Contract Documents & Specifications

WATCH Building Concrete Sidewalk Entrance

A/E # 2021-10-01

Prepared by: Anderson-Montgomery Consulting Engineers Helena, MT







May 2021

CONTRACT DOCUMENTS AND SPECIFICATIONS

WATCH Building Concrete Sidewalk Entrance

May 2021

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WATCH Building Concrete Sidewalk Entrance MONTANA STATE HOSPITAL WARM SPRINGS, MT A/E#2021-10-01

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BIDDING REQUIREMENTS, CONTRACT FORMS AND CONDITIONS OF THE CONTRACT

NOTICE

THE CONTRACTOR WILL BE RESPONSIBLE FOR PAYING THE DEPARTMENT OF LABOR AND INDUSTRY BUILDING CODES BUREAU FOR BUILDING, ELECTRICAL, MECHANICAL AND PLUMBING PERMITS.

CONTACT: BUILDING CODES BUREAU DEPARTMENT OF LABOR & INDUSTRY 301 SOUTH PARK AVENUE P O BOX 200517 HELENA MT 59620-0517 (406) 841-2056 Sealed bids will be received until the closing time of 2:00 p.m. on <u>JUNE 16, 2021</u>, and will be publicly opened and read aloud in the offices of the Architecture & Engineering Division, 1520 East Sixth Avenue, P.O. Box 200103, Helena MT 59620-0103, for: *REBID-WATCH BUILDING CONCRETE SIDEWALK ENTRANCE, MONTANA STATE HOSPITAL, WARM SPRINGS, MONTANA, A/E #2021-10-01.*

Bids shall be submitted on the form provided within the Contract Documents. Contract documents may be obtained at the offices of:

ANDERSON-MONTGOMERY CONSULTING ENGINEERS, INC. 1064 N WARREN STREET HELENA MT 59601 406 449-3303 <u>adam@a-mce.com</u>

A refundable deposit of **\$25.00** is required for each plan set.

NO PRE-BID WALK-THROUGH IS SCHEDULED. BIDDDERS WISHING TO VISIT THE SITE SHOULD CONTACT ANDERSON-MONTGOMERY CONSULTING ENGINEERS.

Bids must be accompanied by a bid security meeting the requirements of the State of Montana in the amount of 10% of the total bid. After award, the successful bidder must furnish an approved Performance Security and a Labor & Material Payment Security each in the amount of 100% of the contract.

No bidder may withdraw his bid for at least thirty (30) calendar days after the scheduled time for receipt of bids except as noted in the Instructions to Bidders.

The Owner reserves the right to reject any or all bids and to waive any and all irregularities or informalities and the right to determine what constitutes any and all irregularities or informalities.

The State of Montana makes reasonable accommodations for any known disability that may interfere with an applicant's ability to compete in the bidding and/or selection process. In order for the state to make such accommodations, applicants must make known any needed accommodation to the individual project managers or agency contacts listed in the contract documents. Phone 711 for Montana Relay Service services offered. Persons using TDD may call the Montana Relay Service at 1-800-253-4091.

ARCHITECTURE & ENGINEERING DIVISION DEPARTMENT OF ADMINISTRATION STATE OF MONTANA

FRONT PAGE HIGHLIGHTS

Note: This list of items is not an exhaustive or all-inclusive list of the contractor's responsibilities for the project but is provided solely for convenience and reference.

ITEM	REFERENCE	GENERAL CONDITIONS	
Prevailing Wage Rates	Article 3.4.4	The Commissioner of The Montana Department of Labor and Industry (DOLI) has established the standard prevailing rate of wages in accordar with 18-2-401 and 18-2-402, MCA.	
Warranty	Article 3.5.2	The warranty period shall be defined as commencing with Substantial Completion (or with each Substantial Completion if there is more than one) of the Project, or any portion thereof, and continuing for one (1) calendar year from the date of Final Acceptance of the entire project.	
Schedule	Article 3.10	The Contractor's schedule shall be in the "Critical Path Method" and shall be in a form that is acceptable to the Owner and meet all the conditions of 3.10.	
Time Limit on Claims	Article 4.3.1.1	Claims by either party must be initiated within 21 calendar days after occurrence of the event giving rise to such claim.	
Weather Delays	Article 4.3.5.2	If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the current critical- path scheduled construction activities.	
Waiver of Consequential	Article 4.3.6	The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract	
Mediation & Arbitration	Article 4.5 & 4.6	The parties shall endeavor to resolve their Claims by mediation unless the parties mutually agree otherwise. Claims not resolved by mediation shall be decided by arbitration.	
Changes	Article 7.1	Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive, or order for a minor change in the Work subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.	
Change Order Allowable Costs	Article 7.2.2	As described with a 5% allowance for overhead and a 10% allowance for profit.	
Time	Article 8.1.1	Time is of the essence in performance, coordination, and completion of the Work contemplated herein.	
Liquidated Damages	Article 8.1.6	The Contractor and his surety shall be liable for and shall pay to the Owner the sums stipulated as liquidated damages for each calendar day of delay until the Work is substantially complete.	
Contract Duration/Milestones/Phases	Article 8.1.8	All Work shall reach Substantial Completion by the date(s) listed or within the consecutive calendar days indication after the start date on the written Notice To Proceed.	
Applications for Payment	Article 9.3.2	The Owner has thirty-five (35) calendar days after receipt for approval of the Contractor's Pay Request without being subject to the accrual of interest.	
Retainage	Article 9.3.7	Until the Work is complete, the Owner will pay 95% of the amount due the Contractor on account of progress payments. If the Work and its progress are not in accordance with all or any part, piece, or portion of the Contract Documents, the Owner may, at its sole discretion and without claim by the Contractor, increase the amount held as retainage to whatever level deemed necessary to effectuate performance and progress of the Work.	
Safety & Protection	Article 10	The Contractor shall be solely responsible for initiating, maintaining and supervising all safety, safety precautions, and safety programs in connection with the performance of the Contract.	
Indemnification and Insurance Requirements	Article 11	The Contractor shall indemnify the Owner against the Contractor's negligence. The Contractor shall least carry Workers' Comp, General Liability, Automobile/Equipment, and Property (all-risk) Insurance Coverages as identified. State of Montana shall be listed as an additional insured with copy of ENDORSEMENT provided along with certificates of insurance. No waivers of subrogation shall be accepted.	
Performance & Payment Bonds	Article 11.7	The Contract shall furnish a Performance Bond in the amount of 100% of the contract price as security for the faithful performance of his contract. The Contractor shall also furnish a Labor and Material Payment Bond in the amount of 100% of the contract price as security for the payment of all persons performing labor and furnishing materials in connection therewith.	
Payroll & Basic Records	Article 13.8	Payrolls and basic records pertaining to the project shall be kept on a generally recognized accounting basis and shall be available to the Owner, Legislative Auditor, the Legislative Fiscal Analyst or his authorized representative at mutually convenient times. Accounting records shall be kept by the Contractor for a period of three years after the date of the Owner's Final Acceptance of the Project.	

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- 2. Viewing of Contract Documents
 - 2.1. The Contract Documents may be viewed at the following locations:

BUILDERS EXCHANGE OF BILLINGS

2050 BROADWATER STE A BILLINGS MT 59102 Phone: (406) 652-1311 bbx@billingsplanroom.com

BOZEMAN BUILDERS EXCHANGE

1105 REEVES RD BOZEMAN MT 59718 Phone: (406) 586-7653 exchange@bozemanplanroom.com

BUTTE PLANS EXCHANGE

4801 HOPE RD BUTTE MT 59701 Phone: (406) 782-5433 butteplans@gmail.com

GREAT FALLS BUILDERS EXCHANGE

325 SECOND ST S GREAT FALLS MT 59405 (406) 453-2513 gfbe@greatfallsplans.com

HELENA PLANS CENTER

1530 CEDAR ST. HELENA MT 59601 (406) 457-2679 planex@helenacopycenter.com

FLATHEAD VALLEY PLANS EXCHANGE 2303 HWY 2 EAST KALISPELL MT 59901

(406) 755-5888 planex@kalcopy.com

MISSOULA PLANS EXCHANGE

201 N RUSSELL ST MISSOULA MT 59801 (406) 549-5002 MPE@vemcoinc.com

- 3. Borrowing of Documents
 - 3.1. Contract Documents may be obtained at the office of the Architect/Engineer:

ANDERSON-MONTGOMERY CONSULTING ENGINEERS, INC. 1064 N WARREN STREET HELENA MT 59601 406 449-3303 adam@a-mce.com

- 3.2. All borrowed Contract Documents shall be returned to the <u>ARCHITECT/ENGINEER</u> within ten (10) calendar days after the bid opening for the deposit refund (if deposit was required). However, if the Contract Documents are not in a condition where they can be reused by the Owner to construct the project, the Owner may at its sole discretion direct the Architect/Engineer to retain the deposit in order to reproduce a replacement set.
- 4. Visits to Site
 - 4.1. Prospective bidders are requested to contact the following for inspection of the site:

SUE CHVILICEK PODRUZNY PROGRAMS & FACLITIES BUREAU MT DEPARTMENT OF CORRECTIONS 406 444-4902 Sue.Chvilicek@mt.gov

- 4.2. Failure to visit site will not relieve the Contractor of the conditions of the contract.
- 5. Requests for Substitution
 - 5.1. Any requests for product substitution must be made to the Architect/Engineer at least ten (10) <u>calendar days</u> prior to the date of the bid opening for consideration by the Architect/Engineer. Any request for substitution made after this time restriction, including those made after award or during project construction, may be rejected without consideration by either the Architect/Engineer or the Owner.
- 6. Bids/Proposals
 - 6.1. The bidder shall submit his bid on the Bid Proposal Form furnished with the Contract Documents.
 - 6.2. DO NOT send the Contract Documents with the Proposal. The Contract Documents should be returned to the Architect/Engineer. See address in 3.1 above.
 - 6.3. If the project is funded by any portion of federal funds, the following may apply: on certain federally funded projects, a "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion" form must be submitted with the bid proposal. If the debarment form is not included within the Construction Documents, federal funds (if included) do not require the form or are not included in the project and the debarment form is not required.
 - 6.3.1.If federal funds are included and require the "Certification," no award may be made to a Contractor or any subcontractor that is federally debarred, suspended or proposed for debarment in accordance with Public Law 103-355, Section 2455 (31 USC 6101) and Executive Order 12689. The Contractor who is awarded this contract shall certify that neither the contractor, its principals, their subcontractors nor their principals: (1) are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from the award of contracts by any federal department or agency; (2) have within a 3-year period preceding any partially or wholly federally funded contract has been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state, or local) contract or subcontract; been in violation of federal or state antitrust statutes, or been convicted of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property; or otherwise criminally or civilly charged by a governmental entity (federal, state, or local) with

commission of any of the offenses enumerated in (2) above; and, (3) have within a 3-year period preceding an award of any partially or wholly federally funded contract, had one or more contracts terminated for cause or default by any federal or state agency.

6.4. Proposals shall be in a sealed envelope and addressed to:

Department of Administration Architecture & Engineering Division Metcalf Building, Room 33 1520 East Sixth Avenue P.O. Box 200103 Helena MT 59620-0103

6.5. The envelope shall state that it contains a "BID PROPOSAL" and indicate the following information:

Name of Project:	REBID-WATCH BUILDING CONCRETE SIDEWALK
Location:	ENTRANCE MONTANA STATE PRISON, DEER LODGE,
A/E Project Number:	MONTANA 2021-10-01
Name of Bidder:	
Acknowledge Addendum Number	·,,,,

- 6.6. It is the bidder's responsibility to deliver or ensure delivery of the bid proposal to the office of the Architecture & Engineering Division. Proposals received after the scheduled closing time for bids by either the bidder, a delivery service (e.g., Federal Express, U.S. Postal Service, United Parcel Service, etc.), or the state's own mail delivery system, will be rejected. Proposals entitled for consideration must be time-stamped in the Owner's office prior to the closing time for receipt of bids. The official time clock for receipt of bids is the Owner's time and date stamp clock located on the reception desk in the Owner's office. No other clocks, calendars or timepieces are recognized. All bidders are responsible to ensure all bids and fax modifications are received in the Owner's office prior to the scheduled closing time.
- 6.7. If requested on the Bid Proposal Form, any person making a bid to perform the work shall, as a requirement of a responsible bid, set forth the name of each subcontractor specified in the "List of Subcontractors" which is part of the bid proposal. The bidder shall list only one subcontractor for each such portion of work listed. The bidder whose bid is accepted shall not:
 - 6.7.1. Substitute any other subcontractor in place of the subcontractor listed in the original bid, except by specific consent of the Owner. The Owner, at its sole discretion, may grant substitution with consent of the originally listed subcontractor, or in consideration of other factor(s) involved if deemed relevant to the successful performance of the Contract.
 - 6.7.2. Permit any such subcontract to be voluntarily assigned, transferred or allow it to be performed by any party other than the subcontractor listed in the original bid without the consent of the Owner.
- 6.8. Bid Proposals entitled to consideration shall be made in accordance with the following instructions:
 - 6.8.1. Made upon form provided.
 - 6.8.2. All blank spaces properly filled.
 - 6.8.3. All numbers stated in both writing and in figures.
 - 6.8.4. Shall contain no additions, conditional or alternate bids, erasures or other irregularities.
 - 6.8.5. Shall acknowledge receipt of all addenda issued.
- 6.9. Bid Proposals entitled to consideration shall be signed by the proper representative of the firm submitting the proposal as follows:
 - 6.9.1. The principal of a single owner firm.
 - 6.9.2. A principal of a partnership firm.
 - 6.9.3. An officer of an incorporated firm, or an agent whose signature is accompanied by a certified copy of the resolution of the Board of Directors authorizing that agent to sign.

- 6.9.4. OR, other persons signing for a single-owner firm or a partnership shall attach a powerof-attorney evidencing his authority to sign for that firm.
- 6.10. UNIT PRICES: When a Bid Proposal Form contains unit prices, any errors discovered in the extension of those unit prices will be corrected by the Owner using the unit price figures. The adjusted extended amount will then be used to determine the correct total bid. Only after the amounts have been checked and adjusted, if necessary, will the valid low bid be determined.
- 6.11. ESTIMATED QUANTITIES: All estimated quantities stipulated in the Bid Proposal and other Contract Documents are approximate and are to be used only as a basis for estimating the probable cost of the work and for the purpose of comparing proposals submitted for the work. It is understood and agreed that the actual amounts of work done, and materials furnished under unit price items may vary from such estimated quantities. The actual quantities will depend on the conditions encountered at the time the work is performed.
- 6.12. Any bidder may modify his bid by fax communication only.
 - 6.12.1. It is the bidder's responsibility to ensure that the entire modification is received at the bid opening location prior to the scheduled closing time for receipt of bids. <u>The modification shall not reveal the bid price</u> but shall only provide the ADDITION or SUBTRACTION from the original proposal.
 - 6.12.2. The Owner is not responsible for the performance of the facsimile/printer machine, maintaining adequate paper levels, toner levels, the telephone connection, quality of the facsimile, or any other factors affecting receipt of the fax. Unreadable or difficult-to-read facsimiles may be rejected at the sole discretion of the Owner.
 - 6.12.3. Changes in the listed subcontractors, if any, shall also be provided.
 - 6.12.4. Bid modifications must be verified by hard copy provided to the Owner within two (2) business days after the bid opening.
 - 6.12.5. Bid modifications shall be directed to fax phone (406) 444-3399.
 - 6.12.6. All facsimiles shall be date and time stamped on the same time-stamp clock in the Owner's office that is used for receipt of bids in order to be considered valid. The Owner may also use the date and time on the automatically generated email notification of facsimile receipt as generated by the State's system. Any date and time indicated at the top of the facsimile on either the bidder's or the Owner's facsimile/printer machine will not be used in determining time of arrival of the modification.
- 6.13. In the event of a discrepancy on the bid proposal between the written (alpha) numbers and the numeric numbers, the lowest figure will prevail.
- 6.14. The Owner reserves the sole right to reject any or all bids and to waive any irregularities or informalities. The Owner also reserves the sole right to determine what constitutes irregularities or informalities and/or what is material and/or immaterial to the bids received.
- 7. Bid Security
 - 7.1. IF THE PROJECT COST IS LESS THAN \$25,000, AT ITS SOLE DISCRETION THE STATE OF MONTANA MAY OR MAY NOT REQUIRE BID SECURITY (18-2-302 MCA).
 - 7.2. All proposals shall be accompanied by a bid security in the amount of 10% of the bid price, as evidence of good faith (18-2-302 MCA).
 - 7.3. Bid security shall be in the form of lawful moneys of the United States, cashier's check, certified check, bank money order or bank draft, bid bond or bonds payable to the State of Montana (18-2-302 MCA).
 - 7.4. If the bidder, to whom a contract is awarded, fails to enter into and execute the proposed contract within fifteen (15) calendar days of award, the bidder shall forfeit the bid security (18-1-204 MCA).
 - 7.5. The bid security of unsuccessful bidders will be returned when the contract has been awarded to the successful bidder or when all bids have been rejected (18-1-205 MCA).

7.6. Execution of and entering into a contract includes providing all necessary insurance certificates, bonds, signed contract and current copy of the construction contractor registration certificate or registration number.

7.7. NOTE: PER STATE POLICY, IF CASH, CHECK, MONEY ORDER, OR BANK DRAFT ARE PROVIDED AS BID SECURITY, IT WILL BE DEPOSITED IN THE TREASURY. UNSUCCESSFUL BIDDERS WILL HAVE THEIR SECURITY RETURNED UPON CONTRACT AWARD. THE SUCCESSFUL BIDDER'S SECURITY MAY BE RETURNED UPON ISSUANCE OF NOTICE TO PROCEED.

- 8. Withdrawal of Bids
 - 8.1. Any bidder may withdraw his bid proposal at any time prior to the scheduled closing time for the receipt of bids.
 - 8.2. Once the closing time for the receipt of bids is reached, a bid may not be withdrawn for a period of thirty (30) calendar days.
 - 8.3. The official time clock for receipt of bids and fax modifications is the Owner's time and date stamp clock located on the reception desk in the Owner's office. No other clocks, calendars or timepieces are recognized. All bidders are responsible to ensure all bids and fax modifications are received in the Owner's office prior to the scheduled closing time.
- 9. Interpretation of Contract Documents
 - 9.1. Bidders shall promptly notify the Architect/Engineer of any ambiguity, inconsistency, or error which they may discover upon examination of the Contract Documents or of the site and local conditions.
 - 9.2. Bidders requiring clarification or interpretation of the Contract Documents shall request, in writing, clarification from the Architect/Engineer at least ten (10) calendar days prior to the date set for receipt of bids.
 - 9.3. Any interpretations, corrections, or change in the Contract Documents prior to the bid opening will be made by written addendum issued by the Architect/Engineer. The Architect/Engineer will endeavor to notify all plan holders of any addenda issued but it shall be the responsibility of the individual bidders to insure they have received all addenda prior to the submission of their bid.
 - 9.4. All written addenda issued by the Architect/Engineer will become part of the Contract Documents and all bidders shall be bound by such addenda whether or not received and/or acknowledged by the bidder. No oral or telephone modifications of the Contract Documents will be considered or allowed.
- 10. Award of Bids
 - 10.1. All bids received by the stated hour will be opened and publicly read aloud.
 - 10.2. The Owner reserves the right to reject any and all bids and to waive any informality or irregularity in any bid received. The Owner reserves the right to determine what constitutes material and/or immaterial informalities and/or irregularities.
 - 10.3. The low bid shall be determined on the basis of the lowest Base Bid or the lowest combination of Base Bid and Alternate Bids, accepted in consecutive order.
 - 10.4. The Owner shall award such contract to the lowest responsible bidder (18-1-102 MCA).
 - 10.4.1. The Owner may make such investigations as it deems necessary to determine whether or not any or all bidders are responsible.
 - 10.4.2. The term "responsible" does not refer to pecuniary ability only, nor the ability to tender sufficient performance and payment bonds.
 - 10.4.3. The term "responsible" includes, but is not limited to:

- 10.4.3.1. Having adequate financial resources to perform the contract or the ability to obtain them.
- 10.4.3.2. Being able to comply with the required delivery, duration, and performance schedule.
- 10.4.3.3. Having a satisfactory record of integrity and business ethics.
- 10.4.3.4. Having the necessary organization, experience, accounting, and operational controls.
- 10.4.3.5. Having the necessary production, construction, technical equipment, and facilities; and,
- 10.4.3.6. Having the technical skill, ability, capacity, integrity, performance, experience, lack of claims and disputes, lack of actions on bonds, lack of mediations, arbitrations and/or lawsuits related to construction work or performance, and such like.
- 10.4.4. Bidders shall furnish to the Owner all information and data for this purpose as the Owner may request.
- 10.4.5. The Owner reserves the right to reject any bid if the investigation or evidence of any Bidder fails to satisfy the Owner that such Bidder is properly and adequately qualified to suitably perform and satisfactorily execute the obligations of the Contract and Work defined in the Contract Documents.
- 10.5. The Owner shall award such contract to the lowest responsible bidder without regard to residency except on a reciprocal basis: a resident bidder will be allowed a preference on a contract against the bid of any non-resident bidder from any state or country that enforces a preference for resident bidders. The preference given to resident bidders of the State of Montana must be equal to the preference given in the other state or country (18-1-102, MCA). This does not apply when prohibited by federal requirements.
- 10.6. The Department of Administration may negotiate deductive changes, not to exceed 7% of the total cost of the project, with the lowest responsible bidder when the lowest responsible bids causes the project cost to exceed the appropriation; or with the lowest responsible bidders if multiple contracts will be awarded on the projects when the total of the lowest responsible bids causes the project cost to exceed the appropriation. A bidder is not required to negotiate his bid but is required to honor his bid for the time specified in the bidding documents. The Owner may terminate negotiations at any time (18-2-105(7) MCA).
- 11. Contract
 - 11.1. The sample Standard Form of Contract between Contractor and Owner, as issued by the Owner, will be used as the contracting instrument and is bound within the Contract Documents.
 - 11.2. The form shall be signed by a proper representative of the bidder as defined above in these instructions.
 - 11.3. The Contractor shall also complete and return federal form W-9 along with the Contract.
- 12. Performance, Labor and Material Payment Security
 - 12.1. IF THE PROJECT COST IS LESS THAN \$50,000, AT ITS SOLE DISCRETION THE STATE OF MONTANA MAY OR MAY NOT REQUIRE A PERFORMANCE OR LABOR AND MATERIAL PAYMENT SECURITY (18-2-201 MCA).
 - 12.2. THE CONTRACTOR SHALL PROVIDE BOTH SECURITIES FOR THIS PROJECT AS SPECIFIED BELOW, UNLESS SPECIFICALLY DIRECTED THAT THIS REQUIREMENT HAS BEEN WAIVED ELSEWHERE IN THESE DOCUMENTS.
 - 12.3. The Owner shall require the successful bidder to furnish a Performance Bond in the amount of 100% of the contract price as security for the faithful performance of his contract (18-2-201, MCA).
 - 12.4. The Owner shall require the successful bidder to furnish a Labor and Material Payment Bond in the amount of 100% of the contract price as security for the payment of all persons performing labor and furnishing materials in connection therewith (18-2-201 MCA).

- 12.5. The bonds shall be executed on forms furnished by the Owner. No other forms will be acceptable.
- 12.6. The bonds shall be signed in compliance with state statutes (33-17-111 MCA).
- 12.7. Bonds shall be secured from a state-licensed bonding company.
- 12.8. Power of Attorney
 - 12.8.1. Attorneys-in-fact who sign contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.
 - 12.8.2. One original copy shall be furnished with each set of bonds.
 - 12.8.3. Others furnished with a set of bonds may be copies of that original.
- 13. Notice to Proceed
 - 13.1. The successful bidder who is awarded the contract for construction will not be issued a Notice to Proceed until there is a signed Contract, the specified insurance certificates, completed bond forms, federal form W-9, a copy of the bidder's current Construction Contractor Registration Certificate in the Owner's possession. All items are required within fifteen (15) calendar days of contract award made by the Owner.
- 14. Laws and Regulations
 - 14.1. The bidders' attention is directed to the fact that all applicable federal and state laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over the project shall apply to the contract throughout and will be deemed to be included in this contract as if bound herein in full.

15. PAYMENTS

- 15.1. NOTICE OF APPROVAL OF PAYMENT REQUEST PROVISION. Per Title 28, Chapter 2, Part 21, this contract allows the Owner to change the number of days to approve a Contractor's payment request. This contract allows the Owner to approve the Contractor's payment request within thirty-five (35) calendar days after it is received by the Owner without being subject to the accrual of interest.
- 16. BUY SAFE MONTANA PROVISIONS
 - 16.1. The successful bidder who is awarded the contract for construction shall provide their incident rate, experience modification ratio (EMR) and loss ratio via the Buy-Safe Montana form with the Award documents.

REBID-WATCH BUILDING CONCRETE SIDEWALK ENTRANCE MONTANA STATE HOSPITAL WARM SPRINGS, MONTANA A/E# 2021-10-01

TO:

Director, Department of Administration Architecture & Engineering Division 1520 East Sixth Avenue P.O. Box 200103 Helena, Montana 59620-0103

The undersigned, having familiarized himself with the Contract Documents, site, location, and conditions of the Work as prepared by **ANDERSON-MONTGOMERY CONSULTING ENGINEERS, INC., 1064 N WARREN STEET, HELENA MT 59601, 406 449-3303,** <u>adam@a-mce.com</u>; by submission of this Bid Proposal, hereby agrees to complete the Work for the total sum as follows:

BASE BID:

(Bid Price in ALPHA notation) ______and _____/100 DOLLARS

\$_

(Bid Price in NUMERIC notation)

This bidder acknowledges receipt of the following addenda:

 ADDENDUM #:
 Dated:

 ADDENDUM #:
 Dated:

ADDENDUM #: _____ Dated: _____

Company Nam	e:
Signature:	
Print Name:	
Title:	(verify signatory requirements with Instructions To Bidders, Paragraph 6.9)
Business Address:	
e-mail Address:	
Phone #:	
Fax #:	
MT Contractor Registration #: _	



STATE OF MONTANA DEPARTMENT OF ADMINISTRATION ARCHITECTURE AND ENGINEERING DIVISION

ARCHITECTURE AND ENGINEERING DIVISION 1520 East Sixth Avenue • P.O. Box 200103 • Helena MT 59620-0103 Phone: 406 444-3104 • Fax: 406 444-3399

STANDARD FORM OF CONTRACT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION

THIS CONTRACT IS SUBJECT TO ARBITRATION PURSUANT TO THE UNIFORM ARBITRATION ACT, MCA TITLE 27, CHAPTER 5

This **CONTRACT** is made as of:

BETWEEN:

Hereinafter identified as the "**CONTRACTOR**" and the State of Montana, acting through its Director, Department of Administration, hereinafter identified as the "**OWNER**":

Department of Administration, State of Montana P.O. Box 200103, 1520 East Sixth Avenue Helena, MT 59620-0103

WITNESSETH that the Contractor and the Owner, for the consideration hereinafter named, agree as follows:

ARTICLE 1 – SCOPE OF WORK

The Contractor shall perform all Work as shown in the Contract Documents entitled:

REBID-WATCH BUILDING CONCRETE SIDEWALK ENTRANCE MONTANA STATE HOSPITAL WARM SPRINGS, MONTANA A/E PROJECT #2021-10-01

As prepared by:

ANDERSON-MONTGOMERY CONSULTING ENGINEERS, INC. HELENA, MONTANA 406 449-3303

Hereinafter identified as the "ARCHITECT/ENGINEER."

ARTICLE 2 - TIME OF COMPLETION

As time is of the essence in performance, coordination, and completion of the Work contemplated under this Contract, the Work to be performed shall commence on a date set forth by the Owner in a written "Notice To Proceed" and shall be completed within:

FORTY-FIVE (45) CONSECUTIVE CALENDAR DAYS, WITH A COMPLETION DATE NOT LATER THAN SEPTEMBER 30, 2021.

If the Work is not completed within the time specified, the Owner may assess liquidated damages in the amount of:

ONE HUNDRED AND NO/100 DOLLARS (\$100.00) PER CALENDAR DAY OF DELAY.

ARTICLE 3 – CONTRACT SUM

The Owner shall pay the Contractor for performance of the Work, subject to additions and/or deductions by Change Order or damages as provided in the Contract Documents, the Contract Sum of:

ARTICLE 4 – PROGRESS PAYMENTS

The Owner shall make payments on account in accordance with the Contract Documents as follows: Ninety-Five (95%) of the portion of the Contract Sum for labor, materials, and equipment incorporated in the Work and for materials suitably

stored. The Contractor shall be aware that the Owner has thirty-five (35) calendar days upon receipt in which to make approval and payment without being in violation of statute or being subject to the accrual of interest shall, or the need to make written notice or justification to deny payment in whole or in part. The Contractor shall, within seven (7) calendar days following receipt of payment from the Owner, make payment to subcontractor(s).

ARTICLE 5 - FINAL PAYMENT

Final Payment, constituting the entire unpaid balance of the Contract Sum, shall be paid by the Owner to the Contractor when: 1) the Work is completed in accordance with the Contract Documents; 2) the Contract fully performed; 3) a final Form 101, Periodic Estimate for Partial Payment showing the final correct amounts is approved by the Architect/Engineer; 4) a Form 106, "Contractor's Affidavit of Completion, Payment of Debts and Claims, and Release of Liens" is completed and submitted; and 5) a Form 103, "Consent of Surety Company To Final Payment" is completed and submitted.

ARTICLE 6 – CONTRACT DOCUMENTS

The Contract Documents, together with this Contract, form the entire Contract and Agreement between the Contractor and Owner. The Contract Documents, which are totally and completely a part of this Contract as if attached hereto or repeated herein, are enumerated in the General Conditions of the Contract for Construction inclusive of Wage Rates, Reports, and all other items bound with the Specifications and/or Project Manual(s).

ARTICLE 7 – PREVAILING WAGE SCHEDULE

The Contractor and all subcontractors at any tier or level shall, as a minimum, pay the standard prevailing rate of wages schedule (including per diem, fringe benefits for health, welfare, and pension contributions and travel allowance) in effect and as applicable to the district in which the Work is being performed.

ARTICLE 8 - VENUE

In the event of any mediation, arbitration, or litigation concerning any matter or dispute arising out of or related to the Contract, venue shall be the First Judicial District in and for the County of Lewis and Clark, Montana. The Contract shall be interpreted and subject to the laws of the State of Montana.

EXECUTION OF THIS CONTRACT

This Contract is entered into as of the day and year first written above:

Contractor:

Signature

(print name)

Title

Is this company incorporated? Yes _____ No_____

Owner:

DEPARTMENT OF ADMINISTRATION	1
STATE OF MONTANA	

RUSS KATHERMAN Administrator, Architecture & Engineering Division for the DIRECTOR, DEPARTMENT OF ADMINISTRATION

Date



STATE OF MONTANA DEPARTMENT OF ADMINISTRATION ARCHITECTURE AND ENGINEERING DIVISION

1520 East Sixth Avenue • P.O. Box 200103 • Helena MT 59620-0103 Phone: 406 444-3104 • Fax: 406 444-3399

PERFORMANCE BOND #_____

KNOW ALL PERSONS BY THESE PRESENTS, that we:

(Contractor), hereinafter called the Principal, and

(Surety), a corporation licensed to do business as a surety under the laws of the State of Montana, hereinafter called Surety, are held and firmly bound unto the State of Montana in the full and just sum of:

AND 00/100 DOLLARS

to be paid to the State of Montana or its assigns, to which payment we bind ourselves, heirs, executors, administrators, successors and assigns, jointly, severally, firmly by this bond.

WHEREAS, the Principal has entered into a contract with the State of Montana, acting by and through its Director, Department of Administration dated ______ and whereas it is one of the conditions of the award of the contract pursuant to statutes that this bond be executed for the Project entitled:

[PROJECT NAME] [AGENCY NAME] [A/E PROJECT #]

NOW, THEREFORE, the conditions of this obligation are such that if the above Principal as Contractor shall promptly and faithfully perform all of the provisions of the contract, and all obligations thereunder including the specifications, and any alterations provided for, and shall in a manner satisfactory to the State of Montana, complete the work contracted for including any alterations, and shall save harmless the State of Montana from any expense incurred through the failure of the Contractor to complete the work as specified, then this obligation shall be void; otherwise it shall remain in full force and effect.

The surety hereby waives notice of any extension of time and any alterations made in the terms of the contract, unless the cumulative cost of such alterations cause the total project cost to exceed the original contract sum by more than 10%.

FOR STATE USE ONLY:	Contractor:
	Signature
Surety is licensed in MT: Yes No	Print Name
Date Verified:	Date
Verified By:	Surety:
Architecture & Engineering Div. Department of Administration State of Montana	Print Name Date By: Attorney-in-Fact, Seal & Signature Agency Street Address Mailing Address
	Phone Fax



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LABOR & MATERIAL PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS, that we:

(Contractor), hereinafter called the Principal, and

(Surety), a corporation licensed to do business as a surety under the laws of the State of Montana, hereinafter called Surety, are held and firmly bound unto the State of Montana in the full and just sum of:

AND 00/100 DOLLARS

to be paid to the State of Montana or its assigns, to which payment we bind ourselves, heirs, executors, administrators, successors and assigns, jointly, severally, firmly by this bond.

WHEREAS, the Principal has entered into a contract with the State of Montana, acting by and through its Director, Department of Administration dated ______ and whereas it is one of the conditions of the award of the contract pursuant to statutes that this bond be executed for the Project entitled:

[PROJECT NAME] [AGENCY NAME] [A/E PROJECT #]

NOW, THEREFORE, the conditions of this obligation are such that if the above Principal as Contractor shall promptly and faithfully perform all of the provisions of the contract, and all obligations thereunder including the specifications, and any alterations provided for, and shall in a manner satisfactory to the State of Montana, complete the work contracted for including any alterations, and shall save harmless the State of Montana from any expense incurred through the failure of the Contractor to complete the work as specified, then this obligation shall be void; otherwise it shall remain in full force and effect.

The surety hereby waives notice of any extension of time and any alterations made in the terms of the contract, unless the cumulative cost of such alterations cause the total project cost to exceed the original contract sum by more than 10%.

FOR STATE US	E ONLY:	Contractor		
Suretv is licensed	d in MT: □Yes □No		Signature	
Data Varified:			Date	
Date vermed.				
Verified By:		Surety		
Arc	chitecture & Engineering Div.		Print Name	
Sta	ate of Montana		Date	
		By		
			Attorney-In-Fact, Seal & Signatu	ure
			Agency	
			Street Address	
			Mailing Address	
		1	Phone	Fax



STATE OF MONTANA

DEPARTMENT OF ADMINISTRATION

ARCHITECTURE AND ENGINEERING DIVISION 1520 East Sixth Avenue • P.O. Box 200103 • Helena MT 59620-0103 Phone: 406 444-3104 • Fax: 406 444-3399

SCHEDULE OF AMOUNTS FOR CONTRACT PAYMENT

 Project Name:
 A/E #:

 Location:
 Date:

 Contractor:

 Address:

DIV. NO.	DESCRIPTION	LABOR COSTS	MATERIAL COSTS	OTHER COSTS	TOTAL ITEM COST
-					\$ 0.00
					\$ 0.00
					\$ 0.00
					\$ 0.00
					\$ 0.00
					\$ 0.00
					\$ 0.00
					\$ 0.00
					\$ 0.00
					\$ 0.00
					\$ 0.00
					\$ 0.00
					\$ 0.00
					\$ 0.00
					\$ 0.00
					\$ 0.00
					\$ 0.00
					\$ 0.00
					\$ 0.00
					\$ 0.00
					\$ 0.00
	TOTAL COST THIS SHEET	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00
ΤΟΤΑ	L COST - ADDITIONAL SHEETS				\$ 0.00
	TOTAL PROJECT COST	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00

This Schedule of Values is a statement made by the Contractor to the Architect/Engineer and Owner that allocates the contract sum among the various portions of the Work and shall form the basis for review of the Contractor's Payment Requests.

Submitted By:	Company/Contractor	Signature	Date
Reviewed By:			
, .	Architect/Engineer	Signature	Date
Approved By:	Architecture & Engineering Division		
		Signature	Date



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PERIODIC ESTIMATE FOR PARTIAL PAYMENT

Project Name:	Contractor:			
Location:	Address:			
	Phone/Fax:	E-mail:	Fax:	

RETAINAGE ADJUSTMENT			
1. Total Retainage to Date:	0.00		
2. Less Securities Deposited or Retainage Paid Out:			
3. Retainage Withheld (1 - 2)	0.00		

	CONTRACT AMOUNT STATU	IS
1. Original Contract Amount:		
2. Net +/- by Change Order	(Pulls from Change Order Summary)	0.00
3. Contract Amount to Date:		0.00

	CHANGE ORDER SUMMARY				
No.	Date Approved	Additions	Deductions		
	TOTALS:	0.00	0.00		
		NET TOTAL:	0.00		

	CONTRACT STATUS	
1. Work in Place (from next page):	(Col D + E Total - Grand Totals Page 2)	0.00
2. Total Work & Stored Material:	(Col G Total -Grand Totals Page 2)	0.00
3. Retainage Withheld	5%	0.00
4. Total Earned Less Retainage:		0.00
5. Less Pervious Payments:	(Col D - Prior Ret. Total in Grand Totals Page 2)	0.00
6. Amount Due This Payment:		0.00
7. Less 1% State Contractor's Tax:	(Contracts >4999.99)	0.00
8. Payment Due Contractor:		0.00

I hereby certify that this submitted request for payment is correct, thru and just in all respects and that payment or credit has not previously been received. I future warrant and certify by submission of this request that all previous work for which payment has been received is free and clear of all liens, disputes, claims, security interest, encumbrances, or causes of action of any type or kink in favor of the contractor, subcontractors, material suppliers, or other persons or entities and do hereby release the owner from such.

Submitted by:	(Company/Contractor)	(Name)		Date:	
Reviewed by:	(Architect/Engineer)	(Name)		Date:	
Approved by:	Montana Dept of Administration Architecture and Engineering Division	(Name)		Date:	
FOR OWNER'S USE: Davis-Ba	con certified payroll on file (for federally funded projects only where D-B applies)?		Initials of PM/CM:		Date:

WORK IN PLACE / STORED MATERIALS

Project Name:	Contractor:	A/E No.:	
Location:		Date:	

Pay Estimate No:

В С D Е F G Н А J TOTAL COMPLETED AND CONTRACTOR FROM PREVIOUS APPLICATION MATERIAL PRESENTLY STORED STORED TO DATE ITEM NO. DESCRIPTION OF WORK SCHEDULED VALUE THIS PERIOD BALANCE TO FINISH (C-G) RETAINAGE % (G/C) ITEM NO (D + E) (NOT IN D OR E) (D + E + F) 0.00 0.00 0.00 1 2 0.00 0.00 0.00 0.00 3 0.00 0.00 4 0.00 0.00 0.00 5 0.00 0.00 0.00 6 0.00 0.00 0.00 7 0.00 0.00 0.00 8 0.00 0.00 0.00 9 0.00 0.00 0.00 10 0.00 0.00 0.00 0.00 0.00 0.00 11 12 0.00 0.00 0.00 13 0.00 0.00 0.00 14 0.00 0.00 0.00 0.00 15 0.00 0.00 16 0.00 0.00 0.00 17 0.00 0.00 0.00 18 0.00 0.00 0.00 19 0.00 0.00 0.00 0.00 20 0.00 0.00 21 0.00 0.00 0.00 22 0.00 0.00 0.00 23 0.00 0.00 0.00 24 0.00 0.00 0.00 25 0.00 0.00 0.00 26 0.00 0.00 0.00 27 0.00 0.00 0.00 0.00 0.00 0.00% 0.00 0.00 PAGE TOTALS: 0.00 0.00 0.00 ADDITIONAL PAGE TOTALS: 0.00 0.00 0.00 0.00 0.00 0.00% 0.00 0.00 GRAND TOTALS: 0.00 0.00 0.00 0.00 0.00 0.00 0.00% 0.00

Attach additional sheets as needed.



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ACKNOWLEDGEMENT OF SUBCONTRACTORS

Project Name: ______ Location: ______ A/E #: ______ Date: ______

Contractor: ______Address:

TO: DEPARTMENT OF ADMINISTRATION ARCHITECTURE AND ENGINEERING DIVISION 1520 EAST SIXTH AVENUE, P.O. BOX 200103 HELENA MT 59620-0103

Listed below are the principal subcontractors proposed on this project. *All subcontracts exceeding \$5,000 are to be listed.* The Contractor certifies that these subcontractors:

- 1. Have been advised of the labor standards and provisions applicable to this project.
- 2. That all provisions incorporated in the Contract between the Owner and the undersigned contractor will be incorporated in the contracts between the Contractor and any Subcontractors.
- 3. Are competent to accomplish the work subcontracted to them.

NAME AND ADDRESS OF SUBCONTRACTORS	REGISTRATION NO.	TYPE OF WORK

NAME AND ADDRESS OF SUBCONTRACTORS	REGISTRATION NO.	TYPE OF WORK	
Submitted By:			
Company/Contractor		Signature	Date
Reviewed By:		Signature	Date

Acknowledged By:	Architecture & Engineering	Division
		2

Signature

Date



STATE OF MONTANA DEPARTMENT OF ADMINISTRATION ARCHITECTURE AND ENGINEERING DIVISION 1520 East Sixth Avenue • P.O. Box 200103 • Helena MT

59620-0103 Phone: 406 444-3104 • Fax: 406 444-3399

CONSENT OF SURETY COMPANY TO FINAL PAYMENT

Project: _____ Location: A/E#: _____

DEPARTMENT OF ADMINISTRATION TO: ARCHITECTURE AND ENGINEERING DIVISION 1520 EAST SIXTH AVENUE, P.O. BOX 200103 HELENA MT 59620-0103

Contractor: Contract Date:

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the (Insert name and address of Surety Company)

on bond of (Insert name and address of Contractor)

.Contractor.

,Surety Company,

hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall not relieve the Surety Company of any of its obligations to the Montana Department of Administration, Owner, as set forth in the said Surety Company's bond. The Surety agrees to be bound to the warranty period under the same conditions as the Contractor. The warranty is defined as commencing with Substantial Completion (or with each Substantial Completion if there is more than one) of the Project, or any portion thereof, and continuing for one (1) calendar year from the date of Final Acceptance of the entire project unless otherwise modified in writing as part of the Substantial Completion or Final Acceptance.

IN WITNESS WHEREOF, the Surety Company has hereunto set its hand this Day of ,

Surety Company

Signature of Authorized Representative

Attest: (Seal) Title



STATE OF MONTANA

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CONTRACT CHANGE ORDER

A/E #:	
Chg. Order #:	
Date:	
Phone:	
	A/E #: Chg. Order #: Date: Phone:

The Contractor is hereby directed to make the following changes in the Contract:

ITEM NO.	D	DESCRIPTION/UNIT BREAKDOWN/UNIT COSTS (Indicate Critical Path Schedule impact for each Item)		COST (Indicate + or -)
			TOTAL FROM PAGE	2 \$ 0.00
			SUBTOTAL (Labor & Materials)	= \$ 0.00
O&P II	ncluded above: 💽	Calculate O&P 🔘	Overhead & Profit @ <u>15</u> %	= \$ 0.00
		Т	OTAL COST (This Change Order Only)	= \$ 0.00

Change In Contract Duration/Time By This Change Order:

No Change Increase Decrease BY CALENDAR DAYS.

NEW CONTRACT COMPLETION DATE:

CONTRACT STATUS	
1. Original Contract Amount	
2. Net Change by Previous Change Order(s)	
3. Current Contract Amount (1+2)	\$ 0.00
4. This Change Order Total Amount	\$ 0.00
5. New Contract Amount (3+4)	\$ 0.00
6. Total Cost of All Change Orders to Date (2+4)	\$ 0.00

A/E #:
Change Order #:
0

ITEM NO.	DESCRIPTION/UNIT BREAKDOWN/UNIT COSTS (Indicate Critical Path Schedule impact for each Item)	COST (Indicate + or -)
	SUBTOTAL (Labor & Materials) this page only. Carry forward to first page. =	\$ 0.00

JUSTIFICATION FOR CHANGE(S) (To be completed by Architect/Engineer): *Describe the details which mandate the change(s).*

JUSTIFICATION FOR COST ADJUSTMENT (To be completed by Architect/Engineer): Describe the basis used to calculate the cost adjustment.

JUSTIFICATION FOR SCHEDULE ADJUSTMENT (To be completed by Architect/Engineer): Describe the impact of adjustment(s) to the critical path.

APPROVALS

By signature on this change order, the Contractor certifies that consequential items (including additional time, if any) and is free additional time, disruptions, and impacts) in favor of the Contra change order and on all previously contracted Work and does I	this change order is complete and includes e and clear of any and all claims or dispute actor, subcontractors, material suppliers, or hereby release the Owner from such.	s all direct costs, indirect costs and es (including, but not limited to, additional costs, other persons or entities concerning this
Approved by Contractor:	Ву:	Date:
Recommended by Architect/Engineer:	Ву:	Date:
Reviewed by Agency:	Ву:	Date:
Surety Consent: SURETY CONSENT IS REQUIR 10% OF THE ORIGINAL CONTR	ED IF THE TOTAL AMOUNT OF ALL RACT AMOUNT.	CHANGE ORDERS (LINE 6) EXCEEDS
The Surety consents to this Contract Change Order modified or amended per this Change Order. The the penalty of the applicable Performance Bond and By One Hundred Percent (100%) of ALL Change Orders	r and agrees that its bond or bonds sh principal and the Surety further agree d Labor & Material Bond is increased	all apply and extend to the Contract as that on or after execution of this consent, by:
Countersigned by Resident Agent:		Date:
Surety:		
Recommended by: A&E Project Manager:		Date:
Accepted by: Montana Dept. of Administration:		Date:



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CONTRACTOR'S AFFIDAVIT OF COMPLETION, PAYMENT OF DEBTS AND CLAIMS, AND RELEASE OF LIENS

Project Name: _____

Location:

A/E #:_____

I CERTIFY to the best of my knowledge and belief that all work has been performed and materials supplied in strict accordance with the terms and conditions of the corresponding contract documents between the STATE OF MONTANA, acting by and through its DIRECTOR, DEPARTMENT OF ADMINISTRATION, hereinafter called the Owner, and

, hereinafter called the CONTRACTOR, for the above referenced project.

I further certify and declare that all bills for materials, supplies, utilities and for all other things furnished or caused to be furnished by the CONTRACTOR and used in the execution of the contract will be fully paid upon receipt of Final Payment and that there are no unpaid obligations, liens, claims, security interests, encumbrances, liabilities and/or demands of State Agencies, subcontractors, materialmen, mechanics, laborers or any others resulting from or arising out of any work done, caused to be done or ordered to be done by the CONTRACTOR under the contract.

In consideration of the prior and final payments made and all payments made for authorized changes, the CONTRACTOR releases and forever discharges the OWNER from any and all obligations, liens, claims, security interests, encumbrances and/or liabilities arising by virtue of the contract and authorized changes between the parties, either verbal or in writing, and any and all claims and demands of every kind and character whatsoever against the OWNER, arising out of or in any way relating to the contract and authorized changes.

I further certify and agree that the warranty period is defined as commencing with Substantial Completion (or with each Substantial Completion if there is more than one) of the Project, or any portion thereof, and continuing for one (1) calendar year from the date of Final Acceptance of the entire project unless otherwise modified in writing as part of the Substantial Completion or Final Acceptance.

This statement is made for the purpose of inducing the OWNER to make FINAL PAYMENT under the terms of the contract, relying on the truth and statements contained herein.

(Seal) CONTRACTOR
(Signature) (Title)
Subscribed and sworn to me this ____ Day of _____, ____
(Seal) NOTARY
Notary Public for the State of Montana

My Commission Expires:



STATE OF MONTANA

DEPARTMENT OF ADMINISTRATION

ARCHITECTURE AND ENGINEERING DIVISION 1520 East Sixth Avenue • P.O. Box 200103 • Helena MT 59620-0103 Phone: 406 444-3104 • Fax: 406 444-3399

CERTIFICATE OF SUBSTANTIAL COMPLETION

Project Name: Project Address: Project Location:		A	&E #: Date:
Agency: Address: Contact Name: Contact #:			
To:	MONTANA DEPARTMENT OF ADMINISTRATION ARCHITECTURE AND ENGINEERING DIVISION 1520 E. SIXTH AVENUE, P.O. BOX 200103 HELENA MT 59620-0103		
Architect/Enginee	r:		
Contractor:		Contract Date: Contract Award Amount:	

PROJECT OR DESIGNATED PORTION SHALL INCLUDE:

The work performed under this Contract has been reviewed and found to be substantially complete. The Date of Substantial Completion of the Project or portion thereof designated above, which is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below is hereby established as:_____

BASIC PROJECT INFORMATION (required by Risk & Tort Defense Division)	Ν	IEW	REMODEL/R	RENOVATION
Total Square Footage		Sq. Ft.		Sq. Ft.
General Construction Material (e.g. masonry, metal panel, wood, etc.)				
Total Construction Cost				
Fire Sprinklers Installed (yes/no)	Yes	No	Yes	No
Estimated Date of Occupancy (if different from date of Substantial)				
Building Usage:				
Safety Consultation with DLI:	Yes	No	Yes	No
Additional Comments:				

Definition of Date of Substantial Completion

The Date of Substantial Completion of the Work or designated portion thereof is the Date certified by the Architect/Engineer when construction is sufficiently complete, in accordance with the Contract Documents, so the Owner can occupy or utilize the Work or designated portion thereof for the use for which it is intended, as expressed in the Contract Documents.

A list of items to be completed or corrected, prepared by the Contractor and verified and amended by the Architect/Engineer, is attached hereto. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all the Work in accordance with the Contract Documents. The warranty period is defined as commencing with Substantial Completion (or with each Substantial Completion if there is more than one) of the Project, or any portion thereof, and continuing for one (1) calendar year from the date of Final Acceptance of the entire project unless otherwise modified in writing as part of the Substantial Completion or Final Acceptance.

Architect/Engineer	Signature	Date
The Contractor will complete or correct the Work on the list of iten Substantial Completion.	ns attached hereto within days from	the above Date of
	Signature	Date
Contractor	olgilataro	2 410
Contractor The Owner accepts the Work or designated portion thereof as su	bstantially complete and will assume full po	ssession thereof
Contractor The Owner accepts the Work or designated portion thereof as su at on	bstantially complete and will assume full po	ossession thereof
Contractor The Owner accepts the Work or designated portion thereof as su at on Time Date	bstantially complete and will assume full po	ossession thereof
Contractor The Owner accepts the Work or designated portion thereof as su at on Time Date State of Montana Department of Administration, Architecture and Engineering Division	bstantially complete and will assume full po	ossession thereof

The responsibilities of the Owner and the Contractor for security, maintenance, heat, utilities, damage to the Work and insurance will be as follows (use attachments as necessary):



STATE OF MONTANA

DEPARTMENT OF ADMINISTRATION

ARCHITECTURE AND ENGINEERING DIVISION 1520 East Sixth Avenue • P.O. Box 200103 • Helena MT 59620-0103 Phone: 406 444-3104 • Fax: 406 444-3399

CONSTRUCTION CHANGE DIRECTIVE

Project Name:		A/E #:
Location:		Date:
Contractor:		Change Directive #: CCD-
Owner:	MONTANA DEPARTMENT OF ADMINISTRATION ARCHITECTURE AND ENGINEERING DIVISION 1520 EAST SIXTH AVENUE, P. O. BOX 200103 HELENA MT 59620	_
Architect/Engineer:		_
		_

The Contractor is directed to proceed as described below. Proceed with this Work promptly. Costs for the Work (if any) involved and change in Contract Time (if any) will be included in a subsequent Change Order. **Description:**

Attachments: (insert listing of documents that support description)

The following is b Lump Sum Unit Price Estimated No	based on information provided by the Contr Change in Contract Sum of ot To Exceed	ractor: Fixed Estimated Maximum	Change in Contract Time of Calendar Days.	
Issued By:	Architect / Engineer	Si	gnature	Date
Accepted By:				
	Company / Contractor	Si	gnature	Date
Accepted By: MT	Dept. of Administration, A&E Division			
		Si	gnature	Date



Information Requested:

STATE OF MONTANA

DEPARTMENT OF ADMINISTRATION

ARCHITECTURE AND ENGINEERING DIVISION 1520 East Sixth Avenue • P.O. Box 200103 • Helena MT 59620-0103 Phone: 406 444-3104 • Fax: 406 444-3399

REQUEST FOR INFORMATION

Project Name: _ Location: _		A/E #: RFI #: Date:	
To:_		Attention:	
-		-	
From:		Attention:	
-		-	
Trades Affected:_		-	
In order to expect following information	dite the Work and avoid or minimize delays in the Work the ation is requested. Please return a response by:	Date Date Rec	e Sent: ceived:

Response:

Response Date:

Respondent:

This RFI is for clarification only. The contractor shall notify the Owner's Representative within 48 hours if he/she feels the response to this RFI constitutes additional work.

LUS	I CI CO I	IIION	
		auon	

Owner

Engineer

Agency

Architect Contractor

Other___


STATE OF MONTANA DEPARTMENT OF ADMINISTRATION ARCHITECTURE AND ENGINEERING DIVISION

1520 East Sixth Avenue • P.O. Box 200103 • Helena MT 59620-0103 Phone: 406 444-3104 • Fax: 406 444-3399

CERTIFICATE OF FINAL ACCEPTANCE

Project Name: Location:		A&E #: Date:
To:	MONTANA DEPARTMENT OF ADMINISTRATION ARCHITECTURE AND ENGINEERING DIVISION 1520 E. SIXTH AVENUE, P.O. BOX 200103 HELENA MT 59620-0103	
Architect/Enginee	r:	
Contractor:		Contract Date: Contract Amount:

The Work performed under this Contract has been reviewed and found to be complete and has reached Final Acceptance. The Date of Final Acceptance of the Work is defined as the Date Certified by the Architect/Engineer upon which the Work is fully complete in all aspects, and which the Owner accepts the Contractor's work as complete. The Date of Final Acceptance of the Project, or portion thereof designated above, is also the basis for commencement of the DURATION of applicable warranties required by the Contract Documents. The Warranty Period is defined in the Contract Documents as commencing with Substantial Completion(s) and continuing for one (1) calendar year from the Date of Final Acceptance. This date shall correspond to the date of the Architect/Engineer's approval on the final pay application unless otherwise agreed upon in writing. In the event of a disparity between the date of the Architect/Engineer's approval and this form, if no other written agreement exists as to the date of final acceptance, this form shall constitute such agreement and it shall govern as the date of Final Acceptance.

Date of Substantial Completion:	Date of Final Acceptance:	Date of Warranty Expiration:

Notes:

Architect / Engineer	Signature	Date
Contractor	Signature	Date
State of Montana Department of Administration, Architecture and Engineering Division		
Owner	Signature	Date



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Buy-Safe Montana

submits the following Buy-Safe Montana values for A&E review. For assistance, clarification, or the latest industry average rates, visit: https://www.bls.gov/iif/osheval.htm

Incident Rate:		
Industry Average Incident Rate:		
Experience Modification Ratio (EMR):		
Loss Ratio:		
Less than Industry Average Incident Rate -	Yes	No
EMR less than 1.0 -	Yes	No
Loss ratio less than 100% -	Yes	No
Is a Comprehensive Safety Consultation Required? *If all 3 options are responded to as "No," a consultation is required	Yes	No

Explanation of above average incident rate, EMR greater than 1.0, or loss ratio greater than 100%...

Per 3.1.7 – Buy-Safe Montana. The Owner shall review the Buy-Safe Montana form provided by the Bidder under Articles 16 of the Instructions to Bidders. To promote a safe work environment, the Owner encourages an incidence rate less than the latest average for non-residential building construction for Montana as established by the federal Bureau of Labor Statistics for the prior year; an experience modification rating (EMR) less than 1.0; and a loss ratio of less than 100%. The Contractor with a greater-than-average incidence rate, an EMR greater than 1.0, and a loss ratio of more than 100% shall schedule and obtain a Comprehensive Safety Consultation from the Montana Department of Labor & Industry, Employment Relations Division, Safety Bureau before the Owner grants Substantial Completion of the Work. For assistance in obtaining the Comprehensive Safety Consultation, visit http://erd.dli.mt.gov/safety-health/onsite-consultation.

Name

Date



STATE OF MONTANA DEPARTMENT OF ADMINISTRATION

ARCHITECTURE AND ENGINEERING DIVISION 1520 East Sixth Avenue • P.O. Box 200103 • Helena MT 59620-0103 Phone: 406 444-3104 • Fax: 406 444-3399

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

(Form Revision Date: April 2020)

ARTICLE 1 – GENERAL PROVISIONS

1.1. BASIC DEFINITIONS

1.1.1. CONTRACT DOCUMENTS. The Contract Documents consist of the Contract between Owner and Contractor (hereinafter the "Contract"), Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Contract and Modifications issued after execution of the Contract. A Modification is: (1) a written amendment to the Contract signed by both parties; (2) a Change Order; (3) a Construction Change Directive; or, (4) a written order for a minor change in the Work issued by the Architect/Engineer. The Contract Documents shall include the bidding documents and any alterations made thereto by addenda. In the event of a conflict, discrepancy, contradiction, or inconsistency within the Contract Documents and for the resolution of same, the following order of hierarchy and control shall apply and prevail:

1) Contract; 2) Addenda; 3) Supplementary General Conditions; 4) General Conditions; 5) Specifications; 6) Drawings; 7) Instructions to Bidders; 8) Invitation To Bid; 9) Sample Forms.

- 1.1.1.1. If a conflict, discrepancy, contradiction, or inconsistency occurs within or between the Specifications and the Drawings, resolution shall be controlled by the following:
 - 1.1.1.1.1. As between figures, dimensions, or numbers given on drawings and any scaled measurements, the figures, dimensions, or numbers shall govern;
 - 1.1.1.1.2. As between large scale drawings and small scale drawings, the larger scale drawings shall govern;
 - 1.1.1.1.3. As between the technical specifications and drawings; the technical specifications shall govern.
 - 1.1.1.1.4. Shop Drawings and Submittals: Shop drawings and other submittals from the Contractor, subcontractors, or suppliers do not constitute a part of the Contract Documents.
- 1.1.1.2. The Contractor acknowledges, understands and agrees that the Contract Documents cannot be changed except as provided herein by the terms of the Contract. No act(s), action(s), omission(s), or course of dealing(s) by the Owner or Architect/Engineer with the Contractor shall alter the requirements of the Contract Documents and that alteration can be accomplished only through a written Modification process defined herein.
- 1.1.2. THE DRAWINGS. The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, intent, location, and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.
- 1.1.3. THE SPECIFICATIONS. The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.
- 1.1.4. THE CONTRACT. The entire Contract for Construction is formed by the Contract Documents. The Contract represents the entire, complete, and integrated agreement between the Owner and Contract

hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind between: (1) the Architect/Engineer and Contractor; (2) the Owner and any Subcontractor, Sub-subcontractor, or Supplier; (3) the Owner and Architect/Engineer; or, (4) between any persons or entities other than the Owner and Contractor. However, the Architect/Engineer shall at all times be permitted and entitled to performance and enforcement of its obligations under the Contract intended to facilitate performance of the Architect/Engineer's duties.

- 1.1.5. THE WORK. The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to completely fulfill the Contract and the Contractor's obligations. The Work may constitute the whole or a part of the Project.
- 1.1.6. THE PROJECT. The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner or by separate contractors.
- 1.1.7. TIME. Time is of the essence in performance, coordination, and completion of the Work contemplated herein. The Owner may suffer damages if the Work is not completed as specified herein. When any duration or time period is referred to in the Contract Documents by days, the first day of a duration or time period shall be determined as the day following the current day of any event or notice starting a specified duration. All durations in the Contract Documents are calendar days unless specifically stated otherwise.

1.2. CORRELATION, INTER-RELATIONSHIP, AND INTENT OF THE CONTRACT DOCUMENTS

- 1.2.1. The intent of the Contract Documents is to include all items and all effort necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary and inter-related, and what is required by one shall be as binding as if required by all. Performance by the Contractor shall be required to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.
- 1.2.2. Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade. It is the Contractor's responsibility to control the Work under the Contract.
- 1.2.3. Unless otherwise stated in the Contract Documents, words which have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

1.3. CAPITALIZATION

1.3.1. Terms capitalized in these General Conditions include those which are: (1) specifically defined; and, (2) the titles of numbered articles and identified references to Paragraphs, Subparagraphs and Clauses in the document.

1.4. INTERPRETATION

1.4.1. In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

1.5. EXECUTION OF THE CONTRACT AND CONTRACT DOCUMENTS

1.5.1. The Contract shall be signed by the Owner and Contractor. Execution of the Contract by the Contractor constitutes the complete and irrevocable binding of the Contractor and his Surety to the Owner for complete performance of the Work and fulfillment of all obligations. By execution of the Contract, the Contractor acknowledges that it has reviewed and familiarized itself with all aspects of the Contract Documents and agrees to be bound by the terms and conditions contained therein.

- 1.5.2. Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.
- 1.5.3. The Contractor acknowledges that it has taken all reasonable actions necessary to ascertain the nature and location of the work, and that it has investigated and satisfied itself as to the general and local conditions which can affect the work or its cost, including but not limited to: (1) conditions bearing upon transportation, disposal, handling, and storage of materials; (2) the availability of labor, water, gas, electric power, phone service, and roads; (3) uncertainties of weather, river stages, tides, or similar physical conditions at the site; (4) the conformation, topography, and conditions of the ground; and, (5) the character of equipment and facilities needed for performance of the Work. The Contractor also acknowledges that it has satisfied itself as to the character, guality, and guantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory geotechnical work done by the Owner, as well as from the drawings and specifications made a part of this contract. Any failure of the Contractor to take the action described and acknowledged in this paragraph will not relieve the Contractor from responsibility for properly ascertaining and estimating the difficulty and cost of successfully performing the Work or for proceeding to successfully perform the Work without additional expense to the Owner.
- 1.5.4. The Owner assumes no responsibility for any conclusions or interpretations made by the Contractor based on the information made available by the Owner, nor does the Owner assume responsibility for any understanding reached or representation made by any of its officers, agents, or employees concerning conditions which can affect the Work unless that understanding or representation is expressly stated in the Contract Documents.
 - 1.5.4.1. Performance of any portion of the Work beyond that required for complying with the specifications and all other requirements of the Contract, shall be deemed to be for the convenience of the Contractor and shall be at the Contractor's sole expense.
 - 1.5.4.2. There shall be no increase in the contract price or time allowed for performance which is for the convenience of the Contractor.

1.6. OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS, AND OTHER INSTRUMENTS OF SERVICE

The Drawings, Specifications and other documents, including those in electronic form, prepared by the 1.6.1. Architect/Engineer and the Architect/Engineer's consultants are Instruments of Service through which the Work to be executed by the Contractor is described. The Contractor may retain one record set. Neither the Contractor nor any Subcontractor, Sub-subcontractor or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications and other documents prepared by the Architect/Engineer or the Architect/Engineer's consultants. Unless otherwise indicated, the Architect/Engineer and the Architect/Engineer's consultants shall be deemed the authors of them and will retain all common law, statutory and other reserved rights, in addition to the copyrights except as defined in the Owner's Contract with the Architect/Engineer. All copies of Instruments of Service, except the Contractor's record set, shall be returned or suitably accounted for to the Architect/Engineer upon completion of the Work. The Drawings, Specifications and other documents prepared by the Architect/Engineer and the Architect/Engineer's consultants, and copies thereof furnished to the Contractor, are for use solely with respect to this Project. They are not to be used by the Contractor or any Subcontractor, Sub-subcontractor or material or equipment supplier on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect/Engineer, and the Architect/Engineer's consultants. The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce applicable portions of the Drawings, Specifications and other documents prepared by the Architect/Engineer and the Architect/Engineer's consultants appropriate to and for use in the execution of their Work under the Contract Documents. All copies made under this authorization shall bear the statutory copyright notice, if any, shown on the Drawings Specifications and other documents prepared by the Architect/Engineer and the Architect/Engineer's consultants. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect/Engineer's or Architect/Engineer's consultants' copyrights or other reserved rights.

1.6.2. Owner's Disclaimer of Warranty: The Owner has requested the Architect/Engineer prepare the Contract Documents for the Project which are adequate for bidding and constructing the Project. However, the Owner makes no representation, guarantee, or warranty of any nature whatsoever to the Contractor concerning such documents. The Contractor hereby acknowledges and represents that it has not, does not, and will not rely upon any such representation, guarantee, or warranty have been or are hereby made.

ARTICLE 2 – THE OWNER

2.1. THE STATE OF MONTANA

- 2.1.1. The Owner is the State of Montana and is the sole entity to be identified as Owner in the Contract and as referred to throughout the Contract Documents as if singular in number.
- 2.1.2. Except as otherwise provided in Subparagraph 4.2.1, the Architect/Engineer does not have authority to bind the Owner. The observations and participations of the Owner or its authorized representative do not alleviate any responsibility on the part of the Contractor. The Owner reserves the right to observe the work and make comment. Any action or lack of action by the Owner shall not be construed as approval of the Contractor's performance.
- 2.1.3. The Owner reserves the right to require the Contractor, all sub-contractors and material suppliers to provide lien releases at any time. The Owner reserves the right to withhold progress payments until such lien releases are received for all work for which prior progress payments have been made. Upon the Owner's demand for lien releases (either verbally or written), the Contractor, all sub-contractors and material suppliers shall provide such releases with every subsequent application for payment through Final Acceptance of the Project.
- 2.1.4. Except for permits and fees, including those required under Subparagraph 3.7.1, which are the responsibility of the Contractor under the Contract Documents, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.
- 2.1.5. Information or services required of the Owner by the Contract Documents shall be furnished by the Owner with reasonable promptness. Any other information or services relevant to the Contractor's performance of the Work under the Owner's control shall be furnished by the Owner after receipt from the Contractor of a written request for such information or services.
- 2.1.6. Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, such copies of Drawings and Specifications as are reasonably necessary for execution of the Work.

2.2. OWNER'S RIGHT TO STOP WORK

2.2.1. If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents as required by Paragraph 12.2 or persistently fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated. However, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Subparagraph 6.1.3. The issuance of a stop work order by the Owner shall not give rise to a claim by the Contractor or any subcontractor for additional cost, time, or other adjustment.

2.3. OWNER'S RIGHT TO CARRY OUT THE WORK

2.3.1. If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may after such seven-day period give the Contractor a second written notice to correct such deficiencies within a three-day period. If the Contractor within such three-day period after receipt of such second notice fails to commence and continue to correct any deficiencies, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be

issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and increased costs, and compensation for the Architect/Engineer's additional services made necessary by such default, neglect, or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

2.4. OWNER'S RIGHT TO PERSONNEL

- 2.4.1. The Owner reserves the right to have the Contractor and/or subcontractors remove person(s) and/or personnel from any and all work on the project with cause but without cost to the Owner. Such requests from the Owner may be made verbally or in writing and may be done directly with the Contractor or indirectly through the Architect/Engineer. Cause may be, but not limited to, any of the following: incompetence, poor workmanship, poor scheduling abilities, poor coordination, disruption to the facility or others, poor management, causes delay or delays, disruption of the Project, will not strictly adhere to facility procedures and Project requirements either knowingly or unknowingly, insubordination, drug/alcohol use, possession of contraband, belligerent acts or actions, etc. The Contractor shall provide replacement person(s) and/or personnel acceptable to the Owner at no cost to the Owner.
- 2.4.2. Any issue or circumstance relating to or resulting out of this clause shall not be construed or interpreted to be interference with or impacting upon the Contractor's responsibilities and liabilities under the Contract Documents.
- 2.4.3. Person(s) and/or personnel who do not perform in accordance with the Contract Documents, shall be deemed to have provided the Owner with cause to have such persons removed from any and all involvement in the Work.
- 2.4.4. The Contractor agrees to indemnify and hold harmless the Owner from any and all causes of action, demands, claims, damages, awards, attorneys' fees, and other costs brought against the Owner and/or Architect/Engineer by any and all person(s) or personnel as a result of actions under this clause.

ARTICLE 3 – THE CONTRACTOR

3.1. <u>GENERAL</u>

- 3.1.1. The Contractor is the person or entity identified as such in the Contract and is referred to throughout the Contract Documents as if singular in number. The term "Contractor" means the Contractor or the Contractor's authorized representative.
- 3.1.2. Construction Contractor Registration: The Contractor is required to be registered with the Department of Labor and Industry under 39-9-201 and 39-9-204 MCA prior to the Contract being executed by the Owner. A bidder must demonstrate that it has registered or promises that it will register immediately upon notice of award and prior to the commencement of any work. If the prevailing bidder cannot or does not register in time for the Owner to execute the Contract within fifteen (15) days of the date on the notice of award, the Owner may award, at its sole discretion, to the next lowest responsible bidder who meets this requirement. The Owner will not execute a contract for construction nor issue a Notice to Proceed to a Contractor who is not registered per 39-9-401(a) MCA. It is solely the Contractor's responsibility to ensure that all Subcontractors are registered in accordance with Title 39, Chapter 9, MCA.
- 3.1.3. The Owner's engagement of the Contractor is based upon the Contractor's representations by submission of a bid to the Owner that it:
 - 3.1.3.1. has the requisite skills, judgment, capacity, expertise, and financial ability to perform the Work;
 - 3.1.3.2. is experienced in the type of labor and services the Owner is engaging the Contractor to perform;
 - 3.1.3.3. is authorized, licensed and registered to perform the type of labor and services for which it is being engaged in the State and locality in which the Project is located;

- 3.1.3.4. is qualified, willing and able to perform the labor and services for the Project in the manner and scope defined in the Contract Documents; and,
- 3.1.3.5. has the expertise and ability to provide labor and services that will meet the Owner's objectives, intent and requirements, and will comply with the requirements of all governmental, public, and quasi-public authorities and agencies having or asserting jurisdiction over the Project.
- 3.1.4. The Contractor shall perform the Work in accordance with the Contract Documents.
- 3.1.5. The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect/Engineer in the Architect/Engineer's administration of the Contract, or by tests, inspections or approvals required or performed by persons other than the Contractor.
- 3.1.6. Quality Control (i.e. ensuring compliance with the Contract Documents) and Quality Assurance (i.e. confirming compliance with the Contract Documents) are the responsibility of the Contractor. Testing, observations, and/or inspections performed or provided by the Owner are solely for the Owner's own purposes and are for the benefit of the Owner. The Owner is not liable or responsible in any form or fashion to the Contractor regarding quality assurance or extent of such assurances. The Contractor shall not, under any circumstances, rely upon the Owner's testing or inspections as a substitute or in lieu of its own Quality Control or Assurance programs.
- Buy-Safe Montana Provision: The Owner shall review the Buy-Safe Montana Form provided by the Bidder 3.1.7. under Articles 16 of the Instructions to Bidders. To promote a safe work environment, the Owner encourages an incidence rate less than the latest average for non-residential building construction for Montana as established by the federal Bureau of Labor Statistics for the prior year; an experience modification rating (EMR) less than 1.0; and a loss ratio of less than 100%. The Contractor with a greaterthan-average incidence rate, an EMR greater than 1.0, and a loss ratio of more than 100% shall schedule and obtain a Comprehensive Safety Consultation from the Montana Department of Labor & Industry, Employment Relations Division, Safety Bureau before the Owner grants Substantial Completion of the Work. For assistance in obtaining the Comprehensive Safety Consultation, visit http://erd.dli.mt.gov/safety-health/onsite-consultation.

3.2. REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

- 3.2.1. Since the Contract Documents are complementary and inter-related, before starting each portion of the Work, the Contractor shall carefully study and compare the various Drawings and other Contract Documents relative to that portion of the Work, shall take field measurements of any existing conditions related to that portion of the Work and shall observe any conditions affecting the Work. These obligations are for the purpose of facilitating construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents. However, any errors, inconsistencies or omissions discovered by the Contractor shall be reported promptly to the Architect/Engineer as a request for information in such form as the Architect/Engineer may require.
- 3.2.2. Any errors or omissions noted by the Contractor during this review shall be reported promptly to the Architect/Engineer, but it is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional unless otherwise specifically provided in the Contract Documents.
- 3.2.3. If the Contractor believes that additional cost or time is involved because of clarifications or instructions issued by the Architect/Engineer in response to the Contractor's notices or requests for information pursuant to Subparagraphs 3.2.1 and 3.2.2, the Contractor shall make Claims as provided in Subparagraphs 4.3.4 and 4.3.5. If the Contractor fails to perform the obligations of Subparagraphs 3.2.1 and 3.2.2, the Contractor shall make claims as provided in 3.2.2, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. The Contractor shall not be liable to the Owner or Architect/Engineer for damages resulting from errors, inconsistencies, or omissions in the Contract Documents or for differences between field measurements or conditions and the Contract Documents unless the Contractor recognized such error, inconsistency, omission or difference and failed to report it to the Architect/Engineer.

- 3.2.4. Except as otherwise expressly provided in this Contract, the Contractor assumes all risks, liabilities, costs, and consequences of performing any effort or work in accordance with any written or oral order (including but not limited to direction, instruction, interpretation, or determination) of a person not authorized in writing by the Owner to issue such an order.
- 3.2.5. By entering into this Contract, the Contractor acknowledges that it has informed itself fully regarding the requirements of the Drawings and Specifications, the General Conditions, the Supplementary General Conditions, all other documents comprising a part of the Contract Documents and all applicable laws, building codes, ordinances and regulations. Contractor hereby expressly acknowledges, guarantees, and warrants to the Owner that:
 - 3.2.5.1. the Contract Documents are sufficient in detail and scope to enable Contractor to construct the finished project;
 - 3.2.5.2. no additional or further work should be required by Owner at the time of Owner's acceptance of the Work; and,
 - 3.2.5.3. when the Contractor's work is finished and the Owner accepts, the Work will be complete and fit for the purpose intended by the Contract Documents. This acknowledgment and guarantee does not imply that the Contractor is assuming responsibilities of the Architect/Engineer.
- 3.2.6. Sufficiency of Contract Documents: Prior to submission of its bid, and in all events prior to and upon signing the Contract, the Contractor certifies, warrants and guarantees that it has received, carefully reviewed, and evaluated all aspects of the Contract Documents and agrees that said Documents are adequate, consistent, coordinated, and sufficient for bidding and constructing the Work requested, intended, conceived, and contemplated therein.
 - 3.2.6.1. The Contractor further acknowledges its continuing duty to review and evaluate the Contract Documents during the performance of its services and shall immediately notify the Architect/Engineer of any problems, conflicts, defects, deficiencies, inconsistencies, errors, or omissions it discovers in the Contract Documents and the Work to be constructed; and, any variances it discovers between the Contract Documents and applicable laws, statutes, building codes, rules or regulations.
 - 3.2.6.2. If the Contractor performs any Work which it knows or should have known due to its experience, ability, qualifications, and expertise in the construction industry, that involves problems, conflicts, defects, deficiencies, inconsistencies, errors, or omissions in the Contract Documents and the Work to be constructed and, any variances between the Contract Documents and applicable laws, statutes, building codes, rules or regulations, without prior written notification to the Architect/Engineer and without prior authorization to proceed from the Architect/Engineer, the Contractor shall be responsible for and bear the costs and delays (including costs of any delay) of performing such Work and all corrective actions as directed by the Architect/Engineer.
 - 3.2.6.3. Any and all claims resulting from the Contractor's failure, including those of any subcontractor or supplier, to carefully review, evaluate, and become familiar with all aspects of the Contract Documents shall be deemed void and waived by the Contractor.
- 3.2.7. Sufficiency of Site Conditions: Prior to submission of its bid, and in all events prior to and upon signing the Contract, the Contractor certifies, warrants and guarantees that it has visited, carefully reviewed, evaluated, and become familiar with all aspects of the site and local conditions at which the Project is to be constructed. The Contractor agrees that the Contract Documents are an adequate, consistent, coordinated, and sufficient representation of the site and local conditions for the Work.
 - 3.2.7.1. The Contractor has reviewed and become familiar with all aspects with the Site Survey and Geotechnical Report for the Project and has a full understanding of the information provided therein.
 - 3.2.7.2. If the Work involves modifications, renovations, or remodeling of an existing structure(s) or other man-made feature(s), the Contractor certifies, warrants and guarantees that it has

reviewed, evaluated, and become familiar with all available as-built and record drawings, plans and specifications, and has thoroughly inspected and become familiar with the structure(s) or man-made feature(s).

3.2.7.3. Any and all claims resulting from the Contractor's failure, including those of any subcontractor or supplier, to visit, carefully review, evaluate, and become familiar with all aspects of the site, available geotechnical information, and local conditions at which the Project is to be constructed shall be deemed void and waived by the Contractor.

3.3. SUPERVISION AND CONSTRUCTION PROCEDURES

- 3.3.1. The Contractor shall supervise and direct the Work using the Contractor's best skill and attention recognizing that time and quality are of the essence of the Work. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. It is the responsibility of and incumbent upon the Contractor to ensure, confirm, coordinate, inspect and oversee all Work (which is inclusive of but not limited to all submittals, change orders, schedules, workmanship, and appropriate staffing with enough competent and qualified personnel) so that the Work is not impacted in terms of any delays, costs, damages, or additional time, or effort on the part Architect/Engineer or Owner. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect/Engineer and shall not proceed with that portion of the Work without further written instructions from the Architect/Engineer. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Architect/Engineer or Owner as appropriate shall be solely responsible for any resulting loss or damage. The Contractor will be required to: review any specified construction or installation procedure; advise the Architect/Engineer if the specified procedure deviates from good construction practice; to advise the Architect/Engineer if following the procedure will affect any warranties, including the Contractor's general warranty, or of any objections the Contractor may have to the procedure and shall propose any alternative procedure which the Contractor will warrant and guarantee. The Contractor is required to: review any specified construction or installation procedure; advise the Architect/Engineer if the specified procedure deviates from good construction practice; to advise the Architect/Engineer if following the procedure will affect any warranties, including the Contractor's general warranty, or of any objections the Contractor may have to the procedure and to propose any alternative procedure which the Contractor will warrant.
- 3.3.2. The Contractor shall furnish management, supervision, coordination, labor and services that: (1) expeditiously, economically, and properly completes the Work; (2) comply with all requirements of the Contract Documents; and, (3) are performed in a quality workmanlike manner and in accordance with the standards currently practiced by persons and entities performing or providing comparable management, supervision, labor and services on projects of similar size, complexity, cost, and nature to this Project. However, the standards currently practiced within the construction industry shall not relieve the Contractor of the responsibility to perform the Work to the level of quality, detail, and excellence defined and intended by the Contract Documents as interpreted by the Architect/Engineer.
- 3.3.3. All services and labor rendered by the Contractor, including any subcontractors or suppliers, shall be performed under the immediate supervision at the site of persons possessing expertise and the requisite knowledge in the discipline or trade of service being rendered. The Contractor shall maintain such supervision and personnel at all times that the Contractor's personnel, subcontractors, and/or suppliers are at the site. The Contractor shall never be absent from the site during performance of any portion of the Work by any entity under the supervision and direction of the Contractor. Full time attendance by the Contractor from Notice to Proceed through Final Acceptance is an explicit requirement of this Contract.
- 3.3.4. The Contractor shall be responsible to the Owner for acts, damages, errors, and omissions of the Contractor's employees, subcontractors and their agents and employees, and other persons or entities performing portions of the Work for or on behalf of the Contractor or any of its Subcontractors.

3.3.5. The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

3.4. LABOR, WAGES, AND MATERIALS

- 3.4.1. Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, permits, licenses, goods, products, equipment, tools, construction equipment and machinery, water, heat, all utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work in accordance with the Contract Documents, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.
- 3.4.2. The Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect/Engineer and in accordance with a Change Order. This opportunity to request substitutions does not negate or waive any requirement for the Contractor to follow a pre-bidding "prior approval" requirement nor obligate the Owner to approve any substitution request.
- 3.4.3. The Contractor shall enforce strict discipline, appropriate behavior, and good order among the Contractor's employees, subcontractors at every tier and level, and other persons carrying out the Contract. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.
- 3.4.4. Prevailing Wages and Montana Residents.
 - 3.4.4.1. The Contractor and all subcontractors at any level or tier of the Work shall give preference to the employment of bona fide Montana residents in the performance of the Work and shall pay the standard prevailing rate of wages, including fringe benefits for health and welfare and pension contributions and travel allowance provisions in effect and applicable to the county or locality in which the work is being performed. (18-2-403, MCA)
 - 3.4.4.2. At least 50% of the workers, as defined by the Department of Labor & Industry (DOLI), must be bona fide Montana residents. (18-2-401, 18-2-402, MCA)
 - 3.4.4.3. Indian Employment Preference within the Boundaries of an Indian Reservation. All contractors that are awarded a state agency construction contract within the exterior boundaries of an Indian Reservation shall extend a hiring preference to qualified Indians as provided herein:
 - 3.4.4.3.1. "State agency" means a department, office, board, bureau, commission, agency, or other instrumentality of the executive or judicial branches of the government of this State. "Indian" means a person who is enrolled or who is a lineal descendent of a person enrolled in an enrollment listing of the Bureau of Indian Affairs or in the enrollment listing of a recognized Indian tribe domiciled in the United States.
 - 3.4.4.3.2. Qualified Indians Employment Criteria: An Indian shall be qualified for employment in a permanent, temporary, or seasonal position if he or she has substantially equal qualifications for any position and resides on the reservation where the construction contract is to be performed.
 - 3.4.4.3.3. Non-Applicability: The Indian Employment Preference Policy does not apply to a project partially funded with federal-aid money from the United States Department of Transportation or when residency preference laws are specifically prohibited by federal law. It does not apply to independent contractors and their employees, student interns, elected officials, or appointed positions.
 - 3.4.4.4. The Commissioner of The Montana Department of Labor and Industry (DOLI) has established the standard prevailing rate of wages in accordance with 18-2-401 and 18-2-402, MCA. A copy of the Rates entitled "State of Montana, Prevailing Wage Rates" are bound herein. The Commissioner of the Montana DOLI has established the resident requirements in accordance with 18-2-409, MCA. The Contractor and all subcontractors at any level or tier of the Work shall direct any and all questions concerning prevailing wage and Montana resident issues for all aspects of the Work to DOLI.

- 3.4.4.5. The Contractor and all subcontractors at any tier or level of the Work, and as determined by the Montana DOLI, shall classify all workers in the project in accordance with the State of Montana, Prevailing Wage Rates. In the event the Contractor is unable to classify a worker in accordance with these rates he shall contact DOLI for a determination of the classification and the prevailing wage rate to be paid.
- 3.4.4.6. The Contractor and all subcontractors at any tier or level of the Work shall be responsible for obtaining wage rates for all workers prior to their performing any work on the project. The Contractor is required to pay and insure that its subcontractors at any tier or level and others also pay the prevailing wage determined by the DOLI, insofar as required by Title 18 of the MCA and the pertinent rules and standards of DOLI.
- 3.4.4.7. It is not the responsibility of the Owner to determine who classifies as a subcontractor, subsubcontractor, material man, supplier, or any other person involved in any aspect of the Work at any tier or level. All such determinations shall be the sole responsibility of the Contractor, subcontractors, sub-subcontractors, material men, suppliers and others involved in the project at any tier or level. The Contractor, subcontractors, sub-subcontractors, material men, suppliers and others involved in the project shall indemnify and hold harmless the Owner from all claims, attorneys' fees, damages and/or awards involving prevailing wage or Montana resident issues. Any changes to wages or penalties for failure to pay the correct wages will be the sole responsibility of the Contractor and/or his subcontractors and no further charges or claims shall be made to the Owner. If the parties mutually agree or an arbitrator or court determines that any change in wages is due and any part is attributable to the Owner, the Owner's sole liability shall be for the amount of wages ordered only and not for other expenses, charges, penalties, overhead, profit or other mark-ups.
- 3.4.4.8. In accordance with 18-2-422(1) MCA, each job classification's standard prevailing wage rate, including fringe benefits, that the contractors and employers shall pay during construction of the project is included herein by both reference to DOLI's "Building" or 'Heavy/Highway" schedules and as part of these Contract Documents.
- 3.4.4.9. The Contractor and every employer, including all subcontractors at any tier or level, is required by 18-2-422(2) MCA to maintain payroll records in a manner readily capable of being certified for submission under 18-2-423 MCA, for a period of not less than 3 years after the contractor's, subcontractor's, or employer's completion of work on the project or the Final Acceptance by the Owner, whichever is later.
- 3.4.4.10. Each contractor is required by 18-2-422(3) MCA to post in a visible and accessible location a statement of all wages and fringe benefits in compliance with 18-2-423.

3.5. WARRANTY AND GUARANTEE

- 3.5.1. The Contractor warrants to the Owner and Architect/Engineer that materials and equipment furnished under the Contract will be new and of good quality unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform to the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective and rejected. The Contractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect/Engineer, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.
- 3.5.2. The Contractor shall and does hereby warrant and guarantee all work, workmanship, and materials for the full warranty period as specified in the Contract Documents. The warranty period shall be defined as commencing with Substantial Completion (or with each Substantial Completion if there is more than one) of the Project, or any portion thereof, and continuing for one (1) calendar year from the date of Final Acceptance of the entire project by the Owner. The date of Final Acceptance shall be the date of the Architect/Engineer's signature on the final request for payment unless otherwise agreed upon in writing for the entire project or any portion thereof, by the Owner, Architect/Engineer and Contractor.

- 3.5.3. In addition to the one (1) calendar year warranty and guarantee specified in this herein above, the Contractor warrants and guarantees all materials and workmanship for the roofing system for a period of two (2) calendar years from the date of Final Acceptance. This warranty shall cover all labor and materials for roof and roofing finish systems (e.g. flashing, terminations, parapet caps, etc.) repairs from moisture penetration and/or defects in workmanship.
- 3.5.4. Manufacturer and product warranties and guarantees, as provided by the manufacturer or as specified in the Contract Documents, are in addition to the Contractor's warranty.

3.6. <u>TAXES</u>

- 3.6.1. The Contractor is responsible for and shall pay all sales, consumer, use, and similar taxes for the Work provided by the Contractor which are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.
- 3.6.2. In compliance with 15-50-206 MCA, the Contractor will have 1% of his gross receipts withheld by the Owner from all payments due and sent to the Montana Department of Revenue. Each subcontractor who performs work greater than \$5,000 shall have 1% of its gross receipts withheld by the Contractor and sent to the Montana Department of Revenue. The Contractor shall notify the Department of Revenue on the Department's prescribed form.

3.7. PERMITS, FEES, AND NOTICES

- 3.7.1. Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit and other permits and governmental fees, licenses and inspections necessary for proper execution and completion of the Work which are customarily secured after execution of the Contract, including but not limited to, the building permit fee, electrical, plumbing, sewer connection fee and mechanical permit fee, and any required impact fees and which are legally required when bids are received or negotiations concluded.
- 3.7.2. The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations and lawful orders of public authorities applicable to performance of the Work.
- 3.7.3. If the Contractor performs Work knowing it to be contrary to laws, statutes, ordinances, building codes, and rules and regulations, and does so without providing notice to the Architect/Engineer and Owner, the Contractor shall assume responsibility for such Work and shall bear the costs attributable to correction. The Contractor shall be solely responsible to insure that all work it performs is in full compliance with all prevailing and applicable codes and regulations.
- 3.7.4. Incident Reporting: The Contractor shall immediately notify the Owner and Architect/Engineer, both orally and in writing, of the nature and details of all incidents which may adversely affect the quality or progress of the Work, including, but not limited to, union disputes, accidents, delays, damages to Work, and other significant occurrences. Such notices are in addition to any other notices required regarding claims.

3.8. ALLOWANCES

- 3.8.1. The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct.
- 3.8.2. Unless otherwise provided in the Contract Documents:
 - 3.8.2.1. allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
 - 3.8.2.2. Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included by the Contractor in the Contract Sum but not in the allowances;

- 3.8.2.3. whenever costs are more than or less than stated allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect: (1) the difference between actual costs and the allowances under Clause 3.8.2.1; and, (2) changes in Contractor's costs under Clause 3.8.2.2.
- 3.8.3. Materials and equipment under an allowance shall be selected by the Owner.

3.9. CONTRACTOR'S PERSONNEL

- 3.9.1. The Contractor shall employ competent personnel, supervisors, project managers, project engineers, project superintendent, and all others who shall be assigned to the Work throughout its duration. Contractor's personnel extend to those employed by the Contractor whether at the site or not. The Owner shall have right to review and approve or reject all replacement of Contractor's personnel. All personnel assigned by the Contractor to the Work shall possess the requisite experience, skills, abilities, knowledge, and integrity to perform the Work.
- 3.9.2. The superintendent and others as assigned shall be in attendance at the Project site during the performance of any and all Work. The superintendent shall represent the Contractor. All communications given to the Contractor's personnel such as the project manager or the superintendent, whether verbal, electronic or written, shall be as binding as if given to the Contractor.
- 3.9.3. It is the Contractor's responsibility to appropriately staff, manage, supervise and direct the Work which is inclusive of the performance, acts, and actions of his personnel and subcontractors. As such, the Contractor further agrees to indemnify and hold harmless the Owner and the Architect/Engineer, and to protect and defend both from and against all claims, attorneys' fees, demands, causes of action of any kind or character, including the cost of defense thereof, arising in favor of or against the Owner, Architect/Engineer, Contractor, their agents, employees, or any third parties on account of the performance, behavior, acts or actions of the Contractor's personnel or subcontractors.
- 3.9.4. Prior to the commencement of any work, the Contractor shall prepare and submit a personnel listing and organizational chart in a format acceptable to the Owner which lists by name, phone number (including cell phone), job category, and responsibility the Contractor's key/primary personnel who will work on the Project. The Contractor shall promptly inform the Owner in writing of any proposed replacements, the reasons therefore, and the name and qualifications of any proposed replacements. The Owner shall have the right to reject any proposed replacements without cost or claim being made by the Contractor. The chart shall be provided to the Owner at the time of the pre-construction conference.
- 3.9.5. The Contractor shall immediately remove for the duration of the Project, any person making an inappropriate racial, sexual, or ethnic comment, statement, joke, or gesture toward any other individual.
- 3.9.6. The Contractor shall immediately remove for the duration of the Project, any person who is incompetent, careless, disruptive, or not working in harmony with others.

3.10. CONSTRUCTION SCHEDULES

- 3.10.1. The Contractor shall, promptly after being awarded the Contract, prepare and submit for the Owner's and Architect/Engineer's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and per the requirements of the Contract Documents, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work. The Contractor's schedule shall be in the "Critical Path Method" and shall show the Critical Path of the Work in sufficient detail to evaluate the Contractor's progress. A request for time extension by the Contractor will not be allowed unless a change in the Work is approved by the Owner and materially affects the Critical Path. It is the Contractor's responsibility to demonstrate that any time extensions requests materially affect the Critical Path.
- 3.10.2. The Contractor shall prepare and keep current, for the Architect/Engineer's approval, a schedule of submittals which is coordinated with the Contractor's Construction Schedule and allows the Architect/Engineer reasonable time to review submittals.

- 3.10.3. The Contractor shall perform the Work in accordance with the most recent schedule submitted to the Owner and Architect/Engineer.
- 3.10.4. The Contractor's operations (including but not limited to the Contractor's forces employed, sequences of operations, and methods of operation) at all times during the performance of the contract shall be: (a) subject to the review of the Owner or the Architect/Engineer; and, (b) sufficient to insure the completion of the Work within the specified performance period.
- 3.10.5. The Critical Path Method Construction Schedule prepared by the Contractor must be in a form that is acceptable to both the Architect/Engineer and the Owner.
 - 3.10.5.1. The Schedule shall show the estimated progress of the entire Project through the individual time periods allowed for completion of each discipline, trade, phase, section, and aspect of the Work. The Contractor shall provide written reports of all logic and resource loading data with the Schedule and with all updates to the Schedule.
 - 3.10.5.2. The Schedule shall show percent complete, progress to date, project work, and projected time to complete the work for all activities. The percent complete and minor schedule changes, including additions of activities, change orders, construction change directives, changes to sequences of activities and significant changes in activity demands must be shown by a revised Schedule. A written report providing details about the changes and what actions are anticipated to get the work completed in the contractual time period shall be submitted with the revised schedule.
 - 3.10.5.3. The Construction Schedule shall include coordinate dates for performance of all divisions of the Work, including shipping and delivery, off-site requirements and tasks, so the Work can be completed in a timely and orderly fashion consistent with the required dates of Substantial Completion and Final Acceptance.
 - 3.10.5.4. The Construction Schedule shall include: (i) the required commencement date, the required dates of Substantial Completion(s) and Final Acceptance for the complete Project and all phases (if any); (ii) any guideline and milestone dates required by the Owner or the Contract Documents; (iii) subcontractor and supplier schedules; (iv) a submittal schedule which allows sufficient time for review and action by the Architect/Engineer; (v) the complete sequence of all construction activities with start and completion dates; and, (vi) required decision dates.
 - 3.10.5.5. By receiving, reviewing, and/or commenting on the Construction Schedule or any portion thereof (including logic and resource loading), neither the Owner or Architect/Engineer assume any of the Contractor's responsibility or liability that the Schedule be coordinated or complete, or for timely and orderly completion of the Work.
 - 3.10.5.6. Receiving, reviewing, and/or commenting on the Schedule, any portion thereof, or any revision thereof, does not constitute an approval, acknowledgement, or acceptance of any duration, dates, milestones, or performance indicated therein.
 - 3.10.5.7. A printout of the Schedule's logic showing all activities and all resource loading is required with the Schedule and with all updates to the Schedule.
- 3.10.6. The Contractor shall review and compare, at a minimum on a weekly basis, the actual status of the Work against its Construction Schedule.
- 3.10.7. The Contractor shall routinely, frequently, and periodically (but not less than monthly) update and/or revise its Construction Schedule to show actual progress of the Work through the date of the update or revision, projected level of completion of each remaining activity, activities modified since the previous update or revision, and major changes in scope or logic. The updated/revised Schedule shall be accompanied by a narrative report which: (1) states and explains any modifications of the critical path, if any, including any changes in logic; (2) defines problem areas and lists areas of anticipated delays; (3) explains the anticipated impact the change in the critical path or problems and delays will have on the entire Schedule and the completion of the Work; (4) provides corrective action taken or proposed; and,

(5) states how problems or delays will be resolved in order to deliver the Work by the required phasing milestones (if any), Substantial Completion(s), and Final Acceptance dates.

- 3.10.8. Delay in Performance: If at any time the Contractor anticipates that performance of the Work will be delayed or has been delayed, the Contractor shall: (1) immediately notify the Architect/Engineer by separate and distinct correspondence of the probable cause and effect of the delay, and possible alternatives to minimize the delay; and, (2) take all corrective action reasonably necessary to deliver the Work by the required dates. Nothing in this paragraph or the Contract Documents shall be construed by the Contractor as a granting by the Architect/Engineer or Owner of constructive acceleration. The results of failure to anticipate delays, or to timely notify the Owner and Architect/Engineer of an anticipated or real delay, are entirely the responsibility of the Contractor whether compensable or not.
- 3.10.9. Early Completion: The Contractor may attempt to achieve Substantial Completion(s) on or before the date(s) required in the Contract. However, such early completion shall be for the Contractor's sole convenience and shall not create any real or implied additional rights to Contractor or impose any additional obligations on the Owner or Architect/Engineer. The Owner will not be liable for nor pay any additional compensation of any kind to the Contractor for achieving Substantial Completion(s) or Final Acceptance prior to the required dates as set forth in the Contract. The Owner will not be liable for nor pay any additional compensation of any kind should there by any cause whatsoever that the Contractor is not able to achieve Substantial Completion(s) earlier than the contractually required dates of Substantial Completion(s) or Final Acceptance.
- 3.10.10. Float in Schedule. Any and all float time in the Contractor's schedule, regardless of the path or activity, shall accrue to the benefit of the Owner and the Work, and not to the Contractor. Float also includes any difference shown between any early completion dates shown on the Contractor's Schedule for any phasing milestone(s), Substantial Completion(s) or Final Acceptance and the dates or durations as required by the Contract Documents.
- 3.10.11. Modification of Required Substantial Completion(s) or Final Acceptance Dates: Modification of the required dates shall be accomplished only by duly authorized, accepted, and approved change orders stating the new date(s) with specificity on the change order form. All rights, duties, and obligations, including but not limited to the Contractor's liability for actual, delay, and/or liquidated damages, shall be determined in relation to the date(s) as modified.

3.11. DOCUMENTATION AND AS-BUILT CONDITIONS AT THE SITE

- 3.11.1. The Contractor shall maintain at the site for the Owner one record copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and accurately marked to record current field changes and selections made during construction, and one record copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect/Engineer or Owner at any time and shall be delivered to the Architect/Engineer for submittal to the Owner upon completion of the Work.
- 3.11.2. The Owner shall not be required to process final payment until all documentation and data required by the Contract Documents is submitted to and approved by the Architect/Engineer including, but not limited to, the As-Built Drawings. The Owner will not process any final request for payment until the Architect/Engineer has received and verified that the Contractor has performed the requirements pertaining to the as-built drawings.
- 3.11.3. The as-built drawings shall be neatly and clearly marked during construction to record all deviations, variations, changes, and alterations as they occur during construction along with such supplementary notes and details necessary to clearly and accurately represent the as-built condition. The as-built drawings shall be available at all times to the Owner, Architect/Engineer and Architect/Engineer's consultants.

3.12. SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

3.12.1. Definitions:

- 3.12.1.1. Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.
- 3.12.1.2. Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.
- 3.12.1.3. Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.
- 3.12.2. Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required by the Contract Documents the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review by the Architect/Engineer is subject to the limitations of Subparagraph 4.2.7. Informational submittals upon which the Architect/Engineer is not expected to take responsive action may be so identified in the Contract Documents. Submittals which are not required by the Contract Documents may be returned by the Architect/Engineer without action.
- 3.12.3. The Contractor shall review, approve, and submit to the Architect/Engineer, Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents within sixty (60) calendar days of being issued the Notice To Proceed unless noted otherwise and shall do so in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Any and all items submitted by the Contractor which are not marked as reviewed for compliance with the Contract Documents and approved by the Contractor, or in the opinion of the Architect/Engineer, have not been reviewed for compliance by the Contractor even if marked as such, may be returned by the Architect/Engineer without action and shall not result in any accusation or claim for delay or cost by the Contractor. Any submittal that, in the opinion of the Architect/Engineer, is incomplete in any area or detail may be rejected and returned to the Contractor. It is the responsibility of and incumbent upon the Contractor to ensure and confirm that all submittals are complete, accurate, and in conformance to the Contract Documents prior to submission.
- 3.12.4. By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents and guarantees to the Architect/Engineer and Owner that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.
- 3.12.5. The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect/Engineer. Should the Contractor, Subcontractors or Subsubcontractors install, construct, erect or perform any portion of the Work without approval of any requisite submittal, the Contractor shall bear the costs, responsibility, and delay for removal, replacement, and/or correction of any and all items, material, and /or labor.
- 3.12.6. The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect/Engineer's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect/Engineer in writing of such deviation at the time of submittal and: (1) the Architect/Engineer has given written approval to the specific deviation as a minor change in the Work; or, (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect/Engineer's approval thereof.
- 3.12.7. The Contractor shall direct specific attention, in writing or on re-submitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect/Engineer on previous submittals. In the absence of such written notice the Architect/Engineer's approval of a re-submission shall not apply to such revisions.

- 3.12.8. The Contractor shall not be required to provide professional services which constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect/Engineer will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect/Engineer. The Owner and the Architect/Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided the Owner and Architect/Engineer have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this subparagraph, the Architect/Engineer will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents but shall be responsible and held liable for review and verification of all performance or design criteria as required by Paragraph 3.2.
- 3.12.9. Unless noted otherwise in the Contract Documents, the Contractor shall submit to the Architect/Engineer within sixty (60) days from the date of the Notice To Proceed a minimum of six (6) complete copies of all shop/setting drawings, schedules, cut sheets, products, product data, and samples required for the complete Work. Copies shall be reviewed, marked, stamped and approved on each and every copy by the Contractor prior to submission to the Architect/Engineer or they shall be returned without review or action. The Architect/Engineer shall review with reasonable promptness, making corrections, rejections, or other actions as appropriate. The Architect/Engineer's approval or actions on shop/setting drawings, schedules, cut sheets, product data, or samples shall not relieve the Contractor from responsibility for, nor deviating from, the requirements of the plans and specifications. Any deviations from the plans and specifications requested or made by the Contractor shall be brought promptly to the attention of the Architect/Engineer.
- 3.12.10. Cost for Re-Submissions: the Contractor is responsible for ensuring that all shop drawings, product data, samples, and submittals contain all information required by the Contract Documents to allow the Architect/Engineer to take action. The Contractor shall pay the Architect/Engineer's cost for any resubmission of any rejected item. Such costs shall be deducted from the contract sum by Change Order. The Contractor agrees that any action taken by the Architect/Engineer is solely in the Architect/Engineer's discretion and is non-negotiable for the purposes of the Architect/Engineer's cost recovery for multiple (i.e. more than one) review.

3.13. USE OF SITE

- 3.13.1. The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.
- 3.13.2. The Contractor shall not damage, endanger, compromise or destroy any part of the Project or the site, including but not limited to work performed by others, monuments, stakes, bench marks, survey points, utilities, existing features or structures. The Contractor shall be fully and exclusively responsible for and bare all costs and delays (including and costs of delay) for any damage, endangerment, compromise, or destruction of any part of the Project or site.

3.14. CUTTING AND PATCHING

3.14.1. The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly.

3.14.2. The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

3.15. CLEAN UP AND SITE CONTROL

- 3.15.1. The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract during performance of the Work and at the direction of the Owner or Architect/Engineer. At completion of the Work, the Contractor shall remove from and about the Project waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials.
- 3.15.2. If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the cost thereof shall be charged to the Contractor.

3.16. ACCESS TO WORK

3.16.1. The Contractor shall provide the Owner and Architect/Engineer access to the Work at all times wherever located.

3.17. ROYALTIES, PATENTS AND COPYRIGHTS

3.17.1. The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect/Engineer harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Architect/Engineer. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect/Engineer.

3.18. INDEMNIFICATION

- 3.18.1. To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect/Engineer, Architect/Engineer's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Paragraph. The Contractor agrees that it will defend, protect, indemnify and save harmless the State of Montana and the Owner against and from all claims, liabilities, demands, causes of action, judgments (including costs and reasonable attorneys' fees), and losses from any cause whatever (including patent, trademark and copyright infringement) except the Owner's sole or partial negligence. This includes any suits, claims, actions, losses, costs, damages of any kind, including the State and Owner's legal expenses, arising out of, in connection with, or incidental to the Contract, but does not include any such suits, claims, actions, losses, costs or damages which are the result of the negligent acts, actions, losses, costs, or damages which are acts, omissions or misconduct of the Owner if they do not arise out of, depend upon or relate to a negligent act, omission or misconduct of the Contractor in whole or in part.
- 3.18.2. In claims against any person or entity indemnified under this Paragraph 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Subparagraph 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

ARTICLE 4 – ADMINISTRATION OF THE CONSTRUCTION CONTRACT

4.1. THE ARCHITECT/ENGINEER

- 4.1.1. The Architect/Engineer is the person lawfully licensed to practice or an entity lawfully practicing identified as such in the Agreement with the Owner and is referred to throughout the Contract Documents as if singular in number. The term "Architect/Engineer" means the Architect/Engineer's duly authorized representative.
- 4.1.2. Duties, responsibilities and limitations of authority of the Architect/Engineer as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner.
- 4.1.3. If the employment of the Architect/Engineer is terminated, the Owner shall employ a new Architect/Engineer at the sole choice and discretion of the Owner, whose status under the Contract Documents shall be that of the former Architect/Engineer.

4.2. ARCHITECT/ENGINEER'S ADMINISTRATION OF THE CONSTRUCTION CONTRACT

- 4.2.1. The Architect/Engineer will provide administration of the Contract as described in the Contract Documents, and will be an Owner's representative throughout the complete duration of the Project, including the warranty period. The Architect/Engineer will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified in writing in accordance with the Architect/Engineer Contract.
- 4.2.2. The Architect/Engineer, as a representative of the Owner, will visit the site at intervals appropriate to the stage of the Contractor's operations to: (1) become generally familiar with and to keep the Owner informed about the progress and quality of the portion of the Work completed; (2) endeavor to guard the Owner against defects and deficiencies in the Work; and, (3) to determine in general if the Work is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Owner and Architect/Engineer will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Contractor's Work. The Owner and Architect/Engineer will neither have control over or charge of, nor be responsible for, the construction means, methods, techniques, sequences or procedures, for the safety of any person involved in the work, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.
- 4.2.3. The Architect/Engineer will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect/Engineer will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.
- 4.2.4. Communications Facilitating Contract Administration. Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect/Engineer about matters arising out of or relating to the Contract. Communications by and with the Architect/Engineer's consultants shall be through the Architect/Engineer. Communications by and with Subcontractors and material suppliers shall be through the Contractor to the Architect/Engineer. Communications by and with separate contractors shall be through the Owner to the Architect/Engineer.
- 4.2.5. Based on the Architect/Engineer's evaluations of the Contractor's Applications for Payment, the Architect/Engineer will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts. The Contractor is fully aware that the Owner (i.e. the State of Montana) has established a billing cycle for processing payments in Article 9 of these General Conditions. The Contractor and all Subcontractors are subject to all provisions of Title 28, Chapter 2, Part 21 MCA regarding all aspects of the Work.
- 4.2.6. The Architect/Engineer will have authority to reject Work that does not conform to the Contract Documents. Whenever the Architect/Engineer considers it necessary or advisable, the Architect/Engineer

will have authority to require inspection or testing of the Work in accordance with the General Conditions and any applicable technical specification requirements, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect/Engineer nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect/Engineer to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

- 4.2.7. The Architect/Engineer will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect/Engineer's action will be taken with such reasonable promptness as to cause no delay in the Work or in the activities of the Owner, Contractor or separate contractors, while allowing sufficient time in the Architect/Engineer's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect/Engineer's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Paragraphs 3.3, 3.5 and 3.12. The Architect/Engineer's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect/Engineer, of any construction means, methods, techniques, sequences or procedures. The Architect/Engineer's approval of a specific item shall not indicate approval of an assembly of which the item is a component.
- 4.2.8. The Architect/Engineer will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Paragraph 7.4.
- 4.2.9. The Architect/Engineer will conduct inspections to determine the date or dates of Substantial Completion(s) and the date of Final Acceptance, will receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor, and will issue a final Certificate for Payment upon compliance with the requirements of the Contract Documents.
- 4.2.10. If the Owner and Architect/Engineer agree, the Architect/Engineer will provide one or more project representatives to assist in carrying out the Architect/Engineer's responsibilities. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in the Owner's Agreement with the Architect/Engineer.
- 4.2.11. The Architect/Engineer will interpret and decide matters concerning performance under and requirements of the Contract Documents on written request of either the Owner or Contractor. The Architect/Engineer's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If no agreement is made concerning the time within which interpretations required of the Architect/Engineer shall be furnished in compliance with this Paragraph 4.2, then delay shall not be recognized on account of failure by the Architect/Engineer to furnish such interpretations until 15 days after written request is made for them.
- 4.2.12. Interpretations and decisions of the Architect/Engineer will be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and initial decisions, the Architect/Engineer will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will render such interpretations and decisions in good faith.
- 4.2.13. The Architect/Engineer's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.
- 4.2.14. The Architect/Engineer's or Owner's observations or inspections do not alleviate any responsibility on the part of the Contractor. The Architect/Engineer and the Owner reserves the right to observe and inspection the work and make comment. Action or lack of action following observation or inspection is not to be construed as approval of Contractor's performance.

4.3. CLAIMS AND DISPUTES

- 4.3.1. Definition. A Claim is a demand or assertion by one of the parties seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of money, extensions of time or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes, controversies, and matters in question between the Owner and Contractor arising out of or relating to the Contract. Claims must be initiated by written notice. The responsibility to substantiate Claims shall rest solely with the party making the Claim.
 - 4.3.1.1. Time Limits on Claims. Claims by either party must be initiated within 21 calendar days after occurrence of the event giving rise to such claim. The following shall apply to the initiation of a claim:
 - 4.3.1.1.1. A written notice of a claim must be provided to the Architect/Engineer and the other party within 21 calendar days after the occurrence of the event or the claim is waived by the claiming party and void in its entirety.
 - 4.3.1.1.2. Claims must be initiated by separate, clear, and distinct written notice within the 21 calendar day time frame to the Architect/Engineer and the other party and must contain the notarized statement in Sub-Paragraph 4.3.1.5 when the claim is made by the Contractor. Discussions in any form with the Architect/Engineer or Owner, whether at the site or not, do not constitute initiation of a claim. Notes in project meeting minutes, email correspondence, change order proposals, or any other form of documentation does not constitute initiation of a claim. The written notice must be a separate and distinct correspondence provided in hardcopy to both the Architect/Engineer and Owner and must delineate the specific event and outline the causes and reasons for the claim whether or not cost or time have been fully determined. Written remarks or notes of a generic nature are invalid in their entirety. Comments made at progress meetings, project site visits, inspections, emails, voice mails, and other such communications do not meet the requirement of providing notice of claim.
 - 4.3.1.1.3. Physical Injury or Physical Damage. Should the Owner or Contractor suffer physical injury or physical damage to person or property because of any error, omission, or act of the other party or others for whose acts the other party is legally and contractually liable, claim will be made in writing to the other party within a reasonable time of the first observance of such physical injury or physical damage but in no case beyond 30 calendar days of the first observance. The notice shall provide sufficient detail to enable the other party to investigate the matter. The provisions of this paragraph shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose. In all such cases, the indemnification provisions of the Contract shall be effectual and the Contractor's insurance shall be primary and in full effect.
 - 4.3.1.2. All Claims must contain sufficient justification and substantiation with the written notice or they may be rejected without consideration by the Architect/Engineer or other party with no additional impact or consequence to the Contract Sum, Contract Time, or matter(s) in question in the Claim.
 - 4.3.1.3. If additional compensation is claimed, the exact amount claimed and a breakdown of that amount into the following categories shall be provided with each and every claim:
 - 4.3.1.3.1. Direct costs (as listed in Subparagraph 7.3.9.1 through 7.3.9.5);
 - 4.3.1.3.2. Indirect costs (as defined in Paragraph 7.2.5); and,
 - 4.3.1.3.3. Consequential items (i.e. time extensions, credits, logic, reasonableness, impacts, disruptions, dilution) for the change.
 - 4.3.1.4. If additional time is claimed the following shall be provided with each and every claim:
 - 4.3.1.4.1. The specific number of days and specific dates for which the additional time is sought;
 - 4.3.1.4.2. The specific reasons, causes, and/or effects whereby the Contractor believes that additional time should be granted; and,

- 4.3.1.4.3. The Contractor shall provide analyses, documentation, and justification of its claim for additional time in accordance with the latest Critical Path Method schedule in use at the time of event giving rise to the claim.
- 4.3.1.5. With each and every claim, the Contractor shall submit to the Architect/Engineer and Owner a notarized statement containing the following language:

"Under penalty of law (including perjury and/or false/fraudulent claims against the State), the undersigned,

(Name)	(Title)
Of (Company)	(Date)

hereby certifies, warrants, and guarantees that this claim made for Work on this Contract is a true statement of the costs, adjustments and/or time sought and is fully documented and supported under the contract between the parties.

(Signature)

(Date)"

- 4.3.2. Continuing Contract Performance.
 - 4.3.2.1. Pending final resolution of a Claim except as otherwise agreed in writing or as provided in Subparagraph 9.7.1 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents on the portion of the Work not involved in a Claim.
- 4.3.3. Claims for Cost or Time for Concealed or Unknown Conditions.
 - 4.3.3.1. If conditions are encountered at the site which are: (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents; or, (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then notice by the observing party shall be given to the other party promptly before conditions are disturbed.
 - 4.3.3.2. The Architect/Engineer will promptly investigate such conditions and, if they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect/Engineer determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect/Engineer shall so notify the Owner and Contractor in writing, stating the reasons. Claims by either party in opposition to such determination must be made within 21 days after the date of the Architect/Engineer's decision.
 - 4.3.3.3. If the conditions encountered are materially different, the Contract Sum and Contract Time shall be equitably adjusted, but if the Owner and Contractor cannot agree on an adjustment in the Contract Sum or Contract Time, the adjustment shall be referred to the Architect/Engineer for initial determination, subject to further proceedings pursuant to Paragraph 4.4.
 - 4.3.3.4. Nothing in this paragraph shall relieve the Contactor of its obligation to adequately and sufficiently investigate, research, and examine the site, the site survey, topographical information, and the geotechnical information available whether included by reference or fully incorporated in the Contract Documents.
- 4.3.4. Claims for Additional Cost.

- 4.3.4.1. If the Contractor wishes to make Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Paragraph 10.6.
- 4.3.4.2. If the Contractor believes additional cost is involved for reasons including but not limited to: (1) a written interpretation from the Architect/Engineer; (2) an order by the Owner to stop the Work solely for the Owner's convenience or where the Contractor was not at least partially at fault; (3) a written order for a minor change in the Work issued by the Architect/Engineer; (4) failure of payment by the Owner per the terms of the Contract; (5) termination of the Contract by the Owner; or, (6) other reasonable grounds, Claim must be filed in accordance with this Paragraph 4.3.
- 4.3.5. Claims for Additional Time
 - 4.3.5.1. If the Contractor wishes to make Claim for an increase in the Contract Time, written notice as specified in these General Conditions shall be provided along with the notarized certification. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay for the same event or cause only one Claim is necessary. However, separate and distinct written notice is required for each separate event.
 - 4.3.5.2. Weather Delays:
 - 4.3.5.2.1. If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction activities.
 - 4.3.5.2.2. Inclement or adverse weather shall not be a prima facie reason for the granting of an extension of time, and the Contractor shall make every effort to continue work under prevailing conditions. The Owner may grant an extension of time if an unavoidable delay occurs as a result of inclement/severe/adverse weather and such shall then be classified as a "Delay Day". Any and all delay days granted by the Owner are and shall be non-compensable in any manner or form. The Contractor shall comply with the notice requirements concerning instances of inclement/severe/adverse weather before the Owner will consider a time extension. Each day of inclement/severe/adverse weather shall be subject to the notice requirements.
 - 4.3.5.2.3. An "inclement", "severe", or "adverse" weather delay day is defined as a day on which the Contractor is prevented by weather or conditions caused by weather resulting immediately there from, which directly impact the current controlling critical-path operation or operations, and which prevent the Contractor from proceeding with at least 75% of the normal labor and equipment force engaged on such critical path operation or operations for at least 60% of the total daily time being currently spent on the controlling operation or operations.
 - 4.3.5.2.4. The Contractor shall consider normal/typical/seasonal weather days and conditions caused by normal/typical/seasonal weather days for the location of the Work in the planning and scheduling of the Work to ensure completion within the Contract Time. No time extensions will be granted for the Contractor's failure to consider and account for such weather days and conditions caused by such weather for the Contract Time in which the Work is to be accomplished.
 - 4.3.5.2.5. A "normal", "typical", or "seasonal" weather day shall be defined as weather that can be reasonably anticipated to occur at the location of the Work for each particular month involved in the Contract Time. Each month involved shall not be considered individually as it relates to claims for additional time due to inclement/adverse/severe weather but shall consider the entire Contract Time as it compares to normal/typical/seasonal weather that is reasonably anticipated to occur. Normal/typical/seasonal weather days shall be based upon U.S. National

Weather Service climatic data for the location of the Work or the nearest location where such data is available.

- 4.3.5.2.6. The Contractor is solely responsible to document, prepare and present all data and justification for claiming a weather delay day. Any and all claims for weather delay days shall be tied directly to the current critical-path operation or operations on the day of the instance or event which shall be delineated and described on the Critical-Path Schedule and shall be provided with any and all claims. The Contractor is solely responsible to indicate and document why the weather delay day(s) claimed are beyond those weather days which are reasonably anticipated to occur for the Contract Time. Incomplete or inaccurate claims, as determined by the Architect/Engineer or Owner, may be returned without consideration or comment.
- 4.3.5.3. Where the Contractor is prevented from completing any part of the Work with specified durations or phases due to delay beyond the control of both the Owner and the Contractor, an extension of the contract time or phase duration in an equal amount to the time lost due to such delay shall be the Contractor's sole and exclusive remedy for such delay.
- 4.3.5.4. Delays attributable to and/or within the control of subcontractors and suppliers are deemed to be within the control of the Contractor.
- 4.3.5.5. In no event shall the Owner be liable to the Contractor, any subcontractor, any supplier, Contractor's surety, or any other person or organization, for damages or costs arising out of or resulting from: (1) delays caused by or within the control of the Contractor which include but are not limited to labor issues or labor strikes on the Project, federal, state, or local jurisdiction enforcement actions related directly to the Contractor's Work (e.g. safety or code violations, etc.); or, (2) delays beyond the control of both parties including but not limited to fires, floods, earthquakes, abnormal weather conditions, acts of God, nationwide material shortages, actions or inaction by utility owners, emergency declarations by federal, state, or local officials enacted in the immediate vicinity of the project, or other contractors performing work for the Owner.
- 4.3.6. Claims for Consequential Damages
 - 4.3.6.1. The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes:
 - 4.3.6.1.1. damages incurred by the Owner for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and,
 - 4.3.6.1.2. damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, income, and for loss of profit.
 - 4.3.6.2. This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this waiver of consequential damages shall be deemed to preclude an award of liquidated or actual damages, when applicable, in accordance with the requirements of the Contract Documents.

4.4. RESOLUTION OF CLAIMS, DISPUTES, AND CONTROVERSIES

4.4.1. Decision of Architect/Engineer. Claims, including those alleging an error or omission by the Architect/Engineer, shall be referred initially to the Architect/Engineer for decision. A decision by the Architect/Engineer shall be required as a condition precedent to mediation, arbitration or litigation of all Claims between the Contractor and Owner arising prior to the date of Final Acceptance, unless 30 days have passed after the Claim has been referred to the Architect/Engineer with no decision having been rendered by the Architect/Engineer. The Architect/Engineer will not decide disputes between the Contractor and persons or entities other than the Owner. Any Claim arising out of or related to the Contract, except those already waived in Subparagraphs 4.3.6, 7.2.6, 7.3.8, 9.10.4 and 9.10.5 shall, pending compliance with Subparagraph 4.4.5, be subject to mediation, arbitration, or the institution of

legal or equitable proceedings. Claims waived in Subparagraphs 4.3.6, 7.2.6, 7.3.8, 9.10.4, and 9.10.5 are deemed settled, resolved, and completed.

- 4.4.2. The Architect/Engineer will review Claims and within ten (10) days of the receipt of the Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party; (2) reject the Claim in whole or in part; (3) approve the Claim; (4) suggest a compromise; or (5) advise the parties that the Architect/Engineer is unable to resolve the Claim if the Architect/Engineer lacks sufficient information to evaluate the merits of the Claim or if the Architect/Engineer concludes that, in the Architect/Engineer's sole discretion, it would be inappropriate for the Architect/Engineer to resolve the Claim.
- 4.4.3. If the Architect/Engineer requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond within ten (10) days after receipt of such request and shall either provide a response on the requested supporting data, advise the Architect/Engineer when the response or supporting data will be furnished, or advise the Architect/Engineer that no supporting data will be furnished. Upon either no response or receipt of the response or supporting data, the Architect/Engineer will either reject or approve the Claim in whole or in part.
- 4.4.4. The Architect/Engineer will approve or reject Claims by written decision, which shall state the reasons therefore and which shall notify the parties of any change in the Contract Sum or Contract Time or both. The approval or rejection of a Claim by the Architect/Engineer shall be final and binding on the parties but subject to mediation and arbitration.
- 4.4.5. When 30 days have passed upon submission of a Claim without decision or action by the Architect/Engineer, or the Architect/Engineer has rendered a decision or taken any of the actions identified in Subparagraph 4.4.2, a demand for arbitration of a Claim covered by such decision or action must be made within 30 days after the date of expiration of Subparagraph 4.4.1 or within 30 days of the Architect/Engineer's decision or action. Failure to demand arbitration within said 30 day period shall result in the Architect/Engineer's decision becoming final and binding upon the Owner and Contractor whenever such decision is rendered.
- 4.4.6. If the Architect/Engineer renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence but shall not supersede arbitration proceedings unless the decision is acceptable to all parties concerned.
- 4.4.7. Upon receipt of a Claim against the Contractor or at any time thereafter, the Architect/Engineer or the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Architect/Engineer or the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.
- 4.4.8. A Claim subject to or related to liens or bonds shall be governed by applicable law regarding notices, filing deadlines, and resolution of such Claim prior to any resolution of such Claim by the Architect/Engineer, by mediation, or by arbitration, except for claims made by the Owner against the Contractor's bonds.

4.5. MEDIATION

- 4.5.1. Any Claim arising out of or related to the Contract, except Claims relating to aesthetic effect and except those waived as provided for in Subparagraphs 4.3.6, 7.2.6, 7.3.8, 9.10.4 and 9.10.5 shall, after initial decision by the Architect/Engineer or 30 days after submission of the Claim to the Architect/Engineer, be subject to mediation as a condition precedent to arbitration or the institution of legal or equitable proceedings by either party.
- 4.5.2. The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be in accordance with the Construction Industry Mediation Rules of the American Arbitration Association currently in effect and/or those rules specified in the contract documents or separately agreed upon between the parties. Construction Industry Mediation Rule M-2 (filing with AAA) is void. The parties shall mutually agree upon a mediator who shall then take the place of AAA in the Construction Industry Mediation Rules. The parties must mutually agree to use AAA and no filing of a request for mediation shall be made to AAA by either party until such mutual agreement has been made.

Request for mediation shall be filed in writing with the other party to the Contract and with the American Arbitration Association. The request may be made concurrently with the filing of a demand for arbitration but, in such event, mediation shall proceed in advance of arbitration or legal or equitable proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order.

4.5.3. The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

4.6. ARBITRATION

- 4.6.1. Any controversy or Claim arising out of or related to this Contract or the breach thereof shall be settled by arbitration in accordance with the Montana Uniform Arbitration Act (MUAA). To the extent it does not conflict with the MUAA, the Construction Industry Arbitration Rules of the American Arbitration Association shall apply except as modified herein. The parties to the arbitration shall bear their own costs and expenses for participating in the arbitration. Costs of the Arbitration panel shall be borne equally between the parties except those costs awarded by the Arbitration panel (including costs for the arbitration itself).
- 4.6.2. Prior to the arbitration hearing all parties to the arbitration may conduct discovery subject to the provisions of Montana Rules of Civil Procedure. The arbitration panel may award actual damages incurred if a party fails to provide full disclosure under any discovery request. If a party claims a right of information privilege protected by law, the party must submit that claim to the arbitration panel for a ruling, before failing to provide information requested under discovery or the arbitration panel may award actual damages.
- 4.6.3. The venue for all arbitration proceedings required by this Contract shall be the seat of the county in which the work occurs or the First Judicial District, Lewis & Clack County, as determined solely by the Owner. Arbitration shall be conducted by a panel comprised of three members with one selected by the Contractor, one selected by the Owner, and one selected by mutual agreement of the Owner and the Contractor.
- 4.6.4. Any Claim arising out of or related to the Contract, except Claims relating to aesthetic effect and except those waived as provided for in Subparagraphs 4.3.6, 7.2.6, 7.3.8, 9.10.4 and 9.10.5, shall, after decision or action by the Architect/Engineer or 30 days after submission of the Claim to the Architect/Engineer, be subject to arbitration provided a demand for arbitration is made within the time frame provided in Subparagraph 4.4.5. If such demand is not made with the specified time frame, the Architect/Engineer's decision or action is final. Prior to arbitration, the parties shall endeavor to resolve disputes by mediation in accordance with the provisions of Paragraph 4.5.
- 4.6.5. Claims not resolved by mediation shall be decided by arbitration which, unless the parties mutually agree otherwise, shall be in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association currently in effect and/or those rules specified in the Contract Documents or separately agreed upon between the parties. Construction Industry Arbitration Rule R-3 (filing with AAA) is void. The parties shall mutually agree upon an arbitrator or arbitrators who shall then take the place of AAA in the Construction Industry Arbitration Rules. The parties must mutually agree to use AAA and no filing of a demand for arbitration shall be made to AAA by either party until such mutual agreement has been made. The demand for arbitration shall be filed in writing with the other party to the Contract and a copy shall be filed with the Architect/Engineer.
- 4.6.6. A demand for arbitration shall be made within the time limits specified in Subparagraphs 4.4.5 and in no event shall it be made after the date when institution of legal or equitable proceedings based on such Claim would be barred by the applicable statute of limitations as determined pursuant to Paragraph 13.7.
- 4.6.7. Pending final resolution of a Claim including arbitration, unless otherwise mutually agreed in writing, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract on Work or amounts not in dispute.
- 4.6.8. **Limitation on Consolidation or Joinder**. Arbitration arising out of or relating to the Contract may include by consolidation or joinder the Architect/Engineer, the Architect/Engineer's employees or consultants,

except by written consent containing specific reference to the Agreement and signed by the Architect/Engineer, Owner, Contractor and any other person or entity sought to be joined. No arbitration shall include, by consolidation or joinder or in any other manner, parties other than the Owner, Architect/Engineer, Contractor, a separate contractor as described in Article 6 and other persons substantially involved in a common question of fact or law whose presence is required if complete relief is to be accorded in arbitration. No person or entity other than the Owner, Architect/Engineer, Contractor as described in Article 6 shall be included as an original third party or additional third party to an arbitration whose interest or responsibility is insubstantial. The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

- 4.6.9. **Claims and Timely Assertion of Claims**. The party filing a demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.
- 4.6.10. **Judgment on Final Award**. The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof. The parties agree that the costs of the arbitrator(s') compensation and expenses shall be borne equally. The parties further agree that the arbitrator(s) shall have authority to award to either party some or all of the costs and expenses involved, including attorney's fees.

ARTICLE 5 – SUBCONTRACTORS

5.1. DEFINITIONS

5.1.1. A Subcontractor is a person or entity who has a direct or indirect contract at any tier or level with the Contractor or any Subcontractor to the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

5.2. AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

- 5.2.1. Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract and in no instance later than (30) days after award of the Contract, shall furnish in writing to the Owner through the Architect/Engineer the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect/Engineer will promptly reply to the Contractor in writing stating whether or not the Owner or the Architect/Engineer, after due investigation, has reasonable objection to any such proposed person or entity.
- 5.2.2. The Contractor shall not contract with a proposed person or entity to which the Owner or Architect/Engineer has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.
- 5.2.3. If the Owner or Architect/Engineer has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect/Engineer has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.
- 5.2.4. The Contractor shall not change a Subcontractor, person or entity previously selected if the Owner or Architect/Engineer makes reasonable objection to such substitute. The Contractor shall not change or substitute for a Subcontractor who was required to be listed on the bid without first getting the approval of the Owner.

5.2.5. Buy-Safe Montana Provision: Before commencement of each subcontractor's portion of the Work, the Contractor shall obtain each subcontractor's incidence rate, experience modification rate, and loss ratio. The Contractor shall endeavor--but is not required--to use subcontractors whose incidence rate is less than the latest average for non-residential building construction for Montana as established by the Federal Bureau of Labor Statistics for the prior year; whose experience modification rating (EMR) is less than 1.0; and whose loss ratio is less than 100%. Contractor shall require any of its subcontractors who, based on the safety information that the Contractor obtains, have greater-than-average incidence rate, an EMR greater than 1.0, and a loss ratio of more than 100%, to schedule and obtain a Comprehensive Safety Consultation from the Montana Department of Labor & Industry, Employment Relations Division, Safety Bureau before substantial completion of each such subcontractor's portion of the Work. For assistance in obtaining the Comprehensive Safety Consultation, visit http://erd.dli.mt.gov/safety-health/onsite-consultation.

5.3. SUBCONTRACTUAL RELATIONS

- 5.3.1. By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner and Architect/Engineer. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect/Engineer under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement which may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.
- 5.3.2. Upon written request by the Owner, the Contractor shall require its subcontractors to provide to it performance and payment securities for their portion of the Work in the types and form defined in statute (18-2-201 and 18-2-203 MCA) for all sub-contractual agreements.
- 5.3.3. The Contractor shall prepare a Subcontractors' and Suppliers' chart in CSI division format acceptable to the Owner which lists by name, all contact information, job category, and responsibility the Contractor's Subcontractors (at all tiers or levels) and Suppliers with a pecuniary interest in the Project of greater than \$5,000.00. The Contractor shall not enter into any agreement with any subcontractor or supplier to which the Owner raises a timely objection. The Contractor shall promptly inform the Owner in writing of any proposed replacements, the reasons therefore, and the name and qualifications of any proposed replacements. The Owner shall have the right to reject any proposed replacements without cost or claim being made by the Contractor. The chart shall be provided to the Owner at the time of the pre-construction conference but no less than 30 days after award of the Contract.
- 5.3.4. All Contractors and Subcontractors to this contract must comply with all Montana Department of Labor and Industry requirements, regulations, rules, and statutes.
- 5.3.5. In accordance with 39-51-1104 MCA, any Contractor who is or becomes an employer under the provisions of Title 39, Chapter 51 of Montana Code Annotated, who contracts with any Subcontractor who also is or becomes an employer under the provisions of Title 39, Chapter 51 of Montana Code Annotated, shall withhold sufficient money on the contract to guarantee that all taxes, penalties, and interest are paid upon completion of the contract.
 - 5.3.5.1. It is the duty of any Subcontractor who is or becomes an employer under the provisions of Title 39, Chapter 51 of Montana Code Annotated, to furnish the Contractor with a certification issued by the Montana Department of Labor and Industry, prior to final payment stating that said

Subcontractor is current and in full compliance with the provisions of Montana Department of Labor and Industry.

- 5.3.5.2. Failure to comply shall render the Contractor directly liable for all taxes, penalties, and interest due from the Subcontractor, and the Montana Department of Labor and Industry has all of the remedies of collection against the Contractor under the provisions of Title 39, Chapter 51 of Montana Code Annotated, as though the services in question were performed directly for the Contractor.
- 5.3.6. In compliance with state statutes, the Contractor will have the 1% Gross Receipts Tax withheld from all payments. Each "Public Contractor" includes all Subcontractors with contracts greater than \$5,000 each. The Contractor and all Subcontractors will withhold said 1% from payments made to all Subcontractors with contracts greater than \$5,000.00 and make it payable to the Montana Department of Revenue. The Contractor and all Subcontractors shall also submit documentation of all contracts greater than \$5,000.00 to the Montana Department of Revenue on the Department's prescribed form.
- **5.3.7.** Construction Contractor Registration: All Subcontractors at any tier or level are required to be registered with the Department of Labor and Industry under 39-9-201 and 39-9-204 MCA prior to the Contract being executed by the Owner. Subcontractors shall demonstrate to the Contractor that it has registered or promises that it will register immediately upon notice of award and prior to the commencement of any work.

5.4. CONTINGENT ASSIGNMENT OF SUBCONTRACTS

- 5.4.1. Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner provided that:
 - 5.4.1.1. assignment is effective only after termination of the Contract by the Owner for cause pursuant to Paragraph 14.2 and only for those subcontract agreements which the Owner accepts by notifying the Subcontractor and Contractor in writing; and,
 - 5.4.1.2. assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.
- 5.4.2. Upon such assignment, if the Work has been suspended for more than 30 days as a result of the Contractor's default, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension. Such adjustment shall be at the expense of the Contractor.
- 5.4.3. The Contractor shall engage each of its subcontractors and suppliers with written contracts that preserve and protect the rights of the Owner and include the acknowledgement and agreement of each subcontractor and supplier that the Owner is a third-party beneficiary of their sub-contractual and supplier agreements. The Contractor's agreements shall require that in the event of default by the Contractor or termination of the Contractor, and upon request of the Owner, the Contractor's subcontractors and suppliers will perform services for the Owner.
- 5.4.4. Construction Contractor Registration: All Subcontractors at any tier or level are required to be registered with the Department of Labor and Industry under 39-9-201 and 39-9-204 MCA prior to the Contract being executed by the Owner. Subcontractors shall demonstrate to the Contractor that it has registered or promises that it will register immediately upon notice of award and prior to the commencement of any work.

ARTICLE 6 – CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

6.1. OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

6.1.1. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims

that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Paragraph 4.3.

- 6.1.2. When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.
- 6.1.3. The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules when directed to do so. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.
- 6.1.4. Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights which apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12.

6.2. MUTUAL RESPONSIBILITY

- 6.2.1. The Contractor shall afford the Owner and separate contractors reasonable opportunity' for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.
- 6.2.2. If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Architect/Engineer apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's or separate contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.
- 6.2.3. The Owner shall be reimbursed by the Contractor for costs incurred by the Owner which are payable to a separate contractor because of delays, improperly timed activities or defective construction of the Contractor. The Owner shall be responsible to the Contractor for costs incurred by the Contractor because of delays, improperly timed activities, damage to the Work or defective construction of a separate contractor.
- 6.2.4. The Contractor shall promptly remedy damage wrongfully caused by the Contractor to completed or partially completed construction or to property of the Owner or separate contractors as provided in Paragraph 12.2.
- 6.2.5. The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Subparagraph 3.14.

6.3. OWNER'S RIGHT TO CLEAN UP

6.3.1. If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect/Engineer will determine the responsibility of those involved and allocate the cost accordingly.

ARTICLE 7 – CHANGES IN THE WORK

7.1. <u>GENERAL</u>

- 7.1.1. Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive, or order for a minor change in the Work subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents. Minor changes as ordered by the Architect/Engineer has the definition provided in Paragraph 7.4
- 7.1.2. A Change Order shall be based upon agreement among the Owner, Contractor, and Architect/Engineer; a Construction Change Directive requires agreement by the Owner and Architect/Engineer and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect/Engineer alone.
- 7.1.3. Changes in the Work shall be performed under applicable provisions of the Contract Documents and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.
- 7.1.4. No act, omission, or course of dealing, shall alter the requirement that Change Orders or Construction Change Directives shall be in writing and signed by the Owner, and that Change Orders and Construction Change Directives are the exclusive method for effecting any adjustment to the Contract. The Contractor understands and agrees that neither the Contract Sum nor the Contract Time can be changed by implication, oral agreement, verbal directive, or unsigned Change Order.

7.2. CHANGE ORDERS

- 7.2.1. A Change Order is a written instrument prepared by the Architect/Engineer and signed by the Owner, Contractor and Architect/Engineer, stating their agreement upon all of the following:
 - 7.2.1.1. change in the Work;
 - 7.2.1.2. the amount of the adjustment, if any, in the Contract Sum; and,
 - 7.2.1.3. the extent of the adjustment, if any, in the Contract Time.
- 7.2.2. The cost or credit to the Owner resulting from a change in the Work shall be determined as follows:
 - 7.2.2.1. Per the limitations of this Subparagraph, plus a 5% allowance for overhead and a 10% allowance for profit. The allowances for overhead and for profit are limited to the percentages as specified herein unless they are determined to be unreasonable by the Architect/Engineer (not the Contractor) per Subparagraph 7.3.9 for each Change Order or Construction Change Directive; or,
 - 7.2.2.2. By one of the methods in Subparagraph 7.3.4, or as determined by the Architect/Engineer per Subparagraph 7.3.9, plus a 5% allowance for overhead and a 10% allowance for profit. The allowances for overhead and for profit are limited to the percentages as specified herein unless they are determined to be unreasonable by the Architect/Engineer (not the Contractor) per Subparagraph 7.3.9 for each Change Order or Construction Change Directive.
 - 7.2.2.3. The Contractor's proposed increase or decrease in cost shall be limited to costs listed in Subparagraph 7.3.9.1 through 7.3.9.5.
- 7.2.3. The Contractor shall not submit any Change Order, response to requested cost proposals, or requested changes which are incomplete and do not contain full breakdown and supporting documentation in the following three areas:
 - 7.2.3.1. Direct costs (only those listed in Subparagraph 7.3.9.1 through 7.3.9.5 are allowable);
 - 7.2.3.2. Indirect costs (limited as a percentage on each Change Order per Supplementary General Conditions, Paragraph 7.2.2); and
 - 7.2.3.3. Consequential items (e.g. time extensions, credits, logic, reasonableness, impacts, disruptions, dilution).

- 7.2.4. Any Change Order, responses to requested proposals, or requested changes submitted by the Contractor which, in the opinion of the Architect/Engineer, are incomplete, may be rejected and returned to the Contractor without comment. It is the responsibility of and incumbent upon the Contractor to ensure and confirm that all Change Orders, responses to requested proposals, or requested changes are complete prior to submission.
- 7.2.5. Overhead, applicable to all areas and sections of the Contract Documents, means "Indirect Costs" as referenced in Subparagraph 7.2.3.2. Indirect costs are inclusive of, but not limited to, the following: home office overhead; off-site supervision; home office project management; change order and/or proposal preparation, design, research, negotiation and associated travel; effects of disruption and dilution of management and supervision off-site; time delays; coordination of trades; postage and shipping; and, effective increase in guarantee and warranty durations. Indirect costs applicable to any and all changes in the work, either through Change Order or Construction Change Directive, are limited to the percentage allowance for overhead in Subparagraph 7.2.2.
- 7.2.6. By signature on any Change Order, the Contractor certifies that the signed Change Order is complete and includes all direct costs, indirect costs and consequential items (including additional time, if any) and is free and clear of all claims or disputes (including, but not limited to, claims for additional costs, additional time, disruptions, and/or impacts) in favor of the Contractor, subcontractors, material suppliers, or other persons or entities concerning the signed change order and on all previously contracted Work and does release the Owner from such claims or demands.
- 7.2.7. Any and all changes or adjustments to the Contract Time requested or claimed by the Contractor as a result of a Change Order shall require documentation and justification for the adjustment by a Critical Path Method analysis of the Contractor's most recent Critical Path Schedule in use prior to the change. Changes which affect or concern activities containing float or slack time (i.e. not on the critical path) and which can be accomplished within such float or slack time, shall not result in an increase in the Contract Time.
- 7.2.8. Supervision means on-site, field supervision and not home office overhead, off-site management or offsite supervision.
- 7.2.9. Labor means those persons engaged in construction occupations as defined in Montana Prevailing Wage Rates for Building Construction or Heavy/Highway as bound in the Contract Documents and does not include design, engineering, superintendence, management, on-site field supervision, home office or other off-site management, off-site supervision, office or clerical work.

7.3. CONSTRUCTION CHANGE DIRECTIVES

- 7.3.1. A Construction Change Directive is a written order prepared by the Architect/Engineer directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.
- 7.3.2. Any and all changes or adjustments to the Contract Time requested or claimed by the Contractor as a result of a Construction Change Directive, shall require documentation and justification for the adjustment by a Critical Path Method analysis of the Contractor's most recent Critical Path Schedule in use prior to the change. Changes that affect or concern activities containing float or slack time (i.e. not on the critical path) and which can be accomplished within such float or slack time shall not result in an increase in the Contract Time.
- 7.3.3. A Construction Change Directive shall be used in the absence of agreement on the terms of a Change Order.
- 7.3.4. If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:
 - 7.3.4.1. mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;

- 7.3.4.2. unit prices stated in the Contract Documents or subsequently agreed upon;
- 7.3.4.3. cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee;
- 7.3.4.4. By actual cost as shown by the Contractor's and Subcontractor's itemized invoices; or
- 7.3.4.5. as provided in Subparagraph 7.3.9.
- 7.3.5. Costs shall be limited to the following: cost of materials, including cost of delivery; cost of labor, including social security, old age and unemployment insurance and fringe benefits under collective bargaining agreements; workers' compensation insurance; bond premiums; and rental value of power tools and equipment.
- 7.3.6. Overhead and profit allowances shall be limited on all Construction Change Directives to those identified in 7.2.2.
- 7.3.7. Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect/Engineer of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.
- 7.3.8. A Construction Change Directive signed by the Contractor indicates the agreement of the Contractor therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.
- 7.3.9. If the Contractor does not respond or disagrees with the method for adjustment in the Contract Sum in writing within seven (7) calendar days, the method and the adjustment made shall be determined by the Architect/Engineer on the basis of reasonable expenditures and/or savings of those performing the Work directly attributable to the change including, in the case of an increase in the Contract Sum, plus an allowance for overhead and profit as listed under Subparagraph 7.2.2. In such case, and also under Clause 7.3.4.3, the Contractor shall keep and present, in such form as the Architect/Engineer may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Subparagraph 7.3.9 shall be limited to the following:
 - 7.3.9.1. costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance as determined by the Prevailing Wage Schedules referenced in the Contract Documents;
 - 7.3.9.2. costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
 - 7.3.9.3. rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
 - 7.3.9.4. costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and
 - 7.3.9.5. additional costs of field supervision and field office personnel directly attributable to the change.
- 7.3.10. The amount of credit to be allowed by the Contractor to the Owner for a deletion or change which results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect/Engineer. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.
- 7.3.11. Pending final determination of the total cost of a Construction Change Directive to the Owner, amounts not in dispute for such changes in the Work shall be included in Applications for Payment accompanied

by a Change Order indicating the parties' agreement with part or all of such costs. For any portion of such cost that remains in dispute, the Architect/Engineer will make an interim determination for purposes of monthly certification for payment for those costs. That determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a claim in accordance with Article 4.

7.3.12. When the Owner and Contractor agree with the determination made by the Architect/Engineer concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and shall be recorded by preparation and execution of an appropriate Change Order.

7.4. MINOR CHANGES IN THE WORK

7.4.1. The Architect/Engineer will have authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order and shall be binding on the Owner and Contractor. The Contractor shall carry out such written orders promptly.

<u>ARTICLE 8 – TIME</u>

8.1. **DEFINITIONS**

- 8.1.1. Time is of the essence in performance, coordination, and completion of the Work contemplated herein. The Owner may suffer damages if the Work is not completed as specified herein. When any duration or time period is referred to in the Contract Documents by days, the first day shall be determined as the day following the current day of any event or notice starting a specified duration.
- 8.1.2. Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.
- 8.1.3. The date of commencement of the Work is the date established in the NOTICE TO PROCEED AS ISSUED BY THE OWNER.
- 8.1.4. The date the Contractor reaches Substantial Completion is the date certified by the Architect/Engineer in accordance with Paragraph 9.8.
- 8.1.5. The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.
- 8.1.6. Liquidated Damages. The Owner may suffer loss if the project is not substantially complete on the date set forth in the contract documents. The Contractor and his surety shall be liable for and shall pay to the Owner the sums hereinafter stipulated as liquidated damages for each calendar day of delay until the work is substantially complete: **ONE HUNDRED AND NO/100 DOLLARS (\$100.00).**
- 8.1.7. The Contractor shall not be charged liquidated or actual damages when delay in completion of the Work is due to:
 - 8.1.7.1. Any preference, priority or allocation order issued by the government;
 - 8.1.7.2. Unforeseeable cause beyond the control and without the fault or negligence of the Contractor, such as acts of God or of the public enemy, fires, floods, epidemics, quarantine restrictions, freight embargoes, and unusually severe weather. All such occurrences resulting in delay must be documented and approved by Change Order; or,
 - 8.1.7.3. Any delays of Subcontractors or suppliers occasioned by any of the causes specified in 8.1.7.1 and 8.1.7.2 of this article.
- 8.1.8. The Contractor is completely obligated and responsible to provide written notice of each day of delay as provided for in Paragraph 4.3.

8.1.9. Contract Time. All work shall reach Substantial Completion by: **SEPTEMBER 30, 2021.** The Owner will issue a written NOTICE TO PROCEED and finalized contract.

8.2. PROGRESS AND COMPLETION

- 8.2.1. Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Contract, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.
- 8.2.2. The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the date on the Notice to Proceed and in no case prior to the effective date of insurance required by Article 11 to be furnished by the Contractor. The date of commencement of the Work shall not be changed by the effective date of such insurance.
- 8.2.3. The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.
- 8.2.4. If the Contractor falls behind the latest construction schedule by more than 14 calendar days through its own actions or inaction, neglect, inexperience, lack of oversight and management of the Work including that of any Subcontractors, written notice to the Owner and Architect/Engineer shall be provided within three (3) days with explanation of how the Contractor intends to get back on schedule. Response to getting back on schedule consists of providing a sufficient number of qualified workers and/or proper materials or an acceptably reorganized schedule to regain the lost time in a manner acceptable to the Owner.

8.3. DELAYS AND EXTENSIONS OF TIME

- 8.3.1. If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect/Engineer, or of an employee of either, or of a separate contractor employed by the Owner, or by changes ordered in the Work, or by fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control, or by delay authorized by the Owner pending mediation and arbitration, or by other causes which the Architect/Engineer determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect/Engineer may determine.
- 8.3.2. Claims relating to time shall be made in accordance with applicable provisions of Paragraph 4.3.
- 8.3.3. This Paragraph 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

PAYMENTS AND COMPLETION

9.1. CONTRACT SUM

9.1.1. The Contract Sum is stated in the Contract and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

9.2. SCHEDULE OF VALUES

9.2.1. Before the first Application for Payment, the Contractor shall submit to the Architect/Engineer a schedule of values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Architect/Engineer may require. This schedule, unless objected to by the Architect/Engineer, shall be used as a basis for reviewing the Contractor's Applications for Payment.

9.3. APPLICATIONS FOR PAYMENT

9.3.1. The Contractor shall submit to the Architect/Engineer an itemized Application for Payment for operations completed in accordance with the Schedule of Values. Such application shall be signed and supported by such data substantiating the Contractor's right to payment as the Owner or Architect/Engineer may
require, such as copies of requisitions from Subcontractors and material suppliers, and reflecting retainage if provided for in the Contract Documents.

- 9.3.2. NOTICE OF APPROVAL OF PAYMENT REQUEST PROVISION. Per Title 28, Chapter 2, Part 21, this contract allows the Owner to change the number of days to approve a Contractor's payment request. This contract allows the Owner to approve the Contractor's payment request within thirty-five (35) calendar days after it is received by the Owner without being subject to the accrual of interest.
- 9.3.3. As provided in Subparagraph 7.3.11, such applications may include requests for payment on account of changes in the Work which have been properly authorized by Construction Change Directives, or by interim determinations of the Architect/Engineer, but not yet included in Change Orders.
- 9.3.4. Applications for payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay to a Subcontractor or material supplier.
- 9.3.5. Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.
- 9.3.6. The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.
- 9.3.7. Until the work is complete, the Owner will pay 95% of the amount due the Contractor on account of progress payments.
 - 9.3.7.1. If the Work and its progress are not in accordance with all or any part, piece, or portion of the Contract Documents, the Owner may, at its sole discretion and without claim by the Contractor, increase the amount held as retainage to whatever level deemed necessary to effectuate performance and progress of the Work, for anticipated repairs, warranties or completion of the Work by the Contractor or through the letting of other contracts. The Contractor will not be entitled to additional costs, expenses, fees, time, and such like, in the event the Owner increases the amount held as retainage due to non-compliance and/or non-performance with all or any part, piece, or portion of the Contract Documents.
 - 9.3.7.2. Prior to the first application for payment, the Contractor shall submit the following information on the appropriate forms:
 - 9.3.7.2.1. Schedule of Amounts for Contract Payment (Form 100): This form shall contain a breakdown of the labor, material and other costs associated with the various portions of the work and shall be the basis for the progress payments to the Contractor. The use of electronic method shall be in the Owner's format.
 - 9.3.7.2.2. Project/Progress Schedule: If no Schedule (or revised Schedule) is provided with each and every Periodic Estimates for Partial Payment, the Architect/Engineer and/or Owner may return the pay request, or hold it, and may choose not pay for any portion of the Work until the appropriate Schedule, indicating all changes, revisions and updates, is provided. No claim for additional costs or interests will be made by the Contractor or any subcontractor on account of holding or non-payment of the Periodic Estimate for Partial Payment request.
 - 9.3.7.3. Progress Payments

- 9.3.7.3.1. Periodic Estimates for Partial Payment shall be on a form provided by the Owner (Form 101) and submitted to the Architect/Engineer for payment by the Owner. Payment shall be requested for the labor and material incorporated in the work to date and for materials suitably stored, less the aggregate of previous payments, the retainage, and the 1% gross receipts tax.
- 9.3.7.3.2. The Contractor, by submission of any partial pay request, certifies that every request for partial payment is correct, true and just in all respects and that payment or credit had not previously been received. The Contractor further warrants and certifies, by submission of any partial pay request, that all previous work for which payment has been received is free and clear of all liens, disputes, claims, security interests, encumbrances, or causes of action of any type or kind in favor of the Contractor, subcontractors, material suppliers or other persons or entities and does release the Owner from such.
- 9.3.7.3.3. Progress payments do not constitute official acceptance of any portion of the work or materials whether stored on or off-site.
- 9.3.7.3.4. In compliance with 15-50-206 MCA, the Contractor will have 1% of his gross receipts withheld by the Owner from all payments due. Each subcontractor who performs work greater than \$5,000 shall have 1% of its gross receipts withheld by the Contractor. The Contractor shall notify the Department of Revenue on the department's prescribed forms.
- 9.3.7.4. The Contractor may submit obligations/securities in a form specified in 18-1-301 Montana Code Annotated (MCA) to be held by a Financial Institution in lieu of retainage by the Owner. The Owner will establish the amount that would otherwise be held as retainage. Should the Contractor choose to submit obligations/securities in lieu of retainage, the Owner will require the Financial Institution to execute the Owner's "Account Agreement for Deposit of Obligations Other Than Retainage" (Form 120) prior to submission of any obligations/securities in accordance with 18-1-302 MCA. The Contractor must extend the opportunity to participate in all obligations/securities in lieu of retainage on a pro rata basis to all subcontractors involved in the project and shall be solely responsible for the management and administration of same. The Owner assumes no liability or responsibility from or to the Contractor or Subcontractors regarding the latter's participation.
- **9.3.7.5.** The Contractor shall maintain a monthly billing cycle.

9.4. CERTIFICATES FOR PAYMENT

- 9.4.1. The Architect/Engineer will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect/Engineer determines is properly due, or notify the Contractor and Owner in writing of the Architect/Engineer's reasons for withholding certification in whole or in part as provided in Subparagraph 9.5.1. For the purposes of this paragraph regarding certification of payment, electronic mail and/or notes provided through the use of an electronic approval system shall constitute written notice.
- 9.4.2. The issuance of a Certificate for Payment will constitute a representation by the Architect/Engineer to the Owner, based on the Architect/Engineer's evaluation of the Work and the data comprising the Application for Payment, that the Work has progressed to the point indicated and that, to the best of the Architect/Engineer's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Architect/Engineer. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Architect/Engineer has: (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences or procedures; (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or, (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

9.5. DECISIONS TO WITHHOLD CERTIFICATION

- 9.5.1. The Architect/Engineer may withhold or reject a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect/Engineer's opinion the representations to the Owner required by Subparagraph 9.4.2 cannot be made. If the Architect/Engineer is unable to certify payment in the amount of the Application, the Architect/Engineer will notify the Contractor and Owner as provided in Subparagraph 9.4.1. If the Contractor and Architect/Engineer cannot agree on a revised amount, the Architect/Engineer will promptly issue a Certificate for Payment for the amount for which the Architect/Engineer is able to make such representations to the Owner. The Architect/Engineer may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect/Engineer's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Subparagraph 3.3.4, because of:
 - 9.5.1.1. defective Work not remedied;
 - 9.5.1.2. third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;
 - 9.5.1.3. failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
 - 9.5.1.4. reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
 - 9.5.1.5. damage to the Owner or another contractor;
 - 9.5.1.6. reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or,
 - 9.5.1.7. persistent failure to carry out the Work in accordance with the Contract Documents.
- 9.5.2. When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.
- 9.5.3. Owner's Right to Refuse Payment: The Architect/Engineer's approval, or partial approval, of the Contractor's request for payment shall not preclude or prevent the Owner from exercising any of its remedies under this Contract. The Owner shall have right to refuse to make payment(s) to the Contractor due to:
 - 9.5.3.1. the Contractor's failure to perform the Work in compliance with the Contract Documents;
 - 9.5.3.2. the Contractor's failure to correct any defective or damaged Work;
 - 9.5.3.3. the Contractor's failure to accurately represent the Work performed in the pay request;
 - 9.5.3.4. the Contractor's performance of its Work at a rate or in a manner that, in the Owner's opinion, is likely to result in the Work, or any portion thereof, to be delayed;
 - 9.5.3.5. the Contractor's failure to use funds previously paid to it by the Owner to pay for the Contractor's Work-related obligations including, but not limited to, subcontractors and suppliers on this Project;
 - 9.5.3.6. claims made, or anticipated by the Owner to be made, against the Owner or its property;
 - 9.5.3.7. inclusion in the pay request of any amounts in dispute or part of a claim;
 - 9.5.3.8. Damage or loss caused by the Contractor, including its subcontractors and suppliers; or,

9.5.3.9. The Contractor's failure or refusal to perform its obligations to the Owner.

9.6. PROGRESS PAYMENTS

- 9.6.1. After the Architect/Engineer has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents or the Owner may take any action the Owner deems necessary under Subparagraph 9.5.3.
- 9.6.2. The Contractor shall promptly pay each Subcontractor in accordance with Title 28, Chapter 2, Part 21, upon receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of such Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.
- 9.6.3. The Contractor is prohibited from holding higher amounts in retainage on any Subcontractor than the Owner is holding from the Contractor.
- 9.6.4. The Architect/Engineer will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect/Engineer and Owner on account of portions of the Work done by such Subcontractor.
- 9.6.5. Neither the Owner nor Architect/Engineer shall have an obligation to pay, or to see to the payment of, money to a Subcontractor except as may otherwise be required by law.
- 9.6.6. Payment to material suppliers shall be treated in a manner similar to that provided in Subparagraphs 9.6.2, 9.6.3, 9.6.4, and 9.6.5.
- 9.6.7. A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.
- 9.6.8. Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

9.7. FAILURE OF PAYMENT

9.7.1. If the Owner does not approve payment to the Contractor within thirty-five (35) calendar days after the receipt of a certified Application for Payment, then the Contractor may, upon seven additional days' written notice to the Owner and Architect/Engineer, suspend the Work until payment of the amount owing has been received. Nothing in the Subparagraph shall limit the Owner's rights and options as provided in Subparagraph 9.5.3. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

9.8. SUBSTANTIAL COMPLETION

- 9.8.1. Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.
- 9.8.2. When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect/Engineer a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item

on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

- 9.8.3. Upon receipt of the Contractor's list, the Architect/Engineer will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect/Engineer's Inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect/Engineer. In such case, the Contractor shall then submit a request for another inspection by the Architect/Engineer to determine Substantial Completion.
- 9.8.4. The Contractor shall ensure the project is substantially complete prior to requesting any inspection by the Architect/Engineer so that no more than one (1) inspection is necessary to determine Substantial Completion for all or any portion of the Work. If the Contractor does not perform adequate inspections to develop a comprehensive list as required in Subparagraph 9.8.2 and does not complete or correct such items upon discovery or notification, the Contractor shall be responsible and pay for the costs of the Architect/Engineer's additional inspections to determine Substantial Completion.
- 9.8.5. When the Work or designated portion thereof is substantially complete, the Architect/Engineer will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion and which shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance. After issuance of the Certificate of Substantial Completion, the Contractor shall finish and complete all remaining items within thirty (30) calendar days of the date on the Certificate. The Architect/Engineer shall identify and fix the time for completion of specific items which may be excluded from the thirty (30) calendar day time limit. Failure to complete any items within the specified time frames may be deemed by the Owner as default of the contract on the part of the Contractor.
- 9.8.6. The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety if there are claims or past payment issues, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

9.9. PARTIAL OCCUPANCY OR USE

- 9.9.1. The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect/Engineer as provided under Subparagraph 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect/Engineer.
- 9.9.2. Immediately prior to such partial occupancy or use, the Owner, Contractor and Architect/Engineer shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work. Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.
- 9.9.3. Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

9.10. FINAL COMPLETION AND FINAL PAYMENT

- 9.10.1. Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect/Engineer will promptly make such inspection and, when the Architect/Engineer finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect/Engineer will approve the Contractor's final Certificate for Payment stating that to the best of the Architect/Engineer's knowledge, information and belief, and on the basis of the Architect/Engineer's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect/Engineer's signature on the Contractor's final Certificate for Payment will constitute a further representation that conditions listed in Subparagraph 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.
- 9.10.2. Neither final payment nor any remaining retainage shall become due until the Contractor submits to the Architect/Engineer:
 - 9.10.2.1. completed Contractor's Affidavit of Completion, Payment of Debts and Claims, and Release of Liens (Form 106) that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied;
 - 9.10.2.2. a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner;
 - 9.10.2.3. a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents
 - 9.10.2.4. Consent of Surety Company to Final Payment (Form 103); and,
 - 9.10.2.5. if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner.
- 9.10.3. The Contractor and his surety accepts and assumes responsibility, liability, and costs for and agrees to defend and hold harmless the Owner for and against any and all actions as a result of the Owner making final payment.
- 9.10.4. By submitting any Application for Payment to the Architect/Engineer the Contractor and his surety certify and declare that all bills for materials, supplies, utilities and for all other things furnished or caused to be furnished by the Contractor and all Subcontractors and used in the execution of the Contract will be fully paid upon receipt of Final Payment and that there are no unpaid obligations, liens, claims, security interests, encumbrances, liabilities and/or demands of State Agencies, subcontractors, suppliers, mechanics, laborers or any others resulting from or arising out of any work done, caused to be done or ordered to be done by the Contractor under the contract.
- 9.10.5. In consideration of the prior payments and the final payment made and all payments made for authorized changes, the Contractor releases and forever discharges the Owner from any and all obligations, liens, claims, security interests, encumbrances and/or liabilities arising by virtue of the contract and authorized changes between the parties, either verbal or in writing, and any and all claims and demands of every kind and character whatsoever against the Owner, arising out of or in any way relating to the contract and authorized changes.
- 9.10.6. The date of Final Payment by the Owner shall constitute Final Acceptance of the Work. The determining date for the expiration of the warranty period shall be as specified in Paragraphs 3.5 and 12.2.2.
- 9.10.7. If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect/Engineer so confirms, the Owner shall, upon application by the Contractor and certification by the Architect/Engineer, and without terminating the Contract, make payment of the balance due for that

portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect/Engineer prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

9.10.8. The making of final payment shall constitute a waiver of Claims by the Owner except those arising from:

9.10.8.1. liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;

- 9.10.8.2. failure of the Work to comply with the requirements of the Contract Documents; or,
- 9.10.8.3. terms of special warranties required by the Contract Documents.
- 9.10.9. Acceptance of final payment by the Contractor, a Subcontractor, or material supplier, shall constitute a waiver of any and all obligations, liens, claims, security interests, encumbrances and/or liabilities against the Owner except those previously made in writing per the requirements of Paragraph 4.3 and as yet unsettled at the time of submission of the final Application for Payment.
- 9.10.10. The Owner's issuance of Final Payment does not constitute a waiver or release of any kind regarding any past, current, or future claim the Owner may have against the Contractor and/or the surety.

ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY

10.1. <u>SAFETY</u>

- 10.1.1. **Importance of Safety**. The Contractor and all Subcontractors (at any tier or level) recognize that safety is paramount at all times. The Contractor shall perform the work in a safe manner with the highest regard for safety of its employees and all other individuals and property at the work site. Contractor shall maintain its tools, equipment, and vehicles in a safe operating condition and take all other actions necessary to provide a safe working environment for performance of work required under this Contract. The Contractor is solely responsible for the means, methods, techniques, sequences and procedures for coordinating and constructing the Work, including all site safety, safety precautions, safety programs, and safety compliance with OSHA and all other governing bodies.
- 10.1.2. Particular Safeguards. (a). The Contractor shall erect and maintain, as required by Paragraphs 10.1.1 and 10.1.3, safeguards for safety and protection, including posting danger signs and other warnings against hazards, installing suitable barriers and lighting, promulgating safety regulations, and providing notification to all parties who may be impacted by the Contractor's operations. (b) When use or storage of explosives or other Hazardous Materials/Substances (defined below) or equipment are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel. (c) The Contractor shall not encumber or load or permit any part of the construction site to be encumbered or loaded so as to endanger the safety of any person(s).
- 10.1.3. **Compliance with Safety Laws**. Contractor represents and warrants to Owner that it knows and understands all federal, state and local safety statutes, rules, and regulations (Laws) related to the work under this Contract. Contractor shall comply with these Laws. Contractor shall keep all material data safety sheets on site and available at all times.
- 10.1.4. **Remedy property damage**. The Contractor shall promptly remedy damage and loss to property caused in whole or in part by the Contractor, a Subcontractor of any tier or level, or anyone employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Paragraph 3.18.
- 10.1.5. **Designation of Safety Representative.** Unless the Contractor designates, in writing to the Owner and the Architect/Engineer, another responsible member of the Contractor's organization as the Safety Representative, the Contractor's superintendent is the Safety Representative. The Safety Representative is defined as that member of the Contractor's organization responsible for all safety under this Contract.

10.1.6. **Release/Indemnity of Owner and Architect/Engineer**. The Contractor agrees that the Owner and Architect/Engineer are not responsible for safety at the work site and releases them from all obligations and liability regarding safety at the work site The Contractor shall indemnify and defend the Owner and the Architect/Engineer against and from all claims, liabilities, fines, penalties, orders, causes of action, judgments, losses, costs and expenses (including but not limited to court costs and reasonable attorney fees), arising from injuries and death to any persons and damage to real and personal property arising from, in connection with, or incidental to Contractor's safety responsibilities under this Contract.

10.2. HAZARDOUS MATERIALS/SUBSTANCES

- 10.2.1. "Hazardous Materials/Substances" means any substance: (a) the presence of which requires investigation, or remediation under any federal, state or local statute, rule, regulation, ordinance, order, policy or common law; (b) that is or becomes defined as "hazardous waste," "hazardous substance," pollutant, or contaminant under any federal, state or local statute, rule, regulation, or ordinance or amendments thereto; (c) that is toxic, explosive, corrosive flammable, or otherwise hazardous and is or becomes regulated by any government authority, agency, board, commission or instrumentality of the United States, the state of Montana or any political subdivision thereof; (d) gasoline, diesel fuel or other petroleum hydrocarbons; (e) containing contains polychlorinated biphenyls (PCBs) or asbestos; or (f) the presence of which causes or threatens to cause a nuisance or trespass on the work site or adjacent property.
- 10.2.2. The Contractor is solely responsible for all compliance with all regulations, requirements, and procedures governing Hazardous Materials/Substances at the Work Site or that Contractor brings on the site. The Contractor is solely responsible for remediation, costs, damages, loss, and/or expenses for all Hazardous Materials/Substances brought to the site. The Contractor shall not and is strictly prohibited from purchasing and/or installing any asbestos-containing materials or products as part of the Work. Should the Contractor do so, the Contractor shall be solely responsible for the immediate remediation and all costs, damages, loss, and/or expenses per Paragraphs 10.1.6, 10.2.2, 10.2.3, and 10.2.4.
- 10.2.3. If the Contractor encounters Hazardous Materials/Substances during the course of the Work, whether or not identified in the Contract Documents, Work, the Contractor agrees that:
 - 10.2.3.1. Encountering any Hazardous Materials/Substances during performance of the Work does not necessarily mean a change in conditions has occurred, nor is it evidence that the Contractor is due additional Contract Time or an increase in the Contract Sum. If encountering Hazardous Materials/Substances is determined to be a change in conditions to the Contract Documents, Paragraph 4.3 and Article 7 apply in determining any additional compensation or extension of time claimed by the Contractor.
 - 10.2.3.2. The Contractor is solely responsible for securing the Work in accordance with this Article 10 involving any Hazardous Materials/Substances against unlawful, unregulated, or improper intrusion, disturbance, or removal. The Contractor shall implement protections and take protective actions throughout the performance of the Work to prevent exposure to workers, occupants, and contamination of the site or area.
 - 10.2.3.3. If the Contractor is unable to or fails to properly secure the Work against unlawful, unregulated, or improper intrusion, disturbance, or removal of Hazardous Materials/Substances, the Contractor shall immediately implement protections and take protective actions, up to and including stopping Work in the area or on the item affected, to prevent exposure to workers, occupants, and contamination of the site or area. The Contractor shall immediately notify the Owner and Architect in writing giving details of the failure and the corrective actions taken. If the condition is an emergency and notice cannot be provided in writing, then Contractor shall orally and immediately notify the Owner and Architect/Engineer of the condition followed by a full written explanation. In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss.
 - 10.2.3.4. If the Contractor notifies the Owner and takes precautions in accordance with this Article 10 upon encountering materials/substances suspected of containing asbestos or polychlorinated biphenyls that are unidentified in the Contract Documents, the Owner shall verify if the

unidentified material or substance contains asbestos or polychlorinated biphenyls and shall arrange for the removal or other measures as necessary to allow the Contractor to proceed with the Work. The Contract Time may be extended as appropriate if the Work affected is on the critical path and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs as provided in Article 7. Should the Contractor fail to notify the Owner upon encountering asbestos, polychlorinated biphenyls, or materials/substances suspected of containing asbestos or polychlorinated biphenyls, that are unidentified in the Contract Documents, the Contractor is solely responsible for all mitigation in accordance with Paragraphs 10.1.6, 10.2.2, 10.2.3, and 10.2.4.

10.2.4. The Contractor shall indemnify, hold harmless, and defend the Owner from and against all claims, liabilities, fines, penalties, orders, causes of action, judgments, losses, costs and expenses, including but not limited to court costs and reasonable attorneys' fees, arising from, in connection with, or incidental to the Contractor's handling, disposal, encountering, or release of Hazardous Materials/Substances.

10.3. UTILITIES

- 10.3.1. Underground Utilities: Buried utilities, including, but not limited to, electricity, gas, steam, air, water, telephone, sewer, irrigation, broadband coaxial computer cable, and fiber optic cables are very vulnerable and damage could result in loss of service. The telephone, broadband and fiber optic cables are especially sensitive and the slightest damage to these components will result in disruption of the operations of the campus.
- 10.3.2. "One Call" must be notified by phone and in writing at least 72 hours (3 business days) prior to digging to arrange and assist in the location of buried utilities in the field. (Dial 811). The Contractor shall mark the boundary of the work area. The boundary area shall be indicated with white paint and white flags. In winter, pink paint and flags will be accepted.
- 10.3.3. After buried utilities have been located, the Contractor shall be responsible for any utilities damaged while digging. Such responsibility shall include all necessary care including hand digging. Contractor's responsibility shall also include maintaining markings after initial locate. The area for such responsibility, unless otherwise indicated, shall extend 24 inches to either side of the marked center line of a buried utility line.
- 10.3.4. The Contractor's responsibility shall include repair or replacement of damaged utilities. The Contractor will also be responsible for all costs associated with reterminations and recertification.
- 10.3.5. Any buried utilities exposed by the operations of the Contractor shall be marked on the plans and adequately protected by the Contractor. If any buried utilities not located are exposed, the Contractor shall immediately contact the Owner and the Architect/Engineer. If, after exposing an unlocated buried utility, the Contractor continues digging without notifying Owner and Architect/Engineer and further damages the utility, the Contractor will be fully and solely responsible.
- 10.3.6. Damage to irrigation systems during seasons of no irrigation that are not immediately and adequately repaired and tested will require the Contractor to return when the system is in service to complete the repair.
- 10.3.7. In the event of a planned interruption of any existing utility service, the Contractor shall make arrangements with Owner at least 72 hours (3 business days) in advance. Shutdowns of the broadband or fiber optic cables will normally require 5 working days' notice to the Owner. The Contractor shall bear all costs associated with the interruptions and restorations of service.

ARTICLE 11 - INSURANCE AND BONDS

11.1. CONTRACTOR'S LIABILITY INSURANCE

11.1.1. The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the State of Montana with a rating no less than "A-", such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the

Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- 11.1.1.1. claims under workers' compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed;
- 11.1.1.2. claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
- 11.1.1.3. claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- 11.1.1.4. claims for damages insured by usual personal injury liability coverage;
- 11.1.1.5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting there from;
- 11.1.1.6. claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
- 11.1.1.7. claims for bodily injury or property damage arising out of completed operations; and,
- 11.1.1.8. claims involving contractual liability insurance applicable to the Contractor's obligations under Paragraph 3.18.
- 11.1.2. The insurance required by Subparagraph 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from date of commencement of the Work until termination of any coverage required to be maintained after final payment.
- 11.1.3. Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work. These certificates and the insurance policies required by this Paragraph 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire at any time prior to Final Acceptance and then not until at least 30 days' prior written notice has been given to the Owner. If any of the foregoing insurance coverages are required to remain in force after final payment, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment as required by Subparagraph 9.10.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.
- 11.1.4. At the request of the Owner, the Contractor shall provide copies of all insurance policies to the Owner.

11.2. INSURANCE, GENERAL REQUIREMENTS

- 11.2.1. The Contractor shall maintain for the duration of the contract, at its cost and expense, insurance against claims for injuries to persons or damages to property, including contractual liability, which may arise from or in connection with the performance of the Work by the Contractor, its agents, employees, representatives, assigns, or subcontractors. The Contractor is responsible for all deductibles regardless of policy or level of coverage. The Owner reserves the right to demand, and the Contractor agrees to provide, copies of any and all policies at any time.
- 11.2.2. Hold Harmless and Indemnification: The Contractor shall protect, defend, and save the state, its elected and appointed officials, agents, and employees, while acting within the scope of their duties as such, harmless from and against all claims, liabilities, demands, causes of action, and judgments whatsoever (including the cost of defense and reasonable attorney fees): 1) arising in favor of or asserted by third parties on account of damage to property, personal injury, or death which injury, death, or damage; or, 2) arising out of or resulting from performance or failure to perform, or omissions of services, or in any way results from the negligent acts or omissions of the Contractor, its agents, agents, or subcontractors.

- 11.2.3. Contractor's Insurance: insurance required under all sections herein shall be in effect for the duration of the contract that extends through the warranty period. Insurance required herein shall be provided by insurance policies issued only by insurance companies currently authorized to do business in the state of Montana. No Contractor or Sub-contractor shall commence any Work under this contract until all required insurance has been obtained. During the term of this contract, the Contractor shall, not less than thirty days prior to the expiration date of any policy for which a certificate of insurance is required, deliver to the Owner a certificate of insurance with respect to the renewal insurance policy. The Contractor shall furnish one copy of insurance certificates of insurance herein required, which shall specifically set forth evidence of all coverage required by these contract documents and which shall be signed by authorized representatives of the insurance company or companies evidencing that insurance as required herein is in force and will not be canceled, limited or restricted without thirty days' written notice by certified mail to the contractor and the Owner. The Contractor shall furnish to the Owner copies of any endorsements that are subsequently issued amending coverage or limits. Additionally, all certificates shall include the project name and A/E project number.
- 11.2.4. Certificates of Insurance and Endorsements. All certificates of insurance and the additional insured endorsements are to be received by the state prior to issuance of the Notice to Proceed. The contractor is responsible to ensure that all policies and coverages contain the necessary endorsements for the State being listed as an additional insured. The state reserves the right to require complete copies of all insurance policies at any time to verify coverage. The contractor shall notify the state within 30 days of any material change in coverage.

11.3. WORKERS' COMPENSATION INSURANCE

11.3.1. The Contractor shall carry **Workers' Compensation Insurance**. Such Workers' Compensation Insurance shall protect the Contractor from claims made by his own employees, the employees of any Sub-contractor, and also claims made by anyone directly or indirectly employed by the Contractor or Sub-contractor. The Contractor shall require each Sub-contractor similarly to provide Workers' Compensation Insurance.

11.4. COMMERCIAL GENERAL LIABILITY INSURANCE

- 11.4.1. Each Contractor shall carry per occurrence coverage **Commercial General Liability Insurance** including coverage for premises; operations; independent contractor's protective; products and completed operations; products and materials stored off-site; broad form property damage and comprehensive automobile liability insurance with not less than the following limits of liability:
 - 11.4.1.1. \$1,000,000 per occurrence; aggregate limit of \$2,000,000;
- 11.4.2. The **Commercial General and Automobile Liability Insurance** shall provide coverage for both bodily injury, including accidental death, sickness, disease, occupational sickness or disease, personal injury liability coverage and property damage which may arise out of the work under this contract, or operations incidental thereto, whether such work and operations be by the Contractor or by any Subcontractor or by anyone directly or indirectly employed by the Contractor or by Sub-contractor, or by anyone for whose acts any of them may be liable. The Contractor shall maintain the liability insurance required herein for a period of not less than one year after final payment or anytime the Contractor goes on to the location of the project.
- 11.4.3. The Contractor's liability insurance policies shall list the STATE OF MONTANA as an additional insured. **AN ADDITIONAL INSURED ENDORSEMENT DOCUMENT SHALL BE SUBMITTED WITH THE CERTIFICATES OF INSURANCE**. The STATE OF MONTANA includes its officers, elected and appointed officials, employees and volunteers and political subdivisions thereof. Should the Contractor not be able to list the state as an additional insured, the Contractor shall purchase a per occurrence Owner's/Contractor's Protective Policy (OCP) with the STATE OF MONTANA as the insured party in the same occurrence and aggregate limits as that indicated above for the Contractor's Commercial General Liability Policy.
- 11.4.4. Property damage liability insurance shall be written without any exclusion for injury to or destruction of any building, structure, wires, conduits, pipes, or other property above or below the surface of the ground

arising out of the blasting, explosion, pile driving, excavation, filling, grading or from the moving, shoring, underpinning, raising, or demolition of any building or structure or structural support thereof.

11.4.5. The Contractor's insurance coverage shall be PRIMARY insurance as respects the State, its officers, elected and appointed officials, employees and volunteers. Any insurance or self-insurance maintained by the state, its officers, elected and appointed officials, employees and volunteers shall be excess of the Contractor's insurance and shall not contribute to it. NO WAIVERS OF SUBROGATION OR ENDORSEMENTS LIMITING, TRANSFERRING, OR OTHERWISE INDEMNIFYING LIABLE OR RESPONSIBLE PARTIES OF THE CONTRACTOR OR ANY SUBCONTRACTOR WILL BE ACCEPTED.

11.5. PROPERTY INSURANCE (ALL RISK)

- 11.5.1. New Construction (for projects involving new construction): At its sole cost and expense, the contractor shall keep the building and all other improvements on the premises insured throughout the term of the agreement against the following hazards:
 - 11.5.1.1. Loss or damage by fire and such other risks (including earthquake damage for those areas with a shaking level at 10g or above as indicated on the seismic map, http://rmtd.mt.gov/Portal/62/aboutus/publications/files/NEHRP.pdf in an amount sufficient to permit such insurance to be written at all times on a replacement cost basis. This may be insured against by attachment of standard form extended coverage endorsement to fire insurance policies. <u>Certificates of Insurance MUST indicate earthquake coverage if coverage is required per the above referenced map.</u>
 - 11.5.1.2. Loss or damage from leakage or sprinkler systems now or hereafter installed in any building on the premises.
 - 11.5.1.3. Loss or damage by explosion of steam boilers, pressure vessels, and oil or gasoline storage tanks, or similar apparatus now or hereafter installed in a building or buildings on the premises.
- 11.5.2. Building Renovation (for projects involving building renovation or remodeling):
 - 11.5.2.1. The contractor shall purchase and maintain Builder's Risk/Installation insurance on a "special causes of loss" form (so called "all risk") for the cost of the work and any subsequent modifications and change orders. The contractor is not responsible for insuring the existing structure for Builder's Risk/Installation insurance.
 - 11.5.2.2. At its sole cost and expense, the contractor shall insure all property construction on the premises throughout the term of the agreement against the following hazards:
 - 11.5.2.2.1. Loss or damage by fire and such other risks (including earthquake damage for those areas with a shaking level at 10g or above as indicated on the seismic map at http://rmtd.mt.gov/Portal/62/aboutus/publications/files/NEHRP.pdf in an amount sufficient to permit such insurance to be written at all times on a replacement cost basis. This may be insured against by attachment of standard form extended coverage endorsement to fire policies. <u>Certificates of Insurance MUST indicate</u> earthquake coverage if coverage is required per the above referenced map.
 - 11.5.2.2.2. Loss or damage from leakage or sprinkler systems now or hereafter installed in any building on the premises.
 - 11.5.2.2.3. Loss or damage by explosion of steam boilers, pressure vessels, oil or gasoline storage tanks, or similar apparatus now or hereafter installed in a building or buildings on the premises.

11.6. ASBESTOS ABATEMENT INSURANCE

11.6.1. If Asbestos Abatement is identified as part of the Work under this contract, the Contractor or any subcontractor involved in asbestos abatement shall purchase and maintain Asbestos Liability Insurance for coverage of bodily injury, sickness, disease, death, damages, claims, errors or omissions regarding the asbestos portion of the work <u>in addition to</u> the CGL Insurance by reason of any negligence

in part or in whole, error or omission committed or alleged to have been committed by the Contractor or anyone for whom the Contractor is legally liable.

11.6.2. Such insurance shall be in "per occurrence" form and shall clearly state on the certificate that asbestos work is included in the following limits:

11.6.2.1. **\$1,000,000** per occurrence; aggregate limit of **\$2,000,000**.

11.6.3. Asbestos Liability Insurance as carried by the asbestos abatement subcontractor in these limits in lieu of the Contractor's coverage is acceptable provided the Contractor and the State of Montana are named as additional insureds and that the abatement subcontractor's insurance is PRIMARY as respects both the Owner and the Contractor. If the Contractor or any other subcontractor encounters asbestos, all operations shall be suspended until abatement with the associated air monitoring clearances are accomplished. The certificate of coverage shall be provided by the asbestos abatement subcontractor to both the Contractor and the Owner.

11.7. <u>PERFORMANCE BOND AND LABOR & MATERIAL PAYMENT BOND (BOTH ARE REQUIRED ON THIS PROJECT)</u>

- 11.7.1. The Contract shall furnish a Performance Bond in the amount of 100% of the contract price as security for the faithful performance of his contract (18-2-201 MCA). The Contractor shall also furnish a Labor and Material Payment Bond in the amount of 100% of the contract price as security for the payment of all persons performing labor and furnishing materials in connection therewith (18-2-201MCA). The bonds shall be executed on forms furnished by the Owner and no other forms or endorsements will be acceptable. The bonds shall be signed in compliance with state statutes (33-17-1111 MCA). Bonds shall be secured from a state licensed bonding company. Power of Attorney is required with each bond. Attorneys-in-fact who sign contract bonds must file with each bond a certified and effectively dated copy of their power of attorney:
 - 11.7.1.1. one original copy shall be furnished with each set of bonds.
 - 11.7.1.2. Others furnished with a set of bonds may be copies of that original.
- 11.7.2. The Owner reserves the right at any time during the performance of Work to require bonding of Subcontractors provided by the General Contractor. Should this occur, the Owner will cover the direct cost. This shall not be construed as to in any way affect the relationship between the General Contractor and his Subcontractors.
- 11.7.3. Surety must have an endorsement stating that their guarantee of Contractor's performance automatically covers the additional contract time added to a Contractor's contract by Change Order.
- 11.7.4. A change in the Contractor's organization shall not constitute grounds for Surety to claim a discharge of their liability and requires an endorsement from Surety so stating.
- 11.7.5. Except as noted below, the Contractor is required to notify Surety of any increase in the contract amount resulting from a Change Order within 48 hours of signing and submitting a Change Order and shall submit a copy of Surety's written acknowledgment and consent to Owner before a Change Order can be approved. The Surety's written acknowledgment and consent on the Change Order form shall also satisfy this consent requirement.
 - 11.7.5.1. Surety consent shall not be required on Change Order(s) which, in the aggregate total amount of all Changes Orders, increase the original contract amount by less than 10%. However, the Contractor is still required to notify Surety of any increase in contract amount resulting from a Change Order(s) within 48 hours of signing and submitting every Change Order.
 - 11.7.5.2. Surety is fully obligated to the Owner for the full contract amount, inclusive of all Change Orders, regardless of whether or not written acknowledgement and consent is received and regardless of whether or not the aggregate total of all Change Orders is more or less than 10% of the original contract amount.

- 11.7.5.3. A fax with hard copy to follow of Surety's written acknowledgment and consent is acceptable. If hard copy is not received by Owner before Application for Payment on any portion or all of said Change Order, it will not be accepted by Owner for payment.
- 11.7.6. The Surety must take action within 30 days of notice of default on the part of the Contractor or of any claim on bonds made by the Owner or any Subcontractor or supplier.

ARTICLE 12 - UNCOVERING AND CORRECTION OF WORK

12.1. UNCOVERING OF WORK

- 12.1.1. If a portion of the Work is covered contrary to the Architect/Engineer's request or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Architect/Engineer, be uncovered for the Architect/Engineer's examination and be replaced at the Contractor's expense without change in the Contract Time.
- 12.1.2. If a portion of the Work has been covered which the Architect/Engineer has not specifically requested to examine prior to it being covered, the Architect/Engineer may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

12.2. CORRECTION OF WORK

12.2.1. BEFORE OR AFTER SUBSTANTIAL COMPLETION

- 12.2.1.1. The Contractor shall promptly correct Work that fails to conform to the requirements of the Contract Documents or that is rejected by the Architect/Engineer, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections and compensation for the Architect/Engineer's services and expenses made necessary thereby, shall be at the Contractor's expense. The Contractor is responsible to discover and correct all defective work and shall not rely upon the Architect/Engineer's or Owner's observations.
- 12.2.1.2. Rejection and Correction of Work in Progress. During the course of the Work, the Contractor shall inspect and promptly reject any Work that:
 - 12.2.1.2.1. does not conform to the Construction Documents; or,
 - 12.2.1.2.2. does not comply with any applicable law, statute, building code, rule or regulation of any governmental, public and quasi-public authorities, and agencies having jurisdiction over the Project.
- 12.2.1.3. The Contractor shall promptly correct or require the correction of all rejected Work, whether observed before or after Substantial Completion. The Contractor shall bear all costs of correcting such Work, including additional testing, inspections, and compensation for all services and expenses necessitated by such corrective action.

12.2.2. AFTER SUBSTANTIAL COMPLETION AND AFTER FINAL ACCEPTANCE

12.2.2.1. In addition to the Contractor's obligations under Paragraph 3.5, if, within one year after the date of Final Acceptance of the Work or designated portion thereof or after the date for commencement of warranties, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of 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 contractor and give the Contractor an opportunity to make the correction, the Owner waives

the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect/Engineer, the Owner may correct it in accordance with Paragraph 2.3.

- 12.2.2.1.1. The Contractor shall remedy any and all deficiencies due to faulty materials or workmanship and pay for any damage to other work resulting there from, which shall appear within the period of Substantial Completion through one (1) year from the date of Final Acceptance in accordance with the terms and conditions of the Contract and with any special guarantees or warranties provided in the Contract Documents. The Owner shall give notice of observed deficiencies with reasonable promptness. All questions, claims or disputes arising under this Article shall be decided by the Architect/Engineer. All manufacturer, product and supplier warranties are in addition to this Contractor warranty.
- 12.2.2.1.2. The Contractor shall respond within seven (7) days after notice of observed deficiencies has been given and he shall proceed to immediately remedy these deficiencies.
- 12.2.2.1.3. Should the Contractor fail to respond to the notice or not remedy those deficiencies; the Owner shall have this work corrected at the expense of the Contractor.
- 12.2.2.1.4. Latent defects shall be in addition to those identified above and shall be the responsibility of the Contractor per the statute of limitations for a written contract (27-2-208 MCA) starting from the date of Final Acceptance.
- 12.2.2.2. The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work.
- 12.2.2.3. The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Paragraph 12.2.
- 12.2.3. The Contractor shall remove from the site portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.
- 12.2.4. The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents.
- 12.2.5. Nothing contained in this Paragraph 12.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the one-year period for correction of Work as described in Subparagraph 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

12.3. ACCEPTANCE OF NONCONFORMING WORK

12.3.1. If the Owner prefers to accept Work which is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 - MISCELLANEOUS PROVISIONS

13.1. GOVERNING LAW

13.1.1. The Contract shall be governed by the laws of the State of Montana and venue for all legal proceedings shall be the First Judicial District, Lewis & Clark County.

13.2. SUCCESSORS AND ASSIGNS

13.2.1. The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to the other party hereto and to partners, successors, assigns and legal representatives of such other party in respect to covenants, agreements and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempt to make such assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

13.3. WRITTEN NOTICE

13.3.1. Written notice shall be deemed to have been duly served if delivered in person to the individual or a member of the firm or entity or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified mail to the last business address known to the party giving notice.

13.4. RIGHTS AND REMEDIES

- 13.4.1. Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.
- 13.4.2. No action or failure to act by the Owner, Architect/Engineer or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

13.5. TESTS AND INSPECTIONS

- 13.5.1. Tests, inspections and approvals of portions of the Work required by the Contract Documents or by laws, ordinances, rules, regulations or orders of public authorities having jurisdiction shall be made at an appropriate time. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Architect/Engineer timely notice of when and where tests and inspections are to be made so that the Architect/Engineer may be present for such procedures. The Owner shall bear costs of tests, inspections or approvals which do not become requirements until after bids are received or negotiations concluded.
- 13.5.2. If the Architect/Engineer, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Subparagraph 13.5.1, the Architect/Engineer will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect/Engineer of when and where tests and inspections are to be made so that the Architect/Engineer may be present for such procedures. Such costs, except as provided in Subparagraph 13.5.3 shall be at the Owner's expense.
- 13.5.3. If such procedures for testing, inspection or approval under Subparagraphs 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Architect/Engineer's services and expenses shall be at the Contractor's expense.
- 13.5.4. Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect/Engineer.
- 13.5.5. If the Architect/Engineer is to observe tests, inspections or approvals required by the Contract Documents, the Architect/Engineer will do so promptly and, where practicable, at the normal place of testing.
- 13.5.6. Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

13.6. <u>INTEREST</u>

13.6.1. Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

13.7. COMMENCEMENT OF STATUTORY LIMITATION PERIOD

- 13.7.1. As between the Owner and Contractor:
 - 13.7.1.1. **Before Substantial Completion.** As to acts or failures to act occurring prior to the relevant date of Substantial Completion, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than such date of Substantial Completion;
 - 13.7.1.2. **Between Substantial Completion and Final Certificate for Payment.** As to acts or failures to act occurring subsequent to the relevant date of Substantial Completion and prior to issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of issuance of the final Certificate for Payment; and,
 - 13.7.1.3. After Final Payment. As to acts or failures to act occurring after the relevant date of issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of any act or failure to act by the Contractor pursuant to any Warranty provided under Paragraph 3.5, the date of any correction of the Work or failure to correct the Work by the Contractor under Paragraph 12.2, or the date of actual commission of any other act or failure to perform any duty or obligation by the Contractor or Owner, whichever occurs last.

13.8. PAYROLL AND BASIC RECORDS

13.8.1. Payrolls and basic records pertaining to the project shall be kept on a generally recognized accounting basis and shall be available to the Owner, Legislative Auditor, the Legislative Fiscal Analyst or his authorized representative at mutually convenient times. Accounting records shall be kept by the Contractor for a period of three years after the date of the Owner's Final Acceptance of the Project.

ARTICLE 14 - TERMINATION OR SUSPENSION OF THE CONTRACT

14.1. TERMINATION BY THE CONTRACTOR

- 14.1.1. The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:
 - 14.1.1.1. issuance of an order of a court or other public authority having jurisdiction which requires all Work to be stopped; or,
 - 14.1.1.2. an act of government, such as a declaration of national emergency which requires all Work to be stopped.
- 14.1.2. The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Paragraph 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

- 14.1.3. If one of the reasons described in Subparagraph 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and Architect/Engineer, terminate the Contract and recover from the Owner payment for Work executed and for proven loss with respect to materials, equipment, tools, and construction equipment and machinery, including reasonable overhead and profit but not damages.
- 14.1.4. If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has persistently failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect/Engineer, terminate the Contract and recover from the Owner as provided in Subparagraph 14.1.3.

14.2. TERMINATION BY THE OWNER FOR CAUSE

- 14.2.1. The Owner may terminate the Contract if the Contractor:
 - 14.2.1.1. persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
 - 14.2.1.2. fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
 - 14.2.1.3. persistently disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction; or,
 - 14.2.1.4. otherwise is guilty of any breach of a provision of the Contract Documents.
- 14.2.2. When any of the above reasons exist, the Owner, upon certification by the Architect/Engineer that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:
 - 14.2.2.1. take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
 - 14.2.2.2. accept assignment of subcontracts pursuant to Paragraph 5.4; and,
 - 14.2.2.3. finish the Work by whatever reasonable method the Owner may deem expedient. Upon request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.
- 14.2.3. When the Owner terminates the Contract for one of the reasons stated in Subparagraph 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.
- 14.2.4. If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect/Engineer's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Architect/Engineer, upon application, and this obligation for payment shall survive termination of the Contract.

14.3. SUSPENSION BY THE OWNER FOR CONVENIENCE

- 14.3.1. The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.
- 14.3.2. The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Subparagraph 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent:

- 14.3.2.1. that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or,
- 14.3.2.2. that an equitable adjustment is made or denied under another provision of the Contract.

14.4. TERMINATION BY THE OWNER FOR CONVENIENCE

- 14.4.1. The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.
- 14.4.2. Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall:
 - 14.4.2.1. cease operations as directed by the Owner in the notice;
 - 14.4.2.2. take actions necessary, or that the Owner may direct, for the protection and preservation of the Work, and;
 - 14.4.2.3. except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.
- 14.4.3. In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed. The Contractor shall provide a full and complete itemized accounting of all costs.

ARTICLE 15 – EQUAL OPPORTUNITY

- **15.1.** The Contractor and all Sub-contractors shall not discriminate against any employee or applicant for employment because of race, color, sex, pregnancy, childbirth or medical conditions related to pregnancy or childbirth, political or religious affiliation or ideas, culture, creed, social origin or condition, genetic information, sexual orientation, gender identity or expression, national origin, ancestry, age, disability, military service or veteran status, or marital status, or physical or mental disability and shall comply with all Federal and State laws concerning fair labor standards and hiring practices. The Contractor shall ensure that applicants are employed, and that employees are treated during employment, without regard to race, color, sex, pregnancy, childbirth or medical conditions related to pregnancy or childbirth, political or religious affiliation or ideas, culture, creed, social origin or condition, genetic information, sexual orientation, gender identity or expression, national origin, ancestry, age, disability, military service or veteran status, or marital status, or physical or mental disability.
- **15.2.** 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. The Contractor agrees to post in conspicuous places available to employees and applicants for employment, notices setting forth the policies of non-discrimination.
- **15.3.** The Contractor and all Sub-contractors shall, in all solicitations or advertisements for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, color, sex, pregnancy, childbirth or medical conditions related to pregnancy or childbirth, political or religious affiliation or ideas, culture, creed, social origin or condition, genetic information, sexual orientation, gender identity or expression, national origin, ancestry, age, disability, military service or veteran status, or marital status, or physical or mental disability.

[END OF GENERAL CONDITIONS]

MONTANA PREVAILING WAGE RATES FOR BUILDING CONSTRUCTION SERVICES 2021

Effective: January 1, 2021

Steve Bullock, Governor State of Montana

Brenda Nordlund, Acting Commissioner Department of Labor & Industry

To obtain copies of prevailing wage rate schedules, or for information relating to public works projects and payment of prevailing wage rates, visit ERD at <u>www.mtwagehourbopa.com</u> or contact:

Employment Relations Division Montana Department of Labor and Industry P. O. Box 201503 Helena, MT 59620-1503 Phone 406-444-6543

The department welcomes questions, comments, and suggestions from the public. In addition, we'll do our best to provide information in an accessible format, upon request, in compliance with the Americans with Disabilities Act.

MONTANA PREVAILING WAGE REQUIREMENTS

The Commissioner of the Department of Labor and Industry, in accordance with Sections 18-2-401 and 18-2-402 of the Montana Code Annotated (MCA), has determined the standard prevailing rate of wages for the occupations listed in this publication.

The wages specified herein control the prevailing rate of wages for the purposes of Section 18-2-401, et seq., MCA. It is required each employer pay (as a minimum) the rate of wages, including fringe benefits, travel allowance, zone pay and per diem applicable to the district in which the work is being performed as provided in the attached wage determinations.

All Montana Prevailing Wage Rates are available on the internet at <u>www.mtwagehourbopa.com</u> or by contacting the department at (406) 444-6543.

In addition, this publication provides general information concerning compliance with Montana's Prevailing Wage Law and the payment of prevailing wages. For detailed compliance information relating to public works contracts and payment of prevailing wage rates, please consult the regulations on the internet at <u>www.mtwagehourbopa.com</u> or contact the department at (406) 444-6543.

BRENDA NORDLUND Acting Commissioner Department of Labor and Industry State of Montana

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WAGE RATES:

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ROOFERS
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SOLAR PHOTOVOLTAIC INSTALLERS
SPRINKLER FITTERS
TAPERS
TELECOMMUNICATIONS EQUIPMENT INSTALLERS
TERRAZZO WORKERS AND FINISHERS
TILE AND STONE SETTERS
TRUCK DRIVERS 2

A. Date of Publication January 4, 2021

B. Definition of Building Construction

For the purposes of Prevailing Wage, the Commissioner of Labor and Industry has determined that building construction occupations are defined to be those performed by a person engaged in a recognized trade or craft, or any skilled, semiskilled, or unskilled manual labor related to the construction, alteration, or repair of a public building or facility, and does not include engineering, superintendence, management, office or clerical work.

The Administrative Rules of Montana (ARM), 24.17.501(2) - 2(a), states "Building construction projects generally are the constructions of sheltered enclosures with walk-in access for housing persons, machinery, equipment, or supplies. It includes all construction of such structures, incidental installation of utilities and equipment, both above and below grade level, as well as incidental grading, utilities and paving.

Examples of building construction include, but are not limited to, alterations and additions to buildings, apartment buildings (5 stories and above), arenas (closed), auditoriums, automobile parking garages, banks and financial buildings, barracks, churches, city halls, civic centers, commercial buildings, court houses, detention facilities, dormitories, farm buildings, fire stations, hospitals, hotels, industrial buildings, institutional buildings, libraries, mausoleums, motels, museums, nursing and convalescent facilities, office buildings, out-patient clinics, passenger and freight terminal buildings, police stations, post offices, power plants, prefabricated buildings, remodeling buildings, renovating buildings, repairing buildings, restaurants, schools, service stations, shopping centers, stores, subway stations, theaters, warehouses, water and sewage treatment plants (buildings only), etc."

C. Definition of Public Works Contract

Section 18-2-401(11)(a), MCA defines "public works contract" as "...a contract for construction services let by the state, county, municipality, school district, or political subdivision or for nonconstruction services let by the state, county, municipality, or political subdivision in which the total cost of the contract is in excess of \$25,000...".

D. Prevailing Wage Schedule

This publication covers only Building Construction occupations and rates. These rates will remain in effect until superseded by a more current publication. Current prevailing wage rate schedules for Heavy Construction, Highway Construction, and Nonconstruction Services occupations can be found on the internet at www.mtwagehoubopa.com or by contacting the department at (406) 444-6543.

E. Rates to Use for Projects

ARM, 24.17.127(1)(c), states "The wage rates applicable to a particular public works project are those in effect at the time the bid specifications are advertised."

F. Wage Rate Adjustments for Multiyear Contracts

Section 18-2-417, MCA states:

"(1) Any public works contract that by the terms of the original contract calls for more than 30 months to fully perform must include a provision to adjust, as provided in subsection (2), the standard prevailing rate of wages to be paid to the workers performing the contract.

(2) The standard prevailing rate of wages paid to workers under a contract subject to this section must be adjusted 12 months after the date of the award of the public works contract. The amount of the adjustment must be a 3% increase. The adjustment must be made and applied every 12 months for the term of the contract.

(3) Any increase in the standard rate of prevailing wages for workers under this section is the sole responsibility of the contractor and any subcontractors and not the contracting agency."

G. Fringe Benefits

Section 18-2-412, MCA states:

"(1) To fulfill the obligation...a contractor or subcontractor may:

(a) pay the amount of fringe benefits and the basic hourly rate of pay that is part of the standard prevailing rate of wages directly to the worker or employee in cash;

(b) make an irrevocable contribution to a trustee or a third person pursuant to a fringe benefit fund, plan, or program that meets the requirements of the Employee Retirement Income Security Act of 1974 or that is a bona fide program approved by the U. S. department of labor; or

(c) make payments using any combination of methods set forth in subsections (1)(a) and (1)(b) so that the aggregate of payments and contributions is not less than the standard prevailing rate of wages, including fringe benefits and travel allowances, applicable to the district for the particular type of work being performed.

(2) The fringe benefit fund, plan, or program described in subsection (1)(b) must provide benefits to workers or employees for health care, pensions on retirement or death, life insurance, disability and sickness insurance, or bona fide programs that meet the requirements of the Employee Retirement Income Security Act of 1974 or that are approved by the U. S. department of labor."

Fringe benefits are paid for all hours worked (straight time and overtime hours). However, fringe benefits are not to be considered a part of the hourly rate of pay for calculating overtime, unless there is a collectively bargained agreement in effect that specifies otherwise.

H. Prevailing Wage Districts

Montana counties are aggregated into 4 districts for the purpose of prevailing wage. The prevailing wage districts are composed of the following counties:



Montana Prevailing Wage Districts

I. Dispatch City

ARM, 24.17.103(11), defines dispatch city as "...the courthouse in the city from the following list which is closest to the center of the job: Billings, Bozeman, Butte, Great Falls, Helena, Kalispell, and Missoula." A dispatch city shall be considered the point of origin only for jobs within the counties identified in that district (as shown below):

District 1 – Kalispell and Missoula: includes Flathead, Lake, Lincoln, Mineral, Missoula, Ravalli, and Sanders;

District 2 – Butte and Helena: includes Beaverhead, Broadwater, Deer Lodge, Glacier, Granite, Jefferson, Lewis and Clark, Liberty, Madison, Pondera, Powell, Silver Bow, Teton, and Toole;

District 3 – Bozeman and Great Falls: includes Blaine, Cascade, Chouteau, Fergus, Gallatin, Golden Valley, Hill, Judith Basin, Meagher, Park, Petroleum, Phillips, Sweet Grass, and Wheatland;

District 4 – Billings: includes Big Horn, Carbon, Carter, Custer, Daniels, Dawson, Fallon, Garfield, McCone, Musselshell, Powder River, Prairie, Richland, Roosevelt, Rosebud, Sheridan, Stillwater, Treasure, Valley, Wibaux, and Yellowstone.

J. Zone Pay

Zone pay is not travel pay. ARM, 24.17.103(24), defines zone pay as "...an amount added to the base pay; the combined sum then becomes the new base wage rate to be paid for all hours worked on the project. Zone pay must be determined by measuring the road miles one way over the shortest practical maintained route from the dispatch city to the center of the job." See section I above for a list of dispatch cities.

K. Computing Travel Benefits

ARM, 24.17.103(22), states " 'Travel pay,' also referred to as 'travel allowance,' is and must be paid for travel both to and from the job site, except those with special provisions listed under the classification. The rate is determined by measuring the road miles one direction over the shortest practical maintained route from the dispatch city or the employee's home, whichever is closer, to the center of the job." See section I above for a list of dispatch cities.

L. Per Diem

ARM, 24.17.103(18), states "'Per diem' typically covers costs associated with board and lodging expenses. Per diem is paid when an employee is required to work at a location outside the daily commuting distance and is required to stay at that location overnight or longer."

M. Apprentices

Wage rates for apprentices registered in approved federal or state apprenticeship programs are contained in those programs. Additionally, Section 18-2-416(2), MCA states "... The full amount of any applicable fringe benefits must be paid to the apprentice while the apprentice is working on the public works contract." Apprentices not registered in approved federal or state apprenticeship programs will be paid the appropriate journey level prevailing wage rate when working on a public works contract.

N. Posting Notice of Prevailing Wages

Section 18-2-406, MCA provides that contractors, subcontractors and employers who are "...performing work or providing construction services under public works contracts, as provided in this part, shall post in a prominent and accessible site on the project or staging area, not later than the first day of work and continuing for the entire duration of the project, a legible statement of all wages and fringe benefits to be paid to the employees."

O. Employment Preference

Sections 18-2-403 and 18-2-409, MCA requires contractors to give preference to the employment of bona fide Montana residents in the performance of work on public works contracts.

P. Projects of a Mixed Nature

Section 18-2-408, MCA states:

"(1) The contracting agency shall determine, based on the preponderance of labor hours to be worked, whether the public works construction services project is classified as a highway construction project, a heavy construction project, or a building construction project.

(2) Once the project has been classified, employees in each trade classification who are working on that project must be paid at the rate for that project classification"

Q. Occupations Definitions

You can find definitions for these occupations on the following Bureau of Labor Statistics website: <u>http://www.bls.gov/oes/current/oes_stru.htm</u>

R. Welder Rates

Welders receive the rate prescribed for the craft performing an operation to which welding is incidental.

S. Foreman Rates

Rates are no longer set for foremen. However, if a foreman performs journey level work, the foreman must be paid at least the journey level rate.

WAGE RATES

BOILERMAKERS

	Wage	Benefit
1	\$33.15	\$31.15
2	\$33.15	\$31.15
3	\$33.15	\$31.15
4	\$33.15	\$31.15
	1 2 3 4	Wage 1 \$33.15 2 \$33.15 3 \$33.15 4 \$33.15

Duties Include:

Construct, assemble, maintain, and repair stationary steam boilers, boiler house auxiliaries, process vessels, and pressure vessels.

Travel: All Districts 0-120 mi. free zone >120 mi. federal mileage rate/mi.

Special Provision: Travel is paid only at the beginning and end of the job.

Per Diem:

All Districts 0-70 mi. free zone >70-120 mi. \$65.00/day >120 mi. \$80.00/day

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BRICK, BLOCK, AND STONE MASONS

	Wage	Benefit
District 1	\$30.55	\$15.75
District 2	\$30.55	\$15.75
District 3	\$30.55	\$15.75
District 4	\$30.55	\$15.75

Duties Include:

Lays out, lays, cuts, installs, and finishes all brick, structural tile, refractory materials, precast units, concrete, cinder, glass, gypsum, terra cotta block, and all other natural and artificial masonry products to construct or repair walls, partitions, stacks, furnaces, or other structures.

Sets stone to build stone structures such as piers, walls, and abutments, and lays walks, curbstones, or special types of masonry for vats, tanks, and floors. May set, cut, and dress ornamental and structural stone in buildings. This classification is tended by Tender to Masons Trades: Brick and Stonemason, Mortar Mixer, Hod Carrier

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CARPENTERS

	Wage	Benefit
District 1	\$25.00	\$13.57
District 2	\$25.00	\$13.86
District 3	\$25.00	\$13.57
District 4	\$25.00	\$13.57

Duties Include:

Install roll and batt insulation, and hardwood floors.

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Travel: All Districts 0-70 mi. free zone >70-90 mi. \$60.00/day >90 mi. \$80.00/day

Zone Pay: All Districts 0-30 mi. free zone >30-60 mi. base pay + \$4.00/hr. >60 mi. base pay + \$6.00/hr.

CARPET INSTALLERS

No Rate Established

Duties Include:

Lay and install carpet from rolls or blocks on floors. Install padding and trim flooring materials.

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Travel and Per Diem: All Districts No travel or per diem established.

CEMENT MASONS AND CONCRETE FINISHERS

	Wage	Benefit
District 1	\$25.61	\$10.40
District 2	\$24.74	\$10.40
District 3	\$25.31	\$10.40
District 4	\$25.36	\$10.40

Duties Include:

Smooth and finish surfaces of poured concrete, such as floors, walks, sidewalks, or curbs. Align forms for sidewalks, curbs, or gutters.

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CONSTRUCTION EQUIPMENT OPERATORS GROUP 1

	Wage	Benefit
District 1	\$27.91	\$13.67
District 2	\$27.91	\$13.67
District 3	\$27.91	\$13.67
District 4	\$27.91	\$13.67

This group includes but is not limited to:

Air Compressor; Auto Fine Grader; Belt Finishing; Boring Machine (Small); Cement Silo; Crane, A-Frame Truck Crane; Crusher Conveyor; DW-10, 15, and 20 Tractor Roller; Farm Tractor; Forklift; Form Grader; Front-End Loader, under 1 cu. yd; Oiler, Heavy Duty Drills; Herman Nelson Heater; Mucking Machine; Oiler, All Except Cranes/Shovels; Pumpman.

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Zone Pay: All Districts 0-25 mi. free zone >25-50 mi. base pay + \$2.50/hr. >50 mi. base pay + \$3.00/hr.

Zone Pay: All Districts 0-30 mi. free zone >30-60 mi. base pay + \$3.50/hr. >60 mi. base pay + \$5.50/hr.

CONSTRUCTION EQUIPMENT OPERATORS GROUP 2

	Wage	Benefit
District 1	\$26.69	\$12.18
District 2	\$28.70	\$13.67
District 3	\$28.70	\$13.67
District 4	\$28.70	\$13.67

This group includes but is not limited to:

Air Doctor; Backhoe\Excavator\Shovel, up to and incl. 3 cu. yds; Bit Grinder; Bitunimous Paving Travel Plant; Boring Machine, Large; Broom, Self-Propelled; Concrete Travel Batcher; Concrete Float & Spreader; Concrete Bucket Dispatcher; Concrete Finish Machine; Concrete Conveyor; Distributor; Dozer, Rubber-Tired, Push, & Side Boom; Elevating Grader\Gradall; Field Equipment Serviceman; Front-End Loader, 1 cu. yd up to and incl. 5 cu. yds; Grade Setter; Heavy Duty Drills, All Types; Hoist\Tugger, All; Hydralift Forklifts & Similar; Industrial Locomotive; Motor Patrol (except finish); Mountain Skidder; Oiler, Cranes\Shovels; Pavement Breaker, EMSCO; Power Saw, Self-Propelled: Pugmill: Pumpcrete\Grout Machine: Punch Truck; Roller, other than Asphalt; Roller, Sheepsfoot (Self-Propelled); Roller, 25 tons and over; Ross Carrier; Rotomill, under 6 ft; Trenching Machine; Washing /Screening Plant.

Zone Pay:

All Districts 0-30 mi. free zone >30-60 mi. base pay + \$3.50/hr. >60 mi. base pay + \$5.50/hr.

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CONSTRUCTION EQUIPMENT OPERATORS GROUP 3

	Wage	Benefit
District 1	\$29.45	\$13.67
District 2	\$29.45	\$13.67
District 3	\$29.45	\$13.67
District 4	\$29.45	\$13.67

This group includes but is not limited to:

Asphalt Paving Machine; Asphalt Screed; Backhoe\Excavator\Shovel, over 3 cu. yds; Cableway Highline; Concrete Batch Plant; Concrete Curing Machine; Concrete Pump; Cranes, Creter; Cranes, Electric Overhead; Cranes, 24 tons and under; Curb Machine\Slip Form Paver; Finish Dozer; Front-End Loader, over 5 cu. yds; Mechanic\Welder; Pioneer Dozer; Roller Asphalt (Breakdown & Finish); Rotomill, over 6 ft; Scraper, Single, Twin, or Pulling Belly-Dump; YO-YO Cat.

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Zone Pay:

All Districts 0-30 mi. free zone >30-60 mi. base pay + \$3.50/hr. >60 mi. base pay + \$5.50/hr.

CONSTRUCTION EQUIPMENT OPERATORS GROUP 4

	Wage	Benefit
District 1	\$30.45	\$13.67
District 2	\$30.45	\$13.67
District 3	\$30.45	\$13.67
District 4	\$30.45	\$13.67

This group includes but is not limited to:

Asphalt\Hot Plant Operator; Cranes, 25 tons up to and incl. 44 tons; Crusher Operator; Finish Motor Patrol; Finish Scraper.

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CONSTRUCTION EQUIPMENT OPERATORS GROUP 5

	Wage	Benefit
District 1	\$31.45	\$13.67
District 2	\$31.45	\$13.67
District 3	\$31.45	\$13.67
District 4	\$31.45	\$13.67

This group includes but is not limited to:

Cranes, 45 tons up to and incl. 74 tons.

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CONSTRUCTION EQUIPMENT OPERATORS GROUP 6

	Wage	Benefit
District 1	\$32.45	\$13.67
District 2	\$32.45	\$13.67
District 3	\$32.45	\$13.67
District 4	\$32.45	\$13.67

This group includes but is not limited to:

Cranes, 75 tons up to and incl. 149 tons; Cranes, Whirley (All).

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Zone Pay: All Districts 0-30 mi. free zone >30-60 mi. base pay + \$3.50/hr. >60 mi. base pay + \$5.50/hr.

Zone Pay: All Districts 0-30 mi. free zone >30-60 mi. base pay + \$3.50/hr. >60 mi. base pay + \$5.50/hr.

Zone Pay: All Districts 0-30 mi. free zone >30-60 mi. base pay + \$3.50/hr. >60 mi. base pay + \$5.50/hr.

CONSTRUCTION EQUIPMENT OPERATORS GROUP 7

	Wage	Benefit
District 1	\$33.45	\$13.67
District 2	\$33.45	\$13.67
District 3	\$33.45	\$13.67
District 4	\$33.45	\$13.67

This group includes but is not limited to:

Cranes, 150 tons up to and incl. 250 tons; Cranes, over 250 tons-add \$1.00 for every 100 tons over 250 tons; Crane, Tower (All); Crane Stiff-Leg or Derrick; Helicopter Hoist.

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Zone Pay: All Districts 0-30 mi. free zone >30-60 mi. base pay + \$3.50/hr. >60 mi. base pay + \$5.50/hr.

CONSTRUCTION LABORERS GROUP 1/FLAG PERSON FOR TRAFFIC CONTROL

	Wage	Benefit	Zone Pay:
District 1	\$22.10	\$11.27	All Districts
District 2	\$22.10	\$11.27	0-15 mi. free zone
District 3	\$22.10	\$11.27	>15-30 mi. base pay + \$0.65/hr.
District 4	\$22.10	\$11.27	>30-50 mi. base pay + \$0.85/hr.
			>50 mi. base pay + \$1.25/hr.

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CONSTRUCTION LABORERS GROUP 2

Wage	Benefit
\$21.16	\$ 8.80
\$23.32	\$11.27
\$21.78	\$ 7.18
\$22.56	\$11.27
	Wage \$21.16 \$23.32 \$21.78 \$22.56

This group includes but is not limited to:

General Labor; Asbestos Removal; Burning Bar; Bucket Man; Carpenter Tender; Caisson Worker; Cement Mason Tender; Cement Handler (dry); Chuck Tender; Choker Setter; Concrete Worker; Curb Machine-lay Down; Crusher and Batch Worker; Heater Tender; Fence Erector; Landscape Laborer; Landscaper; Lawn Sprinkler Installer; Pipe Wrapper; Pot Tender;

Powderman Tender; Rail and Truck Loaders and Unloaders; Riprapper; Sign Erection; Guardrail and Jersey Rail; Spike Driver; Stake Jumper; Signalman; Tail Hoseman; Tool Checker and Houseman and Traffic Control Worker.

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Zone Pay: All Districts 0-15 mi. free zone >15-30 mi. base pay + \$0.65/hr. >30-50 mi. base pay + \$0.85/hr. >50 mi. base pay + \$1.25/hr.

CONSTRUCTION LABORERS GROUP 3

	Wage	Benefit
District 1	\$23.10	\$11.27
District 2	\$23.10	\$11.27
District 3	\$23.10	\$11.27
District 4	\$23.10	\$11.27

This group includes but is not limited to:

Concrete Vibrator; Dumpman (Grademan); Equipment Handler; Geotextile and Liners; High-Pressure Nozzleman; Jackhammer (Pavement Breaker) Non-Riding Rollers; Pipelayer; Posthole Digger (Power); Power Driven Wheelbarrow; Rigger; Sandblaster; Sod Cutter-Power and Tamper.

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CONSTRUCTION LABORERS GROUP 4

	Wage	Benefit
District 1	\$23.15	\$11.27
District 2	\$23.15	\$11.27
District 3	\$23.15	\$11.27
District 4	\$23.15	\$11.27

This group includes but is not limited to:

Hod Carrier***; Water Well Laborer; Blaster; Wagon Driller; Asphalt Raker; Cutting Torch; Grade Setter; High-Scaler; Power Saws (Faller & Concrete) Powderman; Rock & Core Drill; Track or Truck Mounted Wagon Drill and Welder incl. Air Arc.

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DRYWALL APPLICATORS

	Wage	Benefit
District 1	\$25.00	\$13.57
District 2	\$25.00	\$13.86
District 3	\$25.00	\$13.57
District 4	\$25.00	\$13.57

Duties Include:

Drywall and ceiling tile installation.

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Zone Pay: All Districts

0-15 mi. free zone >15-30 mi. base pay + \$0.65/hr. >30-50 mi. base pay + \$0.85/hr. >50 mi. base pay + \$1.25/hr.

Zone Pay: All Districts 0-15 mi. free zone >15-30 mi. base pay + \$0.65/hr. >30-50 mi. base pay + \$0.85/hr. >50 mi. base pay + \$1.25/hr.

***Hod Carriers will receive the same amount of travel and/or subsistence pay as bricklayers when requested to travel.

Zone Pay: All Districts 0-30 mi. free zone >30-60 mi. base pay + \$4.00/hr. >60 mi. base pay + \$6.00/hr.

ELECTRICIANS: INCLUDING BUILDING AUTOMATION CONTROL

	Wage	Benefit
District 1	\$32.22	\$14.98
District 2	\$31.65	\$16.33
District 3	\$32.00	\$15.27
District 4	\$34.59	\$15.71

Duties Include:

Electrical wiring; equipment and fixtures; street lights; electrical control systems. Installation and/or adjusting of building automation controls also during testing and balancing, commissioning and retro-commissioning.

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Travel: District 1

No mileage due when traveling in employer's vehicle.

The following travel allowance is applicable when traveling in employee's vehicle:

0-15 mi. free zone >15-45 mi. \$0.585/mi. in excess of the free zone. >45 mi. \$75.00/day

District 2

No mileage due when traveling in employer's vehicle.

The following travel allowance is applicable when traveling in employee's vehicle:

0-10 mi. free zone >10-55 mi. federal mileage rate/mi. >55 mi. \$66.00/day

District 3

No mileage due when traveling in employer's vehicle.

The following travel allowance is applicable when traveling in employee's vehicle:

0-08 mi. free zone >08-50 mi. federal mileage rate/mi. in excess of the free zone. >50 mi. \$66.00/day

District 4

No mileage due when traveling in employer's vehicle.

The following travel allowance is applicable when traveling in employee's vehicle:

0-18 mi. free zone >18-60 mi. federal mileage rate/mi. >60 mi. \$75.00/day

ELEVATOR CONSTRUCTORS

	Wage	Benefit	Travel:
District 1	\$55.86	\$39.71	All Districts
District 2	\$55.86	\$39.71	0-15 mi. free zone
District 3	\$55.86	\$39.71	>15-25 mi. \$44.73/day
District 4	\$55.86	\$39.71	>25-35 mi. \$89.46/day
			meals, whichever is greater.

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FLOOR LAYERS

No Rate Established

Duties Include:

Apply blocks, strips, or sheets of shock-absorbing, sounddeadening, or decorative coverings to floors.

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GLAZIERS

	Wage	Benefit	Travel and Per Die
District 1	\$18.54	\$2.50	All Districts
District 2	\$18.54	\$2.50	No travel or per die
District 3	\$19.47	\$2.64	
District 4	\$20.52	\$2.76	

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HEATING AND AIR CONDITIONING

	Wage	Benefit
District 1	\$30.92	\$17.33
District 2	\$30.84	\$19.38
District 3	\$30.84	\$19.38
District 4	\$30.84	\$19.38

Duties Include:

Testing and balancing, commissioning and retrocommissioning of all air-handling equipment and duct work.

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em: em established.

Travel: All Districts

0-50 mi. free zone >50 mi.

- \$0.25/mi. in employer vehicle. •
- \$0.65/mi. in employee vehicle. .

Per Diem: **All Districts** \$70/day

INSULATION WORKERS - MECHANICAL (HEAT AND FROST)

	Wage	Benefit
District 1	\$35.37	\$19.87
District 2	\$35.37	\$19.87
District 3	\$35.37	\$19.87
District 4	\$35.37	\$19.87

Duties Include:

Insulate pipes, ductwork or other mechanical systems.

Travel: All Districts

0-30 mi. free zone >30-40 mi. \$25.00/day >40-50 mi. \$35.00/day >50-60 mi. \$50.00/day >60 mi. \$60.00/day plus

- \$0.56/mi. if transportation is not provided.
- \$0.20/mi. if in company vehicle.

>60 mi. \$95.00/day on jobs requiring an overnight stay plus

- \$0.56/mi. if transportation is not provided.
- \$0.20/mi. if in company vehicle.

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IRONWORKERS - STRUCTURAL STEEL AND REBAR PLACERS

	Wage	Benefit
District 1	\$29.15	\$27.05
District 2	\$28.24	\$23.19
District 3	\$28.24	\$23.19
District 4	\$28.24	\$23.19

Duties Include:

Structural steel erection; assemble prefabricated metal buildings; cut, bend, tie, and place rebar; energy producing windmill type towers; metal bleacher seating; handrail fabrication and ornamental steel.

Travel: District 1

0-45 mi. free zone >45-60 mi. \$45.00/day >60-100 mi. \$70.00/day >100 mi. \$90.00/day

Special Provision:

When the employer provides transportation, travel will not be paid. However, when an employee is required to travel over 70 miles one way, the employee may elect to receive the travel pay in lieu of the transportation.

Districts 2, 3 & 4

0-45 mi. free zone >45-85 mi. \$70.00/day >85 mi. \$100.00/day

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MILLWRIGHTS

	Wage	Benefit
District 1	\$36.97	\$14.02
District 2	\$36.97	\$14.02
District 3	\$36.97	\$14.02
District 4	\$36.97	\$14.02

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Zone Pay: All Districts 0-30 mi. free zone >30-60 mi. base pay + \$4.00/hr. >60 mi. base pay + \$6.00/hr.

PAINTERS: INCLUDING PAPERHANGERS

	Wage	Benefit
District 1	\$19.57	\$0.00
District 2	\$19.57	\$0.00
District 3	\$19.57	\$0.00
District 4	\$19.57	\$0.00

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PILE BUCKS

	Wage	Benefit
District 1	\$32.00	\$13.57
District 2	\$32.00	\$13.86
District 3	\$32.00	\$13.57
District 4	\$32.00	\$13.57

Duties Include:

All pile driving, bridge, wharf, building, and caisson work, on both land and water. General pile driving work includes all labor employed in the barking, shoeing, splicing, form building, heading, centering, placing, driving, staying, framing, fastening, demo, tooling of the cutter head, Lagging, automatic pile threading, pulling, and/or cutting off of all piling, to include all pile of any make and material as well as similar pre-cast structural shapes or units the setting of which is performed with a pile driver, derrick, crane, or similar power equipment. Fabrication, forming, handling, and setting of all such pre-cast, pre-stressed and post- stressed shapes that are an integral part of any heavy structure, rafting, boring, reeving, dogging, or booming of piles or other material. This includes the unloading of piling of all types together with the wailing and bracing included.

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PLASTERERS

No Rate Established

Duties Include:

All materials beyond the substrate, such as a moisture barrier, any type of drainage installation between the moisture barrier and insulation or EPS board, the attachment of the EPS board, installation of fiberglass mesh embedded in the base coat, any water-resistant coat that is applied on top of the insulation to serve as a weather barrier, and the application of the finish coat.

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Travel and Per Diem: All Districts No travel or per diem established.

Zone Pay: All Districts

0-30 mi. free zone >30-60 mi. base pay + \$4.00/hr. >60 mi. base pay + \$6.00/hr.

Travel and Per Diem: All Districts No travel or per diem established.

PLUMBERS, PIPEFITTERS, AND STEAMFITTERS

	Wage	Benefit
District 1	\$33.38	\$15.56
District 2	\$34.35	\$16.00
District 3	\$34.35	\$16.00
District 4	\$32.74	\$19.50

Duties Include:

Assemble, install, alter, and repair pipe-lines or pipe systems that carry water, steam, air, other liquids or gases. Testing of piping systems, commissioning and retrocommissioning. Workers in this occupation may also install heating and cooling equipment and mechanical control systems.

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Travel:

District 1 0-30 mi. free zone >30-50 mi. \$30.00/day >50-75 mi. \$45.00/day >75 mi. \$85.00/day

Special Provision

If transportation is not provided, mileage at \$0.35/mi. with a separate free zone of 20 miles is added to the amounts above. However, if the employee is traveling more than 75 miles/day, only subsistence is required.

Districts 2 & 3

0-40 mi. free zone >40-80 mi. \$50.00/day >80 mi. \$100.00/day

Special Provision:

If employer provides transportation, travel pay will be $\frac{1}{2}$ of the amounts listed above unless the employee stays overnight. If the employee chooses to stay overnight, the employee will receive the full amount of travel listed above even if the employer furnishes transportation.

District 4

0-70 free zone >70 mi.

- On jobs when employees do not work consecutive days: \$0.55/mi. if employer doesn't provide transportation. Not to exceed two trips.
- On jobs when employees work any number of consecutive days: \$105.00/day.
ROOFERS

	Wage	Benefit
District 1	\$25.61	\$12.49
District 2	\$25.61	\$12.49
District 3	\$21.60	\$ 7.66
District 4	\$22.72	\$ 5.67

Duties Include:

Metal roofing. Excludes prefabricated metal buildings.

Travel: District 1 0-50 mi. free zone >50 mi. \$0.35/mi.

District 2 and 3 0-35 mi. free zone >35 mi. \$0.30/mi only when employer doesn't provide transportation.

District 4 0-25 mi. free zone >25 mi. \$0.30/mi only when employer doesn't provide transportation.

Per Diem: District 1 \$60.00/day

District 2 and 3 Employer pays for room + \$26.50/day.

District 4 Employer pays for room + \$25.00/day.

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SHEET METAL WORKERS

	Wage	Benefit
District 1	\$30.84	\$19.38
District 2	\$30.84	\$19.38
District 3	\$30.84	\$19.38
District 4	\$30.84	\$19.38

Duties Include:

Testing and balancing, commissioning and retrocommissioning of all air-handling equipment and duct work. Manufacture, fabrication, assembling, installation, dismantling, and alteration of all HVAC systems, air conveyer systems, and exhaust systems. All lagging over insulation and all duct lining.

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Travel: All Districts 0-50 mi. free zone >50 mi.

- \$0.25/mi. in employer vehicle
- \$0.65/mi. in employee vehicle

Per Diem: All Districts \$70.00/day

SOLAR PHOTOVOLTAIC INSTALLERS

	Wage	Benefit
District 1	\$32.22	\$14.98
District 2	\$31.65	\$16.33
District 3	\$32.00	\$15.27
District 4	\$34.59	\$15.71

Travel: District 1

No mileage due when traveling in employer's vehicle.

The following travel allowance is applicable when traveling in employee's vehicle:

0-15 mi. free zone >15-45 mi. \$0.585/mi. in excess of the free zone. >45 mi. \$75.00/day

District 2

No mileage due when traveling in employer's vehicle.

The following travel allowance is applicable when traveling in employee's vehicle:

0-10 mi. free zone >10-55 mi. federal mileage rate/mi. >55 mi. \$66.00/day

District 3

No mileage due when traveling in employer's vehicle.

The following travel allowance is applicable when traveling in employee's vehicle:

0-08 mi. free zone >08-50 mi. federal mileage rate/mi. in excess of the free zone. >50 mi. \$66.00/day

District 4

No mileage due when traveling in employer's vehicle.

The following travel allowance is applicable when traveling in employee's vehicle:

0-18 mi. free zone >18-60 mi. federal mileage rate/mi. >60 mi. \$75.00/day

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SPRINKLER FITTERS

	Wage	Benefit
District 1	\$34.35	\$23.00
District 2	\$34.35	\$23.00
District 3	\$34.35	\$23.00
District 4	\$34.35	\$23.00

Duties Include:

Duties Include but not limited to any and all fire protection systems: Installation, dismantling, inspection, testing, maintenance, repairs, adjustments, and corrections of all fire protection and fire control systems, including both overhead and underground water mains, all piping, fire hydrants, standpipes, air lines, tanks, and pumps used in connection with sprinkler and alarm systems.

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TAPERS

No Rate Established

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Travel All Districts

The following travel allowance is applicable when traveling in employee's vehicle.

0-60 mi. free zone >60-80 mi. \$19.00/day >80-100 mi. \$29.00/day >100 mi. \$105.00/day.

Special Provision

When traveling >100 miles, mileage at \$0.54/mi. + \$8.59 for every 15 miles traveled at beginning and end of job.

The following travel allowance is applicable when traveling in employer's vehicle.

0-100 mi. free zone >100 mi. \$105.00/day

Special Provision

When traveling >100 miles, \$8.59 for every 15 miles traveled, at beginning and end of job.

Per Diem: All Districts

No per diem is applicable when traveling in employee's vehicle

The following per diem is applicable when traveling in employer's vehicle.

0-100 mi. free zone >100 mi. \$105.00/day

Travel and Per Diem: All Districts No travel or per diem established.

TELECOMMUNICATIONS EQUIPMENT INSTALLERS

	Wage	Benefit
District 1	\$22.11	\$ 3.48
District 2	\$24.33	\$10.85
District 3	\$24.42	\$ 9.22
District 4	\$22.76	\$8.37

Duties Include:

Install voice; sound; vision and data systems. This occupation includes burglar alarms, fire alarms, fiber optic systems, and video systems for security or entertainment.

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TERRAZZO WORKERS AND FINISHERS

No Rate Established

Duties Include: Finish work on hard tile, marble, and wood tile to floors, ceilings, and roof decks

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TILE AND STONE SETTERS

No Rate Established

Duties Include:

Apply hard tile, stone, and comparable materials to walls, floors, ceilings, countertops, and roof decks.

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TRUCK DRIVERS

Pilot Car Driver No Rate Established

Truck Driver No Rate Established

Truck drivers include but are not limited to:

Combination Truck & Concrete Mixer; Distributor Driver; Dry Batch Trucks; DumpTrucks & Similar Equipment; Flat Trucks; Lowboys, Four-Wheel Trailers, Float Semitrailer; Powder Truck Driver (Bulk Unloader Type); Servicemen; Service Truck Drivers, Fuel Truck Drivers, Tiremen; Trucks with Power Equipment; Truck Mechanic; Water Tank Drivers, Petroleum Product Drivers..

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Travel:

All Districts

The federal mileage rate/mi. in effect when travel occurs if using own vehicle.

Per Diem:

All Districts

Employer pays for meals and lodging up to \$75.00/day. When jobsite is located in Big Sky, West Yellowstone, and Gardiner, lodging and meals will be provided by the employer for all actual and reasonable expenses incurred.

Zone Pay: All Districts No zone pay established.

SPECIAL PROVISIONS

WATCH BUILDING CONCRETE SIDEWALK ENTRANCE MONTANA STATE HOSPITAL SECTION 00 95 10 SPECIAL PROVISIONS

SP1. CONTRACT DOCUMENTS

The Project Drawings are included as Appendix A to the Project Specifications. The CONTRACTOR will be given two (2) copies of the Contract documents (plans and specifications). One set of Contract documents shall be used by the CONTRACTOR for "As Constructed" drawings. One set of Contract documents shall be the CONTRACTOR's executed copy of the Contract documents.

Additional copies of the Contract documents shall be made available to the CONTRACTOR at a cost of \$75 per set. The CONTRACTOR will be required to have a minimum of one set of plans and specifications at the project site at all times during construction.

SP2. PREBID EXPLORATION/SITE INFORMATION

All Bidders are strongly encouraged to visit the site of the work and conduct all field investigations at their disposal to become acquainted with the nature of the work. Written authorization shall be obtained from the OWNER, utilities, and others who may be directly affected prior to: entering the property; conduction field tests; drilling, boring, excavating, or test pumping. No pre-bid walk-through is scheduled. Bidders wishing to visit the site should contact Anderson Montgomery Consulting Engineers.

SP3. DRAWINGS

The ENGINEER has identified, to the best of his knowledge, all major objects that may influence construction and has indicated them on the Drawings for bidding purposes only. Because of scale, possible additions, subsurface uncertainties, etc., the CONTRACTOR shall be responsible for verifying in the field the exact locations of objects that may influence his construction operations. The ENGINEER and OWNER shall in no way be held responsible for objects not located exactly as shown on the Drawings or for objects installed subsequent to preparation of the Drawings. Locations of water and sewer lines, services and other utilities are approximate and are not intended to be used as exact locations. The CONTRACTOR must obtain assistance from the appropriate entities in locating their respective utilities during construction.

SP4. GEOTECHNICAL INVESTIGATION

Geotechnical investigation work has been done for this Project. **Appendix C** of the contract documents contains the April 2021 <u>Montana State Hospital WATCH Building Geotechnical</u> <u>Report</u> by Pioneer Technical Services. The soil investigations represent only the site conditions at each borehole and the investigations were conducted and should not be

considered as a warranty that the conditions exist throughout the site. This data is provided strictly for informational purposes in an effort to provide the contractor with all available information. There is no guarantee that the soil and groundwater conditions portrayed in the study are descriptive of conditions within the general construction area or for any particular time of the year.

SP5. UNSCHEDULED EMPLOYMENT OF THE ENGINEER – LIQUIDATED DAMAGES

Liquidated damages for the unscheduled employment of the ENGINEER and/or Inspector will be assessed against the CONTRACTOR necessitated by <u>any</u> of the following:

- a. The CONTRACTOR working beyond the specified contract time.
- b. The CONTRACTOR working more than 8 hours per day, (or 40 hours per week if four 10-hour shifts are worked) or on Saturdays, Sundays and federal holidays.
- c. The CONTRACTOR utilizing material, supplies, or equipment that requires the redesign of the project.
- d. The CONTRACTOR destroying or disturbing baselines, benchmarks or reference stakes.
- e. The failure of the CONTRACTOR to maintain acceptable as-built records.
- f. Re-submittal review due to the CONTRACTOR not supplying adequate or correct shop drawings, operation and maintenance manuals, and information on the first submittal.

Liquidated damages for the unscheduled employment of the ENGINEER and/or Inspector shall be determined based on the following hourly rates:

Project Manager	\$125.00/Hour
Project ENGINEER	\$110.00/Hour
Inspector	\$85.00/Hour
Mileage	\$ 0.60/Mile

Out of pocket expenses for materials, equipment, supplies, transportation, and subsistence shall be billed at cost plus ten percent. Liquidated damages for unscheduled employment of the ENGINEER and/or Inspector shall be deducted from monthly progress payments and the final payment as the damages are incurred.

The CONTRACTOR shall reimburse the OWNER for all costs incurred as a result of the CONTRACTOR's failure to complete the work within the time period specified in the Contract unless modified by a Change in Contract Time. The OWNER shall have one or more representatives observing the work at all times work is taking place. The CONTRACTOR shall reimburse the OWNER for the cost of engineers, architects, attorneys, construction field representatives, and other professionals that are incurred due to the CONTRACTOR's failure to complete the work within the Contract time period.

SP6. SAFETY

The CONTRACTOR shall be responsible for identifying and meeting all safety standards that are applicable to this project. The ENGINEER, the OWNER or any of their representatives or employees do not work in the capacity of overseeing or enforcing safety on the project. The CONTRACTOR shall hold harmless the OWNER and ENGINEER from any claims made as a result of the CONTRACTOR's responsibilities in this regard. Given the institutional nature of the project area, the maintenance of a safe working area will be a priority. <u>Please refer to the Montana State Hospital Requirements for Construction</u> <u>Contractors provided in these Special Provisions for more information regarding safety on the Hospital Campus.</u>

The CONTRACTOR is responsible for providing safe working conditions for all employees, sub-contractors, inspectors, engineers, OWNERS while on site. This includes providing any personal protection equipment being recommended/required by the Centers for Disease Control or the World Health Organization for work completed during the Coronavirus outbreak.

SP7. OFFICE AND TELEPHONE

The CONTRACTOR shall provide the mailing and street address of a local or main office where information related to the project can be delivered or mailed. All communications, drawings, instructions, and other articles will be delivered to the CONTRACTOR's local or main office as appropriate. Communications delivered to either location shall be deemed to have been delivered to the CONTRACTOR. Telephone numbers of the main office and project superintendent shall also be provided.

The CONTRACTOR shall maintain copies of record drawings, specifications, shop drawings, submittals, and all communications pertinent to the performance of the work at the field office and available for use at all times.

The CONTRACTOR will provide a suitable office and restroom facilities as required to support the project and needs of the project superintendent and the contractor's employees.

SP8. PROJECT RELATED CONTACTS

OWNER:	WATCH Building
	Contact: Sue Chvilicek
	Telephone: 406-444-4902

Montana State Hospital Contact: Raul Luciani Telephone: 406-693-7110

ENGINEER: Anderson-Montgomery Consulting Engineers, Inc.

1064 N. Warren Helena, MT 59601 Contact Person: Adam Eckhart, P.E. Telephone: 406-449-3303

Utilities: One Call Locators Telephone: 800-424-5555 Note – Some utilities are privately owned on the MSH Campus

SP9. VERIFICATION OF SIZES AND UNIT QUANTITIES

Sizes, locations and quantities noted in the bid documents are based on survey data, visual observation and other available data. Some changes in quantities may be expected during construction. The contractor will be responsible for documenting the actual quantities used and for ordering the correctly sized materials.

SP10. BUILDING CODES PERMITS

As required, the CONTRACTOR will be responsible for obtaining Construction Permits from Anaconda-Deer Lodge County and Building, Electrical, Mechanical and Plumbing Permits from the Building Codes Bureau, Montana Department of Labor and Industry. The CONTRACTOR shall be responsible for application fees and any costs to implement the permit. The Building Codes contact phone number is (406) 841-2333.

SP11. ENVIRONMENTAL SAMPLING

Contractor must make arrangements with Anaconda Deer Lodge County during excavation but before backfill to collect a soil sample. Contact Carl Nyman, Anaconda Deer Lodge County Superfund Coordinator at 406 563-7019 for information.

SP12. CONSTRUCTION STAKING

The Contractor shall provide construction staking from the Contractor's layouts and the Engineer's control points and coordinates. Contractor's construction staking shall include:

- 1. Line and grade @ 50' O.C. for piping installation.
- 2. Establish actual (field verify) irrigation and distribution piping elevation prior to ordering flushing and frost-free hydrants.
- 3. Building Centerline and foundation offsets at 10' o.c.

Prior to commencing work, the Contractor shall carefully compare and check all drawings, each with the other that in any way affects the location or elevation of the work to be executed by him, and should any discrepancy be found, he shall immediately report the same to the Engineer for verification and adjustment. Any duplication of work made necessary by failure or neglect on his part to comply with this function shall be done at Contractor's sole expense.

SP13. ENGINEERING, INSPECTIONS, AND TESTING

The Contractor's work will be periodically tested and observed to ensure compliance with the Contract Documents. Complete payment will not be made until the Contractor has demonstrated that the work is complete and has been performed as required. If the Engineer detects a discrepancy between the work and the requirements of the Contract Documents at any time, up to and including final inspection, such work will not be completely paid for until the Contractor has corrected the deficiency.

The Engineer will periodically monitor the construction of work to determine if the work is being performed in accordance with the contract requirements. The Engineer does not have the authority or means to control the Contractor's methods of construction. It is, therefore, the Contractor's responsibility to utilize all methods, equipment, manpower, and other means necessary to assure that the work is installed in compliance with the Drawings and Specifications, and laws and regulations applicable to the work. Any discrepancies noted shall be brought to the Contractor's attention, who shall immediately correct the discrepancy. Failure of the Engineer to detect a discrepancy will not relieve the Contractor of his ultimate responsibility to perform the work as required.

The Contractor shall inspect the work as it is being performed. Any deviation from the Contract requirements shall be immediately corrected. Prior to any scheduled observation by the Engineer, the Contractor shall again inspect the work and certify to the Engineer that he has inspected the work and it meets the requirements of the Contract Documents. All buried work items shall be inspected by the Engineer prior to backfilling, or may not be considered for payment.

The work will be subject to review by the Owner, whose findings shall be as valid as those of the Engineer. The results of all such observations shall be directed to the Contractor through the Engineer.

<u>Testing Services Provided by the Contractor</u>. The Contractor shall provide the following services at no additional cost to the Owner:

- a. Any field surveys to establish locations, elevations, and alignments as stipulated on the Plans.
- b. Preparation and certification of all required shop drawings and submittals as described in the Supplementary Conditions.
- c. Tests as required by the Contract Documents which include, but are not limited to proctors, pressure tests, compaction tests, concrete testing, and leakage testing. All tests requiring the services of a laboratory to determine compliance with the Contract Documents shall be performed by an independent commercial testing laboratory acceptable to the Engineer. The laboratory shall be staffed with experienced technicians properly equipped,

and fully qualified to perform the tests in accordance with the specified standards.

- d. The Contractor shall provide the Engineer with a written schedule indicating dates for specific testing and inspection services to be performed. The schedule shall be updated as required to give the Engineer at least one week's advance notice. The Contractor shall notify the Engineer immediately of any change or shall be subject to pay engineering fees as herein defined.
- e. Maintenance of project record drawings. The project record drawings shall be available for review by the Engineer and Owner at the construction progress meetings.
- f. The Contractor shall arrange for and pay for all tests required not specifically identified below as being performed by the Engineer.

<u>Testing Services Provided by the Owner.</u> The Owner shall provide the following services at no cost to the Contractor except as required for retests as defined in the Contract Documents.

a. The Engineer may spot check compaction of backfill, subbase and base course using Proctor information supplied by the Contractor. These tests are only to determine if the material is complying with the Contract Documents. It is the responsibility of the Contractor to ensure that this level of compaction is constant in all locations and provide the services of an independent tester to check compaction and provide results to the Engineer.

SP14. UNDERGROUND AND OVERHEAD UTILITIES

As noted on the Drawings, underground or overhead utilities are present in certain areas of the project. The CONTRACTOR will be required to locate, expose the utilities and/or stake them out of the trench while installing pipelines in these areas or coordinate the lines relocation prior to construction. There is no guarantee as to the accuracy and completeness of such information shown in the Contract documents and all responsibility for the accuracy and completeness thereof is expressly disclaimed. The CONTRACTOR shall be solely responsible for any damage to underground or overhead utilities due to his operations. The CONTRACTOR shall work closely with the utilities to ensure their criteria are met and no problems result.

All costs associated with construction around, near, under, and/or over underground and overhead utility lines as shown on the contract drawings shall be the responsibility of the CONTRACTOR and included incidental to identified bid payment items. The CONTRACTOR will not be paid specifically for underground utility crossings and parallel underground utilities and the cost of dealing with such shall be included in the total bid amount. The CONTRACTOR will assume full responsibility for any utility conflict cost and repair and to construct within restrictions outlined by the utility company.

All above-ground utilities may not be shown on the plans. It will be the CONTRACTOR's responsibility to field review the magnitude of construction conflict created by the overhead lines and bid this work accordingly. There is no separate pay item for overhead utility conflicts. The CONTRACTOR will need to consider the cost associated with the overhead utilities as a subsidiary cost to the total amount bid.

At least 2 but not more than 10 business days before beginning any excavation, the CONTRACTOR shall according to MCA 69-4-501 notify all owners of underground facilities and coordinate the Work with the owners of such underground facilities. The information shown or indicated in the Contract documents with respect to existing underground facilities is based on information and data obtained from the owners of the facilities without field exploration, and as such, OWNER and ENGINEER are not responsible for the accuracy or completeness of such information or data.

SP15. ASBESTOS PIPE

This project does not have any components relating to asbestos pipe and this provision is only included in the event asbestos pipe is hit during excavation. Specific requirements as imposed by the Montana Department of Environmental Quality for working with and the inspection of asbestos materials must be satisfied by the contractor, generally requiring special certification. No additional costs for compensation to the contractor will be allowed for compliance with these requirements. John Benoit at MDEQ can be contacted at 444-5286 for more information regarding compliance with these requirements.

SP16. DEWATERING AND PUMPING OPERATIONS

Installation of the work scheduled under this project may require dewatering operations. Dewatering operations shall be adequate to assure the integrity of the finished project. It is the intent of these specifications that such draining, pumping and dewatering, and cleaning operations shall be the obligation of the Contractor. The Contractor shall provide all necessary piping, as required to remove all surface water, groundwater, leakage, and water from excavations. **No separate pay item is designated for dewatering.** This work will be considered subsidiary to other bid items. Adequate dewatering is defined as the work required to lower the natural groundwater 12" or more below the bottom of excavation in order to get a structurally stable subgrade. If the existing subgrade material is coarse rock and is naturally stable, the 12" depth will not be required.

Any discharge of water during pumping and dewatering operations will be subject to approval of the Montana Department of Environmental Quality. As needed, the CONTRACTOR shall obtain a Construction Dewatering Discharge Permit and/or 318 Authorization from DEQ for discharging effluent from dewatering operations and written approval from the OWNER if discharge is to the sanitary sewer system. If necessary, the Contractor shall make application and secure the Montana Pollutant Discharge Elimination System Application For Authorization To Discharge Under The General Permit For Storm Water Associated With Construction Activity and associated Erosion Control Plan. The Contractor shall be responsible for application fee and any cost to implement the permit. The DEQ contact phone number is (406) 444-3080.

The Contractor shall be responsible for any damages caused to surrounding structures, land and physical features in the area. Contractor will restore any ground that had been eroded to its natural state. DO NOT DISCHARGE GROUNDWATER NEAR ANY TREES OR SHRUBS, THE GROUNDWATER CONTAINS THERMAL WATER AND HAS BEEN KNOWN TO KILL EXISTING TREES AND SHRUBS. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL EXISTING TREES AND SHRUBS.

Stabilization – Prior to any embankment/backfill work, subgrades shall be firm, dense, and thoroughly compacted and consolidated and shall be sufficiently stable for equipment or manpower to work. Soil material that has been removed because it is too wet to permit compaction may be stockpiled and removed or spread and allowed to dry. Processing of saturated material will not be directly paid for. If the Contractor chooses to import material in lieu of processing wet materials, Contractor will assume responsibility and expense to do such. Authorization for payable import stabilization will only be per direction of Engineer

SP17. WEATHER SHUTDOWN

While it is desired to complete the work as soon as possible, it is recognized that inclement weather may result in a request for a weather shutdown. The OWNER reserves the right to approve or disapprove any shutdown or extension requests. Should a shutdown be granted for unanticipated conditions, the CONTRACTOR shall provide for maintenance of adequate water supply, close all open excavations, provide for maintaining traffic and provide for protection of public property at the work site. The CONTRACTOR will not be allowed to perform any work during the shutdown period unless prior approval is granted by the OWNER.

SP18. WAGE RATES

State of Montana Prevailing Wage Rates shall be utilized on all work. The appropriate wage rates are included and shall be applied to this project. Contractor shall comply with all applicable wage laws. The Contractor shall maintain weekly payroll reports and have them available for review by the OWNER or ENGINEER, upon request. All required postings and sample forms will be supplied to the Contractor upon request.

SP19. WARRANTY

The CONTRACTOR shall warranty the project for at least one (1) year against defective materials and defective workmanship according to the General Conditions. The project shall not be accepted as substantially complete until <u>ALL</u> project segments are substantially complete. Only one (1) notice of substantial completion and start of warranty will be issued for this project. Warranty period begins upon <u>final acceptance</u> of project.

An eleven (11) month project inspection will be held for the project one (1) year warranty period. The CONTRACTOR, OWNER and ENGINEER will be invited to attend. At the inspections, warranty items will be defined for correction according to the General Conditions.

SP20. CONTRACTOR EXPERIENCE/PERFORMANCE REQUIREMENTS

The Bidder may be required to demonstrate his ability and capability to meet the requirements herein stipulated to complete the project. Unless specifically stated elsewhere in these specifications, all CONTRACTORs, subcontractors, suppliers and equipment manufacturers shall submit written evidence within five (5) days of OWNER's request, prior to contract award the following:

- a. Certification that his/her company(ies) has/have specifically been in the business for products or services which he is bidding.
- b. Number of years in business.
- c. List of three (3) similar projects completed in the last five (5) years and references for those projects. Similar projects shall include construction of pumphouses or similar structures.
- d. Certification of a permanent place of business.
- e. Certification and description of adequate plant, staffing and equipment to do the work properly and expeditiously.
- f. Certification of suitable financial status to meet obligations incident to the work.
- g. Certification of appropriate technical experience.
- h. Certification that no just or proper claims are pending against former work performed.

No Bidder will be acceptable if he is engaged on any other work which impairs his ability to finance this contract. These requirements will also apply to all equipment and materials furnished for the project. The OWNER will use these items in determining the lowest responsible bid.

SP21. NOTICES

Except as noted below, the CONTRACTOR shall notify affected users and the OWNER in writing of service outages a minimum of 24 hours in advance of planned outages, including property access. Provide details such as phone number of project superintendent, date, and times for outage.

Notify the ENGINEER and the OWNER a minimum of 48 hours by telephone in advance of any planned utility outage longer than two hours. Any planned outage must be approved in advance by the OWNER or ENGINEER. Notify the ENGINEER 24 hours in advance of intended excavation or other construction activity. Notify the OWNER and ENGINEER as soon as possible of any unplanned outage, even if the outage is corrected immediately.

SP22. REMOVING, REPLACING AND RELOCATING EXTRANEOUS ITEMS

The CONTRACTOR may encounter culverts, fences, signs, ditches, sidewalks, curbs, gutters, barricades, etc. during construction that may hinder his operations. Whether on private or public property, the CONTRACTOR shall, at his own expense, remove, replace, and/or relocate these objects as necessary to conduct his operations. CONTRACTOR shall notify OWNER of such item prior to construction and coordinate with OWNER as to methodology required. Objects removed shall be replaced in as good a condition as previously existed, and to the satisfaction of the ENGINEER.

SP23. RESTORATION OF PROPERTY

All property affected by project construction shall be restored to the preexisting condition found prior to project construction. Damaged turf must be fine graded, topsoiled, seeded and protected against erosion. The technical specification for seeding further describes restoration requirements.

SP24. MATERIAL STORAGE SITES

If necessary, the CONTRACTOR shall secure a storage site for material storage on the campus, location to be at the direction of the Raul Luciani, Facilities Superintendent for the Montana State Hospital. Generally all construction waste materials will be required to be hauled off site to an approved solid waste disposal site.

SP25. PROVISION OF UTILITIES

Water for construction purposes can be provided by the OWNER, generally from hydrants. The Contractor shall be responsible to ensure that water supplies are not contaminated through use or cross connections.

SP26. STANDARD SPECIFICATIONS AND DRAWING

Where referenced here and elsewhere in the Contract documents, relevant portions of the Montana Public Works Standard Specifications 6th Edition, April 2010 are adopted by reference and become part of the contract documents. The Montana Public Works Standard Specifications Drawings, 6th Edition, April 2010, are included in these project documents by reference.

SP27. PROJECT SCHEDULE

The project must be completed by September 30th, 2021. The Contractor will be limited to **45 consecutive days** once construction begins. For example: If demolition begins July 1st, the project must be completed by August 14th. Time is of the essence on this project and schedules must be followed to complete construction in a timely manner. The CONTRACTOR must submit a project schedule prior to beginning construction activities on-site with periodic updates as described in Division 1 of the Technical Specifications.

SP28. BID SCHEDULES AND AWARD

The project will be bid in one bid schedule for completion of the work. No other work will be bid at this time. Award will be based upon the Total Estimated Bid Price for the Base Bid:

SP29. SUBSTITUTIONS FOR SPECIFIED EQUIPMENT

- A. The names of equipment and/or materials that are specifically identified herein by manufacturer's names, model, or catalog number are open for substitution after bid opening, but CONTRACTOR must demonstrate "or equal" performance and quality or else requests will be rejected. Manufacturers desiring approval shall submit catalog cuts, which define quality of product and ability to perform as the unit specified.
- B. CONTRACTOR shall be responsible for proper selection of proposed substitution and that said substitution is in conformance with the plans and specifications insofar as proper capacities, dimensions, or electrical requirements.
- C. Additional cost associated with the evaluation or incorporation of a proposed substitution necessitating redesign of project components will be the responsibility of the CONTRACTOR.

SP30. TRAFFIC PLAN

An approved Traffic Control Plan must be developed outlining procedures to be followed for maintaining typical and emergency traffic throughout the campus. The plan must be developed and approved prior to initiating work on the project. Appropriate project planning and scheduling should be utilized by the Contractor to keep impacts to the flow of traffic to a minimum. The north alley to the WATCH Building must remain open at all times as it will be the access to the building while the main access is unavailable during construction. Access to the south alley will be required Monday through Friday from 10:00 a.m. to 10:30 a.m. to allow for daily deliveries and garbage pickup.

SP31. MONTANA STATE HOSPITAL – REQUIREMENTS FOR CONSTRUCTION CONTRACTORS

The following conditions apply to construction contractors performing work on the Montana State Hospital Campus at Warm Springs, MT.

- A. Construction Operations: Limited to areas noted on drawings.
- B. Arrange use of site and premises to allow:
 - Montana State Hospital 24 hour occupancy.
- C. The surrounding grounds within the campus will be occupied during the course of this project. The contractor shall conduct operations accordingly and take all necessary precautions to protect patients and staff from exposure to the dangers associated with the work. Coordination and cooperation with the staff of MSH is of the utmost importance.

- 1. The speed limit within the campus is 15 miles per hour. Pedestrians always have the right of way.
- 2. Watch for and be careful of all clients (patients) everywhere on campus.
- 3. Do **not** give money, tobacco, candy, gum or any other items to anyone.
- 4. Keep all vehicles locked at any time the occupants are not in the vehicle.
- 5. Remove the keys from the ignition of equipment and vehicles not in use even if standing beside the vehicle. Vehicles and equipment shall not be parked where they will interrupt the flow of traffic or service access.
- 6. The use of tobacco products of any type is not allowed on the Montana State Hospital campus. The campus is entirely tobacco free.
- 7. All trucks backing up should have the assistance of a guide.
- 8. Montana State Hospital will not be responsible for theft or damage of any items.
- 9. Do not leave ladders standing unattended.
- 10. When power tools are not in use they will be unplugged and other tools should be kept where clients cannot get to them.
- 11. Exterior areas of work shall be fenced and interior areas of work shall be barricaded to restrict access to these areas by clients and staff.
- 12. Work areas shall not be left in a hazardous condition during non-working hours.
- 13. All rubbish, chemicals, hazardous materials, etc. are to be secured in a manner to prevent client access at all time.
- 14. Temporary or mobile storage facilities of the contractor are to be secured at all times in a manner to prevent access by clients.
- 15. The contractor shall take any and all precautions necessary to protect the existing buildings, furnishings and surrounding areas from damage.
- 16. Dust control barriers must be set up during construction work or demolition in any occupied building.
- 17. The contractor and employees are not to eat or have coffee in the Montana State Hospital dining areas.
- 18. Lists of all contractors/subs are to be given to Raul Luciani, Maintenance Manager 693-7110.
- D. Provide secure access to and from designated work area as required by law and per the requirements of Montana State Hospital:
 - 1. Emergency Building Exits during Construction: Keep all exits required by code open during construction period; Provide temporary exit signs if exit routes are temporarily altered.
 - 2. Do not obstruct roadways, sidewalks or other public ways without permission.
- E. Existing building spaces may not be used for storage.
- F. Time Restrictions:
 - 1. Limit conduct of interior work to the hours of 8 am to 5 pm.
 - 2. Limit use of any loud equipment to 8 am to 7 pm.
- G. Utility Outages and Shutdown:
 - 1. Interruption of any utility services must be coordinated through the facility Director. This coordination is to allow the user and the clients' reasonable use of the existing facilities at all times during normal working hours and interfere minimally with the user's and clients' activities.

- 2. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days' notice to Montana State Hospital and authorities having jurisdiction.
- 3. Do not disrupt or shut down utility services without 7 days' notice to Montana State Hospital and authorities having jurisdiction.
- 4. Prevent accidental disruption of utility services to other facilities.
- H. Emergency: in case of emergency call <u>406-693-7440</u>. This phone is our emergency phone and usually is answered on the first ring.
 - In case of a <u>Medical emergency</u> Anaconda Community Hospital (406-563-8500) is 15 miles away. Call 911 for ambulance. The MSH does have physicians on campus that can help triage the situation until the ambulance arrives. Please call 406-683-7440.
 - 2. In case of **Fire** please call 406-693-7440, the campus is not in the Deer Lodge Fire District, we are under contract with the Opportunity Volunteer Fire Department for immediate response.

END OF SECTION

TECHNICAL SPECIFICATIONS

DIVISION 1

GENERAL REQUIREMENTS

SECTION 01 11 00 SUMMARY OF WORK

PART 1 - GENERAL

1.01 PROJECT

- A. Project Name: WATCH Building Concrete Sidewalk Entrance
- B. A/E #2021-10-01
- C. Owner's Name: State of Montana
- D. Project Design Team:
 - Anderson-Montgomery Consulting Engineers, Inc. 1064 N. Warren St. Helena, MT 59601
- E. The Project consists of the following major project elements to be conducted at the entrance to the WATCH Building in Warm Springs, Montana:
 - 1. Demolition:
 - a. Removal and disposal of approximately 135 lineal feet of chain link fence and posts;
 - b. Removal and disposal of approximately 2,700 square feet of existing concrete sidewalk/driveway.
 - 2. New Construction:
 - a. Installation of approximately 1,305 square feet of 4" concrete sidewalk;
 - b. Installation of approximately 1,100 square feet of 6" concrete driveway;
 - c. Site landscaping/surface restoration.

1.02 TYPE OF CONTRACT

- A. Contract Type: A single prime contract based on a Stipulated Price as described in this Document.
- 1.03 OWNER OCCUPANCY
 - A. Cooperate with the Owner to minimize interference with the operation of the WATCH Building Facility due to demolition and construction activities. It is acknowledged that construction progress will generally take precedence. Coordinate with the Owner and their operations at all times.
- 1.04 CONTRACTOR USE OF SITE AND PREMISES
 - A. The Contractor shall conduct operations and take all necessary precautions to protect staff from exposure to dangers associated with the Work.

- B. Provide secure access to and from designated work area as required by law and per the requirements of the Owner, noting that the Montana State Hospital Campus has special restrictions for working on Campus that must be observed (See Special Provisions):
 - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
 - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
- C. Existing building spaces may not be used for storage unless specifically authorized by the Owner.
- D. Time Restrictions:
 - 1. Limit conduct of especially noisy and dusty exterior work to the hours of 8 am to 7 pm or as described in Special Provisions.
- E. Utility Outages and Shutdown:
 - 1. Interruption of any utility services must be coordinated through the WATCH Maintenance Director, the Montana State Hospital Maintenance Director, and the Engineer. This coordination is to allow the reasonable use of the existing facilities at all times during normal working hours and interfere minimally with the Owner's operational activities.
 - 2. Do not disrupt or shut down utility services without 7 days notice to the WATCH, MSH and authorities having jurisdiction.
 - 3. Prevent accidental disruption of utility services to other facilities.
- 1.05 WORK SEQUENCE
 - 1. The Contractor will closely coordinate with the Owner and Engineer before conducting any work that impacts existing facilities. Work sequence and schedule shall be described by the Contractor and reviewed by the Engineer.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION 01 11 00

SECTION 01 26 00 CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and Special Provisions of the Contract, including general and Supplementary Conditions and other Division 1 Specifications Sections, apply to this Section.

1.02 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Sections include the following:
 - 1. Division 1 Section "Payment Procedures" for administrative requirements.
 - 2. Division 1 Section "Product Requirements" for administrative procedures for handling requests for substitutions made after Contract award.

1.03 VARIATIONS IN WORK

A. Engineer will issue a Field Order authorizing variations in Work, not involving adjustment of the Contract Sum or the Contract Time.

1.04 PROPOSAL REQUESTS

- A. Owner-initiated Proposal Requests: Engineer will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Proposal Requests issued by Engineer are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
 - 2. Within time specified in the Proposal Request after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicated applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

- B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change to Engineer.
 - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 - 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - 4. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - 5. Comply with requirements in Division 1 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.

1.05 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Proposal Request, the Engineer will issue a Change Order for signatures of Owner and Contractor.
- B. Change Order Form shall be in accordance with Division 0 of these Specifications
- 1.06 WORK CHANGE DIRECTIVE (CONSTRUCTION CHANGE DIRECTIVE)
 - A. Work Change Directive: Engineer may issue a Work Change Directive on EJCDC Document C-940 form see Division 0 of these specifications. Work Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - B. Work change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
 - C. Documentation: The Contractor shall maintain detailed records on a time and material basis for work required by the Work Change Directive.
 - D. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 26 00

SECTION 01 29 00 PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Format and Preparation of Applications.
 - 2. Schedule of Values/Bid Proposal/Bid Schedule
 - 3. Submittal Procedures.
 - 4. Substantiating Data.
- B. Related Sections include:
 - 1. General Conditions as provided in Contract Forms section of Contract Documents.
 - 2. Section 01 26 00 Contract Modification Procedures.
 - 3. Section 01 33 00 Submittal Procedures.
 - 4. Section 01 77 00 Closeout Procedures.
- 1.02 FORMAT AND PREPARATION OF APPLICATIONS
 - A. Utilize: Periodic Estimate for Partial Payment, Form 101 as provided in Contract Forms section of Contract Documents.
 - B. Preparation
 - 1. Present required information in typewritten form.
 - 2. Execute certification by signature of authorized officer.
 - 3. Use data from approved Schedule of Values/Bid Proposal/Bid Schedule. Provide dollar value in each column for each line item for portion of work performed and for stored Products.
 - 4. List each authorized Change Order as an extension on Continuation Sheet, listing Change Order number and dollar amount as for an original item of Work.
 - 5. Prepare Application for Final Payment as specified in Section 01 77 00.

1.03 SCHEDULE OF VALUES/BID SCHEDULE

- A. Submit:
 - 1. Typed schedule of values in format similar to Periodic Estimate for Partial Payment, Form 101. The schedule of values shall be derived directly from the Bid Items included in the Bid Proposal included in the Project Documents.
 - 2. In duplicate within 15 days after date of Owner-Contractor Agreement.
 - 3. See Article 9.2 of the General Conditions.

PAYMENT PROCEDURES

- B. Format:
 - 1. Utilize a spreadsheet format referencing items in the Bid Proposal, suitable for insertion into the Partial Pay Estimate.
 - 2. Identify line items corresponding with number and title of Specification Section.
 - 3. Provide sufficient information regarding means of measurement of quantities or progress completed for verification by Engineer.
- C. Identify site mobilization including bonds and insurance separately. Payment for Mobilization, Bonds and Insurance is limited to 10% or less of the Total Bid Amount. Payment for mobilization will be based on the percentage of the original contract amount in place as described in the following schedule:

Percentage of Original	Percentage of Lump Sum
Contract Amount In-Place	Price for Mobilization Earned
5	20
10	50
25	60
65	75
90	90
100	100

- D. Payment: Payment for MOBILIZATON will be made on the percentage of the contract unit price bid per lump sum as indicated in the Bid Form.
 - 1. Include within each line item a direct proportional amount of Contractor's overhead and profit.
- E. Revise Schedule of Values to list approved Change Orders, and submit with each Application for Payment.

1.04 PROGRESS PAYMENTS

A. See Article 9 of the General conditions

1.05 SUBMITTAL PROCEDURES

- A. Submittals
 - 1. Five (5) copies of each Application for Payment or arrangements for electronic submittal of Payment Application documents can be made.
 - 2. Updated construction schedule with each Application for Payment.
 - 3. Payroll records as required.
 - 4. Payment Periods: As stipulated in the Agreement.
 - 5. Submit with transmittal letter as specified for Submittals in Section 01 33 00.
 - 6. Administrative actions which must precede or coincide with submittal of final application for payment include:

- a. Submit lien waivers, warranties and bonds, and project record documents with final application for payment.
- b. Completion of all work not included in substantial completion as defined in General and Supplementary Conditions.
- c. Completion of project closeout procedures as indicated in Section 01 77 00.
- d. Removal of temporary facilities and services.
- e. Removal of surplus materials, rubbish, or similar elements.
- f. Final cleaning.
- g. Transmittal of project construction record documents to Owner and Engineer.
- h. Consent of surety for final payment.

1.06 SUBSTANTIATING DATA

- A. When Engineer requires substantiating information, submit data justifying dollar amounts in question.
- B. Provide one (1) copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.
- C. Provide copies of invoice(s) for payment of materials stored on-site. Payment will not be made for materials that are not stored on-site or within a bonded warehouse that has been approved by Engineer and Owner.
- D. Contractor shall supply substantiating information in compliance with federal and state requirements for monthly utilization reports and weekly prevailing wage and labor rates for laborers on-site.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 29 00

SECTION 01 31 00 PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and Special Provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specifications Sections, apply to this section.
- 1.02 SUMMARY
 - A. This Section specifies administrative provisions for coordination construction operations on Project including, but not limited to, the following:
 - 1. Preconstruction Conference.
 - 2. General project coordination procedures.
 - 3. Conservation.
 - 4. Coordination Drawings.
 - 5. Administrative and supervisory personnel.
 - 6. Project meetings.
 - B. Related Sections include the following:
 - 1. Division 1 Section 01 70 00 Execution Requirements for procedure for coordinating general installation and field-engineering service, including establishment of benchmarks and control points.
 - 2. Division 1 Section 01 77 00 Closeout Procedures- for coordinating Contract Closeout.
 - 3. Division 1 Section 01 32 00 Construction Progress Documentation for administrative requirements governing preparation and submittal of Contractor's Construction Schedule and Submittals Schedule.

1.03 COORDINATION

- A. Coordination: Coordinate construction operations included in various Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different specification divisions and sections, that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.

- B. If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for Owner, Engineer and separate contractors if coordination of their work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's Construction Schedule.
 - 2. Installation and removal of temporary facilities and controls.
 - 3. Delivery and processing of submittals.
 - 4. Progress meetings.
 - 5. Preconstruction conferences.
 - 6. Project closeout activities.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water and minerals.
 - 1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work.
 - a. All materials salvaged in the project shall become the property of the Owner unless otherwise specified. Material identified as salvage shall be delivered by the Contractor to a suitable storage location as directed by the Engineer.
- 1.04 SUBMITTALS
 - A. Staff Names: At the preconstruction conference submit a list of principal staff assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office and mobile telephone numbers by which Contractor's representatives can be reached immediately. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.
 - 1. Post copies of the contact list in temporary field office and by each temporary telephone.
- 1.05 ADMINISTRATIVE AND SUPERVISORY PERSONNEL
 - A. In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.
- 1.06 PROJECT MEETINGS
 - A. General: Schedule and conduct meetings and conferences at Project site, unless

otherwise indicated.

- 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Engineer of scheduled meeting dates and times.
- 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
- 3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Engineer, within three days of the meeting.
- B. Preconstruction Conference: Engineer and Owner will schedule a preconstruction conference at the Project site or other convenient location. The meeting shall be conducted by the Engineer who shall review work responsibilities and personnel assignments.
 - 1. Attendees: Authorized representatives of Owner, Engineer, and their consultants; Contractor and his superintendent; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.
 - 2. Contractor shall bring a written, detailed construction schedule to the preconstruction conference.
 - 3. Agenda: The Owner, Engineer and Contractor shall discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Phasing.
 - c. Critical work sequencing.
 - d. Designation of responsible personnel.
 - e. Subcontractor list.
 - f. Testing Responsibilities.
 - g. Procedures for processing field decisions and Change Orders.
 - h. Procedures for processing Applications for Payment.
 - i. Distribution of the Contract Documents.
 - j. Submittal procedures.
 - k. Preparation of Record Documents.
 - l. Use of the premises.
 - m. Responsibility for temporary facilities and controls.
 - n. Office, work, and storage areas.

- o. Delivery and storage of materials and equipment.
- p. Security.
- q. Progress and restoration.
- r. Working hours.
- s. Specific County regulations.
- t. Montana DEQ requirements.
- u. Specific MSH Campus requirements.
- C. Progress Meetings: Conduct progress meetings at regular intervals. Coordinate dates of meetings with preparation of payment requests.
 - 1. Attendees: In addition to representatives of the Owner and Engineer, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 2. Agenda: Review and correct or approve minutes of previous progress meetings. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - b. Review present and future needs of each entity present, including the following:
 - i. Interface requirements.
 - ii. Sequence of operations.
 - iii. Status of submittals.
 - iv. Deliveries.
 - v. Off-site fabrications.
 - vi. Access.
 - vii. Site utilization.
 - viii. Temporary facilities and controls.
 - ix. Work hours.
 - x. Hazards and risks.

- xi. Progress, restoration and cleanup.
- xii. Quality and work standards.
- xiii. Change Orders.
- xiv. Documentation of information for payment requests.
- 3. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.
 - a. Schedule Updating: As needed revise Contractor's construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 31 00

SECTION 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and Special Provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specifications Sections, apply to this Section.
- 1.02 SUMMARY
 - A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including, but not limited to, the following:
 - 1. Preliminary Construction Schedule.
 - 2. Contractor's Construction Schedule.
 - 3. Submittals Schedule.
 - 4. Daily construction reports.
 - B. Related Sections include the following:
 - 1. Division 1 Section 01 29 00 Payment Procedures for submitting the Schedule of Values.
 - 2. Division 1 Section 01 31 00 Project Management & Coordination for submitting and distributing meeting and conference minutes.
 - 3. Division 1 Section 01 33 00 Submittals for submitting schedules and reports.
 - 4. Division 1 Section 01 40 00 Quality Requirements for submitting a schedule of tests and inspections.
 - 5. Division 1 Section 01 77 00 Closeout Procedures for submitting digital photographic documentation as part of the Project Record Documents at Project closeout.
- 1.03 DEFINITIONS
 - A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
 - 1. Critical activities are activities on the critical path. They must start and finish on the planned start and finish times.
 - 2. Predecessor activity is an activity that must be completed before a given activity can be started.
 - B. Event: The starting or ending point of an activity.

- C. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
 - 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the following activity.
 - 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- D. Fragment: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.
- E. Milestone: A key or critical point in time for reference or measurement.
- F. Network Diagram: A graphic diagram of a network schedule, showing activities and activity relationships.

1.04 SUBMITTALS

- A. Qualification Data: For firms and persons specified in Section 01 40 00 Quality Requirements to demonstrate their capabilities and experience. Include lists of completed project names and addressed, names and address of Engineers and Owners, and other information specified.
- B. Preliminary Construction Schedule: Submit two printed copies: one a single sheet of reproducible media, and one print.
- C. Contractor's Construction Schedule: Submit two printed copies of initial schedule, one reproducible print and one a blue- or black-line print, large enough to show entire schedule for entire construction period.
- D. Daily Construction Reports: Submit two copies at monthly intervals.

1.05 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
- B. Coordinate Contractor's Construction Schedule, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from parties involved.
 - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.01 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Substantial Completion.
 - 1. Contract completion date shall not be changed by submission of a schedule that shows an earlier or later completion date. Contract time can only be authorized through the formal Change Order process. See Section 01 26 00 and Standard General Conditions Article 9.07.
 - 2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrications, and delivery.
 - 3. Submittal Review Time: Include review and resubmittal times indicated in Division 1 Section "Submittals" in schedule. Coordinate submittal review times in contractor's Construction Schedule with Submittals Schedule.
 - 4. Startup and Testing Time: Include time for startup and testing.
 - 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Engineer's administrative procedures necessary for certification of Substantial Completion.
- B. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
- C. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final completion.

2.02 PRELIMINARY CONSTRUCTION SCHEDULE

- A. Bar-Chart Schedule: Submit preliminary horizontal bar-chart-type construction schedule at the preconstruction conference.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for construction.
- 2.03 REPORTS

PART 3 - EXECUTION

3.01 CONTRACTOR'S CONSTRUCTION SCHEDULE UPDATING

- A. At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
 - 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.

- 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, order, actual starts and finishes, and activity durations.
- 3. As the Work progresses, indicate actual completion percentage for each activity.

3.02 CONTRACTOR'S CONSTRUCTION SCHEDULE DISTRIBUTION

- A. Distribute copies of approved schedule to Engineer, Owner, separate testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
 - 1. Post copies in temporary field offices.
 - 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 01 32 00
SECTION 01 33 00 SUBMITTAL PROCEDURES

PART 1 - GENERAL

- 1.01 RELATED DOCUMENTS
 - A. Drawings and Special Provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specifications Sections, apply to this Section.
- 1.02 SUMMARY
 - A. This Section includes administrative and procedural requirements for submitting shop drawings, Product Data, and other miscellaneous submittals.
- 1.03 DEFINITIONS
 - A. Action Submittals: Written and graphic information that requires Engineer's responsive action.
 - B. Informational Submittals: Written information that does not require Engineer's approval. Submittals may be rejected for not complying with requirements.
- 1.04 SUBMITTAL PROCEDURES
 - A. General: If needed, electronic copies of CAD Drawings of the Contract Drawings will be provided by Engineer for Seller's use in preparing submittals. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, deliver, other submittals, and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
 - B. Submittals shall clearly indicate what product is being submitted and what specification and section the submittal is applicable to. Each submittal shall contain a single piece of equipment being submitted unless grouping of similar items has been approved by the reviewing engineer.
 - C. Submittals Schedule: Comply with requirements in Section 01 32 00 Construction Progress Documentation for list of submittals and time requirements for scheduled performance of related construction activities.
 - D. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer's receipt of submittal.

- 1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with Engineer's review of subsequent submittals. Engineer will advise Seller when a submittal being processed must be delayed to permit coordination with subsequent submittals. Engineer will advise Seller when a submittal being processed must be delayed for coordination.
- 2. Allow 15 days for processing each resubmittal.
- 3. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit review and processing.
- E. Identification: Place a permanent label or title block on each submittal for identification.
 - 1. Indicate name of firm or entity that prepared each submittal on label or title block.
 - 2. Provide a blank second page to record Prime Contractor's review and approval markings and action taken by Engineer.
 - 3. Include the following information on label for processing and recording action taken:
 - a. Project name.
 - b. Date.
 - c. Name and address of Engineer.
 - d. Name and address of Contractor.
 - e. Name and address of subcontractor.
 - f. Name and address of supplier.
 - g. Name of manufacturer.
 - h. Unique identifier, including revision number.
 - i. Number and title of appropriate Specification Section.
- F. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.
- G. Additional Copies: Unless additional copies are required for final submittal, and unless Engineer observes noncompliance with provisions of the Contract Documents, initial submittal may serve as final submittal.
- H. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Engineer will discard submittals received from sources other than Contractor.
 - 1. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Engineer on previous submittal, and *deviations from requirement* of the Contract Documents, including minor variations and limitations. Include the same label information as the related submittal.

- 2. Include certification stating that information submitted complies with requirements of the Contract Documents.
- 3. Transmittal Form: Provide locations on form for the following information:
 - a. Project name.
 - b. Date.
 - c. Destination (To:).
 - d. Source (From:).
 - e. Names of subcontractor, manufacturer, and supplier.
 - f. Category and type of submittal.
 - g. Submittal purpose and description.
 - h. Submittal and transmittal distribution record.
 - i. Remarks.
 - j. Signature of transmitter.
- I. Distribution: Furnish copies of submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- J. Use for Construction: Use only final submittals with mark indicating action taken by Engineer in connection with construction.

PART 2 - PRODUCTS

2.01 ACTION SUBMITTALS

- A. General: Prepare and submit Action Submittals required by individual Specification Sections.
 - 1. Number of Copies: Submit four (4) hard copies and one electronic copy (bearing the Contractor's legal signature) of each action submittal, unless otherwise indicated. Engineer will return two hard copies. Contractor will mark up and retain one returned copy as a Project Record Document.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 - 1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
 - 2. Mark each copy of each submittal to show which products and options are applicable.
 - 3. Include the following information, as applicable:
 - a. Manufacturer's written recommendations.

- b. Manufacturer's product specifications.
- c. Manufacturer's installation instructions.
- d. Standard color charts.
- e. Manufacturer's catalog cuts.
- f. Wiring diagrams showing factory-installed wiring.
- g. Printed performance curves.
- h. Operational range diagrams.
- i. Mill reports.
- j. Standard product operation and maintenance manuals.
- k. Compliance with recognized trade association standards.
- 1. Compliance with recognized testing agency standards.
- m. Application of testing agency labels and seals.
- n. Notation of coordination requirements.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
 - 1. Preparation: Include the following information, as applicable:
 - a. Dimensions.
 - b. Identification of products.
 - c. Fabrication and installation drawings.
 - d. Roughing-in and setting diagrams.
 - e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
 - f. Shopwork manufacturing instructions.
 - g. Templates and patterns.
 - h. Schedules.
 - i. Design calculations.
 - j. Compliance with specified standards.
 - k. Notation of coordination requirements.
 - 1. Notation of dimensions established by field measurement.
 - 2. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.

- 3. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 inches by 11 inches but no larger than 30 by 40 inches.
- D. Coordination Drawings: Comply with requirements in Section 01 31 00 Project Management and Coordination.
- E. Contractor's Construction Schedule: Comply with requirements in Section 01 32 00 Construction Progress Documentation for Construction Manager's action.
- F. Submittals Schedule: Comply with requirements in Section 01 32 00 Construction Progress Documentation."
- G. Application for Payment: Comply with requirements in Section 01 29 00 Payment Procedures.
- H. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 - 1. Name, address, and telephone number of entity performing subcontract or supplying products.
 - 2. Number and title of related Specifications Section(s) covered by subcontract.
 - 3. Drawing number and detail references, as appropriate, covered by subcontract.

2.02 INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit Informational Submittals required by other Specifications Sections.
 - 1. Number of Copies: submit two (2) hard copies and one electronic copy of each informational submittal, unless otherwise indicated. Engineer will not return copies.
 - 2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - 3. Test and Inspection Reports: Comply with requirements in 01 40 00 Quality Requirements.
- B. Contractor's Construction Schedule: Comply with requirements in Section 01 32 00 Construction Progress Documentation.
- C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addressed, names and addresses of Engineers and Owners, and other information specified.
- D. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements.

- E. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.
- F. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.
- G. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements.
- H. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.
- I. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements.
- J. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product.
- K. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements.
- L. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- M. Maintenance Data: Prepare written and graphic instructions and procedure for operation and normal maintenance of products and equipment. Comply with requirements in Section 01 77 00 - Closeout Procedures.
- N. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculation. Include page numbers.
- O. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guideline, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:
 - 1. Preparation of substrates.
 - 2. Required substrate tolerance.

- 3. Sequence of installation or erection.
- 4. Required installation tolerance.
- 5. Required adjustments.
- 6. Recommendations for cleaning and protection.
- P. Manufacturer's Field Reports: Prepare written information documenting factoryauthorized service representative's tests and inspections. Include the following, as applicable:
 - 1. Name, address, and telephone number of factory-authorized service representative making report.
 - 2. Statement on condition of substrates and their acceptability for installation of product.
 - 3. Statement that products at Project site comply with requirements.
 - 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 - 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 - 6. Statement whether conditions, products and installation will affect warranty.
 - 7. Other required items indicated in individual Specification Sections.
- Q. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance and bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amount of deductibles, if any, and term of the coverage.
- R. Material Safety Data Sheets: Submit information directly to Owner. If submitted to Engineer, Engineer will not review this information but will return it with not action taken.

PART 3 - EXECUTION

3.01 CONTRACTOR'S REVIEW

- A. Review each submittal and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Engineer.
- B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Seller's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
- 3.02 ENGINEER'S ACTION
 - A. General: Engineer will not review submittals that do not bear Seller's approval stamp and will return them without action.

- B. Action Submittals: Engineer will review each submittal, make marks to indicate corrections or modifications required, and return it. Engineer will stamp each submittal with an action stamp and will mark stamp appropriately to indicated action taken, as follows:
 - 1. No Exceptions Noted.
 - 2. Exceptions Noted
 - 3. Returned for Correction.
- C. Informational Submittals: Engineer will review each submittal and will not return it, or will reject and return it if it does not comply with requirements. Engineer will forward each submittal to appropriate party.
- D. Submittals not required by the Contract Documents will not be reviewed and may be discarded.

END OF SECTION 01 33 00

SECTION 01 40 00 QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and Special Provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specifications Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor and/or Equipment Supplier of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's qualitycontrol procedures that facilitate compliance with the Contract Documents requirements.
 - 3. Requirements for Contractor/Supplier to provide quality-control services required by Engineer, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Sections include the following:
 - 1. Section 01 32 00 Construction Progress Documentation for developing a schedule of required tests and inspections.
 - 2. Divisions 2 through 32 Technical Sections for specific test and inspection requirements.

1.03 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that completed construction complies with requirements. Services do not include contract enforcement activities performed by Engineer.
- C. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

1.04 SUBMITTALS

- A. Qualification Data: For testing agencies specified in Section 01 40 00 Quality Requirements to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- B. Reports: Prepare and submit certified written reports that include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, and telephone number of testing agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection method.
 - 7. Identification of product and Specification Section.
 - 8. Complete test or inspection data.
 - 9. Test and inspection results and an interpretation of test results.
 - 10. Ambient conditions at time of sample taking and testing and inspecting.
 - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 - 12. Name and signature of laboratory inspector.
 - 13. Recommendations on retesting and re-inspecting.
- C. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.
- 1.05 QUALITY ASSURANCE
 - A. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
 - B. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
 - C. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project,

whose work has resulted in construction with a record of successful in-service performance.

- D. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance.
- E. Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E 548, and that specializes in those types of tests and inspections to be performed.
- F. Preconstruction Testing: Testing agency shall perform preconstruction testing for compliance with specified requirements for performance and test methods.
 - 1. Contractor responsibilities include the following:
 - a. Provide test specimens and assemblies representative of proposed materials and construction. Provide sizes and configurations of assemblies to adequately demonstrate capability of product to comply with performance requirements.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection and similar quality-assurance service to Engineer, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

1.06 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency or Engineer to perform these services.
 - 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of the types of testing and inspecting they are engaged to perform.
 - 2. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to the Contractor.
- B. Contractor Responsibilities: Unless otherwise indicated, provide quality-control services specified and required by authorities having jurisdiction.
 - 1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ the same entity engaged by Owner, unless agreed to in writing by Owner.
 - 2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.

- 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
- 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
- 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- 6. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing.
- 7. Retesting/Re-inspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and re-inspecting, for construction that revised or replaced Work that failed to comply with requirements established by the Contract Documents.
- C. Testing Agency Responsibilities: Cooperate with Engineer and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
 - 1. Notify Engineer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 - 2. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 - 3. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 - 4. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.
 - 5. Do not perform any duties of Contractor.
- D. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
 - 1. Access to the Work.
 - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 - 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 - 4. Facilities for storage and field-curing of test samples.
 - 5. Delivery of samples to testing agencies.
 - 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.

- 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- E. Coordination: Coordinate sequence of activities to accommodate required qualityassurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
 - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Sections of these Specifications. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of patching.
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 40 00

SECTION 01 50 00 TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

- 1.01 SECTION INCLUDES
 - A. Owner-Provided Temporary Utilities.
 - B. Contractor-Provided Temporary Utilities.
 - C. Security requirements.
 - D. Vehicular access and parking.
 - E. Waste removal facilities and services.
 - F. Field offices.

1.02 OWNER PROVIDED TEMPORARY UTILITIES

- A. Owner will provide the following:
 - 1. Water supply (from hydrant), consisting of connection to Owner's existing water infrastructure. Any damage due to making or maintaining this connection shall be completely repair with no cost to the Owner.
 - 2. The contractor will be expected to use Owner provided utilities in a conservative manner.
- B. Contractor shall use trigger-operated nozzles for water hoses, to avoid waste of water.

1.03 CONTRACTOR-PROVIDED TEMPORARY UTILITIES

- A. Temporary Electrical Services, as required.
- B. Telecommunications Services
 - 1. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization, as needed.
- C. Temporary Sanitary Facilities
 - 1. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
 - 2. Maintain daily in clean and sanitary condition.
- D. Barriers
 - 1. Provide barriers to prevent unauthorized entry to demolition areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from demolition operations.
 - 2. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

- E. Fencing to be provided by Contractor as directed by the Engineer to maintain security of the construction site.
- 1.04 SECURITY
 - A. Coordinate with Owner's security program.
- 1.05 VEHICULAR ACCESS AND PARKING
 - A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.
 - B. Coordinate access and haul routes with governing authorities and Owner.
 - C. Provide and maintain access to fire hydrants, free of obstructions.
 - D. Provide means of removing mud from vehicle wheels before entering streets.
 - E. Designated existing on-site roads may be used for construction traffic. Coordinate with Construction Manager, Watch on-site representative, and MSH on-site representative.
 - F. Provide temporary parking areas to accommodate Contractor personnel.
- 1.06 WASTE REMOVAL
 - A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
 - B. Provide containers with lids. Remove trash from site at regular intervals.
 - C. If materials to be recycled or must be stored on-site, provide suitable non-combustible storage areas unless otherwise approved by the authorities having jurisdiction.
- 1.07 FIELD OFFICES (as needed)
 - A. Office: Weathertight, with lighting, electrical outlets, heating, ventilating equipment, and equipped with sturdy furniture.
 - B. Locate offices a minimum distance of 30 feet from existing structures.
- 1.08 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS
 - A. Remove temporary utilities, equipment, facilities, materials, prior to Final Application for Payment inspection.
 - B. Clean and repair damage caused by installation or use of temporary work.
 - C. Restore existing facilities used during construction to original condition.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION 01 50 00

SECTION 01 60 00 PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and Special Provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specifications Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes the following administrative and procedural requirements: selection of products for use in Project: product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.
- B. Related Sections include, but are not limited to, the following:
 - 1. Section 01 77 00 Closeout Procedures for submitting warranties for contract closeout.
 - 2. Divisions 2 through 32 for specific requirements for warranties on products and installation specified to be warranted.

1.03 DEFINITIONS

- A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation, shown or listed in manufacturer's published product literature, that is current as of dated of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are no considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
- C. Basis-of-Design Product Specifications: Where a specific manufacturer's product is named including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

- D. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorse by manufacturer to Owner.
- E. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.
- F. Reference herein to the name "Contractor" will be considered the same as the name "seller".
- 1.04 SUBMITTALS
 - A. Substitution Request: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified material or product cannot be provided.
 - b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. List of similar installations for completed projects with project names and addressed and names and addresses of Engineers and owners.
 - g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - h. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
 - i. Cost information, including a proposal of change, if any, in the Contract Sum.
 - j. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.

- k. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
- 2. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within one week of receipt of a request for substitution. Engineer will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
 - a. Form of Acceptance: Change Order.
 - b. Use product specified if Engineer cannot make a decision on use of a proposed substitution within time allocated.
- B. Basis-of-Design Product Specifications Submittal: Comply with requirements in Division 1 Section "Submittal Procedures" Show compliance with requirements.
- C. Contractor will be responsible for any project redesign and/or construction costs that may become necessary as a result of the product substitution.
- 1.05 QUALITY ASSURANCE
 - A. Compatibility of Options: If Contractor is given option of selecting between two more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.
- 1.06 PRODUCT DELIVERY, STORAGE AND HANDLING
 - A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss including theft. Comply with manufacturer's written instructions.
 - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 - 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 - 4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
 - 5. Store products to allow for inspection and measurement of quantity or counting of units.
 - 6. Store materials in a manner that will not endanger Project structure.
 - 7. Store products that are subject to damage by the elements, under cover in a watertight enclosure above ground, with ventilation adequate to prevent condensation.

- 8. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
- 9. Protect stored products from damage.

1.07 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
 - 1. Refer to Divisions 2 through 32 Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Section 01 33 00 Submittal Procedure and Section 01 77 00 Closeout Procedures.

PART 2 - PRODUCTS

2.01 PRODUCT OPTIONS

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged, and unless otherwise indicated, that are new at time of installation.
 - 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for complete installation and indicated use and effect.
 - 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 - 3. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.
- B. Product Selection Procedures: Procedures for product selection include the following:
 - 1. Products: Where Specification paragraphs or subparagraphs titled "Products" introduce a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
 - a. Substitutions may be considered unless otherwise indicated.
 - 2. Manufacturers: Where Specification paragraphs or subparagraphs titled "Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
 - a. Substitutions may be considered, unless otherwise indicated.

2.02 PRODUCT SUBSTITUTIONS

- A. Timing: Engineer will consider requests for substitution if received within 30 days after the Notice of Award. Requests received after that time may be considered or rejected at discretion of Engineer.
- B. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:
 - 1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducing additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Engineer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - 2. Requested substitution does not require extensive revisions to the Contract Documents.
 - 3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - 4. Substitution request is fully documented and properly submitted.
 - 5. Requested substitution will not adversely affect Contractor's Construction Schedule.
 - 6. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - 7. Requested substitution is compatible with other portions of the Work.
 - 8. Requested substitution has been coordinated with other portions of the Work.
 - 9. Requested substitution provides specified warranty.

2.03 COMPARABLE PRODUCTS

- A. Where products or manufacturers are specified by name, submit the following, in addition to other required submittals, to obtain approval of an unnamed product:
 - 1. Evidence that the proposed product does not require extensive revisions to the Contract Documents;
 - 2. That it is consistent with the Contract Documents and will produce the indicted results, and that it is compatible with other portions of the Work.
 - 3. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - 4. Evidence that proposed product provides specified warranty.

- 5. List of similar installations for completed projects with project names and addresses and names and addresses of Engineers and Owners, if requested.
- 6. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 60 00

SECTION 01 70 00 EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and Special Provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specifications Sections, apply to this Section.
- 1.02 SUMMARY
 - A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Field engineering and surveying.
 - 3. General installation of products.
 - 4. Coordination of Owner-installed products.
 - 5. Progress cleaning.
 - 6. Protection of installed construction.
 - 7. Correction of the Work.
 - B. Related Sections include, but are not limited to, the following:
 - 1. Section 01 31 00 Project Management and Coordination for procedures for coordinating field engineering with other construction activities.
 - 2. Section 01 33 00 Submittal Procedures for submitting surveys.
 - 3. Section 01 77 00 Closeout Procedures for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.
- 1.03 SUBMITTALS
 - A. Qualification Data: As required, land surveyors must demonstrate their capabilities and experience. Include lists of completed projects with project names and addressed, names and addresses of Engineers and Owners, and other information specified.
- 1.04 QUALITY ASSURANCE
 - A. Land Surveyor Qualifications; A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services is necessary for all required legal surveys.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
 - 1. Before construction, verify the location and points of connection of utility services.
- B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

3.02 PREPARATION

- A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocated existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Engineer not less than two days in advance of propose utility interruptions.
 - 2. Do not proceed with utility interruptions without Engineer's written permission.
- C. Field Measurements: Take field measurements as required to locate and execute the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- D. Space Requirements: Verify space requirements and dimensions of items shown on Drawings.
- E. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Engineer. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.03 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on

Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Engineer promptly.

- B. General: As required, engage a land surveyor to lay out the Work using accepted surveying practices.
 - 1. Establish benchmarks and control points to set lines and levels.
 - 2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 - 3. Inform installers of lines and levels to which they must comply.
 - 4. Check the location, level and plumb, of every major element as the Work progresses.
 - 5. Notify Engineer when deviations from required lines and levels exceed allowable tolerances.
 - 6. Close site surveys with an error of closure equal to or less than the standard established by authorities in the surveying discipline.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.
- D. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Engineer.

3.04 FIELD ENGINEERING

- A. Identification: Owner will identify existing benchmarks, control points, and property corners.
- B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
 - 1. Do not change or relocated existing benchmarks or control points without prior written approval of Engineer. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Engineer before proceeding.
 - 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- C. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
 - 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
 - 2. Where the actual location or elevation of layout points cannot be marked, provide

temporary reference points sufficient to locate the Work.

3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

3.05 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do no use tools or equipment that produces harmful noise levels.
- F. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
- G. Hazardous Materials: Use products, cleaners and installation materials that are not considered hazardous.

3.06 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of material lawfully.
 - 1. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

- E. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- F. Cutting and Patching: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortars, oils, putty, and similar materials.
 - 1. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original Condition.
- G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.
- 3.07 STARTING AND ADJUSTING
 - A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
 - B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
 - C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 - D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualifications requirements in Division 1 Section "Quality Requirements."

3.08 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

3.09 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction.
 - 1. Repair includes replacing defective parts, refinishing damaged surfaces, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

END OF SECTION 01 70 00

SECTION 01 77 00 CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Closeout Procedures
 - 2. Substantial Completion
 - 3. Final Completion
 - 4. Certificate of Occupancy
 - 5. Final Cleaning
 - 6. Project Record Documents
 - 7. Spare parts and Maintenance Products
 - 8. Warranties and Bonds
 - 9. Maintenance Service
- B. Related Sections include:
 - 1. Section 01 31 00 Project Management & Coordination.
 - 2. Section 01 50 00 Temporary Facilities and Controls.
 - 3. Section 01 78 23 Operation and Maintenance Data.
- 1.02 CLOSEOUT PROCEDURES
 - A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's review.
 - B. Provide submittals to Engineer that are required by governing or other authorities.
 - C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.
 - D. Owner will occupy all portions of the Project.

1.03 SUBSTANTIAL COMPLETION

- A. Prior to substantial completion Contractor shall review Contract Documents for items which are not complete or need to yet be completed including submittal of all manuals, and testing reports. Contractor shall make a list of incomplete work, a value of the incomplete work, and reasons why work is incomplete. Contractor shall complete all items required to be completed as part of substantial completion.
- B. Contractor shall provide a written notice to Engineer that the work, or specific portions of the work, is substantially complete and ready for review. If there are any items remaining to

be corrected or completed Contractor shall submit a list of these items along with the notice of substantial completion. Along with the list of items the Contractor should provide a written explanation of why these items are not considered necessary for substantial completion.

- C. Upon receipt of Contractor's notice of substantial completion, Engineer will proceed with inspection for substantial completion.
- D. Following the substantial completion inspection by the Engineer and Engineer's subconsultants, Engineer will either prepare certificate of substantial completion, or notify the Contractor in writing that substantial completion has not been meant listing the various reasons.
- E. Contractor shall promptly complete the items required to meet substantial completion and submit a second notice of substantial completion to the Engineer.
- F. Engineer will review the work a second time do determine the status of substantial completion.
- G. When Engineer considers the project to be substantially complete, Engineer will prepare the preliminary certificate of substantial completion along with a substantial completion punch list of items to be completed prior to final payment. Engineer will deliver preliminary certificate and punch list to Owner and consider any objections by the Owner as provided in the Conditions of the Contract.
- H. Upon agreement by Owner and Engineer of substantial completion and punch list items, Engineer will execute and deliver to the Contractor and Owner a final certificate of substantial completion along with substantial completion punch list of items to be completed prior to final payment.
- I. A maximum of two (2) reviews of substantially complete work will be completed by Engineer and Engineer's subconsultants for any one portion of work under the Contract. Should a third or subsequent reviews be necessary the following requirements will be met:
 - 1. Owner will compensate Engineer for additional reviews.
 - 2. Owner will deduct the amount of compensation paid to the Engineer for additional reviews from the payment to the Contractor.
 - 3. Compensation shall be at Engineer's standard hourly rates plus actual cost of reimbursables.

1.04 FINAL COMPLETION

- A. Following substantial completion Contractor shall complete remaining work and items to be corrected as part of substantial completion punch list as well as final cleaning and transferring site to Owner.
- B. When Contractor considers that all work is complete, Contractor shall provide written notice of final completion to Engineer.
- C. Following receipt of final completion certification, Engineer and Engineer's subconsultants shall review the work to verity that the requirements for final completion have been met.

- D. Upon review of work for final completion Engineer will either request the Contractor to make closeout submittals or will notify Contractor that the work is not complete with a list of incomplete or defective work.
- E. Contractor shall promptly take steps to correct all listed deficiencies and incomplete work before sending a second written notice of final completion certification to Engineer.
- F. If final completion was not met following first review, Engineer will review work a second time to determine if the requirements for final completion have been met.
- G. A maximum of two (2) reviews of final complete work will be completed by Engineer and Engineer's subconsultants for any one portion of work under the Contract. Should a third or subsequent reviews be necessary the following requirements will be met:
 - 1. Owner will compensate Engineer for additional reviews.
 - 2. Owner will deduct the amount of compensation paid to the Engineer for additional reviews from the payment to the Contractor.
 - 3. Compensation shall be at Engineer's standard hourly rates plus actual cost of reimbursables.
- H. When Engineer considers all work to be complete in accordance with the Contract Documents, Engineer shall request the Contractor to make closeout submittals.
- 1.05 CERTIFICATE OF OCCUPANCY (As Needed)
 - A. In accordance with State Building Codes, when WORK is complete and ready for occupancy, CONTRACTOR shall contact local building official and request a final building code review for the purposes of obtaining a Certificate of Occupancy.
 - B. CONTRACTOR shall, in accordance with Supplementary Conditions submit copy of Certificate of Occupancy with final Application for Payment.
- 1.06 FINAL CLEANING
 - A. Execute final cleaning prior to final project assessment.
 - B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains, and foreign substances, polish transparent and glossy surfaces, mop all floors.
 - C. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
 - D. Replace filters of operating equipment.
 - E. Clean debris from roofs, gutters, downspouts, and drainage systems.
 - F. Clean site; sweep paved areas, rake clean landscaped surfaces.
 - G. Remove waste and surplus materials, rubbish, and construction facilities from the site.
- 1.07 PROJECT RECORD DOCUMENTS
 - A. Maintain on site one set of the following record documents; record actual revisions to the Work:

- 1. Drawings.
- 2. Specifications.
- 3. Addenda.
- 4. Change Orders and other modifications to the Contract.
- 5. Reviewed Shop Drawings, Product Data, and Samples.
- 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling current and future reference by Owner and Engineer.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Specifications: Legibly mark and record at each Product section description of actual Products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Measured depths of foundations in relation to finish first floor datum.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Provide GPS survey during construction for horizontal and vertical locations of all underground piping and utilities at fittings, valves, building connections, pull boxes, junction boxes, manholes, and other appurtenances.
 - 4. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - 5. Field changes of dimension and detail.
 - 6. Details not on original Contract drawings.
- G. Submit documents to Engineer with claim for final Application for Payment.
- 1.08 SPARE PARTS AND MAINTENANCE PRODUCTS (As Needed)
 - A. Provide spare parts, maintenance, and extra Products in quantities specified in individual specification sections.
 - B. Deliver to Project site and place in location as directed by Owner; obtain receipt prior to final payment.
- 1.09 WARRANTIES AND BONDS
 - A. Provide duplicate notarized copies.

- B. Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers.
- C. Provide Table of Contents and assemble in D size three ring binders with durable plastic cover.
- D. Submit prior to final Application for Payment.
- E. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance.
- 1.10 MAINTENANCE SERVICE
 - A. Furnish service and maintenance of components during the warranty period.
 - B. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
 - C. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
 - D. Maintenance service shall not be assigned or transferred to any agent or Subcontractor without prior written consent of the Owner.

1.11 FINAL ADJUSTMENT OF ACCOUNTS

- A. Contractor shall submit a final statement of accounting to Engineer. Statement shall reflect all adjustments to the contract sum and include the following:
 - 1. Original contract sum.
 - 2. Additions and deductions resulting from:
 - a. All previous change orders
 - b. Allowances
 - c. Unit prices
 - d. Deductions for uncorrected work
 - e. Penalties and bonuses
 - f. Deductions for liquidated damages
 - g. Deductions for multiple reviews
 - h. Other adjustments
 - 3. Total contract sum as adjusted.
 - 4. Previous payments.
 - 5. Sum remaining due.
- B. Engineer will prepare a final change order, reflecting approved adjustments to the contract sum which were not previously made by change orders.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 77 00

SECTION 01 78 23 OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Quality Assurance.
 - 2. Format.
 - 3. Contents of Each Volume.
 - 4. Manual for Equipment and Systems.
 - 5. Instruction of Owner's personnel.
 - 6. Submittals.
 - 7. Asset Management Submittals.
 - 8. Schedule of Submittals.
- B. Related Sections include:
 - 1. Section 01 33 00 Submittal Procedures.
 - 2. Section 01 40 00 Quality Requirements.
 - 3. Section 01 77 00 Closeout Procedures.
- 1.02 QUALITY ASSURANCE
 - A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.
- 1.03 FORMAT
 - A. Prepare data in the form of an instructional manual. Arrange data in numerical format in accordance with the Specification Divisions.
 - 1. Binders:
 - a. Commercial quality, 8-1/2 x 11 inch three D side ring binders with durable plastic covers.
 - b. 2 inch maximum ring size.
 - c. When multiple binders are used, correlate data into related consistent groupings.
 - 2. Cover; Identify:
 - a. Each binder with typed title OPERATION AND MAINTENANCE INSTRUCTIONS.
 - b. Title of Project.

- c. Subject matter of contents.
- d. Volume number.
- e. Year of construction.
- 3. Provide tabbed dividers for each separate product and system, with typed description of product and major component parts of equipment.
- B. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.
- C. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages. Folded paper should be unfoldable without removal from binder.
- D. Contents: Prepare a Table of Contents for each volume, with each Product or system description identified, in three parts as follows:
 - 1. Part 1: Directory, listing names, addresses, and telephone numbers of Engineer, Contractor, Subcontractors, and major equipment suppliers.
 - 2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.
 - d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - 3. Part 3: Project documents and certificates, including the following:
 - a. Shop drawings and product data.
 - b. Materials testing reports (compaction, concrete, pipe leakage, etc.).
 - c. Certificates.
 - d. Photocopies of warranties.
 - e. Bonds.

1.04 CONTENTS OF EACH VOLUME

- A. Table of Contents: Provide title of Project; names, addresses, and telephone numbers of Engineer, Subconsultants, and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.
- B. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- C. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

- D. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- E. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.
- F. Warranties: Prepare and submit per Section 01 77 00.
- G. Bonds: Prepare and submit per Section 01 77 00.
- 1.05 MANUAL FOR EQUIPMENT AND SYSTEMS (As Needed)
 - A. Each Item of Equipment and Each System: Include description of unit or system, and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.
 - B. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed. Refer to applicable Division 16 specification Sections.
 - C. Include color coded wiring diagrams as installed. Refer to applicable Division 26 specification Sections.
 - D. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
 - E. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
 - F. Provide servicing and lubrication schedule, and list of lubricants required.
 - G. Include manufacturer's printed operation and maintenance instructions.
 - H. Include sequence of operation by controls manufacturer.
 - I. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
 - J. Provide control diagrams by controls manufacturer as installed.
 - K. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.
 - L. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
 - M. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage, and local sources of supply.
 - N. Additional Requirements: As specified in individual Product specification sections.
 - O. Provide a listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.
- P. Electronic Copies: Compact discs (CD) OR USB drives shall be provided with all manuals in electronic format in a portable document format (*.pdf). The documents shall be placed as required under the appropriate tabs and labels as previously required for the compact disk. Each file shall be adequately labeled to identify the contents without requiring the document to be opened. Additionally all files shall be named consistently and in a uniform system for cataloguing files.
- 1.06 INSTRUCTION OF OWNER PERSONNEL (As Needed)
 - A. Before final inspection, instruct Owner's designated personnel in operation, adjustment, and maintenance of products, equipment, and systems, at agreed upon times.
 - B. For equipment requiring seasonal operation, perform instructions for other seasons within six months.
 - C. Use operation and maintenance manuals as basis for instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.
 - D. Prepare and insert additional data in Operation and Maintenance Manual when need for such data becomes apparent during instruction.
- 1.07 SUBMITTALS
 - A. Submit electronic copy of preliminary draft or proposed formats and outlines of contents before Substantial Completion. Engineer will review draft and return one copy with comments.
 - B. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.
 - C. Submit electronic copies of completed volumes fifteen (15) working days prior to final inspection. One (1) copy will be returned after final inspection, with Engineer comments. Revise content of all document sets as required prior to final submission.
 - D. Submit four (4) sets of revised final volumes in final form within ten (10) days after final inspection.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 78 23

DIVISION 2

EXISTING CONDITIONS, SITEWORK

SECTION 02 41 00 SITE DEMOLITION, DISPOSAL & SALVAGE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and Special Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications Sections, apply to this Section. <u>Site demolition will include the removal of existing chain link fence,</u> <u>existing concrete sidewalk/driveway and associated components. No buildings are</u> <u>scheduled to be demolished</u>.

1.02 SUMMARY

- A. This Section includes the following (where applicable):
 - 1. Removal and disposal of all construction indicated on the plans or specified in these documents.
 - 2. Removal and disposal of paving, curbing, sidewalks, driveways, crosswalks, utility structures, piping, below grade foundations, improvements to avoid conflict with new construction, disconnection, capping and removal of utilities no longer in use, pollution control during demolition including noise control and removal and legal disposal of materials.
- B. Related Sections include the following:
 - 1. Division 1 Section "Payment Procedures" for a schedule of unit prices.
 - 2. Division 32 Section "Landscaping" for finish grading, including placing and preparing topsoil for lawns and plantings.
 - 3. Division 31 Section "Earthwork" for excavation and embankment, site stripping, grubbing, removing topsoil, and protecting trees to remain.

1.03 SUBMITTALS

- A. Schedule: Submit schedule indicating proposed methods and sequence of operations for selective demolition work to Engineer for review prior to commencement of work. Include coordination for shut-off, capping, and continuation of utility services as required, together with details for dust and noise control protection.
- B. Provide detailed sequence of demolition and removal work to ensure uninterrupted progress of Owner's on-site operations.
- C. Coordinate with Owner's continuing occupation of portions of existing building, and with Owner's reduced usage of any portion thereof.
- D. Submit project record documents under provisions of Section 01 77 00.
- 1.04 REGULATORY REQUIREMENTS

- A. Conform to all applicable codes for worker safety, confined space entry, dust control, and water and sludge discharges and disposal.
- B. Obtain required permits from authorities.
- C. Notify affected utility companies before starting Work and comply with applicable requirements.
- D. Do not close or obstruct roadways except as permitted by Owner. Do not close or obstruct egress width to exits without prior written permission of Owner.
- E. Do not disrupt or compromise effectiveness of WATCH operations without written permission of Owner.
- F. Conform to procedures applicable if hazardous materials or situations discovered.
- 1.05 PROJECT CONDITIONS
 - A. Dust Control: The amount of dust resulting from demolition shall be controlled to prevent the spread of dust to occupied portions of the site or building and to avoid creation of a nuisance in the surrounding area. Use of water will not be permitted when it will result in, or create, hazardous or objectionable conditions such as ice, flooding, and pollution.
 - B. Protection of Existing Work: Before beginning any cutting or demolition work, the Contractor shall carefully survey the existing facilities and examine the plans and specifications to determine the extent of the work. The Contractor shall take all necessary precautions to ensure against damage to existing facilities to remain in place, to be reused, or to remain the property of the Owner, and any damage to such work shall be repaired or replaced as approved by the Engineer at no additional cost to the Owner. The Contractor shall carefully coordinate the work of this section with all other work and construct and maintain shoring, bracing and supports, as required.
 - C. Protection of Buildings from the Weather: The interior of buildings and all materials and equipment shall be protected from the weather at all times.
 - D. Protection of Trees: Trees which might be damaged during demolition and which are indicated to be left in place shall be protected. Any tree designated to remain that is damaged during the Work under this contract shall be replaced.
 - E. Burning: The use of burning at the project site for the disposal of refuse and debris will not be permitted.
 - F. Occupancy: Owner will be continuously occupying areas of the building immediately adjacent to areas of selective demolition. Conduct selective demolition work in manner that will minimize need for disruption of Owner's normal operations. Provide minimum of 72 hours advance notice to Owner of demolition activities which will severely impact Owner's normal operations.
 - G. Condition of Structures: Owner assumes no responsibility for actual condition of items to be demolished.

- 1. Conditions existing at time of commencement of contract will be maintained by Owner insofar as practicable. However, variations may occur by Owner's removal and salvage operations prior to start of selective demolition work.
- H. Partial Demolition and Removal: Materials of marketable value that are removed in accordance with the provisions of the Project, but that are not to be possessed by the Owner, shall become the property of the Contractor and shall be removed from the right-of-way. Transport salvaged items from site as they are removed.
 - 1. Storage or sale of removed items on site will not be permitted.
- I. Protections: Provide temporary barricades and other forms of protection as required to protect Owner's personnel and general public from injury due to selective demolition work.
 - 1. Confine Work and stockpiling to within Owner's property or easement as approved by Engineer. Leave undisturbed all street and utility appurtenances not indicated for removal or renovation.
 - 2. Provide protective measures as required to provide free and safe passage of Owner's personnel and general public to and from occupied portions of buildings.
 - 3. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of element to be demolished, and adjacent facilities or work to remain.
 - 4. Protect from damage existing finish work that is to remain in place and becomes exposed during demolition operations.
 - 5. Protect floors with suitable covering when necessary.
 - 6. Construct temporary insulated solid dustproof partitions where required to separate areas where noisy or extensive dirt or dust operations are performed. Equip partitions with dustproof doors and security locks if required.
 - 7. Provide temporary weather protection during interval between demolition and removal of existing construction on exterior surfaces, and installation of new construction to insure that no water leakage or damage occurs.
 - 8. Maintain, during operation and at completion, pavement removal areas in such condition that they will be well drained at all times.
 - 9. Protect and maintain survey monuments or any construction staking from disturbance during pavement removal.
- J. Damages: Promptly repair damages caused to adjacent facilities by demolition work at no cost to Owner.
- K. Explosives: Use of explosives will not be permitted.
- L. Utility Services: Maintain existing utilities indicated to remain, keep in service, and protect against damage during demolition operations.

M. Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities as acceptable to governing authorities.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 INSPECTION

A. Prior to commencement of selective demolition work, inspect areas in which work will be performed. Photograph existing conditions to structure surfaces, equipment or to surrounding properties which could be misconstrued as damage resulting from selective demolition work; file with Owner's Representative prior to starting work.

3.02 PREPARATION

- A. Become familiar with required lines of removal and saw cutting.
- B. Identify underground utilities.
- C. Provide, erect, and maintain adequate barriers and warning lights.
- D. Keep streets, sidewalks, and driveways in usable condition; avoid property owner inconvenience insofar as practicable; do not trespass on private property.
- E. Verify traffic control in place prior to commencement of pavement removal.
- F. Inspect and record existing conditions onsite and at adjacent areas prior to starting construction. Commencement of this Section's Work means acceptance of existing conditions.

3.03 PAVING REMOVAL

- A. Saw cutting may be required on concrete and asphalt pavements. Pavement removal beyond the limits established in the notes on the Drawings shall be replaced at the Contractor's expense.
- B. Saw cut vertically; remove on straight lines approximately parallel or perpendicular to centerline of pavement.
- C. Saw cut vertically full depth to obtain a clean break. After saw cutting, use pneumatic jackhammer or similar device prior to breaking out pavement.
- D. Break out remainder of pavement.
- E. Disturbances, breakage, or damage to areas not designated for removal shall be restored at Contractor's expense prior to making final payment.
- F. Leave underlying sub-base material in a condition suitable for traffic if construction sequence involves delays and if local situation requires access by the public.

- G. Pavement removed beyond the limits established shall be replaced to the same specifications as the adjacent removal at Contractor's expense.
- 3.04 TOLERANCES
 - A. Saw cut full depth to achieve a clean break.
 - B. If line of removal falls within 2 feet of an existing joint, adjust line of removal to be the existing joint.
 - C. Remove entire width of sidewalk if removal width is less than sidewalk width.
- 3.05 DEMOLITION
 - A. General: Remove and legally dispose of paving, curbing, sidewalks, driveways, crosswalks, utility structures, piping, below grade foundations, improvements to avoid conflict with new construction, disconnection, and capping and removal of utilities no longer in use.
 - 1. Demolition of existing structures and piping shall only commence after provisions are made to ensure continuing existing utility services.
 - B. Structures: Existing structures indicated shall be completely removed to two feet below grade. The excavations shall be backfilled and final graded in accordance with other sections of these specifications.
 - C. Pavement: Cut, remove and dispose of existing pavement to the lines indicated on the plans or as directed by Engineer. Make straight and an approximately vertical cut of edges along which new pavement is to be placed.
 - D. Driveways and Sidewalks: Remove and dispose of existing concrete
 - E. Piping: Existing utilities shall be removed as indicated. When utility lines are encountered that are not indicated on the plans, the Engineer shall be notified. Buried piping may be left in place provided that exposed pipe ends are plugged.
 - 1. Pipes shall be plugged with a low slump concrete the entire diameter of the pipe to a minimum depth of 18 inches.
 - F. Driveways and Sidewalks: Remove and dispose of existing concrete driveways and/or sidewalks which interfere with construction of improvements or which do not match new grade as shown on the contract documents or as directed by Engineer.
 - 1. Remove to a distance of 8 inches behind curbs, or to greater distance if required to properly match the new curb and gutter grade.
 - 2. Saw cut along a neat line to a depth of at least 25 percent of the concrete thickness and take care in removing the concrete assuring the slab breaks on the sawed neat line.
 - G. Filling: Excavations and other hazardous openings shall be filled in accordance with appropriate sections of these specifications.

- 3.06 DISPOSAL
 - A. General: Upon completion of demolition, all debris shall be disposed of in a legal manner, and the site shall be fine graded to the prevailing adjacent grades and contours.
- 3.07 SALVAGE
 - A. Title to Materials: Title to all materials and equipment to be demolished, excepting Owner salvage and historical items, is vested in the Contractor upon receipt of Notice to Proceed. The Owner will not be responsible for the condition, loss or damage to such property after Notice to Proceed.
 - B. Material for Contractor Salvage: Material for salvage shall be stored as approved by the Engineer. Salvage materials shall be removed from Owner's property before completion of the contract. Material for salvage shall not be sold on the site. Salvage material may not be reused in the project without written approval of the Engineer.
 - C. Unsalvageable Materials: Materials, other than those permitted to remain in place, shall be disposed of in a legal manner. On-site disposal will not be allowed.

END OF SECTION 02 41 00

DIVISION 3

CONCRETE & GROUT

SECTION 03 10 00 CONCRETE FORMING AND ACCESSORIES

PART 1 - GENERAL

- 1.01 RELATED DOCUMENTS
 - A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- 1.02 SUMMARY
 - A. Section Includes:
 - 1. Form-facing material for cast-in-place concrete.
 - 2. Shoring, bracing, and anchoring.
 - B. Related Requirements:
 - 1. Division 31 Earthwork
 - 2. Division 32 Exterior Improvements.
- 1.03 DEFINITIONS
 - A. Form-Facing Material: Temporary structure or mold for the support of concrete while the concrete is setting and gaining sufficient strength to be self-supporting.
 - B. Formwork: The total system of support of freshly placed concrete, including the mold or sheathing that contacts the concrete, as well as supporting members, hardware, and necessary bracing.
- 1.04 PREINSTALLATION MEETINGS
 - A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review the following:
 - a. Special inspection and testing and inspecting agency procedures for field quality control.
 - b. Construction, movement, contraction, and isolation joints
 - c. Forms and form-removal limitations.
 - d. Shoring and reshoring procedures.
 - e. Anchor rod and anchorage device installation tolerances.

1.05 ACTION SUBMITTALS

- A. Product Data: For each of the following:
 - 1. Exposed surface form-facing material.
 - 2. Concealed surface form-facing material.
 - 3. Void forms.

- 4. Form ties.
- 5. Waterstops.
- 6. Form-release agent.
- B. Shop Drawings: Prepared by, and signed and sealed by, a qualified professional engineer responsible for their preparation, detailing fabrication, assembly, and support of forms.
 - 1. For exposed vertical concrete walls, indicate dimensions and form tie locations.
 - 2. Indicate dimension and locations of construction and movement joints required to construct the structure in accordance with ACI 301 and ACI 350.5 when not indicated in Drawings.
 - a. Location of construction joints is subject to approval of the Engineer.
 - 3. Indicate location of waterstops.
 - 4. Indicate proposed schedule and sequence of stripping of forms, shoring removal, and reshoring installation and removal.

1.06 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For testing and inspection agency.
- B. Waterstops, Joint Fillers, Joint Sealers, Backing Rods, and Bond Breaker:
 - 1. Certified mill certificates showing that the material meets all of the requirements specified here-in. The Engineer, at their option, may take samples of any materials and have them tested by an independent testing laboratory to verify their compliance with these Specifications. All such costs shall be borne by the Owner. If any materials should fail to meet these Specifications, all costs for further testing of the replacement materials shall be borne by the Contractor.
- C. Minutes of preinstallation conference.
- 1.07 QUALITY ASSURANCE
 - A. Testing and Inspection Agency Qualifications: An independent agency, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.
- 1.08 DELIVERY, STORAGE, AND HANDLING
 - A. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.
- 1.09 OBSTRUCTIONS
 - A. Contractor shall pay particular attention to removing all obstructions such as concrete, nails, etc., from joints when movements of floor, wall and roof sections can be expected under temperature or other conditions.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Concrete Formwork: Design, engineer, erect, shore, brace, and maintain formwork, shores, and reshores in accordance with ACI 301 and ACI 350.5, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads, so that resulting concrete conforms to the required shapes, lines, and dimensions.
 - 1. Design wood panel forms in accordance with APA's "Concrete Forming Design/Construction Guide."
 - 2. Design formwork to limit deflection of form-facing material to 1/240 of center-tocenter spacing of supports.
 - 3. Forms for circular structures shall conform to the circular shape of the structure.
 - 4. Do not use earth cuts as forms for vertical or sloping surfaces unless required or permitted in drawings.
 - 5. Formwork shall be essentially watertight and shall prevent loss of mortar from concrete. Seal all joints or gaps with an acceptable material.

2.02 FORM-FACING MATERIALS

- A. As-Cast Surface Form-Facing Material:
 - 1. Provide continuous, true, and smooth concrete surfaces.
 - 2. Furnish in largest practicable sizes to minimize number of joints.
 - 3. Acceptable Materials: As required to comply with Surface Finish designations specified in Section 03 30 00 "Cast-In-Place Concrete, and as follows:
 - a. Plywood, metal, or other approved panel materials.
 - b. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
 - 1) APA HDO (high-density overlay).
 - 2) APA MDO (medium-density overlay); mill-release agent treated and edge sealed.
 - 3) APA Structural 1 Plyform, B-B or better; mill oiled and edge sealed.
 - 4) APA Plyform Class I, B-B or better; mill oiled and edge sealed.
 - c. Do not use form-facing materials with raised grain, torn surfaces, worn edges, patches, dents, or other defects that will impair the texture of concrete surfaces.
- B. Concealed Surface Form-Facing Material: Lumber, plywood, metal, plastic, or another approved material.
 - 1. Provide lumber dressed on at least two edges and one side for tight fit.

- C. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class.
 - 1. Provide forms with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.

2.03 WATERSTOPS (As Needed)

- A. Chemically Resistant Flexible Waterstops: Thermoplastic elastomer rubber waterstops, for embedding in concrete to prevent passage of fluids through joints; resistant to oils, solvents, and chemicals, with factory fabricate corners, intersections, and directional changes.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. JP Specialties, Inc.
 - b. Sika Corporation.
 - 2. Profile: Ribbed without center bulb.
 - 3. Dimensions: 6 inches by 3/8 inch thick; nontapered.
- B. Flexible PVC Waterstops: U.S. Army Corps of Engineers CRD-C 572, for embedding in concrete to prevent passage of fluids through joints, with factory fabricated corners, intersections, and directional changes.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Sika Corporation.
 - b. Or approved equal.
 - 2. Profile: As indicated.
 - 3. Dimensions: As indicated; nontapered.
- C. Self-Expanding Butyl Strip Waterstops: Manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete, 3/4 by 1 inch.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. Sika Corporation.
 - b. Or approved equal.

2.04 RELATED MATERIALS

A. Reglets: Fabricate reglets of not less than 0.022-inch- thick, galvanized-steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.

- B. Chamfer Strips: Smooth wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.
- C. Rustication Strips: Smooth wood, metal, PVC, or rubber strips, kerfed for ease of form removal.
- D. Form-Release Agent: Commercially formulated form-release agent that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces.
 - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
 - 2. Form release agent for form liners shall be acceptable to form liner manufacturer.
- E. Form Ties: Factory-fabricated, removable or snap-off, glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
 - 1. Furnish units that leave no corrodible metal closer than 1-1/2 inch to the plane of exposed concrete surface.
 - 2. Furnish ties that, when removed, leave holes at least 1 inch in diameter in concrete surface.
 - 3. Furnish ties with integral water-barrier plates to walls.

PART 3 - EXECUTION

- 3.01 INSTALLATION OF FORMWORK
 - A. Comply with ACI 301 and ACI 350.5.
 - B. Construct formwork, so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117 and to comply with the Surface Finish designations specified in Section 033000 "Cast-In-Place Concrete" for as-cast finishes.
 - C. Limit concrete surface irregularities as follows:
 - 1. Environmental Surface Finish-1.0 (ESF-1.0): 1 inch
 - a. No formwork facing material is specified
 - b. Patch voids greater than 1-1/2 in. wide or 1/4 in. deep
 - c. Remove projections greater than 1/2 in.
 - d. Tie holes needed to be patched
 - e. Surface tolerance Class C (ACI 117)
 - f. Leave surfaces with the texture imparted by the forms
 - g. Mockup not required
 - 2. Environmental Surface Finish-2.0 (EFS-2.0): 1/4 inch
 - a. Patch voids greater than 3/4 in. wide or 1/4 in.

- b. Remove projections greater than 1/4 in.
- c. Patch tie holes
- d. Surface tolerance Class B (ACI 117)
- e. Mockup not required
- 3. Environmental Surface Finish-3.0 (ESF-3.0): 1/8 inch
 - a. Patch voids greater than 3/4 in. wide or 1/4" deep
 - b. Remove projections greater than 1/8 in.
 - c. Patch tie holes
 - d. Surface tolerance Class A (ACI 117)
 - e. Provide mockup of concrete surface appearance and texture
- D. Construct forms tight enough to prevent loss of concrete mortar.
 - 1. Minimize joints.
 - 2. Exposed Concrete: Symmetrically align joints in forms.
 - a. For ESF 3.0 surfaces, set the facing materials in an orderly and symmetrical arrangement, and keep the number of seams to a practical minimum. Facing materials shall be supported with studs or other backing capable of maintaining deflection with the tolerances specified in Part 1. Fit adjacent panels with tight joints.
 - 3. Taper form ties shall be placed with the larger end on the side of the structure that will be in contact with liquid.
 - a. Seal tie holes in formwork to prevent leakage where ties penetrate the formwork.
- E. Construct removable forms for easy removal without hammering or prying against concrete surfaces.
 - 1. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces.
 - 2. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
 - 3. Install keyways, reglets, recesses, and other accessories, for easy removal.
- F. Do not use rust-stained, steel, form-facing material.
- G. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces.
 - 1. Provide and secure units to support screed strips
 - 2. Use strike-off templates or compacting-type screeds.

- H. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible.
 - 1. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar.
 - 2. Locate temporary openings in forms at inconspicuous locations.
- I. Chamfer exterior corners and edges of permanently exposed concrete.
- J. At construction joints, overlap forms onto previously placed concrete not less than 12 inches.
- K. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work.
 - 1. Determine sizes and locations from trades providing such items.
 - 2. Obtain written approval of Engineer prior to forming openings not indicated on Drawings.
- L. Construction and Movement Joints:
 - 1. Construct joints true to line with faces perpendicular to surface plane of concrete.
 - 2. Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Engineer.
 - 3. Place joints perpendicular to main reinforcement.
 - 4. Locate joints for beams and slabs in the middle third of spans, unless indicated otherwise in plans.
 - 5. Locate horizontal joints in walls at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
 - 6. Space vertical joints in walls as indicated on Drawings.
- M. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection.
 - 1. Locate ports and openings in bottom of vertical forms, in inconspicuous location, to allow flushing water to drain.
 - 2. Close temporary ports and openings with tight-fitting panels, flush with inside face of form, and neatly fitted, so joints will not be apparent in exposed concrete surfaces.
- N. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- O. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- P. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.02 INSTALLATION OF EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete.
 - 1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 2. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.
 - 3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
 - 4. Clean embedded items immediately prior to concrete placement.
 - 5. Fill voids in inserts to prevent entry of concrete.
 - 6. Coat surfaces of aluminum embedments to prevent reaction with the concrete.
- 3.03 INSTALLATION OF WATERSTOPS (As Needed)
 - A. Flexible Waterstops: Install in construction joints and at other joints indicated to form a continuous diaphragm.
 - 1. Install in longest lengths practicable.
 - 2. Locate waterstops in center of joint unless otherwise indicated on Drawings.
 - 3. Allow clearance between waterstop and reinforcing steel of not less than 2 times the largest concrete aggregate size specified in Section 03 30 00 "Cast-In-Place Concrete."
 - 4. Secure waterstops in correct position at 12 inches on center in such a manner that bending over one way or another is prevented.
 - a. Vertical waterstops shall be anchored back to the reinforcement with wire ties or by other acceptable means.
 - b. For flexible waterstops placed horizontally, the waterstop shall be folded upward along its entire length while concrete is placed and consolidated up to the level of the waterstop, and then the waterstop shall be pressed into the top of of the fresh concrete. Then complete concrete placement and consolidation so as to provide full encasement of the water stop in concrete.
 - 5. Waterstops at vertical joints shall terminate 3 in. below the tops of exposed walls.
 - 6. Field fabricate joints in accordance with manufacturer's instructions using heat welding.
 - a. Miter corners, intersections, and directional changes in waterstops.
 - b. Align center bulbs.

- c. Splices shall be strong enough to develop a pulling force of 75 percent of the strength of the waterstop, and shall be watertight.
- 7. Clean waterstops immediately prior to placement of concrete.
- 8. Waterstops with a center bulb shall have the ends of the center bulb plugged with a flexible material, such as foam rubber, to prevent concrete intrusion at ends where the bulb will be exposed to concrete extrusions.
- 9. Support and protect exposed waterstops during progress of the Work.
- B. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated on Drawings, according to manufacturer's written instructions, by adhesive bonding, mechanically fastening, and firmly pressing into place.
 - 1. Install in longest lengths practicable.
 - 2. Locate waterstops in center of joint unless otherwise indicated on Drawings.
 - 3. Protect exposed waterstops during progress of the Work.
- 3.04 REMOVING AND REUSING FORMS
 - A. Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations, and curing and protection operations need to be maintained.
 - 1. Leave formwork for beam soffits, joists, slabs, and other structural elements that support weight of concrete in place until concrete has achieved at least 70% of its 28-day design compressive strength.
 - 2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.
 - B. Clean and repair surfaces of forms to be reused in the Work.
 - 1. Split, frayed, delaminated, or otherwise damaged form-facing material are unacceptable for exposed surfaces.
 - 2. Apply new form-release agent.
 - C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints.
 - 1. Align and secure joints to avoid offsets.
 - 2. Do not use patched forms for exposed concrete surfaces unless approved by Engineer.
- 3.05 SHORING AND RESHORING INSTALLATION
 - A. Comply with ACI 350 and ACI 301 for design, installation, and removal of shoring and reshoring.

- 1. Do not remove shoring or reshoring until measurement of slab tolerances is complete.
- B. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.
- 3.06 FIELD QUALITY CONTROL
 - A. Special Inspections: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.
 - B. Inspections:
 - 1. Inspect formwork for shape, location, and dimensions of the concrete member being formed, and for compliance within tolerances specified in ACI 117.
 - 2. Waterstops:
 - a. It is required that all waterstop field joints shall be subject to rigid inspection, and no such work shall be scheduled or started without having made prior arrangements with the ENGINEER to provide for the required inspections. Not less than 24 hours' notice shall be provided to the ENGINEER for scheduling such inspections. All field joints in waterstops shall be subject to rigid inspection for misalignment, bubbles, inadequate bond, porosity, cracks, offsets, and other defects which would reduce the potential resistance of the material to water pressure at any point. All defective joints shall be replaced with material which shall pass said inspection, and all faulty material shall be removed from the site and disposed of by the CONTRACTOR at its own expense.
 - b. The following waterstop defects represent a partial list of defects which shall be grounds for rejection.
 - 1) Offsets at joints greater than 1/16-inch or 15 percent of material thickness, at any point, whichever is less.
 - 2) Exterior crack at joint, due to incomplete bond, which is deeper than 1/16-inch or 15 percent of material thickness, at any point, whichever is less.
 - 3) Any combination of offset or exterior crack which will result in a net reduction in the cross section of the waterstop in excess of 1/16-inch or 15 percent of material thickness at any point, whichever is less.
 - 4) Misalignment of joint which result in misalignment of the waterstop in excess of ½-inch in 10 feet.
 - 5) Porosity in the welded joint as evidenced by visual inspection.
 - 6) Bubbles or inadequate bonding which can be detected with a pen knife test. (If, while prodding the entire joint with the point of a pen

knife, the knife breaks through the outer portion of the weld into a bubble, the joint shall be considered defective.)

- 3. Waterstop Samples:
 - a. Field samples of fabricated fittings (crosses, tees, etc.) may be selected at random by the ENGINEER at their discretion, for testing by a laboratory at the OWNER'S expense. When tested, they shall have a tensile strength across the joints equal to at least 75 percent of the manufacturer's reported tensile strength of the product. These samples shall be fabricated so that the material and workmanship represent in all respects the fittings to be furnished under this contract.

END OF SECTION 03 10 00

SECTION 03 20 00 CONCRETE REINFORCING

PART 1 - GENERAL

- 1.01 RELATED DOCUMENTS
 - A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- 1.02 SUMMARY
 - A. Section Includes:
 - 1. Steel reinforcement bars.
 - 2. Welded-wire reinforcement.
 - 3. PNA Diamond Dowel System
 - B. Related Requirements:
 - 1. Section 03 30 00 "Cast-In-Place concrete for reinforcing used in cast-in-place concrete.
 - 2. Section 03 41 00 "Precast Structural Concrete" for reinforcing used in precast structural concrete.
 - 3. Section 32 13 13 "Concrete Paving" for reinforcing related to concrete pavement and walks.
- 1.03 PREINSTALLATION MEETINGS
 - A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review the following:
 - a. Special inspection and testing and inspecting agency procedures for field quality control.
 - b. Construction contraction and isolation joints.
 - c. Steel-reinforcement installation.

1.04 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Each type of steel reinforcement.
 - 2. Bar supports.
 - a. Include a written description of where each bar support will be used.
 - 3. Mechanical splice couplers.
- B. Shop Drawings: Comply with ACI SP-066:
 - 1. Include placing drawings that detail fabrication, bending, and placement.

- 2. Include bar sizes, lengths, materials, grades, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, location of splices, lengths of lap splices, details of mechanical splice couplers, details of welding splices, tie spacing, hoop spacing, and supports for concrete reinforcement.
- C. Construction Joint Layout: Indicate proposed construction joints required to build the structure where not indicated in Drawings.
 - 1. Location of construction joints is subject to approval of the Engineer.
- 1.05 INFORMATIONAL SUBMITTALS
 - A. Welding certificates.
 - 1. Reinforcement To Be Welded: Welding procedure specification in accordance with AWS D1.4/D1.4M
 - B. Material Certificates:
 - 1. Mill test certificates shall be submitted to the Engineer to certify that the reinforcing steel meets the specified requirements. Mill test certificates shall be furnished and paid for by the Contractor.
 - 2. In addition, the Engineer may require that test samples be taken and test certificates be furnished by a reputable material testing laboratory at the Owner's expense.
 - C. Material Test Reports: For the following, from a qualified testing agency:
 - 1. Steel Reinforcement:
 - a. For reinforcement to be welded, mill test analysis for chemical composition and carbon equivalent of the steel in accordance with ASTM A706/A706M.
 - 2. Mechanical splice couplers.
 - D. Minutes of preinstallation conference.
- 1.06 QUALITY ASSURANCE
 - A. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.4/D 1.4M.
- 1.07 DELIVERY, STORAGE, AND HANDLING
 - A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.
 - 1. Store reinforcement to avoid contact with earth, oil, or other materials that may decrease bond to concrete.

PART 2 - PRODUCTS

2.01 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A615/A615M, Grade 60, deformed. Grade 40 steel shall be allowed for #3 and smaller bars.
- B. Low-Alloy Steel Reinforcing Bars: ASTM A706/A706M, deformed.
- C. Headed-Steel Reinforcing Bars: ASTM A970/A970M.
- D. Steel Bar Mats: ASTM A184/A184M, fabricated from ASTM A615/A615M, Grade 60, deformed bars, assembled with clips.
- E. Plain-Steel Welded-Wire Reinforcement: ASTM A1064/A1064M, plain, fabricated from as-drawn steel wire into flat sheets.
- F. Deformed-Steel Welded-Wire Reinforcement: ASTM A1064/A1064M, flat sheet.
- 2.02 REINFORCEMENT ACCESSORIES
 - A. Joint Dowel Bars: ASTM A615/A615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.
 - B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place.
 - 1. Manufacture bar supports from stainless steel wire, plastic, or precast concrete in accordance with CRSI's "Manual of Standard Practice" and ACI 315, and as follows:
 - a. Where legs of wire bar supports contact forms, use CRSI Class 1 plasticprotected steel wire, all-plastic bar supports, or CRSI Class 2 stainless steel bar supports.
 - For plastic protected wire, plastic shall have a thickness of 3/32 inches or greater at points of contract with formwork and the plastic shall extend along the wire at least 1/2 inches from the point of contact iw the formwork.
 - 2) For stainless steel protected wire-reinforcement supports, the nonstainless steel portion of the supports shall not extend closer than 3/4 inches from the form surface.
 - b. Precast concrete (adobes) shall, as a minimum, be no less in compressive strength or cement content than the concrete in which it will be cast, and a surface area of not less than 4 square inches. Water absorption and porosity of precast concrete supports shall be equal to or less than water absorption and porosity of concrete being placed. Adobes manufactured from plastic or with low cement contents will not be accepted. Brick, broken concrete masonry units, spalls, rocks or similar materials shall not be used for support of reinforcing steel.
 - c. All-plastic reinforcement supports shall incorporate perforations in plane areas to compensate for the difference in the coefficient of thermal expansion between the plastic and concrete.

- C. Mechanical Splice Couplers: ACI 318 Type 2, same material of reinforcing bar being spliced; tension-compression type.
 - 1. Products: Subject to compliance with requirements, available products by one of the following:
 - a. Dayton Superior.
 - b. Or approved equal.
- D. Steel Tie Wire: ASTM A1064/A1064M, annealed steel, not less than 0.0508 inch in diameter.
 - 1. Finish: Plain.
- 2.03 FABRICATING REINFORCEMENT
 - A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice," and in accordance with fabricating tolerances of ACI 117.
 - B. Bend reinforcement cold unless heating is approved by the Engineer prior to fabrication.
 - C. Minimum inside bend diameters shall conform to the requirements of ACI 350.5 unless otherwise permitted. The beginning of the bend shall not be closer to the concrete surface than the minimum diameter of the bend.
 - D. Kinked bars shall not be used.
- 2.04 PNA DIAMOND DOWEL SYSTEM
 - A. Tapered plate dowels for formed construction joints shall be used at all construction joints along the driveway concrete section as indicated on the drawings.
 - B. ¹/₄" steel plates shall be used for concrete with slab depths 4" to 7"
 - 1. Plates shall be manufactured from steel certified to meet ASTM A36
 - C. Dowel system shall be accompanied with an installation template.
 - D. Performance Specifications:
 - 1. Joint stability per industry guides of less than 0.01 inches of differential deflection and continuity of surface profile across the joint
 - 2. Deliver 6.36 inches of steel at the joint and 5.45 square inches of steel in the first inch of embedment where the bearing, shear and flexural stresses are highest
 - 3. Allow free horizontal movement of the concrete without restraint with 45 degree tapered diamond plate geometry
 - 4. Allow for a 3/8" of lateral movement at a joint that opens 1/8"

PART 3 - EXECUTION

3.01 PREPARATION

- A. Protection of In-Place Conditions:
 - 1. Do not cut or puncture vapor retarder.
 - 2. Repair damage and reseal vapor retarder before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.
- 3.02 INSTALLATION OF STEEL REINFORCEMENT
 - A. Comply with CRSI's "Manual of Standard Practice" for placing and supporting reinforcement.
 - B. Accurately position, support, and secure reinforcement against displacement.
 - 1. Locate and support reinforcement with bar supports to maintain minimum concrete cover.
 - 2. The supports shall be of sufficient quantity, strength and stability to maintain the reinforcement in place throughout the concreting operations. Bar supports shall be placed no further than 4 feet apart in each direction.
 - 3. Do not tack weld crossing reinforcing bars.
 - C. Preserve clearance between bars of not less than 1 inch, not less than one bar diameter, or not less than 1-1/3 times size of large aggregate, whichever is greater.
 - D. Provide concrete coverage in accordance with ACI 350.
 - 1. Placing tolerances shall not reduce cover requirements except as specified in ACI 117.
 - 2. No "bury" or "carrier" bars will be allowed unless specifically approved by the Engineer.
 - E. Reinforcing Tying:
 - 1. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
 - 2. There shall be at least three ties in each bar length (this shall not apply to dowel laps or to bars shorter than 4 feet, unless necessary for rigidity).
 - 3. Slab bars shall be tied at every intersection around the periphery of the slab. Wall bars and slab bar intersections shall be tied at not less than every second intersection, but at not greater than the following maximum spacings:
 - a. Slab Bars: Bars No. 5 and smaller = 30 inches; Bars No. 6 through No. 9 = 48 inches; Bars Bars No. 10 through No. 11 = 60 inches
 - b. Wall Bars: Bars No. 5 and smaller = 24 inches; Bars No. 6 through No. 9 = 30 inches; Bars No. 10 through No.11 = 48 inches.
 - F. Reinforcing partially embedded in concrete shall not be field bent unless indicated on the Drawings.

- G. Splices: Lap splices as indicated on Drawings.
 - 1. Bars indicated to be continuous, and all vertical bars shall be lapped not less than 36 bar diameters at splices, or 24 inches, whichever is greater.
 - 2. Stagger splices in accordance with ACI 350.
 - 3. Lapped spliced bars shall be fastened together with steel tie wire.
 - 4. Unless specified or shown otherwise on the Drawings, the bars at a lap splice shall be in contact with each other.
 - 5. Unless shown otherwise on the Drawings, where bars are to be lapped spliced at joints in the concrete, all bars shall project from the concrete first placed, a minimum length equal to the lap splice length indicated on the Drawings. All concrete or other deleterious coating shall be removed from dowels and other projecting bars by wire brushing or sandblasting before the bars are embedded in a subsequent concrete placement.
 - 6. Mechanical Splice Couplers: Install in accordance with manufacturer's instructions.
 - a. Mechanical splices for reinforcement not shown on the Project Drawings shall not be used unless accepted by the Engineer.
 - 7. Weld reinforcing bars in accordance with AWS D1.4/D 1.4M, where indicated on Drawings.
- H. When there is a delay in depositing concrete, reinforcement shall be re-inspected and cleaned when necessary.
- I. Reinforcement relocation When necessary to move reinforcement beyond the specified placing tolerances to avoid interference with other reinforcement, conduits, or embedded items, submit the resulting arrangement of reinforcement for acceptance by the Engineer.
- J. Install welded-wire reinforcement in longest practicable lengths.
 - 1. Support welded-wire reinforcement in accordance with CRSI "Manual of Standard Practice."
 - a. For reinforcement less than W4.0 or D4.0, continuous support spacing shall not exceed 12 inches.
 - 2. Lap edges and ends of adjoining sheets at least one wire spacing plus 2 inches for plain wire and 8 inches for deformed wire.
 - 3. Offset laps of adjoining sheet widths to prevent continuous laps in either direction.
 - 4. Lace overlaps with wire.

- 5. The welded wire fabric shall be bent as shown or required on the Drawings to fit the work. Welded wire fabric shall be rolled or otherwise straightened to make a perfectly flat sheet before placing in the Work.
- 3.03 JOINTS
 - A. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Engineer.
 - 1. Place joints perpendicular to main reinforcement.
 - 2. Continue reinforcement across construction joints unless otherwise indicated.
 - 3. Do not continue reinforcement through sides of strip placements of floors and slabs.
 - B. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length, to prevent concrete bonding to one side of joint.
- 3.04 PNA DIAMOND DOWEL SYSTEM
 - A. Install $\frac{1}{4}$ plates for concrete 4" to 7" thick as per manufacturers recommendations.
 - B. Spacing of the dowels shall be no more than 18" on center as per manufacturer's recommendations.
- 3.05 INSTALLATION TOLERANCES
 - A. Comply with ACI 117.
- 3.06 FIELD QUALITY CONTROL
 - A. Special Inspections: Owner will engage a special inspector to perform field tests and inspections and prepare test reports.
 - B. Inspections:
 - 1. Steel-reinforcement placement.
 - 2. Reinforcing support type, spacing, and quantity of reinforcing supports.
 - 3. Steel-reinforcement mechanical splice couplers.
 - 4. Steel-reinforcement welding.

END OF SECTION 03 20 00

SECTION 03 30 00 CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Section 03 20 00 Concrete Reinforcing
- C. Section 03 10 00 Concrete Forming and Accessories

1.02 SUMMARY

- A. Section Includes:
 - 1. Cast-in-place concrete, including concrete materials, mixture design, placement procedures, and finishes.
- 1.03 DEFINITIONS
 - A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.
 - B. Water/Cement Ratio (w/cm): The ratio by weight of water to cementitious materials.

1.04 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
 - a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixtures.
 - c. Ready-mix concrete manufacturer.
 - d. Concrete Subcontractor.
 - e. Special concrete finish Subcontractor.
 - 2. Review the following:
 - a. Special inspection and testing and inspecting agency procedures for field quality control.
 - b. Construction joints, control joints, isolation joints, and joint-filler strips.
 - c. Semirigid joint fillers.
 - d. Vapor-retarder installation.
 - e. Anchor rod and anchorage device installation tolerances.

- f. Cold and hot weather concreting procedures.
- g. Concrete finishes and finishing.
- h. Curing procedures.
- i. Forms and form-removal limitations.
- j. Shoring and reshoring procedures.
- k. Methods for achieving specified floor and slab flatness and levelness.
- 1. Floor and slab flatness and levelness measurements.
- m. Concrete repair procedures.
- n. Concrete protection.
- o. Initial curing and field curing of field test cylinders (ASTM C31/C31M.)
- p. Protection of field cured field test cylinders.

1.05 ACTION SUBMITTALS

- A. Product Data: For each of the following.
 - 1. Portland cement. <u>Note all precast and cast-in-place concrete in direct contact with</u> <u>native soils must utilize Type V Portland cement.</u>
 - 2. Fly ash.
 - 3. Slag cement;
 - 4. Silica fume;
 - 5. Aggregates.
 - a. Include types, pit or quarry locations, producers' names, gradations, specific gravities, and evidence of not more than 90 days old demonstrating compliance with product specifications.
 - 6. Admixtures:
 - a. Include limitations of use, including restrictions on cementitious materials, supplementary cementitious materials, air entrainment, aggregates, temperature at time of concrete placement, relative humidity at time of concrete placement, curing conditions, and use of other admixtures.
 - 7. Bonding agents;
 - 8. Color pigments.
 - 9. Fiber reinforcement.
 - 10. Vapor retarders.
 - 11. Floor and slab treatments.
 - 12. Liquid floor treatments.

- 13. Curing materials.
 - a. Include documentation from color pigment manufacturer, indicating that proposed methods of curing are recommended by color pigment manufacturer.
- 14. Joint fillers.
- 15. Repair materials.
- B. Design Mixtures: For each concrete mixture, include the following:
 - 1. Mixture identification.
 - 2. Minimum 28-day compressive strength.
 - 3. Durability exposure class.
 - 4. Maximum w/cm.
 - 5. Calculated equilibrium unit weight, for lightweight concrete.
 - 6. Slump limit.
 - 7. Air content.
 - 8. Nominal maximum aggregate size.
 - 9. Steel-fiber reinforcement content.
 - 10. Synthetic micro-fiber content.
 - 11. Indicate amounts of mixing water to be withheld for later addition at Project site if permitted.
 - 12. Include manufacturer's certification that permeability-reducing admixture is compatible with mix design.
 - 13. Include certification that dosage rate for permeability-reducing admixture matches dosage rate used in performance compliance test.
 - 14. Intended placement method.
 - 15. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
- C. Shop Drawings:
 - 1. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
 - a. Location of construction joints is subject to approval of the Engineer.
- D. Concrete Schedule: For each location of each Class of concrete indicated in "Concrete Mixtures" Article, including the following:
 - 1. Concrete Class designation.
 - 2. Location within Project.
 - 3. Exposure Class designation.

- 4. Formed Surface Finish designation and final finish.
- 5. Final finish for floors.
- 6. Curing process.
- 7. Floor treatment if any.
- 1.06 INFORMATIONAL SUBMITTALS
 - A. Qualification Data: For the following:
 - 1. Installer: Include copies of applicable ACI certificates.
 - 2. Ready-mixed concrete manufacturer.
 - 3. Testing agency: Include copies of applicable ACI certificates.
 - B. Material Certificates: For each of the following, signed by manufacturers:
 - 1. Cementitious materials.
 - 2. Admixtures.
 - 3. Fiber reinforcement.
 - 4. Curing compounds.
 - 5. Floor and slab treatments.
 - 6. Bonding agents.
 - 7. Adhesives.
 - 8. Vapor retarders.
 - 9. Semirigid joint filler.
 - 10. Joint-filler strips.
 - 11. Repair materials.
 - C. Material Test Reports: For the following, from a qualified testing agency:
 - 1. Portland cement.
 - 2. Fly ash.
 - 3. Slag cement;
 - 4. Silica fume;
 - 5. Aggregates;
 - 6. Admixtures:
 - a. Permeability-Reducing Admixture: Include independent test reports, indicating compliance with specified requirements, including dosage rate used in test.
 - D. Research Reports:
 - 1. For concrete admixtures in accordance with ICC's Acceptance Criteria AC198.

- 2. For sheet vapor retarder/termite barrier, showing compliance with ICC AC380.
- E. Preconstruction Test Reports: For each mix design.
- F. Field quality-control reports.
- G. Minutes of preinstallation conference.
- 1.07 QUALITY ASSURANCE
 - A. Installer Qualifications: A qualified installer who employs Project personnel qualified as an ACI-certified Flatwork Technician and Finisher and a supervisor who is a certified ACI Flatwork Concrete Finisher/Technician or an ACI Concrete Flatwork Technician.
 - 1. Post-Installed Concrete Anchors Installers: ACI-certified Adhesive Anchor Installer.
 - B. Ready-Mixed Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.
 - 1. Manufacturer certified in accordance with NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
 - C. Laboratory Testing Agency Qualifications: A testing agency qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated and employing an ACI-certified Concrete Quality Control Technical Manager.
 - 1. Personnel performing laboratory tests shall be an ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I. Testing agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician, Grade II.
 - D. Field Quality Control Testing Agency Qualifications: An independent agency, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.
 - 1. Personnel conducting field tests shall be qualified as an ACI Concrete Field Testing Technician, Grade 1, in accordance with ACI CPP 610.1 or an equivalent certification program.
- 1.08 PRECONSTRUCTION TESTING
 - A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on each concrete mixture.
 - 1. Include the following information in each test report:
 - a. Admixture dosage rates.
 - b. Slump.
 - c. Air content.
 - d. Seven-day compressive strength.
 - e. 28-day compressive strength.
 - f. Permeability.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Comply with ASTM C94/C94M and ACI 350.5

1.10 FIELD CONDITIONS

- A. Cold-Weather Placement: Comply with ACI 350.5 and ACI 306.1, including but not limited to the following:
 - 1. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 2. When average high and low temperature is expected to fall below 40° F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 350.5;
 - 3. Do not use frozen materials or materials containing ice or snow.
 - 4. Do not place concrete in contact with surfaces less than 35° F, other than reinforcing steel.
 - 5. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- B. Hot-Weather Placement: Comply with ACI 350.5 and ACI 306.1, including but not limited to the following:
 - 1. Keep concrete subgrade uniformly moist without standing water, soft spots or dry areas;
 - 2. Maintain concrete temperature at time of discharge to not exceed 95° F;
 - 3. Use a concrete consistency that permits rapid placement with least delay;
 - 4. Protect the concrete against moisture loss at all times during placing and curing;
 - 5. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete.
- C. There will not be any additional reimbursement made to the Contractor for costs incurred for placing concrete in cold or hot weather.

PART 2 - PRODUCTS

- 2.01 CONCRETE, GENERAL
 - A. ACI Publications: Comply with ACI 350.5 unless modified by requirements in the Contract Documents.
- 2.02 CONCRETE MATERIALS
 - A. Source Limitations:
 - 1. Obtain all concrete mixtures from a single ready-mixed concrete manufacturer for entire Project.
 - 2. Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant.

- 3. Obtain aggregate from single source.
- 4. Obtain each type of admixture from single source from single manufacturer.
- B. Cementitious Materials:
 - 1. Portland Cement: ASTM C150/C150M, Type V, for cast-in-place exposed to high sulfate native soils. Use Type V cement for the following cast-in-place elements:
 - a. 4" thick pedestrian rated sidewalk;
 - b. 6" thick traffic rated sidewalk.

Type I/II Portland Cement is otherwise acceptable.

- 2. Fly Ash: ASTM C618, Class C or F.
- 3. Slag Cement: ASTM C989/C989M, Grade 100 or 120
- 4. Silica Fume: ASTM C1240 amorphous silica
- C. Normal-Weight Aggregates: ASTM C33/C33M, Class 4S coarse aggregate or better, graded. Provide aggregates from a single source.
 - 1. Alkali-Silica Reaction: Comply with one of the following:
 - a. Expansion Result of Aggregate: Not more than 0.04 percent at one-year when tested in accordance with ASTM C1293.
 - b. Expansion Results of Aggregate and Cementitious Materials in Combination: Not more than 0.10 percent at an age of 16 days when tested in accordance with ASTM C1567.
 - c. Alkali Content in Concrete: Not more than 4 lb/yd3 for moderately reactive aggregate or 3 lb/yd3 for highly reactive aggregate, when tested in accordance with ASTM C1293 and categorized in accordance with ASTM C1778, based on alkali content being calculated in accordance with ACI 301.
 - 2. Maximum Coarse-Aggregate Size: ³/₄ inch nominal.
 - 3. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- D. Air-Entraining Admixture: ASTM C260/C260M.
- E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride in steel-reinforced concrete.
 - 1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
 - 2. Retarding Admixture: ASTM C494/C494M, Type B.
 - 3. Water-Reducing and -Retarding Admixture: ASTM C494/C494M, Type D.
 - 4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.
 - 5. High-Range, Water-Reducing and -Retarding Admixture: ASTM C494/C494M,

Type G.

- 6. Plasticizing and Retarding Admixture: ASTM C1017/C1017M, Type II.
- 7. Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete and complying with ASTM C494/C494M, Type C.
- 8. Non-Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, non-set-accelerating, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.
- 9. Permeability-Reducing Admixture: ASTM C494/C494M, Type S, hydrophilic, permeability-reducing crystalline admixture, capable of reducing water absorption of concrete exposed to hydrostatic pressure (PRAH).
 - a. Permeability: No leakage when tested in accordance with U.S. Army Corps of Engineers CRD C48 at a hydraulic pressure of 200 psi or 14 days.
- F. Water and Water Used to Make Ice: ASTM C94/C94M, potable

2.03 LIQUID FLOOR TREATMENTS (INTERIOR SURFACES)

- A. Penetrating Liquid Floor Treatment: Clear, chemically reactive, waterborne solution of inorganic silicate or siliconate materials and proprietary components; odorless; that penetrates, hardens and densifies concrete surfaces.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. BASF Corporation;
 - b. Dayton Superior;
 - c. Euclid Chemical Company;
 - d. W.R. Meadows, Inc.;
 - e. SealantPro
- B. Slip-Resistive Emery Aggregate Finish: Factory-graded, packaged, rustproof, nonglazing, abrasive, crushed emery aggregate containing not less than 50 percent aluminum oxide and not less than 20 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials with 100 percent passing No. 4 sieve.

2.04 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited

to, the following:

- a. BASF Corporation;
- b. Dayton Superior;
- c. Euclid Chemical Company;
- d. W.R. Meadows, Inc.;
- e. Sika Corporation
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./yd2 when dry.
- C. Moisture-Retaining Cover: ASTM C171, polyethylene film burlap-polyethylene sheet.
 - 1. Color:
 - a. Ambient Temperature Below 50° F: Black.
 - b. Ambient Temperature between 50° F and 85° F: Any color.
 - c. Ambient Temperature Above 85° F: White.
- D. Curing Paper: 8' wide paper, consisting of two layers of fibered kraft paper laminated with double coating of asphalt.
- E. Water: Potable or complying with ASTM C1602/C1602M.
- F. Clear, solvent-borne, membrane-forming, curing and sealing compound: ASTM C1315, Type 1, Class A
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not necessarily limited to, the following:
 - a. BASF Corporation; MasterKure CC 250 XS
 - b. Dayton Superior; Cure & Seal 25% J22UV
 - c. Euclid Chemical Company (The); an RPM company; Luster Seal 300
 - d. Laticrete International, Inc.; L&M Lumiseal Plus
 - e. W.R. Meadows, Inc; CS-309-30.
 - f. Lambert Corporation; UV Super Seal

2.05 VAPOR RETARDERS

- A. Sheet Vapor Retarder, Class A: ASTM E1745, Class A; not less than 10 mils thick. Include manufacturer's recommended adhesive or pressure-sensitive tape. (As needed)
- B. Heavy Duty Visqueen not less than 6 mils thick. Visqueen shall be installed in one continuous strip along the top of the existing tunnel as shown in the Contract Drawings.

2.06 RELATED MATERIALS

A. Joint Sealers: two-part, self-leveling, uniform, stiff consistency, non-staining, nonbleeding, polyurethane elastomeric sealant which cures at ambient temperature,
conforming to ASTM C-920 and does not contain solvents.

- 1. The material shall be of a type that will effectively and permanently seal joints subject to movements in concrete.
- 2. The mastic shall tenaciously adhere to primed concrete surfaces, shall remain permanently mastic and shall be NSF approved for use with potable water.
- 3. For sloping joints, vertical joints and overhead horizontal joints, only "non-sag" compounds shall be used; all such compounds shall conform to the requirements of ANSI/ASTM C 920 Class 12-1/2
- 4. For plane horizontal joints, the self-leveling compounds which meet the requirements of ANSI/ASTM C 920 Class 25. For joints subject to either pedestrian or vehicular traffic, a compound providing non-tracking characteristics, and having a Shore "A" hardness range of 25 to 35, shall be used.
- 5. Primer materials, if recommended by the sealant manufacturer, shall conform to the printed recommendations of the sealant manufacturer.
- 6. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. PERMAPOL RC-270SL RESERVOIR SEALANT, as manufactured by PRODUCTS RESEARCH & CHEMICAL CORP., Gloucester City, New Jersey (800-257-8454)
 - SIKAFLEX/2C POLYURETHANE ELASTOMERIC SEALANT, as manufactured by SIKA CHEMICAL CORP., Santa Fe Springs, CA (213-941-0231)
 - c. SELECT SEAL U-227 RESERVOIR GRADE, as manufactured by SPC, Upland, CA (714-985- 5771)
 - d. Or approved equal.
- B. Expansion- and Isolation-Joint-Filler Strips: ASTM D1751, asphalt-saturated cellulosic fiber.
- C. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 in accordance with ASTM D2240.
- D. Backing Rod: Backing rod shall be an extruded closed cell, polyethylene foam rod. The material shall be compatible with the joint sealant material used and shall have a tensile strength of not less than 40 psi and a compression deflection of approximately 25 percent at 8 psi. The rod shall be 1/8-inch larger in diameter than the joint width except that a one-inch diameter rod shall be used for a 3/4-inch wide joint.
- E. Bonding Agent: ASTM C1059/C1059M, Type II, nonredispersible, acrylic emulsion or styrene butadiene.
- F. Epoxy Bonding Adhesive: ASTM C881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of

grade and class to suit requirements, and as follows:

- 1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete
- G. Bond Breaker: Bond breaker shall be SUPER BOND BREAKER WATER BASE as manufactured by Burke Company, San Mateo, California; SELECT EMULSION CURE 309, as distributed by Select Products Co., Upland, CA (clear or white pigmented) or equivalent. Fugitive dye may be used in bond breakers if recommended by the manufacturer.
- H. Floor Slab Protective Covering: 8' wide cellulose fabric.

2.07 REPAIR MATERIALS

- A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from ¹/₈" and that can be feathered at edges to match adjacent surface elevations/profiles.
 - 1. Cement Binder: ASTM C150/C150M portland cement or hydraulic or blended hydraulic cement, as defined in ASTM C219.
 - 2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
 - 3. Aggregate: Well-graded, washed gravel: ¹/₈" to ¹/₄", or coarse sand, as recommended by underlayment manufacturer.
 - 4. Compressive Strength: Not less than 4,500 psi at 28 days when tested in accordance with ASTM C109/C109M.
- B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from ¹/₄" and that can be filled in over a scarified surface to match adjacent floor elevations.
 - 1. Cement Binder: ASTM C150/C150M portland cement or hydraulic or blended hydraulic cement, as defined in ASTM C219.
 - 2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
 - 3. Aggregate: Well-graded, washed gravel, ¹/₈" to ¹/₄", or coarse sand as recommended by topping manufacturer.
 - 4. Compressive Strength: Not less than 5000 psi at 28 days when tested in accordance with ASTM C109/C109M.
- 2.08 CONCRETE MIXTURES, GENERAL
 - A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, in accordance with ACI 350.5.
 - 1. Use a qualified testing agency for preparing and reporting proposed mixture designs, based on laboratory trial mixtures.

- B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
 - 1. Fly Ash or Other Pozzolans: 25 percent by mass.
 - 2. Slag Cement: 50 percent by mass.
 - 3. Silica Fume: 10 percent by mass.
 - 4. Total of Fly Ash or Other Pozzolans, Slag Cement, and Silica Fume: 50 percent by mass, with fly ash or pozzolans not exceeding 25 percent by mass and silica fume not exceeding 10 percent by mass.
 - 5. Total of Fly Ash or Other Pozzolans and Silica Fume: 35 percent by mass with fly ash or pozzolans not exceeding 25 percent by mass and silica fume not exceeding 10 percent by mass.
- C. Admixtures: Use admixtures in accordance with manufacturer's written instructions.
 - 1. Use water reducing, high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
 - 2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 - 3. Use water-reducing admixture in and concrete with a w/cm below 0.50.
 - 4. Use corrosion-inhibiting admixture in concrete mixtures where indicated.
 - 5. Use permeability-reducing admixture in concrete mixtures where indicated.
- D. Color Pigment: Add color pigment (if called for in project documents) to concrete mixture in accordance with manufacturer's written instructions and to result in hardened concrete color consistent with approved mockup.

2.09 CONCRETE MIXTURES

- A. Class A: Normal-weight concrete used for Concrete Sidewalks and Concrete Driveways.
 - 1. Exposure Class: ACI 318 F0, S0, W0, C0.
 - 2. Minimum Compressive Strength: 4000 psi at 28 days.
 - 3. Maximum w/cm: 0.45.
 - 4. Minimum Cementitious Materials Content: 540 lb/cu. yd.
 - 5. Slump Limit: 8 inches, plus or minus 1 inch for concrete with verified slump of 3 inches plus or minus 1 inch before adding high-range water-reducing admixture or plasticizing admixture at Project site.
 - 6. Air Content:
 - a. Do not use an air-entraining admixture or allow total air content to exceed 3 percent for concrete used in trowel-finished floors.
 - 7. Limit water-soluble, chloride-ion content in hardened concrete to 1.00 percent by

weight of cement.

- B. Class B: Controlled Low Strength Material (CLSM) for flowable backfill.
 - 1. Design and produce non-excavatable CLSM in accordance with the following requirements:
 - a. Unconfined compressive strength greater than 150 psi determined by ASTM D4832.
 - b. Air Content between 5% and 30% determined by ASTM D6023.
 - c. Unit weight of 100-130 lbs/cu. ft. determined by ASTM D6023.
 - d. Consistent flow producing a self-leveling product free of segregation determined by ASTM D6103.
 - e. Do not use materials in CLSM with a plasticity index over 4.
 - f. Furnish aggregates in accordance with the following gradation:
 - i. 3/4-inch sieve: 100 percent passing
 - ii. No. 4 sieve: 65- 100 percent passing
 - iii. No. 30 sieve: 40 80 percent passing
 - iv. No. 200 sieve: 10 30 percent passing.
- C. Class C: Grout used for Grout Shaping of flumes, wet wells, etc.
 - 1. Exposure Class: ACI 318 F0, S2, W1
 - 2. Minimum Compressive Strength: 4000 psi at 28 days.
 - 3. Maximum w/cm: 0.50.
 - 4. Slump Limit: 4 inches, plus or minus 1 inch.
 - 5. Air Content:
 - a. Exposure Class F0: None required.
 - 6. Limit water-soluble, chloride-ion content in hardened concrete to 1.00 percent by weight of cement.

2.10 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete in accordance with ASTM C94/C94M and ASTM C1116/C1116M, and furnish batch ticket information.
 - 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions:
 - 1. Before placing concrete, verify that installation of concrete forms, accessories, and reinforcement, and embedded items is complete and that required inspections have been performed.
 - 2. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Provide reasonable auxiliary services to accommodate field testing and inspections, acceptable to testing agency, including the following:
 - 1. Daily access to the Work.
 - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 - 3. Secure space for storage, initial curing, and field curing of test samples, including source of water and continuous electrical power at Project site during site curing period for test samples.
 - 4. Security and protection for test samples and for testing and inspection equipment at Project site.

3.03 INSTALLATION OF EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining Work that is attached to or supported by cast-in-place concrete.
 - 1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 2. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of ANSI/AISC 303.
 - 3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

3.04 INSTALLATION OF VAPOR RETARDER

- A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder in accordance with ASTM E1643 and manufacturer's written instructions.
 - 1. Install vapor retarder with longest dimension parallel with direction of concrete pour.
 - 2. Face laps away from exposed direction of concrete pour.
 - 3. Lap vapor retarder over footings and grade beams not less than 6 inches sealing vapor retarder to concrete.
 - 4. Lap joints 6 inches and seal with manufacturer's recommended tape.
 - 5. Terminate vapor retarder at the top of floor slabs, grade beams, and pile caps, sealing entire perimeter to floor slabs, grade beams, foundation walls, or pile caps.
 - 6. Seal penetrations in accordance with vapor retarder manufacturer's instructions.

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- 7. Protect vapor retarder during placement of reinforcement and concrete.
 - a. Repair damaged areas by patching with vapor retarder material, overlapping damages area by 6 inches on all sides, and sealing to vapor retarder.
- B. Bituminous Vapor Retarders: Place, protect, and repair bituminous vapor retarder in accordance with manufacturer's written instructions.
- 3.05 JOINTS
 - A. Construct joints true to line, with faces perpendicular to surface plane of concrete.
 - B. Construction Joints: Coordinate with floor slab pattern and concrete placement sequence.
 - 1. Install so strength and appearance of concrete are not impaired, at locations indicated on Drawings or as approved by Engineer.
 - 2. Place joints perpendicular to main reinforcement.
 - a. Continue reinforcement across construction joints unless otherwise indicated.
 - b. Do not continue reinforcement through sides of strip placements of floors and slabs.
 - 3. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
 - 4. Locate joints for beams, slabs, joists, and girders at third points of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
 - 5. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
 - 6. Space vertical joints in walls as indicated on Drawings. Unless otherwise indicated on Drawings, locate vertical joints beside piers integral with walls, near corners, and in concealed locations where possible.
 - 7. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
 - C. Control Joints in Slabs-on-Ground: Form weakened-plane control joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of concrete thickness as follows:
 - 1. Grooved Joints: Form control joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of control joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
 - 2. Sawed Joints: Form control joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random cracks.
 - D. Isolation Joints in Slabs-on-Ground: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade

beams, and other locations, as indicated.

- Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface, where joint sealants, specified in Section 079200 "Joint Sealants," are indicated.
- 2. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.
- E. Doweled Joints:
 - 1. Install dowel bars and support assemblies at joints where indicated on Drawings.
 - 2. Lubricate or asphalt coat one-half of dowel bar length to prevent concrete bonding to one side of joint.
- F. Dowel Plates: Install dowel plates at joints where indicated on Drawings.

3.06 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, embedded items, and vapor retarder is complete and that required inspections are completed.
 - 1. Immediately prior to concrete placement, inspect vapor retarder for damage and deficient installation, and repair defective areas.
 - 2. Provide continuous inspection of vapor retarder during concrete placement and make necessary repairs to damaged areas as Work progresses.
- B. Notify Engineer and testing and inspection agencies 24 hours prior to commencement of concrete placement.
- C. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Engineer in writing, but not to exceed the amount indicated on the concrete delivery ticket.
 - 1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- D. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 350 but not to exceed the amount indicated on the concrete delivery ticket.
 - 1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- E. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness.
 - 1. If a section cannot be placed continuously, provide construction joints as indicated.
 - 2. Deposit concrete to avoid segregation.
 - 3. Deposit concrete in horizontal layers of depth not to exceed formwork design

pressures and in a manner to avoid inclined construction joints.

- 4. Consolidate placed concrete with mechanical vibrating equipment in accordance with ACI 350.5.
 - a. Do not use vibrators to transport concrete inside forms.
 - b. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer.
 - c. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity.
 - d. At each insertion, limit duration of vibration to time necessary to consolidate concrete, and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- F. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
 - 1. Do not place concrete floors and slabs in a checkerboard sequence.
 - 2. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 - 3. Maintain reinforcement in position on chairs during concrete placement.
 - 4. Screed slab surfaces with a straightedge and strike off to correct elevations.
 - 5. Level concrete, cut high areas, and fill low areas.
 - 6. Slope surfaces uniformly to drains where required.
 - 7. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface.
 - 8. Do not further disturb slab surfaces before starting finishing operations.

3.07 FINISHING FORMED SURFACES

- A. As-Cast Surface Finishes:
 - 1. ACI 350 Environmental Surface Finish ESF-1.0: As-cast concrete texture imparted by form-facing material.
 - a. Apply to concrete surfaces not exposed to view for non-fluid-retaining elements.
 - 2. ACI 350 Surface Finish SF-2.0: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams.
 - a. Patch voids larger than 3/4 inch wide or 1/2 inch deep.
 - b. Remove projections larger than 1/4 inch
 - c. Patch tie holes.
 - d. Surface Tolerance: ACI 117 Class B.

- e. Locations: Apply to concrete surfaces exposed to public view.
- B. Rubbed Finish: Apply the following to as cast surface finishes where indicated on Drawings:
 - 1. Smooth-Rubbed Finish:
 - a. Perform no later than one day after form removal.
 - b. Moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture.
 - c. If sufficient cement paste cannot be drawn from the concrete by the rubbing process, use a grout made from the same cementitious materials used in the inplace concrete.
 - d. Maintain required patterns or variances as shown on Drawings or to match mockups.
- C. Related Unformed Surfaces:
 - 1. At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces.
 - 2. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.08 FINISHING FLOORS AND SLABS

- A. Comply with ACI 302.1R recommendations for screeding, re-straightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Scratch Finish:
 - 1. While still plastic, texture concrete surface that has been screeded and bull-floated or darbied.
 - 2. Use stiff brushes, brooms, or rakes to produce a profile depth of 1/4 inch in one direction.
 - 3. Apply scratch finish to surfaces to receive grout shaping.
- C. Float Finish:
 - 1. When bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operation of specific float apparatus, consolidate concrete surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats.
 - 2. Repeat float passes and re-straightening until surface is left with a uniform, smooth, granular texture and complies with ACI 117 tolerances for conventional concrete.
 - 3. Apply float finish to surfaces to receive trowel finish and fluid-retaining slabs.
- D. Trowel Finish:

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- 1. After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel.
- 2. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance.
- 3. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
- 4. Do not add water to concrete surface.
- 5. Do not apply hard-troweled finish to concrete, which has a total air content greater than 3 percent.
- 6. Apply a trowel finish to surfaces exposed to view .
- 7. Finish surfaces to the following tolerances, in accordance with ASTM E1155, for a randomly trafficked floor surface:
 - a. Slabs on Ground:
 - i. Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10-ft.- long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/4 inch.
 - b. Suspended Slabs:
 - i. Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10-ft.- long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/4 inch.
- E. Trowel and Fine-Broom Finish: Apply a first trowel finish to <u>all sidewalk and driveway</u> surfaces indicated on Drawings. While concrete is still plastic, slightly scarify surface with a fine broom perpendicular to main traffic route.
 - 1. Coordinate required final finish with Engineer before application.
 - 2. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.
- F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and locations indicated on Drawings.
 - 1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route.
 - 2. Coordinate required final finish with Engineer before application.
- 3.09 INSTALLATION OF MISCELLANEOUS CONCRETE ITEMS
 - A. Filling In:
 - 1. Fill in holes and openings left in concrete structures after Work of other trades is in place unless otherwise indicated.
 - 2. Mix, place, and cure concrete, as specified, to blend with in-place construction.
 - 3. Provide other miscellaneous concrete filling indicated or required to complete the

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Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

3.10 CONCRETE CURING

- A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
 - 1. Comply with ACI 350.5 and ACI 306.1 for cold weather protection during curing.
 - 2. Comply with ACI 350.5 and ACI 305.1 for hot-weather protection during curing.
 - 3. Maintain moisture loss no more than 0.2 lb/sq. ft. x h before and during finishing operations.
- B. Curing Formed Surfaces: Comply with ACI 308.1 as follows:
 - 1. Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces.
 - 2. Curing period shall not be less than seven days.
 - 3. If forms remain during curing period, moist cure after loosening forms.
 - 4. If removing forms before end of curing period, continue curing for remainder of curing period, as follows:
 - a. Continuous Fogging: Maintain standing water on concrete surface until final setting of concrete.
 - b. Continuous Sprinkling: Maintain concrete surface continuously wet.
 - c. Absorptive Cover: Pre-dampen absorptive material before application; apply additional water to absorptive material to maintain concrete surface continuously wet.
 - d. Water-Retention Sheeting Materials: Cover exposed concrete surfaces with sheeting material, taping, or lapping seams.
 - i. Method by itself is not permitted for fluid-retaining structures.
 - e. Membrane-Forming Curing Compound: Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions. This method is not permitted for fluid-retaining structures.
 - i. Recoat areas subject to heavy rainfall within three hours after initial application.
 - ii. Maintain continuity of coating and repair damage during curing period.
- C. Curing Unformed Surfaces: Comply with ACI 308.1 as follows:
 - 1. Begin curing immediately after finishing concrete.

3.11 TOLERANCES

A. Conform to ACI 117

3.12 APPLICATION OF LIQUID FLOOR TREATMENTS (INTERIOR SURFACES)

- A. Penetrating Liquid Floor Treatment: Prepare, apply, and finish penetrating liquid floor treatment in accordance with manufacturer's written instructions.
 - 1. Remove curing compounds, sealers, oil, dirt, laitance, and other contaminants and complete surface repairs.
 - 2. Do not apply to concrete that is less than 14 days' old.
 - 3. Apply liquid until surface is saturated, scrubbing into surface until a gel forms; rewet; and repeat brooming or scrubbing.
 - 4. Rinse with water; remove excess material until surface is dry.
 - 5. Apply a second coat in a similar manner if surface is rough or porous.
- B. Sealing Coat: Uniformly apply a continuous sealing coat of curing and sealing compound to hardened concrete by power spray or roller in accordance with manufacturer's written instructions.
- 3.13 JOINT FILLING
 - A. Prepare, clean, and install joint filler in accordance with manufacturer's written instructions.
 - 1. Install cork type joint filler in joints in fluid-retaining elements.
 - 2. Defer joint filling until concrete has aged at least six month(s).
 - 3. Do not fill joints until construction traffic has permanently ceased.
 - B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.
 - C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints.
 - D. Overfill joint, and trim joint filler flush with top of joint after hardening.
- 3.14 JOINT SEALING
 - A. Joints, not requiring waterstops or when so indicated on the Drawings, shall be sealed.
 - B. Joint sealed areas shall be sandblasted or roughened and blown clean of dust and sand with compressed air before the material may be applied.
 - C. Joints shall be primed (if required) and the sealant shall be applied in accordance with the manufacturer's recommendations.
- 3.15 CONCRETE SURFACE REPAIRS
 - A. Defective Concrete:

- 1. Repair and patch defective areas when approved by Engineer.
- 2. Remove and replace concrete that cannot be repaired and patched to Engineer's approval.
- B. Repair cracks in liquid containing concrete structures with widths greater than 0.010 inches, unless otherwise specified or directed by the Engineer.
- C. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing. Mix the repair mortar and turn the mortar frequently with a trowel without adding water.
- D. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
 - 1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete.
 - a. Limit cut depth to 3/4 inch
 - b. Make edges of cuts perpendicular to concrete surface.
 - c. Clean, dampen with water, and brush-coat holes and voids with bonding agent.
 - d. Fill and compact with patching mortar before bonding agent has dried.
 - e. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
 - 2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement, so that, when dry, patching mortar matches surrounding color.
 - a. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching.
 - b. Compact mortar in place and strike off slightly higher than surrounding surface.
 - 3. Repair defects on concealed formed surfaces that will affect concrete's durability and structural performance as determined by Engineer.
- E. Repairing Unformed Surfaces:
 - 1. Test unformed surfaces, such as floors and slabs, for finish, and verify surface tolerances specified for each surface.
 - a. Correct low and high areas.
 - b. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
 - 2. Repair finished surfaces containing surface defects, including spalls, popouts, honeycombs, rock pockets, crazing, and cracks in excess of 0.01 inch wide or that

penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.

- 3. After concrete has cured at least 14 days, correct high areas by grinding.
- 4. Correct localized low areas during, or immediately after, completing surfacefinishing operations by cutting out low areas and replacing with patching mortar.
 - a. Finish repaired areas to blend into adjacent concrete.
- 5. Correct other low areas scheduled to receive floor coverings with a repair underlayment.
 - a. Prepare, mix, and apply repair underlayment and primer in accordance with manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
 - b. Feather edges to match adjacent floor elevations.
- 6. Correct other low areas scheduled to remain exposed with repair topping.
 - a. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations.
 - b. Prepare, mix, and apply repair topping and primer in accordance with manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
- 7. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete.
 - a. Remove defective areas with clean, square cuts, and expose steel reinforcement with at least a 3/4-inch clearance all around.
 - b. Dampen concrete surfaces in contact with patching concrete and apply bonding agent.
 - c. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate.
 - d. Place, compact, and finish to blend with adjacent finished concrete.
 - e. Cure in same manner as adjacent concrete.
- 8. Repair random cracks and single holes 1 inch or less in diameter with patching mortar.
 - a. Groove top of cracks and cut out holes to sound concrete, and clean off dust, dirt, and loose particles.
 - b. Dampen cleaned concrete surfaces and apply bonding agent.
 - c. Place patching mortar before bonding agent has dried.
 - d. Compact patching mortar and finish to match adjacent concrete.
 - e. Keep patched area continuously moist for at least 72 hours.

- F. Perform structural repairs of concrete, subject to Engineer's approval, using epoxy adhesive and patching mortar.
- G. Repair materials and installation not specified above may be used, subject to Engineer's approval.
- 3.16 FIELD QUALITY CONTROL
 - A. Special Inspections: Owner will engage a special inspector to perform field tests and inspections and prepare testing and inspection reports.
 - B. Testing Agency: Owner will engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.
 - 1. Testing agency shall be responsible for providing curing container for composite samples on Site and verifying that field-cured composite samples are cured in accordance with ASTM C31/C31M.
 - 2. Testing agency shall immediately report to Engineer, Contractor, and concrete manufacturer any failure of Work to comply with Contract Documents.
 - 3. Testing agency shall report results of tests and inspections, in writing, to Owner, Engineer, Contractor, and concrete manufacturer within 48 hours of inspections and tests.
 - a. Test reports shall include reporting requirements of ASTM C31/C31M, ASTM C39/C39M, and ACI 301, including the following as applicable to each test and inspection:
 - i. Project name.
 - ii. Name of testing agency.
 - iii. Names and certification numbers of field and laboratory technicians performing inspections and testing.
 - iv. Name of concrete manufacturer.
 - v. Date and time of inspection, sampling, and field testing.
 - vi. Date and time of concrete placement.
 - vii. Location in Work of concrete represented by samples.
 - viii. Date and time sample was obtained.
 - ix. Truck and batch ticket numbers.
 - x. Design compressive strength at 28 days.
 - xi. Concrete mixture designation, proportions, and materials.
 - xii. Field test results.
 - xiii. Information on storage and curing of samples before testing, including curing method and maximum and minimum temperatures during initial curing period.

xiv. Type of fracture and compressive break strengths at seven days and 28 days.

- C. Batch Tickets: For each load delivered, submit three copies of batch delivery ticket to testing agency, indicating quantity, mix identification, admixtures, design strength, aggregate size, design air content, design slump at time of batching, and amount of water that can be added at Project site.
- D. Inspections:
 - 1. Headed bolts and studs.
 - 2. Verification of use of required design mixture.
 - 3. Concrete placement, including conveying and depositing.
 - 4. Curing procedures and maintenance of curing temperature.
 - 5. Verification of concrete strength before removal of shores and forms from beams and slabs.
 - 6. Batch Plant Inspections: On a random basis, as determined by Engineer.
- E. Concrete Tests: Testing of composite samples of fresh concrete obtained in accordance with ASTM C 172/C 172M shall be performed in accordance with the following requirements:
 - 1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd. but less than 25 cu. yd. plus one set for each additional 50 cu. yd. or fraction thereof.
 - a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 - 2. Slump: ASTM C143/C143M:
 - a. One test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 - b. Perform additional tests when concrete consistency appears to change.
 - 3. Air Content: ASTM C231/C231M pressure method, for normal-weight concrete;
 - a. One test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 - 4. Concrete Temperature: ASTM C1064/C1064M:
 - a. One test hourly when air temperature is 40 ° F and below or 80 ° F and above, and one test for each composite sample.
 - 5. Compression Test Specimens: ASTM C31/C31M:
 - a. Cast and laboratory cure two sets of two 6-inch by 12-inch or 4-inch by 8-inch cylinder specimens for each composite sample.

- 6. Compressive-Strength Tests: ASTM C39/C39M.
 - a. Test one set of two laboratory-cured specimens at seven days and one set of two specimens at 28 days.
 - b. Test one set of two field-cured specimens at seven days and one set of two specimens at 28 days.
 - c. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
- 7. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
- 8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength, and no compressive-strength test value falls below specified compressive strength by more than 500 psi if specified compressive strength is 5000 psi or no compressive strength test value is less than 10 percent of specified compressive strength if specified compressive strength is greater than 5000 psi
- 9. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Engineer but will not be used as sole basis for approval or rejection of concrete.
- 10. Additional Tests:
 - a. Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Engineer.
 - b. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42/C42M or by other methods as directed by Engineer.
 - i. Acceptance criteria for concrete strength shall be in accordance with ACI 350.5 section 1.6.7.3.
- 11. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- 12. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

3.17 PROTECTION

- A. Protect concrete surfaces as follows:
 - 1. Protect from petroleum stains.
 - 2. Diaper hydraulic equipment used over concrete surfaces.

- 3. Prohibit vehicles from interior concrete slabs.
- 4. Prohibit use of pipe-cutting machinery over concrete surfaces.
- 5. Prohibit placement of steel items on concrete surfaces.
- 6. Prohibit use of acids or acidic detergents over concrete surfaces.
- 7. Protect liquid floor treatment from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by liquid floor treatments installer.
- 8. Protect concrete surfaces scheduled to receive surface hardener or polished concrete finish using Floor Slab Protective Covering.

END OF SECTION 03 30 00

SECTION 03 60 00 GROUT AND REPAIR MORTAR

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and Special Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications Sections, apply to this Section.
- 1.02 SUMMARY
 - A. This section includes, but not limited to, the following:
 - 1. Epoxy grouting of reinforcing bars to be installed in hardened concrete.
 - 2. Repair of deteriorated concrete surfaces
 - B. Related Sections include, but are not limited to, the following:
 - 1. Division 3 Section "Reinforcing Steel"
 - 2. Division 3 Section "Cast-In-Place Concrete"

1.03 SUBMITTALS

A. The Contractor shall submit manufacturers' information indicating the application, formulation, and installation procedures for each brand and type of grout to be used.

1.04 PRODUCT HANDLING

- A. Delivery of Materials: Materials shall be delivered to the project site in original, new and unopened containers bearing the manufacturer's name and label showing at least the following information:
 - 1. Name of material.
 - 2. Federal specification number, if applicable.
 - 3. Manufacturer's name.
 - 4. Contents by volume for major constituents.
 - 5. Handling instructions.
 - 6. Application instructions.
- B. Storage of Materials: Materials shall be stored to prevent moisture contamination, damage, and deterioration of grout materials.
- C. Protection: Materials and Work shall be protected before, during and after installation of the grout.

PART 2 - PRODUCTS

- 2.01 NONSHRINKING GROUT
 - A. Nonshrinking Grout shall be: Sika Grout 212; Master Builders "Masterflow 713 Grout"; Savereisen Cement "F-100 Level Fill Grout"; U.S. Grout "Five Star Grout"; or USM "Upcon" or equal.
- 2.02 EPOXY GROUT
 - A. Adhesive: Two-component liquid equal to: Thermal-Chem "Mortar Resin Products M3"; Minwax "Por-Rok Anchoring Cement", or equal.
 - B. Aggregate: As recommended by the epoxy grout manufacturer.
- 2.03 REPAIR MORTAR
 - A. The material to be used for repair of the Bar Screen structure shall be twocomponent, polymer-modified, cementitious, non-sag mortar equal to SikaTop-123 Plus" with FerroGard 901 penetrating corrosion inhibitor.
- 2.04 QUICK SETTING HYDRAULIC CEMENT
 - A. Quick setting hydraulic cement shall be SikaSet Plug, or equal
- 2.05 SETTING ANCHOR BOLTS/DOWELS
 - A. High strength adhesive shall be Simpson Strong-Tie AT-XP, or equal.
- 2.06 WATER
 - A. Clean and free of deleterious substances.

PART 3 - EXECUTION

3.01 NONSHRINKING GROUT

- A. General: Nonshrinking grout shall be furnished factory-premixed so only water is added at the project site. Grout shall be mixed in a mechanical mixer. No more water shall be used than is necessary to produce a flowable grout as recommended by the manufacturer.
- B. Preparation: Concrete to receive nonshrinking grout shall be saturated with water for 24 hours prior to grouting.
- C. Placement: Grout shall be placed in strict accordance with the directions of the manufacturer so all spaces and cavities below the top baseplates or against concrete slabs or walls are completely filled without voids. Forms shall be provided where structural components of baseplates or launders will not confine the grout.
- D. Finishing: The grout shall be finished smooth in all locations where the top surface or edge of the grout will be exposed to view after it has reached its initial set. Except where shown to be finished on a slope, the edges of grout shall be cut off flush at the baseplate, bedplate, member, or piece of equipment.
- E. Curing: Nonshrink grout shall be protected against rapid loss of moisture by

covering with wet rags or polyethylene sheets. After edge finishing is complete, the grout shall be wet cured for at least 7 days.

3.02 EPOXY GROUT

- A. General: Components shall be packed separately at the factory and field mixed. All proportioning and mixing of the components shall be in accordance with the manufacturer's recommendations.
- B. Preparation: Where indicated on the Drawings, anchor bolts and reinforcing bars shall be epoxy grouted in holes drilled into hardened concrete. Diameters of holes shall be ¹/₄ inch larger than the maximum dimension of the bolt head, and ¹/₂ inch larger than the bar diameter. The embedment depth for epoxy-grouted anchor bolts and reinforcing bars shall not be less than ten bolt or bar diameters unless indicated otherwise on the Drawings.
 - 1. Holes shall be prepared for grouting as recommended by the grout manufacturer.
- C. Installation: Anchor bolts and reinforcing bars shall be clean, dry, and free of grease and other foreign matter at the time of installation. The bolts and bars shall be set and positioned and the epoxy grout shall be placed and finished in accordance with the recommendations of the grout manufacturer. Particular care shall be taken to insure that all spaces and cavities are filled with epoxy grout, without voids.

3.03 REPAIR MORTAR

- A. General: Components shall be packed separately at the factory and field mixed. All proportioning and mixing of the components shall be in accordance with the manufacturer's recommendations.
- B. Preparation: Where indicated on the Drawings, the surfaces to receive repair mortar shall be cleaned and completely free of deleterious substances, standing or adhered water and shall be prepared in strict accordance with the manufacturer's requirements before the repair mortar is mixed and applied.
- C. Installation: All surfaces shall be clean, dry, and free of grease and other foreign matter at the time of installation. The mortar shall be placed and finished in accordance with the recommendations of the manufacturer. Particular care shall be taken to insure that all spaces and cavities are filled with repair mortar, without voids.

3.04 QUICK SETTING HYDRAULIC CEMENT

- A. General. Contents shall be packaged at the factory and mixed with water in the field to obtain the desired consistency. Proportioning and mixing shall be in accordance with the manufacturer's recommendations.
- B. Preparation. The concrete area to receive quick setting hydraulic cement should be thoroughly cleaned and lightly dampened just prior to application.

- C. Installation. The quick setting hydraulic cement shall be placed and finished in accordance with the recommendations of the grout manufacturer. Particular care shall be taken to insure that all spaces and cavities are filled without voids.
- 3.05 USES OF GROUT
 - A. Epoxy grout shall be used at locations shown on the Drawings or specified herein. Repair of rock pockets or surface defects in concrete work approved for repair by the Engineer shall generally be repaired with epoxy grout unless otherwise directed by the Engineer.
 - B. Quick setting hydraulic cement shall be used at locations shown on the Drawings or specified herein. All penetrations/joints in concrete tunnels, manholes, vaults, or structures where a watertight seal is required shall use this type of grout.

END OF SECTION 03 60 00

DIVISION 31 EARTHWORK

SECTION 31 00 00 EARTHWORK

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This work is the excavation, trenching and backfilling for the placement of structures, utilities, equipment and appurtenances, handling and storing materials for fill and backfill, bracing, shoring, trench protection, subgrade preparation, final grading, site dressing and cleanup.
- B. To the extent possible, reuse existing topsoil and other materials excavated from the site.

1.02 REFERENCES

A. The most recent publication of all the following form a part of this specification:

AASHTO T99	Moisture-Density Relations for Soils and Soil-Aggregate Mixtures Using 5-lb Rammer and 12" Drop
ASTM D698	Moisture-Density Relations for Soils and Soil-Aggregate Mixtures Using 5-lb Rammer and 12" Drop
AASHTO T191 ASTM D1556	Density of soil in-place by the sand-cone method
AASHTO T310 ASTM D6938	In-Place density and water content of soil and soil aggregate by Nuclear Method (Shallow Depth)
AASHTO T11 ASTM C117	Materials finer than 0.075 mm (No. 200) sieve in mineral aggregates by washing
AASHTO T27 ASTM C136	Sieve analysis of fine and coarse aggregate
AASHTO T89	Determining the liquid limit of soils
AASHTO T90	Determining the plastic limit and plasticity index of soils
ASTM D4318	Test method for liquid limit, plastic limit and plasticity index of soils

1.03 RELATED DOCUMENTS

- A. The following documents and specification sections apply directly to this Section:
 - 1. Division 01 Section "Payment Procedures" for a schedule of unit prices;
 - 2. Division 01 Temporary Facilities and Controls;
 - 3. Division 02 Existing Conditions & Sitework;

- 4. Division 31 Site Clearing, Geotextiles;
- 5. Division 32 Exterior Improvements;

1.04 DEFINITIONS

- A. Backfill: Soil materials used to fill an excavation.
- B. Base Course: Layer placed between the subbase course and asphalt paving/concrete.
- C. Bedding Course: Layer placed over the excavated subgrade before installing structure.
- D. Borrow: Satisfactory soil imported from off-site for use as fill or backfill.
- E. Select Subgrade: Satisfactory soil imported from off-site for use between membrane liner and imported dike material.
- F. Excavation: Removal of material encountered above subgrade elevations.
 - 1. Additional Excavation: Excavation below subgrade elevations as directed by Engineer. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
 - 2. Bulk Excavation: Excavations more than 10 feet in width and pits more than 30 feet in either length or width.
 - 3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated dimensions without direction by Engineer. Unauthorized excavation, as well as remedial work directed by Engineer, shall be without additional compensation.
- G. Fill: Soil materials used to raise existing grades.
- H. Structures: Buildings, footings, foundations, retaining walls, slabs, manholes, lagoon inlets, valve pits, lift stations, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- I. Subbase Course: Layer placed between the subgrade and base course for asphalt paving, or layer placed between the subgrade and a concrete pavement or walk.
- J. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.

1.05 SUBMITTALS

- A. Product Data: For the following:
 - 1. Drainage fabric (if applicable);
 - 2. Separation fabric (if applicable);
 - 3. Stabilization fabric (if applicable).
- B. Samples: For the following:
 - 1. 30 lb samples, sealed in airtight containers, of each proposed soil material from onsite or borrow sources.

- 2. 1 ft x 1 ft samples of drainage fabric.
- C. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:
 - 1. Classification according to ASTM D 2487 of each on-site or borrow soil material proposed for fill and backfill;
 - 2. Laboratory compaction curve according to ASTM D 698 for each on-site or borrow soil material proposed for fill and backfill;
 - 3. Liquid limit, plastic limit and plasticity of soils in accordance with AASHTO T89 and T90, respectively.

1.06 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by OWNER or others unless permitted in writing by Engineer and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Engineer not less than 48 hours in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Engineer's written permission.
 - 3. Contact utility-locator service for area where Project is located before excavating.
- B. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: ASTM D 2487 soil classification groups GW, GM, GC, ML, SC, SW, SP, and SM, or a combination of these group symbols; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, clayey soils, and other deleterious matter.
- C. Unsatisfactory Soils: ASTM D 2487 soil classification groups GP, MH, CL, CH, OL, OH, and PT, or a combination of these group symbols.
 - 1. Unsatisfactory soils also include satisfactory soils not maintained within 4 percent of optimum moisture content at time of compaction.
- D. Backfill and Fill: Satisfactory soil materials.
- E. Subbase: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, crushed recycled concrete, and natural or crushed sand.
- F. Base: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, crushed recycled concrete, and natural or crushed sand.
- G. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel,

crushed stone, crushed recycled concrete, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1 $\frac{1}{2}$ inch sieve and not more than 12 percent passing a #200 sieve.

- H. Bedding: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand having a maximum ³/₄ inch size and must be free draining and nonplastic.
- I. Drainage Fill: Washed, narrowly graded mixture of crushed stone, or crushed or uncrushed gravel having 100% passing the 1 ½ inch sieve and 0 to 10% passing the No. 10 sieve.
- J. Select Subgrade: Satisfactory soil materials, with no rocks larger than 2" in any dimension.

2.02 ACCESSORIES

A. Drainage Fabric: Nonwoven geotextile, specifically manufactured as a drainage geotextile; made from polyolefins, polyesters, or polyamides.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.
- C. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.02 DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
 - 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
- 3.03 EXPLOSIVES
 - A. Blasting is not anticipated to be necessary for this project and will not be allowed.
- 3.04 EXCAVATION, GENERAL
 - A. Unclassified Excavation: Excavation to subgrade elevations regardless of the character of

surface and subsurface conditions encountered, including rock, soil materials, and obstructions.

- 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, notify geotechnical engineer and replace with satisfactory soil materials. No additional payment will be made for remedial action due to unsuitable soils.
- 2. Meet OSHA requirements for excavations (including work performed in pre-existing excavated openings) and excavated material stockpiles. This may require design of temporary slopes and/or shoring by a licensed professional engineer.

3.05 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. Extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
 - 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
 - 2. Pile Foundations: Stop excavations from 6 inches to 12 inches above bottom of pile cap before piles are placed. After piles have been driven, remove loose and displaced material. Excavate to final grade, leaving solid base to receive concrete pile caps.
 - 3. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended for bearing surface.

3.06 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated cross sections, elevations, and grades.
- 3.07 APPROVAL OF SUBGRADE
 - A. Notify Engineer when excavations have reached required subgrade.
 - B. If Engineer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
 - 1. No additional payment will be made for remedial action due to unsuitable soils.
 - C. Proof roll subgrade with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof roll wet or saturated subgrades.
 - D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer.
 - E. AS PER GEOTECHNICAL REPORT
 - 1. If soil and moisture conditions allow compact native soils at bottom of excavation

surface to standard relative compaction of at least 95 percent (ASTM D698). Density testing is required.

2. If subgrade soil is saturated and prone to pumping, compact subgrade with a minimum of 4 passes of a sheep's foot roller. Do not use vibratory compaction. Discontinue compaction if the process is drawing water upward or causing pumping. Density testing is not required.

3.08 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill may be used when approved by Engineer.
 - 1. Fill unauthorized excavations under other construction or utility pipe as directed by Engineer.
- 3.09 STORAGE OF SOIL MATERIALS
 - A. Stockpile borrow materials and satisfactory excavated soil materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.10 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
 - 1. Construction below finish grade including, where applicable, dampproofing, waterproofing, and perimeter insulation.
 - 2. Inspecting and testing underground utilities.
 - 3. Removing concrete formwork.
 - 4. Removing trash and debris.
 - 5. Removing temporary shoring and bracing, and sheeting.
 - 6. Installing permanent or temporary horizontal bracing on horizontally supported walls.
- 3.11 FILL
 - A. Preparation: Remove vegetation, topsoil, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface before placing fills.
 - B. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
 - C. Place and compact fill material in layers to required elevations as follows:
 - 1. Under grass and planted areas, use satisfactory soil material.

- 2. Under walks and pavements, use satisfactory soil material.
- 3. Under steps and ramps, use engineered fill.
- 4. Under footings and foundations, use engineered fill.

3.12 MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 4 percent of optimum moisture content.
 - 1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
 - 2. Remove and replace, or scarify and air-dry, otherwise satisfactory soil material that exceeds optimum moisture content by 4 percent and is too wet to compact to specified dry unit weight.

3.13 COMPACTION OF BACKFILLS AND FILLS

- A. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
- C. Compact soil to not less than the following percentages of maximum dry unit weight according to ASTM D 698:
 - 1. Under structures, building slabs, steps, and pavements, scarify and recompact top 8 inches of existing subgrade and each layer of backfill or fill material at 95 percent.
 - 2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 92 percent.
 - 3. Under lawn or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 85 percent.

3.14 GRADING

- A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 - 1. Provide a smooth transition between adjacent existing grades and new grades.
 - 2. Cutout soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
 - 1. Lawn or Unpaved Areas: Plus or minus 1 inch.
 - 2. Walks: Plus or minus 1 inch.

3.15 FIELD QUALITY CONTROL

- A. Testing: The Engineer will perform field quality-control testing. The Contractor may also engage the services of a qualified testing firm to perform field quality-control testing to verify the Engineer's testing results, at no additional cost to the OWNER.
- B. Allow Engineer to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.
- C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Engineer.
- D. Engineer and Contractor's independent firm (if applicable) will test compaction of soils in place according to ASTM D 2922. Tests will be performed at the following locations and frequencies:
 - 1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 square feet or less of paved area or building slab, but in no case fewer than three tests.
 - 2. Foundation Wall Backfill: At each compacted backfill layer, at least one test for each 100 feet or less of wall length, but no fewer than two tests.
 - 3. Utility Structures: At each compacted backfill layer, at least one test for every 100 square feet or less, but no fewer than one test per structure.
- E. When Engineer's testing reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained. Contractor shall be responsible for the cost of repeat testing conducted by the Engineer.

3.16 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
 - 1. Scarify or remove and replace soil material to depth as directed by Engineer; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.
- 3.17 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 31 00 00

SECTION 31 05 13 SOILS FOR EARTHWORK

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Subsoil materials.
 - 2. Topsoil materials.
- B. Related Sections include:
 - 1. Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to work of this section.
 - 2. Division 1 General Requirements Specification Sections.
 - 3. Division 31 Earthwork Specification Sections.
- 1.02 SUBMITTALS FOR REVIEW
 - A. See Section 01 33 00 Submittals: Procedures for submittals.
 - B. Samples: In accordance with Section 01 40 00.
- 1.03 QUALITY ASSURANCE
 - A. Section 01 40 00 Quality Control: Field Samples.
 - B. Material Source: Provide materials from the same source throughout the Work. Change of source requires Engineer approval.

PART 2 - PRODUCTS

- 2.01 SUBSOIL MATERIALS
 - A. Subsoil: Uncontaminated excavated onsite material or imported borrow material. Graded free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
 - 1. Type A: See MPWSS, latest edition. Existing (Native) soil shall be considered a Type A.
 - 2. Type B: See MPWSS, latest edition.
 - 3. Type C: Non-used; All frozen material, vegetation, trash, rocks, and concrete and bituminous chunks having a dimension exceeding 3 inches.
- 2.02 TOPSOIL MATERIALS
 - A. Topsoil: Uncontaminated excavated onsite material or imported borrow material; Graded free of roots, rocks larger than ³/₄ inches, subsoil, debris, large weeds, and foreign matter.
 - 1. Imported or Re-used; Friable loam. Acidity range (pH) of 5.5 to 7.5 containing a minimum of 4 percent and a maximum of 25 percent organic matter. Conforming to

ASTM D2487 Group Symbol OL and OH.

- 2.03 SOURCE QUALITY CONTROL
 - A. Section 01 40 00 Quality Control: Testing and analysis of soil material.
 - B. Testing and Analysis of Subsoil Material: Perform in accordance with ASTM D698, ASTM D2922, and ASTM D3017.
 - C. Testing and Analysis of Topsoil Material: Perform in accordance with ASTM D2487.
 - D. Provide materials of each type from same source throughout the Work.
 - E. Contractor to obtain and pay for services of soil classification technician from an independent geotechnical laboratory to monitor soils installed.

END OF SECTION 31 05 13

SECTION 31 10 00 SITE CLEARING

PART 1 - GENERAL

1.01 DESCRIPTION

A. This work includes the identification, preparation, removal, stockpiling, salvage and disposal of existing surface materials at the project site which are impacted by or interfere with construction of the improvements.

1.02 RELATED DOCUMENTS

- A. The following documents and specification sections apply directly to this Section:
 - 1. Drawings and Special Provisions of the Contract;
 - 2. General and Supplementary Conditions;
 - 3. Division 01 General Requirements;
 - 4. Division 02 Existing Conditions;
 - 5. Division 31 Earthwork;

1.03 SUMMARY

- A. This Section includes, but not limited to, the following:
 - 1. Protecting existing trees and vegetation to remain.
 - 2. Removing trees and other vegetation as necessary.
 - 3. Clearing and grubbing.
 - 4. Topsoil stripping and stockpiling;
 - 5. Removing above-grade site improvements.
 - 6. Disconnecting, capping or sealing, and abandoning site utilities in place.
 - 7. Disconnecting and removing site utilities.

1.04 DEFINITIONS

A. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of weeds, roots, and other deleterious materials.

1.05 MATERIALS OWNERSHIP

A. Except for materials indicated to be stockpiled or to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from the site.

1.06 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

SITE CLEARING

- 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
- 2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
- B. Salvageable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.
- C. Notify utility locator service for area where Project is located before site clearing.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

- A. Satisfactory Soil Materials: Requirements for satisfactory soil materials are specified in Division 31 00 00 Earthwork; and 31 05 13 Soils for Earthwork.
 - 1. Obtain approved borrow soils materials off-site when satisfactory soil materials are not available on-site.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Provide erosion-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- C. Locate and clearly flag trees and vegetation to remain or to be relocated.
- D. Protect existing site improvements to remain from damage during construction.
 - 1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.02 TREE PROTECTION

- A. Do not store construction materials, debris, or excavated material within drip line of remaining trees.
- B. Do not permit vehicles, equipment, or foot traffic within drip line of remaining trees.
- C. Do not excavate within drip line of trees, unless otherwise indicated.
- D. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by Engineer.
 - 1. Replace trees that cannot be repaired and restored to full-growth status, as determined by a qualified arborist.

3.03 UTILITIES

- A. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed.
 - 1. Owner will arrange to shut off any publicly-owned utilities indicated to be removed.

SITE CLEARING
- 2. Contractor shall arrange to shut off any privately-owned utilities with utility companies.
- B. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Engineer not less than two days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Engineer's written permission.

3.04 CLEARING AND GRUBBING

- 1. Perform Clearing and Grubbing in accordance with 31 11 00.
- 3.05 TOPSOIL STRIPPING
 - Topsoil stripping and stockpiling shall be conducted in accordance with Section 31 14 13.

3.06 SITE GRADING

- A. Rough-grade the site to provide positive drainage away from all construction elements and away from the site in such a manner that no damage to adjacent property will result from runoff.
 - 1. Project site shall be graded sufficiently smooth to provide access to all elements of construction.

3.07 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.
- B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.
 - 1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut length of existing pavement to remain before removing existing pavement. Saw-cut faces vertically.

3.08 DISPOSAL

A. Disposal: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off Owner's property unless Contractor has made arrangements for onsite disposal.

END OF SECTION 31 10 00

SECTION 31 11 00 CLEARING AND GRUBBING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Protection of features not designated for removal.
 - 2. Site removals.
 - 3. Disposal of waste materials.
- B. Related Sections include:
 - 1. Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to work of this section.
 - 2. Division 1 General Requirement Specification Sections.
 - 3. Division 31 Earthwork Specification Sections.

1.02 REGULATORY REQUIREMENTS

- A. Conform to applicable codes and regulations for proper disposal of debris.
- B. Conform to applicable codes for worker safety.

PART 2 - PRODUCTS

- 2.01 MATERIALS
 - A. Construction Fencing: Construction fencing shall be orange plastic mesh, heavy duty, snow fencing fastened to metal or wood posts.

PART 3 - EXECUTION

- 3.01 PREPARATION
 - A. Verify that existing plant life designated to remain is tagged or identified.
 - B. Beginning work of this Section means acceptance of existing conditions.
 - C. Identify and furnish an area for storing or placing removed material prior to the commencement of Work in this Section.

3.02 PROTECTION

- A. Locate, identify, and protect utilities that remain from damage.
- B. Protect trees, plant growth, and features designated to remain, as final landscaping.
- C. Protect bench marks, survey control points, and existing structures from damage.
- D. Prevent surface water and subsurface or groundwater from entering excavations, from ponding on prepared subgrades and from flooding site and surrounding area.

- E. Contractor shall repair or replace, to original condition or better, existing structures and improvements, flora, and landscaping damaged or injured during construction operations. Contractor shall understand the sensitive nature of working on or near developed property and shall endeavor to limit injury or damage both inside the limits of construction and outside the limits of construction.
- F. Protect existing trees and other vegetation indicated to remain from unnecessary cutting, breaking, skinning of roots, skinning and bruising of bark, smothering of trees, by stockpiling construction materials or excavated materials within the drip line, excess foot of vehicular traffic, or parking of vehicles within drip line.
- G. Protect wetlands, rivers, streams, and other waters of the state from all construction activities and contamination by erosion and runoff.
- H. Protect areas that have been finish graded from subsequent construction operations, traffic, and erosion. Remove, provide new, and compact as required, material contaminated by erosion and runoff
- 3.03 WORK BY OTHERS
 - A. Sod in areas to be disturbed will be removed by others prior to commencement of earthwork activities.

3.04 CLEARING

- A. Clear areas required for access to site and execution of Work.
- 3.05 GRUBBING
 - A. Shall conform to Montana Department of Transportation (MDT) Standard Specifications for Road and Bridge Construction (2014 edition). Section 201.03.1 shall be followed except as specified below and absolutely no burning will be allowed.
 - 1. Grubbing operations may be completed by removal of stump section or by grinding
 - 2. Remove stumps, logs, roots, and other organic matter located within proposed pavements and structures to the depth indicated:
 - a. Gravel or paved surface: 48" below surface grade.
 - b. Grass areas: 12" below surface grade
 - c. Other structures or utilities: 36" below existing ground or finish grade, whichever is lower.
 - B. Depressions resulting from grubbing operations shall be backfilled in accordance with other sections in Division 31.

3.06 DISPOSAL OF WASTE MATERIALS

A. Remove all clearing and grubbing debris from the site in accordance with the Contract Documents and all permits and regulations. Burning shall not be allowed on Owner's property.

END OF SECTION 31 11 00

CLEARING AND GRUBBING

SECTION 31 11 10 REMOVAL OF EXISTING PAVEMENT, CONCRETE CURB, SIDEWALK, DRIVEWAY, AND/OR STRUCTURES (Reference MPWSS Section 02112)

All applicable portions of MPW Standard Specification Section 02112 shall apply with the following additions, deletions, and/or modifications.

PART 3 - EXECUTION

Delete the last sentence of 3.1.C and add the following:

Edges on all concrete and asphalt shall be straight lines and vertical cuts made with a saw. Concrete shall be cut with a saw to a depth of 4 inches minimum. Section deeper than 4 inches may be broken after cutting. Resulting face shall not be flatter than a 1:1 from vertical. Construction methods will not disturb the remaining concrete slabs.

All slabs to remain shall be replaced, if disturbed, at no cost to the owner.

Exercise care in removal of existing tree roots that conflict with the work. Tree roots shall be removed by saw-cutting the roots to a neat line at the extent of the excavation. Remove only the minimum amount of roots necessary in order to complete the work.

PART 4 - MEASUREMENT AND PAYMENT

DELETE: Entire Section and refer to Section 01 29 00

END OF SECTION 31 11 10

SECTION 31 14 13 SOIL STRIPPING AND STOCKPILING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Protection of features not designated for removal.
 - 2. Topsoil Removal.
 - 3. Stockpiling of Materials.
 - 4. Stockpile Cleanup.
 - 5. Estimated Excess Material Volumes.
- B. Related Sections include:
 - 1. Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to work of this section.
 - 2. Division 1 General Requirement Specification Sections.
 - 3. Division 31 Earthwork Specification Sections.

1.02 DESCRIPTION

- A. Limits of construction are shown on the Drawings. Excavation shall not be allowed outside of the limits of construction where shown on the Drawings.
- B. Materials may be temporarily stockpiled on the site within the limits of construction or where shown on the Drawings.
- C. Protect benchmarks and existing structures that are to remain from damage or displacement.
- 1.03 FIELD MEASUREMENTS
 - A. Verify that survey benchmark and intended elevations for the Work are as indicated.
- 1.04 DEFINITIONS
 - A. Soil Testing Laboratory: Refers to a professional soils engineering firm with soil sampling and testing services that is independent from the Contractor.
 - B. Structures: Existing and new construction, including but not limited to slabs, buildings, footings, tanks, and other structural elements.
- 1.05 SITE CONDITIONS
 - A. Soil borings were taken for this project by Pioneer Technical Services, Inc. The Geotechnical Investigation Report and associated Addenda are included in Appendix C of this Project Manual.

- B. Data indicated on the subsurface conditions are not intended as representations, warranties of accuracy, or continuity between soil borings. It shall be expressly understood that Owner and Engineer shall not be responsible for interpretations or conclusions drawn from these reports by the Contractor. The information is made available for the convenience of the Contractor and is in no way, shape, or form considered a part of this Contract.
- C. Contractor shall determine to Contractor's own satisfaction the nature and location of subsurface obstacles and the nature of soil and water conditions which will be encountered during the work.
- D. Contractor may perform additional test borings or other exploratory operations at Contractor's own expense. Contractor shall make arrangements for any additional soils investigation with Owner.
- E. No claim for additional payment will be accepted due to the nature of subsurface conditions in which the work is to be performed.
- F. Do not commence construction of structure foundation until soil test results are confirmed.
- 1.06 ADDITIONAL PAYMENT
 - A. All excavation, removal, and disposal of earth, peat, muck, and other materials; erosion control; sheeting, shoring, and bracing; fill and backfill, placement, compaction, grading, source quality testing; stockpiling; and all other work under this Section shall be considered incidental to the Project and no claim for additional compensation of extra work will be accepted.
 - B. No claim for additional payment will be accepted for excavation and fill for all or improvements required for removal of unsuitable material up to three (3) feet below bottom of proposed foundation or one (1) foot below bottom of noted geosynthetically reinforced structural fill or one (1) foot below minimum excavation limit or as noted on the Drawings, whichever results in the greater excavation and fill.
 - C. Excavation and fill required for removal of unsuitable material deeper than the above limits will be paid for on a time and materials basis if conditions found in the Geotechnical Report are found to differ from actual conditions experienced on site. No additional payment will be made for conditions reflected in the Geotechnical Report.
 - D. No claim for additional payment will be accepted for repairs made to subgrade due to weather related items.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

- 3.01 INSPECTION
 - A. Contractor shall verify which native materials are suitable for reuse at the site. Provide testing data as required and keep materials separated.

- B. Notify Engineer of any unsuitable materials.
- 3.02 PROTECTION
 - A. Protect all existing structures, trees, plantings, turf, and other facilities which are not scheduled for removal.
- 3.03 TOPSOIL REMOVAL
 - A. All topsoil shall be stripped to full depth and stockpiled separately to be placed on top of finished grading and all disturbed areas not covered by structures or pavement. Remove all heavy growths of grass prior to stripping topsoil.
 - B. Separate all debris, large roots, and rocks greater than one (1) inch from the topsoil and remove from the site in accordance with all applicable Federal, State, and Local regulations to Contractor furnished site.
 - C. Where trees are to be left standing, stop topsoil stripping a sufficient distance (at least the drip line) from a tree to prevent damage to main root system.

3.04 STOCKPILING OF MATERIALS

- A. Contractor may temporarily stockpile acceptable materials including topsoil, excess excavated, and delivered materials within the limits of construction where shown on the Drawings. Contractor shall obtain approval from Engineer before stockpiling excess materials.
- B. Stockpile in sufficient quantities to meet Project schedule and requirements.
- C. Separate differing materials with dividers or stockpile apart to prevent mixing.
- D. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.
- E. Apply appropriate erosion control measures to stockpile areas.
- F. Avoid stockpiling in location of future levee or berm around the site.
- G. Contractor shall remove all excess stockpiles from the site prior to substantial completion of the project.
- 3.05 STOCKPILE CLEANUP
 - A. Remove stockpile; leave area in a clean and neat condition. Grade site surface to prevent freestanding surface water.
 - B. Restore stockpile area in accordance with Section 32 90 00.
 - C. Temporary Stockpile Area:
 - 1. Contractor shall place material from excavations onsite in the area designated on the plans or as directed by the MSH maintenance manager.

END OF SECTION 31 14 13

SOIL STRIPPING & STOCKPILING

SECTION 31 22 00 GRADING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes general requirements and procedures for site grading including, but not limited to, the following:
 - 1. Rough Grading
 - 2. Finish Grading
 - 3. Topsoil Placement
- B. Related Sections include:
 - 1. Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to work of this section.
 - 2. Division 1 General Requirement Specification Sections.
 - 3. Division 31 Earthwork Specification Sections.

1.02 DESCRIPTION

- A. Contractor shall grade the site as shown on the Drawings. Contours and spot elevations indicate finished surface grades.
- B. Construct uniform slopes between contours and spot elevations.
- C. Limits of construction are shown on the Drawings as indicated by the fencing boundary. Excavation, placement of fill, or general grading shall not be allowed outside of the limits of construction where shown on the Drawings.
- D. Materials may be temporarily stockpiled on the site within the limits of construction or where shown on the Drawings.
- E. Topsoil removal and rough grading of the site shall be completed prior to structure erection.
- F. Perform finish grading and topsoil placement after structure erection.
- G. Protect benchmarks and existing structures that are to remain from damage or displacement.
- H. All earthwork shall be performed in a manner and sequence that will provide drainage and proper erosion control at all times.
- 1.03 FIELD MEASUREMENTS
 - A. Verify that survey benchmark and intended elevations for the Work are as indicated.
 - B. Contractor shall utilize a licensed surveyor to provide grading layout, elevations, staking and all necessary offsets.

PART 2 - PRODUCTS

- 2.01 MATERIALS
 - A. Topsoil: Type S4 as specified in Section 31 05 13.
 - B. Subsoil Fill: Type S1 or S2 as specified in Section 31 05 13.
 - C. Engineered Fill: Type A4 as specified in Section 32 05 16.
 - D. Aggregate Base and Surface Course: Type A3 and A2 respectively as specified in Section 32 05 16 and shown on drawings.
 - E. Provide source testing data in accordance with Section 01 40 00.
- 2.02 SOURCE QUALITY CONTROL
 - A. Conduct the following tests on each material proposed for use prior to start of soils work. Refer to Section 01 40 00 for source test requirements.

PART 3 - EXECUTION

- 3.01 INSPECTION
 - A. Verify structure and trench backfilling have been inspected.
 - B. Verify subgrade base has been contoured and compacted.

3.02 PROTECTION

- A. Contractor shall conduct all grading operations within the limits of construction where shown on the Drawings, and within the designated grading limits as shown from contours and spot elevations.
- B. Protect all existing structures, trees, plantings, turf, and other facilities which are not scheduled for removal
- C. Provide proper erosion and sediment control for all grading operation.
- D. Repair disturbed areas and compact to required density prior to further work.
- E. Remove material contaminated by erosion and runoff, provide new material and compact.

3.03 SUBSTRATE PREPARATION

- A. Eliminate uneven areas and low spots.
- B. Remove debris, roots, branches, and stones in excess of 2 inches in size. Remove subsoil contaminated with petroleum products.
- C. Scarify surface to depth of 3 inches where topsoil is scheduled. Scarify in areas where equipment used for hauling and spreading topsoil has compacted subsoil.
- 3.04 ROUGH GRADING
 - A. Uniformly grade areas within limits of grading under this Section, including adjacent transition areas. Smooth finish surface within specified tolerances, compact with uniform levels or slopes between points where elevations are shown, or between such points and

existing grades.

- B. Grade surface of fill under structures and slabs to required density, free of voids, and to required elevations.
- C. Rough grade areas adjacent to structure lines to drain away from structures and to prevent ponding or increase in soil lateral pressure on the structure.

3.05 FINISH GRADING

A. Contractor shall provide the degree of finish grading that will be normally obtainable through the use of suitable equipment operated under favorable conditions and by an experienced operator. Deviations from the required tolerance shall be corrected by the Contractor at no additional cost to the Owner.

3.06 TOPSOIL PLACEMENT

- A. Place topsoil in areas where seeding and restoration is required to a nominal depth of 6 inches. Place topsoil during dry weather.
- B. Use imported topsoil as a supplement to stockpiled topsoil only when a 6 inch depth is unable to be maintained.
- C. Drag topsoiled areas to remove wheel tracks and provide a uniform texture and appearance.
- D. Place fine grade topsoil to eliminate rough or low areas. Maintain profiles and contour of subgrade. Finish grades shall allow for proper drainage without ponding.
- E. Remove roots, weeds, rocks, and foreign material while spreading.
- F. Manually spread topsoil close to plant life and buildings to prevent damage.
- G. Lightly compact placed topsoil.
- H. Remove surplus subsoil and topsoil from site. Contractor shall pay for loading, hauling, and spreading of all excess topsoil materials removed from the site or placed and spread on-site by direction of Owner or Engineer.
- I. Contractor shall pay for additional topsoil that is required at the site, including providing transporting and placing topsoil.
- J. Leave stockpile area and site clean and raked, ready to receive landscaping.
- 3.07 TOLERANCES
 - A. Surface of Topsoil: Plus or minus 1 inch.

END OF SECTION 31 22 00

SECTION 31 23 13 SUBGRADE PREPARATION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Scarifying, compacting and shaping the earth subgrade.
 - 2. Perform subgrade preparation on all areas to receive concrete pavement, bituminous pavement, aggregate base course, and/or aggregate surface course.
- B. Related Sections:
 - 1. Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to work of this section.
 - 2. Division 1 General Requirements Specification Sections.
 - 3. Division 31 Earthwork Specification Sections

PART 2 - PRODUCTS

2.01 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to approval of the Engineer.
- B. Suitable Soil Materials: On-Site excavated material or imported material meeting subsoil classification S1, S2, or S3 as defined in Section 31 05 13, free of rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation and other deleterious matter.

PART 3 - EXECUTION

- 3.01 GENERAL
 - A. The contractor shall follow the recommendations as provided in the Geotechnical Report by Pioneer Technical Services, Inc. The Geotechnical Investigation Report and associated Addenda are included in Appendix C of this Project Manual.
 - B. Subgrade Preparation shall consist of producing a firm and stable subgrade prior to placement of the surface or base course.
- 3.02 SUBGRADE PREPARATION
 - A. The Contractor shall compact and shape the subgrade for its full width as may be necessary to produce, at the time the base course is placed, the required density in the upper 12-inches of the base and the required grade and cross-section.
 - B. If areas are encountered that cannot be compacted, sub-excavate unstable materials and replace with materials that can be compacted.

- C. Contractor shall be responsible for drying the subgrade soil or applying water as may be necessary to obtain the required density. Contractor shall also be responsible for grading the Work area and providing drainage so that accumulating water will drain away from the subgrade.
- D. The finished subgrade surface shall be smooth and uniform and shall not rut, shove, flex, or displace when any construction equipment is placed on it.
- E. The required grade and cross-section for subgrades shall consist of a smooth subgrade surface that conforms to the prescribed elevations for the particular subgrade being prepared, prior to constructing an additional course thereon. The required grade and cross-section for rough graded surfaces shall consist of a smooth graded surface that conforms to the prescribed elevations for that particular rough grade being prepared. The prescribed elevation for any point on the subgrade or rough graded surfaces shall be as determined from the grades staked by the Engineer.
- F. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or lose compaction due to subsequent construction operations, vehicular traffic, or weather conditions.
- G. Subgrade preparation shall apply to all mat foundations, pipe trenches, concrete slabs, paved and graveled areas, including roads, driveways, parking areas, and sidewalks.
- H. Testing requirements for subgrade preparation shall be as follows:
 - 1. Shall conform to requirements of Section 01 40 00.

3.03 SPECIAL REQUIREMENTS

- A. Only hand-operated compaction equipment should be used within 5 feet of walls or existing structures.
- B. Final subgrade elevation improvements for mat foundations should be smoothed using a vibratory plate, care shall be taken to prevent pumping of subgrade.

3.04 TOLERANCES

A. Finish subgrade or rough graded surfaces shall not deviate by more than 1 inch from the required section and grade.

END OF SECTION 31 23 13

SECTION 31 23 16 EXCAVATION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Requirements for Excavation.
 - 2. Subgrade Preparation.
 - 3. Common Excavation.
 - 4. Structural Excavation.
 - 5. Estimated Excavation Quantities.
 - 6. Disposal.
- B. Related Sections:
 - 1. The General Conditions, Supplementary Conditions, and General Requirements apply to work of this section.
 - 2. Division 1 General Requirements Specification Sections.
 - 3. Division 31 Earthwork Specification Sections.

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM).
- B. Montana Public Works Standard Specifications (MPWSS), latest edition.
- 1.03 SUBMITTALS
 - A. Submit the following in accordance with Section 01 33 00:
 - 1. Test Results: Prior to start of work, submit written reports for each material sampled and tested. Include project identification, date of report, name of contractor, name of testing laboratory, source of material, manufacturer and brand name for manufactured products, specification requirements for each material, and corresponding test results.
 - a. Tests must have been taken no more than 180 calendar days before Notice to Proceed.
 - 2. Product Data: Information on manufactured products indicating compliance with requirements of this Section.

1.04 DEFINITIONS

- A. Utility: Any buried pipe, duct, conduit, or cable.
- B. Structures: Existing and new construction, including slabs, buildings, tanks, and

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structural elements and systems.

- C. Acceptable Materials: Material that will provide for the indicated soil bearing capacity, soil densities, material requirements and that, in the opinion of soil testing laboratory, will not be subject to future decomposition, settlement, subsidence, expansion and are otherwise of the required soil type.
- D. Unsuitable Materials: Material that will not provide for the indicated soil bearing capacity and soil densities and that in the opinion of the soil testing laboratory will be subject to future decomposition, settlement, subsidence, expansion, and are otherwise not of the required soil type.
- E. Soil Testing Laboratory: Refers to professional soils engineering firm with soil sampling and testing services and that is independent from the Contractor. The soil testing laboratory's engineer shall be licensed in the State of Montana.
- F. Prepared Ground Surface: Ground surface after completion of clearing and grubbing, topsoil removal, excavation to grade, and scarification and compaction of subgrade.

1.05 SITE CONDITIONS

- A. Soils data were collected for this project by Pioneer Technical Services and are reflected in the Geotechnical Investigation Report – included in Appendix C of these project documents.
- B. Data indicated on the subsurface conditions are not intended as representations, warranties of accuracy, or continuity between soil borings. It shall be expressly understood that Owner and Engineer shall not be responsible for interpretations or conclusions drawn from these reports by the Contractor. The information is made available for the convenience of the Contractor and is in no way, shape, or form considered a part of this Contract.
- C. Contractor shall determine to Contractor's own satisfaction the nature and location of subsurface obstacles and the nature of soil and water conditions which will be encountered during the work.
- D. Contractor may perform additional test borings or other exploratory operations at Contractor's own expense. Contractor shall make arrangements for any additional soils investigation with Owner.
- E. No claim for additional payment will be accepted due to the nature of subsurface conditions in which the work is to be performed.
- F. Do not commence construction of structure foundation until soil test results are confirmed.
- G. See Geotechnical Excavation Report by Pioneer Technical Services, Inc. for recommended practices.
- 1.06 CONVENTIONAL QUALITY ASSURANCE
 - A. Source Quality Control Testing: Retain the services of an independent soil testing

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laboratory for Source Quality Control sampling and testing.

- B. Materials and installed work may require testing and retesting, as required by Engineer, at any time during progress of work.
- C. Allow free access of testing laboratory to material stockpiles and facilities at all times.
- D. Tests including retesting of rejected materials and installed work shall be at Contractor's own expense unless otherwise indicated.
- E. See Section 01 40 00 for additional requirements.
- 1.07 SEQUENCING AND SCHEDULING
 - A. Additional excess material shall be stockpiled in accordance with Section 31 14 13.
- 1.08 DELIVERY, STORAGE, AND HANDLING
 - A. Stockpile delivered materials and excavated materials at locations approved by Owner until required for backfill or fill. Place, grade, and shape stockpiles for drainage.
 - B. Store materials in manner that will not impose additional loading and soil pressure on excavation limits and structures.
- 1.09 PAYMENT
 - A. All earth rock, peat, muck and all other excavation, removal and disposal required; erosion control, sheeting, shoring and bracing; fill and backfill; placement compaction, grading, source quality control testing, and all other work required under this Section shall be considered incidental to the Project and no claim for compensation or extra work will be accepted.
 - B. No claim for additional payment will be accepted for excavation and fill for all structures required for removal of unsuitable material of up to three (3) feet below bottom of foundation or one (1) feet below noted structural fill or backfill or one foot below minimum excavation limit as noted on Drawings, whichever results in the greater excavation and fill.
 - C. Excavation and fill required for removal of unsuitable material deeper than the above limits will be paid for on a time and materials basis if conditions found in the Geotechnical Report are found to differ from actual conditions experienced on site. No additional payment will be made for conditions reflected in the Geotechnical Report.
 - D. No claim for additional payment will be accepted for repairs made to subgrade due to weather related problems.
- 1.10 FIELD MEASUREMENTS
 - A. Survey benchmarks, control points, and intended elevations for the Work are as shown on the Drawings or will be provided by the Engineer.
- 1.11 COORDINATION
 - A. Coordinate work under provisions of Section 01 31 13.

- B. Verify work associated with lower elevation utilities is complete before placing higher elevation utilities.
- C. Contractor shall excavate for structures, pipe, and utilities at grades shown on the Drawings. Careful consideration shall be given to whether elevations shown are invert elevations or centerline elevations, Contractor shall make appropriate adjustment depending on elevation shown.

PART 2 - PRODUCTS

- 2.01 EXCAVATION MATERIALS
 - A. See Sections 31 00 00 and 31 05 13 for materials specifications.
- 2.02 SOURCE QUALITY CONTROL
 - A. See Division 31 and Section 01 40 00 for material quality testing requirements.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine project site and conditions under which work of this Section is to be performed.
- B. Contractor shall verify which native materials are suitable for reuse at the site. Provide testing data as required and keep materials separated.
- C. Notify Engineer of any unsuitable materials.
- D. Do not over excavate without authorization from Engineer.

3.02 PREPARATION

- A. An OSHA approved competent person shall review the above mentioned soil classification in the field. Excavations shall comply with the requirements of OSHA 29 CFR, Part 2926, Subpart P, "Excavations and Trenches." Excavation safety is the responsibility of the Contractor. All excavations greater than 20 feet in depth shall be designed by a registered Professional Engineer.
- B. Protection
 - 1. Locate existing utilities in areas of work. Protect utilities that are to remain.
 - 2. Protect structures from damage and from damage caused by groundwater, surface water, flood or floatation forces, lateral movement, settlement, undermining, washout, and other undesirable conditions created by the work.
 - a. Maintain drainage when drainage ways are obstructed by earthwork and related operations.
 - 3. Protect areas beyond construction zone with erosion control system.
 - 4. Do not interrupt existing utilities serving facilities occupied and used by Owner or others, except when allowed by utility owner and then only after acceptable temporary utility services have been provided.

- a. Provide temporary services, complying with Federal, State and local laws and regulations, and as acceptable to Owner, during any interruptions.
- 5. Maintain full access to structure exits and entrances, fire hydrants, street crossings, sidewalks, and other points as designated by Owner to prevent significant interruption of accessibility.
- 6. Do not bring explosives on site or use in work.
- 7. Maintain excavations and stockpiles to prevent caving, heaving, slides, and increased soil pressures on adjacent and underlying structures.
- 8. Maintain existing site drainage ways or provide new paths of drainage for site as required to perform earthwork.
- C. Dry subgrade: Add water, then mix to make moisture content uniform throughout.
- D. Wet subgrade: Aerate material by blading, discing, harrowing, or other methods to hasten drying process.
- E. Excavation support: Install and maintain, as specified in Section 31 41 00, Shoring, as necessary to support sides of excavations and prevent detrimental settlement and lateral movement of existing facilities, adjacent property, and completed Work.

3.03 PROTECTION

- A. Locate existing utilities in areas of work. Protect utilities that are to remain.
- B. Protect structures from damage and from damage caused by groundwater, surface water, flood or floatation forces, lateral movement, settlement, undermining, washout, and other undesirable conditions created by the work.
 - 1. Maintain drainage when drainage ways are obstructed by earthwork and related operations.
- C. Do not interrupt existing utilities serving facilities occupied and used by Owner or others, except when allowed by utility owner and then only after acceptable temporary utility services have been provided.
 - 1. Provide temporary services, complying with Federal, State and local laws and regulations, and as acceptable to Owner, during any interruptions.
- D. Protect areas that have been finish graded from subsequent construction operations, traffic, and erosion.
 - 1. Install erosion control protection along perimeter of unfinished areas.
- E. Maintain full access to structure exits and entrances, fire hydrants, street crossings, sidewalks, and other points designated by Owner to prevent significant interruption of accessibility.
- F. Do not bring explosives on site or use in work.
- G. Maintain excavations and stockpiles to prevent caving, heaving, slides, and increased soil pressures on adjacent and underlying structures.

- H. Repair disturbed areas and compact to required density prior to further work.
- I. Remove material contaminated by erosion and runoff, provide new material and compact.

3.04 COMMON EXCAVATION

- A. Excavate designated areas to the proposed subgrade elevations indicated on the Drawings.
- B. Contractor shall advise Engineer immediately if any unsuitable materials are encountered during excavation. Unsuitable materials shall be reasonably separated form unsuitable materials and shall be considered surplus material at no additional cost to the Owner.
- C. If Contractor encounters excess excavation materials which meet the requirements of common fill as specified herein, Contractor may use those materials as common fill. Contractor shall verify with soils testing laboratory suitability of the use of on-site material.
- D. Trench excavating shall be done in accordance with Section 31 23 33.

3.05 STRUCTURAL EXCAVATION

- A. Remove unsuitable materials in accordance to the depth recommended by soils testing laboratory beneath structures to obtain the design bearing capacity.
 - 1. Do not bear any structure partially on bedrock and partially on more compressible soils. Remove bedrock materials and replace them with clean compacted sand or gravel in accordance to the Geotechnical Report. The minimum depth of compacted sand or gravel is 6-inches.
 - 2. Dewater as warranted in accordance with Contractor's approved dewatering plan, prior to initiating construction within any excavation.
 - 3. Provide an opportunity for the Engineer to properly inspect the bottom of any excavation and remove any soft spots or unsatisfactory soils that are observed.
 - 4. When bottoms of excavations are approved by soils testing laboratory, but are slightly unstable only in relation to Contractor operations or convenience, Contractor may provide a compacted gravel course utilizing materials acceptable to the soil testing laboratory. Such work shall be considered for the Contractor's convenience and at Contractor's own expense.
- B. Slope sides of excavations as required to provide stability and to comply with Federal, State and local laws and regulations. Shore and brace excavation when required by project conditions.
 - 1. Utilize cofferdams, steel sheet piling, shoring, underpinning, and other systems required to prevent damage to existing structures, settlement, slope stability problems, and undermining.
 - 2. Remove construction related protection systems after their need is complete, in a manner that will not loosen or damage soils, create slope stability problems, and otherwise damage existing and new structures.

- a. Leave construction-related protection systems in place when their removal would create potential for damage to the soil conditions or to structures.
- C. Excavate to required elevations and dimensions within a tolerance of plus or minus 1 inch, and extending a sufficient distance as required to provide for the work, completion of the structures, observation, and testing.
 - 1. When excavating for new infrastructure, do not disturb soil materials at and below excavation limits without prior approval from the Engineer. Excavate by hand when necessary to prevent damage to soil materials that will remain.
 - 2. Trim bottoms to required lines and grades to leave solid dense base of required bearing capacity.
 - 3. Final removal limits shall be approved by soil testing laboratory prior to concrete placement.
- D. Removal of materials beyond required subgrade elevations or dimensions without specific approval of soils testing laboratory as well as backfilling, compaction and remedial work recommended by soils testing laboratory at the over-excavated area shall be at Contractor's own expense.
 - 1. Under new infrastructe and their components fill unauthorized excavation utilizing one of the following systems:
 - a. Extend indicated bottom elevation or base to excavation bottom, without altering required top elevation.
 - b. Install lean concrete fill to bring elevations to required position.
 - c. Fill and compact unauthorized excavations with soil materials and to required density.
 - 2. Elsewhere, backfill and compact unauthorized excavations as indicated for authorized excavations of same classification
- E. Protect excavation bottoms from freezing. Remove frozen materials and provide unfrozen compacted materials prior to placement of materials on them.
- F. Excavations of structures shall be widened a minimum of one foot horizontally beyond the outer edges of the building perimeter footings for each foot the excavations extend below bottom-of-footing elevations.
- G. It is anticipated the excavation bottom will consist of sand soils, lean clay or a combination of both. These soils shall be maintained within the prescribed moisture content range until successive layers are placed over them. Thus, if the placement of backfill and fill is slowed or delayed during dry or wet weather, re-conditioning of the placed backfill, fill and natural soils may be necessary.
- H. Prior to the placement of engineered fill or construction of structures, any loosened granular materials shall be surface compacted using a vibratory plate compactor. In areas where groundwater is within 3 feet of the subgrade this requirement may be waived in the

field by the Engineer if it is found the compaction is pumping up water or creating a temporary "quick" condition and the soils are otherwise suitable for support of the new infrastructure. Areas that yield or pump during surface compaction may require additional subcutting.

- 3.06 DISPOSAL
 - A. Excess soil, if any exists, shall be stockpiled on the site. Contractor shall remove unsuitable material such as muck, organic matter, trash, and refuse from the site and dispose of said material according to applicable Federal, State, and local regulations. No additional payment will be provided for off-site disposal.

END OF SECTION 31 23 16

SECTION 31 23 21 FILL AND BACKFILL

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes general requirements and procedures for site grading including, but not limited to, the following:
 - 1. Filling, Backfilling, and Compacting.
- B. Related Sections include, but are not limited to:
 - 1. The General Conditions, Supplementary Conditions, and General Requirements apply to work of this section.
 - 2. Division 1 General Requirements Specification Sections.
 - 3. Division 31 Earthwork Specification Sections.
- 1.02 REFERENCES
 - A. Montana Public Works Standard Specifications (MPWSS) specifications are referenced for material requirements and specific construction requirements only.
- 1.03 DESCRIPTION
 - A. Limits of construction are shown on the Drawings. Placement of fill shall not be allowed outside the fence boundary where shown on the Drawings unless location is authorized by the Owner.
 - B. Materials may be temporarily stockpiled on the site within the limits of construction, or where shown on the Drawings.
 - C. Excess materials shall be stockpiled on site at locations authorized by Owner.
 - D. Protect benchmarks and existing structures that are to remain from damage or displacement.

1.04 DEFINITIONS

- A. Suitable Material: Material that will provide the indicated required soil bearing capacity, soil densities, material requirements or, in the opinion of the soils testing laboratory, will not be subject to future decomposition, subsidence, settlement, or expansion.
- B. Structures: Existing and new construction, including slabs, buildings, footings, tanks, and other structural elements.
- C. Relative Compaction:
 - 1. Ratio, in percent, of as-compacted field dry density to laboratory maximum dry density as determined in accordance with ASTM D1557.
 - 2. Apply corrections for oversize material to either as-compacted field dry density or

maximum dry density, as determined by the Engineer.

- D. Optimum Moisture Content:
 - 1. Determined in accordance with ASTM standard specified to determine maximum dry density for relative compaction.
 - 2. Determine field moisture content on basis of fraction passing ³/₄-inch sieve.
- E. Relative Density: Calculated in accordance with ASTM D4254 based on maximum index density determined in accordance with ASTM D4253 and minimum index density determined in accordance with ASTM D4254.
- F. Complete Course: A course or layer that is ready for next layer or next phase of Work.
- G. Lift: Loose (uncompacted) layer of material.
- H. Well-Graded:
 - 1. A mixture of particle sizes with not specific concentration or lack thereof of one or more sizes.
 - 2. Does not define numerical value that must be placed on coefficient of uniformity, coefficient of curvature, or other specific grain size distribution parameters.
 - 3. Use to define material type that, when compacted, produces a strong and relative incompressible soil mass free of detrimental voids.
- I. Influence Area: Are within planes sloped downward and outward at 60-degree angle from horizontal measured from:
 - 1. 1 foot outside outermost edge at base of foundations or slabs.
 - 2. 1 foot outside outermost edge at surface of roadways or shoulder.
 - 3. 0.5 foot outside exterior of spring line of pipes.
- J. Borrow material: Material from required excavations or from designated borrow areas on or near Site.
- K. Select Backfill Material: Materials available on-site that Engineer determines suitable for specific use.
- L. Imported Material: Materials obtained from sources offsite, suitable for specified use.
- 1.05 SITE CONDITIONS
 - A. Soil borings were taken for this project by Pioneer Technical Services, Inc. The Geotechnical Investigation Report and associated Addenda are included in Appendix C of this Project Manual.
 - B. Data indicated on the subsurface conditions are not intended as representations, warranties of accuracy, or continuity between soil borings. It shall be expressly understood that Owner and Engineer shall not be responsible for interpretations or conclusions drawn from these reports by the Contractor. The information is made available for the convenience of the Contractor and is in no way, shape, or form

considered a part of this Contract.

- C. Contractor shall determine to Contractor's own satisfaction the nature and location of subsurface obstacles and the nature of soil and water conditions which will be encountered during the work.
- D. Contractor may perform additional test borings or other exploratory operations at Contractor's own expense. Contractor shall make arrangements for any additional soils investigation with Owner.
- E. No claim for additional payment will be accepted due to the nature of subsurface conditions in which the work is to be performed.
- F. Do not commence construction of structure foundation until soil test results are confirmed.
- 1.06 SEQUENCING AND SCHEDULING
 - A. Backfill against concrete structures only after concrete has attained compressive strength, specified in Section 03 30 00, Cast-In-Place Concrete. Obtain Engineer's acceptance of concrete work and attained strength prior to placing backfill.
 - B. Construction of grade-supported slabs shall not occur immediately after below- grade walls are backfilled, so that post-compaction consolidation of the compacted backfills can be monitored to estimate how much the slabs could settle. Monitoring shall include the placement of grade stakes around the structure that shall be monitored weekly after construction. Results shall be reviewed by the Engineer to evaluate the rate at which post-construction settlements will occur. Settlement is estimated to be complete in less than 90 days.
- 1.07 PAYMENT
 - A. All excavation, removal, and disposal of earth, peat, muck, and other materials; erosion control; sheeting, shoring, and bracing; fill and backfill, placement, compaction, grading, source quality testing; stockpiling; and all other work under this Section shall be considered incidental to the Project and no claim for additional compensation of extra work will be accepted.
 - B. No claim for additional payment will be accepted for excavation and fill for all structures and improvements required for removal of unsuitable material up to two (2) feet below bottom of proposed piping invert elevation or two (2) feet below bottom of noted structural fill or 6" below minimum excavation limit for earthwork as noted on the Drawings, whichever results in the greater excavation and fill.
 - C. Excavation and fill required for removal of unsuitable material deeper than the above limits will be paid for on a time and materials basis if conditions found in the Geotechnical Report are found to differ from actual conditions experienced on site. No additional payment will be made for conditions reflected in the Geotechnical Report.
 - D. No claim for additional payment will be accepted for repairs made to subgrade due to weather related items.

- 1.08 FIELD MEASUREMENTS
 - A. Verify that survey benchmark, control point, and intended elevations for the Work are as shown on Drawings or will be provided by the Engineer.
- 1.09 FIELD QUALITY CONTROL
 - A. Section 01 40 00 Quality Control: Field inspection and testing.
 - B. Compaction testing will be performed in accordance with ASTM D698, and ASTM D2922.
 - C. If tests indicate Work does not meet specified requirements, remove Work, replace, compact, and retest at no additional cost to Owner.
- 1.10 COORDINATION
 - A. Coordinate work under provisions of Section 01 31 00.
 - B. Verify work associated with lower elevation utilities is complete before placing higher elevation utilities.
 - C. Contractor shall excavate for piping and utilities at grades shown on the Drawings. Careful consideration shall be given to whether elevations shown are invert elevations or centerline elevations, Contractor shall make appropriate adjustment depending on elevation shown.

PART 2 - PRODUCTS

- 2.01 MATERIALS
 - A. Backfill around Structures: Backfill shall be as indicated on the Construction Drawings.

PART 3 - EXECUTION

- 3.01 PREPARATION
 - A. Identify required lines, levels, contours, and datum locations.
 - B. Notify utility company to locate utilities.
 - C. Protect plant life, lawns, and other features remaining as a portion of final landscaping.
 - D. Protect benchmarks, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
 - E. Maintain and protect above and below grade utilities that are to remain.
 - F. Contractor shall verify which native materials are suitable for reuse as granular foundation, bedding, encasement, and backfill material at the site. Provide testing data as required and keep materials separated.
 - G. Notify Engineer of any unsuitable materials or poor subgrade conditions.
 - H. Notify Engineer when structure or tank is ready for backfilling, and whenever backfilling operations are resumed after a period of inactivity.

- I. Dewater excavations during backfilling at no cost to Owner.
- J. Dewater and dry saturated materials suitable for backfill at no cost to Owner.
- K. Compact subgrade to density requirements for subsequent backfill materials.
- L. Cut out soft areas of subgrade not capable of compaction in-place. Backfill with Type A or Type B fill and compact to density equal to or greater than requirements for subsequent fill material.
- M. Identify soft spots; fill and compact to density equal to or greater than requirements for subsequent fill material.
- 3.02 STOCKPILING OF MATERIALS
 - A. Stockpile according to Section 31 14 13.
- 3.03 FILLING, BACKFILLING, AND COMPACTING
 - A. The contractor shall follow the recommendations as provided in the Geotechnical Report by Pioneer Technical, Inc.
 - B. Surface compact excavations prior to installing fill material.
 - C. Proof roll subgrade areas, where noted with, as a minimum, a tandem axle dump truck loaded to at least 25 ton weight. Truck shall traverse the structure footprint to detect areas of loose or soft soils. Loose or soft soils shall be defined as soils exhibiting "excessive rutting" from the truck tires (approximately one (1) inch wheel rut depth.
 - D. Do not place material on muddy surfaces, frozen ground or on materials containing frost or ice.
 - E. Do not place fill required below structures until soil conditions encountered have been approved by special inspector.
 - F. Slope grade away from structures minimum 2 inches in 10 feet, unless noted otherwise.
 - G. Do not place material on or in water.
 - H. Do not proceed with backfilling of excavations until completion of the following:
 - 1. Observation, testing, approval, and recording of locations of underground utilities.
 - 2. Removal of concrete formwork.
 - 3. Removal of shoring, bracing, other protection systems, and backfilling and compaction of voids left by their removals.
 - 4. Removal of unsuitable materials, construction related debris, and excess materials.
 - 5. Walls, including interior walls that brace exterior walls and intermediate floors and roof construction is installed, cured, and obtained required 28- day compressive strength.
 - 6. When existing in-place soil materials are of density less than that specified, but the soil material is acceptable, perform removal, filling, discing of ground surface, moisture-conditioning to within acceptable limits of the optimum moisture content,

and compact to provide specified density and bearing capacity as recommended by soils testing laboratory.

- I. Placement and Compaction
 - 1. Place materials in compacted layers of thickness required to obtain specified soil densities. Layers shall not exceed 8 inches in loose depth for cohesive and cohesionless soil material, respectively, compacted by heavy compaction equipment and not more than 8 inches in loose depth for cohesive and cohesionless soil materials, respectively, compacted by hand operated tampers unless soil density tests substantiate specified densities will be obtained when material is placed in thicker lifts.
 - 2. Place material in lifts uniformly to the same approximate elevation, not exceeding the final grade height, in manner required to prevent creation of unbalanced soil lateral pressures, wedging action of materials and soil pressures that exceed the design lateral soil conditions and to prevent damage to the structure.
 - 3. Moisten or aerate each layer to the extent required to obtain the optimum moisture content required for the indicated compaction density. Prevent free water from appearing on surface during or subsequent to compaction operations.
 - 4. Remove and replace with acceptable material, or scarify and air dry otherwise acceptable soil material that is too wet to obtain specified soil density. Assist drying by discing, harrowing, or pulverizing, until moisture content is reduced to value required for compaction.
 - 5. Compact each layer to the required density specified for each area classification. Hand tamp or utilize hand operated vibratory equipment when required to compact material placed immediately adjacent to walls or structures within 5 feet.
 - 6. Do not place additional layers until density of each layer in place complies with compaction requirements. Perform corrective work as required to obtain required density. Cost associated with correction work and retesting at failed test locations shall be at Contractor's expense.
 - 7. At door stoops place sand cushion to cross-section indicated on Drawings.

3.04 REPLACING OVEREXCAVATED MATERIAL

- A. Replace excavation carried below grade lines shown or established by the Engineer as follows:
 - 1. Beneath Existing Footings: Concrete of strength equal to respective footing.
 - 2. Beneath Fill or Backfill: Same material as specified for overlying fill or backfill.
 - 3. Beneath Slabs on Grade: Aggregate fill.
 - 4. Permanent Cut Slopes (Where overlying area is not to receive fill or backfill):
 - a. Flat to Moderate Steep Slopes (3:1 or flatter): Common fill.
 - b. Steep Slopes:

- i. Correct overexcavation by transitioning between overcut areas and designed slope adjoining areas, providing such cutting does not extend offsite or outside easements and right-of-ways, or adversely impacts existing facilities or competed Work.
- ii. Backfilling overexcavated areas is prohibited, unless in Engineer's opinion, backfill will remain stable, and overexcavated material is replaced as compacted common fill.

3.05 PLACING FILL OVER GEOSYNTHETICS

- A. General:
 - 1. Place fill over geosynthetics with sufficient care so there is no damage.
 - 2. Place fill only by back dumping and spreading only.
 - 3. Dump fill only on previously placed fill.
 - 4. While operating equipment, avoid sharp turns, sudden starts and stops that could damage geosynthetics.
- B. Hauling: Operate hauling equipment with a minimum 3 feet of covering.
- C. Spreading:
 - 1. Spreading equipment shall be track mounted low ground pressure, D-3 or lighter.
 - 2. Operate spreading equipment on minimum of 12-inches of fill.
 - 3. Spread fill in same direction as unseamed overlaps to avoid separation.
 - 4. Limit distance material falls to maximum of 2 feet.
 - 5. Flatten wrinkles in direction of spreading.
 - 6. Maintain proper overlap of unseamed.
 - 7. Avoid overstressing material and seams.
- D. Geosynthetics Damage:
 - 1. Mark punctures, tears, or other damage, so repairs can be made.
 - 2. Clear overlying fill as necessary to repair damage.
- 3.06 COMPACTION REQUIREMENTS
 - A. Compact materials as required in Section 01 40 00.
 - B. Contractor shall re-compact all areas represented by failed density tests at their own expense.
- 3.07 TOLERANCES
 - A. Finished Grade:
 - 1. Plus or minus 1 inch, upon completion of settlement in ditches, berms, and lawn areas.

FILL AND BACKFILL

- 2. Plus or minus 1 inch upon completion of settlement in roadways and driveways.
- B. All areas that receive fill or backfill shall be kept within settlement tolerances through the warranty period.
- 3.08 PROTECTION OF FINISHED WORK
 - A. Protect finished Work under provisions of Section 01 50 00.
 - B. Reshape and re-compact fills subjected to vehicular traffic during construction.
- 3.09 SETTLEMENT
 - A. The Contractor shall be responsible for all settlement of backfill, fills, and embankments which may occur within the correction period stipulated in the Supplementary Conditions.
 - B. The Contractor shall make, or cause to be made, all repairs or replacements made necessary by settlement within 30 days after notice from the Engineer or Owner, or sooner if required by Engineer or Owner, depending on the critical nature of the settlement.
- 3.10 SCHEDULE
 - A. Beneath Landscaped Areas:
 - 1. Type A or B, to a minimum of 6 inches and a maximum of 18 inches below finish grade, compacted as specified in Section 01 40 00.
 - B. Beneath Concrete Sidewalks and Driveways:
 - 1. Material: As indicated on the Construction Drawings and in Division 31.
 - 2. Compacted Thickness: Equal, continuous layers not exceeding 8 inches compacted thickness. In the upper 12 inches of soil below the structures place compacted lifts no greater than 8 inches.
 - 3. Place Geogrid and Goetextile fabric as shown in the Drawings.
 - 4. Compaction: As specified in Section 01 40 00.
 - C. Fill to Correct Over-excavation:
 - 1. Fill Type A, B as specified in Section 31 05 13, or granular material as specified in Section 32 05 16 as indicated on the Construction Drawings, flush to required elevation, compacted as specified in Section 01 40 00.
 - D. Sub-base Preparation:
 - 1. As indicated on the Construction Drawings, Fill Type A or B as specified in Section 31 05 13, compacted in Section 01 40 00.
 - E. Beneath Asphalt:
 - 1. Compact Subsoil as specified in Section 01 40 00.
 - 2. As indicated on the Construction Drawings, Fill Type A or B as indicated on the

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Construction Drawings, compacted as specified in Section 01 40 00.

- F. Topsoil Fill:
 - 1. See Section 31 05 13.

END OF SECTION 31 23 21

SECTION 31 25 00 EROSION AND SEDIMENTATION CONTROLS

PART 1 - GENERAL

1.01 SUMMARY

- A. Prevention of sedimentation of waterways, wetlands, and storm and sanitary sewers due to construction activities.
- B. Restoration of areas eroded due to insufficient preventative measures.
- C. Related Sections include, but are not limited to:
 - 1. Division 02 Existing Conditions
 - 2. Division 31 Earthwork
 - 3. Division 32 Exterior Improvements

1.02 REFERENCES

- Montana General Permit No. MTR100000 (or its successor), Effective Date October 12, 2009 and Expiration Date January 1, 2013 Authorization to Discharge under the National Pollutant Discharge Elimination System.
- B. Montana Department of Transportation (MDT) Erosion and Sediment Control Field Manual – Latest Edition
- C. Montana Department of Transportation (MDT) Standard Specifications for Road and Bridge Construction Latest Edition
- D. Montana General Permit No. MTG070000 (or its successor), Effective Date October 12, 2009 and Expiration Date January 1, 2013 General Permit for Construction Dewatering.
- E. ASTM D 4355 Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc Type Apparatus; 2005.
- F. ASTM D 4491 Standard Test Methods for Water Permeability of Geotextiles by Permittivity; 1999a (Reapproved 2004).
- G. ASTM D 4533 Standard Test Method for Trapezoid Tearing Strength of Geotextiles; 2004.
- H. ASTM D 4632 Standard Test Method for Grab Breaking Load and Elongation of Geotextiles; 1991 (Reapproved 2003).
- I. ASTM D 4751 Standard Test Method for Determining Apparent Opening Size of a Geotextile; 2004.
- J. ASTM D 4873 Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples, 2002.

1.03 SUBMITTALS

- A. Provide product specification sheets for the following erosion control materials to demonstrate that the Contractor's proposed products meet the Contract Document requirements:
 - 1. Fabric proposed for silt fence
 - 2. Fiber Roll
 - 3. Gradation tests for Construction Entrance stone material

PART 2 - PRODUCTS

- 2.01 SILT FENCE
 - A. Silt fence shall be a medium-duty, woven or non-woven polypropylene or polyethylene fabric that lets fluids pass through while trapping soil particles and preventing soil loss. The material shall meet the minimum characteristics of TENAX® silt fence.
- 2.02 SEDIMENT CONTROL LOGS
 - A. Prefabricated sediment control logs (SCR's) Rolls As shown on Drawings. SCR's shall meet the minimum characteristic of the 12" Stenlog® as manufactured by Erosion Control Blanket/GSI.
- 2.03 CONSTRUCTION ENTRANCE
 - A. Materials as Shown on Drawings.
 - B. 3-6 inch Stone
 - 1. Stone shall be angular and shall be comprised of hard, durable mineral materials that have been mechanically processed.
 - 2. Stone shall not be from limestone/dolomite deposits that have thinly bedded strata or strata of a shale nature.
 - 3. Stone gradation shall conform to the following:

SIEVE	PERCENT PASSING (by weight)
6-inch	100
3 ½-inch	50 - 100
3-inch	10 - 75
2-inch	0 - 10
3/8 inch	0 - 1

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.02 PREPARATION

A. The Contractor shall develop a Storm Water Pollution Prevention Plan as required by the

EROSION AND SEDIMENTATION CONTROLS

Montana Department of Environmental Quality that meets both the State's requirements and the minimum practices shown on the Drawings.

B. The Contractor shall complete and sign the Notice of Intent and submit to the Montana Department of Environmental Quality.

3.03 PERFORMANCE REQUIREMENTS

- A. Contractor shall comply with all requirements of the Montana Department of Environmental Quality along with all Federal, State, and Local permits and regulations for erosion and sediment control.
 - 1. If erosion or sedimentation occurs due to non-compliance with any of these permits, Contractor shall restore eroded areas at no cost to Owner.
 - 2. If sedimentation beyond permitted thresholds occurs in regulated waterways or wetlands, Contractor shall at no additional cost to the Owner:
 - a. Contact the authorities having jurisdiction;
 - b. Remove deposited sediments to the satisfaction of the Owner and the authorities having jurisdiction;
 - c. Install or correct preventive measures to the satisfaction of the authorities having jurisdiction; and
 - d. Pay any fines or other additional requirements of the authorities having jurisdiction; and
 - e. Meet the Contract schedule for project completion.
- B. Contractor shall not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.
 - 1. Obtain and pay for permits and provide security required by authority having jurisdiction.
- C. Timing of erosion and sediment control practices: As Shown on the Drawings.
- D. Erosion Control: Contractor shall reduce wind, water, and vehicular erosion of soil on project site due to construction activities for this project, consistent with approved permits and following these requirements:
 - 1. Minimum erosion control measures as shown on the Drawings with additional practices implemented as required by the Contractor's SWPPP.
 - 2. Control movement of sediment and soil from temporary stockpiles of soil.
 - 3. Prevent development of ruts due to equipment and vehicular traffic.
 - 4. Provide good site housekeeping.
 - 5. Inspect, repair, maintain, and replace erosion control practices consistent with approved permits and as shown on the Drawings.

- E. Sediment Control: Contractor shall reduce sediment transport off- site due to construction activities for this project, consistent with approved permits and following these requirements:
 - 1. Minimum sediment control measures as shown on the Drawings with additional practices implemented as required by the Contractor's SWPPP.
 - 2. Reduce windblown soil from leaving the project site.
 - 3. Reduce tracking of mud onto public roads outside of the site.
 - 4. Reduce mud and sediment from flowing onto sidewalks and pavements.
 - 5. Inspect, repair, maintain, and replace sediment control practices consistent with approved permits and as shown on the Drawings.

3.04 CLOSE-OUT

- A. Contractor shall file a Notice of Termination with the State following site stabilization that meets the requirements of the General Permit.
- B. Contractor shall remove and clean up all temporary erosion and sediment control practices as shown on the Drawings. Site disturbance caused by removal of these practices shall be restored consistent with the surface restoration requirements shown on the Drawings. Costs for restoration shall be at Contractor's expense.

END OF SECTION 31 25 00

SECTION 31 41 00 SHORING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Work related to sheeting, shoring, bracing, and excavation support systems needed to accomplish construction of buildings, tanks, facilities, utilities, and piping.
- B. Related sections include, but are not limited to:
 - 1. Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to work of this section.
 - 2. Section 03 30 00 Cast-in-Place Concrete
 - 3. Division 1 General Requirement Specification Sections
 - 4. Division 31 Earthwork Specification Sections.
- 1.02 SUBMITTALS
 - A. Shop Drawings and Product Data: Submit, in accordance with Section 01 33 00. In general, include drawings and supporting calculations for shoring for Engineer review and approval.
 - B. Submittals shall include:
 - 1. Excavation support plan.
 - 2. Movement monitoring plan.
 - 3. Trench excavation plan.
 - 4. Movement measurement and data and reduced results indicating movement trends.
 - 5. Documentation that shoring plan or system has been designed by a registered Professional Engineer if required.
 - C. Design calculations of bracing and shoring showing member stresses and connections due to imposed loads. Calculations shall be sealed by a qualified professional engineer.

1.03 QUALITY ASSURANCE

A. An OSHA approved competent person shall review the soil classification presented in the Geotechnical Report in the field. Excavations shall comply with the requirements of OSHA 29 CFR, Part 2926, Subpart P, "Excavations and Trenches." Excavation safety is the responsibility of the Contractor. All excavations greater than 20 feet in depth shall be designed by a registered Professional Engineer.

- B. Sheeting, shoring, and bracing shall conform to safety requirements of federal, state, and local agencies.
- C. Sheeting, shoring, and bracing shall not affect structural integrity of existing structures, utilities, or Work, and shall allow for sufficient clearances necessary to install associated appurtenances adjacent to new Work.
- D. Sheeting, shoring, and bracing shall not penetrate walls or slabs of new Work unless approved by the Engineer.
- E. Provide surveys to monitor movements of critical facilities.
- 1.04 REGULATORY REQUIREMENTS
 - A. Work outlined in this Section shall conform to OSHA regulations and all applicable codes and regulations for worker safety.

PART 2 - PRODUCTS

- 2.01 SHEETING, SHORING, AND BRACING
 - A. Type, design, detail, and installation of sheeting, shoring, and bracing shall be determined by and be the sole responsibility of the contractor.

PART 3 - EXECUTION

- 3.01 GENERAL
 - A. Design, provide, and maintain shoring, sheeting, and bracing as necessary to support the sides of excavations and to prevent detrimental settlement and lateral movement of existing facilities, adjacent property, and completed Work. Shoring, sheeting, and bracing shall also be provided as necessary to protect workers and the public.
 - B. Sheeting, shoring, and bracing shall be installed to prevent solids from entering excavation below or through sheeting.
 - C. Open cut excavations are to be evaluated by a registered Engineer and protected against surface water intrusion.

3.02 EXCAVATION SUPPORT PLAN

- A. Prepare an excavation support plan addressing the following topics:
 - 1. Select and install shoring system such that no adverse impact occurs on existing structures, utilities, or facilities.
 - 2. Details of shoring, bracing, sloping, or other provisions for worker protection from hazards of caving ground.
 - 3. Design assumptions and calculations.
 - 4. Methods and sequencing of installing excavation support.

- 5. Proposed locations of stockpiled excavated material.
- 6. Minimum lateral distance from the crest of slopes for vehicles and stockpiled excavated materials.
- 7. Anticipated difficulties and proposed resolutions.

3.03 MOVEMENT MONITORING PLAN

- A. Prepare movement monitoring plan addressing following topics:
 - 1. Survey control.
 - 2. Location of monitoring points.
 - 3. Plots of data trends.
 - 4. Interval between surveys.
 - a. Interval shall not be less than once per week during performance of work until the permanent structure is complete to the ground level and shall continue weekly for a period of four (4) weeks after completion of the work (or longer if movement persists).
 - 5. Remedial action and engineer notification plan should movement of existing structures occur during performance of the Work.
- 3.04 REMOVAL OF EXCAVATION SUPPORT
 - A. Remove excavation support in a manner that will maintain support as excavation is backfilled.
 - B. Do not begin to remove excavation support until support can be removed without damage to existing facilities, completed Work, or adjacent property.
 - C. Remove excavation support in a manner that does not leave voids in the backfill.

3.05 TRENCHES

- A. Provide trench excavations exceeding four (4) feet in depth with adequate safety systems.
- B. For trench excavation exceeding five (5) feet in depth, provide adequate safety systems meeting requirements of applicable state and local construction safety orders, and federal requirements.

END OF SECTION 31 41 00
DIVISION 32

EXTERIOR IMPROVEMENTS

SECTION 32 05 16 AGGREGATES FOR EXTERIOR IMPROVEMENTS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Aggregate materials.
- B. Related Sections include, but are not limited to:
 - 1. Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to work of this section;
 - 2. Division 1 General Requirements Specification Sections;
 - 3. Section 31 23 13 Subgrade Preparation;
 - 4. Section 31 23 21 Fill and Backfill;
 - 5. Section 32 11 23 Aggregate Base Courses.

1.02 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO);
- B. American Concrete Institute (ACI);
- C. American Society for Testing Materials (ASTM);
- D. Montana Public Works Standard Specifications (MPWSS) 6th Edition (April 2010).
- 1.03 SUBMITTALS FOR REVIEW
 - A. Section 01 33 00 Submittals: Procedures for submittals.
 - B. Samples: Submit, in air-tight containers, 40-pound sample of each type of aggregate to testing laboratory. Submit Laboratory Results to Engineer.
- 1.04 QUALITY ASSURANCE
 - A. Section 01 40 00 Quality Control: Field Samples.
 - B. Material Source: Submit name of imported material supplier(s). Provide materials from the same source throughout the Work. Change of source requires Engineer approval.

PART 2 - PRODUCTS

- 2.01 AGGREGATE MATERIALS
 - A. Sub-base Course (crushed or uncrushed): As described in the project drawings and in the Geotechnical Report completed by Pioneer Technical Services. Use this material for the section under the base course beneath the concrete sidewalk/driveway. Fully compliant with MPWSS Section 02234 4 inch Minus Base Course, see the following gradation table.

TABLE OF GRADATIONS		
Sieve Size Percent Passing		
4 inch	100	
No. 4	25-60	
No. 40	10-30	
No. 200	2-10	

B. Crushed Base Course: As described in the project drawings and in the Geotechnical Report completed by Pioneer Technical Services. Use this material for the section under the concrete sidewalk/driveway. Fully compliant with all provisions of MPWSS Section 02235 – including the 1 ½ inch Minus Base Course gradation table:

TABLE OF GRADATIONS		
Sieve Size Percent Passing		
1 ½ inch	100	
No. 4	25-60	
No. 200	0-8	

- C. Coarse Aggregate (Concrete Mix and Type A1): Well graded crushed stone or gravel conforming to the requirements of ASTM C33, Gradation 67.
- D. Coarse Aggregate (Surface Course and Type A2): Gravel; angular crushed, or natural stone; free of shale, clay, friable material and debris; graded in accordance with Montana Department of Transportation specifications. For all aggregate surface areas.
- E. Coarse Aggregate (Base Course and Type A3): Gravel; Angular crushed, or natural stone; free of shale, clay, friable material and debris; graded in accordance with Montana Department of Transportation referenced specifications, Section 816, Class 5.
- F. Fine Aggregate (Concrete Mix and Type A4): Natural river or bank sand; free of silt, clay, loam, friable or soluble materials, and organic matter; graded in accordance with ASTM C33.
- G. Coarse Aggregate (Type A5): All gravel for Granular Foundation shall be in accordance with the following table of gradations:

TABLE OF GRADATIONS – GRANULAR FOUNDATION		
Sieve Size	Percent Passing	
4 inch (100 mm)	100	
No. 4 (4.75 mm)	25-60	
No. 200 (0.075 mm)	3-12	

H. Granular Fill (Base course under cast-in-place on-grade slabs): Clean mixture of crushed stone or crushed or uncrushed gravel; ASTM D448, Size 57, with 100 percent passing a 1¹/₂ inch (38-mm) sieve and 0 to 5 percent passing a No. 8 (2.36-mm) sieve.

- 2.02 SOURCE QUALITY CONTROL
 - A. Section 01 40 00 Quality Control: Source testing and analysis of aggregate material.
 - B. Coarse Aggregate Material Testing and Analysis: Perform in accordance with ASTM C136 and ASTM D698.
 - C. Fine Aggregate Material Testing and Analysis: Perform in accordance with ASTM C136 and ASTM D698.
 - D. If tests indicate materials do not meet specified requirements, change material or material source and retest.
 - E. Provide materials of each type of aggregate from the same source throughout the Work.

PART 3 - EXECUTION

- 3.01 STOCKPILING
 - A. Stockpile materials in accordance with Section 31 14 13.
- 3.02 STOCKPILE CLEANUP
 - A. Cleanup stockpiles in accordance with Section 31 14 13.

END OF SECTION 32 05 16

SECTION 32 05 19 GEOSYNTHETICS FOR EXTERIOR IMPROVEMENTS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Geogrid fabric beneath concrete sidewalk/driveway section;
- B. Related Sections include, but are not limited to:
 - 1. The General Conditions, Supplemental Conditions, and General Requirements apply to work of this section.
 - 2. Division 1 General Requirements Specifications Sections.
 - 3. Division 31 Earthwork Specifications Sections.
 - 4. Division 32 Exterior Improvements.

1.02 REFERENCES

- A. Reference Standards include, but are not limited to:
 - 1. Montana Department of Transportation Standard Specifications, latest edition.
 - 2. ASTM D6241 CBR Puncture, Latest Edition.
 - 3. ASTM D4355 UV-Resistance, Latest Edition.
 - 4. ASTM D4491 Permeability, Latest Edition.
 - 5. ASTM D4533 Trapezoid Tear Strength of Geotextiles
 - 6. ASTM D4632 Grab Tensile Strength and Elongation, Latest Edition.
 - 7. ASTM D4751 Apparent Opening Size (AOS), Latest Edition.
 - 8. ASTM D4759 Determining Specification Performance for Geosynthetics
 - 9. ASTM D4873 Guide for Identification, Storage, and Handling of Geosynthetics, Latest Edition.

1.03 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Provide product data on Geogrid and Geotextile Fabric.
- C. Submit manufacturer's installation instructions. Indicate special procedures and conditions requiring special attention.
- 1.04 DELIVERY, STORAGE, AND HANDLING
 - A. The geotextile rolls shall be furnished with suitable wrapping for protection against moisture and extended ultraviolet exposure prior to placement.
 - B. Rolls shall be stored in a manner which protects them from the elements. At no time shall

GEOSYNTHETICS FOR EXTERIOR IMPROVEMENTS

the geotextile be exposed to ultraviolet light for a period exceeding fourteen days.

C. The geotextile rolls shall be labeled as per ASTM D 4873, "Guide for Identification, Storage, and Handling of Geosynthetics".

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Geogrid Fabric
 - 1. The Geogrid fabric within the concrete sidewalk/driveway section shall have the following minimum performance properties:

Property	Test Method	Value
% U.S. Manufactured		100%
Aperture Dimensions		1"x1.3"
Rib Thickness		0.03"x0.03"
Tensile Strength @ 2%	ASTM D-6637	280 x 450 lb/ft
Tensile Strength @ 5%	ASTM D-6637	580 x 920 lb/ft
Ultimate Tensile Strength	ASTM D-6637	850 x 1300 lb/ft
Junction Efficiency	ASTM D-7737	93%
Flexural Stiffness	ASTM D-7748	250,000 mg·cm
Aperture Stability	ASTM D-7864	0.32 m·N/deg
Resistance to LT Degrad.	EPA 9090	100%
UV Resistance at 500 hr.	ASTM D-4355	100%

2. The Geogrid fabric shall be GridPro BXP-11, Type 1 or approved equal.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify subgrade has been inspected, gradients and elevations are correct; surface is dry, and ready to receive Work.
- 3.02 PREPARATION OF SUBSOIL
 - A. Correct irregularities in subgrade gradient and elevation by scarifying a minimum of 6inches, reshaping, and re-compacting.
 - B. Do not place on soft, muddy, or frozen surfaces.
- 3.03 PLACEMENT
 - A. Geogrid fabric shall be placed in strict accordance with Manufacturer's

GEOSYNTHETICS FOR EXTERIOR IMPROVEMENTS

recommendations.

- B. The fabric shall be laid out smooth without wrinkles or folds on the prepared subgrade in the direction of the construction traffic.
- C. Adjacent geogrid rolls shall be overlapped a minimum of 2.5 feet; ends of rolls shall be overlapped 3 feet unless manufacturer specifies otherwise.
- D. On curves, the fabric may be folded or cut to conform to the curves. The fold or overlap shall be in the direction of construction and shall be held in place by staples, pins or aggregate piles.
- E. Damaged areas shall be repaired by overlaying the area with sufficient material to overlap on all edges by at least 2.5 feet.
- F. The aggregate base material shall be placed by end dumping onto the geotextile/geogrid from the edge or over previously placed base aggregate. Construction equipment shall not be allowed directly on the geotextile fabric.
- G. A minimum of 12 inches of aggregate must be placed on the geotextile/geogrid prior to the movement of construction equipment above the fabric.
- H. Turning movements must be carefully monitored to avoid rutting of the aggregate. Any ruts occurring during construction shall be filled with additional gravel aggregate and compacted to the specified density.
- I. If placement of the backfill causes damage to the geotextile/geogrid, the damaged area shall be repaired as described in Section 3.03.E.
- J. Install in the locations as indicated on drawings.
- 3.04 FIELD QUALITY CONTROL
 - A. Section 01 40 00 Quality Assurance: Field inspection.
- 3.05 SCHEDULE OF LOCATIONS
 - A. Use Geogrid Fabric in the following locations:
 - 1. Beneath concrete sidewalk/driveway section and where indicated in the project drawings.

END OF SECTION 32 05 19

SECTION 32 11 23 AGGREGATE BASE COURSES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes general requirements and procedures for furnishing and installing base and pavement courses, including:
 - 1. Sub-base Course.
 - 2. Crushed Base Course.
- B. Related Sections include, but are not limited to:
 - 1. Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to work of this section;
 - 2. Division 1 General Requirement Specification Sections;
 - 3. Section 31 23 13 Subgrade Preparation;
 - 4. Section 31 23 21 Fill and Backfill;
 - 5. Section 32 05 16 Aggregates for Exterior Improvements

1.02 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO)
- B. American Concrete Institute (ACI)
- C. American Society for Testing Materials (ASTM)
- D. MDT Specifications (latest edition)
- 1.03 SUBMITTALS
 - A. Sub-base Course
 - 1. Provide appropriate material date source testing for each granular material. Include name location of source, date of testing, and sample gradations. Tests shall not be more than 180 calendar days before date of submittal.
 - B. Aggregate Base Course
 - 1. Submit gradation report on sample of aggregate base to be used.

1.04 SEQUENCING AND SCHEDULING

- A. Construct aggregate base only after all of the following have been completed:
 - 1. Subgrade has been corrected for instability problems and successfully passed a rolling test performed by the Contractor and witnessed by the Engineer.
 - 2. Subgrade has been checked for conformance to line and string tolerances (stringline).

- B. Aggregate base to be completed and approved by Engineer prior to placement of bituminous or concrete surfaces.
- 1.05 QUALITY ASSURANCE
 - A. Contractor shall establish and maintain the required lines and grades, including crown and cross-slope, for each course during work.
 - B. In-place finished thickness will not be acceptable if exceeding following allowable variation from thickness specified herein:
 - 1. Aggregate Base Course: Plus or minus one-half inch.

PART 2 - PRODUCTS

- 2.01 SUB-BASE COURSE
 - A. Sub-base shall be as indicated on the Construction Drawings and as specified in Section 32 05 16.
- 2.02 AGGREGATE BASE COURSE
 - A. Aggregate Base Course shall be as indicated on the Construction Drawings and as specified in Section 32 05 16.
- 2.03 AGGREGATE SURFACE COURSE
 - A. Aggregate Surface Course shall be as indicated on the Construction Drawings and as specified in Section 32 05 16.

PART 3 - EXECUTION

3.01 AGGREGATE BASE COURSE

- A. Preparation:
 - 1. Verify subsoil has been inspected; gradients and elevations are correct.
 - 2. Prepare the sub-base course.
 - 3. Verify subsoil is compacted to specified density and that subgrade test results have been submitted prior to placing aggregate course.
 - 4. Subgrade to be completed and approved by Engineer prior to installation of the aggregate base course.
 - 5. Verify subgrade is dry.
- B. Construction Requirements; conform to MDT Specifications:
 - 1. Place aggregate in maximum 6-inch layers and compact to specified density. When placing over geotextile fabric, place in minimum 8-inch layers.
 - 2. Level and contour surfaces to elevations and gradients indicated.
 - 3. Compact by mechanical means as specified in Section 01 40 00.
 - 4. Install aggregate base in accordance with Detail Drawings.

AGGREGATE BASE COURSES

- 5. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.
- 6. Use mechanical tamping equipment in areas inaccessible to compaction equipment.
- C. Field Quality Control:
 - 1. The Owner shall have an independent testing laboratory sample the aggregate base materials, determine the moisture/density relationships and gradation, and perform field moisture/density tests at locations determined by Engineer.
 - 2. If, during progress of Work, tests indicate that compacted materials do not meet specified requirements, remove defective Work, replace, and retest. Contractor shall bear all costs associated with repair and retesting of defective Work.

3.02 TOLERANCES

- A. Finished Grade:
 - 1. Line and Grade Tolerance: The final aggregate base surface will be checked for conformance to specified tolerances by the "stringline" method prior to approval to pave the surface. Grade shall be ± 0.03 feet of grade.

END OF SECTION 32 11 23

SECTION 32 90 00 LANDSCAPING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Seeding (also see Section 32 90 19).
 - 2. Planting.
 - 3. Erosion control mulch.
 - 4. Hydro-mulch.
 - 5. Erosion control mat.
 - 6. Turf reinforcement mat.
 - 7. Hardwood mulch.
 - 8. Landscaping materials.
 - 9. Fertilizer.
 - 10. Landscape maintenance.
 - 11. Landscape warranty.
- B. Related Sections
 - 1. The General Conditions, Supplementary Conditions, and General Requirements apply to work of this section.
 - 2. Division 1 General Requirements Specification Sections.
 - 3. Division 31 Earthwork Specification Sections.
 - 4. Division 32 Exterior Improvements.

1.02 **DEFINITIONS**

- A. Growing Season: May 1 through September 30
- B. Weeds Any vegetation that is either not planted or seeded that is within areas to be seeded or planted as part of this Contract.
- C. Planting Bed Planted areas around the screening building, blower building, and east of treatment cell #3 and the polishing reactor.
- D. Noxious Weeds As defined by the MDT Standard Specifications
- 1.03 REFERENCES
 - A. Montana Standard Specifications for Road and Bridge Construction, 2008 edition, referred to as MDT Standard Specifications in this specification section.

- B. General Permit No. MTR100000 (or its successor), Effective Date January 1, 2013 and Expiration Date December 31, 2017 - Authorization to Discharge under the National Pollutant Discharge Elimination System, referred to as the State's Construction General Permit in this specification section.
- 1.04 SUBMITTALS FOR REVIEW
 - A. Section 01 33 00 Submittal Procedures.
 - B. Seed Data: Provide seed testing data and labeling consistent with MDT Standard Specifications.
 - C. Plant Material: Include quantities, sizes, quality and sources for plant materials.
 - D. Submit samples or product data sheets and installation specifications/details of the following materials (if applicable). Contractor shall not place materials until Engineer reviews submittal and provides a submittal review noting no exceptions taken:
 - 1. Landscape Rock
 - 2. Landscape Gravel
 - 3. Hardwood Mulch
 - 4. Erosion Control Mulch, including anchoring approach
 - 5. Hydro-Mulch
 - 6. Erosion Control Mat
 - 7. Weed Control Barriers
 - 8. Landscape Edging
 - E. Proposed seeding equipment and methods.
- 1.05 SUBMITTALS AT PROJECT CLOSEOUT
 - A. Section 01 77 00 Closeout Procedures for submittals.
 - B. Maintenance Data: Include maintenance instructions for all seeding and planting areas including cutting / pruning method and maximum height; types, application frequency, and recommended coverage of fertilizer and/or mulching.
- 1.06 REGULATORY REQUIREMENTS
 - A. Comply with regulatory agencies and MDT Standard Specifications for herbicide, insecticide, pesticide, and fertilizer application rates and composition.
- 1.07 DELIVERY, STORAGE, AND HANDLING
 - A. See Section 01 60 00 for product delivery, storage, and handling requirements.
 - B. Deliver seed mixture in sealed containers, open or damaged packaging is not acceptable.
 - C. For Engineer's field review, each bag of seed delivered to the site shall bear a tag with labeling meeting MDT Standard Specification requirements.

- D. Deliver fertilizer in waterproof bags, labeled according to state law and bearing weight, chemical analysis, name of manufacturer, and warranty of producer.
- E. Deliver plants after preparations for planting have been completed, and install within the same working day. Prior to planting:
 - 1. Set plants in cool, covered, and shaded area;
 - 2. Protect from weather;
 - 3. Protect from mechanical damage;
 - 4. Keep roots moist.
- 1.08 SEEDING BED ESTABLISHMENT PERIOD
 - A. The Seeding Bed Establishment Period shall begin immediately after installation, with the approval of the Engineer, and continue until:
 - 1. A Notice of Termination can be filed for the State's Construction General Permit, and meeting all the requirements of the State's Construction General Permit; and
 - 2. No single bare area is greater than 36 square feet.
 - B. During the Seeding Bed Establishment Period the Contractor shall:
 - 1. Water all seeded areas to maintain an adequate supply of moisture within the root zone. An adequate supply of moisture is the equivalent of one (1) inch of absorbed water per week either through natural rainfall or augmented by periodic watering. Apply water at a moderate rate so as not to displace the mulch or seed flood the plants and turf.
 - 2. Mechanically remove or spot spray noxious weeds prior to reseeding and such that noxious weeds are less than 10 percent of the overall coverage in the Seeding Bed, with no area greater than 100 square feet that is more than 50 percent noxious weed coverage at the end of the Seeding Bed Establishment Period.

PART 2 - PRODUCTS

- 2.01 TOPSOIL
 - A. Per specification Section 31 05 13.
- 2.02 SEED
 - A. Area surrounding the concrete sidewalks and driveways as shown in the contract drawings: Seed shall be Premium Sunny Brand Lawn or Classic Shade/Sun Brand Mixtures as provided by Agassiz Seed & Supply or approved equal.
 - B. Seed shall meet MDT Standard Specifications, except the following additional provisions shall apply / supersede the MDT Standard Specifications:
 - 1. Seed shall have a minimum 80 percent germination rate and maximum inert matter and other seeds of 4%. Maximum weed seed shall be 0.5 percent.
 - 2. Seed shall be tested within six months prior to date of seeding and conform to latest

seed laws of the State of Minnesota. A certified test report shall be submitted to the Engineer at least 21 days before seeding begins.

- 3. Origin of native species shall be limited to North Dakota, eastern Montana, South Dakota, or western Minnesota.
- C. Temporary cover crop, if used, shall be per MDT Standard Specifications.
- 2.03 FERTILIZER
 - A. Fertilizer shall meet MDT Standard Specifications. In the case where both Class I and Class III seed are applied, the Class III fertilizer will apply.
- 2.04 EROSION CONTROL MULCH
 - A. Erosion control mulch shall meet the MDT Standard Specifications.
- 2.05 HYDRO-MULCH
 - A. Hydro-mulch shall meet the MDT Standard Specifications.
- 2.06 EROSION CONTROL MAT
 - A. Erosion Control Mat shall be classified as ECB 2, as outlined in Table 856-1 of the MDT Standard Specifications.
- 2.07 TURF REINFORCEMENT MAT (TRM)
 - A. As shown on the Drawings.
- 2.08 HARDWOOD MULCH (As Needed)
 - A. Organic Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of 2" ground or shredded bark in its natural color.
- 2.09 LANDSCAPE ROCK (As Needed)
 - A. Landscape rock shall be water worn river rock 20 percent maximum jagged edges 3/4inch to 1 1/2-inch diameter, ASTM C33.
- 2.10 LANDSCAPE GRAVEL (As Needed)
 - A. Landscape gravel shall be as shown on the Drawings.
- 2.11 LANDSCAPE EDGINGS (As Needed)
 - A. As shown on the Drawings.
- 2.12 WEED-CONTROL BARRIERS (As Needed)
 - A. Composite Fabric: Woven, needle-punched polypropylene substrate bonded to a nonwoven polypropylene fabric, 4.8oz/sq. yd.

PART 3 - EXECUTION

- 3.01 TOPSOIL PREPARATION
 - A. Verify that prepared topsoil meets the topsoil and grading specifications and is ready to receive work of this Section.

- B. Kill all weeds prior to planting or seeding.
 - 1. For broad removal of weeds, Contractor shall use disking or mechanical removal.
 - 2. Herbicide shall only be allowed for spot spraying and if the herbicide will not have a detrimental effect on the intended seeded or planted species.
- C. Fill all depressions to provide a smooth grade. Sticks, stones, and other rubbish on the surface shall be raked and removed.
- D. Seeding: Immediately prior to sowing seed, soil shall be loosened to a depth of approximately three (3) inches all areas except slopes steeper than 2 horizontally to 1 vertically, using discs, harrows, or other suitable equipment.
- E. Planting: Immediately prior to planting, soil shall be dug and loosened to a depth of approximately 1.25 times the pot depth and diameter using hand or rotary drill equipment.
- F. On slopes, the cultivating equipment shall operate in a general direction at right angles to the direction of surface drainage.
- G. On slopes steeper than 2 horizontally to 1 vertically, no loosening of the soil will be required except that created by equipment used in the finishing operations.
- 3.02 SEEDING BEDS
 - A. Seed all disturbed areas designated for revegetation.
 - B. Stake out areas to receive different seed mixes.
 - C. Seeding Equipment Requirements.
 - 1. The specified seed or seed mixture shall be drilled in uniformly using a grass drill equipped with individually mounted adjustable spring loaded, double disk furrow openers fitted with depth bands and packer wheels. The drill furrow spacing shall not exceed 8 inches. The depth control bands shall be of a size to provide final planting depth of ½ to ¾ inch. Packer wheels shall have adjustable spring tension and be mounted individually on each furrow opener or be mounted independently with a press wheel situated to follow directly behind each opener. The seed box shall be equipped with a positive feed mechanism which accurately meters free flowing introduced (tame) grasses in a uniform manner and shall have agitators which prevent seed bridging. If chaffy native grasses are part of the specified seed mixture, the seed box shall be equipped with a positive feed picker-wheel mechanism with oversize teeth and augur style agitators which accurately meters the chaffy native grasses either in a mixture or separately in a uniform manner. The seed box shall have baffles or partitions that keep all seeds uniformly mixed during drilling.
 - 2. Equipment to be used when Hydro-Mulch seeding is required shall be hydraulic equipment capable of uniformly mixing the specified seed in water for uniform distribution. The mulch may be applied simultaneously with the seed and fertilizer, or within 24 hours after application of seed and fertilizer.

- 3. Other Equipment. Power sprayers, blowers, hydraulic applicators, or broadcasters may be used on slopes steeper than 3:1 or areas too small to be seeded with a drill. The seeding rate shall be at least 120% of the normal rate, and the seed shall be covered by operating a drag harrow and a light packer over the seeded area.
- 4. Areas will be visually inspected for uniformity of application. Areas which do not reveal adequate and uniform coverage shall be reseeded at the Contractor's expense.
- D. Seasonal considerations for seeding shall be implemented per MDT Standard Specifications, Section 708.02C1d.
- E. No seed shall be sown when the wind velocity exceeds 15 miles per hour, in standing water, or on frozen ground.
- F. Do not sow within 24 hours after a rain event.
- G. Within the same work day, Contractor shall stabilize the soil surface with the appropriate surface stabilization (erosion control mulch, hydro-mulch, or erosion control mat) as shown in these specifications and/or the Drawings. Hydro-mulch shall be applied at the same time as seeding, unless approved by Engineer.
- H. Following surface stabilization, Contractor shall water seeded areas consistent with the Seeding Bed Establishment Period requirements.
- 3.03 SURFACE STABILIZATION
 - A. Erosion Control Mulch shall be applied according to MDT Standard Specifications at a rate of 2 tons per acre with approximately 10 percent of the soil surface visible. Contractor shall anchor the mulch using either the punching or tackifier approach.
 - B. Hydro-Mulch shall be applied per MDT Standard Specifications at a rate of 1 ton per acre with a minimum of 95 percent coverage.
 - C. Erosion control mat shall be installed per the Drawings and manufacturer's recommendations, whichever is more stringent.
 - D. Turf Reinforcement Mat shall be installed per the Drawings, which may include placing the TRM below the ground surface prior to seeding with an erosion control mat on the surface, if recommended by the manufacturer.
- 3.04 LANDSCAPE ROCK AND GRAVEL PLACEMENT (As Needed)
 - A. Landscape rock and gravel will be placed in areas identified in the Specifications and Drawings at a uniform depth of four inches, plus or minus 1 inch.
 - B. Provide a two (2) foot wide border of landscape rock at all structures not adjacent to asphalt or concrete surfaces.
 - C. Place landscape gravel on areas shown on the ADM landscaping plan noted with "Gravel" label.
 - D. Place weed control barrier and landscape edging (5-inch) prior to placement of landscape rock and gravel.

3.05 CLEANUP AND PROTECTION

- A. During and after landscaping, keep pavements clean and work area in orderly condition.
- B. Protect existing improvements from damage from landscaping operations.
- C. Contractor shall clean up the site following work and repair any damage caused by landscaping operations, at Contractor's cost.
- 3.06 MAINTENANCE
 - A. Contractor shall be responsible for maintenance of the planting and seeding beds for the Planting and Seeding Bed Establishment Periods, respectively.
 - B. Contractor shall spot spray weeds in the landscape gravel and landscape rock areas before they reach a height of 3 inches and/or re-seed, whichever comes first.
 - C. If Contractor has used a temporary cover crop, Contractor shall mow temporary cover crop prior to cover crop re-seeding.

3.07 WARRANTY

- A. For Seeding Beds:
 - 1. Initial Acceptance:
 - All seeding beds shall be evaluated for Initial Acceptance after the seeding beds have been covered with the specified seed and the specified soil protection measure (such as erosion control mulch or mat) as shown on the Drawings. Initial Acceptance shall be based on the Contractor providing the Engineer with the specified submittals and a visual inspection by the Contractor and Engineer of the seeding beds.
 - 2. Maintenance:
 - a. Contractor shall maintain the seeding beds, consistent with the Seeding Bed Establishment Period, until Final Acceptance.
 - b. Other maintenance activities may be completed at the Contractor's discretion to meet the Final Acceptance performance criteria. Contractor shall notify the Engineer of planned additional maintenance activities prior to implementation.
 - 3. Final Acceptance:
 - a. Final Acceptance will occur at the end of the Seeding Bed Establishment Period.
 - b. If after a period of ninety (90) growing season days, vegetation coverage does not meet the minimum requirements outlined in the Seeding Bed Establishment Period, Contractor shall re-seed all areas that do not meet the minimum coverage, at Contractor's cost. A new Seeding Bed Establishment Period shall begin, except the maintenance period will be thirty (30) growing season days.

END OF SECTION 32 90 00

SECTION 32 92 19 SEEDING (Reference MPWSS Section 02910)

All applicable portions of MPW standard specification Section 02910 shall apply with the following additions, deletions and/or modifications.

PART 2 - PRODUCTS

2.01 SEED

Add following:

E. Seed mixtures shall be proportioned as follows:

1. Dryland Seed.

Seed Species or Variety	Seed Mix %	Application Rate
Western Wheatgrass	20%	
Pryor Slender Wheatgrass	20%	
Crituna Thickspike Wheatgrass	30%	21 lbs. Per acre
Sudar Stream Bank Wheatgrass	20%	
Canada Bluegrass	10%	

Note: All seed shall be 98% pure and shall have a germination percentage of 90%. Do not sow immediately following rain, when ground is to dry, or during windy periods. Apply water with fine spray after seeding. Saturate to 3 inches of soil.

2. Lawn or Turf Grass Seed.

Lawn or turf grass seed shall be a blend of at least 24 percent Kentucky Bluegrass plus a blend of at least three other bluegrasses in approximately equal proportions. Acceptable blend grasses include Adelphi, Silkins, Birka, Nuglade, Rambo, Ram Eclipsey, Quantum, Merian, Nustar or others commonly used in the area by sod producers.

2.02 TOPSOIL

Add the following:

1. Topsoil shall be the existing top 6-12 inches of silty sand surface layer of soil at the site with no admixture of refuse or any material toxic to plant growth, and it shall be reasonably free from subsoil and stumps, roots, brush, stones (1.0 inches or more in diameter), clay lumps or similar objects. Brush and other vegetation which will not be incorporated with the soil during handling operations shall be cut and removed. Ordinary herbaceous growth such as grass and weeds do not need to be removed but shall be thoroughly broken up and intermixed with the soil during handling operations. The Contractor will be required to compact the topsoil to reduce settling and ensure a uniform grade in the disturbed areas.

2.04 FERTILIZER

Add the following:

C. Fertilize uniformly across all surfaces at the following rate:

Dryland Grass	
Nitrogen	25 lbs/acre
Phosphate	25 lbs/acre
Lawn Grass	
Nitrogen	50 lbs/acre
Phosphate	50 lbs/acre

2.05 MULCH

Add the following:

A. Mulch with a loose 1-inch layer of straw.

PART 3 - EXECUTION

Add the following:

- 3.05 CARE OF SEEDED AREAS
 - D. All weeds including (spotted knapweed, leafy spurge, and all others identified by the State of Montana as non-native) shall be controlled by the Contractor while grass is becoming established and during the full one year warranty period after the project is complete and accepted by the Owner. Chemical control may be utilized where permitted by State Laws and regulations.

PART 4 - MEASURMENT AND PAYMENT

DELETE: Entire Section

END OF SECTION 32 92 19

SECTION 32 92 23 TOPSOIL AND SODDING

PART 1 - GENERAL

- 1.01 RELATED DOCUMENTS
 - A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections apply to this Section
- 1.02 GENERAL
 - A. This section covers the work necessary to furnish, haul, and place approved topsoil and live sod on prepared areas at the locations shown on the Drawings or as directed by the Engineer.
- 1.03 SUBMITTALS
 - A. The following submittals for construction shall be made in accordance with the project submittal requirements as described in the Supplementary Conditions.
 - 1. Topsoil particle size analysis; characterization; acidity; salinity; organic matter percentage.
 - 2. Sod supplier name, address and telephone number.
 - 3. Grass mixture contained in sod.
 - 4. Manufacturer's Fertilizer Data Sheets.

PART 2 - MATERIALS

2.01 TOPSOIL

- A. Topsoil shall consist of friable surface soil reasonably free of grass, roots, weeds, sticks, stones, or other foreign materials.
- B. The topsoil shall consist of sandy loam, with soil particles within the following percentages: clay; 0-25; silt; 25-50; sand; 50-70; decomposed organic matter; 5-10.
- C. The clay content is optional.
- D. The soil shall have a soil acidity range between a pH 5.0 to pH 7.0. The soil salinity
- E. shall not exceed 3 millimhos per centimeter at 25oC (as described by USDA Circular
- F. No. 982).
- G. The Contractor shall notify the Engineer of the source of topsoil not less than 10 days prior to excavation.
- 2.02 SOD (Sod not included in the WATCH Building Project)
 - A. Sod furnished by the Contractor shall have a good cover of living or growing grass. This shall be interpreted to include grass that is seasonally dormant during the cold or dry seasons and capable of renewing growth after the dormant period.

- B. All sod shall be obtained from areas where the soil is reasonably fertile and contains a high percentage of loamy topsoil.
- C. Sod shall be cut or stripped from living, thickly matted turf relatively free of weeds or other undesirable foreign plants, large stones, roots, or other materials which might be detrimental to the development of the sod or to future maintenance.
- D. Sod shall be 100 percent Kentucky Bluegrass.
- E. Before harvesting, the turfgrass shall be mowed to a uniform height of not more than 5/8".
- F. Sod, including the soil containing the roots and the plant growth showing above, shall be cut uniformly to a thickness not less than 2 inches.
- 2.03 WATER
 - A. The water shall be sufficiently free from oil, acid, alkali, salt, or other harmful materials that would inhibit the growth of grass. It shall be subject to the approval of the Engineer prior to use.

PART 3 - EXECUTION

3.01 GENERAL

- A. Areas to be solid, strip, or spot sodded are shown on the Drawings. Areas requiring special ground surface preparation such as tilling and those areas in a satisfactory condition which are to remain undisturbed shall also be shown on the Drawings.
- B. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Engineer and replace with new planting soil
- C. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
- D. Uniformly moisten excessively dry soil that is not workable or which is dusty.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARING THE GROUND SURFACE

- A. Placing and spreading of topsoil shall not be done when the ground is frozen, excessively wet or otherwise in a condition detrimental to the work. Surfaces designated to be covered shall be lightly scarified just prior to the spreading operation. Compaction of topsoil will not be required.
- B. After placement is completed the surface of the topsoil shall be finished to a reasonably smooth surface.
- C. After application of the topsoil and grading of areas has been completed and before applying fertilizer, areas to be sodded shall be raked or otherwise cleared of stones larger

than 2 inches in any diameter, sticks, stumps, and other debris which might interfere with sodding, growth of grasses, or subsequent maintenance of grass-covered areas. If any damage by erosion or other causes occurs after grading of areas and before beginning the application of fertilizer and ground limestone, the Contractor shall repair such damage. This may include filling gullies, smoothing irregularities, and repairing other incidental damage.

- D. All areas to receive sod or turf grass seed shall have the native material properly scarified, a minimum of 6" of approved topsoil applied and lightly rolled, prior to installation of the sod or seed.
- E. Over-compaction the topsoil at any time before or during application of the sod or seed is not acceptable.
- 3.03 APPLYING FERTILIZER
 - A. Following ground surface preparation, fertilizer shall be uniformly spread at the rates specified below.
 - 1. All areas shall be fertilized with an inorganic chemical fertilizer with the following nutrients:
 - a. Nitrogen (Elemental) 40 lbs/acre
 - b. Phosphorus (P205) 60 lbs/acre
 - c. Potassium (K20) 30 lbs/acre
- 3.04 OBTAINING AND DELIVERING SOD <u>(Sod not included in the WATCH Building</u> <u>Project)</u>
 - A. After inspection and approval of the source of sod by the Engineer, the sod shall be cut with approved sod cutters to such a thickness that after it has been transported and placed on the prepared bed, but before it has been compacted, it shall have a uniform thickness of not less than 2 inches. Sod sections or strips shall be cut in uniform widths, not less than 10 inches, and in lengths of not less than 18 inches, but of such length as may be readily lifted without breaking, tearing, or loss of soil. Where strips are required, the sod must be rolled without damage with the grass folded inside.
 - B. The sod shall be transplanted within 24 hours from the time it is stripped, unless circumstances beyond the Contractor's control make storing necessary. In such cases, sod shall be stacked, kept moist, and protected from exposure to the air and sun and shall be kept from freezing. Sod shall be cut and moved only when the soil moisture conditions are such that favorable results can be expected. Where the soil is too dry, permission to cut sod may be granted only after it has been watered sufficiently to moisten the soil to the depth the sod is to be cut.
- 3.05 LAYING SOD (Sod not included in the WATCH Building Project)
 - A. Lay sod within 24 hours of harvesting unless a suitable preservation method is accepted by Architect prior to delivery time. Do not lay sod if dormant or if ground is frozen or muddy.

- B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to soil or sod during installation. After establishment, if necessary to smooth surface, tamp and roll lightly to remove surface undulations. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.
 - 1. Lay sod across slopes exceeding 1:3.
 - 2. On slopes exceeding 1:6, and in V-shaped or flat-bottom ditches or gutters, the sod shall be pegged with wood pegs not less than 12 inches in length and have a cross-sectional area of not less than 3/4 square inch. The pegs shall be driven flush with the surface of the sod.
- C. Sodding shall be performed only during the seasons when satisfactory results can be expected. Frozen sod shall not be used and sod shall not be placed upon frozen soil. Sod may be transplanted during periods of drought with the approval of the Engineer, provided the sod bed is watered to moisten the soil to a depth of at least 4 inches immediately prior to laying the sod.
- D. The sod shall be moist and shall be placed on a moist earth bed. Pitch forks shall not be used to handle sod, and dumping from vehicles shall not be permitted. The sod shall be carefully placed by hand, edge to edge and with staggered joints, in rows at right angles to the slopes, commencing at the base of the area to be sodded and working upward. The sod shall immediately be pressed firmly into contact with the sod bed by tamping or rolling with approved equipment to provide a true and even surface, and insure knitting without displacement of the sod or deformation of the surfaces of sodded areas. Where the sod may be displaced during sodding operations, the workmen when replacing it shall work from ladders or treaded planks to prevent further displacement. Screened soil of good quality shall be used to fill all cracks between sods. The quantity of the fill soil shall not cause smothering of the grass. Where the grades are such that the flow of water will be from paved surfaces across sodded areas, the surface of the soil in the sod after compaction shall be set approximately 1 inch below the pavement edge. Where the flow will be over the sodded areas and onto the paved surfaces around manholes and inlets, the surface of the soil in the sod after compaction shall be placed flush with pavement edges.

3.06 WATERING

A. Adequate water and watering equipment must be on hand before sodding begins, and sod shall be kept moist until it has become established and its continued growth assured. In all cases, watering shall be done in a manner which will avoid erosion from the application of excessive quantities and will avoid damage to the finished surface.

3.07 ESTABLISHING TURF

- A. General. The Contractor shall provide general care for the sodded areas as soon as the sod has been laid and shall continue until final inspection and acceptance of the work.
- B. Protection. All sodded areas shall be protected against traffic or other use by warning signs or barricades approved by the Engineer.

C. Mowing. The Contractor shall mow the sodded areas with approved mowing equipment, depending upon climatic and growth conditions and the needs for mowing specific areas. In the event that weeds or other undesirable vegetation are permitted to grow to such an extent that, either cut or uncut, they threaten to smother the sodded species, they shall be mowed and the clippings raked and removed from the area.

3.08 REPAIRING

A. When the surface has become bullied or otherwise damaged during the period covered by this contract, the affected areas shall be repaired to re-establish the grade and the condition of the soil, as directed by the Engineer, and shall then be re-sodded.

END OF SECTION 32 92 23

SECTION 32 97 00 RESTORATION OF DISTURBED AREAS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Restoration of all areas disturbed during construction.
 - 2. Restoration of all items not specifically identified for restoration, but damaged through construction.
- B. Related Sections include:
 - 1. The General Conditions, Supplementary Conditions, and General Requirements apply to work of this section.
 - 2. Division 1 General Requirements Specification Sections.
 - 3. Division 31 Earthwork.
 - 4. Division 32 Exterior Improvements.

1.02 REFERENCES

- A. Reference Standards include:
 - 1. Montana State Highway Department Standard Specifications for Road and Bridge Construction, latest edition.

PART 2 - PRODUCTS

- 2.01 MATERIALS
 - A. Material Sections include:
 - 1. Topsoil and Sodding: Per Section 32 92 23.
 - 2. Aggregate Materials: Per Section 32 11 23.
 - 3. Seed: Per Section 32 92 19.

PART 3 - EXECUTION

- 3.01 EXECUTION
 - A. Observe all surface features requiring protection, removal and replacement, and/or restoration prior to construction.
 - B. The Contractor shall be responsible for the preservation of all public and private property and shall protect carefully from disturbance or damage all land monuments and property marks until the Engineer has witnessed or otherwise referenced their location and shall not move them until directed.

- C. The Contractor shall be responsible for all damage or injury to property of any character during the prosecution of the Work, resulting from any act, omission, neglect, or misconduct in his manner or method of executing the Work, or at any time due to defective Work or materials, and said responsibility will not be released until the Project shall have been completed and accepted.
- D. When any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the Work, or in consequence of the non-execution thereof by the Contractor, he shall restore, at his own expense, such property to the condition similar or equal to that existing before such damage or injury was done by repairing, rebuilding, or otherwise restoring as may be directed or he shall make good such damage or injury in an acceptable manner.

3.02 RESTORATION

- A. Restore all areas disturbed by construction to a condition equal to or better than existed prior to construction.
- B. Replace, restore, repair, or otherwise make good any damage done to any tree, bush, or shrub that is not specifically designated for removal.
- C. Restore items such as culverts, road signs, power poles, sodding, fences, driveways, mailboxes, and like, whether or not specifically identified on the Drawings, to a condition equal to or better than existed before construction.
- D. Replace or repair all concrete or asphalt roads or driveways, removed or damaged during construction with equal or better materials. Replace or repair to match existing conditions.
- E. Stabilize subgrade sufficiently to prevent mixing of granular material with subgrade prior to application of base material.
- F. Place topsoil per Section 32 92 23 and seed areas disturbed by construction in grassed areas per Section 32 92 19.
- G. All damage to streets, driveways, berms, etc. due to the Contractor's construction techniques and equipment shall be repaired at the Contractor's expense prior to final payment.
- H. Remove all excess dirt, concrete, and other debris from work area immediately upon completion of Work and deposit on-site in a disposal area designated by Owner. Contractor shall be required to clean site to the condition prior to the start of construction before final payment will be made.
- I. All restoration shall be completed prior to opening any section of Work.

END OF SECTION 32 97 00

APPENDIX A

Project Drawings

WATCH Building Concrete Sidewalk Entrance Montana State Hospital - Warm Springs, Montana A/E #2021-10-01





WORKSCOPE

Install Pedestrian Rated Concrete Sidewalk Entrance, Install New Vehicular Concrete Driveway, Landscaping, Demolition of Existing Sidewalk Infrastructure, and Demolition of Existing Fencing.

PROJECT DESIGN TEAM

ANDERSON MONTGOMERY CONSULTING ENGINEERS

PRIMARY CONTACTS

Project Administrator - Architecture and Engineering Division, 1520 E. Sixth Avenue, P.O. Box 200103, Helena, MT 59620 Bob Warfle, (406) 444-0771, rwarfle@mt.gov AMCE - Adam Eckhart, (406) 449-3303, Adam@a-mce.com On Site - Sue Chvilicek Podruzny, (406) 444-4902, sue.chvilicek@mt.gov On Site - Raul Luciani, (406) 693-7110, Raul.Luciani@mt.gov

SHEET INDEX

- COVER 1
- **KEY SHEET** 2.
- **DEMOLITION PLAN** 3.
- **DEMOLITION PHOTOS** 4.
- **DESIGN PLAN** 5.
- 6. DETAILS
- **DETAILS CONTINUED** 7.
- EXISTING INFRASTRUCTURE (INCLUDED FOR REFERENCE ONLY) 8.

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Revision	Date	By
Draft	4/7/21	AE
Final	4/22/21	AE
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GENERAL NOTES:

- 1. CONTRACTOR TO OBTAIN ALL REQUIRED PERMITS FOR CONSTRUCTION, DEWATERING AND STORMWATER DISCHARGES.
- 2. AS CONSTRUCTED ELEVATIONS SHALL BE WITHIN 0.1' OF ELEVATION SPECIFIED ON THE PLAN DRAWINGS.
- 3. CONTRACTOR SHALL PROTECT AND PRESERVE ALL EXISTING SITE FEATURES (INCLUDING VEGETATION, SURFACES, STRUCTURES, SURVEY MONUMENTATION, MAILBOXES, CULVERTS, SIGNAGE, DRAINAGE, ETC.) TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION. ANY DAMAGE TO EXISTING SITE FEATURES SHALL BE REPAIRED TO ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE OWNER.
- 4. "OR APPROVED EQUAL" IS IMPLIED WHENEVER A SPECIFIC PRODUCT IS REFERENCED.
- 5. CONTRACTOR TO ARRANGE SOIL SAMPLE WITH DEER LODGE COUNTY AFTER DIGGING HAS OCCURED, BUT BEFORE BACKFILLING IS COMPLETED. CONTACT CARL NYMAN THE DEER LODGE COUNTY SUPERFUND COORDINATOR AT (406) 563-7019.
- 6. CONTRACTOR IS RESPONSIBLE FOR PROVIDING A SAFE WORKING ENVIRONMENT FOR ALL WORKERS, SUBCONTRACTORS, AND THE GENERAL PUBLIC.
- 7. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER DUST CONTROL DURING CONSTRUCTION.
- 8. CONTRACTOR MUST COMPLY WITH MONTANA STATE HOSPITAL REQUIREMENTS FOR CONSTRUCTION. SEE SPECIAL PROVISIONS.

DETAIL DESIGNATION:



- ON DWG WHERE SECTION OR DETAIL
- IS SHOWN: DWG NO. WHERE TAKEN

UTILITY NOTES:

- 1. BEFORE BEGINNING AN EXCAVATION, THE CONTRACTOR SHALL NOTIFY, THROUGH ONE-CALL NOTIFICATION CENTER, ALL OWNERS OF UNDERGROUND FACILITIES IN THE AREA OF THE PROPOSED EXCAVATION. THE PHONE NUMBER IS: **1-800-424-5555**. THE WEBSITE IS: www.callbeforeyoudig.org. UPON REQUEST, THE CONTRACTOR SHALL PROVIDE VERIFICATION THAT ONE-CALL HAS BEEN NOTIFIED. CONTRACTOR SHALL COORDINATE WITH THE MONTANA STATE HOSPITAL STAFF TO HAVE PRIVATE UTILITIES ON SITE LOCATED.
- 2. THE ENGINEER HAS OBTAINED UTILITY INFORMATION FROM OWNERS OF THE UNDERGROUND FACILITIES. THE UTILITY LOCATION INFORMATION IS APPROXIMATE AND MAY BE INCOMPLETE.
- 3. AFTER AN OWNER OF AN UNDERGROUND FACILITY HAS LOCATED AND MARKED THE UNDERGROUND FACILITIES, THE CONTRACTOR SHALL DETERMINE IF WEATHER, TIME, OR OTHER FACTORS MAY HAVE AFFECTED LOCATION MARKS, WARRANTING RELOCATION OF THE FACILITIES.
- 4. IF EXCAVATION HAS NOT OCCURRED WITHIN 30 DAYS OF THE LOCATE AND MARK, THE CONTRACTOR SHALL REQUEST THAT THE FACILITY BE RELOCATED AND REMARKED BEFORE EXCAVATING UNLESS OTHER ARRANGEMENTS HAVE BEEN MADE WITH THE UNDERGROUND UTILITY OWNER. THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH RELOCATING AND REMARKING A FACILITY THAT IS NOT EXCAVATED WITHIN 30 DAYS OF THE LOCATE AND MARK.
- 5. THE CONTRACTOR MAY NOT BEGIN EXCAVATING BEFORE THE LOCATING AND MARKING IS COMPLETE OR BEFORE THE CONTRACTOR IS NOTIFIED THAT LOCATING AND MARKING IS UNNECESSARY.
- 6. THE CONTRACTOR SHALL LOCATE AND MARK THE AREA TO BE EXCAVATED IF REQUESTED BY THE UNDERGROUND FACILITY OWNER OR THEIR REPRESENTATIVE. IF THE CONTRACTOR DISCOVERS AN UNDERGROUND FACILITY THAT HAS NOT BEEN LOCATED AND MARKED, THE CONTRACTOR SHALL STOP EXCAVATING IN THE VICINITY OF THE FACILITY AND NOTIFY THE FACILITY OWNER OR THE ONE-CALL NOTIFICATION CENTER. IF THIS OCCURS THE CONTRACTOR SHALL PROCEED WITH OTHER ELEMENTS OF THE PROJECT, AT NO COST TO THE PROJECT OWNER. UNTIL THE UNDERGROUND FACILITY OWNER HAS NOTIFIED THE CONTRACTOR THAT EXCAVATION CAN PROCEED.
- 7. PRIVATE INDIVIDUAL UNDERGROUND FACILITIES HAVE NOT BEEN LOCATED AND ARE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR SHOULD THEY BE DAMAGED. THESE INDIVIDUAL UNDERGROUND FACILITIES MAY INCLUDE BUT ARE NOT LIMITED TO: INDIVIDUAL ELECTRIC NATURAL GAS, PROPANE, TELEPHONE, SEWER, SATELLITE DISH, AND WATER SERVICE LINES. TELECOMMUNICATION UTILITIES SHALL BE CONTACTED IN ADVANCE TO COORDINATE UTILITY LOCATION AND CONSTRUCTION WORK.
- 8. EXISTING PIPE MAY BE "TRANSITE" PIPE WHICH CONTAINS ASBESTOS CEMENT. CONTRACTOR SHALL OBSERVE ALL FEDERAL AND STATE REGULATIONS WHEN CUTTING, HANDLING AND DISPOSING THIS PRODUCT.
- 9. EXISTING TUNNELS SHALL NOT BE DAMAGED, IF TUNNEL IS DAMAGED CONTRACTOR SHALL REPAIR TUNNEL TO ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE OWNER.



Location Map

	LEGEND / ABBREVIATIONS:	SYMBOL:
	CAST IRON PIPE	CIP
	CENTERLINE	С
	CUBIC YARDS	C.Y.
	DUCTILE IRON PIPE	DIP
	EACH	EA.
	ELEVATION	ELEV.
	EXISTING	EX.
	FLANGE	FL
	INVERT ELEVATION	IE
	LINEAL FOOT	LF
	MANHOLE	MH
-	MECHANICAL JOINT	MJ
-	PLAIN END	PE
	POLYVINYL CHLORIDE	PVC
	RIGHT-OF-WAY	ROW
	SHEET	SHT.
	TYPICAL	TYP.
	POWER POLE	PP
		HDD
	CABLE TELEVISION	
	GAS	
		GA3
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	PROBERTY LINE	her
	SANITART SEWER	ST
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NOTES:

- CONCRETE SIDEWALK SHALL SLOPE AWAY FROM BUILDING ENTRANCE.
- THE TOP OF THE CONCRETE SIDEWALK SHALL BE 1/4" BELOW THE BUILDING ENTRANCE THRESHOLD.
- THE END OF THE CONCRETE SIDEWALKS AND CONCRETE DRIVEWAYS SHALL MATCH EXISTING GRADE. NEW CONCRETE SHALL MATCH GRADE OF EXISTING CONCRETE ON DRIVEWAY APPROACHES.
- PNA CONSTRUCTION TECHNOLOGIES DIAMOND DOWEL SYSTEM (OR EQUAL) SHALL BE PLACED A MINIMUM OF 18" O.C. IN THE CONSTRUCTION JOINTS HALFWAY BETWEEN THE EDGE OF THE TUNNEL AND THE END OF THE DRIVEWAY AS INDICATED IN THE DRAWING. INSTALL THE DOWEL SYSTEM AS PER MANUFACTURERS RECOMMENDATIONS.
- REBAR SHALL EXTEND ACROSS CONSTRUCTION JOINTS A MINIMUM OF 3'.
- THERE SHALL BE CONSTRUCTION JOINTS AT BOTH EDGES OF THE TUNNEL THE ENTIRE LENGTH OF THE TUNNEL AS PER THE DRAWING.
- PER ACI 330R CONSTRUCTION AND/OR CONTROL JOINTS SHALL BE SPACED AT 10' AND 15' INTERVALS ON CENTER FOR 4" AND 6" SLABS RESPECTIVELY.
- INSTALL ISOLATION (EXPANSION) JOINTS AT THE SIDEWALK/DRIVEWAY AND SIDEWALK/DOORWAY ENTRY INTERFACES. AT EACH LOCATION PROVIDE EXPANSION JOINTS HAVING A MINIMUM 3/4" WIDTH.
- FILL ALL CONSTRUCTION AND ISOLATION JOINTS WITH A
 FIELD MOLDED SEALANT.
- DO NOT PARK HEAVY MACHINERY DIRECTLY ON TOP OF THE EXISTING TUNNEL. THERE ARE LIVE UTILITIES INSIDE THE TUNNEL AND DISRUPTION OF SAID UTILITIES WOULD HAVE A MAJOR IMPACT ON THE OPERATION OF THE WATCH FACILITY. TAKE EXTRA CAUTION TO PROTECT THE EXISTING TUNNEL.
- THE EXISTING PAVED AREA DIRECTLY TO THE NORTH OF THE PROJECT RUNNING EAST TO WEST SHALL REMAIN OPEN AT ALL TIMES AS THIS WILL BE THE ENTRANCE TO THE BUILDING WHILE THE MAIN ENTRANCE IS UNAVAILABLE DURING CONSTRUCTION.
- FOR CONCRETE DIRECTLY ABOVE THE TUNNEL SEE









APPENDIX B

DEQ Stormwater & Dewatering Permit Forms
Montana Department of Environmental Quality – Water Protection Bureau Construction Dewatering General Permit Daily Log

Construction dewatering activities authorized under the Construction Dewatering General Permit (CDGP, MTG070000) must be monitored in accordance with the CDGP. The permittee is responsible for recording required data on a daily log -- either on the attached form ("Daily Log") or a site-specific log that includes all the data required by the CDGP.

Records, including the daily log, must be maintained for at least three (3) years and be available for inspection by the Montana Department of Environmental Quality (DEQ). Permittees do not need to submit the logs to the DEQ unless requested.

In addition to the daily log, the permittee must submit completed Discharge Monitoring Reports (DMRs) to DEQ by the 28th of the month following each reporting month, as stated in the CDGP. **Monthly DMRs must be submitted until the Construction Dewatering authorization is terminated whether or not there is a discharge.**

Once dewatering is complete and the permittee determines that authorization to discharge under the CDGP is no longer required, they must submit a request for termination to DEQ. Based on this request, DEQ will terminate the permit authorization and the corresponding requirement to complete the daily log and monthly DMRs.

Specific Instructions for Daily Log:

If no dewatering discharge occurred for any period of record, indicate "no discharge" on the daily log.

Footnotes from Daily Log form:

- 1) Indicate yes for any visual observations of either elevated turbidity or an oil sheen. Visual observation of either parameter triggers the need for the permittee to cease discharging, take a grab sample for analysis, investigate the cause, and address the problem.
- 2) If any turbidity or oil & grease off-site analysis is performed, the permittee is required to maintain records of the date the analysis was performed, the name of the individual who performed the analysis, and what 40 CFR Part 136 analytical technique/method was used [see ARM 17.30.1342(10)(c).] For instance, EPA Method 180.2 is an acceptable method for turbidity, and EPA Method 1664A is an acceptable analysis for oil & grease.
- 3) For any visual observations or numeric turbidity exceedances, the permittee must follow their corrective action plan and include a summary of observations and follow-up actions on additional pages.

Construction Dewatering General Permit - Daily Log

Name of Permittee:	Name of Project:

MPDES Permit Number: MTG070		_Outfall Number_	Month	Year
	/			

(one form must be filled out per permitted outfall)

Day of Month/ Time	Name / Initials	Discharge Turbidity High ⁽¹⁾ ? (Visual - Y/N)	Discharge Turbidity ⁽²⁾ (NTU)	Oil & Grease Sheen (Visual - Y/N) ⁽¹⁾	BMP Failures Observed? (Visual - Y/N)	Corrective Action Report Attached? ⁽³⁾
1/						
2/						
3/						
4/						
5/						
6/						
7/						
8/						
9/						
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						Agency Use		
Montana De of Environm	partment ental Quality		P	WATER ROTECTI BUREAU	R ION J	Permit No.: Date Rec'd Amount Rec'd Check No. Rec'd By		
		Not	ice	of Intent F	Form			
FORM	FORM Construction Dewatering General Permit							
1101-07	1-0/ MTG070000							
READ BEFORE COMPLETING THIS FORM: Before completing this form, the applicant needs to read the Construction Dewatering General Permit (CDGP). Certification of this Notice of Intent (NOI) is certification with the requirements in the CDGP. This NOI must be completed by the owner/operator responsible for construction dewatering activities who are seeking coverage under the CDGP. Please read the attached instructions before completing this form. You must print or type legibly; forms that are not legible, incomplete, or unsigned will be returned. You must maintain a copy of the completed NOI Form for your records.								
Section A – Appl	lication Status (Check one):							
New - No prie	or CDGP authorization or autho	rizatio	n re	equest for this p	roject/ac	tivity.		
Resubmitted -	- Permit Number: M T G 0 7 0							
Renewal - Per	rmit Number: M T G 0 7 0			-				
Modification	- Permit Number: M T G 0 7 0			(Discuss M	<i>Iodificat</i>	ion in Section I)		
Section B – Site	or Activity Information:							
Site Name:								
Location (site phy	vsical address or directions):							
Nearest City or Te	own:	Zip (Cod	e:	_ County	/:		
Latitude:		Lo	ngi	tude:				
Township/Range/	Section (optional): T	/	R	/ S _				
Is this site or activ	vity located on Tribal Lands?	N	Э	Yes (If yes,	stop and	d read instructions)		
Standard Indust	rial Classification (SIC) Code	s:						
Provide at least or	ne SIC code and description which	best re	flect	ts the project or a	ctivity at	the site described above.		
	A. Primary Description			ode	B. Seco	ondary Description		
	line (One and one) Infor	- 4: 0	4					
Section C – App	licant (Owner/Operator) Intoi	mauo	n:					
Organizational Po								
Maining Address.	- Cada.							
City, State, and Σ	ip Code:			T'41-				
Contact Name:				11tie:				
Phone Number: () Email Address:								

Section D – Authorized Representative:

In order for the signated designated 17.30.132	In order for future reports, including Discharge Monitoring Reports (DMRs), to be signed by anyone other than the signatory for this NOI, a duly authorized individual(s) or position(s) must be identified. If one is not designated then all reports must be signed by the signatory until such designation is made in writing [ARM 17.30.1323(2)].(<i>Check the appropriate box</i>):							
I desig	I designate the Contact listed in Section C as a duly authorized individual Or							
I designate the following duly authorized representative for this permit (<i>complete information below</i>):								
Na	me and Title, or Positio	n Title:						
Co	ompany Name (if differe	ent than the applicant):						
Ma	ailing Address:							
Cit	ty, State, and Zip Code:							
Ph	one Number: () _	E	Email Address:					
Or								
No du	ly authorized representa	tive for this permit is de	esignated at this time.					
Section E	– Outfalls and Receiv	ing Water(s):						
Provide the after all the initial recumnamed Each out	Provide the latitude and longitude to the nearest second for each dewatering outfall. The specified location should be after all treatment and before release to the receiving water. Provide the name of the <u>initial</u> receiving water. If the initial receiving water is unnamed, please also indicate the closest named drainage the receiving water flows into (i.e. unnamed tributary to Clear Creek). Attach additional sheets if necessary for more outfalls. Each outfall to a different receiving water segment is subject to additional application fees and annual fees.							
Outfall No.	Latitude	Longitude	Receiving Surface Waters (Name)					
001								

MAP: Attach a USGS topographic map or aerial photo extending one mile beyond the property boundaries of the site or facility/activity identified in Section B depicting the facility or activity boundaries, any treatment area(s), outfall(s), major drainage patterns, and the receiving surface waters stated above.

] Map Attached

Section F – Proximity to Contaminated Site(s):						
Will construction dewatering for this project occur in or near a known contamination site (SUPERFUND, leaking tank, etc.) or do you suspect the site has contamination? (<i>See instructions for further guidance</i>)						
\Box No. (Proceed with Section G.)						
 ☐ Yes: distance from nearest suspected area of contamination to construction dewatering is: feet. → Delineate suspected area of contamination on Section E map, or provide an additional map. 						
The permittee must take a pre-discharge sample of the groundwater and/or surface water that is representative of what is proposed for discharge. The sample must be analyzed for any known or suspected pollutants of concern in accordance with 40 CFR 136. The laboratory's detection level should be able to report at or below Required Reporting Value (RRV) contained in Department Circular DEQ-7. The laboratory results need to be submitted with the NOI.						
Copy of Lab Results enclosed. Sample date						
If analysis shows contaminants present at concentrations above the RRV, the authorization request for coverage under the CDGP will be denied. If there are no contaminants present at concentrations above the RRV, DEQ will continue to process the request. DEQ may require additional future testing in the authorization letter. If any testing results show contamination at levels higher than the RRV for any contaminant contained in Circular DEQ-7, the permittee must cease discharge and notify DEQ.						
Section G – Description of Expected Discharge Duration and Mitigation Measures:						
Date construction dewatering discharge is anticipated to begin:						
Date construction dewatering discharge is anticipated to end*:						
Rough estimate of average discharge flow rate [gallons per minute (gpm)] gpm						
 Dewatering Plan: will be completed prior to beginning construction dewatering, and implemented as part of the dewatering project. The Dewatering Plan will be maintained, and available to DEQ for on-site inspection. (<i>DEQ does not require submittal of this Plan.</i>) Dewatering discharge to state surface waters will be controlled by Best Management Practices evaluated in the Dewatering Plan, including (<i>indicate which of the following will be employed to the extent known</i>): 						
YesNoUnknownYesNoUnknownPumping process pretreatment (i.e. filtering sump or submersible						
Pump protection) Yes No Yes Yes Yes Yes Ye						

Section H – Selection of Dewatering Category & Mixing Zone
Outfall (*A separate Section H needs to be completed for each outfall listed in Section E)
Category Selection: The owner/operator selects the following category as representative of the conditions during the period of construction dewatering discharge from this outfall (<i>PICK ONE CATEGORY PER OUTFALL</i>):
A. "Minimal Impact" with discharge to (also select one of the three subcategories if Category A):
\square A.1 Ephemeral waterbody \square A.2 Dry intermittent segment \square A.3 Large river
B. "Discharge Turbidity Limited to Prevent Impact" – Turbidity effluent limit for discharge to rivers, lakes, wetlands.
C. "Real-Time Turbidity Demonstration" – Demonstration of no increase above background.
By selecting the appropriate category (above), the owner/operator certifies that they will comply with the effluent limits and monitoring requirements associated with that category for this outfall, as provided in the CDGP. (SEE INSTRUCTIONS IF THE RECEIVING WATER FOR YOUR DISCHARGE IS A-1 or A-CLOSED.)

A mixing zone (for categories A.3 and B, only): A mixing zone for category A.3 (large rivers) or B (variable flows) is granted under ARM 17.30.516(4) for rivers, and ARM 17.30.518(3) for lakes. (<i>If not A-3 or B-Categories indicate "NA" for this section</i> .) Indicate the amount of ambient surface water, at the driest time expected for the dewatering activity.
Stream width (at lowest flow expected): ft x $10 =$ ft mixing zone length
Lake/wetland area (at lowest volume): ft ² x 5% = ft ² mixing zone area (note: capped at 200 feet radius)
Section H (con't) – Additional Outfalls Category & Mixing Zone
Section H (con't) – Additional Outfalls Category & Mixing Zone Outfall (*A separate Section H needs to be completed for each outfall listed in Section E)
 Section H (con't) – Additional Outfalls Category & Mixing Zone Outfall (*A separate Section H needs to be completed for each outfall listed in Section E) Category Selection: The owner/operator selects the following category as representative of the conditions during the period of construction dewatering discharge from this outfall (PICK ONE CATEGORY PER OUTFALL):
Section H (<i>con't</i>) – Additional Outfalls Category & Mixing Zone Outfall (*A separate Section H needs to be completed for each outfall listed in Section E) Category Selection: The owner/operator selects the following category as representative of the conditions during the period of construction dewatering discharge from this outfall (<i>PICK ONE CATEGORY PER OUTFALL</i>): A. "Minimal Impact" with discharge to (<i>also select one of the three subcategories if Category A</i>):
Section H (con't) – Additional Outfalls Category & Mixing Zone Outfall (*A separate Section H needs to be completed for each outfall listed in Section E) Category Selection: The owner/operator selects the following category as representative of the conditions during the period of construction dewatering discharge from this outfall (PICK ONE CATEGORY PER OUTFALL):
Section H (con't) – Additional Outfalls Category & Mixing Zone Outfall
 Section H (con't) – Additional Outfalls Category & Mixing Zone Outfall (*A separate Section H needs to be completed for each outfall listed in Section E) Category Selection: The owner/operator selects the following category as representative of the conditions during the period of construction dewatering discharge from this outfall (<i>PICK ONE CATEGORY PER OUTFALL</i>): A. "Minimal Impact" with discharge to (also select one of the three subcategories if Category A): A.1 Ephemeral waterbody A.2 Dry intermittent segment A.3 Large river B. "Discharge Turbidity Limited to Prevent Impact" – Turbidity effluent limit for discharge to rivers, lakes, wetlands.
 Section H (con't) – Additional Outfalls Category & Mixing Zone Outfall (*A separate Section H needs to be completed for each outfall listed in Section E) Category Selection: The owner/operator selects the following category as representative of the conditions during the period of construction dewatering discharge from this outfall (<i>PICK ONE CATEGORY PER OUTFALL</i>): A. "Minimal Impact" with discharge to (also select one of the three subcategories if Category A): A.1 Ephemeral waterbody A.2 Dry intermittent segment A.3 Large river B. "Discharge Turbidity Limited to Prevent Impact" – Turbidity effluent limit for discharge to rivers, lakes, wetlands. C. "Real-Time Turbidity Demonstration" – Demonstration of no increase above background. By selecting the appropriate category (above), the owner/operator certifies that they will comply with the effluent limits and monitoring requirements associated with that category for this outfall, as provided in the CDGP. (SEE INSTRUCTIONS IF THE RECEIVING WATER FOR YOUR DISCHARGE IS A-1 or A-CLOSED.)
Section H (con't) – Additional Outfalls Category & Mixing Zone Outfall
Section H (con't) – Additional Outfalls Category & Mixing Zone Outfall
Section H (con't) – Additional Outfalls Category & Mixing Zone Outfall

Section J – CERTIFICATION

Applicant Information: This form must be completed, signed, and certified as follows:

- For a corporation, by a principal officer of at least the level of vice president;
- For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
- For a municipality, state, federal, or other public facility, by either a principal executive officer or ranking elected official.

All Applicants Must Complete the Following 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 gather and evaluate the information submitted. Based on my inquiry of the 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. [75-5-633, MCA].

Certification of this form indicates conformance with the Construction Dewatering General Permit.

Name (Type or Print)

Title (Type or Print)	Phone Number
Signature	Date Signed

DEQ will not process this form until all of the requested information is supplied, and the appropriate fees are paid.

Return this NOI-07 Form and the applicable fee payment to:

Department of Environmental Quality Water Protection Bureau PO Box 200901 Helena, MT 59620-0901 (406) 444-3080

INSTRUCTIONS FOR

Montana's Construction Dewatering General Permit (MTG070000) Notice of Intent Form NOI-07

IMPORTANT A Notice of Intent (NOI) Form will not be considered complete unless you answer every question. If an item does not apply to you, enter "NA" (not applicable) to show that you considered the question. Responses must be self-explanatory and must not refer exclusively to attached maps, plans, or documents. The appropriate fees must accompany this NOI Form. Do not submit these items separately.

Mail the NOI Form and fee to the Montana Department of Environmental Quality (DEQ) address stated on the NOI Form. Forms and additional information on construction dewatering discharges are available from the Water Protection Bureau at (406) 444-3080 or on the DEQ website at: http://deq.mt.gov/wqinfo/MPDES/ConstructionDewatering.mcpx. Please type or print legibly; NOI Forms that are not legible, incomplete, or unsigned will be returned.

SPECIFIC ITEM INSTRUCTIONS

Section A – Application Status

Check the box that applies and provide the requested information.

- If this activity has not been authorized previously, and you have not previously requested authorization for it, check the box next to "New." DEQ will assign a permit authorization number when you submit the NOI Form. The permit authorization number is a 9-digit code beginning with MTG070 that is unique to your facility or site. If you submitted an NOI Form that the DEQ returns as incomplete the permit authorization number will be written on the upper right hand corner of the NOI Form and on any correspondence sent to you by DEQ.
- If you are resubmitting a NOI Form that DEQ returned to you as deficient or incomplete, check the box next to "Resubmitted."
- If your current discharge authorization is due to expire and you want to maintain coverage, check the box next to "Renewal."
- If there is a change in the facility or site information, check the box next to "Modification."

Please include the permit authorization number for any resubmitted, renewal, or modification applications and on any correspondence with DEQ regarding this site/activity.

Section B – Site or Activity Information

Identify the name of the site or activity that is the source of construction dewatering discharge. The location of the site is the specific area where the activity is physically conducted. Give the address or location and the geographical coordinate information. Sources for geographical coordinate information include: "CWAIC" at <u>http://deq.mt.gov/wqinfo/CWAIC/default.mcpx</u>, a USGS Topographic Map, GIS, a "GPS" handheld navigation device, or other locational sources. The location may be a physical mailing address or description of how the site may be accessed (PO Boxes are not acceptable).

If the facility or site is located on or within the boundaries of a federally-recognized Tribal Lands DEQ is not the permitting authority. You must contact the Environmental Protection Agency (EPA) Montana's Region 8 Operation Office in Helena at (406) 457-5000.

Nature of the Business or Activity and Standard Industrial Classification Code

List in descending order of significance, the four-digit Standard Industrial Classification SIC code(s) and corresponding description(s) that best describes the activity relative to this location. At least one SIC code and description must be provided.

Indicate only one SIC code in the space provided in each box (i.e., only one primary SIC code). For instance, there are different SIC codes for Building Construction (1521 through 1542), Heavy Construction (1611 through 1629), Excavation (1794), and water well drilling (1781). A complete list of SIC codes can be obtained at <u>http://www.osha.gov/pls/imis/sicsearch.html</u> or in paper form from the document entitled "Standard Industrial Classification Manual," Office Management and Budget, 1987.

Section C – Applicant (Owner/Operator) Information

Organizational Formal Name - give the name, as it is legally referred to, of the business, public organization, person, or other entity that owns, operates, controls or supervises the site or activity described in Section B of this form. The permit will be issued to the entity identified in this section (Section C). *The owner or operator assumes all liability for discharges from the site and compliance with the terms and conditions of the permit and applicable regulations.*

Provide information for a contact that can provide further information to DEQ, including on-site visits.

Section D – Authorized Representative

Pursuant to ARM 17.30.1323(2) all reports required by permits and other information requested by DEQ must be signed by the appropriate signatory as described in ARM 17.30.1323(1) or by a duly authorized representative of that person. A person is a duly authorized representative only if:

- 1. The authorization is made in writing by a person described in [ARM 17.30.1323(1)];
- 2. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company (a duly authorized representative may thus be either a named individual or any individual occupying a named position); and
- 3. The written authorization is submitted to DEQ.

In the future, if the authorization made in this NOI is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new written delegation of authorization, including a written letter satisfying the requirements above, must be submitted to DEQ prior to or together with any reports, information, or applications to be signed by an authorized representative.

Any authorized representative shall make the following 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 gather and evaluate 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.

The Responsible Official can duly authorize the person identified as a contact in Section C or another individual or position name. All reports and DMRs may be submitted under the signature of the 'duly authorized' representative. If the Responsible Official does not duly authorize anyone, all correspondence must come from him/her until a written designation is submitted to DEQ.

Section E – Outfalls and Receiving Waters

Outfalls are defined as "a disposal system through which effluent or waste leaves the facility or site." An outfall location is considered to be a discrete channel, conveyance, structure, or flow path from which discharge leaves the facility after all treatment, prior to discharge into state surface waters.

Water bodies used solely for treating, transporting, or impounding pollutants shall not be considered surface water.

As allowed under ARM 17.30.201(6), multiple outfalls from the same source that have similar effluent characteristics may not be required to pay individual application fees, unless the discharges are to different receiving waters or stream segments, or result in multiple effluent limits or monitoring requirements. For the Construction Dewatering General Permit (CDGP), multiple discharge locations to the same stream segment, or the same receiving waters, can be considered one outfall. Provide the following information in the table on the NOI Form Section E for each outfall that you propose:

- 1. Assign a number to each outfall starting with 001. For existing permittees, ensure outfall numbers used are consistent with those identified in the past for the same outfall.
- 2. Provide the latitude/longitude of each outfall. Locations can be derived from a USGS topographic map, "CWAIC" at <u>http://deq.mt.gov/wqinfo/CWAIC/default.mcpx</u>, GIS, a "GPS" handheld navigation device, or other locational sources. Latitude and longitude must be accurate to the nearest second. However, if the dewatering effluent may be discharged at various points along a given stream segment, provide the mid-point for the receiving water segment on this table and indicate the maximum extent of the discharge as a range in Section J Supplemental Information.
- 3. Give the name of the initial receiving surface waters that receive the discharge. If the receiving water is unnamed, please also indicate the closest named drainage the receiving water flows into (i.e. unnamed tributary to Clear Creek).
- 4. Please attach a USGS topographic quadrangle map or USGS-based topographic map or an aerial photo extending one mile beyond the property boundaries of the site or facility/activity identified in Section B depicting the facility or activity boundaries, any dewatering effluent treatment areas, the outfall location(s) and the receiving surface waters stated above.

If additional space is necessary for more outfall locations, attach additional sheets with the requested information. An application fee needs to be included for each identified outfall. If questions develop on identifying these outfalls, call DEQ prior to completing this NOI.

Section F – Proximity to Contaminated Sites

As described in the CDGP, discharge of dewatering effluent that contains contamination from a previous release is <u>not</u> allowed under the CDGP. For due diligence, the applicant must review readily available information to identify known or suspected release sites, including groundwater plumes, that may be in the vicinity of the dewatering. Information sources may include:

- Leaking Underground Storage Tank (LUST) list: <u>http://deq.mt.gov/LUST/LUSTSites.mcpx</u>
- Abandoned Mine Lands list: <u>http://deq.mt.gov/AbandonedMines/default.mcpx</u>
- Federal Superfund: <u>http://deq.mt.gov/FedSuperfund/default.mcpx</u>
- State Superfund: <u>http://deq.mt.gov/StateSuperfund/findasite.mcpx</u>

If applicant has information that an area of known or suspected contamination is near the dewatering activity, the applicant must take a pre-discharge ground water sample and supply DEQ with a copy of lab results for the pollutants in question. The analyses must be capable of detecting the suspected pollutants down to the Required Reporting Value (RRV) listed in Circular DEQ-7. *If pollutants are found to be in concentrations over their RRV, then dewatering discharge cannot be authorized under the CDGP*.

If all parameters are "nondetect" at levels below the RRV, DEQ will continue to process the request, but may require periodic testing for suspected contaminants for the life of the dewatering project. If contaminants are found in any discharge samples at concentrations above the RRV, the permittee must immediately cease construction dewatering and request to terminate coverage under the CDGP. If the

owner/operator plans to have future dewatering from this location, they need to either apply for coverage under the Petroleum Clean-up General Permit or an individual MPDES permit (unless the discharge is eligible for a short-term exemption from water quality standards as provided for by 75-5-308, MCA).

Section G – Description of Expected Discharge Duration and Mitigation Measures

Please provide the following to the extent known:

- Provide the projected beginning and end dates for the construction dewatering activities at your site. *Please be reminded to submit a written request for termination of this authorization after all dewatering is completed, signed by the Responsible Official.* Authorizations that are not terminated are subject to annual fees accrued for every calendar year.
- Provide an estimate of the expected flow rate of the treated dewatering discharge into state surface waters, after initial purge has been completed, in gallons per minute (gpm). Use engineering assumptions to the extent available. For instance, Caltrans provides a rough estimate of pumping flow rates in their "Field Guide to Construction Site Dewatering," CTSW-RT-010:

Typical Pump Flow Rates Pump Size (submersible)	Typical Flow Rates*
1.5-inch	90 to 120 gpm
2-inch	90 to 300 gpm
3-inch	300 to 800 gpm
4-inch	400 to 1300 gpm
6-inch	400 to 1800 gpm

• The 2015 CDGP requires each applicant to certify that they will complete and implement a dewatering plan prior to initiating construction dewatering. Select all of the Best Management Practices (BMPs) that you will or might employ to reduce the turbidity/suspended sediment load. The CDGP also requires the applicant to take corrective action for failure of any BMPs.

Section H –Selection of Dewatering Category & Mixing Zones (for each outfall):

Dewatering Category: for each outfall, the applicant needs to review the receiving water – discharge scenario in order to select the representative dewatering category as described in the CDGP and outlined below. *By selecting a category, the applicant acknowledges that they will comply with the applicable effluent limits and monitoring requirements for that category as described in the CDGP.*

A. "Minimal Impact" category – capped at 100 NTU. If Category A is selected, the applicant also needs to indicate which subcategory applies.

A.1. Discharge to an ephemeral waterbody. Ephemeral is defined as 'a stream or part of a stream which flows only in direct response to precipitation in the immediate watershed or in response to the melting of a cover of snow and ice and whose channel bottom is always above the local water table.' Ephemeral waterbodies are not considered high quality water; therefore, the applicant is allowed to discharge to them regardless whether they are wet or dry.

A.2 Discharge to a dry intermittent segment. This subcategory includes dry intermittent streams or lakes. Intermittent stream is defined as 'a stream or reach of a stream that is below the local water table for at least some part of the year, and obtains its flow from both surface run-off and ground water discharge.' An applicant is allowed to discharge under this subcategory <u>only if the upstream segment is dry</u>. Dewatering discharge must cease if circumstances change and there is ambient water upstream. If the applicant wants to continue to discharge, they need to select a different category and submit a modified NOI.

A.3 Discharge to large rivers. This subcategory includes the eight rivers listed in Department Circular DEQ-12A, Table E-1. The 100 NTU effluent turbidity limit will be protective

because of the good dilution, and typically high background turbidity, associated with these rivers. A mixing zone is applicable for this category.

B. "Discharge Turbidity Limited to Prevent Impact" category – the turbidity in the discharge for authorizations under this category is limited to prevent impact on any high quality water. This category has the most conservative turbidity effluent limits and therefore could apply to any state surface water, other than A-1 and A-closed, regardless of the variability in flow regimes, background turbidity, or applicable turbidity standards. Wetlands are also covered under this category due to the great variability in their sensitivity. Applicants may decide to choose this category to be conservative even if the receiving water segment might be dry in order to ensure uninterrupted operations even if conditions change during their operations.

C. "Real-time Turbidity Demonstration" category – the turbidity in the discharge is limited to below the upstream (ambient) turbidity in order to ensure 'no increase above background.'

Note: Discharges to the most protected waterbodies, A-Closed and A-1 Classifications, include the following water quality standards under ARM 17.30.621(3)(d) and ARM 17.30.622(3)(d), respectively: "No increase above naturally occurring turbidity is allowed except as permitted in 75-5-318, MCA" and "No increase above naturally occurring turbidity or suspended sediment is allowed except as permitted in 75-5-318, MCA." Therefore, unless permitted otherwise under the 318 Authorization, authorization requests for these waterbodies are limited to either Category A.1 or A.2 (dry waterbodies) or Category C (no greater than background). If the discharge may be to a more protected waterbody and the classification is unknown, applicants can check the regulations under ARM 17.30 Subchapter 6 or the Clean Water Act Information Center (CWAIC) at http://deq.mt.gov/wqinfo/CWAIC/default.mcpx.

Mixing Zone: For any discharge under subcategory A.3 (discharge to large rivers) or category B (discharge turbidity limited to prevent impact for variable receiving waters), the applicant needs to provide information to calculate the approved mixing zone at the driest time that will be encountered for the proposed project.

- For flowing water, a mixing zone length based on 10 times the receiving water width will be automatically applied for these dischargers.
- For standing water such as lakes or wetlands, the mixing zone area will be the smaller of 200 feet radius or 5% of the wetted area.
- Other discharges do not need and will not be authorized for mixing zones, and "NA" should be indicated.

Section I– Additional Information

Use this space to provide additional information explaining the basis for a proposed permit modification being submitted, further description of linear projects, etc.

Section J – Certification

The NOI Form certification must be completed by the applicant (owner/operator) responsible for the authorization as identified in Section C, and as described in ARM 17.30.1323. Certification of this NOI is certification that the applicant will comply with the applicable terms of the CDGP.

The NOI-07 Form and other forms for water discharge permitting or authorization are available at DEQ's website: <u>http://deq.mt.gov/wqinfo/MPDES/ConstructionDewatering.mcpx</u>. If you have any questions concerning how to fill out this form, or other forms related to the Montana Pollutant Discharge Elimination System (MPDES) discharge permitting program, please contact DEQ at (406) 444-3080. Mail the package to the address provided in Section J.

		AGENO	CY USE ONLY				
PERMIT NO.:	Date Rec'd	.: Amo	ount Rec'd.:	Check No.:	Rec'd By:		
DECWATERMontana DepartmentPROTECTIONof Environmental QualityBUREAU							
FORM		Not	tice of Ter	mination			
NOT	Non-	Storm Wate	r General	Permit Authoriz	zations		
This form is to be submitted when a discharge permit is no longer required or necessary. The Montana Department of Environmental Quality (DEQ) will notify the permittee in writing of the date termination is effective. This form may not be used to request termination of coverage under any storm water general permit. You must type or print legibly; forms that are not legible or are unsigned will be returned. Do not leave blank spaces. It is recommended that you maintain a copy of the completed form for your records.							
Section A - Sit	te Information						
Permit/Authoriz	ation Number: MTC	G					
Facility or Site M	Name:						
Facility or Site I	Location (physical ad	ldress or Townsh	ip/Range/Secti	on):			
Facility or Site M	Mailing Address (if a	vailable)					
Nearest City or	Town	State	Zip C	ode Cour	nty		
Latitude:		Longitude:					
Section B - Ov	vner/Operator (Reg	gulated Entity) I	nformation				
Owner/Operator	Name:						
Signatory Name and Position Title:							
Mailing Address:							
City:	State	Zip Coo	de:				
Phone:		Email:					
Section C - Annual Fees							
There are no fees associated with terminating permit coverage. However, the permittee is responsible for payment of							

There are no fees associated with terminating permit coverage. However, the permittee is responsible for payment of annual fees for each calendar year in which the discharge is authorized, and annual fees are billed in arrears. You may contact DEQ at (406) 444-3080 to receive an invoice for the outstanding annual fees associated with your effective permit coverage, or one will be mailed to you.

Section D – Required Reports

You are required to comply with all conditions and reporting requirements until notified by DEQ that your general permit authorization is terminated, including submission of Discharge Monitoring Reports.

Section E - Explanation

Indicate the reason for the termination of above referenced permit by checking the most detailed description in the space provided below:	st appropriate box, and provide a				
Discharge terminated or will be terminated by DATE;					
 Discharge permanently terminated by connection to a wastewater treatment plant (WWTP); Date discharge connected or will connect to WWTP:					
Provide name and MPDES permit number of WWTP:					
Other					
Please provide a detailed explanation in the space below (attach additional pages if nee permit/authorization is no longer needed. Please refer to the Standard Conditions section information specified in your permit required for permit termination.	eded) of why the on of your permit and include any				
Section F - CERTIFICATION					
 Permittee Information: This form must be completed, signed, and certified as follow For a corporation, by a principal officer of at least the level of vice president; For a partnership or sole proprietorship, by a general partner or the proprietor, For a municipality, state, federal, or other public facility, by either a principal official. 	respectively; or executive officer or ranking elected				
All Applicants Must Complete the Following Certification					
I certify under penalty of law that this document and all attachments were prepared una accordance with a system designed to assure that qualified personnel properly gather a submitted. Based on my inquiry of the persons who manage the system, or those person gathering the information, the information submitted is, to the best of my knowledge a complete. I am aware that there are significant penalties for submitting false information and imprisonment for knowing violations. [75-5-633, MCA]	der my direction or supervision in nd evaluate the information ons directly responsible for nd belief, true, accurate, and on; including the possibility of fine				
A. Name (Type or Print)					
B. Little (Type or Print)	C. Phone No.				
D. Signature	E. Date Signed				
Return this form (NOT) to:					
Department of Environmental Quality Water Protection Bureau P.O. Box 200901 Helena, MT 59620-0901 (406) 444-3080					

AGENCY USE ONLY						
PERMIT NO.:	Date Rec'd.:	Amount Rec'd.:	Check No.:	Rec'd By:		
	Montana Envir WATER PRO	Department of ONMENTAL	of Quality			
FORM		Notice of Inten	t (NOI)			
NOI	Storm Water Di	ischarge Associ	ated With Cons	struction		
2012	m no	Activity MTR	100000	2		
The NOI form is to be compl Department's <i>General Permi</i> legibly; forms that are not leg completed NOI form for your	eted by the owner or operato t for Storm Water Discharge tible or are not complete or a records.	r of construction activit s Associated with Cons are unsigned will be ret	ty eligible for coverage truction Activities. You urned. You must mainta	under the must print or type ain a copy of the		
Section A - NOI Status ((Check one):					
New	No prior NOI submitted	for this site.				
Resubmitted	Permit Number: MTR10					
Renewal	Permit Number: MTR10)				
Modification	Permit Number: MTR10)	(Discuss Modification	1 in Section I)		
Section B – Facility or Sit	e Information (See instru	ction sheet):				
Site physical address, mail	ing address at location, or	directions to the site				
Township/Range/Section (optional):					
Nearest City or Town	Zip Coc	le	_ County			
Latitude		Longitude	а 1971 г. – 1971 г. – 1 1971 г. – 1971 г. – 1			
Is this facility or site located on Indian Lands? Yes No						
Section C – Applicant (O Owner or Operator Name (wner/Operator) Informa Organization Formal Nam	tion: e)	en de la de			
Mailing Address						
City, State, and Zip Code:_		- <u> </u>	-			
Phone Number	Email					
Is the entity listed above the	e construction project own	er? Yes	No			
Status of Applicant (Check	one) Federal State	e Private Pu	ıblic Other (speci	fy)		

Section D	– Existing or Pe S	nding Permits, (Certification	ns, or Approvals: None RCRA				
PSD (Air Emissions) Other								
🗌 404 Per] 404 Permit (dredge & fill) Other							
Section E	- Standard Ind	lustrial Classific	cation (SIC)) Codes:				
Select at le	ast one SIC code	which best reflect	cts the type o	of construction work.				
	A. Pr	·imary		B. Second				
	С. 1	Third		D. Fourth				
Section F	– SWPPP Admi	inistrator						
Primary:		term and ² a						
Name and	Title or Position	Title						
Mailing Ac	ldress	1						
City, State,	and Zip Code		-					
Phone			Alternate P	Phone				
Email		en en ser a ser a se	$z \rightarrow -\chi^2 - \delta^2$					
Secondary	1	* _ ¹¹	30 A A A					
Name and	Title or Position	Title	an e					
Mailing Ac	ldress							
City, State,	and Zip Code							
Phone			Alternate Pl	Phone				
Email								
Section G – Receiving Surface Water(s): Storm Water Outfall/Discharge Locations: For each outfall, list latitude and longitude in the decimal degrees format (00.0000; -000.0000) and the name of the receiving waters. This section must not be left blank and N/A is not acceptable.								
Outfall	Latitude	Longitude	Receiving	g Surface Waters				
Number			· · · · · · · · · · · · · · · · · · ·	and a standard the transformation				
001				-				
002								
003		3						
004								
005								
		· · · · · · · · · · · · · · · · · · ·	1					

Map: Attach a USGS topographic quadrangle map extending one mile beyond the property boundaries of the site or activity identified in Section B depicting the facility or activity boundaries, major drainage patterns, and the receiving surface waters stated above.

Section H – Describe the Construction Activity or Project *Please describe the Construction Activity or Project*

Please provide a summary of Best Management Practices (BMPs) in the SWPPP

Total site area (acres)
Area of Construction Related Disturbance (acres)
Estimated Project Start Date Estimated Project Completion Date
Estimated Project Final Stabilization Date
Does the project discharge to listed impaired waterbody? Yes No
Does the project discharge to a regulated Small Municipal Separate Storm Sewer System (MS4)? Yes No
If yes, please select the receiving regulated Small MS4
If yes, will the SWPPP be submitted to the regulated Small MS4? Yes No
Section I - Supplemental Information (For Parmit Modification Only Jagua blank around for

Section I – Supplemental Information (For Permit Modification Only – leave blank except for modification)

Section J - Fee:

NEW PROJECTS:

Indicate the acreage of construction related disturbance indicated in Section H of this NOI form. The fee for new projects includes the application and the annual fee for the calendar year in which the permit authorization is effective.

	1-5 acres	\$ 900.00
	>5-10 acres	\$1,000.00
	>10-25 acres	\$1,200.00
	>25-100 acres	\$2,000.00
	>100 acres	\$3,500.00
RESU	BMITTAL	\$ 500.00
RENEWAL		\$ Amount specified in Rule (only required if > four years since date the permit authorization is effective)
	IFICATION	\$ 500.00 (minor modification, only if < six months from date the permit authorization is effective)

Section K - CERTIFICATION

Authorized Signatories: This form must be completed, signed, and certified as follows:

- For a corporation, by a principal officer of at least the level of vice president;
- For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
- For a municipality, state, federal, or other public facility, by either a principal executive officer or ranking elected official.

All Applicants Must Complete the Following 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 gather and evaluate the information submitted. Based on my inquiry of the 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. [75-5-633, MCA]

A. Name (Type of Frint)	
B. Title (Type or Print)	C. Phone No.
D. Signature	E. Date Signed

The Department will not process this form until all of the requested information is supplied, and the appropriate fees are paid. Return this form and the applicable fee to:

Department of Environmental Quality Water Protection Bureau PO Box 200901 Helena, MT 59620-0901 (406) 444-3080

ATTACHMENT A - Delegation of Authority Form (Parts 3.2. and 4.15.)

This form is for use by permittees under the MPDES "General Permit for Storm Water Discharges Associated with Construction Activity". The owner/operator information and "site name" provided below must be the same as the information provided on the NOI and SWPPP Form. This form can be used for an additional and/or new SWPPP Administrator person/position not identified on the NOI Form.

Delegation of Authority

I, ______ (name), hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the MPDES "General Permit for Storm Water Discharges Associated with Construction Activity" (General Permit), at the

_____ construction site. The designee is authorized to sign any reports, Storm Water Pollution Prevention Plan, and all other documents required by the General Permit.

Name of Person or Position: _____

Owner/Operator:____

Mailing Address: _____

City, State, Zip Code: _____

Phone Number:

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in Part 4.15. of the General Permit, and that the designee above meets the definition of a "duly authorized representative" as set forth in Part 4.15.

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 gather and evaluate 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:	 	
Title:	 	
Signature: _		
Date:		



Rainfall Erosivity Factor Calculator for Small Construction Sites

EPA's stormwater regulations allow NPDES permitting authorities to waive NPDES permitting requirements for stormwater discharges from small construction sites if:

- the construction site disturbs less than five acres, and
- the rainfall erosivity factor ("R" in the revised universal soil loss equation, or RUSLE) value is less than five during the period of construction activity.

If your small construction project is located in an area where EPA is the permitting authority and your R factor is less than five, you qualify for a low erosivity waiver (LEW) from NPDES stormwater permitting. LEW certifications are submitted through the electronic Notice of Intent (eNOI) system. Several states that are authorized to implement the NPDES permitting program also accept LEWs. Check with your state NPDES permitting authority for more information.

- <u>List of states, Indian country, and territories where EPA's 2012 Construction General Permit (CGP)</u> and Multi-Sector General Permit (MSGP) Apply
- EPA's CGP eNOI System

The period during which small construction sites qualify for the waiver generally occurs during a relatively short time in arid and semi-arid areas. If your small construction project does not qualify for a waiver, then NPDES stormwater permit coverage is required.

To use the Rainfall Erosivity Factor Calculator to determine your eligibility for the LEW, you will need your project's location (either latitude/longitude or address) and the estimated start and end dates of construction. The period of construction activity begins at initial earth disturbance and ends with final stabilization.

- Construction Rainfall Erosivity Waiver Fact Sheet
- <u>Appendix C of the 2017 CGP Small Construction Waivers and Instructions</u>

For questions or comments, email EPA's CGP staff at cgp@epa.gov.

Facility Information

- Start Date: 07/23/2018
- End Date: 08/27/2018
- Latitude: 48.458333333333
- Longitude: -114.3522222222

Erosivity Index Calculator Results

An erosivity index value Of 3.17 has been determined for the construction period of 07/23/2018 - 08/27/2018.

A rainfall erosivity factor of less than 5.0 has been calculated for your site and period of construction. Contact your permitting authority to determine if you are eligible for a waiver from NPDES permitting requirements. If you are covered under EPA's construction general permit then you can use eNOI to submit your low erosivity waiver certification.

If your construction activity extends past the project completion date you specified above, you must recalculate the R factor using the original start date and a new project completion date. If the recalculated R factor is still less than 5.0, a new waiver certification form must be submitted before the end of the original construction period. If the new R factor is 5.0 or greater, the operator must submit a Notice of Intent to be covered by the Construction General Permit before the original project completion date.

Start Over

AGENCY USE ONLY						
PERMIT NO.:		Date Rec'd.:	Rec'd By:			
Monta	na Department of	LITY				
WATER PRO	DTECTION BURE	U				
STORM WATER RAINFALL EROSIVITY WA for Exclusion from MPDES Permitting for Storr Discharges Associated with Construction Activit	AIVER FORM n Water y					
Important: The attached instructions must be reprint or type. This Form must be filled out comp This Form can only be used for construction pro no earlier than March 1st and completing construction than November 30th of the same calendar year.	ferenced in order to letely. This Form ca jects initiating const ruction work and acl	complete this form p nnot be submitted electron-related groun nieving "final stabiliz	properly. Please ectronically. nd disturbance ation" no later			
A. Name and Address of Applicant (Owner or Ope	erator):					
Applicant (Owner or Operator) Name:						
Mailing Address:						
City, State, and Zip Code:			<u>.</u>			
Email Address (optional):						
Phone Number:						
Who is applying (check): Construction Project Owner	Contractor					
Contact Person (familiar with facility):						
Name:						
Title:	Phone Number:					
B. Location of the Construction Activity Site: Street Address or Location Description:						
n na 1967 e de la companya de la com		anga Karata				
City, State, and Zip Code:						
County:						
Site Name of Construction Activity or Facility:						

Latitude of the Co	nstruction Activity	Site:
--------------------	---------------------	-------

Longitude of the Construction Activity Site:

C. Briefly Describe the Nature of the Construction Activity:

D. Area of Construction-Related Disturbance at the Construction Activity Site:

E. Indicate the name of the receiving surface water(s): Attach a USGS topographic map showing the construction activity location and receiving surface waters. If storm water from the construction activity site enters a storm sewer system, identify that system and indicate the ultimate named receiving surface water for the storm sewer system.

F. Rainfall Erosivity Factor:

Indicate the determined Rainfall Erosivity Factor, otherwise known as "R Factor", rounded to the nearest tenth of a decimal place (this value must be less than five in order to qualify for the use of this Form):

The Department reserves the right to revoke or refuse to grant the waiver based on the potential for contribution to a violation of a water quality standard or for significant contribution of pollutants to state waters.

The Department may not grant waivers for construction sites located in areas where snow cover can exist at the site for extended periods of time, particularly if the construction site will remain active and unstabilized during the snowmelt runoff periods. The Department will make the decision on whether or not a project qualifies for the waiver based on information provided by the permittee, and other sources, such as local government agencies.

Check which one of the following two methods was used to determine the Rainfall Erosivity Factor:

Method #1 - Environmental Protection Agency Website Online Calculator; or

Method #2 - Using Tables & Maps from EPA's Storm Water Phase II Final Rule Fact Sheet 3.1: Low Rainfall Erosivity Waiver (EPA 833-F-00-014, published 01/01/2001)

For all applicants (using either Method #1 or #2), referring to the instructions, please provide the following information which was used in the Rainfall Erosivity Factor determination:

1.	The start date of the construction project.	
		Start Month / Day / Year
2.	The end date of the construction project (after "final stabilization"	
	is achieved).	
		End Month / Day / Year
3.	The county the project is located in. If the project is in two or more	
	counties, the county that the	
	majority of the project lies within must be used.	County

For those applicants which used Method #1, please submit an original print-out of the result page (from the website's online R Factor calculator) demonstrating the above provided information, and which indicates the R Factor is below five. If Method #1 was used, Items #4 through #11 below do not need to be completed. For those applicants using Method #2, then items #4 through #11 do need to be completed, and the result indicated in Item #11 is the determining R Factor.

APPENDIX C

Geotechnical Reports



RESTORING OUR ENVIRONMENT DESIGNING OUR FUTURE

Montana State Hospital WATCH Building Geotechnical Report

Warm Springs, Montana

Prepared for: Anderson-Montgomery Consulting Engineers 1064 N. Warren Street Helena, Montana 59601

> Prepared by: **Pioneer Technical Services, Inc.** 1309 Cole Avenue, Helena, Montana 59601

> > April 2021

Montana State Hospital WATCH Building Geotechnical Report

Warm Springs, Montana

Prepared for: Anderson-Montgomery Consulting Engineers 1064 N. Warren Street Helena, Montana 59601

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> > April 2021



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Revision No.	vision No. Author		Description	Date	
Rev 0	Adam Klein	Draft	Internal Review	March 2021	
Rev 1	Mike Browne	Final	Client Submittal	April 6, 2021	



1 INTRODUCTION

Anderson-Montgomery Consulting Engineers (AMCE) contracted Pioneer Technical Services, Inc. (Pioneer) to complete a geotechnical investigation for the proposed sidewalk replacement for the Montana State Hospital WATCH Building located at Warm Springs, Montana. The purpose of the geotechnical investigation was to explore subsurface conditions at the proposed site and provide information on soil characteristics, groundwater conditions, earthwork/ stabilization measures, concrete flatwork recommendations, and discussion of any unusual conditions. This report provides conclusions of the investigation, results of laboratory testing and analyses, and design recommendations.

2 INVESTIGATION

2.1 Site Description

The Montana State Hospital WATCH building is located at 201 Orofino Way within the Montana State Hospital campus. The concrete sidewalks and driveway in front of the building (between the building and Orofino Way) are generally in poor condition with considerable vertical offsets (settlement and/or heave) present at many of the joints.

An underground utility tunnel is also positioned directly under a portion of the sidewalks. Review of as-built drawings indicate some of the sidewalks are cast directly on top of this tunnel. During the investigation it was noted that sidewalks positioned on top of the tunnel are in better condition than those located outside the tunnel footprint. A site map displaying the project area and underlying tunnel is included as Figure 1.

2.2 Geotechnical Investigation

Pioneer drilled two boreholes (BH-01 and BH-02) to a depth of approximately 20 feet below the ground surface. Figure 1 shows a site map with the borehole locations. The drilling work was performed March 3, 2021 and the boreholes were advanced using Pioneer's Geoprobe 7822DT drill rig. A piezometer was installed in BH-01 to monitor groundwater conditions at the site. A geotechnical engineer for Pioneer logged the borehole lithology and collected samples for laboratory testing.

In each borehole, *in-situ* strengths were collected via Standard Penetration Tests (SPTs) using a 2-inch outside diameter split-spoon sampler which was driven into the soil using a standard 140-pound safety hammer falling from a height of 30 inches. Geotechnical samples were collected from each SPT interval and field classified in general accordance with ASTM International (ASTM) D2488 (Standard Practice for Description and Identification of Soils [Visual – Manual Procedure]).

Appendix A contains the detailed borehole logs while Appendix B presents photographs of the investigation and soil samples. The stratification lines shown on the borehole logs represent the





approximate boundary between soil types as observed within the boreholes. The actual *in-situ* transition is variable because of the nature and depositional characteristics of natural soils. Interpolation of subsurface conditions beyond the location of the boreholes may be unreliable as soil conditions can change rapidly in both lateral and vertical directions.

2.2.1 Soil Lithology

Soil profile at the site consists of uncontrolled fill underlain by alluvial silts, sands, and gravel. A summary of each borehole is listed below while detailed description is presented in borehole logs included in Appendix A.

- BH-01: Uncontrolled fill visually classified as silty sand with debris was logged from the ground surface to the 2-foot depth. Debris consisted of nails, plastic, brick, and concrete rubble. Underlaying the fill was native silt (2 to 4-foot depth), silty gravel with sand (4 to 8-foot depth), poorly graded gravel with sand (8 to 15 feet), and fine-grained clay and silt (15 to 21.5 feet).
 BH-02: Uncontrolled fill classified as silty sand with gravel and debris was logged
- **BH-02:** Uncontrolled fill classified as silty sand with gravel and debris was logged from the ground surface to the 2-foot depth. Debris consisted of nails, plastic, brick, and concrete rubble. Underlaying the fill was native silt (2 to 5-foot depth), lean clay with gravel (5 to 7-foot depth), and poorly graded gravel (7 to 21.5 feet).

2.3 Groundwater Conditions

Groundwater was encountered at 10.2 feet in BH-01 and at 8.8 feet in BH-02 during the investigation. Review of local well logs on the Montana Bureau of Mines and Geology (MBMG) Ground-Water Information Center (GWIC) website indicate the static groundwater levels for nearby wells were 8 to 12 feet below ground surface at the time the wells were installed. The groundwater level likely fluctuates seasonally but can be expected to be shallow during construction. Please note groundwater conditions shown on the borehole logs are only applicable for the dates of the drilling and may vary for different times of the year.

A temporary piezometer was installed in BH-01 to further monitor groundwater conditions at the site. The temporary piezometer allows for future measurements to be taken leading up to construction to better understand groundwater conditions and potential need for dewatering efforts.

2.4 Laboratory Testing

Samples were transported and analyzed at Pioneer's American Association of State Highways and Transportation Officials (AASHTO)/ASTM accredited materials testing laboratory located in Helena, Montana. A summary of the laboratory testing results is presented in Table 1. Appendix C provides the complete laboratory testing results.





BOREHOLE	DEPTH	DEPTH USCS	LIQUID PLASTIC	PLASTIC	PLASTICITY	GRADATION ANALYSIS		
NO.	(ft)	SYMBOL	(%)	(%)	INDEX (%)	GRAVEL (%)	SAND (%)	FINES (%)
BH-01	4.0-5.5	GM	39	27	12	37	36	27
BH-02	0.9-2.4	SM	47	36	11	21	46	33
BH-02	2.5-4.0	MH	51	38	13	8	22	70

Moisture contents ranged from 4 to 29 percent. More specifically, the elastic silts had a moisture content of 29 in the sample tested. These elastic silts have been problematic to properly moisture condition and compact in past projects in the area and are very prone to frost heave. The underlying granular soils typically had moisture contents between 8 and 16 percent.

3 ANALYSIS AND RECOMMENDATIONS

3.1 Proposed Construction

Construction will consist of replacing the concrete sidewalks and driveways in front of the WATCH building. A portion of the sidewalk will be positioned directly on the existing utility tunnel. The existing tunnel and WATCH Building finish floor elevations will control finish grades of the proposed sidewalk replacement. The following subsections present recommendations to provide firm subgrade support.

3.1 Subsurface Materials

The uncontrolled fill was logged in both boreholes from the surface to approximately 2 feet deep. The uncontrolled fill consists of silty sand with gravel and debris (brick, plastic, concrete rubble, and nails). Pioneer is unaware of how the uncontrolled fill was historically placed. Based on past sidewalk performance/settlement, the fill is prone to differential settlement suggesting it was placed with poor compaction and likely has a variable relative density across the site. The uncontrolled fill is problematic and should be removed and replaced prior to constructing the new concrete sidewalks and driveways.

Native silts were logged underlaying the fill. These silts typically have very high moisture contents, are very prone to frost heave, and have been problematic on other construction projects in the near vicinity. For these reasons, Pioneer also recommends removing and replacing the silt under the sidewalk and driveway footprints. Silt was logged from the 2- to 4-foot depth in BH-01 and from the 2- to 5-foot depth in BH-02.

3.2 Earthwork

Pioneer recommends excavating and removing the problematic uncontrolled fill and underlying silt. The excavation should be backfilled in compacted lifts. Specific recommendations are detailed in the alternatives listed below.



1. **Dewater**: Dewater the site, if required, for construction. The temporary piezometer installed in BH-01 can be used to gauge dewatering effort required.

2. Excavation:

- a. Excavate and remove uncontrolled fill and silt under the sidewalk footprint. Granular, uncontrolled fill that is largely free from debris can be stockpiled for reuse as 'general fill'.
 - i. Uncontrolled fill was logged from 0 to 2 feet in each of the boreholes.
 - ii. Silt was logged from 2 to 4 feet and 2 to 5 feet in BH-01 and BH-02, respectively.
- b. For this project, general fill is defined as granular soils with less than 40 percent passing the #200 sieve that is free of organics, fine-grained soil clumps, and deleterious materials. Selective sorting will likely be required to remove debris. General fill must be approved by the engineer via submittal process for reuse. Submittal must include Unified Soil Classification (laboratory gradation and Atterberg limits).
- c. Fine-grained silt soils and uncontrolled fill not meeting general fill requirements should be disposed of offsite.
- d. Ensure there is positive drainage away from the open excavations to keep all surface water from draining into the excavations.
- 3. **Inspect**: Provide the engineer an opportunity to inspect and approve subgrade soils prior to backfilling operations. If warranted, localized dig outs may be identified to remove soft spots or unsatisfactory materials that are observed.
- 4. Subgrade: Compact subgrade by one of the following methods:
 - a. If soil and moisture conditions allow compact native soils at bottom of excavation surface to standard relative compaction of at least 95 percent (ASTM D698). Density testing is required.
 - b. If subgrade soil is saturated and prone to pumping, compact subgrade with a minimum of 4 passes of a sheep's foot roller. Do not use vibratory compaction. Discontinue compaction if the process is drawing water upward or causing pumping. Density testing is not required.
 - c. Note: past work in the near vicinity has been challenging to laboratory test (Proctor), moisture condition, and compact native soils. Proactive communication with materials testing laboratory and extra time added in the project schedule is suggested for subgrade compaction task.
- 5. **Geosynthetic**: Provide and place Gridpro BXP11 Type 1 geogrid or approved equivalent across prepared subgrade. Place geotextile in accordance with manufacturer's recommendations. Overlap joints a minimum of 2 feet. No construction or wheeled traffic is permitted directly on geosynthetics.
- 6. **Sub-base Course**: Backfill from the bottom of the excavation to 2 feet below finish grade using approved General Fill or imported sub-base course.
 - a. Imported subbase course should meet the gradation requirements listed in Table 2.
 - b. Place sub-base course in 12-inch (maximum) loose lifts, moisture condition to plus or minus 2 percent of optimum moisture content and compact each lift to a standard relative compaction (ASTM D698) of at least 95 percent.
 - c. No equipment may be used which by its weight or movement will damage, move, or tilt out of alignment any part of adjoining structure(s) above or below the ground



surface. Special compaction is required within 4 feet lateral of all structures, and in tight, restricted, or steep areas not accessible by large rollers. Use of hand operated vibrating plate compactors having a minimum static weight of 300 pounds and minimum dynamic force of 1,000 pounds, or other special compaction equipment acceptable to the engineer to obtain the compaction adjacent to structures. Loose lift thicknesses shall not exceed 6 inches at special compaction locations.

- 7. **Base Course**: Backfill from top of sub-base course to bottom of slab elevation with imported base course.
 - a. Base course material should meet the gradation requirements listed in Table 3.
 - b. Moisture condition (plus or minus 2 percent of optimum moisture content), place in 8-inch (maximum) loose lift thickness and compact each lift to a standard relative compaction of at least 95 percent (ASTM D698).
- 8. **Concrete**: Form and construct concrete sidewalks and driveways according to the Civil Drawings.

SIEVE SIZE	PERCENT PASSING
4 - inch	100
No. 4	25 - 60
No. 40	10 - 30
No. 200	2 - 10

Table 2: Sub-base Course (MPWSS 4-inch Minus Base Course)

Table 3: Base Course(MPWSS 1 ½-inch Minus Base Course)

SIEVE SIZE	PERCENT PASSING
1.5 - inch	100
No. 4	25 - 60
No. 200	2 - 10

3.3 Concrete Flatwork

For exterior concrete flatwork, Pioneer recommends the following:

- 1. Exterior slabs for pedestrian use should be at least 4 inches thick. Exterior slabs for vehicle use should be at least 6 inches thick. The top of the tunnel elevation will limit concrete thickness to 4 inches at locations directly above tunnel.
- 2. Concrete slabs should be reinforced to help control shrinkage cracking and minimize vertical joint offsets. AMCE will provide specific reinforcement details and concrete specifications.
- 3. Use of a bond breaker (such as Visqeen) between the new concrete and top of the existing concrete tunnel is recommended. The intent of using the bond breaker is to allow minor movement, such as shrinkage of fresh concrete or seasonal freeze-thaw expansion.







- 4. Place construction or control joints at edge of the tunnel. The intent joints is to allow minor movement (minimizes slab cracking) that may occur due to differing subgrades and thicknesses in concrete.
- 5. The WATCH Building concrete driveway will be approximately 90 feet in length. To allow lateral movement (hardened concrete will shrink about 1/16-inch per 10 feet [ACI 330R]) while maintaining vertical support, placement of construction joints reinforced with diamond plate dowels is recommended. These construction joints should be placed such that the slab is divided into thirds. PNA Construction Technologies Diamond Dowel system, or approved equal, is recommended. The dowel plates should be 1/4-inch thick, spaced 18 inches on center, and constructed/cast per manufacturer's recommendations.
- 6. Rebar and/or diamond plate dowels should extend between all construction and control joints.
- 7. Per ACI 330R, construction and/or control joints should be spaced at 10 or 15 feet oncenter for 4-inch and 6-inch slabs, respectively. After the slab finishing has been completed, construct joints within 4 hours in hot weather and within 12 hours in cold weather after slab finish is completed.
- 8. Install isolation (expansion) joints at the sidewalk/driveway and sidewalk/doorway entry interfaces. At each of these locations, provide expansion joints having a minimum ³/₄ inch width.
- 9. Fill all construction and isolation joints with a field-molded sealant.
- 10. Use of concrete lug anchors should be considered for concrete panel locations placed on slopes that are exposed to frequent vehicle turning and/or braking. The lug anchor provides a shear key beneath the concrete flatwork (penetrated into base course) which uses passive lateral force to anchor the slab in place (function similar to burying the toe of a retaining wall). ACI 330R should be referenced for specific lug anchor details.

3.4 Materials Testing

Pioneer recommends that a qualified inspector perform compaction testing for subgrade, subbase course, and base course. Subgrade, sub-base course, and base course should all be compacted to a standard relative compaction of at least 95 percent (ASTM D698). A field density testing frequency of one test per every 50 linear feet per lift is recommended.

Frozen soils, ice particles, and soils with organics, debris, or deleterious materials are not suitable for use as fill. Appropriate winter construction techniques will be used, as warranted, to protect subgrade, fill, and cast concrete from frost. Fill cannot be placed on top of frozen soils.

4 BASIS OF RECOMMENDATIONS

The analyses and recommendations submitted in this report are based on the boreholes drilled during the subsurface investigation and with general site familiarity. Often, variations occur within the subgrade, the nature and extent of which do not become evident until additional exploration or construction is conducted. Pioneer recommends geotechnical involvement be continued throughout the project to ascertain the recommendations presented herein (Geotechnical Report) have been properly interpreted both during design and construction.





These services will reduce potential for misinterpretation of geotechnical design recommendations. Pioneer also recommends a geotechnical engineer be notified during the excavation construction phase to evaluate the site soils and verify their resemblance to those encountered during the site investigation.

This report is based on Pioneer's understanding of the proposed sidewalk replacement for the Montana State Hospital WATCH Building. If the project location changes, please consult Pioneer to verify that these recommendations are still applicable.

This report is for the exclusive use of AMCE and their design team. In the absence of Pioneer's written approval, Pioneer makes no representation and assumes no responsibility to other parties regarding this report. The data, analyses, and recommendations may not be appropriate for other structures or purposes. Other parties contemplating other structures or purposes should contact Pioneer.

Services performed by Pioneer's personnel for this project have been conducted with the level of care and skill ordinarily exercised by members of the profession currently practicing in this area under similar budget and time restraints. No warranty, expressed or implied, is made.

Professional Certification

I hereby certify that this report was prepared by me and that I am a duly Licensed Professional Engineer under the laws of the State of Montana.



Mike Browne, P.E. Geotechnical Engineer

No Che

Adam Klein, E.I. Staff Geotechnical Engineer


5 REFERENCES

ACI 330R, 2008. Guide for the Design and Construction of Concrete Parking Lots, ACI 330R-08, American Concrete Institute, June 2008.

NOTES:

- CONCRETE SIDEWALK SHALL SLOPE AWAY FROM BUILDING ENTRANCE.
- THE TOP OF THE CONCRETE SIDEWALK SHALL BE 1/4" BELOW THE BUILDING ENTRANCE THRESHOLD.
- THE END OF THE CONCRETE SIDEWALKS AND CONCRETE DRIVEWAYS SHALL MATCH EXISTING GRADE.
- DRIVEWAYS SHALL MATCH EXISTING GRADE. • FOR CONCRETE DIRECTLY ABOVE THE TUNNEL SEE

Note:

Borehole Location is Approximate





Geotechnical Report

APPENDIX A. BOREHOLE LOGS

GENERAL NOTES

CA:

DA:

HА·

RB:

GS:

m

DRILLING & SAMPLING SYMBOLS:



The number of blows required to advance a standard 2-inch O.D. split-spoon sampler (SS) the last 12 inches of the total 18-inch penetration with a 140-pound hammer falling 30 inches is considered the "Standard Penetration" or "N-value". The field blow counts are reported for each 6-inch interval, or portion thereof if greater than 50 blows are required to advance the full 6-inch interval. For over-sized split spoon samplers, non-standard hammers, or non-standard drop heights, the field penetration values are reported on the bore log. The values must be corrected to obtain the N-value.

WL:	Water Level	WS:	While Sampling	NE:	Not Encountered
WC1:	Wet Cave in	WD: ∇	While Drilling		
DCI:	Dry Cave in	BCR:	Before Casing Removal		
AB:	After Boring	ACR: 💆	After Casing Removal		

Water levels indicated on the boring logs are the levels measured in the borings at the times indicated. Groundwater levels at other times and other locations across the site could vary. In pervious soils, the indicated levels may reflect the location of groundwater. In low permeability soils, the accurate determination of groundwater levels may not be possible with only short-term observations.

DESCRIPTIVE SOIL CLASSIFICATION: Soil classification is based on the Unified Soil Classification System, Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: gravel or sand. Cobbles and boulders are not part of the USCS system but are included, when present, as percentages. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; depending on their plasticity, they are described as clays or silts. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

Standard

CONSISTENCY OF FINE-GRAINED SOILS

	<u>Standard</u>	
Unconfined	Penetration or	
Compressive	N-value (SS)	
Strength, Qu, psf	Blows/Ft.	Consistency
< 500	< 2	Very Soft
500 - 1,000	2 - 4	Soft
1,001 - 2,000	5 - 8	Medium Stiff
2,001 - 4,000	9 - 15	Stiff
4,001 - 8,000	16 - 30	Very Stiff
8 000 +	30 +	Hard

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other	Percent of
<u>constituents</u>	Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

RELATIVE DENSITY OF COARSE-GRAINED SOILS

Casing Advancer

Drill Auger

Hand Auger

Grab Sample

Rock Bit

Stanuaru		
<u>Penetration or</u>		
N-value (SS)	California Barrel	
Blows/Ft.	(CB) Blows/Ft.	Relative Density
0 - 4	0 - 6	Very Loose
5 - 10	7 - 18	Loose
11 - 30	19 - 58	Medium Dense
31 - 50	59 - 98	Dense
50 +	99 +	Very Dense

USCS* GRAIN SIZE TERMINOLOGY

PLASTICITY DESCRIPTION

<u>Major</u>	
Component	
of Sample	Particle Size
Boulders	Over 12 in. (300mm)
Cobbles	12 in. to 3 in. (300mm to 75 mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm)
Silt or Clay	Passing #200 Sieve (0.075mm)
*For AASHTO grain si	ize the #4 sieve is replaced with the #10 sieve

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other	Percent of
<u>constituents</u>	Dry Weight
Trace	< 5
With	5 - 12
Modifiers	> 12

Term	Plasticity_Index
Non-Plastic	0
Slightly	1 - 5
Low	6 - 10
Medium	11 - 20
High	21 - 40
Very Highly	> 40



Criteria for A	Soil Classification					
	Cravels Clean Gravels $Cu \ge 4$ and $1 \le Cc \le 3$		GW	Well-graded Gravel F		
	More than 50% of coarse	Less than 5% fines	Cu < and/or 1 > Cc > 3	GP	Poorly graded gravel F	
	fraction retained on	Gravels with Fines	Fines classify as ML or MH	GM	Silty Gravel F,G,H	
Coarse Grained Soils	No. 4 sieve	More than 12% fines	Fines classify as CL or CH	GC	Clayey Gravel F,G,H	
on No. 200 sieve	C	Clean Sands	$Cu \ge 6 \text{ and } 1 \le Cc \le 3$	SW	Well-graded Sand 1	
	50% or more of coarse	Less than 5% fines	Cu < 6 and/or 1 > Cc > 3	SP	Poorly graded Sand ¹	
	fraction passes	Sands with Fines	Fines classify as ML or MH	SM	Silty Sand G,H,I	
	No. 4 sieve	More than 12% fines	Fines classify as CL or CH	SC	Clayey Sand G,H,I	
		·	PI > 7 and plots on or above "A" line	CL	Lean Clay K,L,M	
	Silts and Clays	inorganic	PI < 4 or plots below "A" line	ML	Silt K,L,M	
	Liquid limit less than 50		Liquid limit - oven dried	OI	Organic Clay K,L,M,N	
Fine-Grained Soils		organic	Liquid limit - not dried	OL	Organic Silt K,L,M,Q	
No. 200 sieve		·	PI plots on or above "A" Line	СН	Fat Clay K,L,M	
	Silts and Clays	inorganic	PI plots below "A" line	MH	Elastic Silt K,L,M	
	Liquid Limit 50 or more	arcania	Liquid limit - oven dried	OU	Organic Clay K,L,M,P	
		organic	Liquid limit - not dried	ОП	Organic Silt K,L,M,Q	
Highly organic soils	Primarily organic matter, da	PT	Peat			

^ABased on the material passing the 3-in. (75-mm) sieve

- ^B If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
- ^C Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt. GP-GC poorly graded gravel with clay.
- ^D Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.

$$^{E}Cu = D_{60} / D_{10} \quad Cc = \frac{(D_{30})^{2}}{D_{10} \times D_{60}}$$

 $^{\rm F}$ If soil contains $\geq 15\%$ sand, add "with sand" to group name.

^G If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

- ^HIf fines are organic, add "with organic fines" to group name.
- $^{\rm I}$ If soil contains $\geq 15\%$ gravel, add "with gravel" to group name.
- ^J If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.
- ^K If soil contains 15 to 29% plus No. 200, add "with sand" or " with gravel," whichever is predominant.
- $^{\rm L}$ If soil contains \geq 30% plus No. 200, predominantly sand, add "sandy" to group name.
- ^MIf soil contains \geq 30% plus No. 200, predominantly gravel, add "gravelly" to group name.
- ^N PI \geq 4 and plots on or above "A" line.
- ^oPI < 4 or plots below "A" line.
- ^P PI plots on or above "A" line.
- QPI plots below "A" line.



Helena, MT 59601 Phone: 406-457-8252 Fax: 442-1158 Boring BH-01										P TEC	YC HINIC								
Project	N t: V	1ont VAT	ana S CH E	Sta Suil	te Hospital ding			Rig: Geoprobe 78	322	Boring Location	ו N E	721,44	9.9 599	ft .1 f	ť		Sta	tion: set:	
Project Numbe	t er:				UPN	:		Boring Diameter: 3 in		System: MT S.I Datum: NAD83	P. (E 3	Ξ)					Top of Flevati		
Date Startec	I : 3	8/2/2	21		Date Finished: 3/2	2/21		Drilling Fluid: None		Location Source: Hand	neld	GPS.	Und	cori	rect	ted	Elevatio		
Driller: Logge	Pi r: A	ione . Kle	er ein					Abandonment Method: Be	nto	onite		Town: and S	shij ecti	p R ion	ang :	ge 5	N 10	N 10W 1	
Depth (ft) <i>Elev.</i> (ft)	Operation	Sample Type	Recovery (%)	RQD (%)	Blow Count	Lithology		Material D	esc	cription		Depth (ft)	MC (%)	F	PL	-200 (%)	DD		
		X	67		3 - 5 - 11		FIL bro SIL	L, Silty SAND (SM), me wn. T (ML), moist, brown. L	diu ow	m dense, moist, dark plasticity.		2.0	20					Trac othe	
5_		X	83		4 - 2 - 2		Silt mo Fin	y, Clayey GRAVEL with ist, brown, fine to coars es have low plasticity.	sa e gi	nd (GM), very loose, rained, subangular.		4.0		39	27	27			
-		X	54 53		3 - 6 - 7		Poo	orly-Graded GRAVEL w ise, moist, brown to gra	ith y, fi	sand (GP), medium ine to coarse grained	,	8.0	17 4						
_ 10 		X	61		7 - 6 - 7						Ţ								
 _ 15 		X	100		1 - 2 - 2		Silt Me	y Lean CLAY (CL-ML), dium plastic.	sof	t, moist, brown.		15.0							

RING



Top of Boring

Elevation: ft Elevation

Remarks

and **Other Tests**

Trace brick, concrete and other debris observed.

5N 10W 13

SkPIONEER GEOTECH	83	4-2-2	Silty, Clayey GRAVEL with sand (GM), very loose, moist, brown, fine to coarse grained, subangular. Fines have low plasticity.	4.0		39	27	27		
EER TECHNICAL SERVICE	53	3-6-7	Poorly-Graded GRAVEL with sand (GP), medium dense, moist, brown to gray, fine to coarse grained, subangular.	— 8.0 ⊻	17 4					
IMPORT).GDT - 4/6/21 22:00 - C:USERS/MBROWNE/PIONE 51 1 1 1 1	61	7-6-7	Silty Lean CLAY (CL-ML), soft, moist, brown. Medium plastic.	— 15.0						
10T_REVISED_2009+(CPT 07	100	2-3-6	SILT with clay (ML), stiff, moist, brown. Low plasticity to non-plastic. Boring Depth: 21.5 ft, <i>Elevation:</i>	20.0						
A - Drilling:	Water Level	Observations	✓ During Drilling: 10.2 ft ✓ After After ✓ Drilling: Drilling:	marks:						

μ
201 F Broadway Ste C
S Helena MT 59601
¹ Phone: 406-457-8252
Eax: 1/2 1159
₩ ¹ ax. 442-1156
IO .

LOG OF BORING Boring BH-02



Montana State Hospital Project: WATCH Building			Rig: Geoprobe 7822DifferenceN 721,404.0 ftHammer: AutoCoordinates:E 1,134,650.4 ft				Station: Offset:											
3_2021\L	Project Number: UPN:								Boring Diameter: 3 in	g System: MT S.P. (E) ster: 3 in Datum: NAD83				Top of Boring Elevation: ft				
TCHBLD	Date Starte	d: 3	/2/2	21		Date Finished: 3/2/	/21		Drilling Fluid: None	Location Source: Han	dheld	GPS. I	Unc	corr	ect	ed	Elev Sou	vation
MSH WA	Driller Logge	Driller: Pioneer Logger: A. Klein							Abandonment Method: Ben	tonite		Township Range and Section: 5N 10W 13				W 13		
ERSONMONTGOMERY	Depth (ft) <i>Elev.</i> (ft)	Operation	Sample Type	Recovery (%)	RQD (%)	Blow Count	Lithology		Material Des	scription		Depth (ft)	MC (%)	L	PL	-200 (%)	DD	Remarks and Other Tests
ROJECT FILESVAND				17 67 67		8 - 8 - 9		FILI moi Sar grav	L, Silty SAND with gravel ist, brown, fine grained. N ndy Elastic SILT (MH), stir vel, medium plastic.	(SM), medium dens on-plastic. f, dry, brown. Trace	;e,	2.0	9 29	47 51	36 38	33 70		
PIONEER GEOTECH - P	 _ ⁵ _		X	72 56		8 - 7 - 6 5 - 5 - 13/0.0ft		Silty	y Lean CLAY with gravel ist, brown to greenish bro	(CL-ML), very stiff, wn, subangular.		5.0	13					
ECHNICAL SERVICES/F				60		14 - 16 - 13		Poc mec sub	orly-Graded GRAVEL with dium dense, moist, brown bangular.	n clay and sand (GP) , fine grained,), 	7.0 9.5	7					
RS/MBROWNE/PIONEER T	10		X	50		10 - 12 - 11		med	ony-oraded GRAVEL wit dium dense, wet, greenis	i ciay and sand (GP, n gray to black, angu), ular.							
T_IMPORT).GDT - 4/6/21 22:00 - C:\USEF	_ 15 _ _ 15 _ 		X	60		17 - 25 - 38												
:VISED_2009+(CP	_ 20 _		X	83		9 - 12 - 17			Boring Denth: 21 f	off Elevation:		<u>21.5</u>						
OF BORING - MDT_RE									Bonny Depth. 21.	n, ∟ievalio∏.								
MDT LOG	After		Wate	ər L	.evel	Observations	-	⊻ Du Dri	ring illing: 8.8 ft ter		Rema	arks:						
(2)	Y Drillin	ng:					-	👤 Dri	illing:									



Geotechnical Report

APPENDIX B. PHOTOGRAPH LOG





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MSH Watch Building Geotechnical Investigation Page 4 of 7





MSH Watch Building Geotechnical Investigation Page **5** of **7**









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Geotechnical Report

APPENDIX C. LABORATORY DATA









APPENDIX D

Aanconda-Deer Lodge County Permits

CONSOLIDATED CONSOLIDATED CONSOLIDATED	ANACONDA-DEER ADMINISTRATIVE DEVELOPI (Please Fill Out En <mark>ABSOLUTELY DO NOT BEGIN PROJECT UN</mark> PHYSICAL PERMIT HA	LODGE COUNTY MENT APPLICATION (<i>itire Application)</i> ITIL ALL PAPERWORK IS AS BEEN OBTAINED	ADP) FINALIZED AND
Date of Application:	Admin. Develop	pment Permit #:	
Permit Received By:	Date of Receipt	::	
	PROPERTY OWNER CONTACT INFORMATI	ION	
Property Owner:			
Mailing Address:	City:	State:	Zip:
Phone/Mobile #:	E-Mail:		
Physical Address of Project Proper	ty:		
CONTRACTOR/ <mark>CONTRACTOR MUS</mark> DOES CON Yea	DEVELOPER/PERSON DOING THE WORK CON T HAVE AN ACTIVE BUSINESS LICENSES IN ANACO ITRACTOR HAVE A BUSINESS LICENSE IN ADLC: Ye IT License Last Renewed: License #:	NTACT INFORMATION INDA-DEER LODGE COU 25: No: 	I NTY
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PROJECT DESCRIPTION CHECKLIST

DESCRIPTION	YES	NO	ADDITIONAL COMMENTS/REMARKS
Demolition			
Buildings			
Infrastructure (Driveways, Sidewalks, Etc.)			
Trees/Shrubs			
Excavation			
Footings			
Foundation			
Posts/Poles			
Install/Repair Water Line			
Install/Repair Well			
Install/Repair Sewer			
Install/Repair Septic System			
Install/Repair Electric Service			
Install/Repair Gas Line			
Install/Repair Telephone Line (Land Line)			
Other:			
Grading			
Access Road			
Driveway			
Sidewalks			
Parking Lot			
Landscaping			
Revegetation			
Sod			
Trees/Shrubs			
Garden for Food			
Irrigation System			
Fencing			
Removed/Installed/Both			
Ground Signs			
Removed/Installed/Both			
Soils			
Will Soil Be Removed From Site?			
If So, Where Will This Be Discarded?			
How Much Soil Will Be Removed?			
Will Soil Be Brought To Site?			
If So, Where Will This Be Obtained?			
How Much Soil Will Be Brought In?			
Additional Comments:			



SITE PLAN DRAWING DIMENSIONS MUST BE PROVIDED IF BUILDING PERMIT IS NEEDED, ENGINEERED DRAWINGS WOULD BE ACCEPTED





CONSENT FOR ACCESS TO PROPERTY FOR THE PURPOSE OF ENVIRONMENTAL SAMPLING

In support of Anaconda-Deer Lodge County's (ADLC) Interim Institutional Controls Program, ADLC would like your consent to collect samples on your property. Pease fill out the information below and return with your Administrative Permit Application.

, (printed name), property owner of the property located at	
, Anaconda, MT 59711, give my consent for employ	/ees
ind/or representatives of ADLC to access my property for the purpose of collection of soil samples. I understan	id that
hese actions are undertaken by EPA pursuant to its responsibilities under the Comprehensive Environmental	l

Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. 9601 et seq (also known as Superfund).

Property Owner

<mark>Date</mark>



ADMINISTRATIVE REVIEW (Staff Use Only)									
Legal Description of Property:									
Geocode:									
Assessor:									
This permit will also require:									
Building Permit:									
Demo Permit:									
Driveway Approach Permit:									
Well Permit:									
Septic Permit:									
Fee Paid: Receipt and/or Check #: Payment Taken By:									



ANACONDA-DEER LODGE COUNTY SMELTER SUPERFUND SITE INSTITUTIONAL CONTROLS/COMMUNITY PROTECTIVE MEASURES PROGRAM For Your Information

Incidental Mine Waste Notice

Residents and property owners in Anaconda-Deer Lodge County need to be aware that the area includes many historic mining districts that may contain hazardous waste. These sites include the Anaconda Smelter Superfund and Georgetown Railroad Superfund sites as well as many other abandoned mined areas in the county. If during excavation and development activities you locate potential mine waste or suspicious materials, ADLC recommends you do the following:

- Cease all activities which might expose yourself, others, or your animals to potential waste until an investigation by a qualified professional is conducted and the site is determined to be safe.
- Contact the ADLC Superfund Department at (406) 563-7476 or the ADLC Planning Department at (406-563-4010). In the event, ALDC does not have jurisdiction of the site, you will be directed to the appropriate agency.
- Common smelting waste includes black slag and cinders, pale yellow and orange tailings, white/gray powdery ash material, and rocks with a scaly green deposit on the surface.

If you require further assistance, please contact the ADLC Planning Department at (406) 563-4010. ADLC's Superfund experts as well as other county staff will do their best to either assist you or direct you to the appropriate party for assistance.

Superfund Soil Repository

Some projects in Anaconda-Deer Lodge County may involve contaminated soil that may need to be placed in the Superfund Soil Repository. After reviewing your application, the county and Superfund will determine if special soils handling is required and you will be given written instructions by Superfund on how to handle the soils and they will guide you through the process.

Placement of soil in the repository must be part of an approved Administrative Development Permit and Institutional Controls Work Plan. The Superfund Coordinator (406) 563-7476, must be contacted at least 24 hours in advance of beginning excavation. The repository is generally open Monday through Friday, 7 a.m. to 4 p.m. and some seasonal hours may apply.

Only Superfund-related contaminated soil, mining millings, or smelting waste material may be placed in the repository.

A pre-entry briefing is required prior to placing soil and the Superfund Coordinator must be notified at the beginning and the end of each day's hauling activities.

Personal safety equipment is required for all drivers and passengers.



MEMORANDUM

Attached, please find you Building Permit Application.

Please be advised for new residential construction, that an Administrative Development Permit (ADP), as well as a Septic and/or Well Permit and a Driveway Approach Permit (depending on each individual construction site) is required before a Building Permit Application can be approved. The Office of Environmental Health handles all well and septic permits, and they can be reached at (406) 563-4035. All other permit applications can be obtained in the Planning Office at (406) 563-4010.

The Building Permit and the Administrative Development Permit require a full set of plans from a Registered Design Professional or Engineer before a review of this application can take place. <u>The Building/Planning Department requires</u> <u>a minimum of two (2) weeks from the receipt of completed application and plans for review.</u>

Please be advised that construction must begin within six (6) months of Building Permit approval. Building Permits expire six (6) months from the date of being issued if construction has not been started. After construction begins, the construction should be completed within six (6) months, however extensions may be requested prior to expiration, not less than one (1) month prior. If an extension request is not received before the expiration date, the Building Permit will be null and void and the process will need to be restarted. Extensions may be requested due to weather conditions and/or financial difficulties.

If you have any further questions, please feel free to call the office at (406) 563-4010.

Note: Twenty-Four (24) hour notice is required for all inspections, including concrete

CONSOLIDATED	ANACONDA-DEER LODGE COUNTY BUILDING PERMIT APPLICATION (Please Fill Out Entire Application) ABSOLUTELY DO NOT BEGIN PROJECT UNTIL ALL PAPERWORK IS FINALIZED AND PHYSICAL PERMIT HAS BEEN OBTAINED
Date of Application:	Building Permit #:
Permit Received By:	Date of Receipt:

The applicant must fill out Page 2 and sign Page 4. Your permit will not be processed if you do not fill out the required information. Please read all conditions on this application before signing. The property owner and/or licensed contractor must sign and date the application. Each permit requires a separate check processing.

SECTION 1: Property Owner	SECTION 2: Property Information			
Name:	Location:			
Street Address:	Project Address:			
City, State, Zip:	City, State, Zip:			
Phone/Mobile #:	Legal Description:			
E-Mail:	Section: Township: Range:			
Contractor: SELF: 🗌	Block:Lot:COS/Tract#:			
Contractor/Business Name:	17-Digit Geocode:			
Street Address:	Total Area (Square Footage):			
City, State, Zip:	Lot/Property Size: sq. ft.			
Phone/Mobile #:	Proposed Structure: sq. ft.			
E-Mail:	Existing Structure (if applicable):sq. ft.			
County License #:	Building or Structure Use (please check only one):			
	🔲 Residential			
SECTION 3: SANITARIAN APPROVAL (if applicable) Septic: Approved Denied N/A SECTION 4: HISTORICAL PRESERVATION APPROVAL (if applicable) Is this property in a Historical District? Yes No Approved Denied N/A	 Single Family Duplex Townhouse Multi-FamilyUnits Storage Building Detached Garage Other Commercial/Non-Residential Previous Use: Proposed Use: Business Name: 			
SECTION 5: PRO New Construction Foundation Work Remodel Structures Emergency Repair Fire Suppression Project Description:	OPOSED WORK Addition Change of Use Repair Roof Moving Building			



ANACONDA-DEER LODGE COUNTY BUILDING PERMIT APPLICATION

(Please Fill Out Entire Application)

ABSOLUTELY DO NOT BEGIN PROJECT UNTIL ALL PAPERWORK IS FINALIZED AND PHYSICAL PERMIT HAS BEEN OBTAINED

I do hereby acknowledge that all information on this application and on the attached plans is true and correct, and that the activity or development permitted will be conducted in full compliance with all ordinances of Anaconda-Deer Lodge County, as well as all state and federal laws. The activity or development will be in full compliance with any and all conditions imposed on the approval of this permit and that the permit and conditions imposed are binding on future owners of the subject property and on future building permits issued for this site.

X	
Property Owner	Date

ADLC

Building Permit Application

Revised January 2020

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ANACONDA-DEER LODGE COUNTY BUILDING PERMIT APPLICATION (Please Fill Out Entire Application)

ABSOLUTELY DO NOT BEGIN PROJECT UNTIL ALL PAPERWORK IS FINALIZED AND PHYSICAL PERMIT HAS BEEN OBTAINED

BUILDING PERMIT/PLAN REVIEW FEES

Total VALUATION		Building Permit Fee
\$1 to \$500		\$23.50
\$501 to \$2000		\$23.50 for first \$500 plus \$3.05 for each additional \$100 or fraction thereof, to and including \$2,000
\$2001 to \$25,000		\$69.25 for first \$2000 plus \$14 for each additional \$1,000 or fraction thereof, to and including \$25,000
\$25,001 to \$50,000		\$391.25 for first \$25,000 plus\$10.10 for each additional \$1,000 or fraction thereof, to and including \$50,000
\$50,001to\$100,000		\$643.75 for first \$50,000 plus \$7 for each additional \$1,000 or fraction thereof, to and including \$100,000
\$100,001to \$500,000		\$993.75 for first \$100,000 plus \$5.60 for each additional \$1,000 or fraction thereof, to and including \$500,000
\$500,001 to\$1,000,000		\$3,233.75 for first \$500,000 plus \$4.75 for each additional \$1,000 or fraction thereof, to and including \$1,000,000
\$1 ,000,001 to UP		\$5,608.75 for first \$1,000,000 plus \$3 15 for each additional \$1,000 or fraction thereof, up and over \$1,000, 001

Other inspections and fee;

- Inspections outside of normal business hours (minimum charge: 2 hours) \$75/hr.
- Inspections for which no fee is specifically indicated (min charge: 2 hours) \$75/hr.
- Plan Review Fee
 - When submittal documents are required, a plan review fee must be paid in addition to the building permit fee. The plan review fee is 35 percent of the building permit fee.
 - Additional plan review required by changes, additions, or revisions to plans (min charge: 1 hour) \$75/hr.
 - Actual cost includes administrative and overhead cost.

BUILDING PE Estimated Pi	ERMIT F	EE (PLANNING USE ON ost: \$	LY)				
Building Per	mit Fee	(see above table) \$	Plus Plan Review Fee (35% BP Fee) \$				
TOTAL DUE:	\$		Received by	:	_ Check/Red	ceipt # _	
ADLC	•	Building Permit Applicat	tion •	Revised Janua	i ry 2020	•	Page 4

CONTRACTOR OF	ANACONDA-DEER LODGE COUNTY DEMOLITION PERMIT APPLICATION (Please Fill Out Entire Application)
CONSOLIDATED	ABSOLUTELY DO NOT BEGIN PROJECT UNTIL ALL PAPERWORK IS FINALIZED AND PHYSICAL PERMIT HAS BEEN OBTAINED
MONTAN A TUR	
Date of Application:	Demolition Permit #:
Permit Received By:	Date of Receipt:

The applicant must fill out Page 1 and sign Page 2. Your permit will not be processed if you do not fill out the required information. Please read all conditions on this application before signing. The property owner and/or licensed contractor must sign and date the application. Each permit requires a separate check processing.

SECTION 1: Property Owner	SECTION 2: Property Information					
Name:	Location:					
Street Address:	Project Address:					
City, State, Zip:	City, State, Zip:					
Phone/Mobile #:	Legal Description:					
E-Mail:	Section: Township: Range:					
Contractor: SELF:	Block:Lot: COS/Tract#:					
Contractor/Business Name:	17-Digit Geocode:					
Street Address:	Total Area (Square Footage):					
City, State, Zip:	Proposed Structure for Demolition:					
Phone/Mobile #:	sq ft					
E-Mail:	Building or Structure Use (please check only one):					
County License #:	Residential					
	🔲 Single Family 🔲 Duplex 🔲 Townhouse					
SECTION 3: UTILITY APPROVAL AND DISCONNECT	Multi-Family Units					
COMPLETE	Storage Building Detached Garage					
ADLC Water/Septic: Disconnected: 🔲	Other					
Northwestern Energy Electrical: Disconnected: 🛄	Commercial/Non-Residential					
Northwestern Energy Gas: Disconnected: 🔲	Previous Use:					
Other: Disconnected: 🔲	Proposed Use:					
	Business Name:					
SECTION 4: HISTORICAL PRESERVATION APPROVAL						
(if applicable)						
Is this property in a Historical District? 🔲 Yes 🔲 No						
Historic Preservation Officer's initials:						
SECTION 5: JOB DESCRIPTION						
Project Description:						

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ANACONDA-DEER LODGE COUNTY DEMOLITION PERMIT APPLICATION



(Please Fill Out Entire Application)

 ABSOLUTELY DO NOT BEGIN PROJECT UNTIL ALL PAPERWORK IS FINALIZED AND

PHYSICAL PERMIT HAS BEEN OBTAINED

By executing this application, the applicant acknowledges and agrees that:

- The information supplied is true and correct
- The proposed project may be subject to other laws and regulations including, but not limited to, local development standards and flood plain requirements.
- Issuance of a demolition permit is provisional. That is, such permit is conditional on the plan and specifications submitted and approved and does not extend to any changes without the express consent of the Planning Director.
- Demolition of the proposed structure may not be started by any person until a demolition permit is issued.

A COUNTY BUSINESS LICENSE IS REQUIRED FOR ANY CONTRACTOR DOING BUSINESS IN ANACONDA-DEER LODGE COUNTY AND ABSOLULTY NO BUILDING PERMIT WILL BE ISSUED WITHOUT AN ACTIVE BUSINESS LICENSE

Х		 		
	Signature of Property Owner		Date	

DEMO PERMIT FEE (\$25.00) (PLANNING USE ONLY)

TOTAL RECEIVED \$	Received by:	Check/Receipt #
	<i>,</i>	