STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES

Division of Facilities Construction and Management

DFCM

STANDARD LOW BID PROJECT
Project Budgets Over $100,000

January 11, 2010

OTTER CREEK STATE PARK FISH CLEANING STATION

DIVISION OF PARKS AND RECREATION

ANTIMONY, UTAH

DFCM Project Number 09136510

Sargent Design Group
36 North 300 West
Cedar City, Utah 84720

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Current copies of the following documents are hereby made part of these contract documents by reference These documents are available on the DFCM web site at http://dfcm.utah.gov/StdDocs/index.html "Standard Documents" – "Reference Documents I" – "Item 6. Supplemental General Conditions" or are available upon request from DFCM:

DFCM Supplemental General Conditions dated July 1, 2009 *
DFCM Supplemental General Conditions dated July 15, 2008
DFCM General Conditions dated May 25, 2005
DFCM Application and Certification for Payment dated May 25, 2005.

*** NOTE: THE NEW SUPPLEMENTAL GENERAL CONDITIONS EFFECTIVE JULY 1, 2009 ADDRESSING HEALTH INSURANCE AND IMMIGRATION ARE REFERENCED AT THE LINK ABOVE.**

The Agreement and General Conditions dated May 25, 2005 have been updated from versions that were formally adopted and in use prior to this date. The changes made to the General Conditions are identified in a document entitled Revisions to General Conditions that is available on DFCM's web site at http://dfcm.utah.gov

NOTICE TO CONTRACTORS

Sealed bids will be received by the Division of Facilities Construction and Management (DFCM) for:

OTTER CREEK STATE PARK FISH CLEANING STATION
DFCM PROJECT NO: 09136510

Bids will be in accordance with the Contract Documents that will be available on **Monday, January 11, 2010**, and distributed in electronic format only on CDs from DFCM, 4110 State Office Building, Salt Lake City, Utah and on the DFCM web page at http://dfcm.utah.gov. For questions regarding this project, please contact Brent Lloyd, DFCM, at 801-550-5882. No others are to be contacted regarding this bidding process. The construction estimate for this project is $105,000.00.

A **mandatory** pre-bid meeting will be held at Otter Creek State Park, Antimony, Utah on **Wednesday, January 13, 2010 at 11:00 AM**. All bidders wishing to bid on this project are required to attend this meeting.

Bids will be received until the hour of **2:30 PM on Tuesday, January 26, 2010** at DFCM, 4ll0 State Office Building, Salt Lake City, Utah 84114. Bids will be opened and read aloud in the DFCM Conference Room, 4110 State Office Building, Salt Lake City, Utah. NOTE: Bids must be received at 4110 State Office Building by the specified time.

A bid bond in the amount of five percent (5%) of the bid amount, made payable to the Division of Facilities Construction and Management on DFCM's bid bond form, shall accompany the bid.

The Division of Facilities Construction and Management reserves the right to reject any or all bids or to waive any formality or technicality in any bid in the interest of DFCM.

DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT
Joanna Reese, Contract Coordinator
4110 State Office Building, Salt Lake City, Utah 84114

PROJECT DESCRIPTION

This project consists of multiple tasks. Included will be demolition of the existing fish cleaning station and its associated plumbing and electrical; abandonment of an existing septic tank; removal of two existing trees, including stump removal; and the relocation of an existing trash dumpster and propane tank.

Installation of the new fish cleaning station will include a stainless steel pre-fabricated table/sink combination supplied by Fabwright (FG-9648 Model 5126 or equal) with a pre-fabricated 20' x 20' steel structure sheltering the entire unit. The steel structure must be supplied by an approved fabricator from those listed on the State Building Officials website located at (http://dfcm.utah.gov/BldgOHP/index.html). The Contractor will be required to work closely with Sargent Design Group in compiling engineered construction drawings for the structure along with structural calculations to be submitted to the State Building Official for his review and approval prior to commencing work on this project.

Also included in the new fish cleaning station will be all associated electrical and plumbing, along with trenching, and piping to the sewage lift station location; a new sewage grinder and pump will be included in this project; installation of a concrete, masonry and chain link fence enclosure for the trash dumpster and propane tank; asphalt and landscape repairs as required by the project.

The Park will be open to the public for the duration of the project and the Contractor shall be responsible for work-site safety, including any necessary construction fencing, barricades and traffic control.

PROJECT SCHEDULE

PROJECT NAME: **OTTER CREEK STATE PARK FISH CLEANING STATION, DIVISION OF PARKS AND RECREATION – ANTIMONY, UTAH**

DFCM PROJECT NO. 09136510

Event	Day	Date	Time	Place
Bidding Documents Available	Monday	January 11,2010	2:00 PM	DFCM 4110 State Office Bldg SLC, UT and the DFCM web site *
Mandatory Pre-bid Site Meeting	Wednesday	January 13, 2010	11:00 AM	Otter Creek State Park, Antimony, Utah
Last Day to Submit Questions	Monday	January 18, 2010	10:00 AM	In writing to: Brent Lloyd, Project Manager brentlloyd@utah.gov Fax 801-538-3267
Addendum Deadline (exception for bid delays)	Thursday	January 21, 2010	10:00 AM	DFCM web site *
Prime Contractors Turn In Bid and Bid Bond	Tuesday	January 26, 2010	2:30 PM	DFCM 4110 State Office Bldg SLC, UT
Sub-contractor List Due	Wednesday	January 27, 2010	2:30 PM	DFCM 4110 State Office Bldg SLC, UT Fax 801-538-3677
Substantial Completion Date	Saturday	April 10, 2010		

* **NOTE: DFCM's web site address is http://dfcm.utah.gov**

BID FORM

NAME OF BIDDER _____ DATE _____

To the Division of Facilities Construction and Management
4110 State Office Building
Salt Lake City, Utah 84114

The undersigned, responsive to the "Notice to Contractors" and in accordance with the "Instructions to Bidders", in compliance with your invitation for bids for the Otter Creek State Park Fish Cleaning Station – Division of Parks and Recreation, Antimony, Utah - DFCM Project No. 09136510 and having examined the Contract Documents and the site of the proposed Work and being familiar with all of the conditions surrounding the construction of the proposed Project, including the availability of labor, hereby proposes to furnish all labor, materials and supplies as required for the Work in accordance with the Contract Documents as specified and within the time set forth and at the price stated below. This price is to cover all expenses incurred in performing the Work required under the Contract Documents of which this bid is a part:

I/We acknowledge receipt of the following Addenda: _____

For all work shown on the Drawings and described in the Specifications and Contract Documents, I/we agree to perform for the sum of:

_____ DOLLARS ($_____)
(In case of discrepancy, written amount shall govern)

I/We guarantee that the Work will be Substantially Complete by April 10, 2010, should I/we be the successful bidder, and agree to pay liquidated damages in the amount of **$200.00** per day for each day after expiration of the Contract Time as stated in Article 3 of the Contractor's Agreement.

This bid shall be good for 45 days after bid opening.

Enclosed is a 5% bid bond, as required, in the sum of _____

The undersigned Contractor's License Number for Utah is _____.

Upon receipt of notice of award of this bid, the undersigned agrees to execute the contract within ten (10) days, unless a shorter time is specified in the Contract Documents, and deliver acceptable Performance and Payment bonds in the prescribed form in the amount of 100% of the Contract Sum for faithful performance of the contract.

The Bid Bond attached, in the amount not less than five percent (5%) of the above bid sum, shall become the property of the Division of Facilities Construction and Management as liquidated damages for delay and additional expense caused thereby in the event that the contract is not executed and/or acceptable l00% Performance and Payment bonds are not delivered within the time set forth.

Type of Organization:

_____
(Corporation, Partnership, Individual, etc.)

Any request and information related to Utah Preference Laws:

_____

Respectfully submitted,

_____
Name of Bidder

ADDRESS:

_____

_____

_____
Authorized Signature

INSTRUCTIONS TO BIDDERS

1. Drawings and Specifications, Other Contract Documents

Drawings and Specifications, as well as other available Contract Documents, may be obtained as stated in the Invitation to Bid.

2. Bids

Before submitting a bid, each contractor shall carefully examine the Contract Documents, shall visit the site of the Work; shall fully inform themselves as to all existing conditions and limitations; and shall include in the bid the cost of all items required by the Contract Documents. If the bidder observes that portions of the Contract Documents are at variance with applicable laws, building codes, rules, regulations or contain obvious erroneous or uncoordinated information, the bidder shall promptly notify the DFCM Representative and the necessary changes shall be accomplished by Addendum.

The bid, bearing original signatures, must be typed or handwritten in ink on the Bid Form provided in the procurement documents and submitted in a sealed envelope at the location specified by the Invitation to Bid prior to the deadline for submission of bids.

A bid bond properly signed by a qualified surety, as indicated on the DFCM Bid Bond form provided along with this Instruction to Bidders, in the amount of 5% of the bid, shall accompany the bid submission to DFCM. THIS BID BOND MUST BE ON THE DFCM BID BOND FORM PROVIDED WITH THIS INSTRUCTION TO BIDDERS IN ORDER TO BE CONSIDERED AN ACCEPTABLE BID unless only one bid is received by DFCM, or the failure to comply with the bid bond requirements is determined by the Director of DFCM to be nonsubstantial based on the following:

(a) the bid bond is submitted on a form other than DFCM's required Bid Bond form and the bid bond meets all other requirements including being issued by a surety firm authorized to do business in the State of Utah and be listed in the U.S. Department of the Treasury Circular 570, Companies Holding Certificates of Authority as Acceptable Securities on Federal Bonds and as Acceptable Reinsuring Companies for an amount not less than the amount of the bond to be issued. A co-surety may be utilized to satisfy this requirement; and

(b) the contractor provides a bid bond properly signed by a qualified surety and on the required DFCM Bid Bond form by the close of business of the next succeeding business day after the DFCM notifies the bidder of the defective bid bond.

3. Contract and Bond

The Contractor's Agreement will be in the form found in the specifications. The Contract Time will be as indicated in the bid. The successful bidder, simultaneously with the execution of the Contract Agreement, will be required to furnish a performance bond and a payment bond, both bearing original signatures, upon the forms provided in the procurement documents. The performance and payment bonds shall be for an amount equal to one hundred percent (100%) of the contract sum and secured from a company that meets the requirements specified in the requisite forms. Any bonding requirements for subcontractors will be specified in the Supplementary General Conditions.

4. Listing of Subcontractors

Listing of Subcontractors shall be as summarized in the "Instructions and Subcontractor's List Form", which are included as part of these Contract Documents. The Subcontractors List shall be delivered to DFCM or faxed to DFCM at 801-538-3677 within 24 hours of the bid opening. Requirements for listing additional subcontractors will be listed in the Contract Documents.

DFCM retains the right to audit or take other steps necessary to confirm compliance with requirements for the listing and changing of subcontractors. Any contractor who is found to not be in compliance with these requirements is subject to a debarment hearing and may be debarred from consideration for award of contracts for a period of up to three years.

5. Interpretation of Drawings and Specifications

If any person or entity contemplating submitting a bid is in doubt as to the meaning of any part of the drawings, specifications or other Contract Documents, such person shall submit to the DFCM Project Manager a request for an interpretation thereof. The person or entity submitting the request will be responsible for its prompt delivery. Any interpretation of the proposed documents will be made only by addenda posted on DFCM's web site at http://dfcm.utah.gov. Neither the DFCM nor A/E will be responsible for any other explanations or interpretations of the proposed documents. A/E shall be deemed to refer to the architect or engineer hired by DFCM as the A/E or Consultant for the Project.

6. Addenda

Addenda will be posted on DFCM's web site at http://dfcm.utah.gov. Contractors are responsible for obtaining information contained in each addendum from the web site. Addenda issued prior to the submittal deadline shall become part of the bidding process and must be acknowledged on the bid form. Failure to acknowledge addenda may result in disqualification from bidding.

7. Award of Contract

The Contract will be awarded as soon as possible to the lowest, responsive and responsible bidder, based on the lowest combination of base bid and acceptable prioritized alternates, provided the bid is reasonable, is in the interests of the State of Utah to accept and after applying the Utah Preference Laws in U.C.A. Title 63, Chapter 56. DFCM reserves the right to waive any technicalities or formalities in any bid or in the bidding. Alternates will be accepted on a prioritized basis with Alternate 1 being highest priority, Alternate 2 having second priority, etc.

8. DFCM Contractor Performance Rating

As a contractor completes each DFCM project, DFCM, the architect/engineer and the using agency will evaluate project performance based on the enclosed "DFCM Contractor Performance Rating" form. The ratings issued on this project will not affect this project but may affect the award on future projects.

9. Licensure

The Contractor shall comply with and require all of its subcontractors to comply with the license laws as required by the State of Utah.

10. Permits

In concurrence with the requirements for permitting in the General Conditions, it is the responsibility of the Contractor to obtain the fugitive dust plan requirements from the Utah Division of Air Quality and the SWPPP requirements from the Utah Department of Environmental Quality and submit the completed forms and pay any permit fee that may be required for this specific project. Failure to obtain the required permit may result in work stoppage and/or fines from the regulating authority that will be the sole responsibility of the Contractor. Any delay to the project as a result of any such failure to obtain the permit or noncompliance with the permit shall not be eligible for any extension in the Contract Time.

11. Right to Reject Bids

DFCM reserves the right to reject any or all Bids.

12. Time is of the Essence

Time is of the essence in regard to all the requirements of the Contract Documents.

13. Withdrawal of Bids

Bids may be withdrawn on written request received from bidder prior to the time fixed for opening. Negligence on the part of the bidder in preparing the bid confers no right for the withdrawal of the bid after it has been opened.

14. Product Approvals

Where reference is made to one or more proprietary products in the Contract Documents, but restrictive descriptive materials of one or more manufacturer(s) is referred to in the Contract Documents, the products of other manufacturers will be accepted, provided they equal or exceed the standards set forth in the drawings and specifications and are compatible with the intent and purpose of the design, subject to the written approval of the A/E. Such written approval must occur prior to the deadline established for the last scheduled addenda to be issued. The A/E's written approval will be in an issued addendum. If the descriptive material is not restrictive, the products of other manufacturers specified will be accepted without prior approval provided they are compatible with the intent and purpose of the design as determined by the A/E.

15. Financial Responsibility of Contractors, Subcontractors and Sub-subcontractors

Contractors shall respond promptly to any inquiry in writing by DFCM to any concern of financial responsibility of the contractor, subcontractor or sub-subcontractor.

16. Debarment

By submitting a bid, the Contractor certifies that neither it nor its principals, including project and site managers, have been, or are under consideration for, debarment or suspension, or any action that would exclude such from participation in a construction contract by any governmental department or agency. If the Contractor cannot certify this statement, attach to the bid a detailed written explanation which must be reviewed and approved by DFCM as part of the requirements for award of the Project.

BID BOND

(Title 63, Chapter 56, U. C. A. l953, as Amended)

KNOW ALL PERSONS BY THESE PRESENTS:

That _____ hereinafter referred to as the "Principal," and_____, a corporation organized and existing under the laws of the State of _____, with its principal office in the City of _____ and authorized to transact business in this State and U. S. Department of the Treasury Listed, (Circular 570, Companies Holding Certificates of Authority as Acceptable Securities on Federal Bonds and as Acceptable Reinsuring Companies); hereinafter referred to as the "Surety," are held and firmly bound unto the STATE OF UTAH, hereinafter referred to as the "Obligee," in the amount of $_____ (5% of the accompanying bid), being the sum of this Bond to which payment the Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the Principal has submitted to Obligee the accompanying bid incorporated by reference herein, dated as shown, to enter into a contract in writing for the_____ _____ Project.

NOW, THEREFORE, THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, that if the said principal does not execute a contract and give bond to be approved by the Obligee for the faithful performance thereof within ten (10) days after being notified in writing of such contract to the principal, then the sum of the amount stated above will be forfeited to the State of Utah as liquidated damages and not as a penalty; if the said principal shall execute a contract and give bond to be approved by the Obligee for the faithful performance thereof within ten (10) days after being notified in writing of such contract to the Principal, then this obligation shall be null and void. It is expressly understood and agreed that the liability of the Surety for any and all defaults of the Principal hereunder shall be the full penal sum of this Bond. The Surety, for value received, hereby stipulates and agrees that obligations of the Surety under this Bond shall be for a term of sixty (60) days from actual date of the bid opening.

PROVIDED, HOWEVER, that this Bond is executed pursuant to provisions of Title 63, Chapter 56, Utah Code Annotated, 1953, as amended, and all liabilities on this Bond shall be determined in accordance with said provisions to same extent as if it were copied at length herein.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their several seals on the date indicated below, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

DATED this _____ day of _____, 20_____ .

Principal's name and address (if other than a corporation):

_____

_____

By:_____

Title: _____

Principal's name and address (if a corporation):

_____

_____

By:_____

Title: _____

(Affix Corporate Seal)

Surety's name and address:

_____

_____

By: _____

Attorney-in-Fact (Affix Corporate Seal)

STATE OF _____)
) ss.
COUNTY OF _____)

On this ____ day of _____, 20____, personally appeared before me _____, whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who, being by me duly sworn, did say that he/she is the Attorney-in-fact of the above-named Surety Company, and that he/she is duly authorized to execute the same and has complied in all respects with the laws of Utah in reference to becoming sole surety upon bonds, undertakings and obligations, and that he/she acknowledged to me that as Attorney-in-fact executed the same.

Subscribed and sworn to before me this _____ day of _____, 20_____.
My Commission Expires: _____
Resides at: _____

_____
NOTARY PUBLIC

Agency: _____
Agent: _____
Address: _____
Phone: _____

Approved As To Form: May 25, 2005
By Alan S. Bachman, Asst Attorney General

INSTRUCTIONS AND SUBCONTRACTORS LIST FORM

The three low bidders, as well as all other bidders that desire to be considered, are required by law to submit to DFCM within 24 hours of bid opening a list of **ALL** first-tier subcontractors, including the subcontractor's name, bid amount and other information required by Building Board Rule and as stated in these Contract Documents, based on the following:

DOLLAR AMOUNTS FOR LISTING

PROJECTS UNDER $500,000: ALL FIRST-TIER SUBS $20,000 OR OVER MUST BE LISTED
PROJECTS $500,000 OR MORE: ALL FIRST-TIER SUBS $35,000 OR OVER MUST BE LISTED

- Any additional subcontractors identified in the bid documents shall also be listed.
- The DFCM Director may not consider any bid submitted by a bidder if the bidder fails to submit a subcontractor list meeting the requirements of State law.
- List subcontractors for base bid as well as the impact on the list that the selection of any alternate may have.
- Bidder may not list more than one subcontractor to perform the same work.
- If there are no subcontractors for the job that are required to be reported by State law (either because there are no subcontractors that will be used on the project or because there are no first-tier subcontractors over the dollar amounts referred to above), then you do not need to submit a sublist. If you do not submit a sublist, it will be deemed to be a representation by you that there are no subcontractors on the job that are required to be reported under State law. At any time, DFCM reserves the right to inquire, for security purposes, as to the identification of the subcontractors at any tier that will be on the worksite.

LICENSURE:

The subcontractor's name, the type of work, the subcontractor's bid amount, and the subcontractor's license number as issued by DOPL, if such license is required under Utah Law, shall be listed. Bidder shall certify that all subcontractors, required to be licensed, are licensed as required by State law. A subcontractor includes a trade contractor or specialty contractor and does not include suppliers who provide only materials, equipment, or supplies to a contractor or subcontractor.

'SPECIAL EXCEPTION':

A bidder may list 'Special Exception' in place of a subcontractor when the bidder intends to obtain a subcontractor to perform the work at a later date because the bidder was unable to obtain a qualified or reasonable bid under the provisions of U.C.A.Section 63A-5-208(4). The bidder shall insert the term 'Special Exception' for that category of work, and shall provide documentation with the subcontractor list describing the bidder's efforts to obtain a bid of a qualified subcontractor at a reasonable cost and why the bidder was unable to obtain a qualified subcontractor bid. The Director must find that the bidder complied in good faith with State law requirements for any 'Special Exception' designation, in order for the bid to be considered. If awarded the contract, the Director shall supervise the bidder's efforts to obtain a qualified subcontractor bid. The amount of the awarded contract may not be adjusted to reflect the actual amount of the subcontractor's bid. Any listing of 'Special Exception' on the sublist form shall also include amount allocated for that work.

GROUNDS FOR DISQUALIFICATION:

The Director may not consider any bid submitted by a bidder if the bidder fails to submit a subcontractor list meeting the requirements of State law. Director may withhold awarding the contract to a particular bidder if one or more of the proposed subcontractors are considered by the Director to be unqualified to do the Work or for

such other reason in the best interest of the State of Utah. Notwithstanding any other provision in these instructions, if there is a good faith error on the sublist form, at the sole discretion of the Director, the Director may provide notice to the contractor and the contractor shall have 24 hours to submit the correction to the Director. If such correction is submitted timely, then the sublist requirements shall be considered met.

CHANGES OF SUBCONTRACTORS SPECIFICALLY IDENTIFIED ON SUBLIST FORM:

Subsequent to twenty-four hours after the bid opening, the contractor may change its listed subcontractors only after receiving written permission from the Director based on complying with all of the following criteria.

(1) The contractor has established in writing that the change is in the best interest of the State and that the contractor establishes an appropriate reason for the change, which may include, but not is not limited to, the following reasons: the original subcontractor has failed to perform, or is not qualified or capable of performing, and/or the subcontractor has requested in writing to be released.
(2) The circumstances related to the request for the change do not indicate any bad faith in the original listing of the subcontractors.
(3) Any requirement set forth by the Director to ensure that the process used to select a new subcontractor does not give rise to bid shopping.
(4) Any increase in the cost of the subject subcontractor work is borne by the contractor.
(5) Any decrease in the cost of the subject subcontractor work shall result in a deductive change order being issued for the contract for such decreased amount.
(6) The Director will give substantial weight to whether the subcontractor has consented in writing to being removed unless the Contractor establishes that the subcontractor is not qualified for the work.

EXAMPLE:

Example of a list where there are only four subcontractors:

TYPE OF WORK	SUBCONTRACTOR, "SELF" OR "SPECIAL EXCEPTION"	SUBCONTRACTOR BID AMOUNT	CONTRACTOR LICENSE #
ELECTRICAL	ABCD Electric Inc.	$350,000.00	123456789000
LANDSCAPING	"Self" *	$300,000.00	123456789000
CONCRETE (ALTERNATE #1)	XYZ Concrete Inc	$298,000.00	987654321000
MECHANICAL	"Special Exception" (attach documentation)	Fixed at: $350,000.00	(TO BE PROVIDED AFTER OBTAINING SUBCONTRACTOR)

* Bidders may list "self", but it is not required.

PURSUANT TO STATE LAW - SUBCONTRACTOR BID AMOUNTS CONTAINED IN THIS SUBCONTRACTOR LIST SHALL NOT BE DISCLOSED UNTIL THE CONTRACT HAS BEEN AWARDED.

SUBCONTRACTORS LIST

FAX TO 801-538-3677

PROJECT TITLE: _____

Caution: You must read and comply fully with instructions.

TYPE OF WORK	SUBCONTRACTOR, "SELF" OR "SPECIAL EXCEPTION"	SUBCONTRACTOR BID AMOUNT	CONT. LICENSE #

We certify that:

1. This list includes all subcontractors as required by the instructions, including those related to the base bid as well as any alternates.
2. We have listed "Self" or "Special Exception" in accordance with the instructions.
3. All subcontractors are appropriately licensed as required by State law.

FIRM: _____

DATE: _____ SIGNED BY: _____

NOTICE: FAILURE TO SUBMIT THIS FORM, PROPERLY COMPLETED AND SIGNED, AS REQUIRED IN THESE CONTRACT DOCUMENTS, SHALL BE GROUNDS FOR OWNER'S REFUSAL TO ENTER INTO A WRITTEN CONTRACT WITH BIDDER. ACTION MAY BE TAKEN AGAINST BIDDERS BID BOND AS DEEMED APPROPRIATE BY OWNER. ATTACH A SECOND PAGE IF NECESSARY.

CONTRACTOR'S AGREEMENT

FOR:

_____
_____
_____

THIS CONTRACTOR'S AGREEMENT, made and entered into this ____ day of _____, 20__, by and between the DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT, hereinafter referred to as "DFCM", and _____, incorporated in the State of _____ and authorized to do business in the State of Utah, hereinafter referred to as "Contractor", whose address is _____.

WITNESSETH: WHEREAS, DFCM intends to have Work performed at _____ _____.

WHEREAS, Contractor agrees to perform the Work for the sum stated herein.

NOW, THEREFORE, DFCM and Contractor for the consideration provided in this Contractor's Agreement, agree as follows:

ARTICLE 1. SCOPE OF WORK. The Work to be performed shall be in accordance with the Contract Documents prepared by _____ and entitled "_____."

The DFCM General Conditions ("General Conditions") dated May 25, 2005 and Supplemental General Conditions dated July 15, 2008 and July 1, 2009 ("also referred to as General Conditions") on file at the office of DFCM and available on the DFCM website, are hereby incorporated by reference as part of this Agreement and are included in the specifications for this Project. All terms used in this Contractor's Agreement shall be as defined in the Contract Documents, and in particular, the General Conditions.

The Contractor Agrees to furnish labor, materials and equipment to complete the Work as required in the Contract Documents which are hereby incorporated by reference. It is understood and agreed by the parties hereto that all Work shall be performed as required in the Contract Documents and shall be subject to inspection and approval of DFCM or its authorized representative. The relationship of the Contractor to the DFCM hereunder is that of an independent Contractor.

ARTICLE 2. CONTRACT SUM. The DFCM agrees to pay and the Contractor agrees to accept in full performance of this Contractor's Agreement, the sum of _____ _____ DOLLARS AND NO CENTS ($_____.00), which is the base bid, and which sum also includes the cost of a 100% Performance Bond and a 100%

Payment Bond as well as all insurance requirements of the Contractor. Said bonds have already been posted by the Contractor pursuant to State law. The required proof of insurance certificates have been delivered to DFCM in accordance with the General Conditions before the execution of this Contractor's Agreement.

ARTICLE 3. TIME OF COMPLETION AND DELAY REMEDY. The Work shall be Substantially Complete by _____. Contractor agrees to pay liquidated damages in the amount of $_____ per day for each day after expiration of the Contract Time until the Contractor achieves Substantial Completion in accordance with the Contract Documents, if Contractor's delay makes the damages applicable. The provision for liquidated damages is: (a) to compensate the DFCM for delay only; (b) is provided for herein because actual damages can not be readily ascertained at the time of execution of this Contractor's Agreement; (c) is not a penalty; and (d) shall not prevent the DFCM from maintaining Claims for other non-delay damages, such as costs to complete or remedy defective Work.

No action shall be maintained by the Contractor, including its or Subcontractor or suppliers at any tier, against the DFCM or State of Utah for damages or other claims due to losses attributable to hindrances or delays from any cause whatsoever, including acts and omissions of the DFCM or its officers, employees or agents, except as expressly provided in the General Conditions. The Contractor may receive a written extension of time, signed by the DFCM, in which to complete the Work under this Contractor's Agreement in accordance with the General Conditions.

ARTICLE 4. CONTRACT DOCUMENTS. The Contract Documents consist of this Contractor's Agreement, the Conditions of the Contract (DFCM General Conditions, Supplementary and other Conditions), the Drawings, Specifications, Addenda and Modifications. The Contract Documents shall also include the bidding documents, including the Invitation to Bid, Instructions to Bidders/ Proposers and the Bid/Proposal, to the extent not in conflict therewith and other documents and oral presentations that are documented as an attachment to the contract.

All such documents are hereby incorporated by reference herein. Any reference in this Contractor's Agreement to certain provisions of the Contract Documents shall in no way be construed as to lessen the importance or applicability of any other provisions of the Contract Documents.

ARTICLE 5. PAYMENT. The DFCM agrees to pay the Contractor from time to time as the Work progresses, but not more than once each month after the date of Notice to Proceed, and only upon Certificate of the A/E for Work performed during the preceding calendar month, ninety-five percent (95%) of the value of the labor performed and ninety-five percent (95%) of the value of materials furnished in place or on the site. The Contractor agrees to furnish to the DFCM invoices for materials purchased and on the site but not installed, for which the Contractor requests payment and agrees to

safeguard and protect such equipment or materials and is responsible for safekeeping thereof and if such be stolen, lost or destroyed, to replace same.

Such evidence of labor performed and materials furnished as the DFCM may reasonably require shall be supplied by the Contractor at the time of request for Certificate of Payment on account. Materials for which payment has been made cannot be removed from the job site without DFCM's written approval. Five percent (5%) of the earned amount shall be retained from each monthly payment. The retainage, including any additional retainage imposed and the release of any retainage, shall be in accordance with UCA 13-8-5 as amended. Contractor shall also comply with the requirements of UCA 13-8-5, including restrictions of retainage regarding subcontractors and the distribution of interest earned on the retention proceeds. The DFCM shall not be responsible for enforcing the Contractor's obligations under State law in fulfilling the retention law requirements with subcontractors at any tier.

ARTICLE 6. INDEBTEDNESS. Before final payment is made, the Contractor must submit evidence satisfactory to the DFCM that all payrolls, materials bills, subcontracts at any tier and outstanding indebtedness in connection with the Work have been properly paid. Final Payment will be made after receipt of said evidence, final acceptance of the Work by the DFCM as well as compliance with the applicable provisions of the General Conditions.

Contractor shall respond immediately to any inquiry in writing by DFCM as to any concern of financial responsibility and DFCM reserves the right to request any waivers, releases or bonds from Contractor in regard to any rights of Subcontractors (including suppliers) at any tier or any third parties prior to any payment by DFCM to Contractor.

ARTICLE 7. ADDITIONAL WORK. It is understood and agreed by the parties hereto that no money will be paid to the Contractor for additional labor or materials furnished unless a new contract in writing or a Modification hereof in accordance with the General Conditions and the Contract Documents for such additional labor or materials has been executed. The DFCM specifically reserves the right to modify or amend this Contractor's Agreement and the total sum due hereunder either by enlarging or restricting the scope of the Work.

ARTICLE 8. INSPECTIONS. The Work shall be inspected for acceptance in accordance with the General Conditions.

ARTICLE 9. DISPUTES. Any dispute, PRE or Claim between the parties shall be subject to the provisions of Article 7 of the General Conditions. DFCM reserves all rights to pursue its rights and remedies as provided in the General Conditions.

ARTICLE 10. TERMINATION, SUSPENSION OR ABANDONMENT. This Contractor's Agreement may be terminated, suspended or abandoned in accordance with the General Conditions.

ARTICLE 11. DFCM'S RIGHT TO WITHHOLD CERTAIN AMOUNT AND MAKE USE THEREOF. The DFCM may withhold from payment to the Contractor such amount as, in DFCM's judgment, may be necessary to pay just claims against the Contractor or Subcontractor at any tier for labor and services rendered and materials furnished in and about the Work. The DFCM may apply such withheld amounts for the payment of such claims in DFCM's discretion. In so doing, the DFCM shall be deemed the agent of Contractor and payment so made by the DFCM shall be considered as payment made under this Contractor's Agreement by the DFCM to the Contractor. DFCM shall not be liable to the Contractor for any such payment made in good faith. Such withholdings and payments may be made without prior approval of the Contractor and may be also be prior to any determination as a result of any dispute, PRE, Claim or litigation.

ARTICLE 12. INDEMNIFICATION. The Contractor shall comply with the indemnification provisions of the General Conditions.

ARTICLE 13. SUCCESSORS AND ASSIGNMENT OF CONTRACT. The DFCM and Contractor, respectively bind themselves, their partners, successors, assigns and legal representatives to the other party to this Agreement, and to partners, successors, assigns and legal representatives of such other party with respect to all covenants, provisions, rights and responsibilities of this Contractor’s Agreement. The Contractor shall not assign this Contractor’s Agreement without the prior written consent of the DFCM, nor shall the Contractor assign any moneys due or to become due as well as any rights under this Contractor’s Agreement, without prior written consent of the DFCM.

ARTICLE 14. RELATIONSHIP OF THE PARTIES. The Contractor accepts the relationship of trust and confidence established by this Contractor's Agreement and covenants with the DFCM to cooperate with the DFCM and A/E and use the Contractor's best skill, efforts and judgment in furthering the interest of the DFCM; to furnish efficient business administration and supervision; to make best efforts to furnish at all times an adequate supply of workers and materials; and to perform the Work in the best and most expeditious and economic manner consistent with the interests of the DFCM.

ARTICLE 15. AUTHORITY TO EXECUTE AND PERFORM AGREEMENT. Contractor and DFCM each represent that the execution of this Contractor's Agreement and the performance thereunder is within their respective duly authorized powers.

ARTICLE 16. ATTORNEY FEES AND COSTS. Except as otherwise provided in the dispute resolution provisions of the General Conditions, the prevailing party shall be entitled to reasonable attorney fees and costs incurred in any action in the District Court and/or appellate body to enforce this Contractor's Agreement or recover damages or any other action as a result of a breach thereof.

IN WITNESS WHEREOF, the parties hereto have executed this Contractor's Agreement on the day and year stated hereinabove.

CONTRACTOR: _____

_____
Signature Date

Title: _____

State of _____)
)
County of _____)

_____
Please type/print name clearly

On this ____ day of _____, 20____, personally appeared before me, _____, whose identity is personally known to me (or proved to me on the basis of satisfactory evidence) and who by me duly sworn (or affirmed), did say that he (she) is the _____ (title or office) of the firm and that said document was signed by him (her) in behalf of said firm.

_____
Notary Public

(SEAL)

My Commission Expires _____

APPROVED AS TO AVAILABILITY OF FUNDS:

_____
David D. Williams, Jr. Date
DFCM Administrative Services Director

DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT

_____
Lynn A. Hinrichs Date
Assistant Director Construction Management

APPROVED AS TO FORM:
ATTORNEY GENERAL
July 1, 2009
By: Alan S. Bachman
Asst Attorney General

APPROVED FOR EXPENDITURE:

_____
Division of Finance Date

PERFORMANCE BOND

(Title 63, Chapter 56, U. C. A. 1953, as Amended)

That _____ hereinafter referred to as the "Principal" and _____, a corporation organized and existing under the laws of the State of _____, with its principal office in the City of _____ and authorized to transact business in this State and U. S. Department of the Treasury Listed (Circular 570, Companies Holding Certificates of Authority as Acceptable Securities on Federal Bonds and as Acceptable Reinsuring Companies); hereinafter referred to as the "Surety," are held and firmly bound unto the State of Utah, hereinafter referred to as the "Obligee, " in the amount of _____ _____ DOLLARS ($_____) for the payment whereof, the said Principal and Surety bind themselves and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written Contract with the Obligee, dated the _____ day of _____, 20____, to construct _____ in the County of _____, State of Utah, Project No. _____, for the approximate sum of _____ _____ Dollars ($_____), which Contract is hereby incorporated by reference herein.

NOW, THEREFORE, the condition of this obligation is such that if the said Principal shall faithfully perform the Contract in accordance with the Contract Documents including, but not limited to, the Plans, Specifications and conditions thereof, the one year performance warranty, and the terms of the Contract as said Contract may be subject to Modifications or changes, then this obligation shall be void; otherwise it shall remain in full force and effect.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the state named herein or the heirs, executors, administrators or successors of the Owner.

The parties agree that the dispute provisions provided in the Contract Documents apply and shall constitute the sole dispute procedures of the parties.

PROVIDED, HOWEVER, that this Bond is executed pursuant to the Provisions of Title 63, Chapter 56, Utah Code Annotated, 1953, as amended, and all liabilities on this Bond shall be determined in accordance with said provisions to the same extent as if it were copied at length herein.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this _____ day of _____, 20_____.

WITNESS OR ATTESTATION:

_____

PRINCIPAL:

_____

By: _____ (Seal)

Title: _____

WITNESS OR ATTESTATION:

_____

SURETY:

_____

By: _____ (Seal)

Attorney-in-Fact

STATE OF _____)
) ss.
COUNTY OF _____)

On this _____ day of _____, 20___, personally appeared before me _____, whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who, being by me duly sworn, did say that he/she is the Attorney in-fact of the above-named Surety Company and that he/she is duly authorized to execute the same and has complied in all respects with the laws of Utah in reference to becoming sole surety upon bonds, undertakings and obligations, and that he/she acknowledged to me that as Attorney-in-fact executed the same.

Subscribed and sworn to before me this _____ day of _____, 20_____.

My commission expires: _____

Resides at: _____

_____

NOTARY PUBLIC

Agency: _____

Agent: _____

Address: _____

Phone: _____

Approved As To Form: May 25, 2005
By Alan S. Bachman, Asst Attorney General

PAYMENT BOND

(Title 63, Chapter 56, U. C. A. l953, as Amended)

KNOW ALL PERSONS BY THESE PRESENTS:

That _____ hereinafter referred to as the "Principal," and _____ _____, a corporation organized and existing under the laws of the State of _____authorized to do business in this State and U. S. Department of the Treasury Listed (Circular 570, Companies Holding Certificates of Authority as Acceptable Securities on Federal Bonds and as Acceptable Reinsuring Companies); with its principal office in the City of _____, hereinafter referred to as the "Surety," are held and firmly bound unto the State of Utah hereinafter referred to as the "Obligee," in the amount of _____ Dollars ($_____) for the payment whereof, the said Principal and Surety bind themselves and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written Contract with the Obligee, dated the _____ day of _____, 20____, to construct _____ in the County of _____, State of Utah, Project No. _____ for the approximate sum of _____ _____ Dollars ($_____), which contract is hereby incorporated by reference herein.

NOW, THEREFORE, the condition of this obligation is such that if the said Principal shall pay all claimants supplying labor or materials to Principal or Principal's Subcontractors in compliance with the provisions of Title 63, Chapter 56, of Utah Code Annotated, l953, as amended, and in the prosecution of the Work provided for in said Contract, then, this obligation shall be void; otherwise it shall remain in full force and effect.

That said Surety to this Bond, for value received, hereby stipulates and agrees that no changes, extensions of time, alterations or additions to the terms of the Contract or to the Work to be performed thereunder, or the specifications or drawings accompanying same shall in any way affect its obligation on this Bond, and does hereby waive notice of any such changes, extensions of time, alterations or additions to the terms of the Contract or to the Work or to the specifications or drawings and agrees that they shall become part of the Contract Documents.

PROVIDED, HOWEVER, that this Bond is executed pursuant to the provisions of Title 63, Chapter 56, Utah Code Annotated, 1953, as amended, and all liabilities on this Bond shall be determined in accordance with said provisions to the same extent as if it were copied at length herein.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this _____ day of _____, 20____.

WITNESS OR ATTESTATION:

_____

PRINCIPAL:

_____

By: _____ (Seal)

Title: _____

WITNESS OR ATTESTATION:

_____

SURETY:

_____

By: _____

Attorney-in-Fact (Seal)

STATE OF _____)
) ss.
COUNTY OF _____)

On this _____ day of _____, 20_____, personally appeared before me _____ _____, whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who, being by me duly sworn, did say that he/she is the Attorney-in-fact of the above-named Surety Company, and that he/she is duly authorized to execute the same and has complied in all respects with the laws of Utah in reference to becoming sole surety upon bonds, undertakings and obligations, and that he/she acknowledged to me that as Attorney-in-fact executed the same.

Subscribed and sworn to before me this _____ day of _____, 20_____.

My commission expires: _____

Resides at: _____

_____
NOTARY PUBLIC

Agency: _____
Agent: _____
Address: _____
Phone: _____

Approved As To Form: May 25, 2005
By Alan S. Bachman, Asst Attorney General

STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES

Division of Facilities Construction and Management

DFCM

CERTIFICATE OF SUBSTANTIAL COMPLETION

PROJECT _____ PROJECT NO: _____

AGENCY/INSTITUTION _____

AREA ACCEPTED _____

The Work performed under the subject Contract has been reviewed on this date and found to be Substantially Completed as defined in the General Conditions; including that the construction is sufficiently completed in accordance with the Contract Documents, as modified by any change orders agreed to by the parties, so that the State of Utah can occupy the Project or specified area of the Project for the use for which it is intended.

The DFCM - (Owner) accepts the Project or specified area of the Project as Substantially Complete and will assume full possession of the Project or specified area of the Project at _____ (time) on _____ (date).

The DFCM accepts the Project for occupancy and agrees to assume full responsibility for maintenance and operation, including utilities and insurance, of the Project subject to the itemized responsibilities and/or exceptions noted below:

_____

_____

The Owner acknowledges receipt of the following closeout and transition materials:

As-built Drawings O & M Manuals Warranty Documents Completion of Training Requirements

A list of items to be completed or corrected (Punch List) is attached hereto. The failure to include an item on it does not alter the responsibility of the Contractor to complete all the Work in accordance with the Contract Documents, including authorized changes thereof. The amount of _____(Twice the value of the punch list work) shall be retained to assure the completion of the punch list work.

The Contractor shall complete or correct the Work on the list of (Punch List) items appended hereto within _____ ____calendar days from the above date of issuance of this Certificate. The amount withheld pending completion of the list of items noted and agreed to shall be: $_____. If the list of items is not completed within the time allotted the Owner has the right to be compensated for the delays and/or complete the work with the help of independent contractor at the expense of the retained project funds. If the retained project funds are insufficient to cover the delay/completion damages, the Owner shall be promptly reimbursed for the balance of the funds needed to compensate the Owner.

_____ by: _____

CONTRACTOR (include name of firm) (Signature) DATE

_____ by: _____

A/E (include name of firm) (Signature) DATE

_____ by: _____

USING INSTITUTION OR AGENCY (Signature) DATE

_____ by: _____

DFCM (Owner) (Signature) DATE

4110 State Office Building, Salt Lake City, Utah 84114 cc: Parties Noted

telephone 801-538-3018 • facsimile 801-538-3267 • http://dfcm.utah.gov DFCM, Director

STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES

Division of Facilities Construction and Management

DFCM

General Contractor Performance Rating Form

Project Name:		DFCM Project#	
Contractor: (ABC Construction, John Doe, 111-111-1111)	A/E: (ABC Architects, Jane Doe, 222-222-2222)	Original Contract Amount:	Final Contract Amount:
DFCM Project Manager:		Contract Date:	
Completion Date:		Date of Rating:	

Rating Guideline	QUALITY OF PRODUCT OR SERVICES	COST CONTROL	TIMELINESS OF PERFORMANCE	BUSINESS RELATIONS
5-Exceptional	Contractor has demonstrated an exceptional performance level in any of the above four categories that justifies adding a point to the score. Contractor performance clearly exceeds the performance levels described as "Very Good"			
4-Very Good	Contractor is in compliance with contract requirements and/or delivers quality product/service.	Contractor is effective in managing costs and submits current, accurate, and complete billings	Contractor is effective in meeting milestones and delivery schedule	Response to inquiries, technical/service/ administrative issues is effective
3-Satisfactory	Minor inefficiencies/errors have been identified	Contractor is usually effective in managing cost	Contractor is usually effective in meeting milestones and delivery schedules	Response to inquires technical/ service/administrative issues is somewhat effective
2-Marginal	Major problems have been encountered	Contractor is having major difficulty managing cost effectively	Contractor is having major difficulty meeting milestones and delivery schedule	Response to inquiries, technical/service/administrative issues is marginally effective
1-Unsatisfactory	Contractor is not in compliance and is jeopardizing achievement of contract objectives	Contractor is unable to manage costs effectively	Contractor delays are jeopardizing performance of contract objectives	Response to inquiries, technical/service/administrative issues is not effective

1. Rate Contractors quality of workmanship, management of sub contractor performance, project cleanliness, organization and safety requirement.	**Score**
Agency Comments:	
A & E Comments:	
DFCM Project Manager Comments:	

2. Rate Contractor administration of project costs, change orders and financial management of the project budget.	Score
Agency Comments:	
A & E Comments:	
DFCM Project Manager Comments:	

3. Rate Contractor's performance and adherence to Project Schedule, delay procedures and requirements of substantial completion, inspection and punch-list performance.	Score
Agency Comments:	
A & E Comments:	
DFCM Project Manager Comments:	

4. Evaluate performance of contractor management team including project manager, engineer and superintendent also include in the rating team's ability to work well with owner, user agency and consultants.	Score
Agency Comments:	
A & E Comments:	
DFCM Project Manager Comments:	

5. Rate success of Contractor's management plan, completion of the plans mitigation of project risks and performance of value engineering concepts.	Score
Agency Comments:	
A & E Comments:	
DFCM Project Manager Comments:	

Signed by:	Date:	Mean Score

Additional Comments:

DFCM PROJECT

OTTER CREEK STATE PARK
FISH CLEANING STATION

DFCM PROJECT NUMBER:
09136510

ARCHITECT

SARGENT DESIGN GROUP
36 NORTH 300 WEST
SUITE B
CEDAR CITY, UTAH 84720

(435) 586-8510 Office
(435) 586-4873 Fax

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APPENDIX A

GEOTECHNICAL REPORT

SECTION 01100

SUMMARY

PART 1 GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

A. Conditions
   1. Conditions of the Contract apply to each Division of the Specifications.
   2. Provisions contained in this Division apply to Divisions 02 through 16 of the Specifications.

1.2 SCOPE OF WORK

A. Work will include the following: concrete slab, pre-engineered metal pavilion, fish cleaning station, plumbing lines, electrical power, septic tank, demolition of existing septic tank, demolition of existing fish cleaning station, removal of existing trees, asphalt paving, and trenching. Any questions concerning items included in the contract should be address to the architect.

1.3 WORK RESTRICTIONS

A. During construction period, Contractor shall have full use of premises for construction operations, including use of site. Contractor's use of premises is limited by Owner's right to perform construction operations with its own forces or to employ separate contractors on portions of Project and to items listed below.
   1. Confine operations to areas within Contract limits shown on Drawings. Do not disturb portions of site beyond Contract limits.
   2. Do not allow alcoholic beverages, illegal drugs, nor those under their influence on Project site.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 4000

QUALITY CONTROLS

PART 1 - GENERAL

1.1 REGULATORY REQUIREMENTS

A. Asbestos:
1. Contract Documents for this Project have been prepared in accordance with generally accepted professional architectural and engineering practices. Accordingly, no asbestos or products containing asbestos have been knowingly specified for this Project. Notify Architect immediately for instructions if:
   a. Materials containing asbestos are brought to site for inclusion in the Work.
   b. Asbestos containing materials are encountered in existing structures upon which work is being done.
2. At Architect's direction and with Owner's approval, a certified asbestos inspector will collect samples and an independent testing laboratory will perform testing procedures on suspect materials.
3. Certify that based upon best knowledge, information, inspection, and belief no building materials containing asbestos were used in construction of Project. Submit certification on form provided by Owner.

1.2 REFERENCES

A. Reference Standards:
1. Industry Standards:
   a. Except where Contract Documents specify otherwise, construction industry standards will apply and are made a part of Contract Documents by reference.
   b. Where compliance with two or more standards is specified and standards apparently establish different or conflicting requirements for minimum quantities or quality levels, refer to Architect for decision before proceeding. Quantity or quality level shown or specified will be minimum provided or performed. Actual installation may comply exactly with minimum quantity or quality specified, or it may exceed minimum within reasonable limits. In complying with these requirements, indicated numeric values are minimum or maximum, as appropriate for context of requirements. Refer uncertainties to Architect for decision before proceeding.
   c. Each entity engaged in construction on Project is required to be familiar with industry standards applicable to that entity's construction activity. Copies of applicable standards are not bound with Contract Documents. Where copies of standards are needed for performance of a required construction activity, Contractor will obtain copies directly from publication source.
   d. Trade Assoc names and titles of general standards are frequently abbreviated. The following acronyms or abbreviations, as referenced in Contract Documents, are defined to mean associated names. Names and addresses are subject to change and are believed to be, but are not assured to be, accurate and up to date as of date of Contract Documents.

AABC	Associated Air Balance Council	Washington	DC	(202) 737-0202	www.aabchq.com
AAMA	American Architectural Manufacturers Assoc	Schaumburg	IL	(847) 303-5859	www.aamanet.org
AASHTO	American Assoc of State Highway & Transportation Officials	Washington	DC	(202) 624-5800	www.aashto.org
ACI	American Concrete Inst International	Farmington Hills	MI	(248) 848-3700	www.aci-int.org

AGA	American Gas Assoc	Washington	DC	(202) 824-7000	www.aga.org
AIA	American Inst of Architects	Washington	DC	(202) 626-7300	www.aiaonline.com
AISC	American Inst of Steel Construction	Chicago	IL	(312) 670-2400	www.aisc.org
AISI	American Iron & Steel Inst	Washington	DC	(202) 452-7100	www.steel.org
AITC	American Inst of Timber Construction	Englewood	CO	(303) 792-0669	
AMCA	Air Movement & Control Assoc International	Arlington Heights	IL	(847) 394-0150	www.amca.org
ANSI	American National Standards Inst	New York	NY	(212) 642-4900	www.ansi.org
APA	Engineered Wood Assoc	Tacoma	WA	(253) 565-6600	www.apawood.org
API	American Petroleum Inst	Washington	DC	(202) 682-8000	www.api.org
ARI	Air Conditioning & Refrigeration Inst	Arlington	VA	(703) 524-8800	www.ari.org
ASHRAE	American Society of Heating, Refrigerating, & Air-Conditioning Engineers	Atlanta	GA	(404) 636-8400	www.ashrae.org
ASME	American Society of Mechanical Engineers International	New York	NY	(800) 843-2763	www.asme.org
ASTM	American Society for Testing & Materials	West Conshohocken	PA	(610) 832-9585	www.astm.org
AWI	Architectural Woodwork Inst	Reston	VA	(703) 733-0600	www.awinet.org
AWPA	American Wood Preservers' Assoc	Granbury	TX	(817) 326-6300	www.awpa.com
AWS	American Welding Society	Miami	FL	(800) 443-9353	www.amweld.org
AWWA	American Water Works Assoc	Denver	CO	(303) 794-7711	www.awwa.org
BHMA	Builders Hardware Manufacturers Assoc	New York	NY	(212) 297-2100	www.buildershardware.com
BIA	Brick Industry Assoc	Reston	VA	(703) 620-0010	www.bia.org
CFI	International Certified Floorcovering Installers Assoc	Kansas City	MO	(816) 231-4646	www.cfi-installers.org
CRI	Carpet & Rug Inst	Dalton	GA	(800) 882-8846	www.carpet-rug.com
CRSI	Concrete Reinforcing Steel Inst	Schaumburg	IL	(847) 517-1200	www.crsi.org
CISPI	Cast Iron Soil Pipe Inst	Chattanooga	TN	(423) 892-0137	
DHI	Door & Hardware Inst	Chantilly	VA	(703) 222-2010	www.dhi.org
EIMA	EIFS Industry Members Assoc	Morrow	GA	(800) 294-3462	www.eifsfacts.com
FM	FM Global	Johnston	RI		www.fmglobal.com
GA	Gypsum Assoc	Washington	DC	(202) 289-5440	www.gypsum.org
HPVA	Hardwood Plywood & Veneer Assoc	Reston	VA	(703) 435-2900	www.hpva.org
ICBO	International Conference of Building Officials	Whittier	CA	(800) 423-6587	www.icbo.org
ISSA	International Slurry Surfacing Assoc	Washington	DC	(202) 857-1160	www.slurry.org
LPI	Lightning Protection Inst	Arlington Heights	IL	(800) 488-6864	www.lightning.org
MFMA	Maple Flooring Manufacturers' Assoc	Northbrook	IL	(847) 480-9138	www.maplefloor.org
MSS	Manufacturer's Standardization Society of The Valve and Fittings Industry	Vienna	VA	(703) 281-6613	www.mss-hq.com
NAAMM	National Assoc of Architectural Metal Manufacturers	Chicago	IL	(312) 332-0405	www.naamm.org

NEC	National Electric Code	(from NFPA).			
NEMA	National Electrical Manufacturer's Assoc	Rosslyn	VA	(703) 841-3200	www.nema.org
NFPA	National Fire Protection Assoc	Quincy	MA	(800) 344-3555	www.nfpa.org
NFRC	National Fenestration Rating Council	Silver Spring	MD	(301) 589-6372	www.nfrc.org
NSF	NSF International	Ann Arbor	MI	(734) 769-8010	www.nsf.org
PCA	Portland Cement Assoc	Skokie	IL	(847) 966-6200	www.portcement.org
PCI	Precast / Prestressed Concrete Inst	Chicago	IL	(312) 786-0300	www.pci.org
PEI	Porcelain Enamel Inst	Nashville	TN	(615) 385-5357	www.pocelainenamel.com
SDI	Steel Deck Inst	Fox River Grove	IL	(847) 462-1930	www.sdi.org
SDI	Steel Door Inst	Cleveland	OH	(440) 899-0010	www.steeldoor.org
SIGMA	Sealed Insulating Glass Manufacturer's Assoc	Chicago	IL	(312) 644-6610	
SJI	Steel Joist Inst	Myrtle Beach	SC	(843) 626-1995	www.steeljoist.org
SMACNA	Sheet Metal & Air Conditioning Contractors National Assoc	Chantilly	VA	(703) 803-2980	www.smacna.org
SPIB	Southern Pine Inspection Bureau	Pensacola	FL	(850) 434-2611	
SSMA	Steel Stud Manufacturer's Assoc	Chicago	IL	(312) 332-0405	www.ssma.com
TCA	Tile Council of America	Anderson	SC	(864) 646-8453	www.tileusa.com
TPI	Truss Plate Inst	Madison	WI	(608) 833-5900	
UL	Underwriters Laboratories	Northbrook	IL	(847) 272-8800	www.ul.com
WDMA	Window and Door Manufacturer's Assoc	Des Plaines	IA	(847) 299-5200	www.nwwda.org
WWPA	Western Wood Products Assoc	Portland	OR	(503) 224-3930	www.wwpa.org

2. Federal Government Agencies: Names and titles of federal government standard or specification producing agencies are often abbreviated. Following acronyms or abbreviations referenced in Contract Documents represent names of standard or specification producing agencies of federal government. Names and addresses are subject to change but are believed to be, but are not assured to be, accurate and up to date as of date of Contract Documents.

CS	Commercial Standard (U S Department of Commerce)	Washington	DC	(202) 512-0000	www.doc.gov
EPA	Environmental Protection Agency	Washington	DC	(202) 260-2090	www.epa.gov
FCC	Federal Communications Commission	Washington	DC	(202) 418-0126	www.fcc.gov
FS	Federal Specifications Unit (Available from GSA)	Washington	DC	(202) 619-8925	www.gsa.gov
MIL	Military Standardization Documents (U S Department of Defense)	Philadelphia	PA	(215) 697-2179	www.dod.gov
OSHA	Occupational Safety & Health Administration (U S Department of Labor)	Washington	DC	202) 219-8148	www.osha.gov
PS	Product Standard of NBS (U S Department of Commerce)	Washington	DC	(202) 512-1800	www.doc.gov

B. Governing Regulations / Authorities:

1. Contact authorities having jurisdiction directly for information and decisions having a bearing on the Work.

2. Obtain copies of regulations required to be retained at Project Site, available for reference by parties who have a reasonable need for such reference.

1.3 QUALITY CONTROL

A. Field Quality Control Procedures:
   1. Inspection and testing by Owner, Architect, Contractor, their consultants or government agencies to examine Work performed by Contractor does not relieve Contractor of responsibility for compliance with Contract Documents.
   2. Quality control services include inspections, tests and related actions including reports, performed by Contractor. They do not include inspections, tests or related actions performed by Architect, Owner, governing authorities or independent agencies hired by Owner or Architect.
      a. Contractor and each agency engaged to do inspections, tests, and similar services will coordinate sequence of activities to accommodate required services with minimum of delay. In addition, Contractor and each agency will coordinate activities to avoid necessity of removing and replacing construction to accommodate inspections and tests. Contractor is responsible for scheduling times for inspections, tests, taking samples, and similar activities.
      b. Provide inspections, tests, and similar quality control services specified in individual specification Sections or required by governing authorities.
      c. Where results of inspections, tests, or similar services show that the Work does not comply with Contract Document requirements, correct the deficiencies in the Work.
      d. Cooperate with agencies performing required inspections, tests, and similar services and provide reasonable auxiliary services as requested. Notify agency sufficiently before operations to allow assignment of personnel. Auxiliary services required include but are not limited to -
         1) Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests.
         2) Taking adequate quantities of representative samples of materials that require testing or helping agency in taking samples.
         3) Providing facilities for storage and curing of test samples, and delivery of samples to testing laboratories.
         4) Providing agency with preliminary design mix proposed for use for materials mixes that require control by testing agency.
         5) Securing and protecting samples and test equipment at Project site.
   3. Upon completion of inspection, testing, sample-taking, and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes. Comply with Contract Documents in making such repairs.
   4. Protect construction exposed by or for quality control service activities, and protect repaired construction.
   5. Repair and protection is Contractor's responsibility, regardless of who caused the inspection, testing, or similar services.

B. Testing And Inspecting Services:
   1. Engage inspection and testing service agencies, including independent testing laboratories, only with written approval of Architect. Each independent inspection and testing agency engaged on Project will be licensed and authorized to operate in the jurisdiction in which Project is located.
   2. Duties of Testing Agency:
      a. Independent testing agency engaged to perform inspections, sampling, and testing of materials and construction specified in individual specification Sections will cooperate with Architect and Contractor in performance of its duties and will provide qualified personnel to perform required inspections and tests.
      b. Agency will notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
      c. Agency is not authorized to release, revoke, alter, or enlarge requirements of Contract Documents, or approve or accept any portion of the Work.
      d. Agency will not perform any duties of Contractor.
   3. Submittals:

a. Independent testing agency will submit certified written report of each inspection, test, or similar service, to Architect, in duplicate, unless Contractor is responsible for service. If Contractor is responsible for service, submit certified written report of each inspection, test, or similar service through Contractor, in duplicate.
   1) Submit additional copies of each written report directly to governing authority, when authority so directs.
   2) Written reports of each inspection, test, or similar service will include, but not be limited to:
      a) Date of issue.
      b) Project title and number.
      c) Name, address and telephone number of testing agency.
      d) Dates and locations of samples and tests or inspections.
      e) Names of individuals making the inspection or test.
      f) Designation of the Work and test method.
      g) Identification of product and specification Section.
      h) Complete inspection or test data.
      i) Test results and interpretations of test results.
      j) Ambient conditions at time of sample-taking and testing.
      k) Comments or professional opinion as to whether inspected or tested Work complies with Contract Document requirements.
      l) Name and signature of laboratory inspector.
      m) Recommendations on retesting.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 01 500

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 ADMINISTRATIVE REQUIREMENTS

A. Where necessary, engage appropriate local utility companies to install temporary service or connect to existing service. Where utility company provides only part of service, provide remainder with matching, compatible materials and equipment. Comply with utility company's recommendations.
   1. Comply with industry standards and applicable laws and regulations of authorities having jurisdiction.
   2. Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.
   3. Arrange with utility company and existing users for time when service can be interrupted, where necessary, to make connections for temporary services.
   4. Provide adequate capacity at each stage of construction. Before temporary utility availability, provide trucked-in services.
   5. Obtain construction easements necessary to bring temporary and/or permanent utilities to site.
   6. Use qualified personnel for installation and maintenance of temporary facilities. Locate facilities where they will serve Project adequately and result in minimum interference with the Work of Owner or other Contractors on Project Site. Relocate and modify facilities as required.
   7. Pay cost and use charges for temporary facilities and utilities.

B. Prepare schedule indicating dates for implementation and termination of each temporary utility. At earliest feasible time and when acceptable to Owner, change over from use of temporary service to use of permanent service.

C. Keep temporary services and facilities clean and neat in appearance. Operate in safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or allow them to interfere with progress of The Work. Do not allow hazardous, dangerous or unsanitary conditions, or public nuisances to develop or persist on Project site.

D. Limit availability of temporary facilities to essential and intended uses to reduce waste and abuse.

E. Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
   1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour day basis where required to achieve indicated results and to avoid possibility of damage.
   2. Prevent water filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

F. Remove each temporary facility and control when need has ended, or when replaced by authorized use of permanent facility, or by Substantial Completion. Complete permanent construction that may have been delayed because of interference with temporary facility. Repair damaged work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
   1. Materials and facilities that make up temporary facilities are property of Contractor.
   2. By Substantial Completion, clean and renovate permanent facilities used during construction period, including but not limited to:
      a. Replace air filters and clean inside of ductwork and housings.
      b. Replace significantly worn parts and parts subjected to unusual operating conditions.
      c. Replace lamps that are burned out or noticeably dimmed by substantial hours of use.

PART 2 - PRODUCTS: Not Used

PART 3 - EXECUTION

3.1 TEMPORARY UTILITIES:

A. Temporary Electric Power: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period.

B. Temporary Fire Protection:
   1. Install and maintain temporary fire protection facilities of types needed to protect against predictable and controllable fire losses. At a minimum, provide and maintain in working order two Standard UL Labeled ABC all-purpose 10 lb fire extinguishers. Do not incorporate these extinguishers into final Project.
   2. Locate fire extinguishers where convenient and effective for their intended purpose.
   3. Store combustible materials in containers in fire-safe locations.
   4. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways, and other access routes for fighting fires.
   5. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.
   6. At earliest feasible date in each area of Project, complete installation of permanent fire protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.

C. Heating, Cooling, And Ventilating:
   1. Install and operate temporary heating, cooling, and ventilating units including fuel, temporary piping, fittings, wiring, and connections necessary to provide environmental conditions specified for various portions of the Work. Coordinate ventilation requirements to produce ambient conditions required and reduce consumption of energy.
   2. Repair damage to building and contents caused by cold, heat, dampness, and/or heating, cooling, and ventilating equipment. Select equipment that will not have harmful effect on completed installations or on elements being installed.
   3. Maintain safe conditions for use of temporary heating, cooling, and ventilating systems including, but not limited to, following requirements:
      a. Operate equipment according to equipment manufacturer's instructions.
      b. Provide fresh air ventilation required by equipment manufacturer.
      c. Keep temperature of fuel containers stabilized.
      d. Secure fuel containers from overturning.
      e. Operate equipment away from combustible materials.
   4. Permanent mechanical system may be operated subject to the following conditions:
      a. Do not operate system when work causing air-borne dust is occurring or when dust caused by such work is present without installation of temporary filtering system approved by Architect.
      b. Operate system at no cost to Owner, including cost of fuel.
      c. Assume all responsibility and risk for operation of system.
      d. Return permanent mechanical equipment to 'like-new' condition for Substantial Completion Inspection.

D. Temporary Lighting: Install and operate temporary lighting that will provide adequate illumination for construction operations and traffic conditions.

E. Temporary Telephones
   1. Provide temporary telephone service for all personnel engaged in construction activities, throughout construction period.
   2. Contractor will pay for Local calls. Party making call will pay for long-distance and toll calls.
   3. At each telephone, post list of important telephone numbers.

F. Water Service: Install water service and distribution piping of sizes and pressures adequate for construction until permanent water service is in use.

3.2 CONSTRUCTION FACILITIES:

A. Field Offices:
   1. Provide and maintain insulated, weather tight temporary office of sufficient size to accommodate Contractor's personnel at Project site and for use by Owner, Architect and Subcontractors.
   2. Keep office clean and orderly.
   3. Heat and cool office as needed.
   4. Furnish office with locking door, light(s), table(s), bench(es), rack(s) for drawings, telephone, and FAX machine.
   5. Make office available for progress meetings.
   6. If Owner agrees to permit removal of temporary office before Substantial Completion, Contractor may use a room as an office after temporary office is removed. Equip room as specified above and restore to 'like-new' condition before Substantial Completion.

B. Sanitary Facilities:
   1. Provide temporary sanitary toilet.
   2. Service and maintain temporary toilet in a clean, sanitary condition.

3.3 CONSTRUCTION AIDS:

A. Scaffolding, Platforms, Stairs, Etc:
   1. Furnish and maintain equipment such as temporary stairs, ladders, ramps, platforms, scaffolds, hoists, runways, derricks, chutes and elevators as required for proper execution of The Work.
   2. Apparatus, equipment, and construction will meet requirements of applicable laws and safety regulations.

3.4 VEHICULAR ACCESS AND PARKING:

A. Temporary Access Roads:

B. Haul Routes:

C. Temporary Parking Areas:

D. Temporary Roads:

E. Traffic Control:

F. Staging Areas:

3.5 TEMPORARY BARRIERS AND ENCLOSURES:

A. General:
   1. Protection Of Existing Improvements: Protect streets, private roads, and sidewalks, including overhead protection where required. Repair damage to existing improvements caused by construction activities.
   2. Protection Of Adjacent Property: Provide necessary protection for adjacent property and lateral support thereof.

B. Temporary Barricades:
   1. Comply with standards and code requirements in erecting barricades, warning signs, and lights.

2. Take necessary precautions to protect persons, including members of the public, from injury or harm.

C. Temporary Fencing: Before construction begins, install 6 foot high enclosure fence with lockable entrance gates. Locate where shown on Drawings. If not shown on Drawings, enclose entire site or portion sufficient to accommodate construction operations.

D. Temporary Protective Walkways: Erect structurally adequate protective covered walkway for passage of persons along adjacent Public Street if shown on drawings or required by applicable laws. Coordinate with entrance gates, other facilities and obstructions.

E. Temporary Security Barriers:
1. Install temporary enclosures of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft, and other violations of security.
2. Secure materials and equipment stored on site.
3. Maintain exterior building security until Substantial Completion
4. Secure building at the end of each work day.

F. Temporary Tree And Plant Protection:
1. Before commencing site work, build and maintain protective fencing around existing trees and vegetation as shown on the drawings.
2. Individual trees will have protective fencing built beyond drip line.
3. Build protective fencing around groups of trees and other vegetation as indicated on Drawings.
4. Keep areas within protective fencing undisturbed and do not use for any purpose.
5. Remove and replace vegetation that dies or is damaged beyond repair due to construction activities.

3.6 TEMPORARY CONTROLS:

A. Temporary Erosion And Sediment Control:
1. Take precautions necessary to prevent erosion and transportation of soil downstream, to adjacent properties, and into on-site or off-site drainage systems.
2. Develop, install, and maintain an erosion control plan if required by law.
3. Repair and correct damage caused by erosion.

B. Temporary Environmental Controls:
1. Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations, and reduce possibility that air, waterways, and subsoil might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment that produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near site.
2. Provide protection against weather (rain, winds, storms, frost, or heat) to maintain all work, materials, apparatus, and fixtures free from injury or damage.
3. Protect excavation, trenches, and building from damage from rain water, spring water, ground water, backing up of drains or sewers, and all other water. For temporary drainage and dewatering facilities and operations not directly associated with construction activities included under individual Sections, comply with requirements of applicable local regulations. Where feasible, use permanent facilities. If sewers are not available or cannot be used, provide drainage ditches, dry wells, stabilization ponds, and similar facilities. Filter out excessive amounts of soil, construction debris, chemicals, oils and similar contaminants that might clog sewers or pollute waterways before discharge.
4. Comply with governing ordinances relating to weed control and removal.

3.7 PROJECT IDENTIFICATION

A. Temporary Project Signage:

1. Contractor may, at its option, erect a temporary project identification sign. Sign may be free-standing or attached to temporary field office or storage shed. No other signs or advertisements are allowed on building site.
2. Owner reserves right to remove and/or take possession of any Project identification sign.
3. Provide a temporary Project Identification sign. Sign may be free-standing or attached to temporary field office or storage shed. No other signs or advertisements are allowed on building site.
4. Sign will be no larger than 4 feet by 8 feet and include following information:
   a. Project Name as shown in Contract Documents.
   b. Contractor's name.
   c. Architectural firm name.
5. Owner reserves the right to remove and/or take possession of any Project identification sign.

END OF SECTION

SECTION 01661

TESTING PRESSURE PIPELINES

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Testing of culinary or sanitary pressure pipelines with rated pressures greater than 25 feet of head (10.8 psi).

PART 2 - PRODUCTS

2.01 TEST EQUIPMENT AND LABOR

A. The Contractor shall supply all labor, materials and equipment required for pipeline testing. Such equipment may include pumps, flow-measuring devices, pressure gauges and devices for plugging or blocking pipelines.

B. Gauges used in pressure testing shall be capable of indicating pressures at least 1.5 times normal working pressure of the line.

PART 3 - EXECUTION

3.01 GENERAL

A. All pipeline tests shall be done in the presence of the Owner's representative or the Engineer or an independent tester who shall present the Owner with a certificate of compliance upon successful completion of the test.

3.01 INITIAL FILLING OF PRESSURE PIPELINES

A. Initial filling of the pipeline is often the most critical period during the life of a pipeline and extreme caution is required during this phase.

B. Prior to filling, all air relief and vacuum relief devices shall be checked to insure they are properly installed and that their isolation valves are open and that the valves are operable.

C. The average filling rate shall not exceed 1 foot per second. Filling rate shall be in accordance with the following table:

Nominal Pipe Size Inches	Flow Rate (gpm)
2	10
4	39
6	88
8	157
10	245
12	350
14	480
16	626
18	793
20	979
24	1,410
27	1,785
30	2,200
33	2,665
36	3,175
42	4,320
48	5,640

For pipelines larger than these, the filling rate shall be calculated and submitted to the Engineer for approval before filling.

D. After filling, the pipeline shall be allowed to sit for a 24-hour period prior to testing. All air shall then be purged from the system prior to performing pressure testing.

E. The Contractor shall be responsible for providing all water required for filling and pressure testing.

3.03 TESTING OF PRESSURE LINES

A. After laying pipe, all pipe or sections of such which may be separated by valves shall be hydrostatically tested.

B. Hydrostatic pressure during test shall not be less than 1.5 times the working pressure of the line or other pressure determined by the Engineer at the point of test. The working pressure shall be determined by the Engineer.

C. Hydrostatic pressure and leakage testing of ductile iron pipelines shall be performed in strict conformance with ***AWWA/ANSI C600, Installation of Ductile-Iron Water Mains and Their Appurtenances, latest revision.***

D. Hydrostatic pressure and leakage testing of PVC pipelines shall be performed in strict conformance with ***AWWA/ANSI C605, Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water, latest revision.***

3.04 CAUSE FOR REJECTION

A. Pipelines that fail the hydrostatic pressure and leakage tests shall be rejected and the Contractor shall determine the cause of failure and rectify. After repairs are made the Contractor shall retest and demonstrate compliance to the pressure and leakage test criteria.

3.05 CLEAN-UP

A. Water used for testing shall be disposed of by the Contractor.

B. All equipment used for testing shall be removed from the site and all special connections made for the sole purpose of pipeline testing shall be capped and sealed.

END OF SECTION

7/03

SECTION 01666

TESTING GRAVITY OR LOW PRESSURE PIPELINES

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Testing of non-pressure and low-pressure gravity pipelines.

B. Testing of manholes.

PART 2 - PRODUCTS

2.01 TEST EQUIPMENT AND LABOR

A. Contractor shall supply all labor, materials and equipment required for pipeline testing. Such equipment may include pumps, compressors, flow measuring devices, pipe plugs or other line blockage devices.

B. Gauges used in the low pressure air test shall be accurate to 0.25 psi.

PART 3 - EXECUTION

3.01 GENERAL

A. Sewer lines shall have a clear unobstructed view between ends of manholes and ends of other straight runs of pipe. After cleaning and flushing lines shall be inspected between manholes for alignment by using lights or mirrors.

B. Pipe shall be tested for smoothness of joints inside pipe especially in the invert. Where possible, any projections into the interior of the pipe shall be cut away.

C. Pipe may be removed, re-laid or replaced under the direction of the Engineer for any of the following reasons.

1. Pipe is damaged.
2. Pipe is not laid to true line or grade.
3. Pipe is improperly joined or not smooth across joints.
4. Pipe does not pass testing criteria given in these Specifications.

D. A ball go-no-go gauge shall be used to check deflections in sewer pipes. Lines with deflections greater than 5% shall be rejected and replaced at the Contractor's expense.

E. All pipeline tests shall be done in the presence of the Owner's Agent or the Engineer or an Independent Tester who shall present Owner with a Certificate of Compliance upon successful completion.

F. All lateral connections to the pipeline including wyes, saddles, cut holes, etc., shall be installed and suitably plugged prior to commencing the leakage test.

3.02 WATER TESTING LOW PRESSURE AND GRAVITY FLOW LINES

A. Testing for this part applies to lines rated for 25 feet of head or less and gravity flow pipelines.

B. After pipe is laid, manholes constructed and backfill completed, the Contractor shall make tests for infiltration of water into or leakage out of pipe, laterals and manholes.

C. Where the ground water level rises above the top of the pipe for the full length of line being tested, infiltration shall be measured. The allowable leakage for any segment of line shall not exceed 50 gallons per inch of pipe diameter per mile of sewer per 24 hours.

D. Where the ground water does not completely cover the pipe segment being tested over its full length, a water leakage test, per the following procedure, shall be made.

1. In lines which are open to manholes, each section of line between successive manholes shall be tested.
2. Plugs shall be placed in all laterals; the lower end manhole; and in all inlets to the upstream manhole.
3. The pipe and upper manhole shall be filled with water to a level 4 feet above the highest invert. Filling shall be per Part 3.05.
4. Leakage shall be observed and measured. Maximum allowable loss of water shall not exceed 50 gallons per inch of pipe diameter, per mile of line, per 24 hours.
5. In low pressure lines without manholes, the entire line or convenient segments between valving shall be tested.
6. The line shall be filled per cautions and restrictions listed in Part 3.05.
7. Allowable leakage shall be per Paragraph 4. above.

3.05 AIR TESTING OF LOW PRESSURE AND GRAVITY FLOW LINES

A. Testing for this part applies to pipelines rated for 25 feet of head or less and gravity flow pipelines no larger than 18-inch nominal diameter.

B. As an alternate to water testing, the Contractor may perform a Low Pressure Air Test by the Time Pressure Drop Method.

C Perform Air Test per the following procedure:

1. Seal all connections to segment of line to be tested.
2. Slowly introduce low pressure air into pipeline until pressure reaches 5 psig (greater than any ground water pressure that may be over pipe).
3. Allow 2 minutes for air pressure to stabilize.
4. As pressure in line decreases, record the time period over which the pressure decreases from 3.5 to 2.5 psig (greater than any ground water pressure that may be over pipe).
5. To pass test, the time period must be greater than those values shown on the "Time Holding Chart", Figure 1, shown after Paragraph 7.
6. Should time period be less than the minimum required pipeline with water for 60 minutes (see Part 3.05), drain and immediately retest.
7. Should pipeline again fail time period test, notify Engineer.

FIGURE I. Time Holding Chart

Specification Time Required for Loss of Presure from 3.5 psig to 2.5 psig for Size & Length of Pipe Indicated or Q-0.003.

Pipe Diameter (inches)	Minimum Time (min:sec.)	Length for Minimum Time (ft.)	Time for Longer Length (sec.)	Specification Time for Length (l) in Ft.							
				100	**150**	**200**	**250**	**300**	**350**	**400**	**450**
4	1:53	597	.190L	1:53	1:53	1:53	1:53	1:53	1:53	1:53	1:53
6	2:50	398	.427L	2:50	2:50	2:50	2:50	2:50	2:50	2:51	3:12
8	3:47	298	.760L	3:47	3:47	3:47	3:47	3:48	4:26	5:04	5:42
10	4:43	239	1.187L	4:43	4:43	4:43	4:57	5:56	6:55	7:54	8:54
12	5:40	199	1.709L	5:40	5:40	5:42	7:08	8:33	9:48	11:24	12:50
15	7:05	159	2.671L	7:05	7:05	8:54	11:08	13:21	15:35	17:48	20:02
18	8:30	133	3.846L	8:30	9:37	12:49	16:01	19:14	22:26	25:38	28:51

Based on: T=0.0850 DK/Q

Where:

T= Time in Seconds

K= 0.000419DL

D= Pipe Diamter in inches, and

L= Length of Pipe beng tested in feet.

3.06 SANITARY SEWER MANHOLE LEAKAGE TEST

A. Unless waived by the Engineer, manholes shall be tested for leakage. Manholes shall be filled to the top with water. The allowable leakage for all concrete manholes shall not exceed five (5) gallons per manhole, per hour.

B. If the leakage as shown on the test is greater than allowed, the pipe and manholes shall be overhauled and, if necessary, reconstructed until the joints hold satisfactorily under the test. If the leakage is less than the allowed, the Contractor shall stop any individual leaks that may be observed.

3.07 CLEANUP

A. Water used for testing shall be removed from the site and all special connections which were made for the purpose of pipeline testing shall be capped and sealed.

END OF SECTION

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SECTION 020010

GENERAL SITE WORK REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. General procedures and requirements for Site Work.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 EXAMINATION

A. Site Verification Of Conditions
   1. 48 hours minimum prior to performing any work on site, contact Blue Stakes and DNR to arrange for utility location services.
   2. Upon discovery of conflicts or problems with existing facilities, notify Architect by phone or fax within 24 hours. Follow telephone or fax notification with letter and diagrams indicating conflict or problem and sufficient measurements and details to evaluate problem.

3.2 PREPARATION

A. Protection
   1. Spillage -
      a. Avoid spillage by covering and securing loads when hauling on or adjacent to public streets or highways.
      b. Remove spillage and sweep, wash, or otherwise clean project, streets, and highways.
   2. Dust Control -
      a. Take precautions necessary to prevent dust nuisance, both on-site and adjacent to public and private properties.
      b. Correct or repair damage caused by dust.
   3. Erosion Control -
      a. Take precautions necessary to prevent erosion and transportation of soil downstream, to adjacent properties, and into on-site or off-site drainage systems.
      b. Develop, install, and maintain an erosion control plan if required by law.
      c. Repair and correct damage caused by erosion.
   4. Existing Plants & Features - Do not damage tops, trunks, and roots of existing trees and shrubs on site which are intended to remain. Do not use heavy equipment within branch spread. Interfering branches may be removed only with permission of Architect. Do not damage other plants and features which are to remain.

B. If specified precautions are not taken or corrections and repairs made promptly, Owner may take such steps as may be deemed necessary and deduct costs of such from monies due to Contractor. Such action or lack of action on Owner's part does not relieve Contractor from responsibility for proper protection of the Work.

3.3 REPAIR/RESTORATION

A. Adjust existing covers, boxes, and vaults to grade.

B. Replace broken or damaged covers, boxes, and vaults.

C. Independently confirm size, location, and number of covers, boxes, and vaults which require adjustment.

3.4 FIELD QUALITY CONTROL

A. If work has been interrupted by weather, scheduling, or other reason, notify Architect 24 hours minimum prior to intended resumption of grading or compacting.

B. Owner reserves right to require additional testing to re-affirm suitability of completed work including compacted soils which have been exposed to adverse weather conditions.

END OF SECTION

SECTION 021101

SITE CLEARING

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Prepare site for rough grading and structure excavation as described in Contract Documents.

B. Related Sections
   1. Section 020010 - General Sitework Requirements
   2. Section 022120 - Finish grading of existing topsoil stored on site and addition of imported topsoil.

1.2 DEFINITIONS

A. Existing topsoil is defined as total amount of soil stripped less vegetation layer stripped as specified in Article 3.3 below.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine site to determine type of problems to be encountered.

3.2 PERFORMANCE

A. Tree & Brush Removal
   1. Cut off trees, shrubs, brush, and vegetative growth 12 inches maximum above ground.
   2. Do not pull up or rip out roots of trees and shrubs that are to remain. If excavation through roots is required, excavate by hand and cut roots with sharp axe. Make clean, smooth, sloping cuts.
   3. Cut roots 6 inches or larger in diameter only with Architect's written permission.

B. Grubbing
   1. Grub out stumps and roots 12 inches minimum below original ground surface, except as follows -
      a. Under buildings, remove roots one inch and larger entirely.
      b. Entirely remove roots of plants which normally sprout from roots, as identified by Architect.

C. Stripping
   1. Strip existing vegetation layer 6 inches deep minimum from areas of site to receive buildings, landscaping, and paving and remove from site prior to stripping topsoil for storage and reuse.

3.3 CLEANING

A. Remove from site trees, shrubs, uprooted stumps, vegetative layer, and surface debris and dispose of legally.

B. Do not bury cuttings, stumps, roots, and other vegetative matter or burnt waste material on site.

END OF SECTION

SECTION 02 2120

FINISH GRADING

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
1. Perform finish grading work required to prepare site for installation of replacement grass as described in Contract Documents including -
   a. Spread existing top soil stored on site over lawn and planting areas.
   b. Furnish and spread imported top soil over lawn and planting areas.

B. Related Sections
1. Section 021101 - Stripping and storing of existing topsoil.

1.2 SUBMITTALS

A. Quality Assurance
1. Submit test on imported top soil by licensed laboratory prior to use, using criteria on Owner Form 3332. Imported top soil shall meet minimum specified requirements and be approved by Architect prior to use.
2. Submit report stating location of source of imported topsoil and account of recent use.

PART 2 PRODUCTS

2.1 MATERIALS

A. Imported Topsoil
1. Fertile, loose, friable soil meeting following criteria -
   a. Chemical Characteristics -
      1) Acidity/alkalinity range - pH 5.5 to 7.7
      2) Soluble Salts - less than 2.0 mmhos/cm
      3) Sodium Absorption Ratio (SAR) - less than 3.0
      4) Organic Matter - greater than 2 percent
      5) Nitrogen (NO^3N) - greater than 48 ppm
      6) Phosphorus (P) - greater than 11 ppm
      7) Potash (K) - greater than 130 ppm
      8) Iron (Fe) - greater than 5.0 ppm
   b. Physical Characteristics -
      1) Gradation as defined by USDA triangle of physical characteristics.
         Sand - 15 to 60 percent
         Silt - 10 to 70 percent
         Clay - 5 to 30 percent
      2) Clean and free from toxic minerals and chemicals, noxious weeds, weed seeds, rocks larger than 1-1/2 inch in any dimension, and other objectionable materials.
      3) Soil shall not contain more than 2 percent of particles measuring over 2.0 mm in largest size.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not commence work of this Section until grading tolerances are met.

3.2 PREPARATION

A. Prior to grading, dig out weeds from planting areas by their roots and remove from site. Before placing top soil in landscape areas, remove rocks larger than 1-1/2 inches in size and foreign matter such as building rubble, wire, cans, sticks, concrete, etc.

3.3 PERFORMANCE

A. Site Tolerances
   1. Total Topsoil Depth -
      a. Lawn & Groundcover Planting Areas - 5 inches minimum
   2. Elevation of Topsoil Relative to Walks or Curbs -
      a. Seeded Lawn Areas - 2 inches below
      b. Sodded Lawn Areas - 3 inches below

B. Do not expose or damage existing shrub or tree roots.

C. Redistribute approved existing top soil stored on site as a result of work of Section 02 1101. Provide additional imported topsoil required to bring surface to specified elevation relative to walk or curb.

D. Slope grade away from building for 12 feet minimum from walls at slope of 1/2 inch per ft minimum unless otherwise noted. High point of finish grade at building foundation shall be 6 inches minimum below finish floor level. Direct surface drainage in manner indicated on Drawings by molding surface to facilitate natural run-off of water. Fill low spots and pockets with top soil and grade to drain properly.

END OF SECTION

SECTION 02220

EXCAVATING, BACKFILLING, & COMPACTING

PART 1 GENERAL

1.1 SUMMARY

A .Includes But Not Limited To

1. Perform Project excavating, trenching, backfilling, and compacting as described in Contract Documents, except as specified below.
2. Procedure and quality for excavating, trenching, backfilling, and compacting performed on Project under other Sections unless specifically specified otherwise.

B. Related Sections

1. Section 02001 - General Sitework Requirements
2. Section 02110 - Site Clearing
3. Performance of excavating, backfilling, and compacting inside and outside of building required for electrical and mechanical work is responsibility of respective Section doing work unless arranged differently by Contractor.

1.2 REFERENCES

A. American Society For Testing And Materials

1. ASTM D 1557-91, "Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort"
2. STM D 2216-90, "Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock"
3. ASTM D 2487-93, "Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)"
4. ASTM D 2922-91, "Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)"
5. ASTM D 3017-88, "Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)"

1.3 DEFINITIONS

A. Relative Compaction - Ratio of field dry density as determined by ASTM D 2922 and ASTM D 3017 or 2216, and laboratory maximum dry density as determined by ASTM D 1557.

1.4 QUALITY ASSURANCE

A. Pre-Installation Meeting

1. Participate in pre-installation meeting.

1.5 PROJECT/SITE CONDITIONS

A. If existing utility lines not described in Contract Documents are encountered, contact Architect before proceeding.

1.6 SEQUENCING

A. Before backfilling, show utility and service lines being covered on record set of Drawings. Do not backfill until utilities involved have been tested and approved by Architect and until instructed by Architect.

PART 2 PRODUCTS

2.1 MATERIALS

A. Standard Backfill
   1. Well graded material free from debris, organic material, frozen materials, brick, lime, concrete, and other material which would prevent adequate performance of backfill.
   2. Fill shall conform to ASTM D 2487 soil classification groups GW, GP, GM, SW, SP, or SM.
      a. Fill more than 24 inches below finish grade may not contain stones over 6 inches diameter and 90 percent minimum of fill shall be smaller than 1-1/2 inch in any direction.
      b. Fill less than 24 inches below finish grade may contain no stones larger than 1-1/2 inches in any direction.

PART 3 EXECUTION

3.1 EXAMINATION

A. Carefully examine site and available information to determine type soil to be encountered. Discuss problems with Architect before proceeding with work.

3.2 PERFORMANCE

A. Excavating
   1. Building Footings & Foundations -
      a Excavate as necessary for proper placement and forming of footings and foundations.
      b. Bottom of excavations to receive footings shall be undisturbed soil.
      c. Excavation Carried Deeper Than Required -
         1) Under Footings - Fill with concrete specified for footings.
         2) Under Slabs - Use specified compacted backfill material.
   2. Pavement & Concrete Site Elements -
      a. Excavate as necessary for proper placement and forming of concrete site elements and pavement structure. Remove vegetation and deleterious material and remove from site.
      b. Backfill over-excavated areas with compacted base material specified in Section 02500.
      c. Remove and replace exposed material which becomes soft or unstable.
   3. Site Utility Trenches -
      a. Excavate to proper alignment, depth, and grade. Excavate to sufficient width to allow adequate space for proper installation and inspection of site utility.
      b. Backfill over-excavated areas with compacted native material.
   4. If unusual excavating conditions are encountered, stop work and notify Architect.

B. Backfilling
   1. Around Buildings & Structures - Slope grade away from building as specified in Section 02212. Hand backfill when close to building or where damage to building might result.
   2. Site Utilities -
      a. Landscape Areas - Cover utilities with 3 inches minimum of sand slurry backfill. Place remaining backfill consisting of on-site soil in 12 inch maximum layers compacted as specified. Do not place remaining backfill until sand slurry has cured 72 hours.
      b. Pavement & Concrete Site Elements - Extend sand slurry backfill to elevation of subgrade. Do not place base material until sand slurry has cured 72 hours.

C. Compacting
   1. General -
      a. Do not use puddling or jetting to consolidate fill areas.
      b. If site material will not compact to specified density or it is suspected that it will not, remove and replace with material specified in PRODUCT section above.
   2. Sub-Grade -
      a. Under Building Slabs/Pads, Concrete Site Elements, & Portland Cement Concrete - Moisture condition soil to uniform moisture content between optimum and 4 percent over

optimum, and mechanically tamp 6 inches deep to 90 percent minimum of relative compaction.

3. Fill, Backfill, & Base -
   a. Under Building Slabs/Pads - Place in 8 inch maximum layers, dampen (do not soak), and mechanically tamp to 95 percent minimum of maximum density as established by ASTM D 1557.
   b. Under Concrete Site Elements & Around Foundation Walls - Place in 8 inch maximum layers, dampen (do not soak), and mechanically tamp to 90 percent minimum of maximum density as established by ASTM D 1557.
   c. Site Utility Trenches -
      1) Consolidate sand slurry backfill using vibrating or other means.
      2) Moisture condition standard backfill to be placed above sand slurry backfill to plus or minus 2 percent of optimum moisture and compact to 90 percent minimum relative compaction to within 12 inches of finish grade.
   d. Fill Slopes - Compact by rolling or using sheepsfoot roller.
   e. Backfill Under Footings - Not allowed.
   f. Other Backfills - Place other fills in 12 inch layers and compact to 90 percent relative compaction.

3.3 REPAIR/RESTORATION

A. Damage to other portions of the Work due to work of this Section shall be repaired at no additional cost to Owner. On new work, damage shall be repaired by original installer.

3.4 CLEANING

A. Debris and material not necessary for Project are property of Contractor and are to be removed prior to completion of Project. However, if material necessary for Project is hauled away, replace with specified backfill material.

END OF SECTION

SECTION 02622C

PVC PRESSURE PIPE-C900

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Specification of PVC Pressure pipe and fittings

1.02 RELATED WORK

A. Section 01661: Testing Pressure Pipelines

B. Section 02209: Pipe Installation

PART 2 - PRODUCTS

2.01 GENERAL

A. Any pipe which does not conform to specifications or is cracked, chipped, or otherwise damaged will be rejected.

B. The class and pressure rating of pipe used must be that specified on the "Piping Schedule" shown on Drawings.

2.02 PVC PRESSURE PIPE

A. Pipe shall be "Polyvinyl Chloride (PVC) Pressure Pipe, 4-inch through 12-inch for Water" conforming to AWWA Specification C-900-97 with Cast-Iron-Pipe Equivalent Outside Diameter.

B. Fittings shall be Class 250 grey or ductile iron and conform with AWWA Specification C-110.

C. Couplings shall be solid sleeve or transition type with mechanical joints complying with AWWA Specification C-110.

D. All PVC pipe and fittings used for culinary water purposes shall have the National Sanitation Foundation (NSF) seal indicating that the pipe and fittings are suitable for use in potable water systems.

2.03 PIPE JOINTS

A. Pipe joints shall be elastometric gasket joints, providing a water tight seal.œ3.01

PART 3 - EXECUTION

3.01 PIPE INSTALLATION

A. Pipe shall be installed per manufacturer's specific instructions and Section 02209, Pipe Installation, of these Specifications.

B. Pipeline shall be tested per Section 01661, Testing Pressure Pipelines, of these Specifications.

END OF SECTION

3/82

SECTION 02623

PVC SEWER PIPE

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Specification of PVC Sewer Pipe and Fittings

1.02 RELATED WORK

A. Section 01666: Testing Gravity or Low Pressure Pipelines

B. Section 02209: Pipe Installation

PART 2 - PRODUCTS

2.01 GENERAL

A. Any pipe which does not conform to specification or is cracked, chipped, or otherwise damaged will be rejected.

B. The size and allowable locations for use of this pipe is shown in the "Piping Schedule" on the Drawings.

2.02 PVC SEWER PIPE AND FITTINGS

A. Gravity flow, non-pressure sewer pipe, sizes 4-inch through 15-inch shall conform to ASTM Specification D-3034.

2.03 PIPE JOINTS

A. Pipe joints shall be elastometric gasket joints, providing a water tight seal.

PART 3 - EXECUTION

3.01 PIPE DELIVERY AND STORAGE

A. Pipe furnished under this specification shall be delivered to the job site and stored in accordance with the manufacturer's recommendations.

3.02 PIPE INSTALLATION

A. Pipe shall be installed in accordance with ASTM D 2321, the manufacturer's recommendation, Section 02209, Pipe Installation, of the Specifications and the Drawings.

3.03 PIPELINE TESTING

A. Pipeline shall be tested in accordance with Section 01666, Testing Gravity or Low Pressure Pipelines.

END OF SECTION

3/82

SECTION 02921

SOIL PREPARATION & SOIL MIXES

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Furnish and apply soil amendments as described in Contract Documents.

B. Related Sections
   1. Section 02001 - General Sitework Requirements
   2. Section 02212 - Finish grading

1.2 SUBMITTALS

A. Samples - Submit sample of workability soil amendment for approval before delivery to site.

B. Quality Control - Submit delivery slips indicating amount of workability soil amendment delivered to Project site.

1.3 QUALITY ASSURANCE

A. Pre-Installation Meetings
   1. See Section 01200.
   2. Schedule landscaping pre-installation meeting after completion of finish grading but prior to beginning landscape work.

PART 2 PRODUCTS

2.1 MATERIAL

A. Chemical Soil Amendments & Application Rates
   1. Typical for area.

B. Workability Soil Amendments
   1. Canadian Sphagnum Peat Moss, "Nutri Mulch", "Soil Pep", or nitrogen stabilized organic amendment (not sawdust).

PART 3 EXECUTION

3.1 PREPARATION

A. Protection
   1. Take care in performing work of this Section to avoid conditions which will create hazards. Post signs or barriers as required.
   2. Provide adequate means for protection from damage through excessive erosion, flooding, heavy rains, etc. Repair or replace damaged areas.

3.2 APPLICATION

A. Site Tolerances
   1. Finish grade of lawn areas prior to planting shall be -
      a. Sodded Areas - 2 inches below top of adjacent pavement of any kind
      b. Seeded Areas - One inch below top of adjacent pavement of any kind

B. Add specified chemical soil amendments at specified rates. Roto-till or otherwise mix amendments evenly into top 6 inches of topsoil.

C. Apply one inch, approximately 3 cu yds per 1000 sq ft, of workability soil amendments over lawn and planting areas. Notify Architect two working days before rototilling. Rototill workability soil amendment that has been applied previously, into top 4 inches of top soil until homogeneous mixture results.

END OF SECTION

SECTION 02933

LAWN SEEDING

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Furnish and install seeded lawn as described in Contract Documents.

B. Related Sections
   1. Section 02001 - General Sitework Requirements

1.2 QUALITY ASSURANCE

A. Pre-Installation Meetings
   1. See Section 01200.
   2. Participate in pre-installation meetings specified in Sections 02211 and 02921.

1.3 SEQUENCING

A. Do not commence work of this Section until work of Sections 02212, 02811, 02921, and 02950 has been completed and approved.

PART 2 PRODUCTS

2.1 MATERIALS

A. Seed
   1. Type typical for the area.
   2. Purchase seeds which bear this season's certification of weight, purity, and germination from reputable seed company.

B. Fertilizer - Commercial 16-16-8.

C. Top Dressing
   1. Use one of following -
      a. Cellulose wood fiber. Fiber shall be dyed green if lawn is hydro-seeded.
      b. Peat moss
      c. Clean, seed free, salt hay
      d. Threshed straw of wheat, rye, oats or barley

PART 3 EXECUTION

3.1 PREPARATION

A. Protection
   1. Take care and preparation in work to avoid conditions which will create hazards. Post signs or barriers as required.
   2. Provide adequate means for protection from damage through excessive erosion, flooding, heavy rains, etc. Repair or replace damaged areas.

B. Surface Preparation
   1. Loosen area 4 inches deep, dampen thoroughly, and cultivate to properly break up clods and lumps.
   2. 7 days maximum prior to seeding -
      a. Rake area to remove clods, rocks, weeds, roots, and debris.
      b. Grade and shape area to receive sod to bring surface to true uniform planes free from irregularities and to provide drainage and proper slope to catch basins.
   3. Immediately prior to seeding, fertilize lawn areas with specified material at 15 lbs per 1000 sq ft.
   4. After lawn areas have been fertilized, take no heavy objects over them except lawn rollers.

5. After preparation of lawn areas and with top soil in semi-dry condition, roll lawn planting areas in two directions at approximately right angles with water ballast roller weighing 100 to 300 lbs according to soil type.
6. Rake or scarify and cut or fill irregularities that develop as required and again roll until area is true and uniform, free from lumps, depressions, and irregularities.

3.2 INSTALLATION

A. Site Tolerances - Final grade of soil after seeding of lawn areas is complete shall be one inch below top of adjacent pavement of any kind.

B. Seeding - After lawn areas are graded, sow seed with adequate equipment at time when little or no wind is blowing.

C. Top Dressing - After seeding, rake or broom seed in gently and roll area to firm in seed. After rolling, cover area evenly with top dressing of peat moss at rate of two 4 cu ft bales per 1000 sq ft of area or light layer of straw/hay mulch at rate of 1 to 2 tons per acre.

D. After Top Dressing - Thoroughly water seeded areas. Reseed areas that do not show prompt germination at 15 day intervals until an acceptable stand of grass is assured.

3.3 CLEANING

A. Upon completion of planting operations, remove debris, superfluous materials, and equipment from site.

3.4 PROTECTION

A. Protect seeded areas against traffic or other use immediately after seeding is completed by placing adequate warning signs and barricades.

END OF SECTION

SECTION 02970

LANDSCAPE MAINTENANCE

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Provide maintenance for new landscaping as described in Contract Documents.

1.2 MAINTENANCE

A. General
   1. Maintain landscaping from completion of landscape installation to 30 days after Substantial Completion Meeting.
      a. If Substantial Completion Meeting occurs between October 1st and April 1st, then maintenance period and plant guarantee period shall extend to May 1st.
      b. Lawn which does not live and has to be replaced shall be guaranteed and maintained an additional 30 days from date of replacement.
   2. Replace landscaping that is dead or appears dead as directed by Architect at end of maintenance period. Make replacements within 10 days of notification.
   3. Provide at least one gardener on site for one hour per day on at least every other day during maintenance period.

B. Seeded Lawn
   1. Seeded lawn areas will not be accepted as complete and 30 day maintenance period will not begin until uniform stand of grass at least 3 inches tall has been obtained.
   2. After grass is established and 3 inches tall, mow lawn areas at least weekly to a height of 2 inches. During this period, perform work necessary to maintain a full, even stand of grass.
   3. At end of 30 days of maintenance period, fertilize lawns with 16-16-8 at rate recommended by Fertilizer Manufacturer.
   4. Apply weed killers as necessary in order to obtain weed free lawn.

END OF SECTION

SECTION 03 1100

CAST-IN-PLACE CONCRETE FORMWORK

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
1. Design, construction, and safety of formwork.
2. Furnish and install required formwork ready for placing of concrete.
3. Strip and dispose of formwork.

1.2 SUBMITTALS

A. Quality Assurance/Control - Manufacturer's application instructions for form release agent.

PART 2 PRODUCTS

2.1 COMPONENTS

A. Forms - Wood, metal, or plastic as arranged by Contractor. Forming material shall be compatible with specified form release agents and with finish requirements for concrete to be left exposed or to receive decorative finish.

B. Form Release Agents
1. Chemically acting type
2. Approved Manufacturers -
   a. Crete-Lease 727 or 20-VOC by Cresset Chemical Co, Weston, OH (800) 367-2020
   b. DEBOND Form Coating by L & M Construction Chemicals, Omaha, NE (800) 362-3331
   c. Equal which will provide CCS-2 surface minimum as approved by Architect before bidding. See Section 01600.

PART 3 EXECUTION

3.1 INSTALLATION

A. Forms
1. Assemble forms so forms are sufficiently tight to prevent leakage.
2. Properly brace and tie forms.
3. Provide temporary cleanouts at base of tall forms to facilitate cleaning and inspection.
4. Make proper form adjustments before, during, and after concreting.
5. Use new forms, or used forms that have been cleaned of loose concrete and other debris from previous concreting and repaired to proper condition. Provide smooth liner on forms used for concrete to be exposed if necessary to attain specified finish quality.
6. Use metal cold joint forms when unable to place concrete for footings, foundations, and slabs in continuous pours.

B. Accessories
1. Provide for installation of inserts, templates, fastening devices, and other accessories to be set in concrete prior to placing.
2. Position anchor bolts for hold-down anchors and columns and securely tie in place prior to placing concrete.

C. Form Release Agents
1. Apply in accordance with Manufacturer's recommendations.
2. Film thickness shall be no thicker than as recommended by Manufacturer to attain specified finish. Finish shall be of quality equal to CCS-1 or CCS-2 surface as defined by Cresset Chemical.
3. Allow no release agent on reinforcing steel or footings.

D. Form Removal - Removal of forms can usually be accomplished in 12 to 24 hours. If temperature is

below 50 deg F or if concrete (stairs, beams, etc) depends on forms for structural support, leave forms intact for sufficient period for concrete to reach adequate strength.

END OF SECTION

SECTION 03 2100

CONCRETE REINFORCING STEEL

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Furnishing and installing reinforcing as described in Contract Documents.

1.2 REFERENCES

A. American Society For Testing And Materials
   1. ASTM A 615-90, "Standard Specification for Deformed & Plain Billet-Steel Bars for Concrete Reinforcement"

1.3 SUBMITTALS

A. See Section 01300.

B. Quality Assurance/Control
   1. Provide reinforcing placement drawings.
   2. If requested by Architect, provide mill certificate.

1.4 DELIVERY, STORAGE, & HANDLING

A. Reinforcing steel shall be free of rust, scale, or other coating at time of delivery and placing. Properly protect rebar on site after delivery.

B. Deliver bars separated by size and tagged with manufacturer's heat or test identification number.

PART 2 PRODUCTS

2.1 MATERIAL

A. Reinforcing Steel
   1. Rebars shall have grade identification marks and conform to ASTM A 615.
      a. Grade 60 minimum, except dowels which are to be field bent Grade 40 minimum.
      b. Bars shall be deformed type.
      c. Bars shall be free of rust, scale, or other bond-reducing coatings.

B. Rebar Spacing Blocks
   1. Approved Manufactured Types -
      a. Single cover block with wire by Frank Co, Humbolt, TX
      b. Equals as approved by Architect before bidding. See Section 01600.
   2. Other Approved Types -
      a. Plain concrete blocks.

2.2 FABRICATION

A. Fabricate reinforcing steel according to "ACI Detailing Manual," 1988 edition, and details on Drawings.

PART 3 EXECUTION

3.1 INSTALLATION

A. Site Tolerances
   1. Provide following minimum concrete cover for reinforcement (ACI 318-89) -
      a. Concrete cast against and permanently exposed to earth -
         1) Exterior Slabs on Grade (where shown) - 2 inches
         2) Interior Slabs on Grade - 2 inches
         3) Sections other than Slabs - 3 inches

b. Concrete Exposed to Earth or Weather -
   1) #6 & Larger Bars - 2 inches
   2) #5 & Smaller Bars - 1-1/2 inches

c. Concrete not exposed to weather or in contact with ground -
   1) Slabs - 3/4 inches

B. Bend bars cold.

C. Accurately place and support with chairs, bar supports, spacers, or hangers as recommended by "ACI Detailing Manual," 1988 edition, except slab on grade work. Support bars in slabs on grade and footings with specified rebar spacing blocks to maintain specified concrete cover.

D. Dowel vertical reinforcement for columns or walls out of footing or structure below with rebar of same size and spacing required above.

E. Securely anchor and tie reinforcing bars and dowels prior to placing concrete.

F. Avoid splices of reinforcing bars at points of maximum stress. Lap bars 40 bar diameters minimum unless dimensioned otherwise on the Drawings.

G. Run steel reinforcing bars continuous through cold joints.

END OF SECTION

SECTION 03 2200

WELDED WIRE FABRIC

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Furnish and install welded wire fabric as described in Contract Documents for use in reinforcing slabs other than interior slabs-on-grade.

1.2 REFERENCES

A. American Society For Testing And Materials
   1. ASTM A 185-90a, "Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement"

PART 2 PRODUCTS

2.1 MATERIALS

A. Reinforcing
   1. Flat sheets of welded steel wire fabric for concrete reinforcement meeting requirements of ASTM A 185.
   2. Style - 6 x 6 - W1.4 x W1.4.

B. Spacing Blocks
   1. Approved Manufactured Types -
      a. Single cover block with wire by Frank Co, Humbolt, TX
      b. Equals as approved by Architect before bidding.
   2. Other Approved Types - Plain concrete blocks.

PART 3 EXECUTION

3.1 INSTALLATION

A. Tie mesh together 2 feet on center minimum with 6 inch overlap.

B. Support wire mesh sheets at 2 feet on center along edges and 2 feet on center minimum each way in field with spacing blocks to maintain mesh in center of slab.

END OF SECTION

SECTION 03 3111

NORMAL-WEIGHT STRUCTURAL CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Furnish and install Project concrete work as described in Contract Documents.
   2. Quality of concrete used on Project but furnished under other Sections.

B. Products Installed But Not Supplied Under This Section:
   1. Inserts, bolts, boxes, templates, and fastening devices for other work, including those for bases only for Electrical.
   2. Concrete accessories.

1.2 REFERENCES

A. American Society For Testing And Materials:
   1. ASTM C 33-03, 'Standard Specification for Concrete Aggregates.'
   2. ASTM C 94-03, 'Standard Specification for Ready-Mixed Concrete.'
   3. ASTM C 150-04, 'Standard Specification for Portland Cement.'
   4. ASTM C 260-01, 'Standard Specification for Air-Entraining Admixtures for Concrete.'
   5. ASTM C 494-04, 'Standard Specification for Chemical Admixtures for Concrete.'
   6. ASTM C 618-03, 'Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.'
   7. ASTM E 1155-96 (2001), 'Standard Test Method for Determining F_F Floor Flatness and F_L Floor Levelness Numbers.'

1.3 SYSTEM DESCRIPTION

A. Performance Requirements:
   1. Conform to requirements of ASTM C 94 unless specified otherwise.
   2. For testing purposes, following concrete strengths are required:
      1. At 7 days: 60 percent minimum of 28 day strengths.

1.4 SUBMITTALS

A. Shop Drawings: Show dimensioned locations of anchor bolts for hold-down anchors and columns.

B. Quality Assurance / Control:
   1. Concrete mix design.
   2. Delivery Tickets: Require mix plant to furnish delivery ticket for each batch of concrete. Keep delivery tickets at job-site for use of Owner or his representatives. Tickets shall show following:
      1. Name of ready-mix batch plant.
      2. Serial number of ticket.
      3. Date and truck number.
      4. Name of Contractor.
      5. Name and location of Project.
      6. Specific class or designation of concrete conforming to that used in Contract Documents.
      7. Amount of concrete.
      8. Time loaded.
      9. Type, name, manufacturer, and amount of admixtures used.

10. Amount and type of cement.
11. Total water content.
12. Sizes and weights of sand and aggregate.

1.5 QUALITY ASSURANCE

A. Pre-Installation Conference:
   1. Schedule pre-installation conference after placing of footings, installation of foundation forms and reinforcing steel, and installation of anchors, dowels, inserts, and block outs in foundation walls and slabs, but before placing of concrete.
   2. In addition to agenda items specified in Section 01 3000, review following:
      1. Approved mix design and use of admixtures.
      2. Installation scheduling, coordination, and placement of items installed in and under floor slab.
      3. Placement, finishing, and curing of concrete including cold and hot weather requirements.
      4. Concrete slab tolerances and corrective measures if tolerances not met.

1.6 PROJECT CONDITIONS

A. Project Environmental Requirements:
   1. Cold Weather Concreting Procedures:
      1. General Requirements:
         1) Materials and equipment required for heating and protection of concrete shall be approved and available at Project site before beginning cold weather concreting.
         2) Forms, reinforcement, metallic embedments, and fillers shall be free from snow, ice, and frost. Surfaces that will be in contact with newly placed concrete, including sub-grade materials, shall be 35 deg F minimum at time of concrete placement.
         3) Thaw sub-grade 6 inches deep minimum before beginning concrete placement. If necessary, re-compact thawed material.
         4) Use no frozen materials or materials containing ice.
      2. Requirements When Average 24 Hour Temperature, midnight to midnight, Is Below 40 deg F:
         1) Temperature of concrete as placed and maintained shall be 55 deg F minimum and 75 deg F maximum.
         2) Heat concrete for 72 hours minimum after placing if regular cement is used; for 48 hours if high early strength cement is used; or longer if determined necessary by Architect. During this period, maintain concrete surface temperature between 55 and 75 deg F.
         3) Vent flue gases from combustion heating units to outside of enclosure to prevent carbonation of the concrete surface.
         4) Prevent concrete from drying during heating period. Maintain housing, insulation, covering, and other protection 24 hours after heat is discontinued.
         5) After heating period, if temperature falls below 32 deg F, protect concrete from freezing until strength of 2000 psi minimum is achieved. Protect flatwork exposed to melting snow or rain during day and freezing during night from freezing until strength of 3500 psi minimum is achieved.
      3. Requirements When Average 24 Hour Temperature, midnight to midnight, Is Above 40 deg F, but when temperature falls below 32 deg:
         1) Protect concrete from freezing for 72 hours after placing, or until a strength of 2000 psi is achieved, whichever is longer. Protect flatwork exposed to melting snow or rain during day and freezing during night from freezing until strength of 3500 psi minimum is achieved.
      4. Protect soil supporting concrete footings from freezing under any circumstances.
   2. Hot Weather Concreting Procedures:
      1. Maximum concrete temperature allowed is 90 deg F in hot weather.
      2. Cool aggregate and subgrades by sprinkling.
      3. Avoid cement over 140 deg F.

4. Use cold mixing water or ice.
5. Use fog spray or evaporation retardant to lessen rapid evaporation from concrete surface.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Portland Cement: Meet requirements of ASTM C 150, Type V

B. Aggregates:
   1. Meet requirements of ASTM C 33 or nonconforming aggregate that by test or actual service produces concrete of required strength and conforms to local governing codes.
   2. See Structural Notes Sheet S1.0.

C. Water: Clear, apparently clean, and potable.

D. Admixtures And Miscellaneous:
   1. See Structural Notes Sheet S1.0.

2.2 MANUFACTURERS

A. Contact Information:
   1. See Structural Notes Sheet S1.0.

2.3 MIXES

A. See Structural Notes Sheet S1.0.

PART 3 - EXECUTION

3.1 PREPARATION

A. Inserts, bolts, boxes, templates, pipes, conduits, and other accessories as required shall be installed and inspected before placing concrete.

B. Install inserts, bolts, boxes, templates, pipes, conduits, and other accessories furnished under other Sections to be installed as part of work of this Section. Tie anchor bolts for hold-down anchors and columns securely to reinforcing steel.

C. Remove water and debris from space to be placed.

3.2 INSTALLATION

A. Site Tolerances:
   1. Tolerances shall conform to requirements of ACI 117, except where specified differently.
   2. Local Flatness / Levelness of Interior Slabs:
      1. Specified Overall Value of F_F28 / F_L20 and Minimum Local Value of F_F20 / F_L15 when tested in accordance with ASTM E 1155.

B. Placing:

1. Place as soon after mixing as possible. Deposit as nearly as possible in final position. Placing of concrete shall be continuous until a panel or section is complete.
2. Compact concrete in forms by vibrating and other means where required. Thoroughly work in concrete around reinforcing bars.
3. Do not embed aluminum in concrete.
4. Do not use contaminated, deteriorated, or re-tempered concrete.
5. Avoid accumulation of hardened concrete.
6. Joints:
    1. Where possible, locate joints under partitions or where joints will cause least disruption to floor coverings.
    2. Construction Joints: Locate where shown on Drawings to least impair strength of completed structure. Construction joints in foundation walls shall not occur within 6 feet of corner and be keyed.

C. Bonding Fresh And Hardened Concrete:
1. Re-tighten forms.
2. Roughen surfaces.
3. Clean off foreign matter and laitance.
4. Wet but do not saturate.
5. Slush with neat cement grout or apply bonding agent.
6. Proceed with placing new concrete.

D. Special Requirements:
1. Footings:
    1. Bear 36 inches minimum into undisturbed earth or on mechanically compacted engineered fill. Step footings at ratio of 1-1/2 horizontal to One vertical unless detailed otherwise. Level top of finish footing and leave rough.
2. Foundations And Walls: Leave steel projecting where required for floor tie.
3. Exterior Slabs:
    1. Dusting with cement not permitted.
    2. For continuous placing and where shown on Drawings, saw cut one inch deep control joints before shrinkage occurs.
4. Equipment Bases: Coordinate with appropriate Sections for locations and dimensions.
5. Anchor Bolts: Place anchor bolts not tied to reinforcing steel immediately following leveling of concrete. Reconsolidate concrete around bolt immediately after placing bolt. Do not disturb bolts during finishing process.

E. Finishing:
1. Broom Finishes, Exterior Flatwork:
    1. Broom finish exterior slabs.
    2. Round edges including edges formed by expansion joints.
    3. Remove edger marks.
2. Rough: Top of slabs and stairs to receive setting bed for ceramic or paver tile.

F. Curing:
1. All Other Concrete Flatwork And Curbs: Membrane cure as specified.

3.3 FIELD QUALITY CONTROL

A. Inspection: Notify Architect three days minimum before placing concrete for footings, foundation walls, and building slabs.

3.4 PROTECTION

A. Protect concrete that has not received its initial set from precipitation to avoid excess water in mix and unsatisfactory surface finish.

B. Do not allow materials resulting from construction activities, which will affect concrete or application of finish floor systems adversely, to come in contact with interior concrete slabs.

END OF SECTION

SECTION 13125
METAL BUILDING SYSTEMS

PART I - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
1. Structural framing.
2. Roof panels.
3. Fascia and Soffit panels.
4. Accessories and trim.

B. Related Sections include the following: List below only products, construction, and equipment that the reader might expect to find in this Section but are specified elsewhere.

1. Division 3 Section "Cast-in-Place Concrete" for concrete foundations and anchor-bolt installation including concrete waterproofing systems.

1.3 DEFINITIONS

A. Building Length: Dimension of the building measured perpendicular to main framing from end wall to end wall (outside face of girt to outside face of girt).

B. Building Width: Dimension of the building measured parallel to main framing from sidewall to sidewall (outside face of girt to outside face of girt).

C. Clear Span: Distance between supports of beams, girders, or trusses (measured from lowest level of connecting area of a column and a rafter frame, or knee).

D. Eave Height: Vertical dimension from finished floor to eave (the line along the sidewall formed by intersection of the planes of the roof and wall).

1.4 SYSTEM PERFORMANCE REQUIREMENTS

A. General: Provide a complete, integrated set of metal building system manufacturer's standard mutually dependent components and assemblies that form a metal building system capable of withstanding structural and other loads, thermally induced movement, and exposure to weather without failure or infiltration of water into building interior. Include primary and secondary framing, roof and wall panels, and accessories complying with requirements indicated, including those in this Article.

B. Metal Building System Design: Of size, spacing, slope, and spans indicated, and as follows:

1. Primary Frame Type: Provide the following:
a. Rigid Clear Span: Solid-member structural-framing system without interior columns as indicated.
2 Eave Height: Manufacturer's standard height, as indicated by nominal height on Drawings.
3. Roof Slope: See plans
4. Roof System: Manufacturer's standard standing-seam roof panels with high clip, vapor barrier, thermal block, and insulation.

C. Structural Performance: Provide metal building systems capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated.

D. Seismic Performance: Design and engineer metal building systems capable of withstanding the effects of earthquake motions determined according to the International Building Code, Soil Profile D.

E. Wind-Uplift Resistance: Provide roof panel assemblies that meet requirements of UL 580 for the following wind-uplift resistance:

1. Class 90. With additional requirements for resistance to 95 mph winds.

1.5 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, finishes and available colors as indicated on the drawings for each type of the following metal building system components:

1. Structural-framing system.
2. Roof panels.
3. Trim and closures.
4. Accessories.

B. Shop Drawings: For the following metal building system components. Include plans, elevations, sections, details, and attachments to other Work.

1. For installed components indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

2. Anchor-Bolt Plans: Include location, diameter, and projection of anchor bolts required to attach metal building to foundation. Indicate column reactions at each location.

3. Structural-Framing Drawings: Show complete fabrication of primary and secondary framing. Indicate welds and bolted connections, distinguishing between shop and field applications. Include transverse cross-sections.

4. Roof Layout Drawings.

5. Accessory Drawings: Include details of the following items, at a scale of not less than 2 inches per 12 inches: Include details of reinforcement and installation requirements for all accessories specified in other sections.

C. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for each type of the following products with factory-applied color finishes as required to match the selected colors: Design intent is to match the colors of the building on-site; roof, and trim & closure colors.

1. Roof panels.
2. Soffit panels.
3. Trim, gutter and closures.
4. Accessories.

D. Samples for Verification: For the following products, in manufacturer's standard sizes, showing the full range of color, texture, and pattern variations expected, in the profile and style indicated. Prepare Samples from the same material to be used for the Work.

1. Roof Panels: 12-inches long by actual panel width (24"). Include clips, caps, battens, fasteners, closures, and other exposed panel accessories.

2. Soffit Panels: 12-inches long by actual panel width (12"). Include clips, caps, battens, fasteners, closures, and other exposed panel accessories.

3. Trim and Closures: 12-inches long. Include fasteners and other exposed accessories.

E. Product Certificates: Signed by manufacturers of metal building systems certifying that products furnished comply with requirements.

1. Letter of Design Certification: Signed and sealed by a qualified professional engineer. Include the following:

a. Name and location of Project.
b. Order number.
c. Name of manufacturer.
d. Name of Contractor.
e. Building dimensions, including width, length, height, and roof slope.
f. Indicate compliance with AISC standards for hot-rolled steel and AISI standards for cold-rolled steel, including edition dates of each standard.
g. Governing building code and year of edition.
h. Design Loads: Include dead load, roof live load, collateral loads, roof snow load, deflection, wind loads/speeds and exposure, seismic zone or effective peak velocity-related acceleration/peak acceleration, and auxiliary loads (cranes).
i. Load Combinations: Indicate that loads were applied acting simultaneously with concentrated loads, according to governing building code.
j. Building-Use Category: Indicate category of building use and its effect on load importance factors.
k. AISC Certification for Category MB: Include statement that metal building system and components were designed and produced in an AISC-Certified Facility by an AISC-Certified Manufacturer.

F. Welding Certificates: Copies of certificates for welding procedures and personnel.

G. Erector Certificates: Signed by manufacturer certifying that erectors comply with requirements.

H. Manufacturer Certificates: Signed by manufacturers certifying that they comply with requirements. Include evidence of manufacturing experience.

I. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

J. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:

1. Thermal insulation.

2. Vapor retarders.

K. Surveys: Show final elevations and locations of major members. Engage a qualified engineer or land surveyor to perform surveys and certify their accuracy. Indicate discrepancies between actual installation and the Contract Documents.

L. Warranties: Special warranties specified in the provisions of the contract documents.

1.6 QUALITY ASSURANCE

A. Erector Qualifications: An experienced erector who has specialized in erecting and installing work similar in material, design, and extent to that indicated for this Project and who is acceptable to manufacturer.

B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of metal building systems that are similar to those indicated for this Project in material, design, and extent.

C. Manufacturer Qualifications: A firm experienced in manufacturing metal building systems similar to those indicated for this Project and with a record of successful in-service performance.

1. AISC Certification for Category MB: An AISC-Certified Manufacturer that designs and produces metal building systems and components, AISC-Certified Facility, Category I. For non pre-approved Manufacturer’s copies of current AISC certificate must be submitted to the Architect prior to the issuance of the final addendum or the final response to bidder’s questions, whichever is sooner.

2. Engineering Responsibility: Preparation of Shop Drawings, testing program development, test result interpretation, and comprehensive engineering analysis by a qualified professional engineer.

D. Surveyor Qualifications: A land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing surveying services of the kind indicated.

E. Source Limitations: Obtain each type of metal building system component through one source from a single manufacturer.

F. Product Options: Information on Drawings and in Specifications establishes requirements for system's aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sight lines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, or in-service performance.

1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

G. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel"; and AWS D1.3, "Structural Welding Code--Sheet Steel." All welding shall be done by certified welders per AWS in the last 12 months.

H. Regulatory Requirements: Fabricate and label structural framing to comply with special inspection requirements at point of fabrication for welding and other connections required by

authorities having jurisdiction.

I. Structural Steel: Comply with AISC S335, "Specification for Structural Steel Buildings--Allowable Stress Design, Plastic Design"; or AISC S342, "Load and Resistance Factor Design Specification for Structural Steel Buildings," for design requirements and allowable stresses.

J. Cold-Formed Steel: Comply with AISI SG-671, "Specification for the Design of Cold-Formed Steel Structural Members," and AISI SG-911, "Load and Resistance Facet Design Specification for Steel Structural Members," for design requirements and allowable stresses.

K. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Meetings." Review methods and procedures related to metal building systems including, but not limited to, the following:

1. Inspect and discuss condition of foundations and other preparatory work performed by other trades.

2. Review structural load limitations.

3. Review and finalize construction schedule and verify availability of materials, Erector's personnel, equipment, and facilities needed to make progress and avoid delays.

4. Review required testing, inspecting, and certifying procedures.

5. Review weather and forecasted weather conditions and procedures for unfavorable conditions.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, sheets, panels, and other manufactured items so as not to be damaged or deformed. Package roof panels for protection during transportation and handling.

B. Handling: Unload, store, and erect roof panels to prevent bending, warping, twisting, and surface damage.

C. Stack materials on platforms or pallets, covered with tarpaulins or other suitable weathertight and ventilated covering. Store roof panels to ensure dryness. Do not store panels in contact with other materials that might cause staining, denting, or other surface damage.

1.8 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when weather conditions permit roof and wall panel installation to be performed according to manufacturer's written instructions and warranty requirements.

B. Field Measurements: Verify metal building system foundations by field measurements before metal building fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Established Dimensions for Foundations: Where field measurements cannot be made without delaying the Work, establish foundation dimensions and proceed with fabricating structural framing without field measurements. Coordinate anchor-bolt installation to ensure that actual anchorage dimensions correspond to established dimensions.

2. Established Dimensions for Panels: Where field measurements cannot be made without delaying the Work, either establish framing and opening dimensions and proceed with fabricating roof panels without field measurements, or allow for field-trimming panels. Coordinate roof construction to ensure that actual building dimensions, locations of structural members, and openings correspond to established dimensions.

1.9 COORDINATION

A. Coordinate size and location of concrete foundations and casting of anchor-bolt inserts into foundation walls and footings. Concrete, reinforcement, and form work requirements are specified in Division 3 Section "Cast-in-Place Concrete."

1.10 WARRANTY

A. General Warranty: Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Special Warranty on Panels: Written warranty, executed by manufacturer agreeing to repair or replace roof and wall panels that fail in materials or workmanship within specified warranty period.

1. Warranty Period: five years from date of Substantial Completion.

C. Special Warranty on Panel Finishes: Written warranty, signed by manufacturer agreeing to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period. Deterioration of finish includes, but is not limited to, color fade, chalking, cracking, peeling, and loss of film integrity.

1. Warranty Period for Roof Panels: 20 years from date of Substantial Completion.

2. Warranty Period for Wall Panels: 20 years from date of Substantial Completion.

D. Special Warranty on Standing-Seam Roof Panel Weather tightness: Written warranty, signed by manufacturer agreeing to repair or replace standing-seam roof panel assemblies that fail to remain weather tight within specified warranty period.

1. Warranty Period: 20 years from date of Substantial Completion.

PART II – PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Porter Corporation.

2. Any equal manufacturer from the 09 Approved Fabricators List provided by Utah State Building Official's Office.

2.2 STRUCTURAL-FRAMING MATERIALS

A. Structural-Steel Shapes: ASTM A 36/A 36M or ASTM A 529/A 529M.

B. Steel Plate, Bar, or Strip: ASTM A 529/A 529M, ASTM A 570/A 570M, or

ASTM A 572/A 572M; 50,000-psi minimum yield strength.

C. Steel Tubing or Pipe: ASTM A 500, Grade B or ASTM A 53, Grade B.

D. Structural-Steel Sheet: Hot-rolled, ASTM A 570/A 570M, Grade 50 or Grade 55; hot-rolled, ASTM 568/A 568M; or cold-rolled, ASTM A 611, structural-quality, matte (dull) finish.

E. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, structural quality, Grade 50, with G60 (Z180) coating designation; mill phosphatized.

F. Metallic-Coated Steel Sheet Prepainted with Coil Coating: Steel sheet metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755/A 755M and the following requirements:

1. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 (Z275) coating designation; structural quality. Galvalume accepted.

G. High-Strength Bolts, Nuts, and Washers: ASTM A 325 (ASTM A 325M), Type 1, heavy hex steel structural bolts, heavy hex carbon-steel nuts, and hardened carbon-steel washers. Size bolts for primary systems shall be 5/8" diameter.

1. Finish: Hot-dip zinc coating, ASTM A 153, Class C.

H. Anchor Rods, Bolts, Nuts, and Washers: As follows:

1. Unheaded Rods: ASTM A 572/A 572M, Grade 50 (Grade 345).

2. Headed Bolts: ASTM A 325 (ASTM A 325M), Type 1, heavy hex steel structural bolts and heavy hex carbon-steel nuts.

3. Washers: ASTM A 36/A 36M.

I. Primers: As selected by manufacturer for resistance to normal atmospheric corrosion, compatibility with finish paint systems, capability to provide a sound foundation for field-applied topcoats despite prolonged exposure, and as follows:

1. Primer: Manufacturer's standard, lead- and chromate-free, nonasphaltic, rust-inhibiting primer.

2.3 MISCELLANEOUS MATERIALS

A. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil (0.4-mm) dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

B. Nonmetallic, Shrinkage-Resistant Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage compensating agents, plasticizing and water-reducing agents, complying with ASTM C 1107, of consistency suitable for application, and with a 30-minute working time.

C. Shop Primer for Galvanized Metal Surfaces: Zinc dust, zinc-oxide primer selected by manufacturer for compatibility with substrate. Comply with FS TT-P-641.

D. Flexible weather resistant EPDM pipe flashing. Isolates piping from building movement. Acceptable product, Dektite as manufactured by ITW Buildex (708-595-3500) or prior approved equal.

2.4 FABRICATION, GENERAL

A. General: Design components and field connections required for erection to permit easy assembly and disassembly.

1. Fabricate components in a manner that once assembled in the shop, they may be disassembled, repackaged, and reassembled in the field.

2. Mark each piece and part of the assembly to correspond with previously prepared erection drawings, diagrams, and instruction manuals.

3. Fabricate framing to produce clean, smooth cuts and bends. Punch holes of proper size, shape, and location. Cold-formed members shall be free of cracks, tears, and ruptures.

B. Primary Framing: Shop-fabricate framing components to indicated size and section with baseplates, bearing plates, stiffeners, and other items required for erection welded into place. Cut, form, punch, drill, and weld framing for bolted field assembly.

1. Make shop connections by welding continuous or by using high-strength bolts.

2. Join flanges to webs of continuous built-up members by a continuous submerged arc-welding process.

3. Brace compression flange of primary framing by angles connected between frame web and purlin or girt web, so flange compressive strength is within allowable limits for any combination of loadings.

4. Weld clips to frames for attaching secondary framing members.

5. Shop Priming: Prepare surfaces for shop priming according to SSPC-SP 2. Shop prime primary structural members with specified primer after fabrication.

C. Secondary Framing: Shop-fabricate framing components to indicated size and section by roll-forming or break-forming, with base plates, bearing plates, stiffeners, and other plates required for erection welded into place. Cut, form, punch, drill, and weld secondary framing for bolted field connections to primary framing.

1. Make shop connections by welding or by using high-strength bolts.

2. Shop Priming: Prepare surfaces for shop priming according to SSPC-SP 2. Shop prime secondary structural members with specified primer after fabrication.

D. Factory Priming for Field-Painted Finish: Where field painting after installation is indicated, apply the specified air-dried primer immediately after cleaning and pretreating.

1. Prime primary, secondary, and end-wall steel framing members with specified primer to a minimum dry film thickness of 1 mil.

2. Prime secondary steel framing formed from metallic-coated steel sheet with red-oxide polyester paint, with a minimum dry film thickness of 0.5 mil on each side.

3. Prime galvanized members, after phosphoric acid pretreatment, with manufacturer's standard zinc dust, zinc-oxide primer.

E. Tolerances: Comply with MBMA's "Low Rise Building Systems Manual": Chapter IV, Section 9, "Fabrication and Erection Tolerances."

2.5 STRUCTURAL FRAMING

A. Primary Framing: Manufacturer's standard structural primary framing system, designed to withstand required loads and specified requirements. Primary framing includes transverse and lean-to frames; rafter, rake, and canopy beams; sidewall, intermediate, end-wall, and corner columns; and wind bracing. If build-up sections are used out of plate, continuous welding shall be employed on at least one side and intermittent welds on the opposite side to suite design requirements.

1. General: Provide frames with attachment plates, bearing plates, and splice members. Factory drill for field-bolted assembly. Provide frame span and spacing indicated.

2. Rigid Frames: I-shaped frame sections fabricated from continuous shop-welded, built-up steel plates Minimum plate thickness of 1/4" or structural-steel shapes.

3. Frame Configuration: Two-directional sloped.

4. Exterior Column Type: Straight.

5. Rafter Type: Tapered.

B. Secondary Framing: Manufacturer's standard secondary framing members, including purlins, girts, eave struts, flange bracing, base members, gable angles, clips, headers, jambs, and other miscellaneous structural members. Fabricate framing from cold-formed, structural-steel sheet or roll-formed, metallic-coated steel sheet prepainted with coil coating, unless otherwise indicated, to comply with the following:

1. Purlins: C- or Z-shaped sections; fabricated from minimum 0.0598-inch thick steel sheet, built-up steel plates, or structural-steel shapes; minimum 2-1/2-inch wide flanges.

2. Girts: C- or Z-shaped sections; fabricated from minimum 0.0598-inch thick steel sheet, built-up steel plates, or structural-steel shapes. Form ends of Z-sections with stiffening lips angled 45 to 50 degrees to flange and with minimum 2-1/2-inch wide flanges.

3. Eave Struts: Unequal-flange, C-shaped sections; fabricated from 0.0598-inch thick steel sheet, built-up steel plates, or structural-steel shapes; to provide adequate backup for both roof and wall panels.

4. Flange and Sag Bracing: Minimum 1-5/8-by-1-5/8-inch structural-steel angles, with a minimum thickness of 0.0598 inch, to stiffen primary frame flanges.

5. Base or Sill Angles: Minimum 3-by-2-by-0.0747-inch zinc-coated (galvanized) steel sheet.

6. Purlin and Girt Clips: Minimum 0.0747-inch thick, zinc-coated (galvanized) steel sheet.

7. Secondary End-Wall Framing: Manufacturer's standard sections fabricated from minimum 0.0747-inch thick, zinc-coated (galvanized) steel sheet.

8. Framing for Openings: Channel shapes; fabricated from minimum 0.0598-inch thick, cold-formed, structural-steel sheet or structural-steel shapes. Frame head and jamb of door openings, and head, jamb, and sill of other openings.

9. Miscellaneous Structural Members: Manufacturer's standard sections fabricated

from cold-formed, structural-steel sheet; built-up steel plates; or zinc-coated (galvanized) steel sheet; designed to withstand required loads.

D. Canopy Framing: Provide canopy framing as indicated on architectural drawings.

1. Type: Construct using standard secondary framing members indicated above.

E. Bracing: Provide adjustable wind bracing as follows:

1. Rods: ASTM A 36/A 36M; ASTM A 572/A 572M, Grade D; or ASTM A 529/A 529M, Grade 50; 1/2-inch diameter steel; threaded full length or threaded a minimum of 12 inches at each end.

2. Cable: Cable bracing is not allowed.

3. Angles: Fabricated from structural-steel shapes to match primary framing, of size required to withstand design loads.

4. Rigid Portal Frames: Fabricate from shop-welded, built-up steel plates or structural-steel shapes to match primary framing; of size required to withstand design loads.

5. Fixed-Base Columns: Fabricate from shop-welded, built-up steel plates or structural-steel shapes to match primary framing; of size required to withstand design loads.

6. Diaphragm Action of Panels: Design metal building to resist wind forces through diaphragm action of roof, and rod bracing.

7. Bracing: Provide wind bracing using any method specified above, at manufacturer's option.

F. Bolts: Provide shop-painted bolts unless structural-framing components are in direct contact with roof and wall panels. Provide zinc-plated bolts when structural-framing components are in direct contact with roof and wall panels. The primary frame shall use a minimum bolt size of 5/8" diameter A325 or higher strength.

2.6 ROOF PANELS

A. Structural Standing-Seam Roof Panels: Manufacturer's standard panels complying with the following:

1. Ribbed Roof Panels: Fabricate from metallic-coated steel sheets prepainted with coil coating, factory formed to provide 24-inch coverage; with 3-inch high (including seam), raised trapezoidal major ribs at panel edges, and intermediate stiffening ribs symmetrically spaced between major ribs for full length of panel. Field seamed. Comply with the following:
   a. Material: Zinc-coated (galvanized) steel.
   b. Yield Strength: 50 ksi.
   c. Metal Thickness: 0.0239 inch minimum.
   d. Joint Type: Folded, mechanically seamed type.
   e. Clip System: Floating to accommodate thermal movement (high clip system).

B. Roof Panel Accessories: Provide components required for a complete roof panel assembly including trim, copings, fasciae, mullions, sills, corner units, ridge closures, clips, seam covers, battens, flashings, gutters, sealants, gaskets, fillers, closure strips, and similar items. Match materials and finishes of roof panels, unless otherwise indicated.

1. Closures: Provide closures at eave and ridge, fabricated of same metal as roof panels.

2. Clips: Minimum 0.0625-inch thick, stainless-steel panel clips designed to withstand negative-load requirements.

3. Cleats: Mechanically seamed cleats formed from minimum 0.0250-inch thick, stainless-steel or nylon-coated aluminum sheet.

4. Thermal Spacer Blocks: Where panels attach directly to purlins, provide 1-inch thick, thermal spacer blocks; fabricated from extruded polystyrene.

5. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.

C. Exterior Finish: Apply the following coil coating to roof panels and accessories:

1. Galvalume Plus: clear acrylic coating applied to Galvalume sheet. Galvalume sheet: aluminum-zinc alloy-coated steel sheet complying with ASTM A 792/A 792M.

2. Colors, Textures, and Glosses: As selected by Architect from manufacturer's full range for these characteristics.

D. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored backer finish, consisting of prime coat and wash coat with a total minimum dry film thickness of 0.5 mil.

2.7 ACCESSORIES

A. General: Provide accessories as standard with metal building system manufacturer, and complying with the following:

1. Provide sheet metal accessories of same material and in same finish as wall panels, unless otherwise indicated.

B. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide fasteners with heads matching color of roof or wall sheets by means of plastic caps or factory-applied coating. Comply with the following:

1. Fasteners for Roof Panels: Self-drilling or self-tapping 410 stainless or zinc-alloy steel hex washer head, with EPDM or PVC washer under heads of fasteners bearing on weather side of panels.

2. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws with hex washer head.

3. Blind Fasteners: High-strength aluminum or stainless-steel rivets.

C. Flashing and Trim: Form from 0.0179-inch thick, zinc-coated (galvanized) steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent wall panels.

1. Opening Trim: Painted subframing of suitable thickness to protect overhead door

operation. Trim head and jamb of door openings, and head, jamb, and sill of other openings.

D. Gutters: Form from 0.0179-inch thick, zinc-coated (galvanized) steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating. Match profile of gable trim, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch long sections, sized according to SMACNA's "Architectural Sheet Metal Manual." Furnish gutter supports spaced 36-inches o.c., fabricated from same metal as gutters. Provide bronze, copper, or aluminum wire ball strainers at outlets. Finish gutters with same finish system as adjacent wall panels.

1. See special detailing.

E. Downspouts: PVC piping 3" sealed water tight.

1. See special detailing.

F. Snow Guards: Not Required.

G. Closures: Closed-cell, laminated polyethylene; minimum 1-inch thick, flexible closure strips; cut or premolded to match roof and wall panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

2.8 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.9 SOURCE QUALITY CONTROL

A. Owner may employ an independent testing agency to perform source quality-control testing and special inspections, and to prepare test reports.

1. Testing agency will conduct and interpret tests and state in each report whether test specimens comply with or deviate from requirements.

2. Allow Owner's testing agency access to places where structural framing is being fabricated or produced. Cooperate with Owner's testing agency and provide samples of materials as may be requested for additional testing and evaluation.

3. Special inspections will not be required when fabrication is performed by a fabricator registered and approved by authorities having jurisdiction to perform such work without special inspection.

B. Correct deficiencies in or remove and replace structural framing that inspections and test reports indicate do not comply with requirements.

C. Additional testing, at Contractor's expense, will be performed to determine compliance of corrected Work with requirements.

D. Shop-bolted connections will be tested and inspected according to RCSC's "Allowable Stress Design Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

E. Shop-bolted connections will be tested and inspected according to RCSC's "Load and Resistance Factor Design Specification for Structural Joints Using ASTM A 325 or A 490 Bolts.

1. Direct-tension indicator gaps will be verified to comply with ASTM F 959, Table 2.

F. In addition to visual inspection, shop welding will be inspected and tested according to AWS D1.1 and the inspection procedures listed below, at testing agency's option:

1. Liquid-Penetrant Inspection: ASTM E 165.

G. In addition to visual inspection, shop-welded shear connectors will be inspected and tested according to requirements of AWS D1.1 for stud welding and as follows:

1. Bend tests may performed when visual inspections reveal either less than a continuous 360-degree flash or welding repairs to any shear connector.

2. Tests may be conducted on additional shear connectors when weld fracture occurs on shear connectors already tested, according to requirements of AWS D1.1.

H. Testing agency will report test results promptly and in writing to Owner, Contractor and Architect.

PART III – EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Erector present, for compliance with requirements for installation tolerances and other conditions affecting performance of metal building system.

B. Before erection proceeds, survey elevations and locations of concrete and masonry bearing surfaces, baseplates, and anchor bolts to receive structural framing. Verify compliance with requirements and metal building system manufacturer's tolerances.

1. Engage land surveyor to perform surveying.

3.2 PREPARATION

A. Clean substrates of substances, including oil, grease, rolling compounds, incompatible primers, and loose mill scale, that impair bond of erection materials.

B. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.

3.3 ERECTION

A. Erect metal building system according to manufacturer's written instructions and erection drawings.

B. Do not field cut, drill, or alter structural members without written approval from metal building system manufacturer's professional engineer.

C. Set structural framing in locations and to elevations indicated and according to AISC specifications referenced in this Section. Maintain structural stability of frame during erection.

D. Baseplates and Bearing Plates: Clean concrete and masonry bearing surfaces of

bond-reducing materials and roughen surfaces before setting baseplates and bearing plates. Clean bottom surface of baseplates and bearing plates.

1. Set baseplates and bearing plates for structural members on wedges, shims, or setting nuts.

2. Tighten anchor bolts after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of baseplate or bearing plate before packing with grout.

3. Pack grout solidly between bearing surfaces and plates so no voids remain. Finish exposed surfaces, protect installed materials, and allow to cure.

4. Comply with manufacturer's written instructions for proprietary grout materials.

E. Align and adjust framing members before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact. Make adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure.

2. Establish required leveling and plumbing measurements on mean operating temperature of structure. Make allowances for difference between temperature at time of erection and mean temperature at which structure will be when completed and in service.

F. Primary Framing and End Walls: Erect framing true to line, level, plumb, rigid, and secure. Level baseplates to a true even plane with full bearing to supporting structures, set with double-nutted anchor bolts. Use grout to obtain uniform bearing and to maintain a level base-line elevation. Moist cure grout for not less than seven days after placement.

1. Make field connections using high-strength bolts. Tighten bolts by turn-of-the-nut method.

G. Secondary Framing: Erect framing true to line, level, plumb, rigid, and secure. Fasten secondary framing to primary framing using clips with field connections using non-high-strength bolts. Hold rigidly to a straight line by sag rods.

1. Provide rake or gable purlins with tight-fitting closure channels and fasciae.

2. Locate and space wall girts to suit door and window arrangements and heights.

3. Locate canopy framing as indicated.

4. Provide supplemental framing at entire perimeter of openings, including doors, windows, louvers, ventilators, and other penetrations of roof and walls.

H. Bracing: Install bracing in roof and sidewalls where indicated on erection drawings.

1. Tighten rod and cable bracing to avoid sag.

2. Locate interior end bay bracing only where indicated.

I. Framing for Openings: Provide shapes of proper design and size to reinforce openings and to carry loads and vibrations imposed, including equipment furnished under mechanical and electrical work. Securely attach to building structural frame.

3.4 ROOF PANEL INSTALLATION

A. General: Provide roof panels of full length from eave to ridge when possible. Install panels perpendicular to purlins.

1. Field cutting by torch is not permitted.

2. Rigidly fasten eave end of roof panels and allow ridge end free movement due to thermal expansion and contraction. Predrill panels.

3. Provide weatherseal under ridge cap.

4. Flash and seal roof panels with weather closures at eaves, rakes, and at perimeter of all openings. Fasten with self-tapping screws.

5. Install screw fasteners with power tools having controlled torque adjusted to compress neoprene washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.

6. Use aluminum or stainless-steel fasteners for exterior applications and galvanized fasteners for interior applications.

7. Locate and space fastenings in true vertical and horizontal alignment.

8. Install ridge caps as roof panel work proceeds.

9. Locate panel splices over, but not attached to, structural supports. Stagger panel splices to avoid a four-panel lap splice condition.

10. Provide weather-resistant escutcheons for pipe and conduit penetrating roofing panels.

B. Standing-Seam Roof Panels: Fasten roof panels to purlins with concealed clips at each standing-seam joint. Install clips over top of insulation at location and spacing determined by manufacturer.

1. Install clips to supports with self-drilling fasteners.

2. Crimp standing seams with manufacturer-approved motorized seamer tool so clip, panel, and factory-applied side-lap sealant are completely engaged.

3. At panel splices, nest panels with minimum 6-inch end lap, sealed with butyl sealant and fastened together by interlocking clamping plates.

3.5 ACCESSORY INSTALLATION

A. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

1. Install exposed flashing and trim that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.

2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10-feet with no joints allowed within 24-inches of corner or intersection. Where lapped or bayonet-type expansion provisions

cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1-inch deep, filled with mastic sealant (concealed within joints).

3. Separations: Separate metal from incompatible metal or corrosive substrates by coating concealed surfaces, at locations of contact, with asphalt mastic or other permanent separation as recommended by manufacturer.

3.6 ERECTION AND LOCATION TOLERANCES

A. Structural-Steel Erection Tolerances: Comply with erection tolerance limits of AISC S303, "Code of Standard Practice for Steel Buildings and Bridges."

B. Roof Panel Installation Tolerances: Shim and align units within installed tolerance of 1/4 inch in 20-feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.7 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing agency to perform field quality-control testing.

B. Extent and Testing Methodology: Testing and verification procedures will be required of high-strength bolted connections. AISC and RCSC allow turn-of-the-nut method, calibrated wrench, alternative design bolts, and direct-tension indicators for bolt-tension testing. Add actual requirements if other than AISC's "10 percent" will be inspected.

1. Bolted connections will be visually inspected.

2. High-strength, field-bolted connections will be tested and verified according to procedures in RCSC's "Load and Resistance Factor Design Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

C. Testing agency will report test results promptly and in writing to Contractor and Architect.

3.8 CLEANING AND PROTECTION

A. Touchup Painting: Immediately after erection, clean, prepare, and prime or reprime welds, bolted connections, and abraded surfaces of prime-painted primary and secondary framing, accessories, and bearing plates.

1. Clean and prepare surfaces by hand-tool cleaning, SSPC-SP 2, or power-tool cleaning, SSPC-SP 3.

2. Apply compatible primer of same type as shop primer used on adjacent surfaces.

B. Repair damaged galvanized coatings on exposed surfaces with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

C. Roof Panels: Remove temporary protective coverings and strippable films, if any, as soon as each panel is installed. On completion of panel installation, clean finished surfaces as recommended by panel manufacturer and maintain in a clean condition during construction.

1. Replace panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

SECTION 15411

POTABLE WATER PIPING SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Perform excavating and backfilling required by work of this Section.
   2. Furnish and install potable water piping complete with necessary valves, connections, and accessories inside building and connect with outside utility lines 5 feet from building perimeter as described in Contract Documents.

B. Related Sections
   1. Division 02 -
   2. Division 07 - Furnishing and installing of roof jacks and pipe flashing at roof.
   3. Section 15055 - General Mechanical Requirements
   4. Section 15060 - Pipe & Pipe Fittings

1.2 REFERENCES

A. American Society For Testing And Materials
   1. ASTM B 88-93, "Standard Specification for Seamless Copper Water Tube"

1.3 SUBMITTALS

A. Quality Assurance - Written report of sterilization test.

1.4 QUALITY ASSURANCE

A. Pre-Installation Meeting
   1. See Section 01200.
   2. Participate in meeting specified in Section 03313.

PART 2 PRODUCTS

2.1 COMPONENTS

A. Pipe
   1. Meet requirements of ASTM B 88.
      a. Type K for underground or beneath concrete slab. 3/4 inch minimum under slabs.
      b. Type L for above ground applications.

B. Fittings - Wrought copper.

C. Connections
   1. Above-Grade -
      a. Sweat copper type with 95/5 or 96/4 Tin-Antimony solder or Silvabrite 100 solder.
      b. Use only lead-free solder.
   2. Below Grade -
      a. Brazed using following type rods.
         1) Copper to Copper Connections -
            a) AWS Classification BCuP-4 Copper Phosphorus (6% silver).
            b) AWS Classification BCuP-5 Copper Phosphorus (15% silver).
         2) Copper to Brass or Copper to Steel Connections - AWS Classification BAg-5 Silver (45% silver).

3) Do not use rods containing Cadmium.

b. Brazing Flux -

1) Approved Manufacturers -

a) "Stay-Silv white brazing flux" by J W Harris Co

b) High quality silver solder flux by Handy & Harmon

c. Joints under slabs acceptable only if allowed by local codes.

D. Ball Valves

1. Use ball valves exclusively unless otherwise specified. Ball valves shall be by single manufacturer from approved list below. Valves shall be two piece, full port for 150 PSI SWP.
2. Quality Standard - Nibco-Scott T585 or S585
3. Approved Manufacturers -
   a. ConBraCo (Apollo)
   b. Hammond
   c. Honeywell-Braukmann
   d. Jenkins
   e. Milwaukee
   f. Nibco-Scott
   g. Stockham
   h. Watts

E. Stop & Waste Valves

1. Approved Manufacturers & Models -
   a. Mueller - Mark II Oriseal stop & waste valve H15134
   b. Mueller - Buffalo screw type curb box H-10350 complete with lid and H-10349 enlarged base

F. Combination Pressure Reducing Valve/Strainer

1. Integral stainless steel strainer, or separate 'Y' strainer installed upstream of pressure reducing valve.
2. Built-in thermal expansion bypass check valve.
3. Quality Standard - Watts U5B
4. Approved Manufacturers -
   a. Cash Valve
   b. Clay Valve - Hi Capacity
   c. Con Braco (Apollo)
   d. Honeywell-Braukmann
   e. Spence - Hi Capacity
   f. Watts
   g. Wilkins

PART 3 EXECUTION

3.1 INSTALLATION

A. Below Grade

1. Install piping under slabs without joints where possible.
2. Insulate water piping buried within building perimeter.
3. Bury water piping 6 inches minimum below bottom of slab and encase in 2 inches minimum of sand.

B. Locate cold water lines a minimum of 6 inches from hot water line.

3.2 FIELD QUALITY CONTROL

A. Site Tests - Before pipes are covered, test systems in presence of Architect at 100 psi hydrostatic pressure for two hours and show no leaks.

3.3 CLEANING

A. Sterilize potable water system with solution containing 200 parts per million minimum of available chlorine and maintaining a pH of 7.5 minimum. Introduce chlorinating materials into system in manner approved by Architect. Allow sterilization solution to remain for 24 hours and open and close valves and faucets several times during that time.

B. After sterilization, flush solution from system with clean water until residual chlorine content is less than 0.2 parts per million.

C. Water system will not be accepted until negative bacteriological test is made on water taken from system. Repeat dosing as necessary until such negative test is accomplished.

END OF SECTION

SECTION 15412

SOIL, WASTE, & VENT PIPING SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Furnish and install soil, waste, and vent piping systems within building and connect with outside utility lines 5 feet out from building where applicable.
   2. Perform excavation and backfill required by work of this Section.

B. Related Sections
   1. Division 02 -
   2. Division 07 - Furnishing and installing of roof jacks and pipe flashing at roof.
   3. Section 15055 - General Mechanical Requirements
   4. Section 15060 - Pipe & Pipe Fittings
   5. Section 15440 - Cleanouts

1.2 REFERENCES

A. American Society For Testing And Materials
   1. ASTM A 74-92, "Specification for Cast Iron Soil Pipe & Fittings"
   2. ASTM C 564-88, "Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings"

1.3 QUALITY ASSURANCE

A. Pre-Installation Meeting
   1. See Section 01200.
   2. Participate in meeting specified in Section 03313.

PART 2 PRODUCTS

2.1 MATERIAL

A. Buried Lines
   1. Minimum size of waste piping installed under floor slab on grade shall be 2 inches.
   2. Service weight, single-hub type cast iron soil pipe and fittings meeting requirements of ASTM A 74.
      a. Joint Material -
         1) 50 percent oakum and 50 percent lead, well calked.
         2) Rubber gaskets meeting requirements of ASTM C 564.
   3. Cast iron soil pipe meeting requirements of CISPI - Cast Iron Soil Pipe Institute, Standard 301-85 used in conjunction with "Best" coupling and gasket by AB&I, American Brass & Iron Foundry, San Leandro, CA.
      a. Fittings shall be hub and spigot meeting requirements of ASTM A 74.

B. Above Grade Piping & Vent Lines
   1. Same as specified for buried lines except no-hub pipe may be used.
   2. Vent lines 2-1/2 inches or smaller may be Schedule 40 galvanized steel.
   3. Joint Material -
      a. Bell & Spigot Pipe - 50 percent oakum and 50 percent lead, well calked, or rubber gaskets meeting requirements of ASTM C 564.
      b. No-Hub Pipe - Neoprene gaskets with stainless steel cinch bands.
      c. Galvanized Pipe - Screwed Durham tarred drainage fittings.

PART 3 EXECUTION

3.1 INSTALLATION

A. Do not calk threaded work.

B. Grade soil and waste lines within building perimeter 1/4 inch fall per ft in direction of flow.

C. Install piping so cleanouts may be installed as follows
   1. Where shown on Drawings and near bottom of each stack and riser.
   2. At every 135 degrees of acculumative change in direction for horizontal lines.
   3. Every 100 feet of horizontal run.
   4. Extend piping to accessible surface. Do not install piping so cleanouts must be installed in carpeted floors. In such locations, configure piping so wall type cleanouts may be used.

D. Each fixture and appliance discharging water into sanitary sewer or building sewer lines shall have seal trap in connection with complete venting system so gasses pass freely to atmosphere with no pressure or syphon condition on water seal.

E. Vent entire waste system to atmosphere. Discharge 14 inches above roof. Join lines together in fewest practicable number before projecting above roof. Set back vent lines so they will not pierce roof near edge or valley.

F. Use torque wrench to obtain proper tension in cinch bands when using hubless cast iron pipe. Butt ends of pipe against centering flange of coupling.

3.2 FIELD QUALITY CONTROL

A. Site Tests - After backfilling and compacting is complete but before placing floor slab, conduct tests for leaks and defective work. Notify Architect prior to testing. Fill waste and vent system to roof level with water, 10 feet minimum, and show no leaks for two hours. Correct leaks and defective work.

END OF SECTION

SECTION 15430

PLUMBING SPECIALTIES

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Furnish and install miscellaneous plumbing specialties specified in this Section as described in Contract Documents.

PART 2 PRODUCTS

2.1 MANUFACTURED UNITS

A. Fish Cleaning Station
   1. Fabwright Fish Cleaning Station, FG-9648, Model 5126, Single Phase.
   2. Or approved equal.

B. Septic Tank
   1. Jensen Pre-Cast, JPU 3000 Gallon Low profile Septic Tank
   2. Or approved equal.

C. Lift Station
   1. Hydromatic TG-Pro system, Lift Station, (see drawings)
   2. Or approved equal.

PART 3 EXECUTION

3.1 INSTALLATION

A. Specialties
   1. Install per manufacturer's directions.

END OF SECTION

Engineering, Inc.

Geotechnical Investigation

Otter Creek Fish Cleaning Station

Near Otter Creek Southwest Parking Lot

Otter Creek Reservoir, Piute County, Utah

Prepared For:

Sargent Design Group
36 North 300 West
Cedar City, UT 84720

October 2, 2009

Report Number: RG1006

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October 2, 2009

Sargent Design Group
36 North 300 West
Cedar City, UT 84720

Subject: Otter Creek Fish Cleaning Station
Near Otter Creek Southwest Parking Lot
Otter Creek Reservoir, Piute County, Utah

Enclosed is our geotechnical investigation report for the subject fish cleaning station to be constructed at the subject site in Otter Creek Reservoir, Utah.

The report details our field exploration and laboratory testing program and presents our analysis, opinions and recommendations for the proposed project.

We appreciate this opportunity to be of service on this phase of the project and look forward to being of service as the project progresses. If you have any questions, please contact this office at your convenience.

Sincerely,
GEM Engineering, Inc.

Joel A. Myers, P.E.
President

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1.0 INTRODUCTION

1.1 General

This report presents the results of a geotechnical investigation performed for a proposed fish cleaning station at near Otter Creek Reservoir southwest parking lot in Piute County, Utah. The study was conducted in accordance with the client's authorization.

The purposes of this investigation were to: (1) evaluate the general site geologic conditions and identify potential geotechnical hazards to the proposed structures; (2) evaluate the general nature and engineering properties of the subsurface soils at the site; and (3) provide recommendations and opinions regarding general site grading and the design and construction of foundations, concrete slabs-on-grade and asphaltic concrete pavements. The investigation included a site reconnaissance, subsurface exploration, representative soil sampling, laboratory testing, engineering analyses, and preparation of this report.

The recommendations contained in this report are subject to the limitations presented in the "Limitations" section of the report. We recommend that all individuals reading this report read the limitations section of this document.

1.2 Project Description

We understand that a fish cleaning station will be constructed at the location described in Piute County, Utah. Structural loads are expected to be relatively low.

The proposed site plan on Plate 1 shows the approximate trench location with respect to surrounding structures and proposed fish cleaning station.

2.0 FIELD EXPLORATION

The subsurface soil conditions were explored by excavating, with a backhoe, 1 exploratory trench to a depth of approximately 10 feet below the existing site grade. The approximate location of this exploration is shown on Plate 1. Soils and subsurface conditions encountered in the exploration were classified, logged and recorded at the time of excavation by our field geologists. The results of the exploration are presented on the enclosed Plate 2. A key to soil symbols and terms is found on Plate 3.

3.0 LABORATORY TESTING

Representative soil samples from the exploration were tested in the laboratory for solubility, Atterberg limits and maximum density. Results are presented on Plate 4.

4.0 SITE CONDITIONS

4.1 Surface Conditions

As stated previously the site is located at near the southwest parking lot at Otter Creek Reservoir, Piute County, Utah, as shown on Plate 1. At the time of our investigation the proposed fish cleaning station site was vacant with numerous near by structures, signs and equipment. The site is located on a small peninsula near the southwest end of the reservoir. Highway 22 is located to the south of the site.

4.2 Subsurface Conditions

The on site soils encountered in the excavation generally consisted of loose to medium dense sandy gravel with some cobble to a depth of approximately 3 feet below existing grade. This material was underlain by a 4 foot thick layer of medium dense to dense gravelly sand with occasional cobble. Below this layer was a layer of sandy gravel with cobble which extended to the bottom of the trench.

Groundwater was not encountered during the exploration. The soils were in a slightly moist condition throughout the depths explored.

The encountered subsurface conditions are described in detail on the enclosed trench log, Plate 2. Due to the nature and depositional characteristics of the native soils, care should be taken in extrapolating subsurface conditions beyond the exploration location.

The laboratory tests results indicated that the on-site soils exhibited a relatively low solubility, low plasticity and a low collapse potential.

5.0 ENGINEERING ANALYSIS AND RECOMMENDATIONS

5.1 General

Based on our investigation there may be loose, soft and/or collapsible soils located at the site which, if encountered, will require stabilization and/or overexcavation prior to the placement of structural fill. However, it is our opinion that the subject site is suitable for the proposed construction provided that the recommendations contained in this report are followed.

The following sections of this report present our recommendations to reduce the potential for structural damage. They contain specific opinions and recommendations concerning construction considerations, site preparation and grading, structural fill, foundation design, retaining walls, concrete slabs-on-grade, soil corrosion, moisture protection and structural pavement sections.

One of the most critical recommendations to follow in order to reduce potential for structural damage is to set the finished floor slab elevations high enough to facilitate proper drainage away from the structure.

5.2 Construction Considerations

5.2.1 Foundation Systems

After excavation and recompaction are completed, the structures can be supported by conventional strip and/or spread footings founded on properly placed and compacted structural fill.

5.3 Earthwork

5.3.1 Site Preparation and Grading

Within the areas to be graded, existing vegetation, loose soils, and debris, should be removed and hauled off the site. Any undocumented fill soils, and soft, loose,

collapsible and/or disturbed native soils should be excavated to expose competent, dense or medium dense granular soils.

It is anticipated that competent medium dense granular soils will be encountered at footing depth. A GEM Engineering representative should observe the excavation to verify that competent granular soils have been reached and that no additional overexcavation is required. If additional overexcavation is required the width of overexcavation should extend laterally at least 5 feet beyond the edge of footing on each side or to a distance equal to the depth of overexcavation, whichever is greater. In some circumstances, after review of the excavation, GEM Engineering may approve a width of lateral overexcavation less than 5 feet but in no case shall this width be less than the required depth of overexcavation.

Slabs-on-grade, exterior concrete flatwork, and pavements should be supported by a zone of properly placed and compacted structural fill or native medium dense granular soils.

If loose soft or pumping soils are encountered at the bottom of the excavations, stabilization and/or additional overexcavation will be required prior to the placement of structural fill. Overexcavations may be terminated if competent, medium-dense granular soils are encountered. A GEM Engineering representative should observe excavation and determine if it is acceptable to terminate the excavation or reduce the overexcavation depth.

The majority of on-site soils, free of organics and debris, should be suitable for reuse as structural fill. If using on-site soils for backfill or structural fill a shrinkage factor of up to 10 percent can be expected.

Following excavation of the unsuitable soils as described above, a representative of this office should observe the excavation bottoms prior to the continuance of grading to verify that unsuitable materials have been removed and that competent

soils have been exposed. The native soils exposed after overexcavation should be scarified to a depth of 6 inches and brought to within 2 percent of the optimum moisture content for granular soils and slightly above optimum for fine-grained soils. Soil shall then be compacted to at least 90 percent of the maximum dry density for granular soils and 85 percent of the maximum dry density for fine grained soils as determined by ASTM D-1557. The site should then be brought to the proper grade with structural fill as described in the Structural Fill section.

Subgrade materials supporting slabs-on-grade, exterior concrete flatwork, and pavements should be kept moist and not be allowed to dry out and crack. If the subgrade has been disturbed or dried out prior to placement of aggregate base, the exposed soils should be moisture-conditioned and recompacted as outlined in the Structural Fill section of this report.

We recommend that a GEM Engineering representative be allowed to review the grading plans when prepared to evaluate their compatibility with the recommendations of this report.

5.3.2 Excavations

The majority of the soils encountered in our explorations should be excavatable with conventional earthwork equipment. It is also possible that soft pumping soils may be encountered. Pumping soils will need to be stabilized prior to placing of structural fill. Safety of construction personnel is the responsibility of the Contractor.

5.3.3 Material Volume Changes

There will be shrinkage losses when excavating and compacting the on-site soils. An estimated average shrinkage factor of 10 percent is applicable for the loose to medium-dense near-surface native soils. A subsidence factor of 0.1 should be used in all areas where the surficial soils are scarified and recompacted to a depth of 6 inches.

5.3.4 Structural Fill

All fill placed for the support of slabs-on-grade, exterior concrete flatwork, and pavements should be structural fill. Structural fill may consist of approved excavated on-site or imported fill materials. Structural fill should have a swell potential less than 4 percent under a 60 psf surcharge, have a solubility of less than 3 percent, be free of organics, salts, or inert materials larger than 4 inches nominal size, and be similar in gradation to the on-site soils.

Structural fill should be placed in maximum eight-inch loose lifts and compacted on a horizontal plane, unless otherwise approved by the Geotechnical Engineer. Soils in compacted fills should be compacted to at least 90 percent of the maximum dry density as determined by ASTM-D1557 for fine grained soils and 95 percent for granular soils. The moisture content should be within 2 percent of optimum for granular soils and at least 2 percent above optimum for fine-grained soils. Any imported fill materials should be approved prior to importing. Also, prior to placing any fill, the excavations should be observed by a GEM Engineering representative to observe that unsuitable materials have been removed.

5.4 Foundations

5.4.1 Conventional Foundations

General: Conventional shallow foundations consisting of strip and/or spread footings can be utilized for the support of the proposed building provided that overexcavation is completed in accordance with the requirements and recommendations of this report as described in the Earthwork section.

For frost protection the bottom of exterior conventional spread and strip footings shall be at least 40 inches below the lowest adjacent final compacted subgrade.

Foundations for structures constructed on soils, prepared in accordance with the recommendations and requirements of this report, may be designed for an allowable net bearing pressure of 2000 psf. This bearing pressure may be increased by one-third for load combinations containing seismic or wind loads.

Prior to constructing the foundations, the footing excavations should be observed by a GEM Engineering representative to confirm that the soil preparation has been completed in accordance with the requirements and recommendations of this report.

Seismicity: The soil meets the 2006 International Building Code (IBC) requirements for a site class D. The seismic design category for the 2006 International Residential Code (IRC) is D1.

Settlement: Foundations established in accordance with the recommendations and requirements of this report are estimated to subject to 1 ½" or less of settlement if the soils beneath the overexcavation do not become moistened. Estimated differential settlement could be on the order of ½ the total settlement.

Lateral Earth Pressures: The following lateral earth pressure equivalent fluid densities shall be used in the design of the structure.

Properly Compacted On-Site Soils	
Active Pressure	34 pcf
At Rest Pressure	53 pcf
Passive Pressure	282 pcf

When passive pressure is used for resistance to lateral loads the top one foot of soil should be neglected. The maximum allowable passive pressure for lateral load resistance should not exceed 1,600 psf.

The seismic lateral earth pressure coefficient (k_h) is 0.11.

Lateral Load Resistance: Horizontal loads acting on foundations will be resisted by friction acting at the base of foundations and/or passive earth pressures acting against the side of footings and concrete walls. If design makes use of passive earth pressures, it is important that a GEM Engineering representative be present during backfill placement.

The friction force acting along the base of footings founded on suitable foundation soils may be calculated using a coefficient of friction of 0.40.

Lateral loads acting on buried utility lines may be resisted by thrust blocks reacting against undisturbed native soil or properly placed and compacted structural fill. The passive lateral earth pressure equivalent fluid density and coefficient of friction, previously listed, may be used for thrust block design.

5.5 Concrete Slabs-On-Grade

Satisfactory support for concrete slabs-on-grade and exterior concrete flatwork may be provided by a 6 inch layer of compacted gravel overlying properly placed and compacted structural fill as recommended in the Site Grading section of this report. The layer of compacted gravel may consist of road base or pit-run gravel with a 2-inch maximum particle size and not more than 12% fines passing the No. 200 sieve. The gravel layer should be compacted to at least 95% of the maximum dry density as determined by ASTM D1557.

All concrete slabs should be designed to minimize cracking as a result of shrinkage. Reinforcement requirements shall be provided by the Structural Engineer. Reinforcement should be installed at the mid-height of the slab unless directed otherwise by the Structural Engineer.

Special precautions must be taken during the placement and curing of all concrete slabs. Excessive slump (high water-cement ratio) of the concrete and/or improper curing procedures used during either hot or cold weather conditions could lead to excessive shrinkage, cracking or curling in the slabs. All concrete placement and curing operations shall be performed in accordance with the American Concrete Institute (ACI) Manual.

5.6 Soil Corrosion

Based on similar studies performed in the area, the on-site soils contain salts in sufficient concentration to be considered corrosive to both concrete and metal. Therefore, all concrete in contact with the on-site soils and used in stem walls should contain Type V or equivalent sulfate-resistant cement, and should be placed with a maximum four inch slump. Special protection to buried metal pipes and water lines should be considered for long term performance of these underground utilities. Consideration should be given to cathodic protection of buried metal pipes, or to the use of PVC pipe where permitted by local building codes.

5.7 Moisture Protection and Drainage

It is imperative that precautions are taken during and after construction to eliminate, or at least minimize, wetting of foundation soils. Drainage and grading shall be constructed in accordance with the requirements of sections R401.3 and R801.3 of the 2006 International Residential Code (IRC). Positive drainage shall be established away from the exterior walls of the structure. The required minimum slope is five percent (5%) in landscape areas and two percent (2%) in pavement areas, for a minimum distance of 10 feet from the structure. Roof runoff and other sources of moisture should not be allowed to infiltrate the soils in the vicinity of, or upslope from, the structure. No roof moisture should infiltrate the soils beneath the foundations.

All utility trenches leading into the structures should be backfilled with compacted non-pervious fill. Special care should be taken during installation of sub floor sewer and water lines to reduce the possibility of future subsurface saturation.

Landscape watering adjacent to the structure should be eliminated. As an additional protection a concrete slab could be placed around the structure to facilitate drainage away from the structure as described above. Any planters adjacent to the structure should have sealed bottoms. It is recommended that desert landscaping techniques be utilized.

6.0 CLOSURE

6.1 Limitations

The recommendations contained in this report are based on the field exploration, laboratory tests, and our understanding of the proposed construction. The subsurface data used in the preparation of this report were obtained from the exploration made during this investigation. It is possible that variations in the soil and groundwater conditions could exist elsewhere on the site. The nature and extent of variations may not be evident until construction occurs. If any conditions are encountered at the site which are different from those described in this report, GEM Engineering should be immediately notified so that we may make any necessary revisions to recommendations contained in this report. In addition, if the scope of the proposed construction changes from that described in this report, GEM Engineering should likewise be notified.

This report was prepared in accordance with the generally accepted standard of practice at the time the report was written. Although some potential geologic hazards may be indentified in this Geotechnical Investigation Report, this is NOT a Geologic Hazards Report and should not be regarded as such. No warranty, express or implied, is made. It is the Client's responsibility to see that all parties to the project, including the Designer, Contractor, Subcontractors, etc., are made aware of this report in its entirety. The use of information contained in this report for bidding purposes should be done at the Contractor's option and risk. GEM Engineering will not accept the responsibility for damage caused by the uncontrolled action of water at the site.

6.2 Additional Services

The recommendations made in this report are based on the assumption that an adequate program of tests and observations will be made during the construction to verify compliance with the recommendations. These tests and observations should include, but not necessarily be limited to, the following:

- Observations and testing during site preparation, earthwork and structural fill placement
- Observations of footing excavations
- Consultation as may be required during construction

We also recommend that project plans and specifications be reviewed by us to verify compatibility with our conclusions and recommendations. Additional information concerning the scope and cost of these services can be obtained from our office.

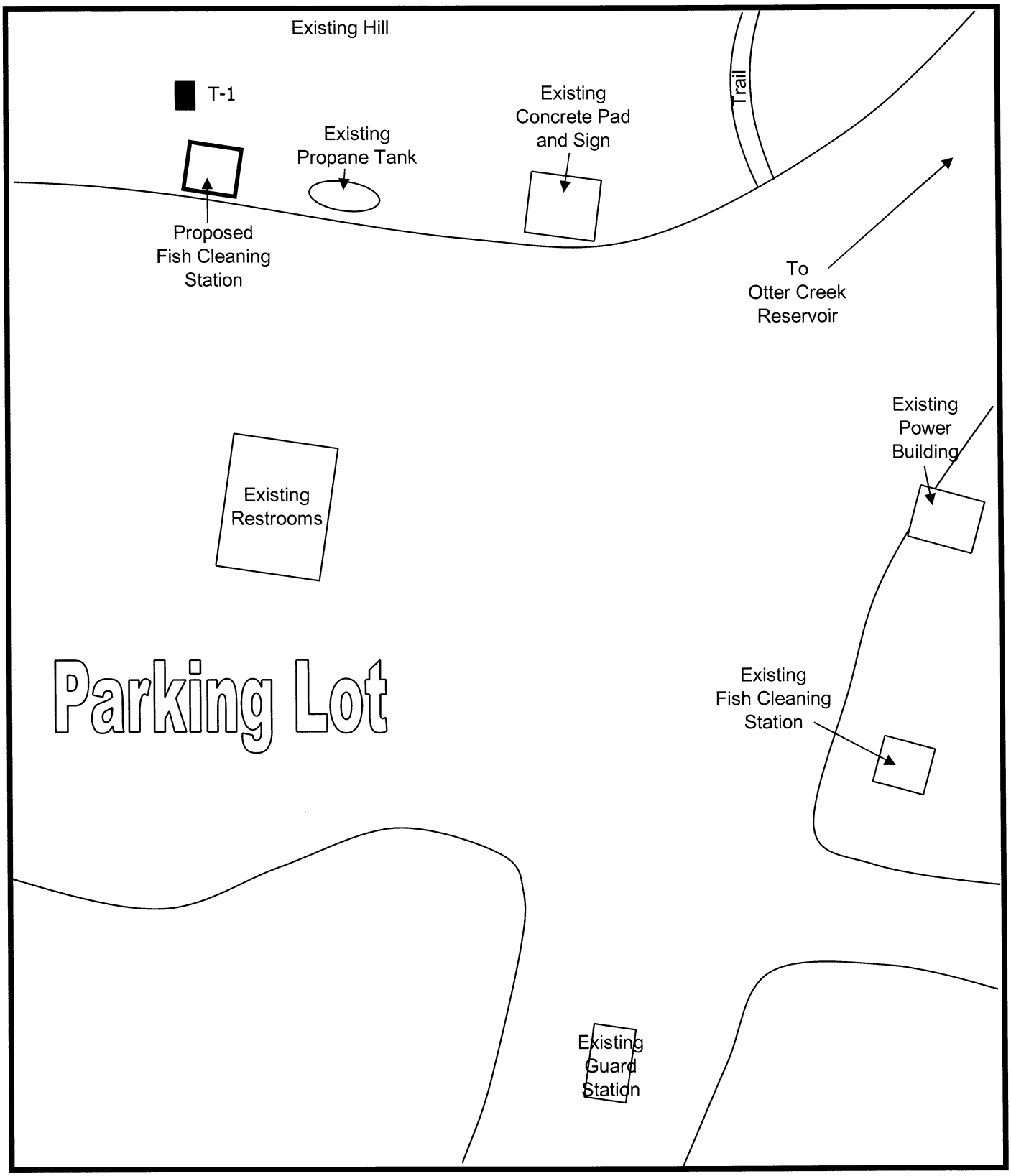
Appendix A

Site Plan

Key
- Approximate Trench Location

Not to Scale

North



GEM ENGINEERING, INC.

Otter Creek Fish Cleaning Station

Near Southwest Parking Lot

Otter Creek Reservoir, Piute County, Utah

Plate: 1

Trench No. 1

Date Excavated: 9/23/2009
Location: see plate 1
Elevation: Not measured

Depth (ft.)	Field Moisture %	Dry Density (pcf)	Other Tests *	Samples	SYMBOL +	SOIL DESCRIPTION	MOISTURE	CONSISTENCY
0					GM	(GM) - Sandy Gravel with some Cobble.	Slightly Moist	Loose to Med. Dense
						- Light Brown		Medium Dense to Dense
			SOL, AT, P		SP	(SP) - Gravelly Sand.		
						- Layer is poorly graded. Layer capped with 6" caliche.		
5						- Occasional cobble observed.		
						- Light Brown		
			SOL, AT, P			(GW) - Sandy Gravel with Cobble.		
						- Light Brown		
10						Bottom @ 10 feet.		
15								
20								

* Other Tests: C = Consolidation, AT = Atterberg, S = Shear, G = Grain Size, E = Expansion, SOL = Solubility, DS = Direction Shear, P = Proctor

■ = Drive Sample
▒ = Bulk Sample
⊠ = No Recovery

Notes:
- No groundwater encountered.
- No caving of sidewalls.

GEM ENGINEERING, INC.

Otter Creek Fish Cleaning Station
Near Southwest Parking Lot
Otter Creek Reservoir, Piute County, Utah

Plate: 2

The Unified Soil Classification System

MAJOR DIVISIONS			Group	Symbol	TYPICAL NAMES
COARSE GRAINED SOILS More than 50% of material is larger than the No. 200 sieve.	**GRAVELS**	**CLEAN GRAVELS**	GW		Well graded gravels, gravel sand mixtures, little or no fines
	More than 50 % of coarse part is larger than the No. 4 sieve.	Little or no fines	GP		Poorly graded gravels/gravel sand mixtures
		GRAVELS WITH FINES	GM		Silty gravels, gravel-sand-silt mixtures
		Appreciable amount of fines	GC		Clayey gravels, gravel-clay-sand mixtures
	SANDS	**CLEAN SANDS**	SW		Well graded sands, gravely sands, little or no fines
	More than 50 % of coarse part is smaller than the No. 4 sieve.	Little or no fines	SP		Poorly graded sands or gravely sands, little or no fines
		SANDS WITH FINES	SM		Silty sands, sand-silt mixtures
		Appreciable amount of fines	SC		Clayey sands, sand clay mixtures
FINE GRAINED SOILS More than 50% of material is smaller than the No. 200 sieve.	**SILTS AND CLAYS** Liquid limit less than 50		ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with low plasticity
			CL-ML		Inorganic clay-silt mixture and very fine sand, silty or clayey fine sands or clayey silts with low plasticity.
			CL		Inorganic clays of low to medium plasticity, gravely Claus, sandy clays, silty clays, lean clays
			OL		Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS Liquid limit greater than 50		MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH		Inorganic clays of high plasticity, fat clays
			OH		Organic clays or medium to high plasticity, organic silts
	HIGHLY ORGANIC SOILS		PT		Peat and other highly organic silts

Laboratory Test Results

Table #1 - Solubility Analysis

Sample Location	Soil Classification / Description	Percent Soluble by Weight
T-1 @ 4 feet	Gravelly Sand (poorly graded)	< 1
T-1 @ 8 feet	Sandy Gravel w/ Cobble	< 1

Table #2 - Atterberg Limits

Sample Location	UCS Type	Percent Passing #4 Sieve	Percent Passing #10 Sieve	Percent Passing #40 Sieve	Percent Passing #200 Sieve	Liquid Limit	Plastic Limit	Plasticity Index
T-1 @ 4'	SP	68.6	37.1	16.8	2.7	--	--	Non-Plastic
T-1 @ 8'	SW*	60.4	32.6	13.3	1.7	--	--	Non-Plastic

* Lab sample did not include cobble from site, classification with bolders and cobble included = GW

Table #3 - Maximum Density Test Summary

Sample Location	Soil Classification / Description	Maximum Dry Density (pcf)	Optimum Moisture (%)
T-1 @ 4 feet	Gravelly Sand (poorly graded)	130.0	8.5%
T-1 @ 8 feet	Sandy Gravel w/ Cobble	126.5	8.0%