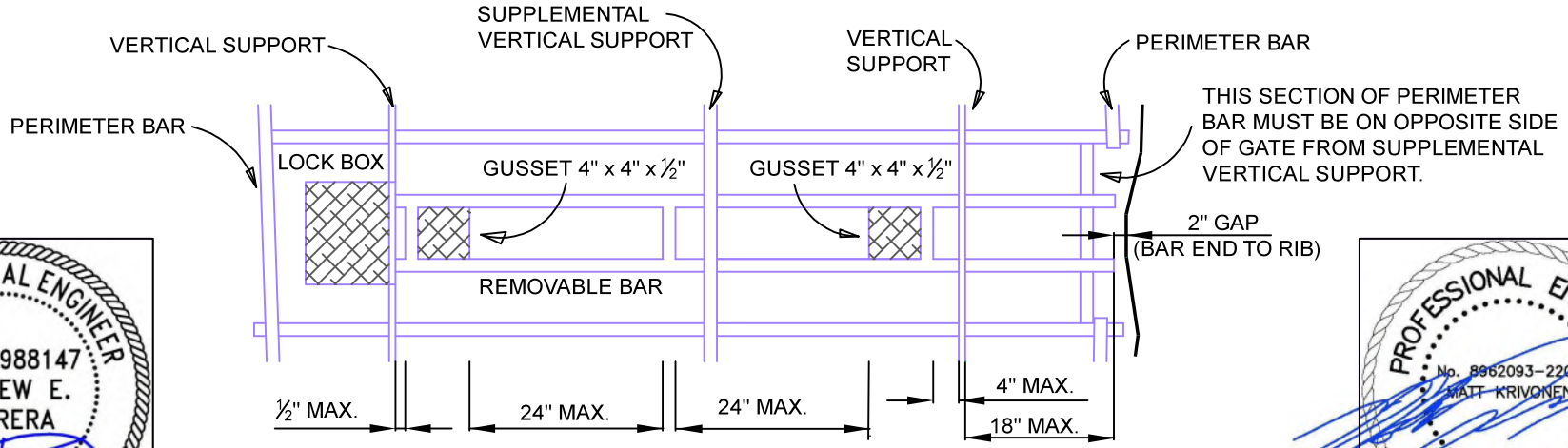


LOCK BOX OBLIQUE VIEW

NOTE: ALL GATE STEEL PLATE TO BE ASTM 36



REMOVABLE BAR DETAIL



TYPICAL ELEVATION

PROFESSIONAL ENGINEER
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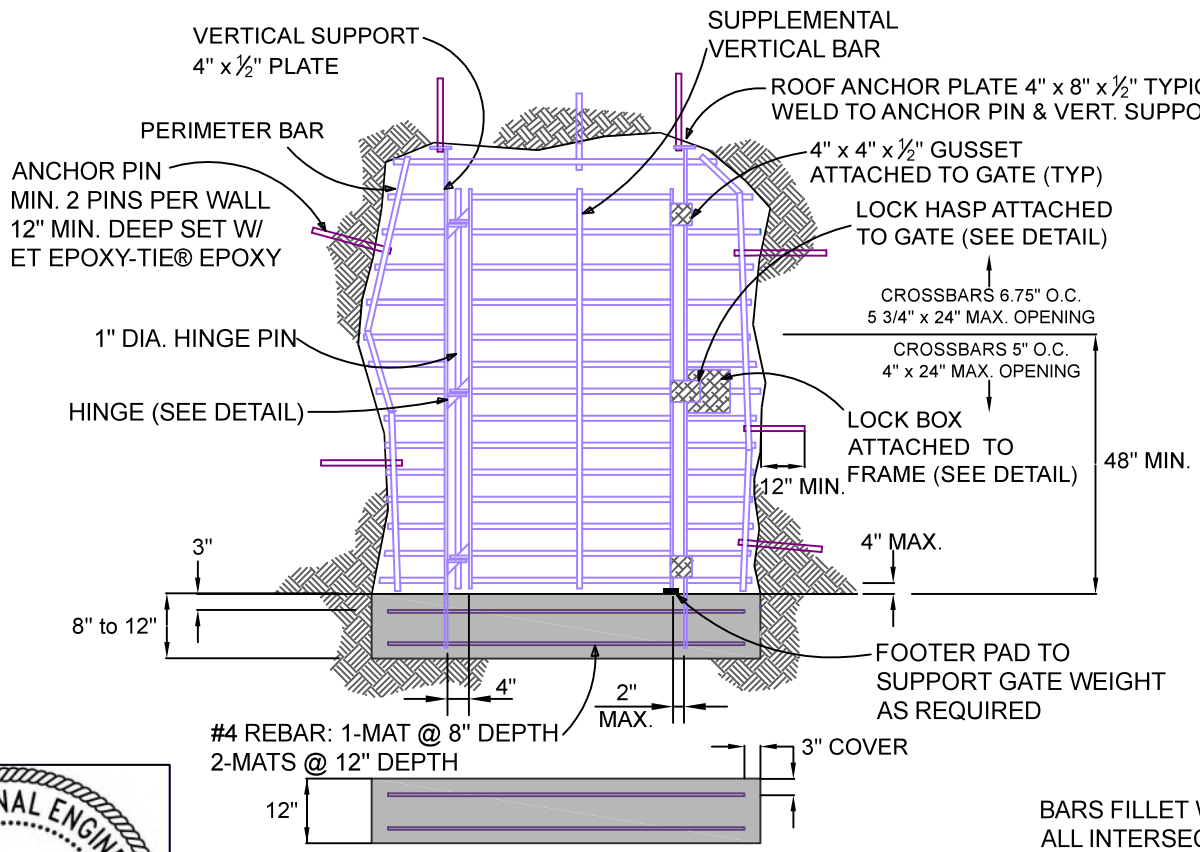
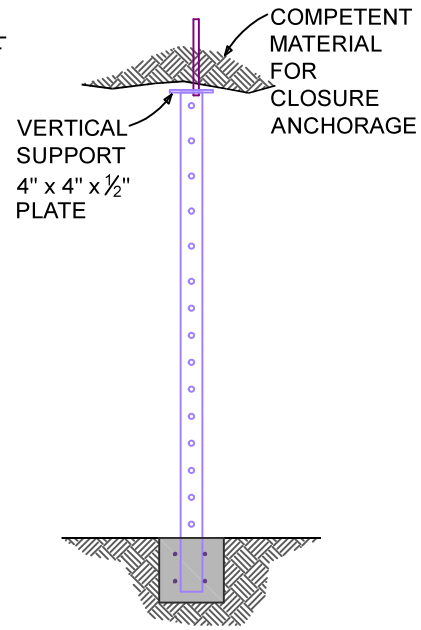
No. 8962093-2202
MATT KRIVONEN
STATE OF UTAH

UTAH DNR OIL, GAS & MINING **STATE OF UTAH** **NATURAL RESOURCES** **Oil, Gas and Mining** Abandoned Mine Reclamation Program	**RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS** **CHAPTER 6: DESIGN DRAWINGS**	**Original design (LAA) and drafting (JCR) by DOGM/AMRP** **Designed by** **Krivonen Associates, P.C. Structural Consultants** **In Association with:** **Spectrum Engineering and Environmental, LLC** **Billings, Montana 59101**	**BAT GATE CLOSURE DETAILS**	
			REFER TO SPEC SECTIONS 0253	DRAWING: 10 of 47
			REVISION: 06-01-2020	SCALE: AS NOTED

TYPICAL ELEVATION



TYPICAL SECTION



FOOTING DETAIL PLAN VIEW

BARS FILLET WELD
ALL INTERSECTIONS

NOTE:
STEEL PLATE ASTM 36
A706 REBAR MAY BE USED FOR ROUND STOCK
ALL ROUND STOCK TO BE 1"Ø
ALL FLAT STOCK TO BE 4" x ½"

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UTAH DNR OIL, GAS & MINING

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RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS

CHAPTER 6:
DESIGN DRAWINGS

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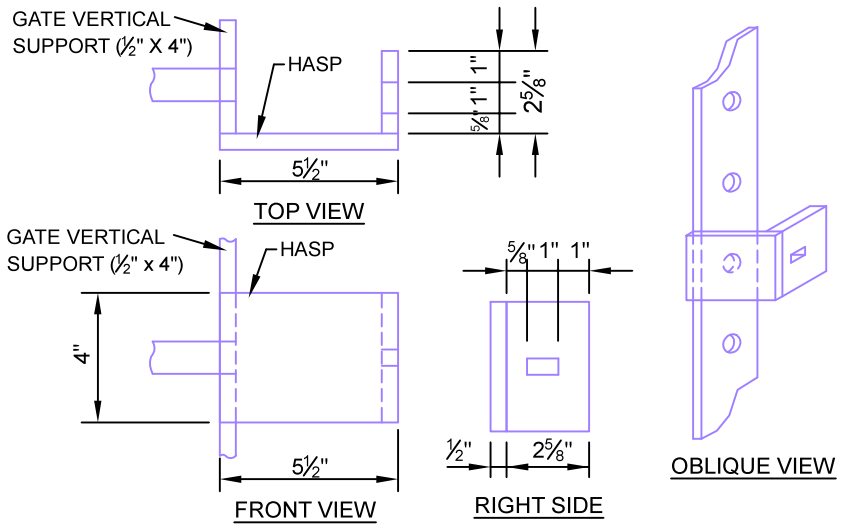
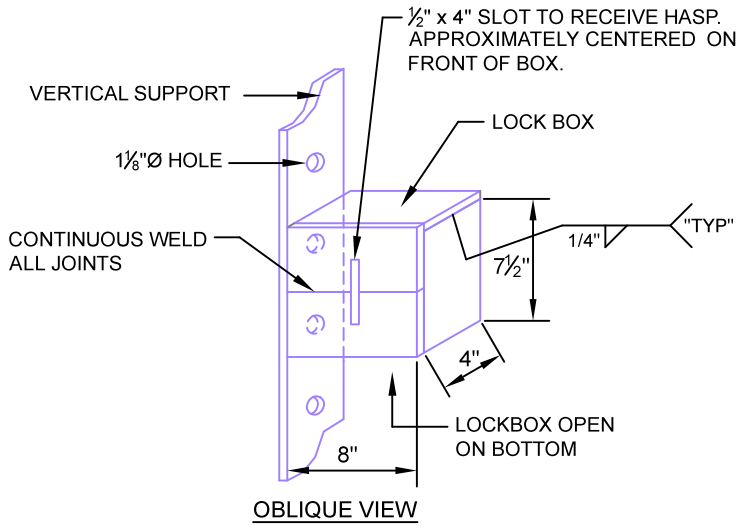
BAT GATE WITH DOOR CLOSURE

REFER TO SPEC SECTIONS	0251-0253	DRAWING: 11 of 47
REVISION:	06-01-2020	SCALE: AS NOTED

HASP DETAIL

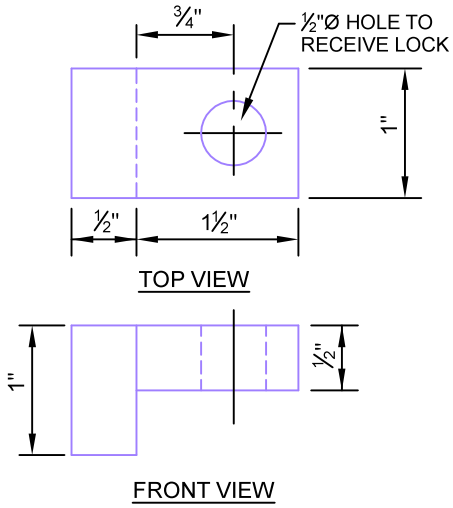


LOCK BOX DETAIL

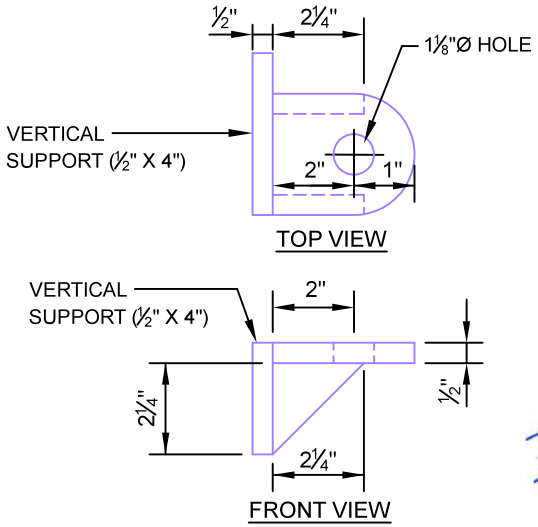


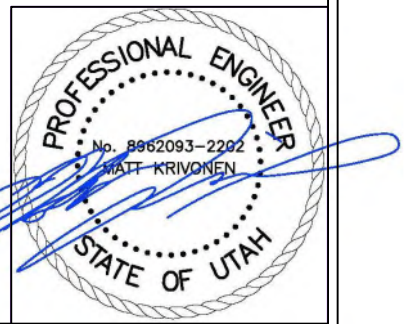
NOTE: ALL GATE STEEL PLATE TO BE ASTM 36

PIN DETAIL



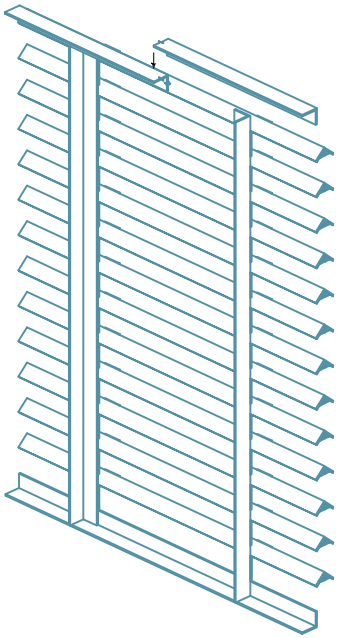
HINGE DETAIL



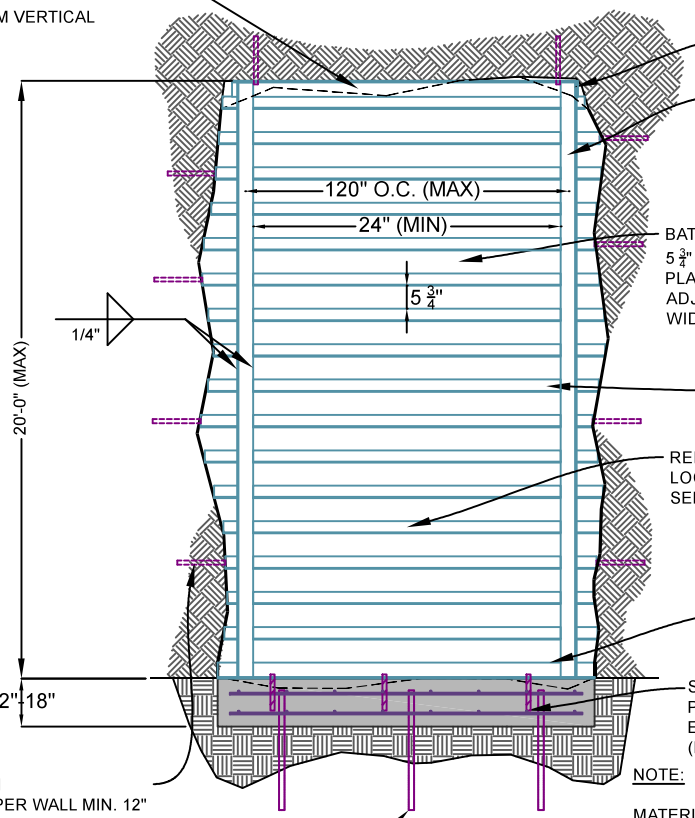


UTAH DNR OIL, GAS & MINING **STATE OF UTAH** **NATURAL RESOURCES** **Oil, Gas and Mining** Abandoned Mine Reclamation Program	**RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS** **CHAPTER 6: DESIGN DRAWINGS**	Original design (LAA) and drafting (JCR) by DOGM/AMRP Designed by Krivonen Associates, P.C. Structural Consultants In Association with: Spectrum Engineering and Environmental, LLC Billings, Montana 59101	**BAT GATE WITH DOOR CLOSURE DETAILS** REFER TO SPEC SECTIONS 0253 — DRAWING: 12 of 47 REVISION: 06-01-2020 — SCALE: AS NOTED

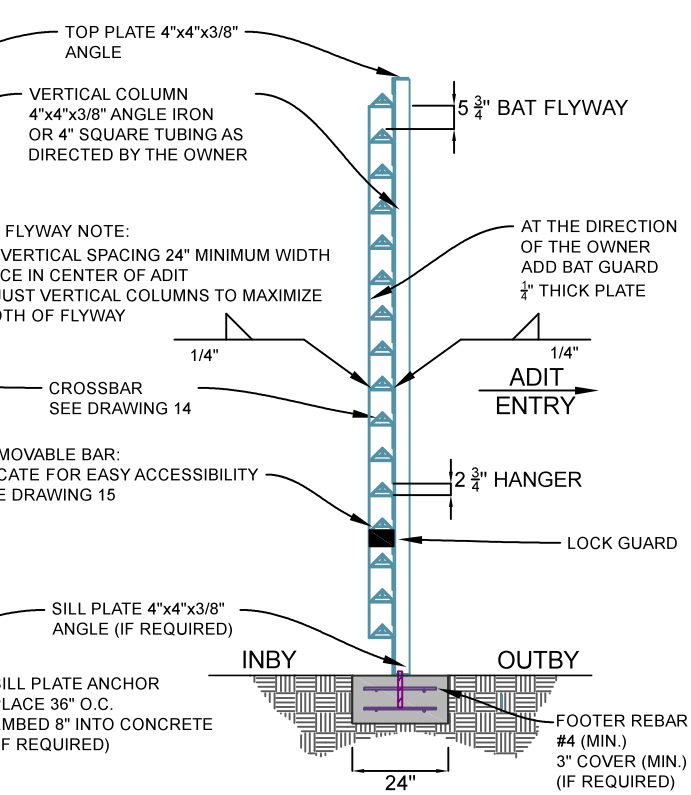
OBLIQUE VIEW



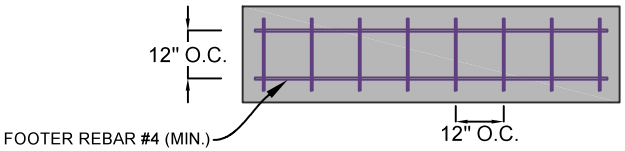
TYPICAL ELEVATION



TYPICAL SECTION



FOOTING DETAIL PLAN VIEW



NOTE:

MATERIALS WILL CONSIST OF THE FOLLOWING:
4" x 4" x ⅜" THICK FLANGED ANGLE IRON
1½" x 1½" x ¼" THICK FLANGED ANGLE IRON
6" x 6" x ⅜" THICK FLANGED ANGLE IRON
1" ROUND STOCK BAR A706
¼" THICK STEEL PLATE VARIOUS DIMENSIONS
(ANGLE IRON AND PLATE STEEL ASTM 36)

IN COMPETENT ROCK THE CONCRETE FOOTER, SILL AND TOP PLATE MAY BE OMITTED AT THE DIRECTION OF THE OWNER.

PROVIDE FOR EXISTING DRAINAGE (AS REQUIRED)
SEE SECTION 0250 AND SECTION 0300

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UTAH DNR OIL, GAS & MINING

STATE OF UTAH
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Oil, Gas and Mining
Abandoned Mine
Reclamation Program

RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS

CHAPTER 6: DESIGN DRAWINGS

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Designed by
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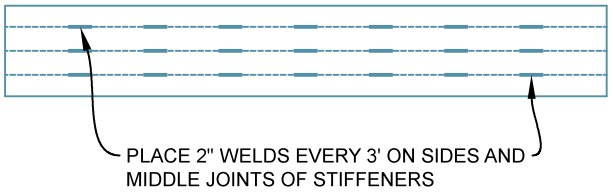
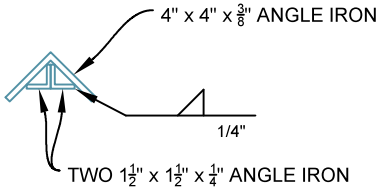
ANGLE IRON BAT GATE CLOSURE

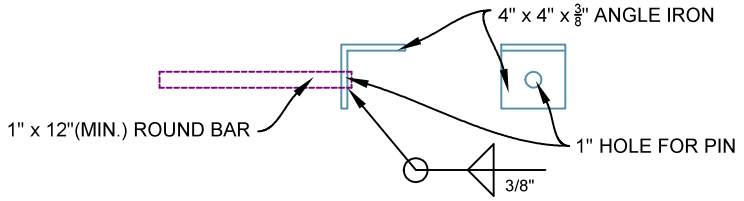
REFER TO SPEC SECTIONS 0251-0253	DRAWING: 13 of 47
REVISION: 06-01-2020	SCALE: AS NOTED

CROSSBAR DESIGN WITH STIFFENER

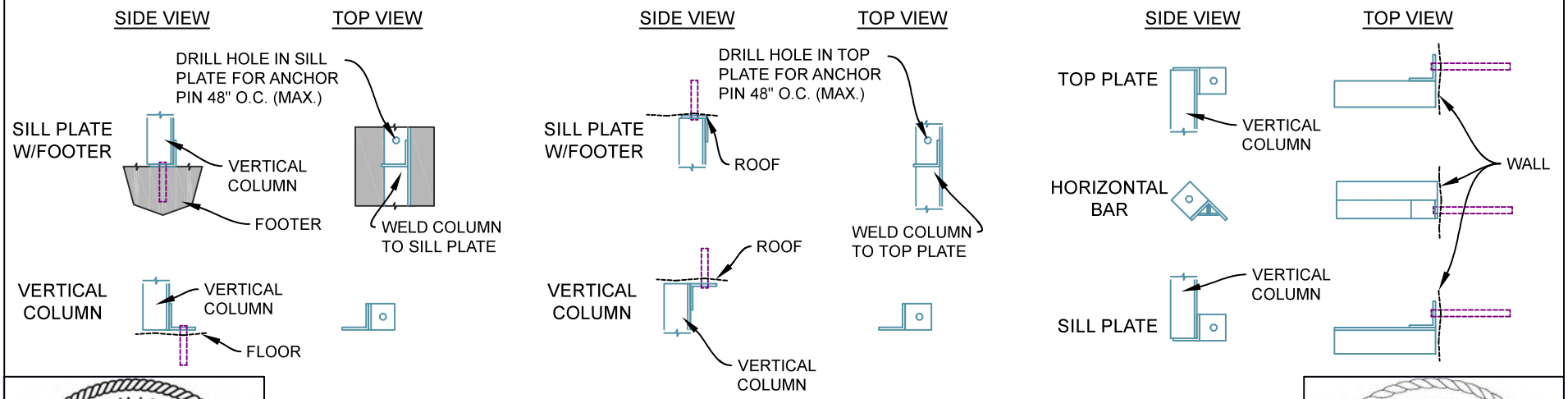


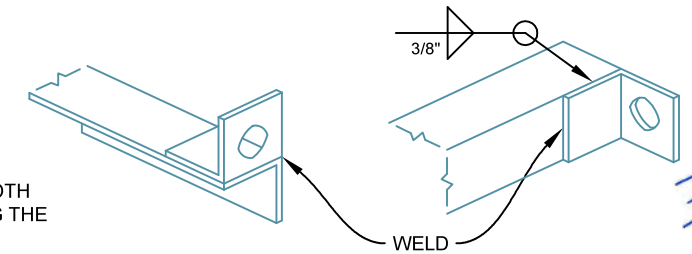


PIN ANCHORS BRACKET



ANCHOR BRACKET MOUNTING PLACEMENT





AS DIRECTED BY THE OWNER:

1) STIFFENERS MAY BE OMITTED.
2) ANCHORS MAY BE WELDED DIRECTLY TO BOTH VERTICAL AND HORIZONTAL BARS OMITTING THE ANCHOR BRACKET.

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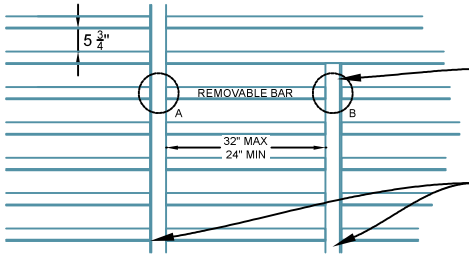
UTAH DNR OIL, GAS & MINING	**STATE OF UTAH NATURAL RESOURCES** **Oil, Gas and Mining** Abandoned Mine Reclamation Program	**RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS** **CHAPTER 6: DESIGN DRAWINGS**	Original design (LAA) and drafting (JCR) by DOGM/AMRP Designed by Krivonen Associates, P.C. Structural Consultants In Association with: Spectrum Engineering and Environmental, LLC Billings, Montana 59101	**ANGLE IRON BAT GATE DETAIL 1** REFER TO SPEC SECTIONS 0251-0253 / DRAWING: 14 of 47 REVISION: 06-01-2020 / SCALE: AS NOTED

NOTE:

LOCATE REMOVABLE BAR FOR ACCESSIBILITY AND A LOADED RESCUE LITTER CAN EASILY PASS THROUGH

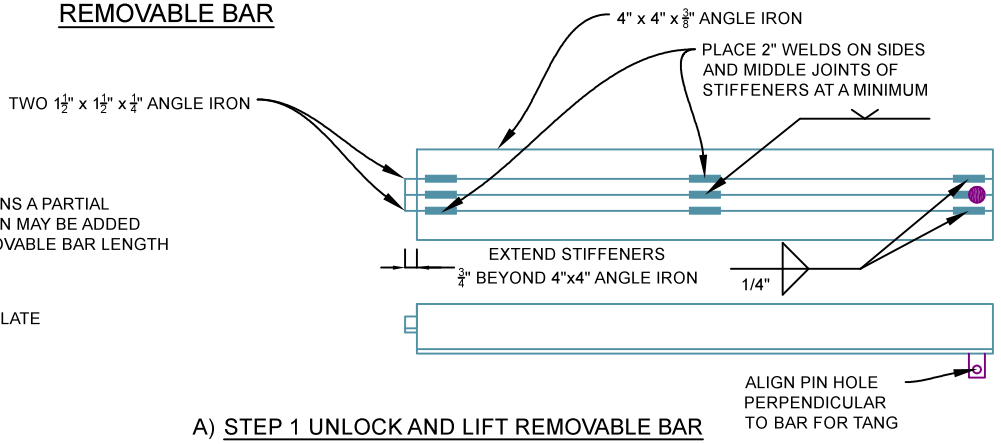


FOR LARGER SPANS A PARTIAL VERTICAL COLUMN MAY BE ADDED TO REDUCE REMOVABLE BAR LENGTH

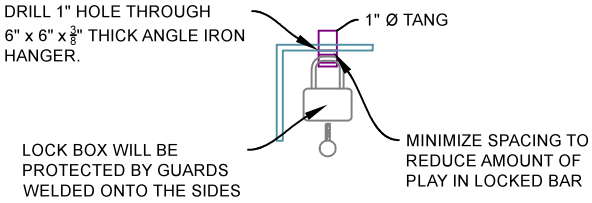
CONNECT TO SILL PLATE OR ANCHOR

AT THE DIRECTION OF THE OWNER THE REMOVABLE BAR WILL BE SECURED USING EITHER TRADITIONAL PADLOCK OR SECURITY NUT.

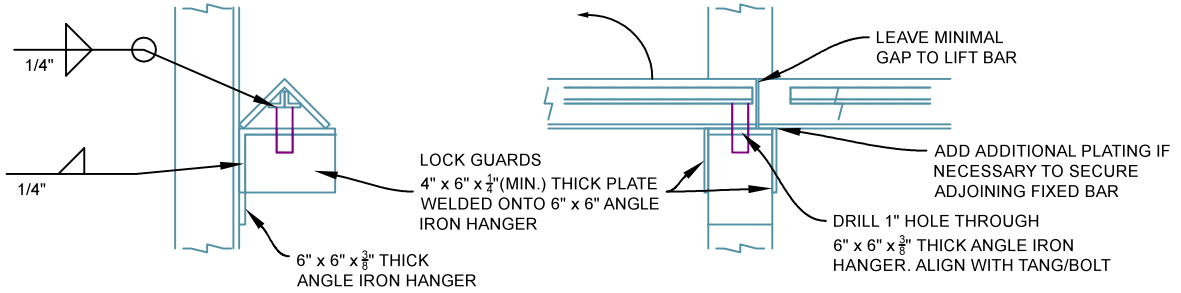
REMOVABLE BAR



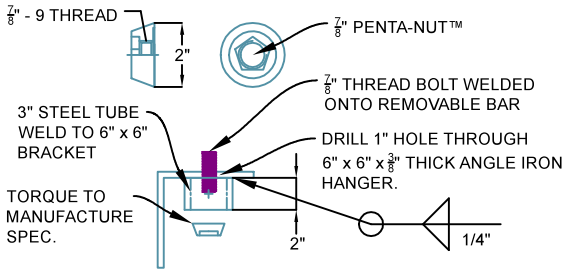
TANG WITH PADLOCK



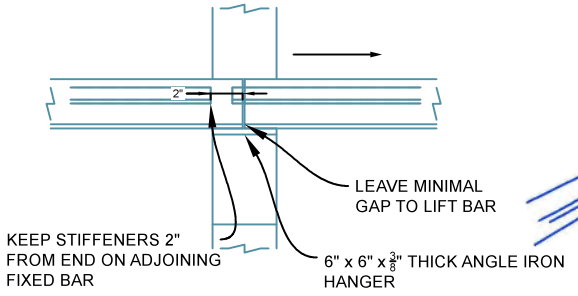
A) STEP 1 UNLOCK AND LIFT REMOVABLE BAR

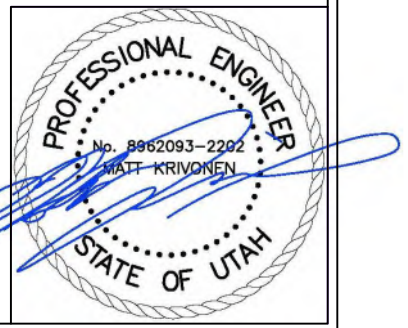


SECURITY NUT



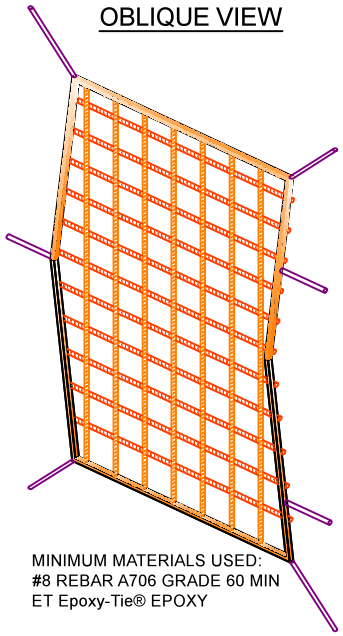
B) STEP 2 SLIDE STIFFENERS OUT OF FIXED BAR





UTAH DNR OIL, GAS & MINING	**STATE OF UTAH NATURAL RESOURCES** **Oil, Gas and Mining** Abandoned Mine Reclamation Program	**RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS** **CHAPTER 6: DESIGN DRAWINGS**	**Original design (LAA) and drafting (JCR) by DOGM/AMRP** **Designed by Krivonen Associates, P.C. Structural Consultants In Association with: Spectrum Engineering and Environmental, LLC Billings, Montana 59101**	**ANGLE IRON BAT GATE DETAIL 2**
				REFER TO SPEC SECTIONS 0251-0253 / DRAWING: 15 of 47
				REVISION: 06-01-2020 / SCALE: AS NOTED

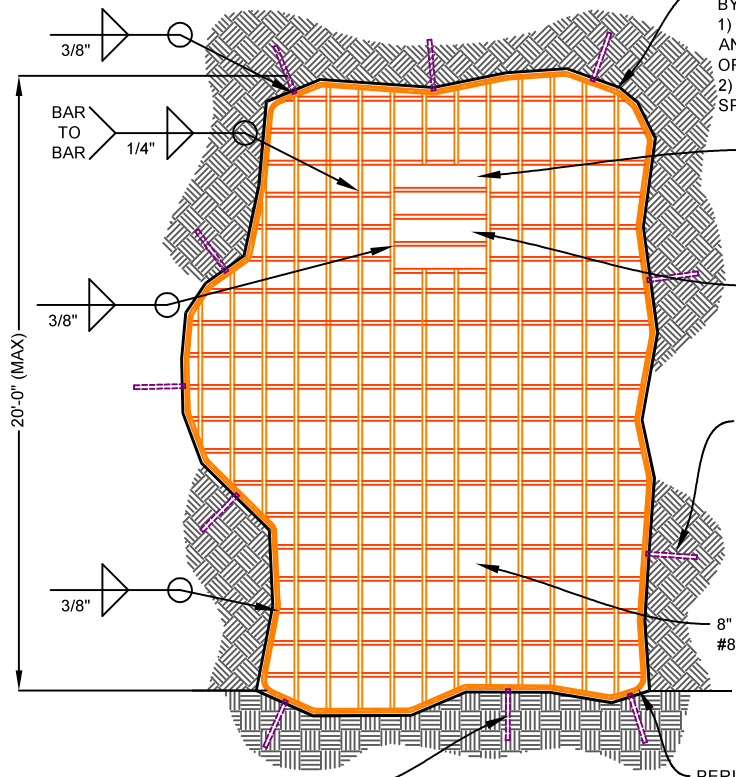
OBLIQUE VIEW



MINIMUM MATERIALS USED:
#8 REBAR A706 GRADE 60 MIN
ET Epoxy-Tie® EPOXY

OWNER MAY REQUIRE
SMOOTH ROUND STOCK WITH
STRENGTH EQUIVALENT TO GRADE 60
REBAR

TYPICAL ELEVATION



SECURE GRATE
BY EITHER:
1) PERIMETER BAR ATTACHED TO ANCHORS (SHOWN)
OR
2) EMBEDDING GRATE ENDS WITH SPOT REINFORCING AS NEEDED

ADD BAT FLYWAYS AT DIRECTION OF OWNER.
LOCATE IN UPPER $\frac{1}{3}$ OF ADIT VERTICALLY AND THEN CENTER HORIZONTALLY

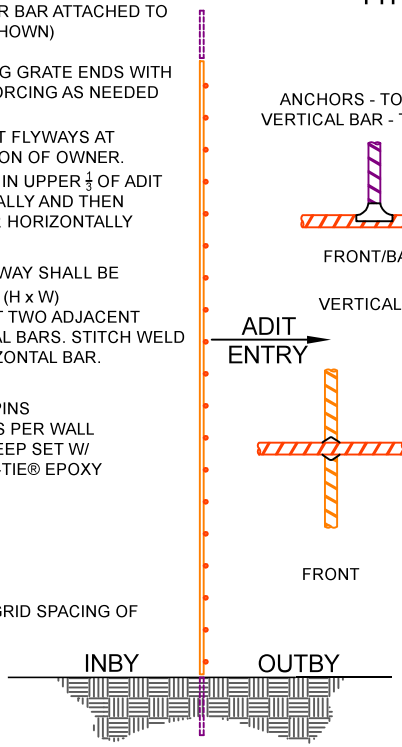
BAT FLYWAY SHALL BE
5 $\frac{3}{4}$" x 23" (H x W)
CUT OUT TWO ADJACENT VERTICAL BARS. STITCH WELD IN HORIZONTAL BAR.

ANCHOR PINS
MIN. 2 PINS PER WALL
12" MIN. DEEP SET W/
ET EPOXY-TIE® EPOXY

8" O.C. MAX GRID SPACING OF #8 REBAR

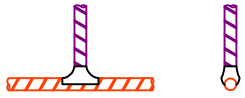
USE ANCHOR PINS ONLY IF SILL IS COMPETENT ROCK. USE CONCRETE FOOTER FOR ALL OTHER SITUATIONS

PERIMETER BAR MAY BE REQUIRED AT THE DIRECTION OF THE OWNER. MAX 2" GAP BETWEEN PERIMETER BAR AND RIB. BENDING OR WELDING REBAR MAY REQUIRED ALONG WITH KEYING THE ADIT SURFACE

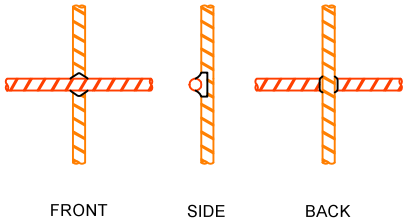


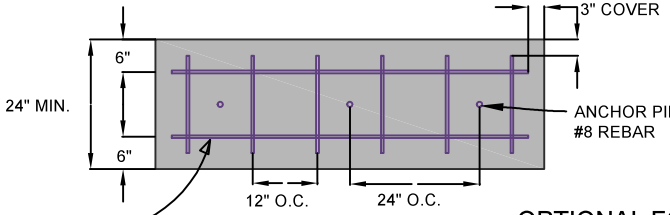
TYPICAL WELDS DETAIL

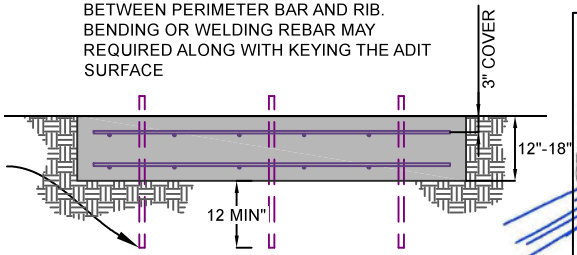
TYPICAL
ANCHORS - TOP/BOTTOM HORIZONTAL BAR
VERTICAL BAR - TOP/BOTTOM HORIZONTAL BAR



TYPICAL
VERTICAL BAR - HORIZONTAL BAR







OPTIONAL FOOTER DETAIL

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PROFESSIONAL ENGINEER
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UTAH DNR OIL, GAS & MINING

STATE OF UTAH
NATURAL RESOURCES
Oil, Gas and Mining
Abandoned Mine
Reclamation Program

RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS

CHAPTER 6: DESIGN DRAWINGS

Original design (LAA) and drafting (JCR) by DOGM/AMRP

Designed by
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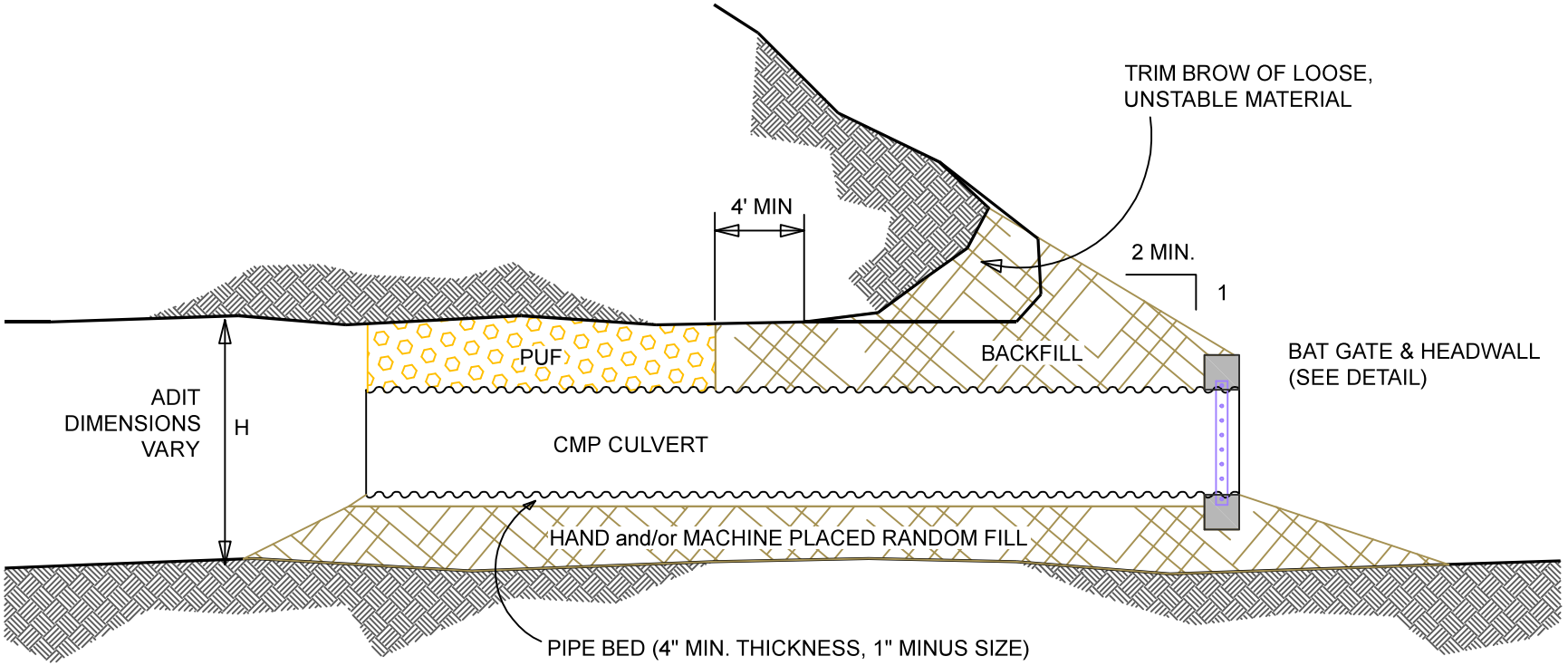
In Association with:
Spectrum Engineering and Environmental, LLC
Billings, Montana 59101

REBAR ADIT GRATE CLOSURE (PINNED)

REFER TO SPEC SECTIONS	0251-0253	DRAWING: 16 of 47
REVISION:	06-01-2020	SCALE: AS NOTED



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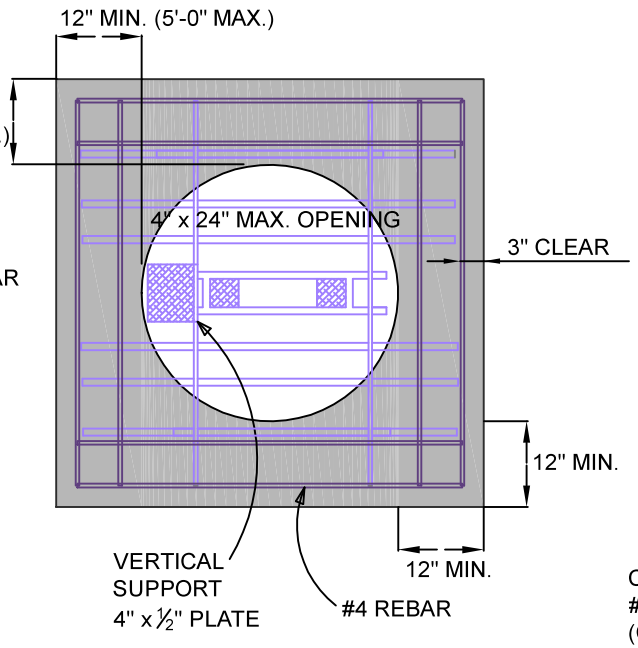
UTAH DNR OIL, GAS & MINING	**STATE OF UTAH** **NATURAL RESOURCES** **Oil, Gas and Mining** Abandoned Mine Reclamation Program	**RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS** **CHAPTER 6:** **DESIGN DRAWINGS**	**Original design (LAA) and drafting (JCR) by DOGM/AMRP** **Designed by** **Krivonen Associates, P.C. Structural Consultants** **In Association with:** **Spectrum Engineering and Environmental, LLC** **Billings, Montana 59101**	**CMP BAT GATE CLOSURE** REFER TO SPEC SECTIONS 0250-0254 | DRAWING: 17 of 47 REVISION: 06-01-2020 | SCALE: AS NOTED

CONCRETE HEADWALL EXTENDS 12" MIN. FROM WALL OF CMP CULVERT

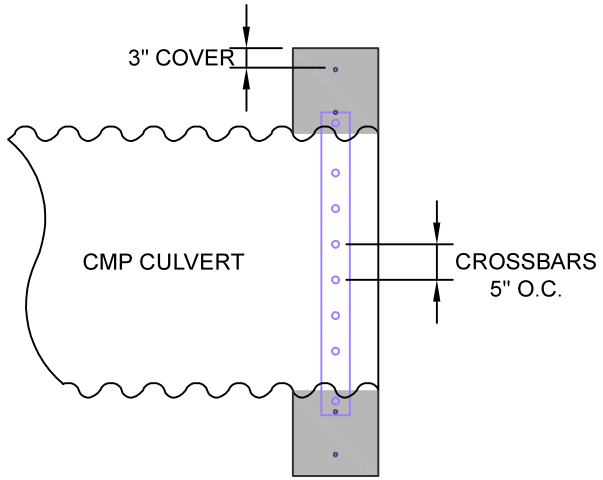
TYPICAL ELEVATION



LOCKBOX/REMOVABLE BAR SEE DETAIL

CROSSBARS AND VERTICAL SUPPORTS EXTEND 6" MIN. THROUGH WALL OF CMP CULVERT

TYPICAL SECTION



CONCRETE REINFORCEMENT:
#4 REBAR, 12" O.C., ONE LAYER (CENTERED HORIZONTALLY)
STEEL SHALL CONFORM WITH ASTM A615 GRADE 60

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NOTE:
STEEL PLATE ASTM 36
A706 REBAR MAY BE USED FOR ROUND STOCK
ALL ROUND STOCK TO BE 1"Ø
ALL FLAT STOCK TO BE 4" x ½"

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UTAH DNR OIL, GAS & MINING

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RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS

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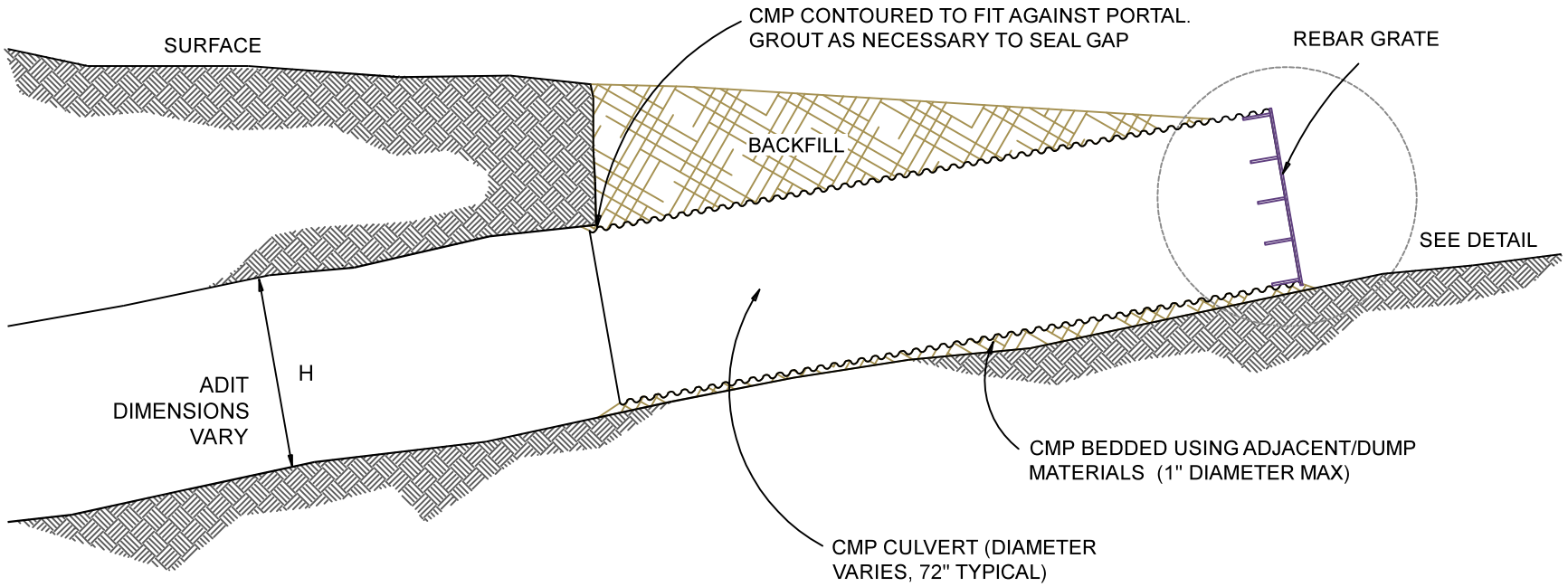
CMP BAT GATE CLOSURE DETAILS

REFER TO SPEC SECTIONS 0250-0254	DRAWING: 18 of 47
REVISION: 06-01-2020	SCALE: AS NOTED



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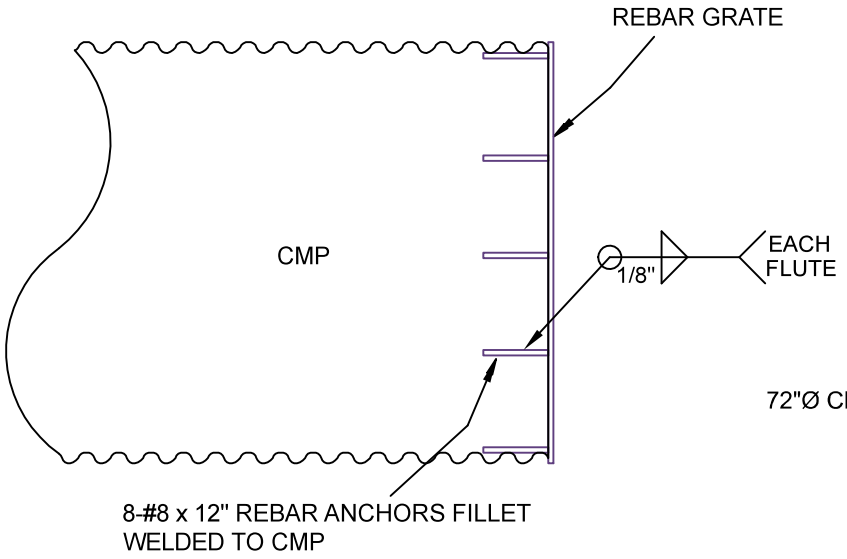
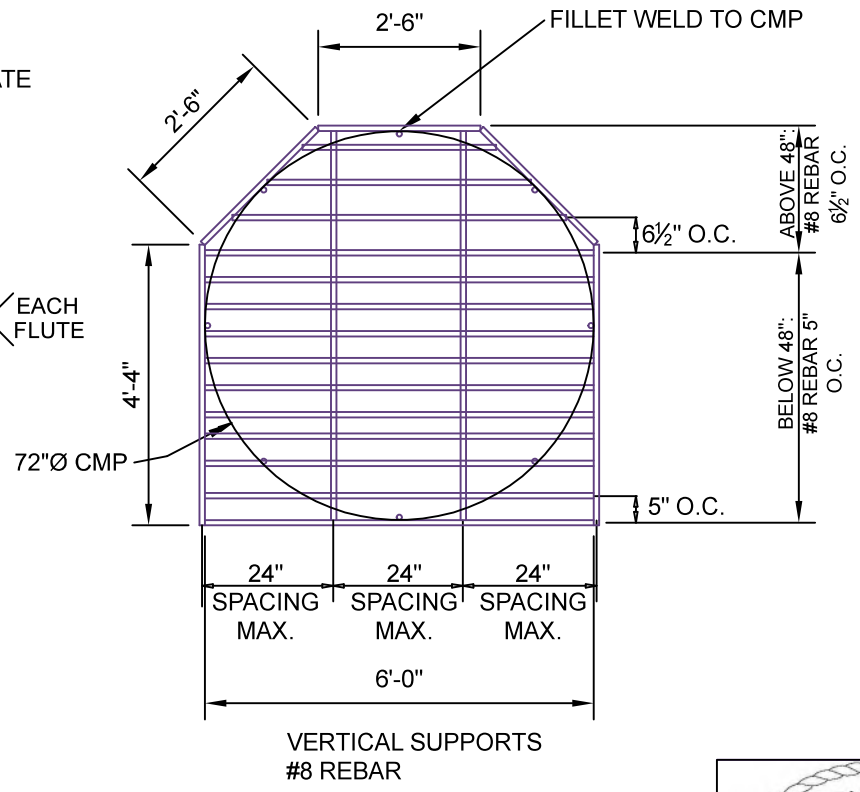
UTAH DNR OIL, GAS & MINING	**STATE OF UTAH** **NATURAL RESOURCES** **Oil, Gas and Mining** Abandoned Mine Reclamation Program	**RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS** **CHAPTER 6:** **DESIGN DRAWINGS**	**Original design (LAA) and drafting (JCR) by DOGM/AMRP** **Designed by** **Krivonen Associates, P.C. Structural Consultants** **In Association with:** **Spectrum Engineering and Environmental, LLC** **Billings, Montana 59101**	**CMP TRENCH PORTAL CLOSURE/BAT GATE** REFER TO SPEC SECTIONS 0250-0254 | DRAWING: 19 of 47 REVISION: 06-01-2020 | SCALE: AS NOTED

TYPICAL SECTION





VERTICAL SUPPORTS
#8 REBAR

NOTE: FIELD DIMENSIONS MAY VARY

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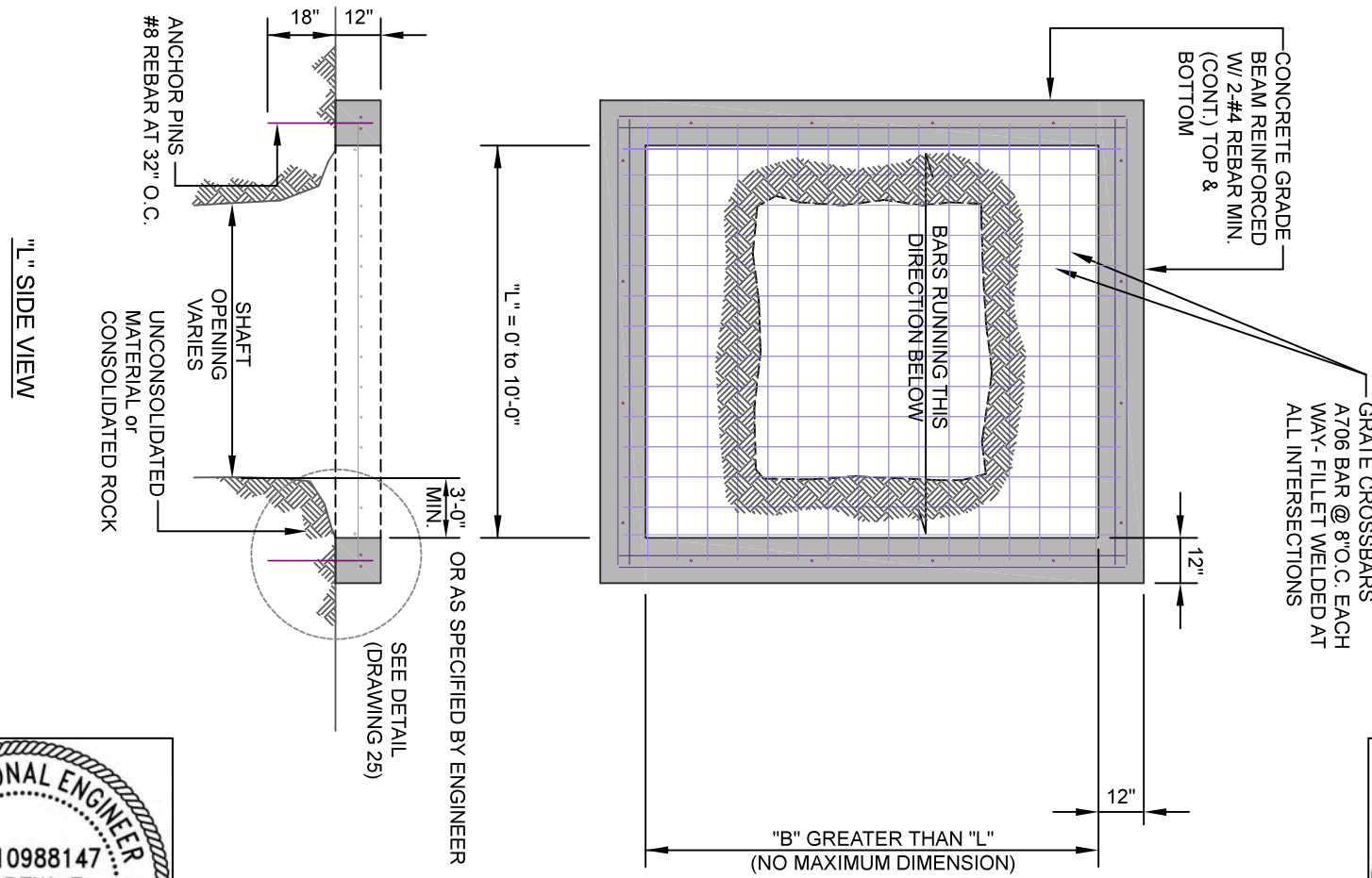
UTAH DNR OIL, GAS & MINING **STATE OF UTAH** **NATURAL RESOURCES** **Oil, Gas and Mining** Abandoned Mine Reclamation Program	**RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS** **CHAPTER 6: DESIGN DRAWINGS**	Original design (LAA) and drafting (JCR) by DOGM/AMRP Designed by Krivonen Associates, P.C. Structural Consultants In Association with: Spectrum Engineering and Environmental, LLC Billings, Montana 59101	**CMP TRENCH PORTAL CLOSURE/BAT GATE DETAILS**	
			REFER TO SPEC SECTIONS 0250-0254	DRAWING: 20 of 47
			REVISION: 06-01-2020	SCALE: AS NOTED



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PROFESSIONAL ENGINEER
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MATT KRIVONEN
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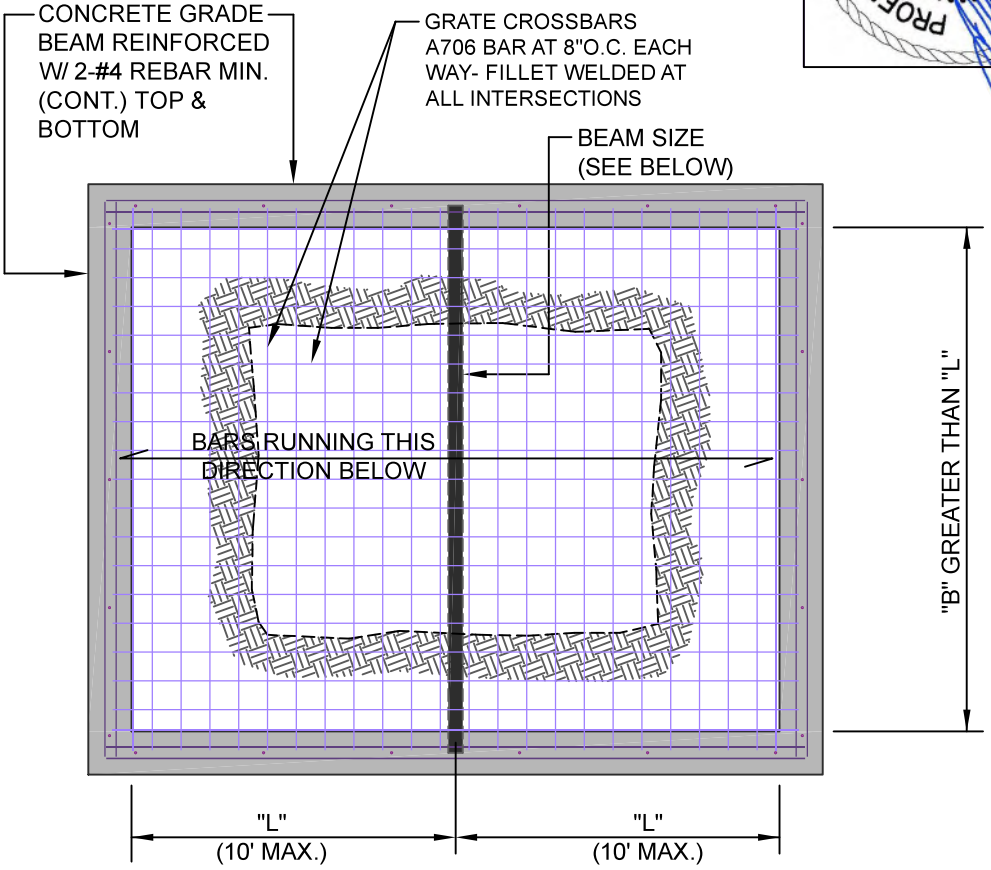
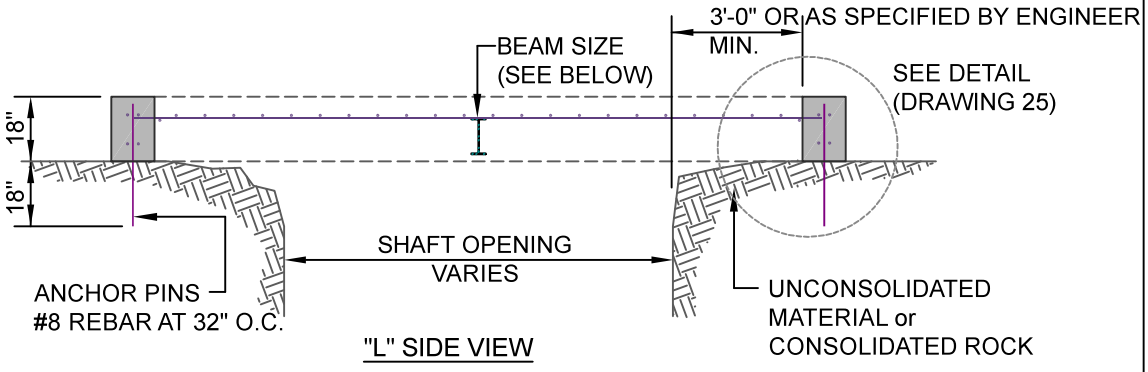
UTAH DNR OIL, GAS & MINING	**STATE OF UTAH** **NATURAL RESOURCES** **Oil, Gas and Mining** Abandoned Mine Reclamation Program	**RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS** **CHAPTER 6:** **DESIGN DRAWINGS**	**Original design (LAA) and drafting (JCR) by DOGM/AMRP** **Designed by** **Krivonen Associates, P.C. Structural Consultants** **In Association with:** **Spectrum Engineering and Environmental, LLC** **Billings, Montana 59101**	**REBAR SHAFT GRATE CLOSURE (WITH GRADE BEAM)** REFER TO SPEC SECTIONS 0251-0253 — DRAWING: 21 of 47 REVISION: 02-01-2021 — SCALE: AS NOTED





"L" SIDE VIEW

BEAM SPAN "B"	BEAM SIZE
11'-0" to 15'-0"	W8x10
15'-0" to 20'-0"	W10x15
20'-0" to 25'-0"	W10x22
25'-0" to 30'-0"	W10x33

FOR BEAM SPANS "B" EXCEEDING 30'-0" CONSULT A PROFESSIONAL ENGINEER MULTIPLE BEAMS MAY BE USED SO LONG AS THE SPACING BETWEEN THE BEAMS "L" DOES NOT EXCEED 10'-0"

PROFESSIONAL ENGINEER No. 8962093-2202 MATT KRIVONEN STATE OF UTAH

PROFESSIONAL ENGINEER No. 10988147 ANDREW E. HERRERA STATE OF UTAH

REBAR SHAFT GRATE CLOSURE (WITH GRADE BEAM & I BEAM)

REFER TO SPEC SECTIONS 0251-0253

DRAWING: 22 of 47

REVISION: 02-01-2021

SCALE: AS NOTED

Original design (LAA) and drafting (JCR) by DOGM/AMRP

Designed by
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In Association with:
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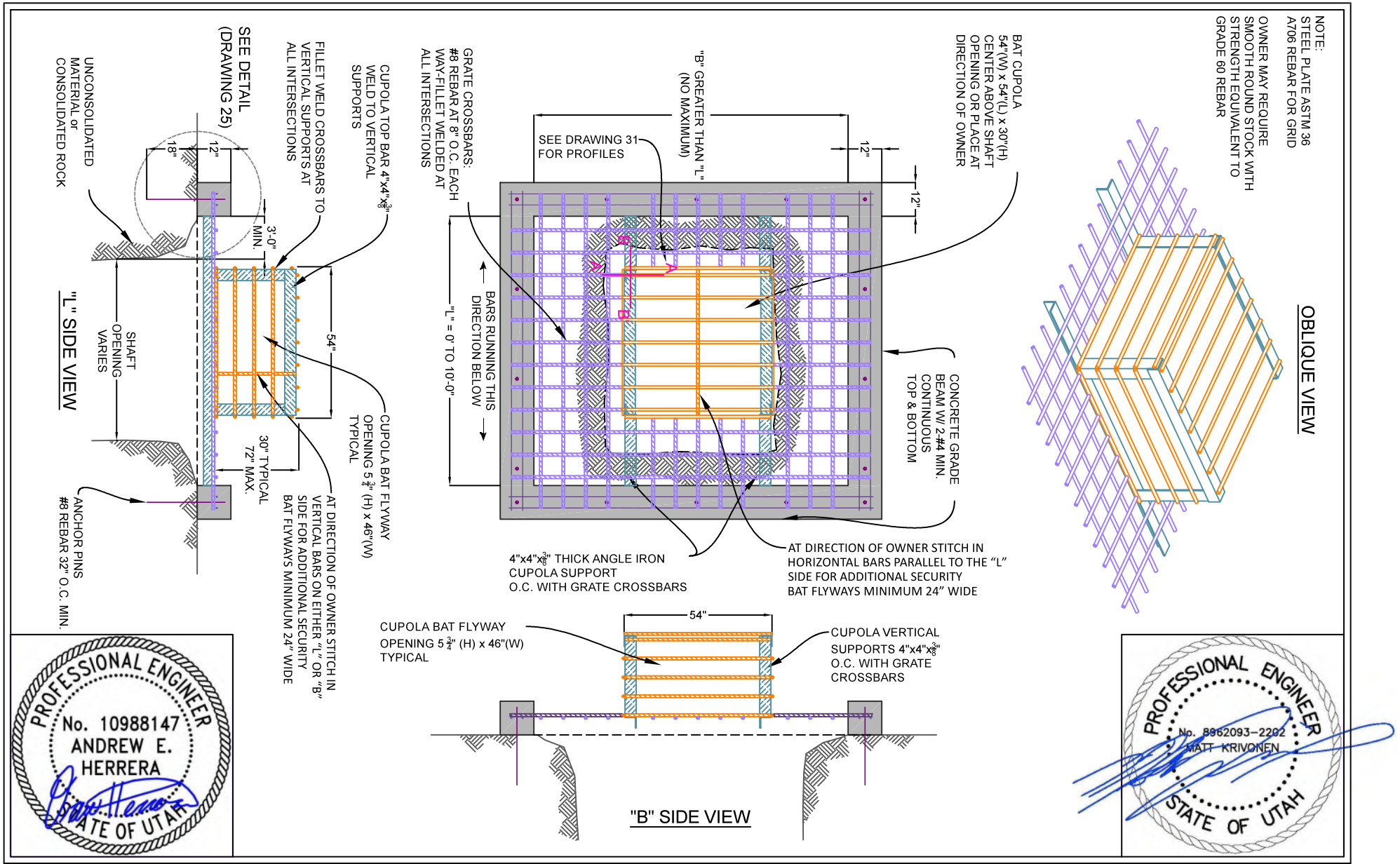
Billings, Montana 59101

RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS

CHAPTER 6: DESIGN DRAWINGS

STATE OF UTAH
NATURAL RESOURCES
Oil, Gas and Mining
Abandoned Mine
Reclamation Program

UTAH DNR OIL, GAS & MINING



PROFESSIONAL ENGINEER
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UTAH DNR OIL, GAS & MINING

STATE OF UTAH
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RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS

CHAPTER 6:
DESIGN DRAWINGS

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REBAR SHAFT GRATE CLOSURE (WITH GRADE BEAM & BAT CUPOLA)

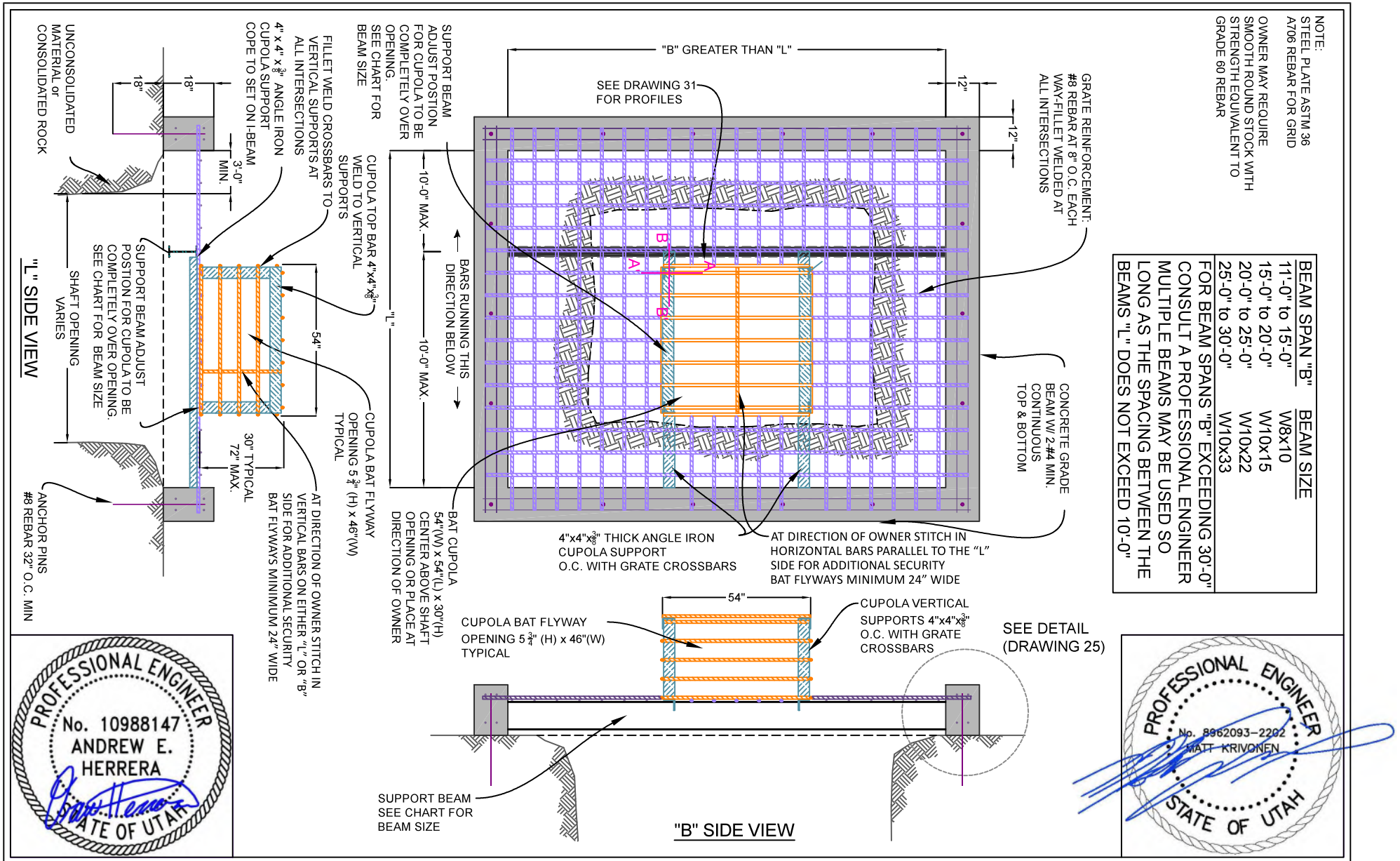
REFER TO SPEC SECTIONS	0251-0253	DRAWING: 23 of 47
REVISION:	06-01-2020	SCALE: AS NOTED

NOTE:
STEEL PLATE ASTM 36
A706 REBAR FOR GRID

OWNER MAY REQUIRE
SMOOTH ROUND STOCK WITH
STRENGTH EQUIVALENT TO
GRADE 60 REBAR

BEAM SPAN "B"	BEAM SIZE
11'-0" to 15'-0"	W8x10
15'-0" to 20'-0"	W10x15
20'-0" to 25'-0"	W10x22
25'-0" to 30'-0"	W10x33

FOR BEAM SPANS "B" EXCEEDING 30'-0"
CONSULT A PROFESSIONAL ENGINEER
MULTIPLE BEAMS MAY BE USED SO
LONG AS THE SPACING BETWEEN THE
BEAMS "L" DOES NOT EXCEED 10'-0"



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STATE OF UTAH

PROFESSIONAL ENGINEER
No. 8962093-2202
MATT KRIVONEN
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UTAH DNR OIL, GAS & MINING

STATE OF UTAH
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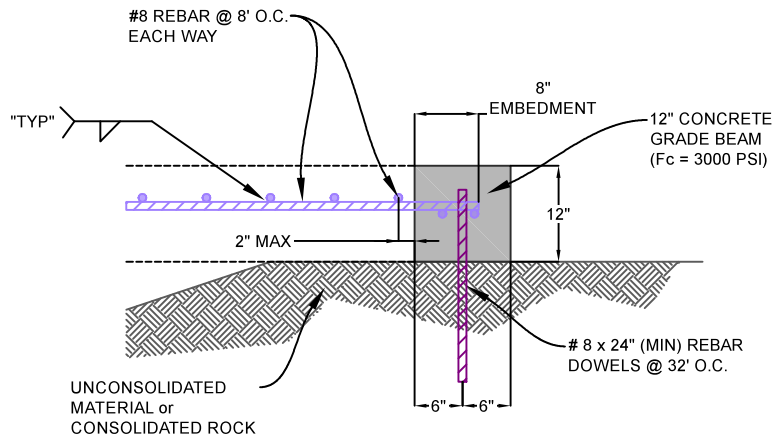
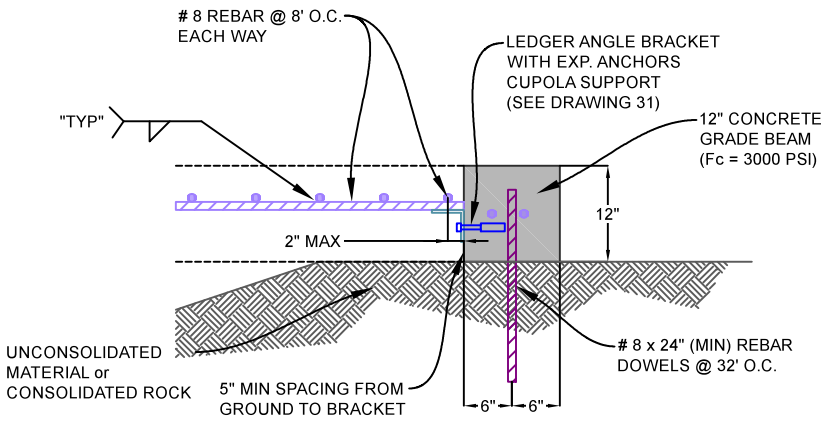
REBAR SHAFT GRATE CLOSURE (WITH GRADE BEAM, I-BEAM & BAT CUPOLA)

REFER TO SPEC SECTIONS 0251-0253	DRAWING: 24 of 47
REVISION: 06-01-2020	SCALE: AS NOTED

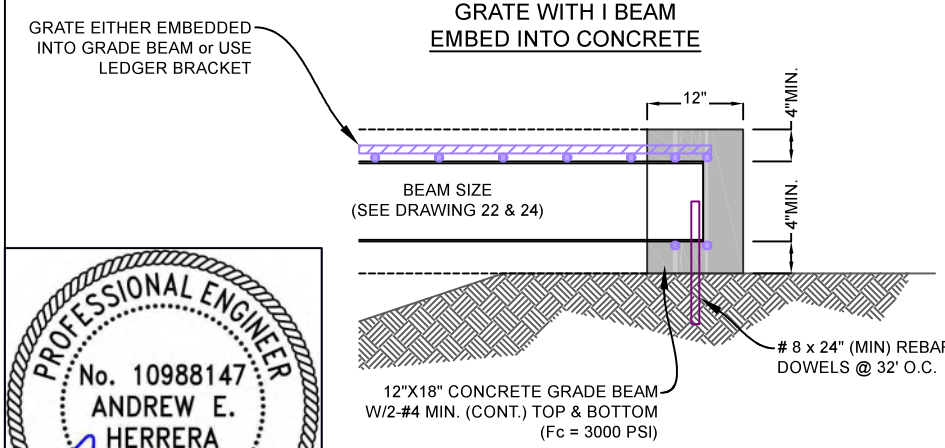
GRATE WITHOUT I BEAM
EMBED INTO CONCRETE



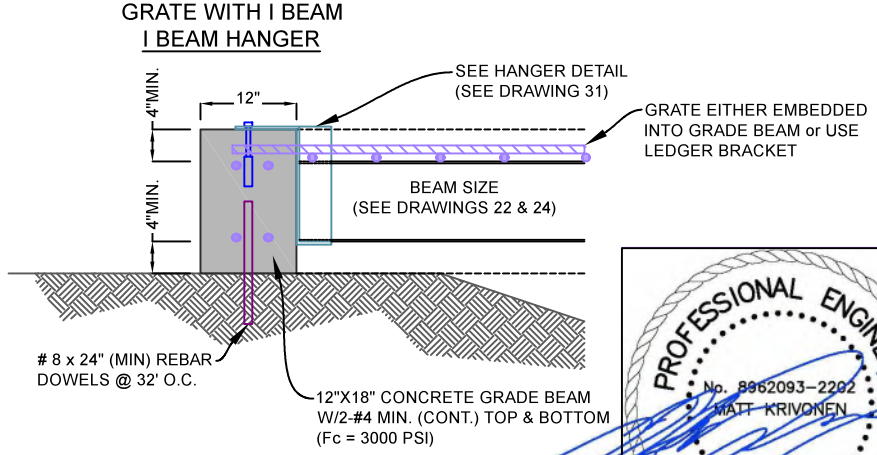
GRATE WITHOUT I BEAM
ANGLE LEDGER BRACKET



GRATE WITH I BEAM
EMBED INTO CONCRETE



GRATE WITH I BEAM
I BEAM HANGER



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UTAH DNR OIL, GAS & MINING

STATE OF UTAH
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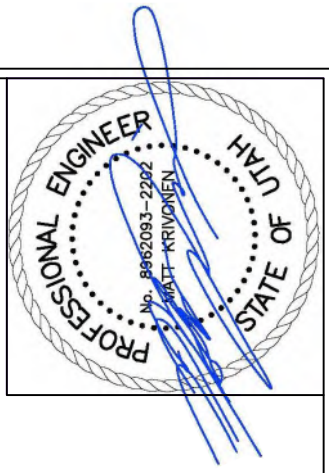
REBAR SHAFT GRATE GRADE BEAM DETAILS

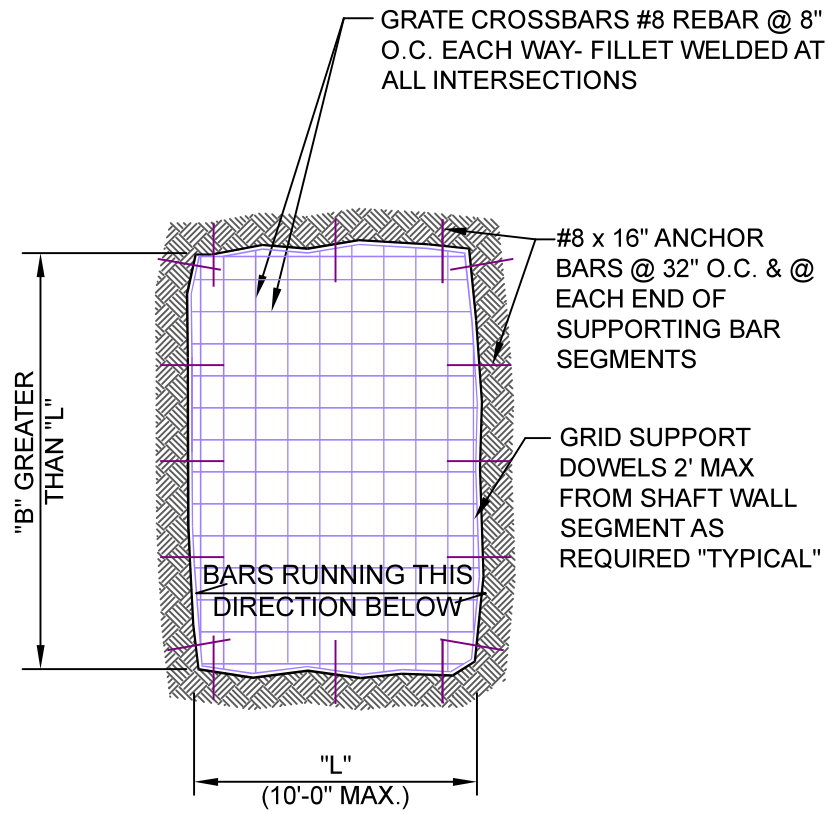
REFER TO SPEC SECTIONS 0251-0253	DRAWING: 25 of 47
REVISION: 02-01-2021	SCALE: AS NOTED

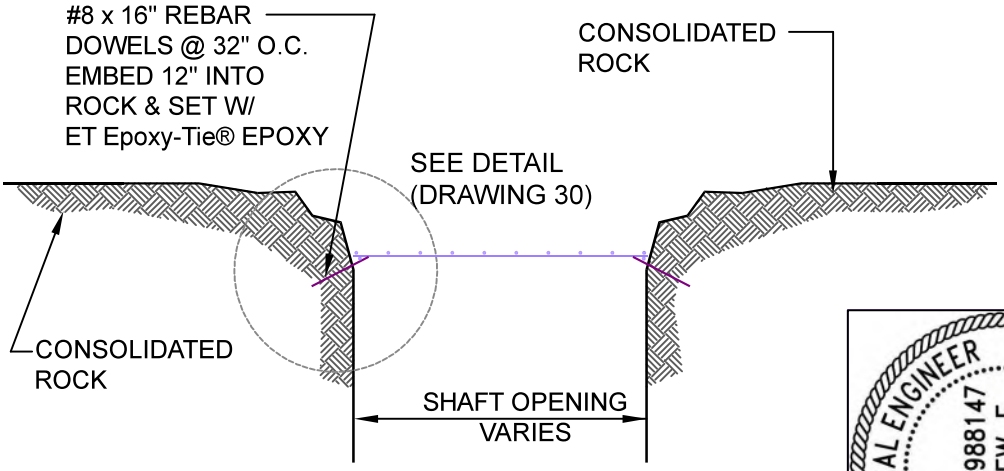
NOTE:
USE A706 FOR ALL REBAR

OWNER MAY REQUIRE
SMOOTH ROUND STOCK WITH
STRENGTH EQUIVALENT TO
GRADE 60 REBAR

DETAIL MAY BE INSTALLED ONLY IN COMPETENT SHAFT WALLS (CONSOLIDATED GRANITE, LIMESTONE, SANDSTONE or VOLCANIC ROCK, ETC.)







"L" SIDE VIEW

REBAR SHAFT GRATE CLOSURE (PINNED)

REFER TO SPEC SECTIONS 0253

DRAWING: 26 of 47

REVISION: 06-01-2020

SCALE: AS NOTED

Original design (LAA) and drafting (JCR) by DOGM/AMRP

Designed by
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RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS

CHAPTER 6: DESIGN DRAWINGS

STATE OF UTAH
NATURAL RESOURCES
Oil, Gas and Mining
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NOTE:
USE A706 FOR ALL REBAR

OWNER MAY REQUIRE
SMOOTH ROUND STOCK WITH
STRENGTH EQUIVALENT TO
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BEAM SPAN "B"	BEAM SIZE
11'-0" to 15'-0"	W8x10
15'-0" to 20'-0"	W10x15
20'-0" to 25'-0"	W10x22
25'-0" to 30'-0"	W10x33

FOR BEAM SPANS "B" EXCEEDING 30'-0"
CONSULT A PROFESSIONAL ENGINEER
MULTIPLE BEAMS MAY BE USED SO
LONG AS THE SPACING BETWEEN THE
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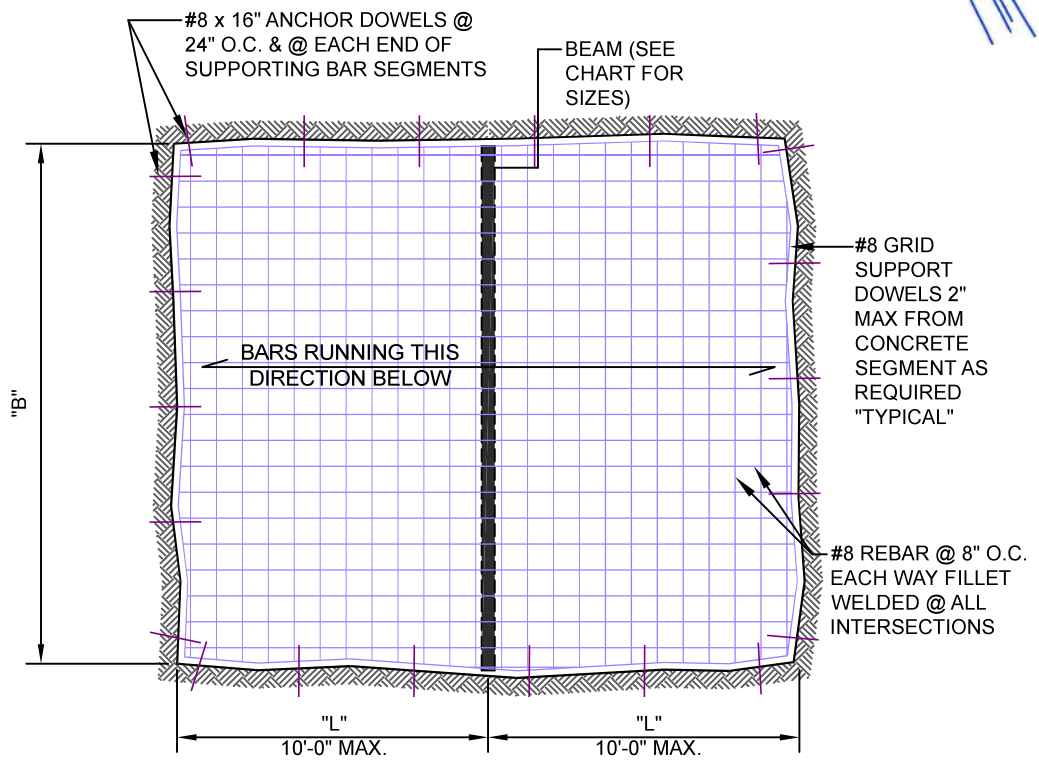
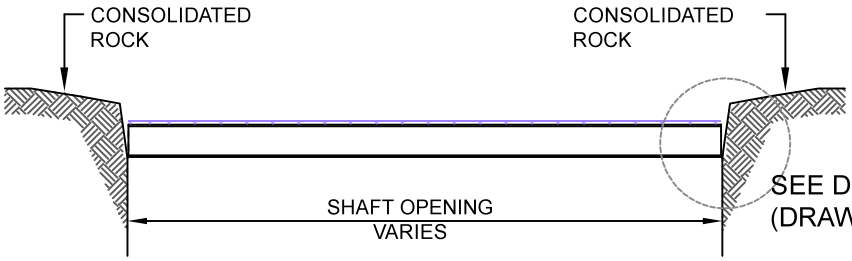
No. 8962093-2202
MATT KRIVONEN
STATE OF UTAH





"L" SIDE VIEW

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ANDREW E. HERRERA
STATE OF UTAH

REBAR SHAFT GRATE (PINNED WITH I BEAM)

REFER TO SPEC SECTIONS 0253

DRAWING: 27 of 47

REVISION: 06-01-2020

SCALE: AS NOTED

Original design (LAA) and drafting (JCR) by DOGM/AMRP

Designed by
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RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS

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STATE OF UTAH
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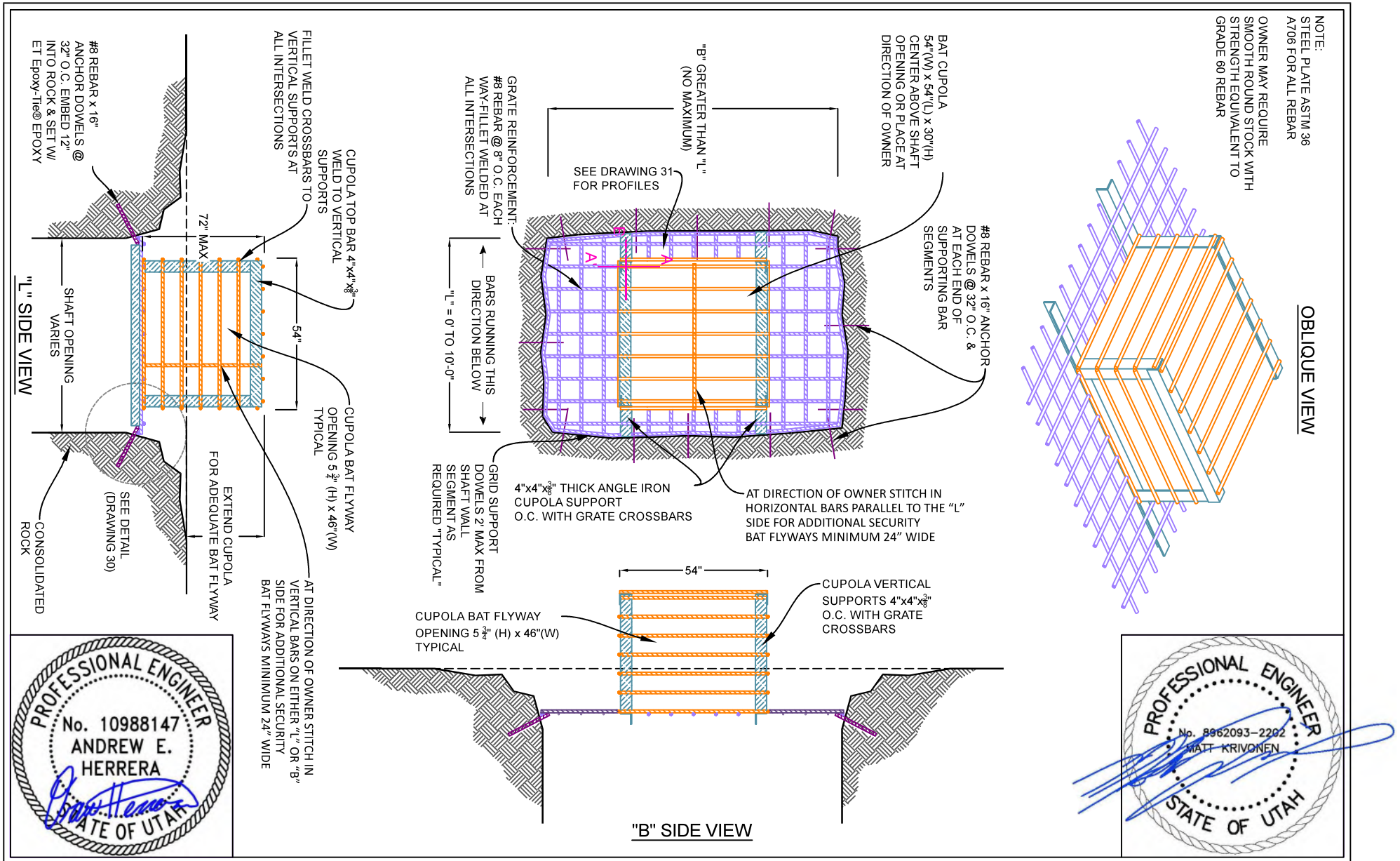
UTAH DNR OIL, GAS & MINING



UTAH DNR OIL, GAS & MINING

STATE OF UTAH
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REBAR SHAFT GRATE CLOSURE (PINNED & BAT CUPOLA)

REFER TO SPEC SECTIONS	0253	DRAWING: 28 of 47
REVISION:	06-01-2020	SCALE: AS NOTED

NOTE:
STEEL PLATE ASTM 36
A706 FOR ALL REBAR

OWNER MAY REQUIRE
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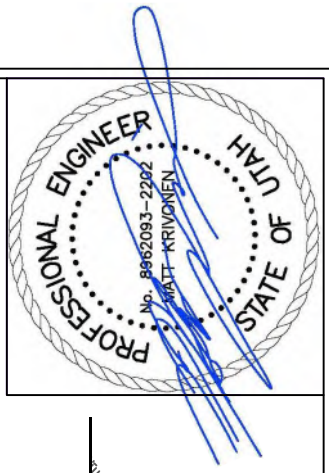
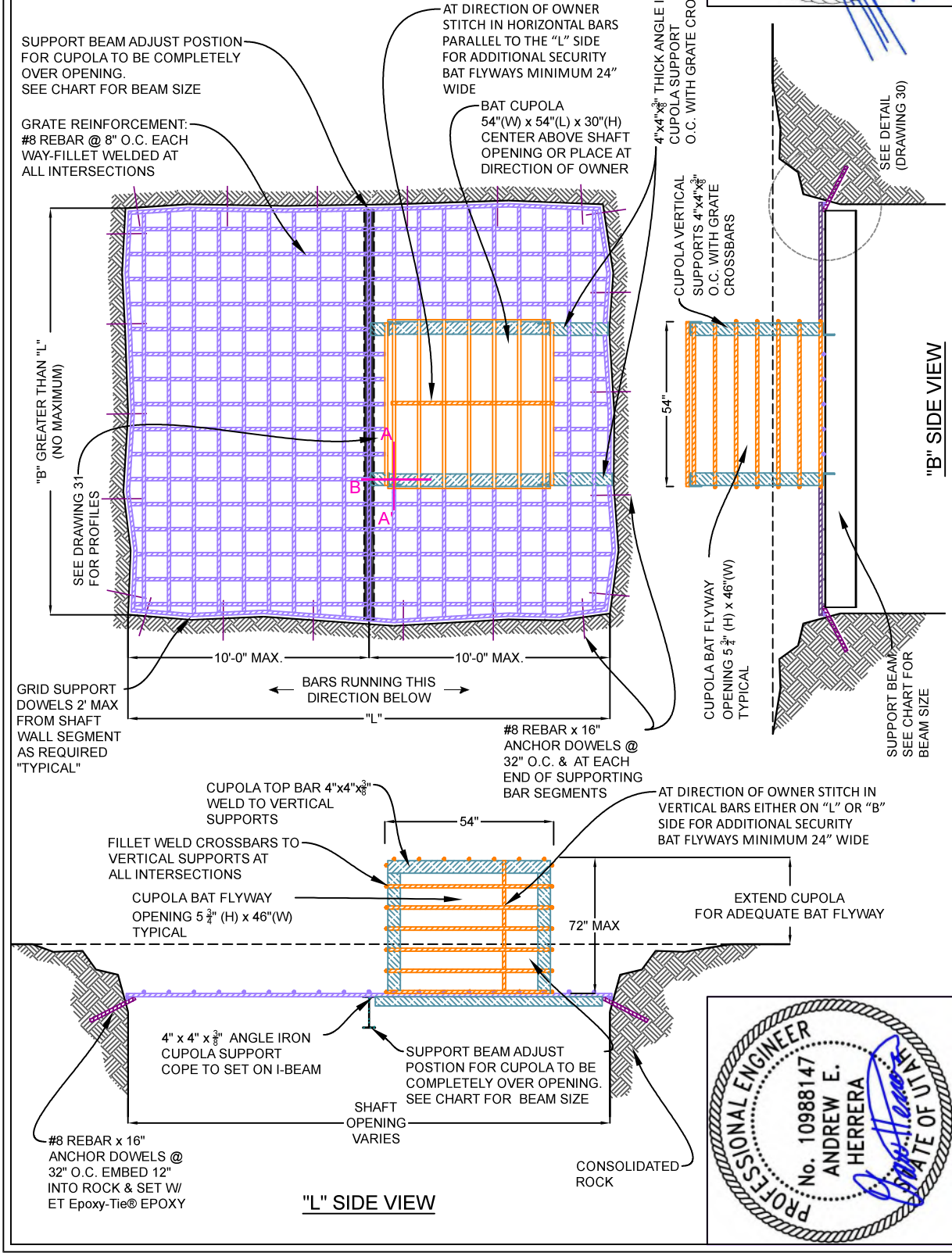
STRENGTH EQUIVALENT TO
GRADE 60 REBAR

BEAM SPAN "B"	BEAM SIZE
11'-0" to 15'-0"	W8x10
15'-0" to 20'-0"	W10x15
20'-0" to 25'-0"	W10x22
25'-0" to 30'-0"	W10x33

FOR BEAM SPANS "B" EXCEEDING 30'-0" CONSULT A PROFESSIONAL ENGINEER MULTIPLE BEAMS MAY BE USED SO LONG AS THE SPACING BETWEEN THE BEAMS "L" DOES NOT EXCEED 10'-0"





REBAR SHAFT GRATE CLOSURE (PINNED, I BEAM, & BAT CUPOLA)

REFER TO SPEC SECTIONS 0253

DRAWING: 29 of 47

REVISION: 06-01-2020

SCALE: AS NOTED

Original design (LAA) and drafting (JCR) by DOGM/AMRP

Designed by
Krivonen Associates, P.C. Structural Consultants
In Association with:
Spectrum Engineering and Environmental, LLC
Billings, Montana 59101

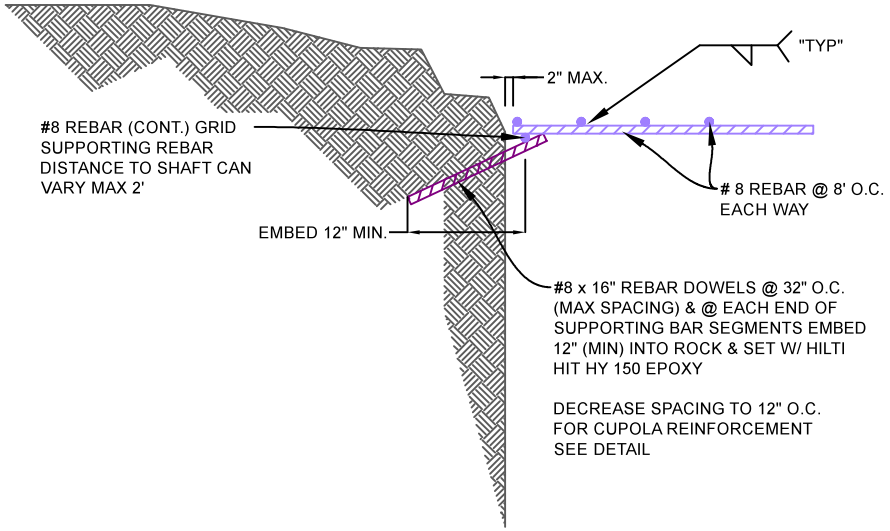
RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS

CHAPTER 6: DESIGN DRAWINGS

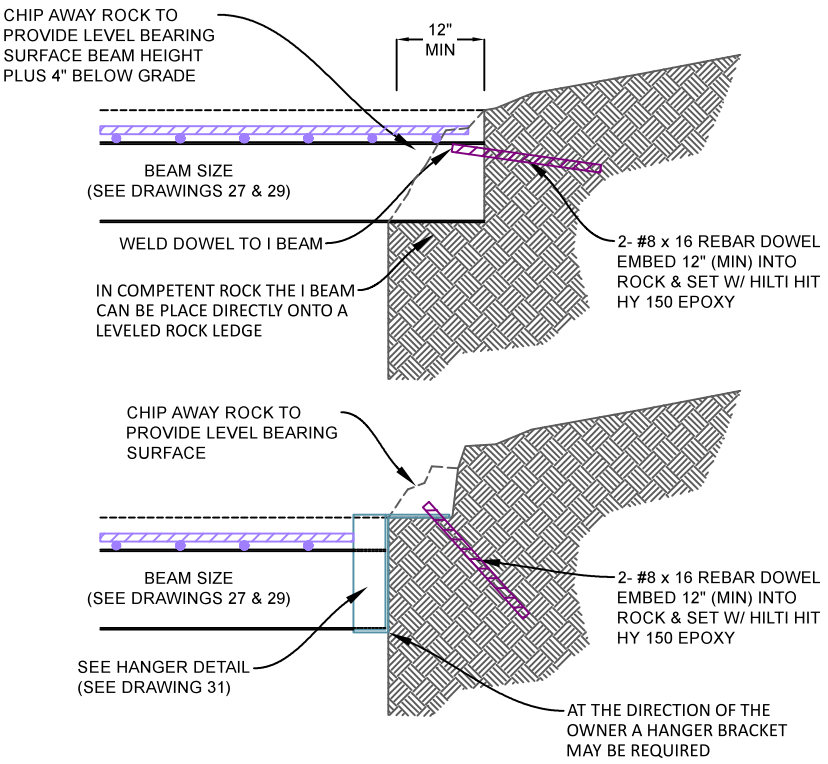
STATE OF UTAH
NATURAL RESOURCES
Oil, Gas and Mining
Abandoned Mine
Reclamation Program

UTAH DNR OIL, GAS & MINING

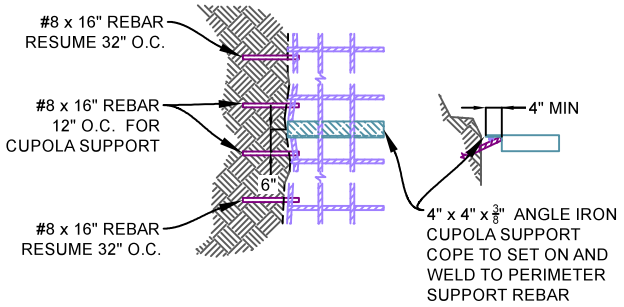
GRATE PINNED



GRATE PINNED I BEAM



CUPOLA SUPPORT DETAIL



PROFESSIONAL ENGINEER
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PROFESSIONAL ENGINEER
No. 8962093-2202
MATT KRIVONEN
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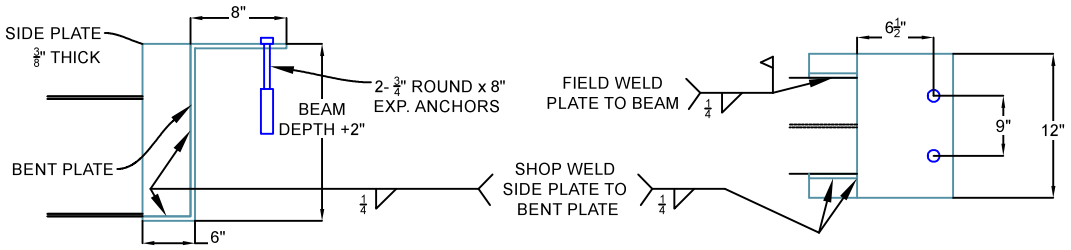
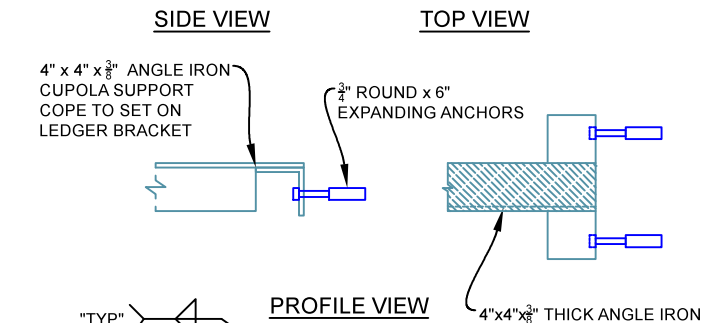
UTAH DNR OIL, GAS & MINING **STATE OF UTAH** **NATURAL RESOURCES** **Oil, Gas and Mining** Abandoned Mine Reclamation Program	**RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS** **CHAPTER 6: DESIGN DRAWINGS**	**Original design (LAA) and drafting (JCR) by DOGM/AMRP** **Designed by** **Krivonen Associates, P.C. Structural Consultants** **In Association with:** **Spectrum Engineering and Environmental, LLC** **Billings, Montana 59101**	**REBAR SHAFT GRATE PINNED DETAIL** REFER TO SPEC SECTIONS 0253 — DRAWING: 30 of 47 REVISION: 06-01-2020 — SCALE: AS NOTED

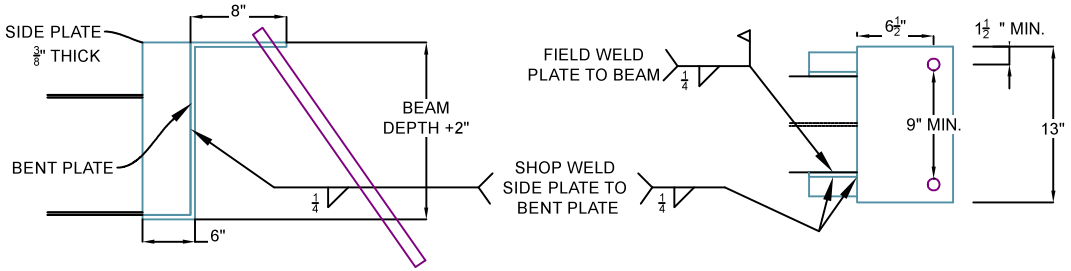
GRADE BEAM W/I BEAM HANGER DETAIL

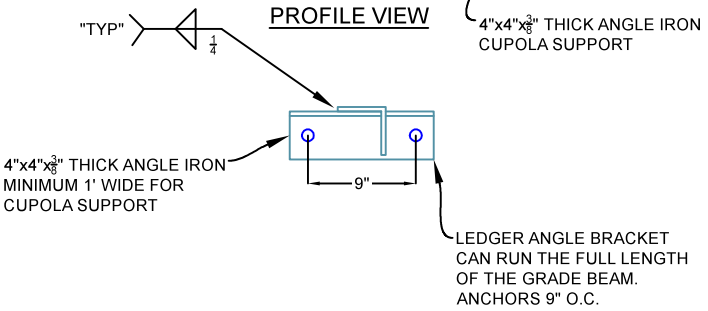


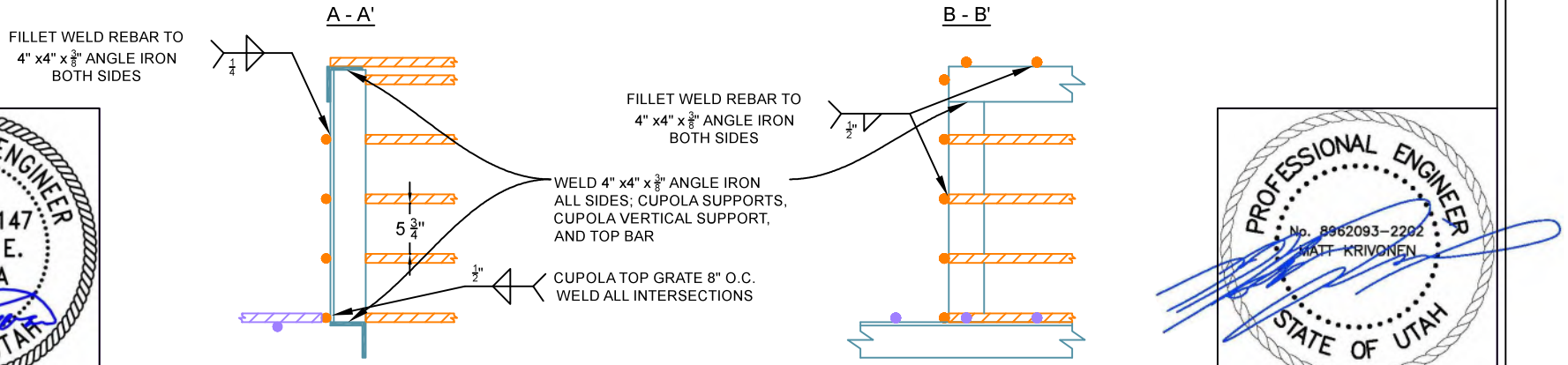
GRADE BEAM LEDGER BRACKET DETAIL



PINNED I BEAM HANGER DETAIL







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UTAH DNR OIL, GAS & MINING

STATE OF UTAH
NATURAL RESOURCES
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Abandoned Mine
Reclamation Program

RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS

CHAPTER 6:
DESIGN DRAWINGS

Original design (LAA) and drafting (JCR) by DOGM/AMRP

Designed by
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In Association with:
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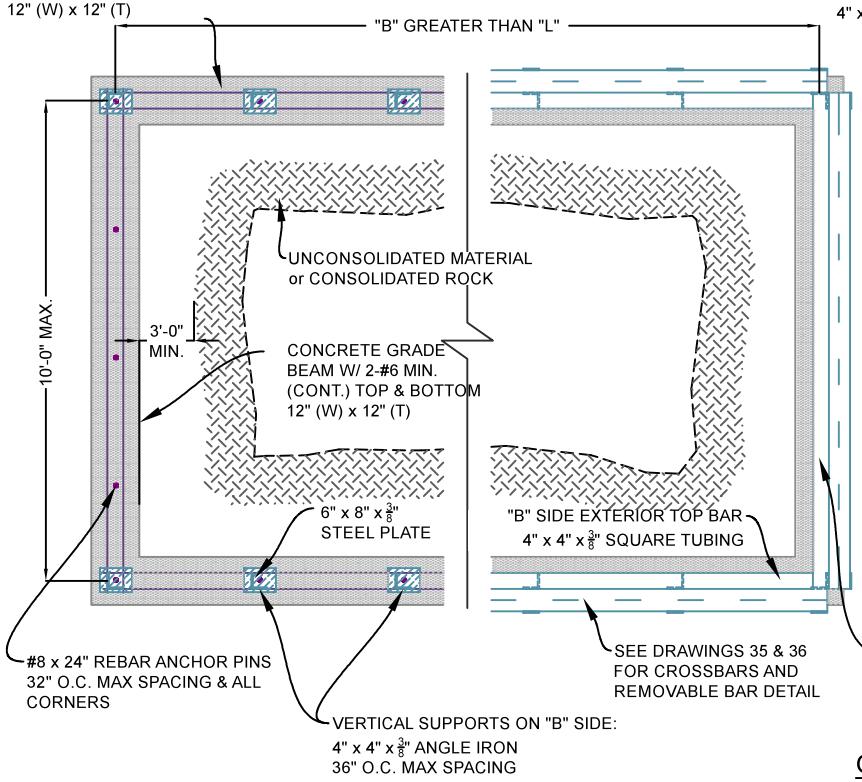
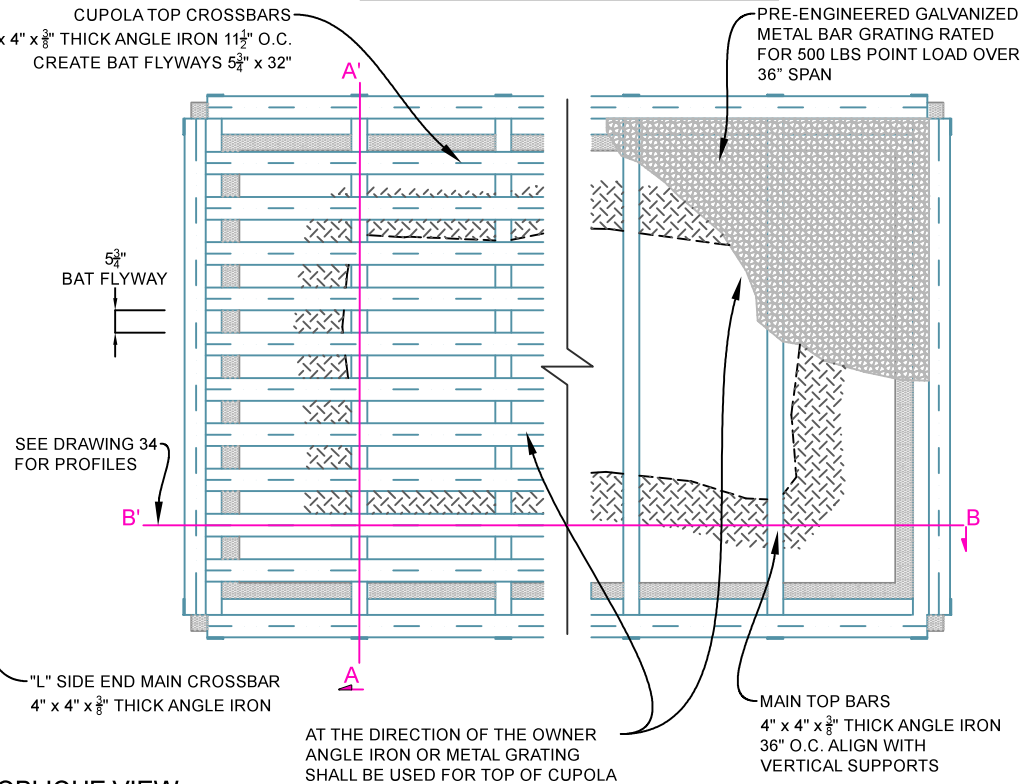
REBAR SHAFT GRATE CUPOLA PROFILE & HANGER DETAILS

REFER TO SPEC SECTIONS	0253	DRAWING: 31 of 47
REVISION:	06-01-2020	SCALE: AS NOTED

PLAN VIEW
GRADE BEAM AND SIDE CROSSBARS



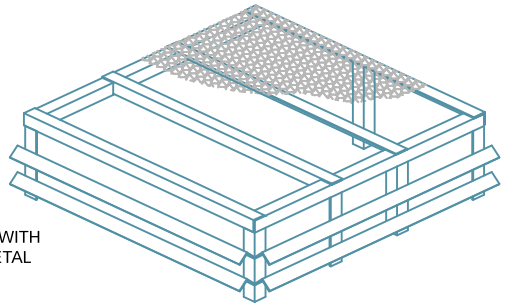
PLAN VIEW CUPOLA TOP
ANGLE IRON OR METAL GRATING



NOTE:

IN COMPETENT ROCK THE DISTANCE MAY BE LESS THAN 3 FEET FROM THE GRADE BEAM TO SHAFT COLLAR AT THE OWNER'S DISCRETION

OBLIQUE VIEW



CUPOLA SHOWN WITH TOP MADE OF METAL GRATING

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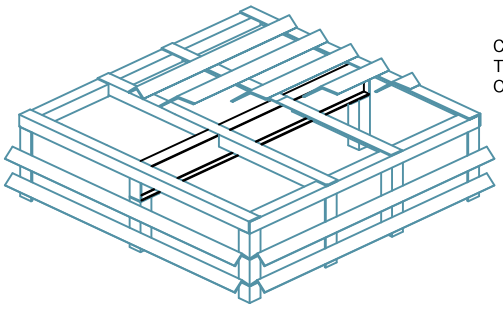
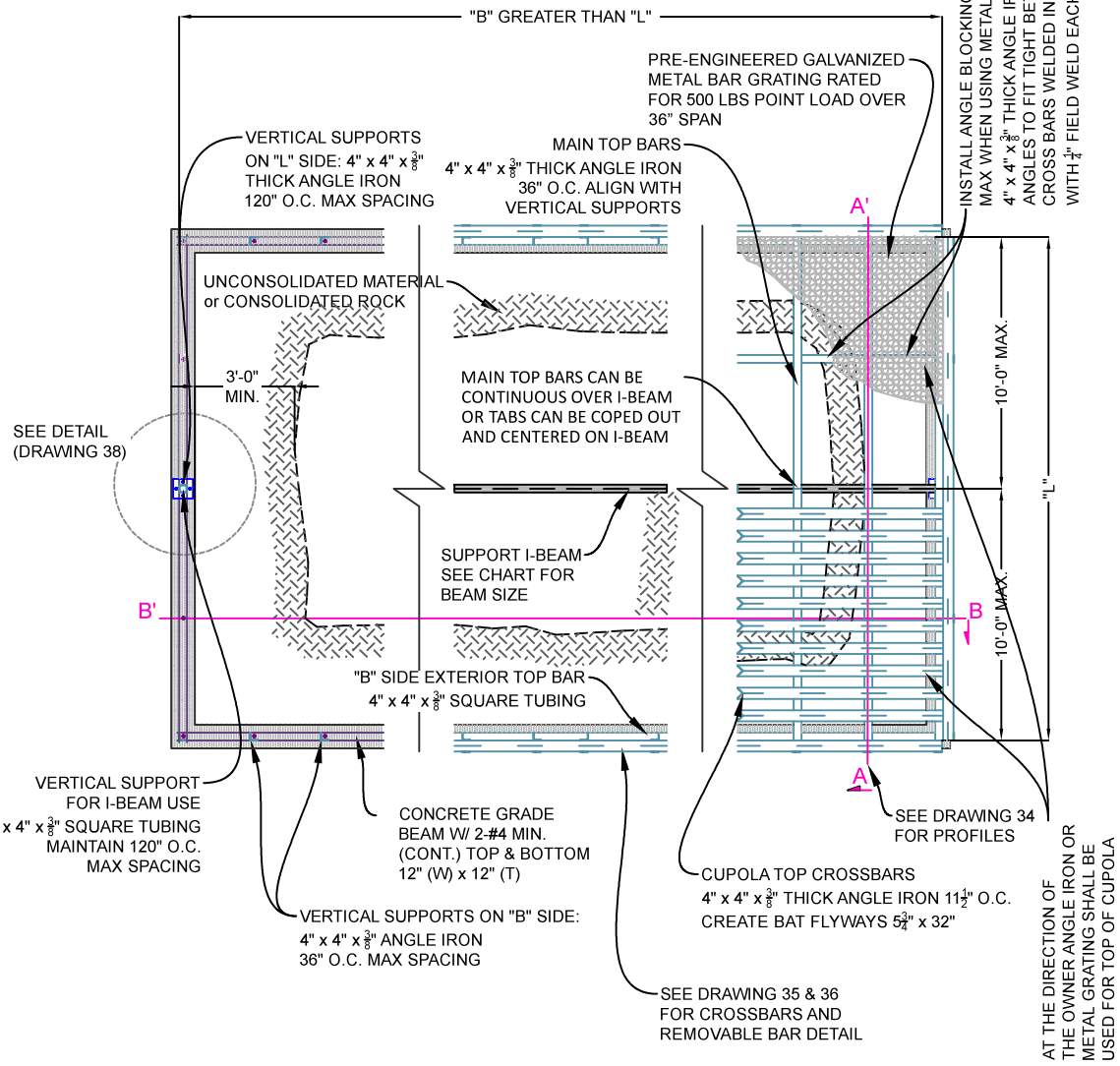
STATE OF UTAH NATURAL RESOURCES **Oil, Gas and Mining** Abandoned Mine Reclamation Program	**RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS** **CHAPTER 6: DESIGN DRAWINGS**	**Original design (LAA) and drafting (JCR) by DOGM/AMRP/ACCA** **Designed by Krivonen Associates, P.C. Structural Consultants In Association with: Spectrum Engineering and Environmental, LLC Billings, Montana 59101**	**ANGLE IRON BAT CUPOLA CLOSURE (WITH GRADE BEAM)** REFER TO SPEC SECTIONS 0251-0253 DRAWING: 32 of 47 REVISION: 02-01-2021 SCALE: AS NOTED

OBLIQUE VIEW



CUPOLA SHOWN WITH TOP CROSSBARS MADE OF ANGLE IRON



BEAM SPAN "B"	BEAM SIZE
11'-0" to 15'-0"	W8x10
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NOTE:

IN COMPETENT ROCK THE DISTANCE MAY BE LESS THAN 3 FEET FROM THE GRADE BEAM TO SHAFT COLLAR AT THE OWNER'S DISCRETION

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ANGLE IRON BAT CUPOLA CLOSURE (WITH GRADE BEAM & I BEAM)

REFER TO SPEC SECTIONS 0251-0253

DRAWING: 33 of 47

REVISION: 02-01-2021

SCALE: AS NOTED

Original design (LAA) and drafting (JCR) by DOGM/AMRP/ACCA

Designed by
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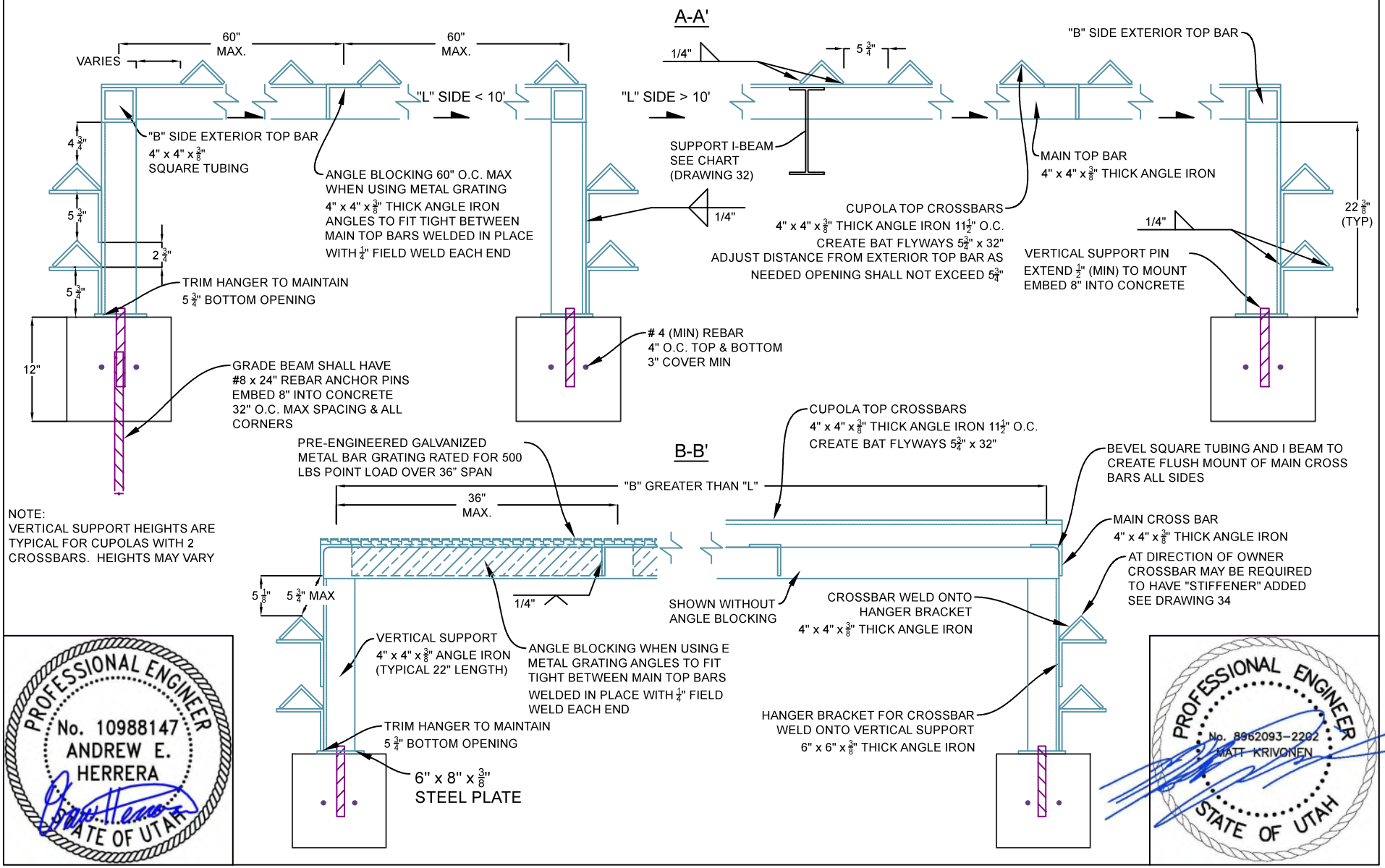
RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS

CHAPTER 6: DESIGN DRAWINGS

STATE OF UTAH
NATURAL RESOURCES
Oil, Gas and Mining
Abandoned Mine
Reclamation Program

UTAH DNR OIL, GAS & MINING



UTAH DNR OIL, GAS & MINING

STATE OF UTAH
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Oil, Gas and Mining
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Reclamation Program

RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS

CHAPTER 6: DESIGN DRAWINGS

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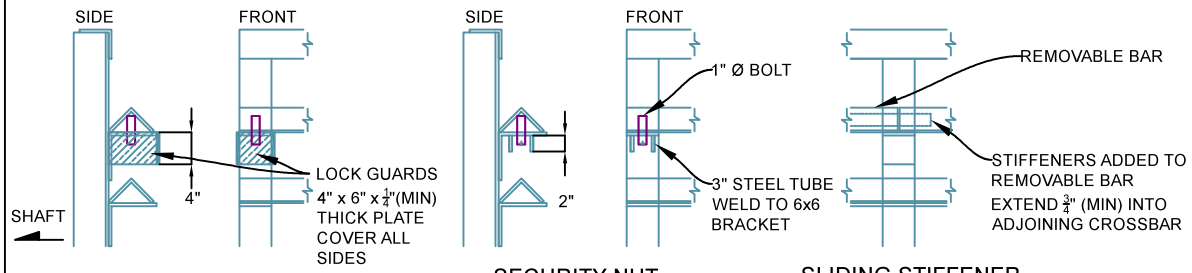
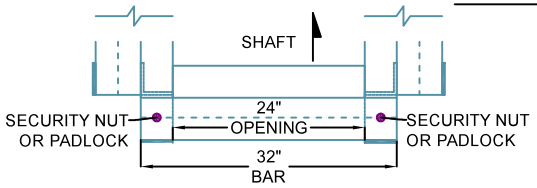
ANGLE IRON BAT CUPOLA CLOSURE DETAIL 1

REFER TO SPEC SECTIONS 0251-0253	DRAWING: 34 of 47
REVISION: 02-01-2021	SCALE: AS NOTED

REMOVABLE BAR FOR CUPOLA VERTICAL SUPPORT SPACING = 28" O.C.



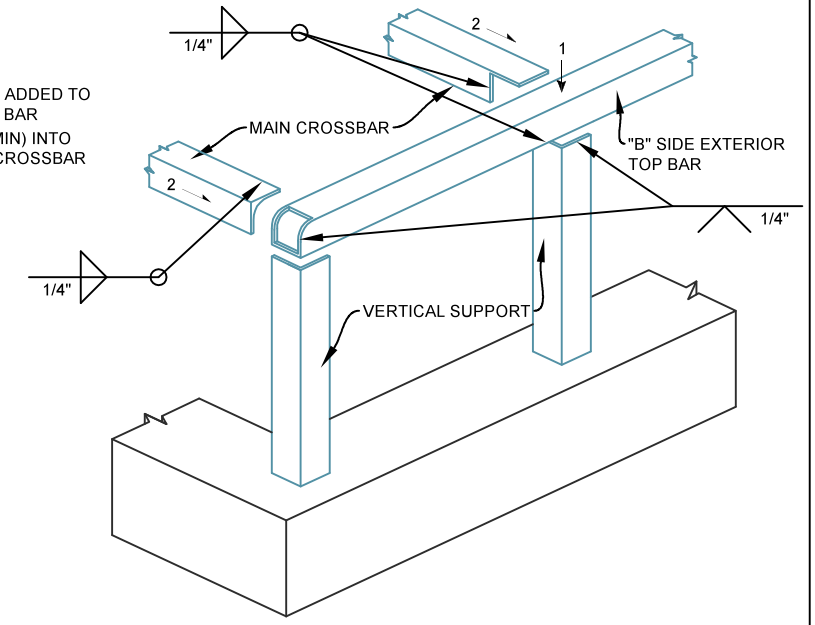
LOCK BOX DETAIL



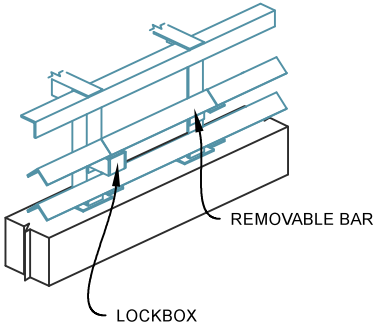
SECURITY NUT COVER DETAIL

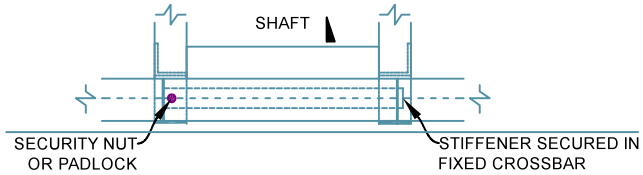
SLIDING STIFFENER DETAIL

"B" SIDE VERTICAL SUPPORT DETAIL



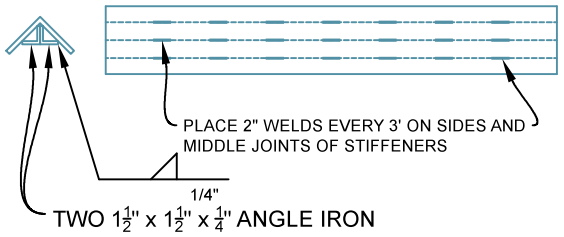
MIMIMUM CUPOLA REMOVABLE BAR PLAN VIEW DETAIL



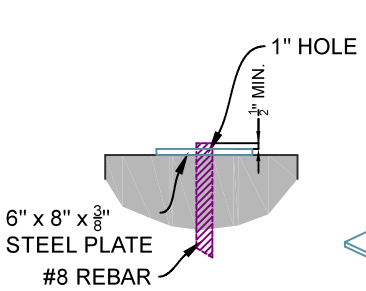


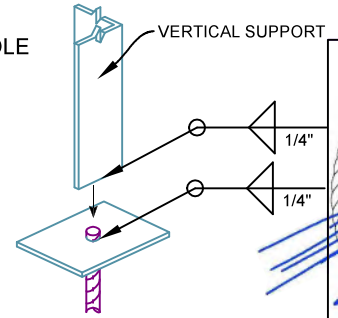
CONTINUOUS SIDE REMOVABLE BAR PLAN VIEW DETAIL

CROSSBAR DESIGN WITH OPTIONAL STIFFENER



SUPPORT MOUNTING PLATE





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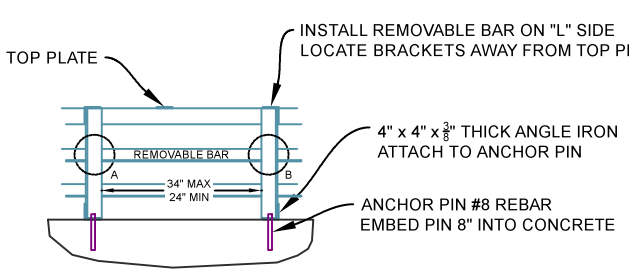
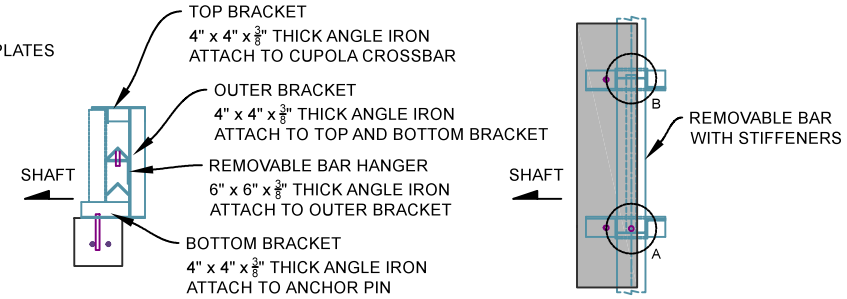
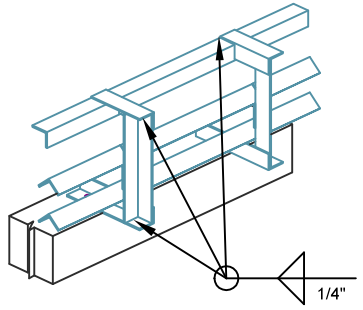
UTAH DNR OIL, GAS & MINING **STATE OF UTAH** **NATURAL RESOURCES** **Oil, Gas and Mining** Abandoned Mine Reclamation Program	**RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS** **CHAPTER 6: DESIGN DRAWINGS**	**Original design (LAA) and drafting (JCR) by DOGM/AMRP** **Designed by** **Krivonen Associates, P.C. Structural Consultants** **In Association with:** **Spectrum Engineering and Environmental, LLC** **Billings, Montana 59101**	**ANGLE IRON CUPOLA CLOSURE DETAIL 2**	
			REFER TO SPEC SECTIONS 0251-0253	DRAWING: 35 of 47
			REVISION: 02-01-2021	SCALE: AS NOTED

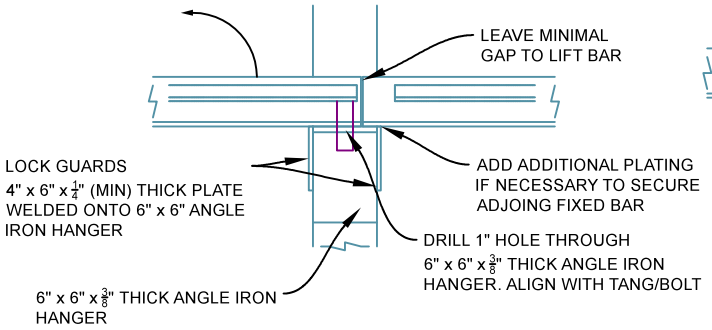
REMOVABLE BAR FOR CUPOLA VERTICAL SUPPORT SPACING > 28" O.C.



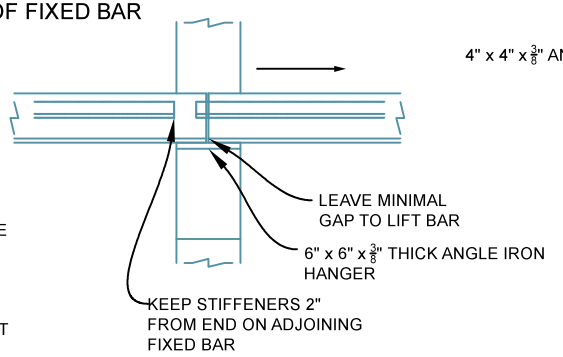


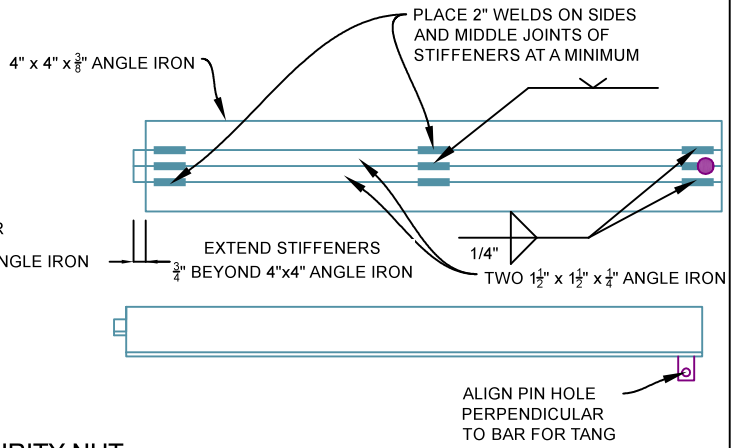


A) STEP 1 UNLOCK AND LIFT REMOVABLE BAR UP

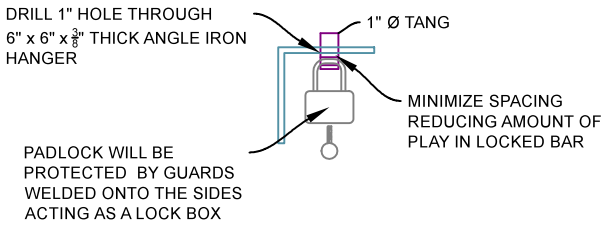


B) STEP 2 SLIDE STIFFENERS OUT OF FIXED BAR

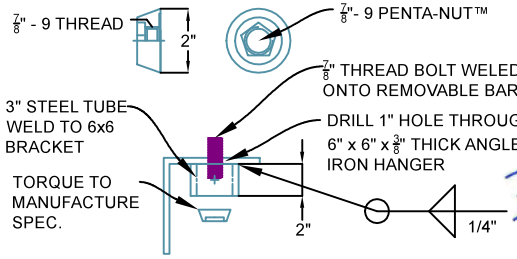




TANG WITH PADLOCK



SECURITY NUT



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RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS

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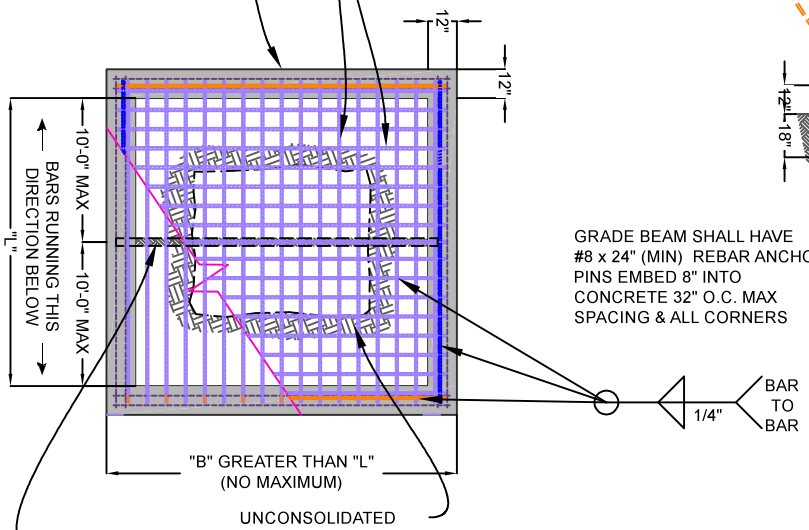
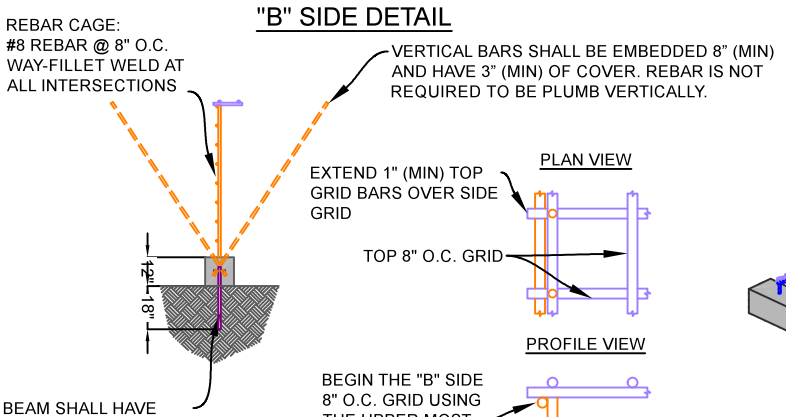
ANGLE IRON BAT CUPOLA CLOSURE DETAIL 3

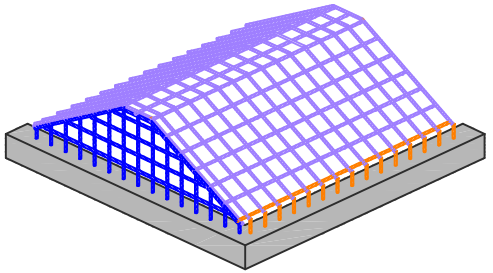
REFER TO SPEC SECTIONS 0251-0253	DRAWING: 36 of 47
REVISION: 06-01-2020	SCALE: AS NOTED



"B" SIDE DETAIL



OBLIQUE VIEW



NOTE: OBLIQUE VIEW IS FOR CONCEPTUAL PURPOSE AND ACTUAL GEOMETRY MAY VARY.

BEAM SPAN "B"	BEAM SIZE
11'-0" to 15'-0"	W8x10
15'-0" to 20'-0"	W10x15
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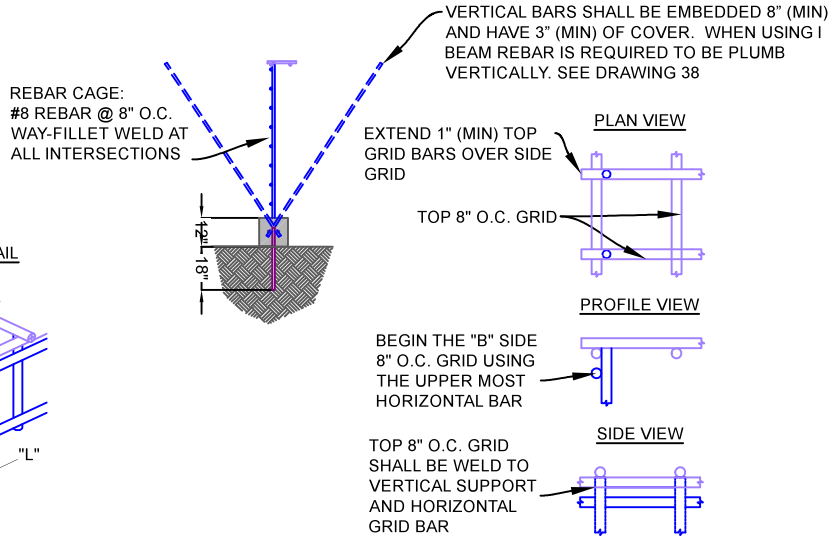
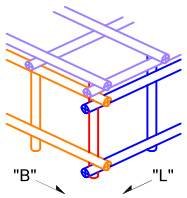
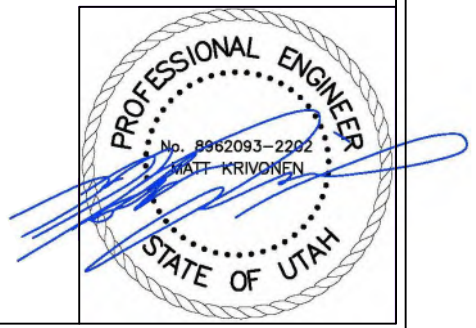
"L" SIDE DETAIL



CORNER DETAIL





UTAH DNR OIL, GAS & MINING

STATE OF UTAH
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RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS

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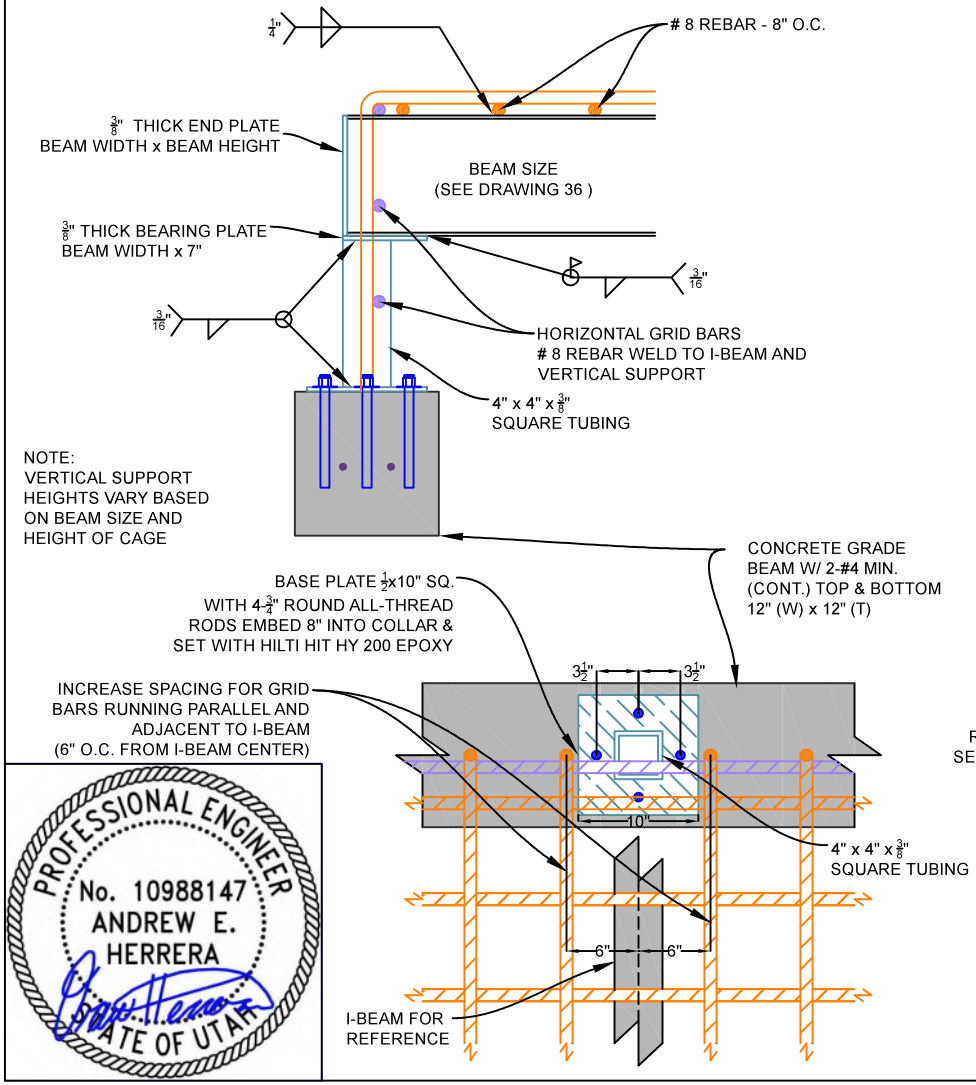
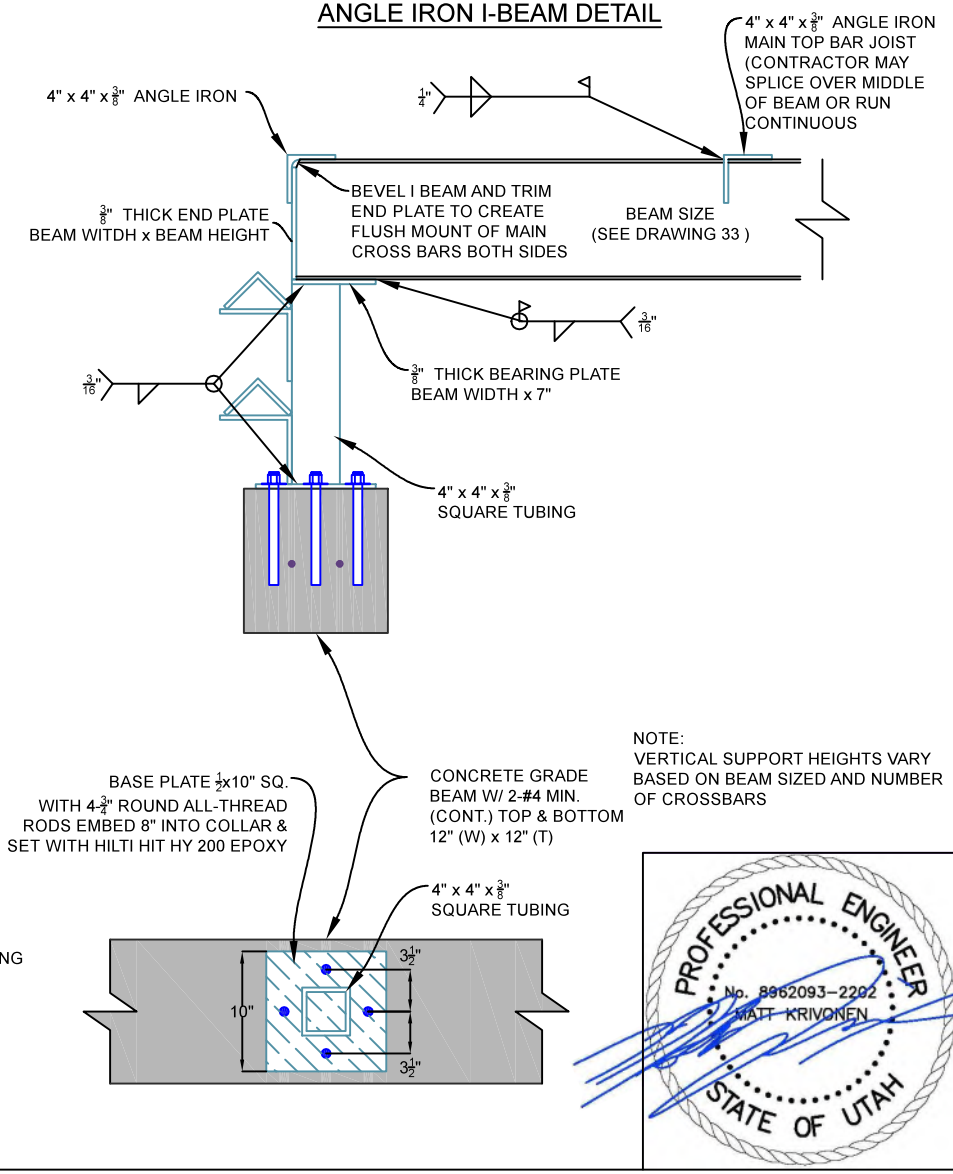
REBAR CAGE SHAFT GRATE (WITH GRADE BEAM & I BEAM)

REFER TO SPEC SECTIONS 0251-0253	DRAWING: 37 of 47
REVISION: 02-01-2021	SCALE: AS NOTED

REBAR CAGE I-BEAM DETAIL



ANGLE IRON I-BEAM DETAIL



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RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS

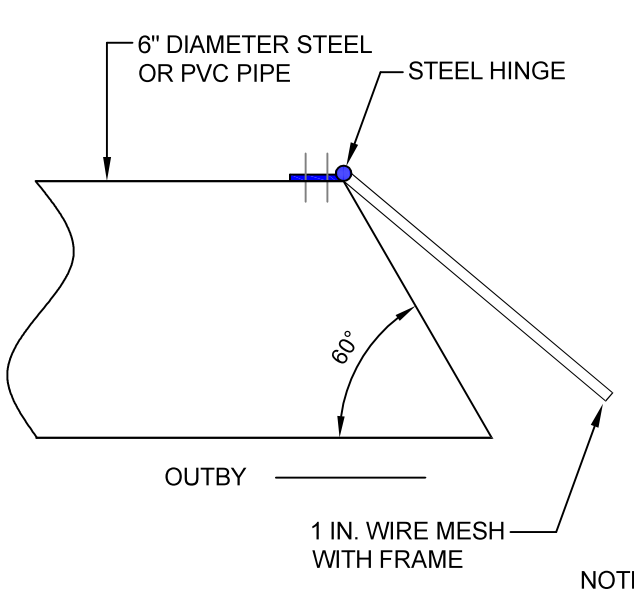
CHAPTER 6: DESIGN DRAWINGS

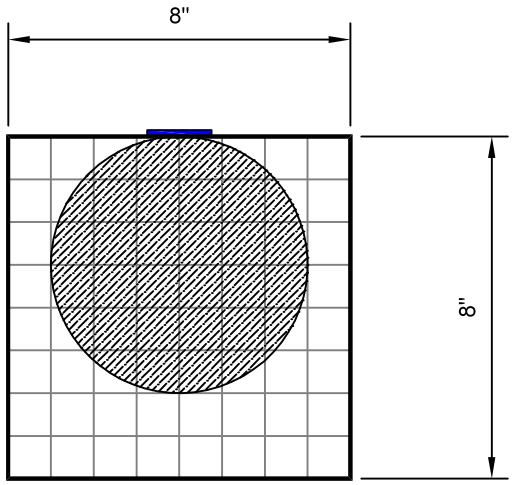
Original design (LAA) and drafting (JCR) by DOGM/AMRP

Designed by
Krivonen Associates, P.C. Structural Consultants
In Association with:
Spectrum Engineering and Environmental, LLC
Billings, Montana 59101

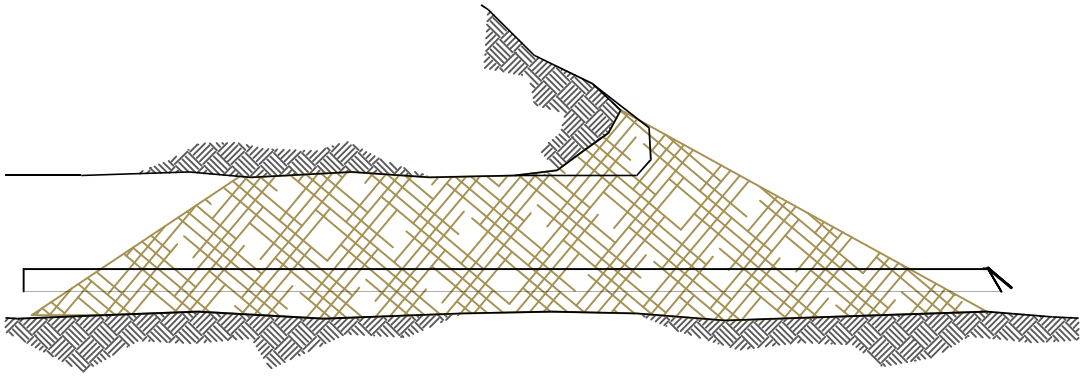
I BEAM SUPPORT DETAILS (REBAR CAGE & ANGLE IRON CUPOLA)

REFER TO SPEC SECTIONS 0251-0253	DRAWING: 38 of 47
REVISION: 02-01-2021	SCALE: AS NOTED





NOTE: STEEL OR PVC PIPE TO EXTEND 12 INCHES
INBY AND OUTBY WALL OR FILL MATERIAL



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UTAH DNR OIL, GAS & MINING

STATE OF UTAH
NATURAL RESOURCES
Oil, Gas and Mining
Abandoned Mine
Reclamation Program

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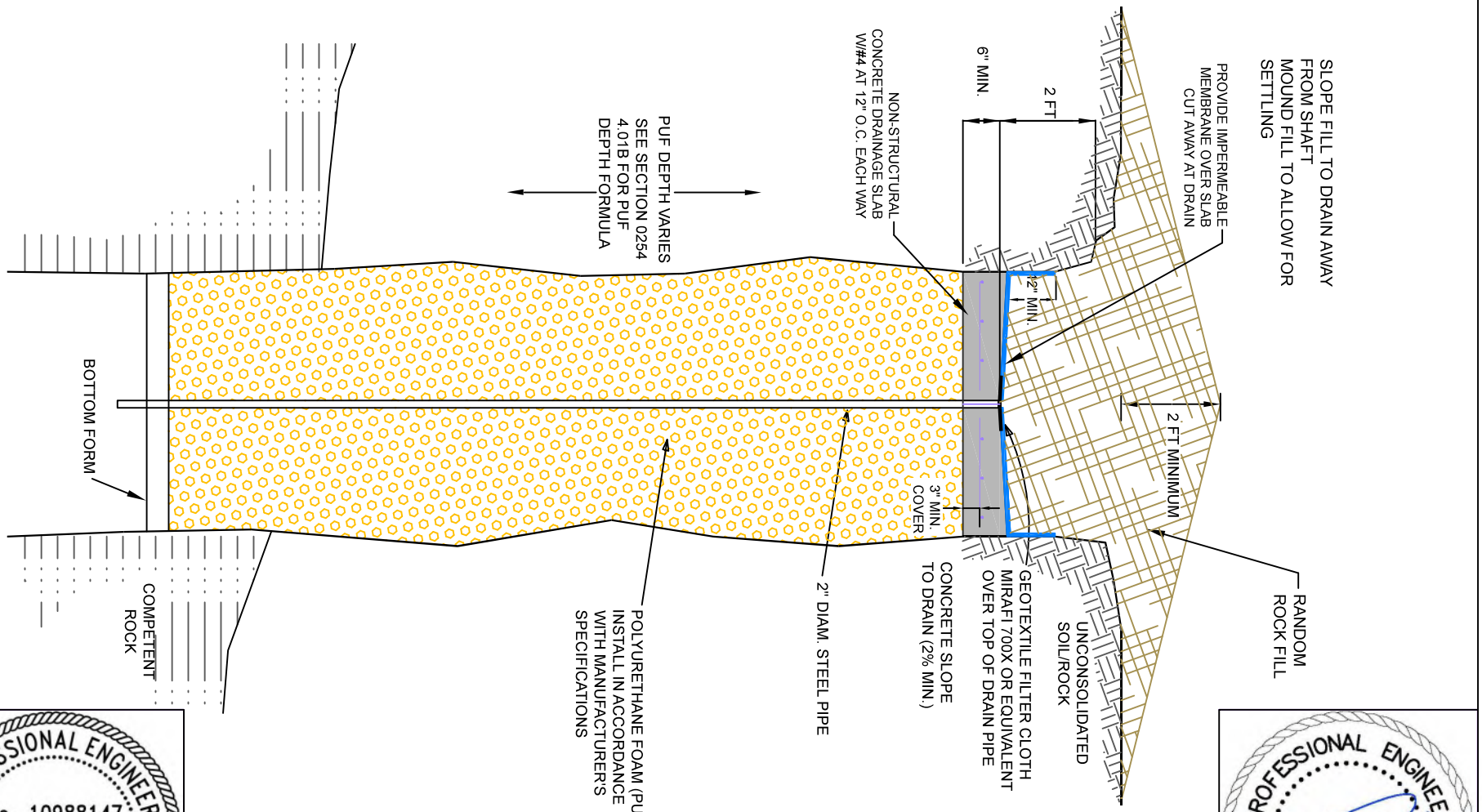
ONE WAY WILDLIFE TRAP DOOR DETAILS

REFER TO SPEC SECTIONS 0200'S	DRAWING: 39 of 47
REVISION: 06-01-2020	SCALE: AS NOTED



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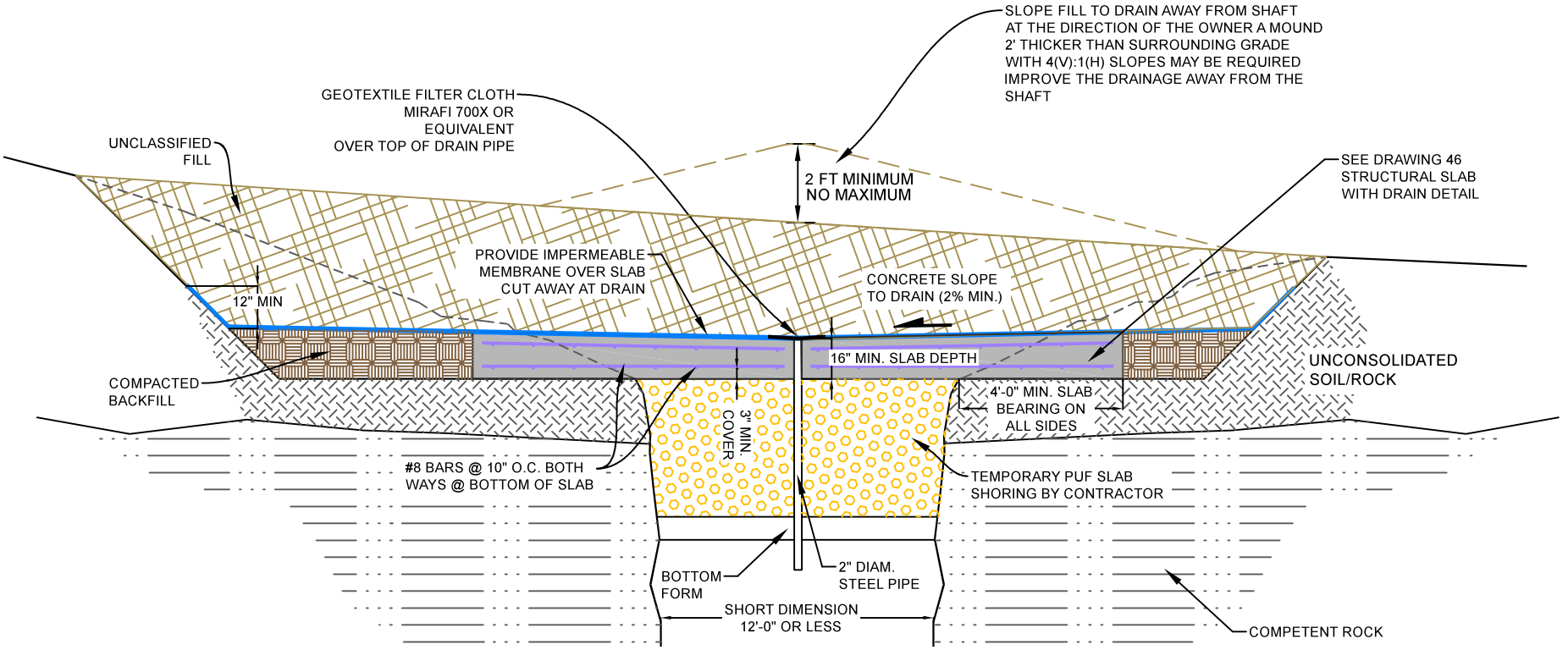
UTAH DNR OIL, GAS & MINING **STATE OF UTAH** **NATURAL RESOURCES** **Oil, Gas and Mining** Abandoned Mine Reclamation Program	**RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS** **CHAPTER 6: DESIGN DRAWINGS**	**Original design (LAA) and drafting (JCR) by DOGM/AMRP** **Designed by** **Krivonen Associates, P.C. Structural Consultants** **In Association with:** **Spectrum Engineering and Environmental, LLC** **Billings, Montana 59101**	**SHAFT PUF CLOSURE (PUF STRUCTURAL BEARING)**	
			REFER TO SPEC SECTIONS 0250-0252, 0254	DRAWING: 40 of 47
			REVISION: 06-01-2020	SCALE: AS NOTED



NOTE:

- THE STRUCTURAL DRAWINGS HERE-IN REPRESENT THE FINISHED CLOSURE. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY GUYING AND BRACING REQUIRED TO SUPPORT THE SLAB IN PROPER ALIGNMENT UNTIL THE SLAB HAS CURED AND CONNECTIONS HAVE BEEN COMPLETED. THE INVESTIGATION, DESIGN, SAFETY, ADEQUACY, & INSPECTION OF PUF SHORING, TEMPORARY SUPPORTS, ETC. IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- THE ENGINEER SHALL NOT BE RESPONSIBLE FOR THE METHODS, TECHNIQUES, AND SEQUENCE OF PROCEDURES TO PERFORM THE WORK. THE SUPERVISION OF THE WORK IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- THE DRAWINGS INDICATE GENERAL AND TYPICAL DETAILS OF CONSTRUCTION. WHERE CONDITIONS ARE NOT SPECIFICALLY SHOWN, SIMILAR DETAILS OF CONSTRUCTION SHALL BE USED, SUBJECT TO APPROVAL BY THE ENGINEER.
- LOADING APPLIED TO THE STRUCTURE DURING THE PROCESS OF CONSTRUCTION SHALL NOT EXCEED THE SAFE LOAD-CARRYING CAPACITY OF THE STRUCTURAL MEMBERS. THESE LOADINGS ARE SPECIFIED IN THE "DESIGN CRITERIA" PORTION OF THESE NOTES. DO NOT APPLY ANY CONSTRUCTION LOADS UNTIL SLAB IS PROPERLY SUPPORTED, STRUCTURAL FRAMING IS PROPERLY CONNECTED TOGETHER AND UNTIL ALL TEMPORARY BRACING IS IN PLACE.

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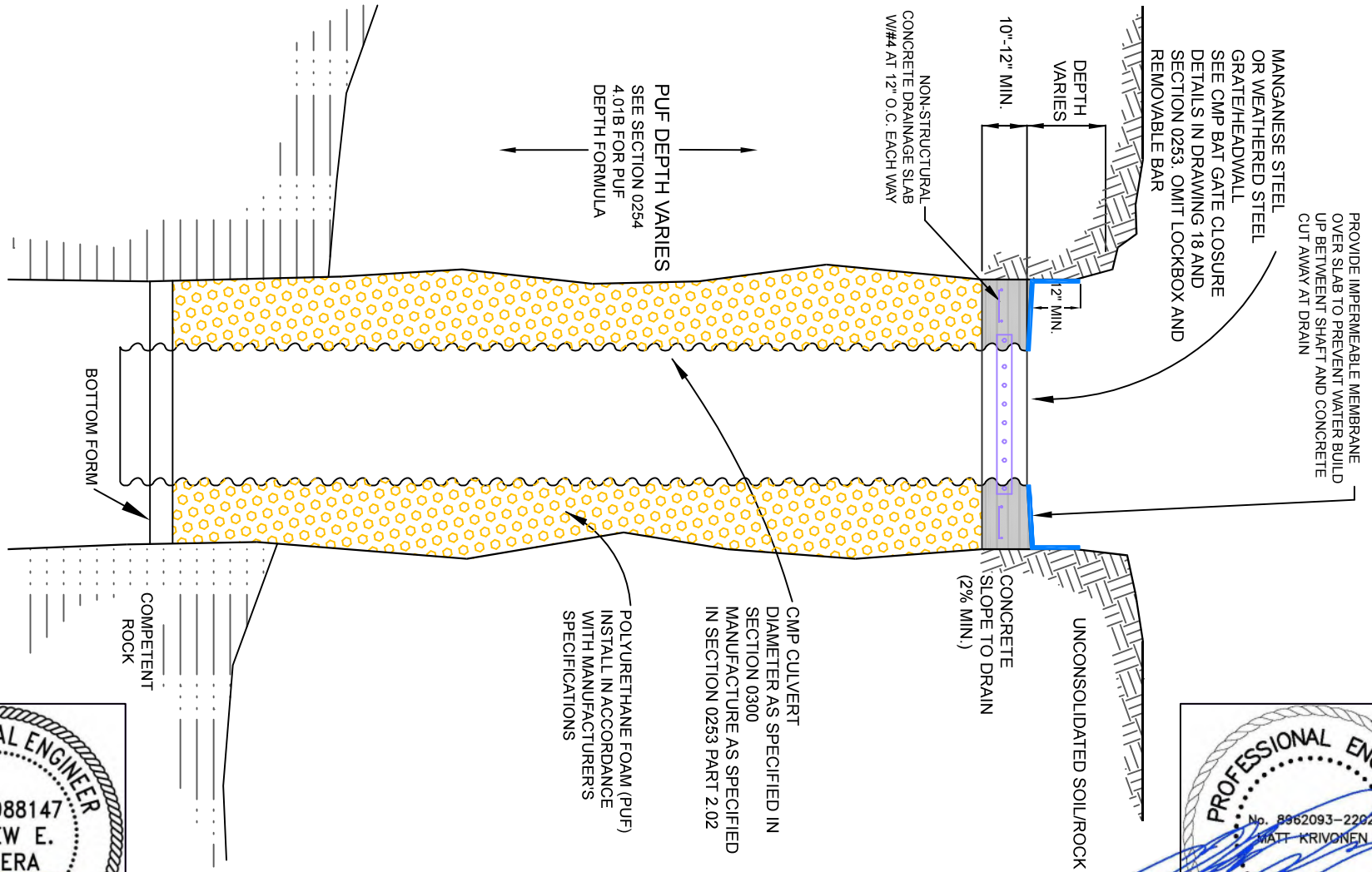
			REFER TO SPEC SECTIONS 0250-0252, 0254	DRAWING: 41 of 47
			REVISION: 02-01-2021	SCALE: AS NOTED



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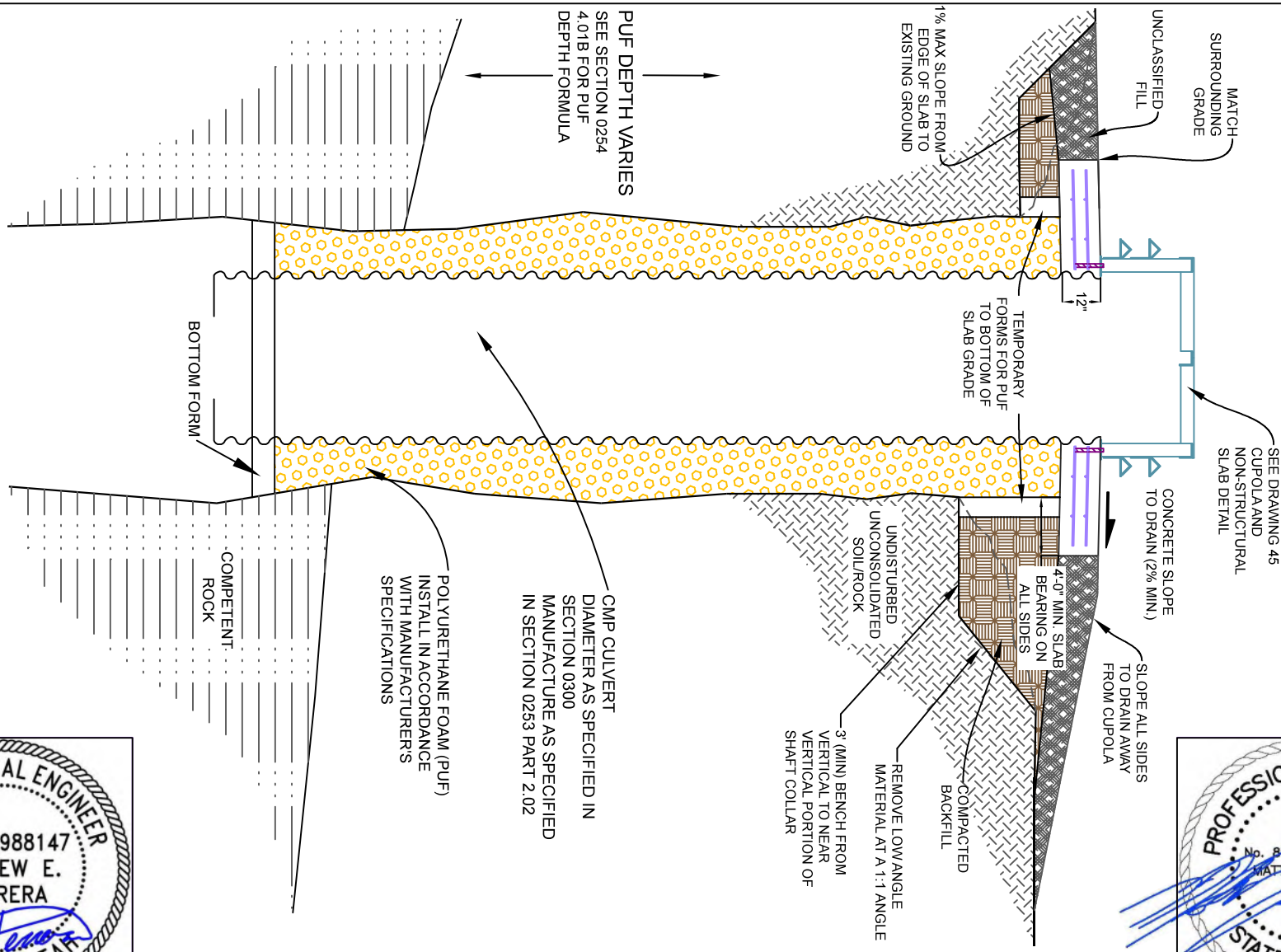

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CHAPTER 6:
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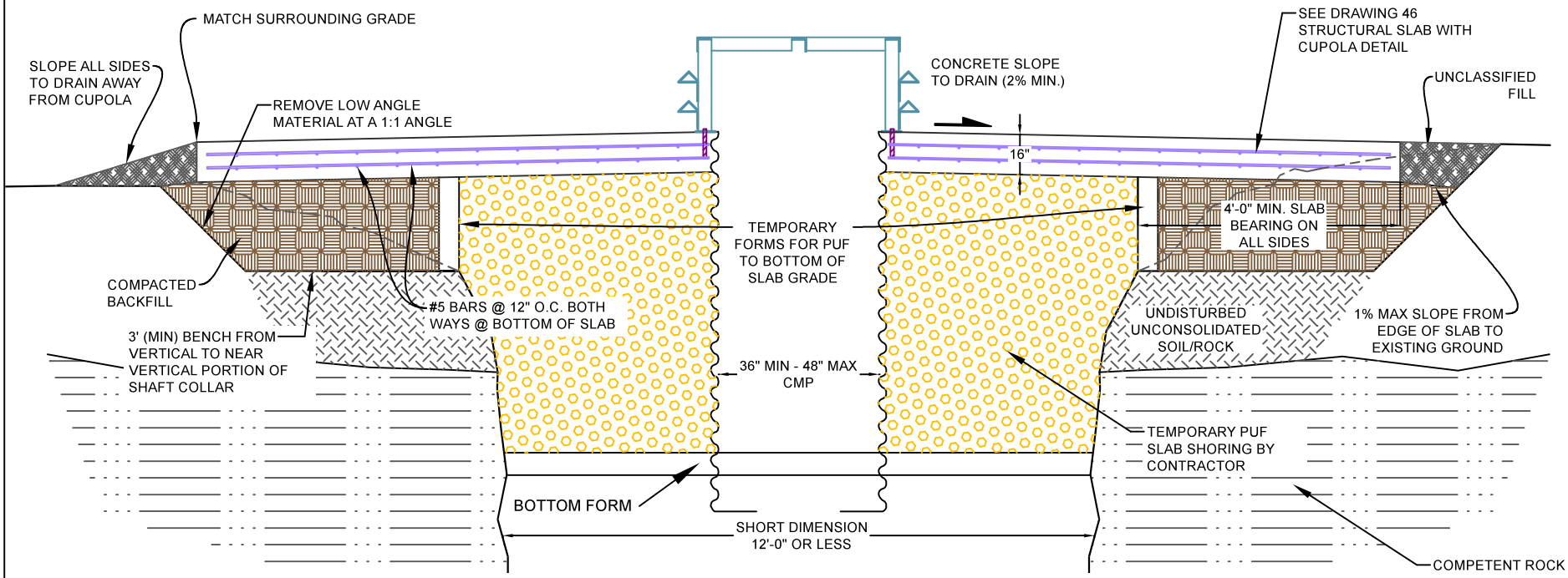
SHAFT PUF CLOSURE WITH CMP AND BAT CUPOLA (PUF STRUCTURAL BEARING)

REFER TO SPEC SECTIONS 0251-0254	DRAWING: 43 of 47
REVISION: 06-01-2020	SCALE: AS NOTED



NOTE:

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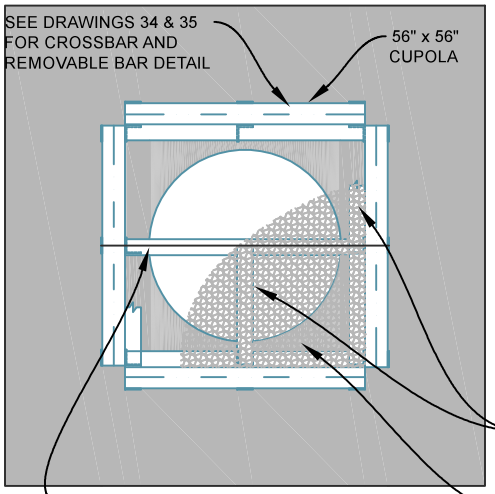
SHAFT CONCRETE SLAB CLOSURE WITH CMP AND BAT CUPOLA (PUF SHORING)

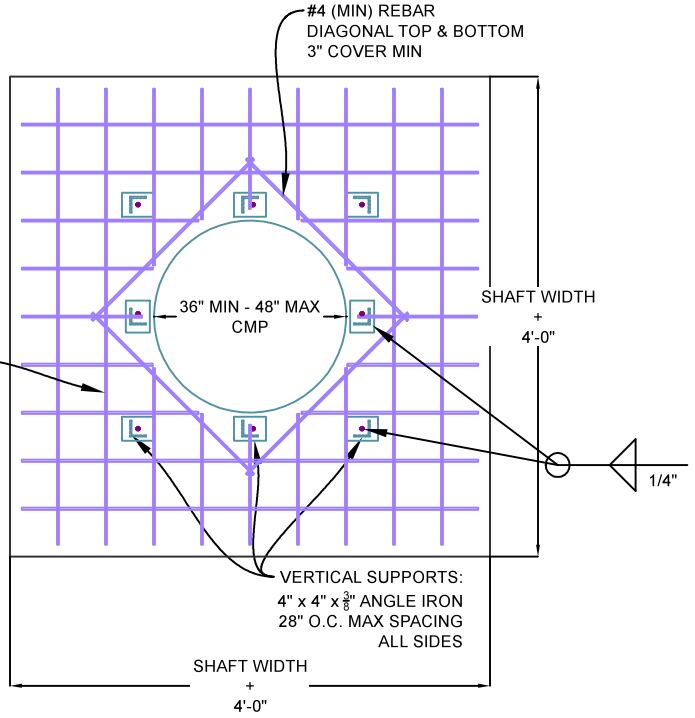
REFER TO SPEC SECTIONS 0251-0254	DRAWING: 44 of 47
REVISION: 02-01-2021	SCALE: AS NOTED

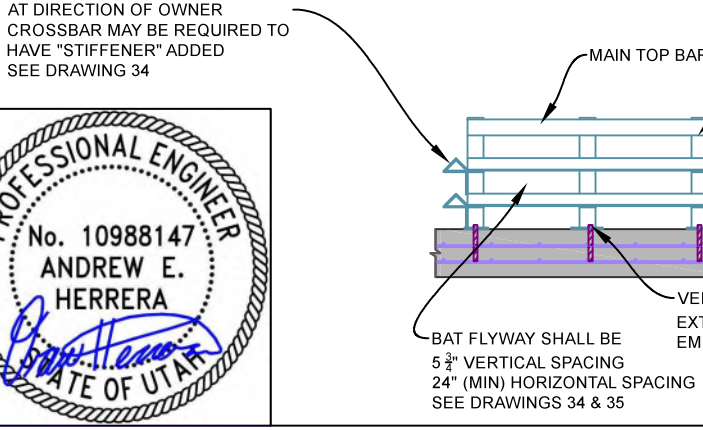


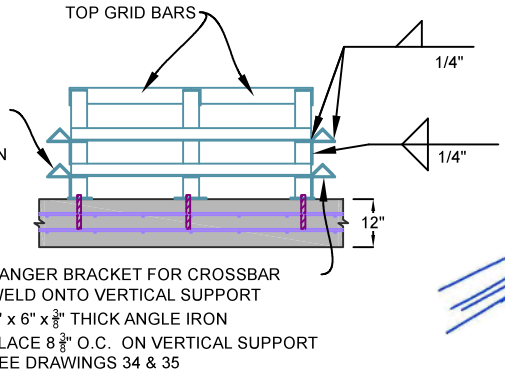
NOTE:

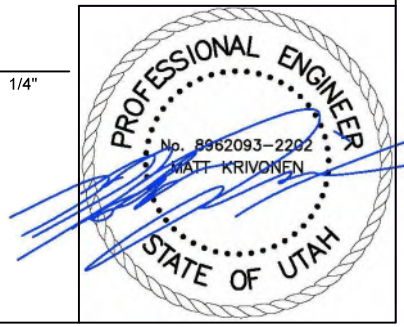
AT THE DIRECTION OF THE OWNER
ANGLE IRON OR METAL GRATING
SHALL BE USED FOR TOP OF CUPOLA

CUPOLA HEIGHT CAN VARY BASED
ON AMOUNT OF BAT FLYWAYS
REQUIRED BY THE OWNER



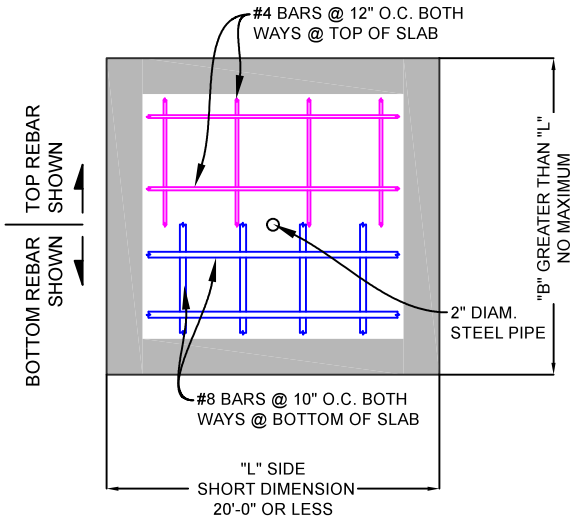


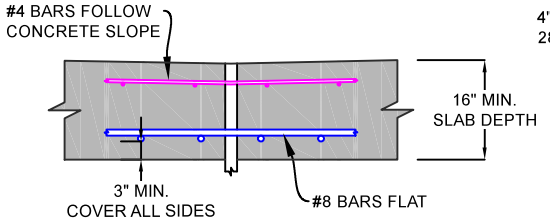




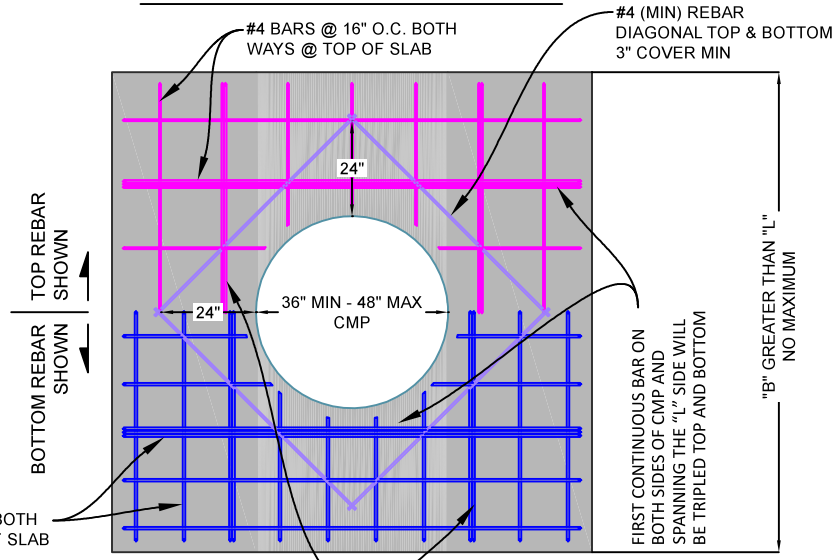
UTAH DNR OIL, GAS & MINING	**STATE OF UTAH** **NATURAL RESOURCES** **Oil, Gas and Mining** Abandoned Mine Reclamation Program	**RECLAMATION PROJECT CONSTRUCTION SPECIFICATIONS** **CHAPTER 6:** **DESIGN DRAWINGS**	**Original design (LAA) and drafting (JCR) by AMRP** **Designed by** **Krivonen Associates, P.C. Structural Consultants** **In Association with:** **Spectrum Engineering and Environmental, LLC** **Billings, Montana 59101**	**NON STRUCTURAL SLAB AND CUPOLA DETAILS (PUF STRUCTURAL BEARING)** REFER TO SPEC SECTIONS 0251-0254 / DRAWING: 45 of 47 REVISION: 02-01-2021 / SCALE: AS NOTED

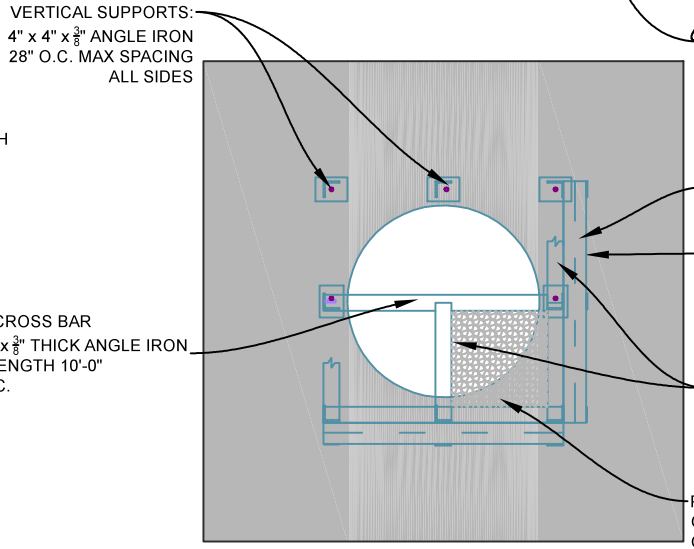
STRUCTURAL SLAB WITH DRAIN





STRUCTURAL SLAB WITH CUPOLA





NOTE:

AT THE DIRECTION OF THE OWNER ANGLE IRON OR METAL GRATING SHALL BE USED FOR TOP OF CUPOLA

CUPOLA HEIGHT CAN VARY BASED ON AMOUNT OF BAT FLYWAYS REQUIRED BY THE OWNER

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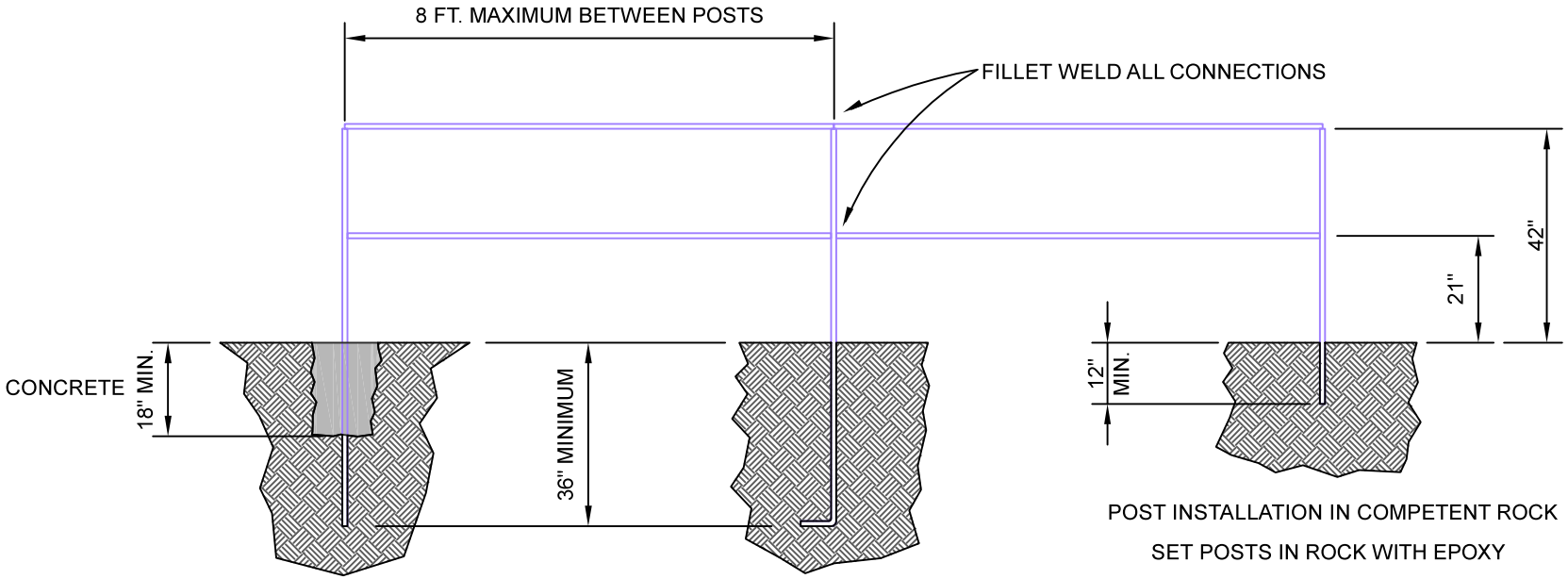
STRUCTURAL SLAB AND CUPOLA DETAILS (PUF SHORING)

REFER TO SPEC SECTIONS 0251-0254	DRAWING: 46 of 47
REVISION: 06-01-2020	SCALE: AS NOTED



POST INSTALLATION IN SOIL OR UNCONSOLIDATED ROCK (MINE DUMP)

POST INSTALLATION IN COMPETENT ROCK

SET POSTS IN ROCK WITH EPOXY

ANCHOR POSTS IN CONCRETE OR WITH BENDS OR SOIL PLATES

BARRICADE CONSTRUCTED OF #8 SCHEDULE 60 REBAR THROUGHOUT

ATTACH WIRE BARRIER FABRIC TO REBAR BARRICADES INSTALLED ON FEDERAL LAND ADMINISTERED BY THE U.S. BUREAU OF LAND MANAGEMENT. SEE SECTION 0294 3.02.K.

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REBAR BARRICADE

REFER TO SPEC SECTIONS	0250	DRAWING: 47 of 47
REVISION:	06-01-2020	SCALE: AS NOTED

CONSTRUCTION SPECIFICATIONS

[Projectname] Project

Reclamation Construction

[Countyname] County, Utah

[Season, Year]

Chapter 7: MAPS & PROJECT-SPECIFIC DESIGN DRAWINGS

Chapter 7: Maps

Map No.	Rational Scale	Representational Scale	Description
Map 1	1:317k	1 in = 5 miles	Project Location & Key Roads
Map 2	1:158k	1 in = 2.5 miles	Index to Subareas
S1	1:48k	1 in = 4000 ft	Subarea Map:
S2	1:48k	1 in = 4000 ft	Subarea Map:
S3	1:48k	1 in = 4000 ft	Subarea Map:
S4	1:48k	1 in = 4000 ft	Subarea Map:
S5	1:48k	1 in = 4000 ft	Subarea Map:
S6	1:48k	1 in = 4000 ft	Subarea Map:
D1	1:12k	1 in = 1000 ft	Detail Map:
D2	1:12k	1 in = 1000 ft	Detail Map:
D3	1:12k	1 in = 1000 ft	Detail Map:
D4	1:12k	1 in = 1000 ft	Detail Map:
D5	1:12k	1 in = 1000 ft	Detail Map:
D6	1:12k	1 in = 1000 ft	Detail Map:
D7	1:12k	1 in = 1000 ft	Detail Map:
D8	1:12k	1 in = 1000 ft	Detail Map:
D9	1:12k	1 in = 1000 ft	Detail Map:
D10	1:12k	1 in = 1000 ft	Detail Map:
D11	1:12k	1 in = 1000 ft	Detail Map:
D12	1:12k	1 in = 1000 ft	Detail Map:
Plate 1	1:100k	1 in = 1.6 miles	Project Area Overview Oversize Plate (11" x 17"), bound
Plate 2	1:24k	1 in = 2000 ft	Project Area Overview Oversize Plate (24" x 36"), not bound

Notes:
See Part 1.03.C in Section 0300: Specific Site Requirements of the construction specifications for a description of the site identification system used to label the mine sites on the maps.

Locations of symbols for shafts, adits, and other features may be off by as much as 50-100 feet (0.1 inch at map scale) due interference by terrain with the GPS surveys and as an artifact of how the mapping software plots the symbols.

To reduce clutter, only mine openings with proposed closures are labeled. Mine openings are labeled with a truncated form of the site ID number (AMRP tag number). The full ID number can be inferred from the mapped location of the mine opening (township, range, section) and the map label (e.g. VO5).

The oversized map sheet is not bound in printed copies if these specifications. It is collated into electronic (pdf) versions of these specifications at the end of the document to keep consistent pagination and simplify printing.

Google Earth KML File:

File Name: [Insert KML File Name]

This is provided as a separate file from the specifications. The KML file can be imported into Google Earth, ESRI ArcView, and other mapping or GIS applications. If Google Earth is installed on a device, opening the KML file will launch Google Earth and load the mine locations in the "Temporary Places" folder in the sidebar window. It can then be saved in the "My Places" folder.

This file allows users to view the mine locations overlaid on satellite imagery. The imagery shows current roads, vegetation, and terrain features that may not be shown on the USGS topographic maps. Besides being a navigational tool, Google Earth's tilt feature and measuring tools can help the user interpret terrain and evaluate the effort required to access the mines.

Apps for mobile devices that allow local storage of base maps are required to use the KML file in remote project areas where internet access is not available.

Only the ### sites specified for closure are included in the KML file. The color coding of the symbols for closure method follows that of Sheet 1.

Chapter 7: Project-Specific Design Drawings

Dwg No.	Rational Scale	Representational Scale	Description
Sheet 1	1:120	1 in = 10 ft	Area 5 Completion Plan and Profiles
Sheet 2	1:480	1 in = 40 ft	Area 4 Excavation Plan 1
Sheet 3	1:480	1 in = 40 ft	Area 4 Excavation Plan 2
Sheet 4	1:480	1 in = 40 ft	Area 4 Completion Plan 1
Sheet 5	1:480	1 in = 40 ft	Area 4 Completion Plan 2
Sheet 6	1:360	1 in = 30 ft	Area 4 Profiles & Details
Sheet 7	1:360	1 in = 30 ft	Area 2 & 3 Excavation Plan
Sheet 8	1:360	1 in = 30 ft	Area 2 & 3 Completion Plan
Sheet 9	1:360	1 in = 30 ft	Area 2 Profiles
Sheet 10	1:360	1 in = 30 ft	Area 3 Profiles
Sheet 11	1:360	1 in = 30 ft	Typical Stream Profile
Sheet A-1	NTS	NTS	Erosion Control Details

Notes:
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SWPPP Maps & Drawings

Dwg No.	Rational Scale	Representational Scale	Description
Sheet 1	1:120	1 in = 10 ft	Area 5 Completion Plan and Profiles
Sheet 2	1:480	1 in = 40 ft	Area 4 Excavation Plan 1
Sheet 3	1:480	1 in = 40 ft	Area 4 Excavation Plan 2
Sheet 4	1:480	1 in = 40 ft	Area 4 Completion Plan 1
Sheet 5	1:480	1 in = 40 ft	Area 4 Completion Plan 2
Sheet 6	1:360	1 in = 30 ft	Area 4 Profiles & Details
Sheet 7	1:360	1 in = 30 ft	Area 2 & 3 Excavation Plan
Sheet 8	1:360	1 in = 30 ft	Area 2 & 3 Completion Plan
Sheet 9	1:360	1 in = 30 ft	Area 2 Profiles
Sheet 10	1:360	1 in = 30 ft	Area 3 Profiles
Sheet 11	1:360	1 in = 30 ft	Typical Stream Profile
Sheet A-1	NTS	NTS	Erosion Control Details

The SWPPP maps and drawings are identical to the Project-Specific maps and drawings. The SWPPP figures and drawings are not duplicated here. Refer to the corresponding project-specific maps and drawings.

****
****
****

Insert Project-Specific Maps and/or Design Drawings here (pdf file).

****
****
****