



STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES

**Division of Facilities Construction and Management**

**DFCM**

**MULTI-STEP BIDDING PROCESS  
FOR  
GENERAL CONTRACTORS**

**Single Project---Short-Listing**

**Request for Submittals**

**May 17, 2010**

**RECREATION REHABILITATION  
PHASE 1  
STARVATION STATE PARK**

**DIVISION OF PARKS AND RECREATION  
DUCHESNE COUNTY, UTAH**

DFCM Project Number 08085510

Bureau of Reclamation

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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 7. Supplemental General Conditions" or are available upon request from DFCM:

DFCM Supplemental General Conditions revised May 11, 2010 \*  
DFCM Supplemental General Conditions dated July 1, 2009 \*  
DFCM Supplemental General Conditions dated July 15, 2008  
DFCM General Conditions dated May 25, 2005

**\* NOTE: THE NEW SUPPLEMENTAL GENERAL CONDITIONS EFFECTIVE JULY 1, 2009 AND REVISED MAY 11, 2010 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

The State of Utah - Division of Facilities Construction and Management (DFCM) is requesting submissions for the following project:

**Project Name:**           **Recreation Rehabilitation - Phase 1 - Starvation State Park  
Division of Parks and Recreation – Duchesne County, Utah**

**Project No.**               **08085510**

**Project Description:** Reconstruction of existing campgrounds including replacement of existing restrooms and constructing new campground spurs and pull through complete with concrete pads, fire rings, shelters, electrical pedestals, and water hydrants.

**Cost Estimate:**         **\$1,200,000**

DFCM is entering into a Multi-Step Bidding Process for Construction services. A short-listing of contractors will be based on the selection criteria outlined in the bidding documents contained herein. Short-listed contractors will be invited to submit bids on the project described above. **The only contractors allowed to bid on this project will be contractors short-listed by the selection committee.**

All contractors responding to this procurement must comply with and require all of their subcontractors to comply with the license laws as required by the State of Utah.

The bidding documents including plans and specification, short-listing requirements and schedule will be available at 11:00 AM on Monday May 17, 2010 on the DFCM web page at <http://dfcm.utah.gov> and from DFCM, 4110 State Office Building, Salt Lake City, Utah 84114, telephone 801-538-3018. For questions regarding this solicitation, please contact Darrell Hunting, DFCM, at 801-244-7647. No others are to be contacted regarding this solicitation.

A **mandatory** pre-submittal meeting to discuss the multi-step bidding process will be held at 2:00 PM on Monday, May 24, 2010 in Room 4112, State Office Building, Salt Lake City, Utah. When bidding on this project, short-listed contractors will be required to submit 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. A Bid Bond must accompany each bid.

The Division of Facilities Construction & Management reserves the right to reject any or all submittals/bids or to waive any formality or technicality in any submittal/bid in the interest of the State.

DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT  
MARLA WORKMAN, CONTRACT COORDINATOR  
4110 State Office Bldg., Salt Lake City, Utah 84114

# DESCRIPTION OF WORK

The only contractors allowed to bid on this project will be contractors short-listed by the selection committee.

## Project Description:

The work is situated at Starvation State Park in Duchesne County about 110 miles southeast of Salt Lake City, Utah. The work comprises the following:

- Demolition of two existing restrooms
- Selective demolition of concrete and asphalt in the campground and day use areas
- New base course and asphalt in the campground loop and various other areas
- New base course and asphalt surfacing on a new road
- Remove and reinstall the existing sewer and water systems at the campground and day use area
- Construct new campground spurs and pull through complete with concrete pads, fire rings, shelters, electrical pedestals, and water hydrants
- Overlay existing asphalt in the parking areas and other areas with 2-inches of asphalt
- Construct a new six unit restroom in the day use area
- Construct a new six unit restroom with seven showers in the campground
- Remove and replace the upper portions of boat ramp concrete
- Install new day use area sites with shelters
- Place new sod and irrigation system in the day use area

Individual contractors or alliances between two or more contractors are allowed in this process to form a team. However, one contractor or firm MUST be declared as the lead firm representing the team. If the team is short-listed through this multi-step process, the state will only enter into contracts with the lead contractor or firm. The lead contractor or firm must be licensed by the State of Utah and comply with and require all of its subcontractors to comply with the license laws as required by the State of Utah.

# **MULTI-STEP BIDDING PROCESS**

## **SHORT-LISTING OF GENERAL CONTRACTORS**

The short-listing of contractors will be based on the selection criteria outlined in this document.

**1. Multi-Step Bidding Documents**

The Multi-Step bidding documents consist of all of the information contained in this solicitation and all documents listed in the Table of Contents. All said documents are incorporated in this document by reference.

**2. Availability of Documents**

Bidding documents are available free of charge at the locations stated on the Schedule. The bidding documents are also available at DFCM's internet web site at <http://dfcm.utah.gov>.

**3. Drawings and Specifications and Interpretations**

Drawings, specifications and other contract documents may be obtained as stated in the Notice to Contractors. If any firm is in doubt as to the meaning or interpretation of any part of the drawings, specifications, scope of work or contract documents, they shall submit, in writing, a request for interpretation to the authorized DFCM representative by the deadline identified in the schedule. Answers to questions and interpretations will be made via addenda issued by DFCM. Neither DFCM nor the designer shall be responsible for incorrect information obtained by contractors from sources other than the official drawings/specifications and addenda issued by DFCM.

**4. Contact Information**

Except as authorized by the DFCM Representative or as otherwise stated in the bidding documents or the pre-submittal meeting, communication during the multi-step bidding process shall be directed to the specified DFCM's Representative. In order to maintain the fair and equitable treatment of everyone, contractors shall not unduly contact or offer gifts or gratuities to owners, users or selection committee members in an effort to influence the selection process or in a manner that gives the appearance of influencing the selection process. This prohibition applies before the bidding documents are issued as the project is developed, and extends through the award of a contract. Failure to comply with this requirement may result in a disqualification from the multi-step bidding process. Contractors should be aware that selection committee members will be required to certify that they have not been contacted by any of the contractors in an attempt to influence the selection process.

**5. Requests for Information**

All requests for information shall be in writing and directed to:

**Project Manager Darrell Hunting**  
Division of Facilities Construction and Management  
4110 State Office Building  
Salt Lake City, Utah 84114  
**E-mail:            d hunting@utah.gov**  
**Phone:             801-244-7647**

**6. Schedule**

The Schedule lists the important events, dates, times and locations of meetings and submittals that must be met by the contractor.

7. **Pre-Submittal Meeting**

A **mandatory** pre-submittal meeting will be held on the date and time and at the location listed on the Schedule. During the meeting, questions will be answered about the multi-step bidding process. Questions about the project, plans and specifications will also be addressed. Attendance at this meeting is mandatory for General Contractors.

8. **Submittal Due Dates and Times**

All required submittals must be delivered to, and received by, the Division of Facilities Construction and Management by the time deadline established in the Schedule. Submittals received after the specified time deadline will not be accepted. Please allow adequate time for delivery. If using a courier service, the contractor is responsible for ensuring that delivery will be made directly to the required location prior to the deadline.

9. **Last Day to Submit Questions**

Questions must be submitted in writing to the DFCM project manager by the deadline listed on the Schedule.

10. **Addendum**

All clarifications will be in writing and issued as addenda to the RFS. Addenda will be posted on DFCM's web site at <http://dfcm.utah.gov>. **Contractors are responsible for obtaining information contained in the addenda from the web site. Any addenda issued prior to the submittal deadline shall become part of the multi-step bidding process and any information required must be included in the contractor's submittal.** 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. DFCM shall not be responsible for incorrect information obtained by contractors from sources other than official addenda issued by DFCM.

11. **Bid Bond Requirements**

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.

**12. Performance and References**

DFCM will rate each firm's performance on every project worked on (rating scale: 1 = low; 5 = high). The rating may include comments from agencies. The firm will have an opportunity to review and comment on their ratings. Ratings on DFCM projects over the previous five years will be provided to the selection committee for their consideration in evaluating and scoring the past performance of each firm. If a firm has not completed at least three DFCM projects in the last five years, they shall provide by the time indicated on the Schedule, a list of references on additional projects for a total of five projects. References should include: (a) name and address of the project; (b) name and phone number of the person able to answer questions about the project; (c) date of when the work was completed; (d) the cost of the project and the type of project (school, office, warehouse, etc).

**13. Statement of Qualifications**

The Contractor (firm) shall provide five copies of a statement of qualifications by the time indicated on the Schedule. The statement should describe: (a) the financial viability of your firm; (b) the experience, skill level and qualifications of your firm - identify the specific project manager and site superintendent that will be assigned to this project; (c) provide examples of similar projects completed by your firm and the specific project manager and site superintendent that will be assigned to this project; (d) describe your firm's areas of expertise and other special qualifications as they pertain to this project; (e) document your firm's track record of completing projects on time and within budget; (f) explain your firm's reputation and commitment to high-quality workmanship; and (g) document your firm's ability to comply with the bonding requirements outlined earlier in this document. The statement of qualifications should be concise (**limit three pages**) yet contain sufficient information for evaluation by the selection committee. Note: If multiple firms combine to form a team, only the lead contractor or firm will be allowed to bid on projects. In addition, if any member of the team (contractor or firm) withdraws from the team, the entire team is disqualified and will not be allowed to bid.

**14. Termination or Debarment Certification**

Each firm must submit a certification that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from soliciting work by any governmental department or agency. The firm must also certify that neither the firm nor its principals have been terminated during the performance of a contract or withdrew from a contract to avoid termination. If the firm cannot certify to these statements, the firm shall submit a written explanation. Firms are to submit the certifications with their Statement of Qualifications.

**15. Project Management Plan**

Each Contractor (firm) shall provide five copies of a document describing their management plan by the time indicated on the Schedule. The document should include: (a) the process used for selecting and managing subcontractors; (b) a description of how the your firm is organized - pertaining to this project, document who will be in charge with decision making authority; (c) a project schedule detailing your firm's plan to ensure that the project will be completed on time (include timeline for ordering long lead materials and equipment); (d) a description of the process (action plan) your firm will take to bring the project back on schedule if it falls behind; (e) the procedures your firm has in place to minimize change

orders; (f) the methodology used to ensure the accuracy of your bid; (g) your firm's approach to site security and project safety; (h) your firm's understanding of DFCM's construction general conditions and contract requirements; and (i) any other information that will assist the selection committee in evaluating your firm's approach to project management.

Include an organization chart of key personnel and a description of their duties. The management plan document should be concise (**limit three pages**) yet contain sufficient information for evaluation by the selection committee. The organization chart is a separate document and is not counted as one of the three pages.

**16. Selection Committee**

The selection committee will evaluate and score each firm/team. Committee members may include individuals from DFCM, User Agency/Institution, and a representative from the design or construction disciplines.

**17. Interviews**

Interviews are not anticipated; however if they are required, firms will be notified of the date and time of their interview. Otherwise, the selection committee reserves the right to short-list firms/teams based on their submitted past performance ratings/references, statement of qualifications and project management plan.

If necessary, interviews will be conducted with all responsive and responsible contractors. Firms that are late or do not appear for the interview may be disqualified by the committee. The evaluation will be made using the selection criteria contained in this document. Information provided by the past performance/references, statement of qualifications, project management plan and the interview will be evaluated using the selection criteria as the basis for the selection. The purpose of the interview is to allow contractors an opportunity to present their qualifications, discuss past performance/references and describe their project management plan. It will also provide an opportunity for the selection committee to ask questions about these items. Firms may elect to have management personnel, project managers and superintendents in attendance. Attendance of subcontractors is at the discretion of the contractor. The method of presentation is at the discretion of the contractor.

**18. Selection Criteria**

The following criteria and weighting will be used in evaluating each firm/team. The selection committee will consider all criteria in performing a comprehensive evaluation of each firm/team. Each firm/team will be scored by each selection committee member in the categories listed below.

**A. Performance Rating/References.** The committee will receive a past performance rating and/or reference score for each firm/team. DFCM will compute the score for each firm/team based upon the information outlined earlier in this document. **Possible Points: 35**

**B. Statement of Qualifications.** The committee will evaluate and score each firm's/team's qualifications in accordance with the information outlined earlier in this document as well as additional information about the firm's/team's qualifications presented during the interview. **Possible Points: 35**

- C. **Project Management Plan.** The committee will evaluate and score each firm's/team's project management approach in accordance with the information outlined earlier in this document as well as additional information about the firm's/team's project management approach presented during the interview. **Possible Points: 30**

**TOTAL POINTS = 100 POINTS**

**19. Short-Listing**

DFCM will **short-list up to six firms** receiving the highest score above the minimum score of 85 points from the selection committee. No firms receiving fewer than 85 points will be short-listed. Only short-listed firms will be invited to bid on this project. During the bidding process, the final contractor selection will be based on the lowest responsive and responsible bidder.

**20. 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 Designer. Such written approval must occur prior to the deadline established for the last scheduled addendum to be issued. The Designer's written approval will be included as part of the addendum issued by DFCM. 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 Designer.

**21. Trade Secrets or Confidential Matters**

Any submitter may designate those portions of the submittals which contain trade secrets or other confidential matters that the Governmental Records and Access Management Act (GRAMA) would allow to be a protected record. Any disclosure of submittals or portions thereof shall be in accordance with GRAMA and State law.

**22. 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. Failure to respond may result in the Contractor (firm) receiving a poor performance rating on this project.

**23. 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.

**24. 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.

**25. Time is of the Essence**

Time is of the essence in regard to all the requirements of the contract documents.

**26. Bids**

Before submitting a bid, each bidder 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 including those added via addenda. 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 Project Manager. Changes necessary to correct these issues will be made via addenda issued by DFCM.

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 Notice to Contractor's prior to the published deadline for the submission of bids.

Bid bond security, in the amount of five percent (5%) of the bid, made payable to the Division of Facilities Construction and Management, shall accompany bid. **THE BID BOND MUST BE ON THE BID BOND FORM PROVIDED IN THE PROCUREMENT DOCUMENTS IN ORDER TO BE CONSIDERED AN ACCEPTABLE BID.**

If the bid bond security is submitted on a form other than the Owner's required bid bond form, and the bid security meets all other legal requirements, the bidder will be allowed to provide an acceptable bid bond by the close of business on the next business day following notification by DFCM of submission of a defective bid bond security. **A cashier's check cannot be used as a substitute for a bid bond.**

**27. Listing of Subcontractors**

Listing of Subcontractors shall be as summarized in the "Instructions and Subcontractors List Form", included as part of the 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 may receive a poor performance rating on this project.

**28. Bid Schedule**

The Bid schedule is required for each building to be submitted as indicated on the Project Schedule.  
See Specification Section 00410

**29. Contract and Bond**

The Contractor's Agreement will be in the form attached. 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.

**30. 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 DFCM 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.

**31. Right to Reject Bids**

DFCM reserves the right to reject any or all Bids.

**32. Withdrawal of Bids**

Bids may be withdrawn on written request received from bidders within 24 hours after the bid opening if the contractor has made an error in preparing the bid.



**MULTI-STEP PROJECT SCHEDULE**

<b>PROJECT NAME: RECREATION REHABILITATION - PHASE 1 - STARVATION STATE PARK</b>				
<b>DIVISION OF PARKS AND RECREATION – DUCHESNE COUNTY, UTAH</b>				
<b>DFCM PROJECT NO. : 08085510</b>				
<b>Event</b>	<b>Day</b>	<b>Date</b>	<b>Time</b>	<b>Place</b>
Document Available, including Plans and Specifications	Monday	May 17, 2010	11:00 AM	DFCM 4110 State Office Building SLC, UT and DFCM web site*
<b>Mandatory</b> Pre-Submittal Meeting	Monday	May 24, 2010	2:00 PM	Room 4112 State Office Building SLC, UT
Last Day to Submit Questions on Shortlisting (In Writing)	Wednesday	May 26, 2010	4:00 PM	Darrell Hunting - DFCM E-mail <a href="mailto:dhunting@utah.gov">dhunting@utah.gov</a>
Addendum on Shortlisting	Thursday	May 27, 2010	2:00 PM	DFCM web site*
List of References, Statement of Qualifications, Project Management Plan, and Termination/Debarment Certification Due	Wednesday	June 2, 2010	12:00 NOON	DFCM 4110 State Office Building SLC, UT
Selection Committee Review	Tuesday	June 8, 2010	To Be Announced	To Be Announced
Short-List Announced	Thursday	June 10, 2010	4:00 PM	DFCM Web site
<b>Notice: Only Short-Listed Firms Will Be Allowed To Bid On This Project</b>				
Mandatory Site Visit	Tuesday	June 15, 2010	10:00 AM	Main Gate Starvation State Park Duchesne, UT
Last Day to Submit Questions (In Writing)	Thursday	June 17, 2010	2:00 PM	Darrell Hunting - DFCM E-mail <a href="mailto:dhunting@utah.gov">dhunting@utah.gov</a>
Final Addendum (exception for bid delays)	Wednesday	June 23, 2010	2:00 PM	DFCM web site*
Prime Contractors Turn in Bid and Bid Bond/Bid Opening in DFCM Conference Room	Monday	June 28, 2010	3:00 PM	DFCM 4110 State Office Building SLC, UT
Subcontractors List and Bid Schedule Due	Tuesday	June 29, 2010	3:00 PM	DFCM 4110 State Office Building SLC, UT Fax 801-538-3677
Project Completion Date	Friday	May 13, 2011		

\* 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 **RECREATION REHABILITATION - PHASE 1 STARVATION STATE PARK - DIVISION OF PARKS AND RECREATION – DUCHESNE COUNTY, UTAH - DFCM PROJECT NO.: 08085510** 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 **May 13, 2011**, should I/we be the successful bidder, and agree to pay liquidated damages in the amount of **\$300.00** 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 100% 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 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.

### **GROUND 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

INSTRUCTIONS AND SUBCONTRACTORS LIST FORM  
PAGE NO. 2

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.

Table with 4 columns: 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 \_\_\_\_\_, 2006, by and between the DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT, hereinafter referred to as "DFCM", and \_\_\_\_\_, incorporated in the State of Utah and authorized to do business in the State of Utah, hereinafter referred to as "Contractor", whose address is \_\_\_\_\_ Utah \_\_\_\_\_.

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, July 1, 2009, and revised May 11, 2010 (also referred to as "General Condition"), 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** (\$ \_\_\_\_\_), which is the base bid, and 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 \_\_\_\_\_ after the date of the Notice to Proceed. 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 Notice to Contractors, 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'S AGREEMENT  
PAGE NO. 3

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.



**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: \_\_\_\_\_  
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

<b>Agency:</b> _____
<b>Agent:</b> _____
<b>Address:</b> _____
<b>Phone:</b> _____

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

**PAYMENT BOND**

(Title 63, Chapter 56, U. C. A. 1953, 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, 1953, 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:**

\_\_\_\_\_

(Seal)

**WITNESS OR ATTESTATION:**

\_\_\_\_\_

STATE OF \_\_\_\_\_ )  
 ) ss.  
COUNTY OF \_\_\_\_\_ )

**PRINCIPAL:**

\_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

**SURETY:**

\_\_\_\_\_

By: \_\_\_\_\_  
Attorney-in-Fact (Seal)

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

# SPECIFICATIONS

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# SPECIFICATIONS

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# SPECIFICATIONS

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**END OF CONTENTS**

**STARVATION STATE PARK, RECREATION REHABILITATION - PHASE I**

Bidders are required to fill in the schedule below in addition to the Proposal Form. The Total for the Schedule shall equal the amount entered in the Proposal Form.

Only the items listed below shall be incorporated into the Schedule of Values.

See the Section 01271 entitled "Payment for Mobilization and Preparatory Work" which applies to Schedule item 1.

**BID SCHEDULE**

Item	Section	Work or material	Quantity and unit	Unit price	Amount
1.	01271	Mobilization and preparatory work	For the	lump sum of	\$_____
2.	01272	Constructing a 6 Unit Restroom	For the	lump sum of	\$_____
3.	01272	Constructing a 6 Unit Restroom with Showers	For the	lump sum of	\$_____
4.	01272	Volleyball courts	2 Each	\$_____	\$_____
5.	01272	Horseshoes pits	3 Each	\$_____	\$_____
6.	01563	Erosion control and water pollution prevention measures	For the	lump sum of	\$_____
7.	02220	Demolition	For the	lump sum of	\$_____
8.	02230	Clearing, grubbing, and stripping topsoil	For the	lump sum of	\$_____
9.	02311	Grading	For the	lump sum of	\$_____

Starvation State Park, Recreation Rehabilitation - Phase I

Item	Section	Work or material	Quantity and unit	Unit price	Amount
10.	02316	Crushed-gravel	205 Cu yd	\$_____	\$_____
11.	02316	Drain rock	35 Cu yd	\$_____	\$_____
12.	02316	Sand	5,000 Ton	\$_____	\$_____
13.	02371	Geotextile	3850 Sq ft	\$_____	\$_____
14.	02375	Riprap	770 Sq ft	\$_____	\$_____
15.	02514	1-inch curb valves	1 Each	\$_____	\$_____
16.	02514	2-inch curb valves	2 Each	\$_____	\$_____
17.	02514	4-inch curb valves	3 Each	\$_____	\$_____
18.	02514	1-inch stop and waste valves	38 Each	\$_____	\$_____
19.	02514	2-inch stop and waste valves	2 Each	\$_____	\$_____
20.	02515	1" HDPE pipe	1,250 Ln ft	\$_____	\$_____
21.	02515	2" HDPE pipe	490 Ln ft	\$_____	\$_____
22.	02515	4" HDPE pipe	1,750 Ln ft	\$_____	\$_____
23.	02519	Disinfect water system	For the	lump sum of	\$_____
24.	02530	Sanitary sewage system	For the	lump sum of	\$_____

Starvation State Park, Recreation Rehabilitation - Phase I

Item	Section	Work or material	Quantity and unit	Unit price	Amount
25.	02610	8" Corrugated metal pipe	200 Ln ft	\$_____	\$_____
26.	02610	12" Corrugated metal pipe	80 Ln ft	\$_____	\$_____
27.	02610	24" Corrugated metal pipe	30 Ln ft	\$_____	\$_____
28.	02610	8-Inch Diameter Metal Flared End Sections	18 Each	\$_____	\$_____
29.	02610	12-Inch Diameter Metal Flared End Sections	4 Each	\$_____	\$_____
30.	02610	24-Inch Diameter Metal Flared End Sections	2 Each	\$_____	\$_____
31.	02742	3-inch bituminous surfacing	9,310 Sq yd	\$_____	\$_____
32.	02742	Leveling courses	400 Sq yd	\$_____	\$_____
33.	02742	2-inch bituminous overlay	13,000 Sq yd	\$_____	\$_____
34.	02742	Paving Fabric	400 Sq yd	\$_____	\$_____
35.	02742	Wheel stops	21 Each	\$_____	\$_____
36.	02763	Paint striping	6,150 Ln ft	\$_____	\$_____

Starvation State Park, Recreation Rehabilitation - Phase I

Item	Section	Work or material	Quantity and unit	Unit price	Amount
37.	02811	Underground irrigation system	For the	lump sum of	\$_____
38.	02822	6 Foot high chain link fence	90 Ln ft	\$_____	\$_____
39.	02846	Accessible Parking Signs	8 Each	\$_____	\$_____
40.	02846	Road Signs	4 Each	\$_____	\$_____
41.	02871	Grills	11 Each	\$_____	\$_____
42.	02871	Firerings Type 1	20 Each	\$_____	\$_____
43.	02871	Firerings Type 2	2 Each	\$_____	\$_____
44.	02873	Day use accessible hydrants	2 Each	\$_____	\$_____
45.	02873	Camp accessible hydrants	2 Each	\$_____	\$_____
46.	02873	Day use hydrants	1 Each	\$_____	\$_____
47.	02873	Camp hydrants	35 Each	\$_____	\$_____
48.	02875	12 by 12 shelters	26 Each	\$_____	\$_____
49.	02875	16 by 16 shelters	7 Each	\$_____	\$_____
50.	02876	Bollards	32 Each	\$_____	\$_____
51.	02877	Park Benches	2 Each	\$_____	\$_____
52.	02934	Sod	4,200 Sq yd	\$_____	\$_____

Starvation State Park, Recreation Rehabilitation - Phase I

Item	Section	Work or material	Quantity and unit	Unit price	Amount
53.	03300	Concrete	205 Cu yd	\$_____	\$_____
54.	03300	Boat Ramp Concrete	220 Cu yd	\$_____	\$_____
55.	16050	Electrical work	For the	lump sum of	\$_____
				Total for Schedule	\$_____

## SECTION 01110 - SUMMARY OF WORK

### PART 1 GENERAL

#### 1.01 REQUIREMENT

- A. Construct and complete Starvation State Park, Facility Improvements - Phase I in accordance with contract provisions, these specifications, and drawings.

#### 1.02 LOCATION

- A. The work is situated at Starvation State Park in Duchesne County about 110 miles southeast of Salt Lake City, Utah.

#### 1.03 DEFINITIONS

- A. **Furnish:** To supply products to the project site, including delivering ready for unloading and replacing damaged and rejected products.
- B. **Install:** To put products in place in the work ready for the intended use, including unloading, unpacking, handling, storing, assembling, installing, erecting, placing, applying, anchoring, working, finishing, curing, protecting, cleaning, and similar operations.
- C. **Provide:** To furnish and install products.
- D. **Indicated:** Shown, noted, scheduled, specified, or drawn, somewhere in the contract documents.
- E. **Demonstrate:** To show product performance or compliance in the presence of the Government Inspector.
- F. **Government:** When the term Government is used in the technical specifications (Divisions 1 through 16) it shall be construed to mean the land owner which is the United States Government and land manager which is the State of Utah or State Parks. Also the term Government shall be construed to mean Consultant (The United States Bureau of Reclamation who has furnished the drawings and technical specification and is providing construction oversight and inspection) when the word Consultant can be substituted without changing the meaning of the phrase.

#### 1.04 PRINCIPAL COMPONENTS OF THE WORK (Most Phase One Items are Listed)

- A. Division 01 - GENERAL REQUIREMENTS

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1. Specific administrative requirements, procedural requirements, temporary facilities, and controls which apply to the execution of the work of all sections of the specifications.
- B. Division 02 - SITEWORK
1. Demolition of concrete, pavement and other items.
  2. Laying sewer and waterlines and installing hydrants.
  3. Renovating day use and campsite areas.
- C. Division 03 - CONCRETE
1. Placing and finishing concrete pads, footings and sidewalks.
- D. Division 04 - MASONRY
1. Laying concrete masonry units for the restrooms.
- E. Division 05 – METAL
- (Not Used)
- F. Division 06 - WOOD AND PLASTICS
1. Rough and finished carpentry for the Rest Rooms
- G. Division 07 - THERMAL AND MOISTURE PROTECTION
1. Roofing system for the Rest Rooms.
  2. Insulation for the Rest Rooms.
- H. Division 08 - DOORS AND WINDOWS
1. Doors and windows for the Rest Rooms.
- I. Division 09 – FINISHES
1. Gypsum wallboard.
  2. Floor coverings.
  3. Wall coverings.
- J. Division 10 - SPECIALTIES
1. Toilet and bath accessories as required for the Rest Rooms
- K. Division 11 - EQUIPMENT
- (Not Used)
- L. Division 13 - SPECIAL CONSTRUCTION

(not used)

M. Division 14 - CONVEYING SYSTEMS

(Not Used)

N. Division 15 - MECHANICAL

1. Plumbing and plumbing fixtures for the Restrooms

O. Division 16 - ELECTRICAL

1. Disconnecting electrical service to demolished areas.
2. Installation of new electrical systems and equipment.

**PART 2 PRODUCTS**

Not Used

**PART 3 EXECUTION**

Not Used

**END OF SECTION**

## SECTION 01111 - DRAWINGS

### PART 1 GENERAL

#### 1.01 QUALITY ASSURANCE

- A. Inform the Government of any discrepancies, errors, or omissions discovered on drawings.

#### 1.02 PROJECT CONDITIONS

- A. Where there are minor differences as determined by the Government between details and dimensions shown on drawings and details and dimensions of existing features at jobsite, use details and dimensions of existing features at jobsite.

#### 1.03 INFORMATIONAL DRAWINGS

- A. Some drawings are marked "for information only" in the drawing list and are included to show some feature about which additional knowledge is required for bidding.
- B. If there are differences as determined by the Government between details and dimensions shown on these drawings and those of existing features at jobsite, use details and dimensions of existing features at jobsite.

#### 1.04 ADDITIONAL OR REVISED DRAWINGS

- A. Except as provided in these specifications for drawings to be furnished by Contractor, specifications drawings will be supplemented by additional or revised general and detail drawings as necessary or desirable as work progresses.
- B. Do not perform work without proper drawings and instructions.

#### 1.05 COPIES OF DRAWINGS

- A. Two sets of full-size drawings, except standard drawings, will be furnished to the Contractor for construction purposes.
- B. Additional half-size copies of standard drawings will be furnished upon request to the Contractor for construction purposes.

#### 1.06 LIST OF DRAWINGS

- A. The drawings listed on sheet 1 drawing number 60-400-1726 are made a part of these specifications.

**PART 2      PRODUCTS**

Not Used

**PART 3      EXECUTION**

Not Used

**END OF SECTION**

**SECTION 01131 - PROTECTED SPECIES**

**PART 1 GENERAL**

**1.01 COST**

- A. Include cost of complying with this section in prices offered in the schedule for other items of work.

**1.02 PROJECT CONDITIONS**

- A. Certain native species in the State of Utah are protected plant or animal species under State law(s). The Government has ascertained that the Peregrine Falcon, the Bald Eagle, the Ferruginous Hawk, the Osprey, the Snowy Plover, the Mountain Plover, the Black Tern and the Loggerhead Shrike are protected species which may exist in the areas to be disturbed by construction activities.
- B. Insert this section in subcontracts which involve performance of work in areas where protected species may occur.
- C. In accordance with State law, the Government may arrange for removal of protected species, and the Contractor shall cooperate with those performing such removal. If these species are not removed, cooperate with and abide by protection plans developed by appropriate State entities to avoid damage to or disturbance of protected species.
- D. The Contractor should also take care not to disturb the habitat of the Osprey or Sage Grouse which are species of special concern to the State of Utah.

**PART 2 PRODUCTS**

Not Used

**PART 3 EXECUTION**

Not Used

**END OF SECTION**

## **SECTION 01135 - PRESERVATION OF HISTORICAL AND ARCHAEOLOGICAL DATA**

### **PART 1 GENERAL**

#### **1.01 COST**

- A. Except as provided for an equitable adjustment, include cost of complying with this section in prices offered in the schedule for other items of work.

#### **1.02 DEFINITIONS**

- A. Cultural resources: Includes prehistoric, historic, architectural, and traditional cultural properties. These include, but are not limited to, human skeletal remains, archaeological artifacts, records, and material remains related to such property.
- B. Cultural items: Native American cultural items (i.e., funerary objects, sacred objects, objects of cultural patrimony, or human remains) for which protection is prescribed under the Native American Graves Protection and Repatriation Act (NAGPRA) - Public Law 101-601; 104 Stat. 3042, Section 3(d); and 43 CFR Part 10.4.
- C. Human remains: Physical remains of the body of a person.
- D. Funerary objects: Native American items that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed intentionally at the time of death or later with or near individual human remains.
- E. Native American: Of, or relating to, a tribe, people, or culture that is indigenous to the United States.
- F. Sacred Objects: Native American items that are specific ceremonial objects needed by traditional Native American religious leaders for the practice of traditional Native American religions by their present-day adherents. These items are specifically limited to objects that were devoted to a traditional Native American religious ceremony or ritual and which have religious significance or function in the continued observance or renewal of such ceremony.
- G. Objects of cultural patrimony: Native American items having ongoing historical, traditional, or cultural importance central to the Indian tribe itself, rather than property owned by an individual tribal member. These objects are of such central importance that they may not be alienated, appropriated, or conveyed by any individual tribal member.

#### **1.03 SUBMITTALS**

- A. Submit the following in accordance with Section 01330 - Submittals.
- B. RSN 01135A, Borrow areas:

1. Submit map showing location of use or borrow areas, for approval.

#### **1.04 PROJECT CONDITIONS**

- A. Federal legislation provides for protection, preservation, and collection of scientific, prehistorical, historical, and archeological data, including relics and specimens, which might otherwise be lost due to alteration of terrain as a result of any Federal construction project.
- B. Any person who, without permission, injures, destroys, excavates, appropriates, or removes any historical or prehistorical artifact, object of antiquity, or archeological resource on public lands of the United States is subject to arrest and penalty of law.
- C. Comply with state laws when operating on non-Federal and non-Indian lands.
- D. Discovery of Resources
  1. When the Contractor, or any of the Contractor's employees, or parties operating or associated with the Contractor, in performance of this contract discover cultural resources on any lands (surface or subsurface):
    - a. Immediately cease work at that location.
    - b. Immediately notify the Provo Area Office Archeologist orally, giving the location and nature of the findings.
    - c. Follow with written confirmation to the Provo Area Office Archeologist within 2 days.
  2. In addition to notifying the Provo Area Office Archeologist; where the discovery occurs on state, municipal, or private lands, notify the appropriate state officials as prescribed by state law.
  3. Exercise care so as not to disturb or damage cultural resources uncovered during construction activities and provide such cooperation and assistance as may be necessary to protect and preserve the findings for removal or other disposition by the Provo Area Office Archeologist, any applicable Indian tribal officials, and the Utah State Historic Preservation Office.
  4. Do not resume work in the area of discovery until receipt of written notice to proceed from the Provo Area Office.
- E. Where appropriate by reason of discovery, the Government Inspector may order delays in time of performance or changes in work, or both. When such delays or changes are ordered, an equitable adjustment will be made in the contract in accordance with applicable clauses of the contract.
  1. Submit a map showing the location of proposed sites to the Government at least 45 days in advance of use.
  2. Take no action to use or alter the proposed location until written approval for site use is received from the Government.

- F. Include permission for Government access in arrangements for use of private lands for use areas or borrow sources. Government access to the private land shall be to identify cultural resources and conduct appropriate inspections.
- G. Insert this Section in subcontracts which involve performance of work on jobsite terrain.

**PART 2 PRODUCTS**

Not Used

**PART 3 EXECUTION**

Not Used

**END OF SECTION**

## SECTION 01141 - USE OF SITE

### PART 1 GENERAL

#### 1.01 COST

- A. Include cost of complying with this section in prices offered in the schedule for other items of work.

#### 1.02 SUBMITTALS

- A. Submit the following in accordance with Section 01330 - Submittals.
- B. RSN 01141A, Land use and landscape rehabilitation plan:
1. For each Contractor use site on Government land.
    - a. Show use location and extent of impact. Uses include but are not limited to the following:
      - 1) Buildings and service areas including offices, shops, warehouses, storage areas, fuel and oil storage areas, and fabrication yards.
      - 2) Parking areas, temporary roads, and haul routes.
      - 3) Utilities including air, power, and water lines; fire hydrants; and compressor station.
      - 4) First-aid and medical facilities.
      - 5) Areas for processing, storing, and disposing of waste materials from construction operations.
      - 6) Temporary fences.
    - b. Describe methods to preserve, protect, and repair if damaged, vegetation (such as trees, shrubs, and grass) and other landscape features on or adjacent to the jobsite, which are not to be removed and which do not interfere with the work required under this contract. Include methods to mark work area limits, protect disturbed areas, and prevent erosion.
    - c. Describe methods to protect, and repair if damaged, existing improvements and utilities at or near the jobsite.
    - d. Describe methods for removing temporary structures and facilities, cleanup, and rehabilitating site after completion of construction activities.
  2. Submit revised drawings of changes in use of Government land made during design and erection stages or after use of Government land is in operation.

#### 1.03 PROJECT CONDITIONS

- A. Government land as shown on drawings may be used for required construction facilities.

- B. When private land is used for construction facilities, or other construction purposes, make necessary arrangements associated with use of private land.
- C. Location, construction, operation, maintenance, and removal of construction facilities on Government land will be subject to approval of the Government.
- D. Do not interfere with work of other contractors or the Government in vicinity, or with reservations made by the Government for use of such land.
- E. Housing for construction personnel will not be permitted on Government land, except housing for guards or watchmen as may be approved by the Government.

**PART 2 PRODUCTS**

Not Used

**PART 3 EXECUTION**

**3.01 RESTORATION**

- A. Restore temporary construction roads to original contours and make impassable to vehicular traffic when no longer required.
- B. Scarify and regrade, after completion of work, Government land used for construction purposes and not required for completed installation so that surfaces blend with natural terrain and are in a condition that will facilitate natural revegetation, provide proper drainage, and prevent erosion.
- C. Seed disturbed areas, of Government land used for construction purposes and not required for completed installation, as recommended by an experienced local horticulturist, with the same species of native plants, or other approved perennial species.

**END OF SECTION**

**SECTION 01271 - PAYMENT FOR MOBILIZATION AND PREPARATORY WORK**

**PART 1 GENERAL**

**1.01 GENERAL**

- A. Payment for the Mobilization and Preparatory Work line item of the schedule will be made as reflected herein. Payment will be made as reflected in Article 1.03 below. The Government will make payment to the Contractor in accordance with this Section for operations including, but not limited to, those necessary for --
1. Movement of personnel, equipment, supplies, and incidentals to the project site;
  2. The establishment of offices, buildings, plants and other facilities, at the site.
  3. Payment of premiums for project bonds and insurance; and
  4. Other work and operations which must be performed or costs incurred incident to the initiation of meaningful work at the site and for which the contract does not otherwise provide for payment.

**1.02 FACILITIES AND EQUIPMENT COVERED BY MOBILIZATION WORK**

- A. Facilities, plant, and equipment which are established at, or brought to, the site shall be deemed to be subject to the provisions of this paragraph unless the Government specifically provides other written authorization for a particular item or items.
- B. The Contractor shall be solely responsible for the adequacy, efficiency, use, protection, maintenance, repair, and preservation of all facilities, plant, and equipment on site.
- C. The facilities, plant, and equipment covered by this Section shall not be dismantled or removed from the site prior to completion of the work under the contract without the written authorization of the Government.
- D. Updating and Using Construction Program: Include cost as an element of Contractor's overhead.

**1.03 PAYMENT**

- A. Mobilization and preparatory work
1. Payment: Lump sum price offered in the schedule and as described below.
- B. Payment for mobilization and preparatory work under Article 1.01 of this Section shall be made at the Contractor's lump sum price for this item as contained in the Schedule. Progress payments for mobilization and preparatory work shall be made as follows --
1. Upon request, the Government will reimburse the Contractor for the total amount of premiums paid for performance and payment bonds after the Contractor has

furnished evidence of full payment to the surety. This payment will not be subject to the retainage described in Article 5 of the Contractor's Agreement.

2. Except as provided in 1.03,A,1 above, progress payments for mobilization and preparatory work shall not be considered a separate division of work for the purposes of progress payments and shall be subject to retainage before payment of the total amount for this contract line item.
3. When progress payments totaling 5 percent of the total original contract amount have been made by the Government for all other work accomplished under the contract, the Government shall pay the Contractor 50 percent of the mobilization and preparatory work contract line item amount or 2.5 percent of the total original contract amount (whichever is the lower) exclusive of any payment already made to the Contractor for performance and payment bond premiums and specified insurance.
4. When progress payments totaling 10 percent of the total original contract amount have been made by the Government for all other work accomplished under the contract, the balance of the amount for the mobilization and preparatory work contract line item or 2.5 percent of the total original contract amount (whichever is the lower) shall be paid to the Contractor.
5. If the contract amount for mobilization and preparatory work exceeds the total of the payments allowed under (3) and (4) above, the balance shall be paid when the contract work is substantially complete as determined by the Government.

**PART 2 PRODUCTS**

Not Used

**PART 3 EXECUTION**

Not Used

**END OF SECTION**

**SECTION 01272 - MEASUREMENT AND PAYMENT**

**PART 1 GENERAL**

**1.01 SUMMARY**

- A. Measurement and payment for the various items of work listed in the bidding schedule and not described in a single section will be made in accordance with the following Measurement and Payment Article.

**1.02 MEASUREMENT AND PAYMENT**

- A. Payment for Constructing a 6 Unit Restroom will be made at the lump sum price offered in the schedule.
  - 1. Includes the cost of concrete and any other items that appear on the bid schedule that are part of the building.
- B. Payment for Constructing a 6 Unit Restroom with Showers will be made at the lump sum price offered in the schedule.
  - 1. Includes the cost of concrete and any other items that appear on the bid schedule that are part of the building.
- C. Volleyball courts
  - 1. Measurement: Each volleyball court provided.
    - a. Includes the cost of concrete to set the posts and make the border.
  - 2. Payment: Unit price per each volleyball court offered in the schedule.
- D. Horseshoes pits
  - 1. Measurement: Each horseshoes pit provided.
    - a. Includes the cost of concrete.
  - 2. Payment: Unit price per each horseshoes pit offered in the schedule.

**PART 2 PRODUCTS**

Not Used

**PART 3 EXECUTION**

Not Used

**END OF SECTION**

## SECTION 01330 - SUBMITTALS

### PART 1 GENERAL

#### 1.01 COST

- A. Add the cost of work required by this section to items requiring submittals.

#### 1.02 DEFINITIONS

- A. Days: Calendar days.
- B. Required Submittal Number (RSN): RSN identifies items to be submitted together as a complete submittal.

#### 1.03 SUBMITTAL REQUIREMENTS

- A. In case of conflict between requirements of this Section and requirements included elsewhere in these specifications, requirements included elsewhere take precedence.
- B. Professional Certifications:
1. Sign and seal submittals requiring certification by a registered professional.
- C. Drawings and Data:
1. Prepare drawings and data in English.
  2. Label drawings and data with the contract number and title, and RSN(s).
  3. Mark items to be furnished on manufacturer's data for commercial products or equipment, such as catalog cut sheets.
    - a. Mark in a manner that will photocopy.
    - b. Strike out items that do not apply or circle items that do apply.
    - c. Identify manufacturer's name, type, model, size, and characteristics.
    - d. Illustrate that product or equipment meets requirements of specifications.
  4. Drawings:
    - a. Minimum identification in title block:
      - 1) Contract number and title.
      - 2) Contractor's or supplier's title and drawings number.
    - b. Size: D size or smaller.
    - c. Draw to scale with neat lettering using drafting equipment or computer drafting equipment.
    - d. Measurement units: US Customary Units.

- e. Final drawings:
  - 1) AUTOCAD format (.dwg) or Drawing Transfer Format (.dxf) on 74 min/650 MB CD-ROM disc.
  - 2) Original D size plots.
  - 3) Show as-built changes, including revision dates, made during installation.

D. Manuals:

- 1. Copies: Bound and indexed.
- 2. Contents:
  - a. Parts identification lists, lists of special tools, and accessories.
  - b. Schematics and wiring diagrams.
  - c. Detailed instructions for installing, operating, lubricating, and maintaining equipment.
  - d. As-built drawings, photographs, and test records or reports if required by the specifications.

E. Photographs:

- 1. Submit negatives and photographs.
- 2. Photographs: Professional quality 4-inch by 6-inch color for each listed view.
- 3. Identify with adhesive labels on back.
  - a. Do not type directly on back of photograph.
  - b. Include contract number, name of equipment and view title.

F. Samples and Color Selection Submittals:

- 1. Label with complete manufacturer's product and color identification.
- 2. Include type and quantity of materials specified in the referenced section in each "set" of samples.
- 3. Submit samples representative of product to be installed.
- 4. Submit color chips consisting of sample paint chips. Ink color reproductions are not acceptable.
- 5. Label each sample, sample kit, set of color chips, or color chart with contract number and title.
- 6. The Government will select architectural color and pattern after product approval.

#### **1.04 SUBMITTALS PROCEDURES**

- A. Submit only checked submittals. Submittals without evidence of Contractor's approval will be returned for resubmission.
- B. Submit complete sets of required materials for each RSN as specified in "Submittals Required" column in Table 01330A - List of Submittals. A complete set includes all listed items for RSNs with multiple parts.
- C. Submit number of sets specified in "No. of sets to be sent to:" column in Table 01330A - List of Submittals.
- D. Include the following information in transmittal letters:
  - 1. The contract number and title.
  - 2. Responsible code.
  - 3. RSN for each attached submittal.
  - 4. Number of sets for each RSN.
  - 5. Identify submittal as initial or resubmittal.
- E. More than one RSN may be submitted under a transmittal letter, provided the responsible code is the same.

#### **1.05 REVIEW OF SUBMITTALS**

- A. Time Required:
  - 1. Submittal review will require 15 days for review of each submittal or resubmittal, unless otherwise specified.
  - 2. Time required for review of each submittal or resubmittal begins when complete sets of materials required for a particular RSN are received and extends through return mailing postmark date.
- B. Time in Excess of Specified:
  - 1. The Government may extend the contract completion date to allow additional time for completing work affected by excess review time. The time extension will be to the extent that excess review time caused delay to the contract completion date. The time will not exceed the time used in excess of the specified number of days for review of submittals or resubmittals.
  - 2. Concurrent days of excess review time resulting from review of two or more separate submittals or resubmittals will be counted only once in extending the contract completion date.
  - 3. No time extension will be allowed if the Contractor fails to make complete approval submittals in sequence and within time periods specified.

4. Adjustment for delay will be made only to the extent that:
  - a. Approval was required under the contract, and
  - b. Requests for approval were properly and timely submitted and were approved.
- C. Return of Submittals:
  1. One set of submittals required for approval will be returned either approved, not approved, or conditionally approved.
  2. Submittals not approved:
    - a. Revise and resubmit for approval.
    - b. Show changes and revisions with revision date.
    - c. Describe reasons for significant changes in transmittal letter.
    - d. Resubmit returned submittals within 15 days after receiving the comments, unless otherwise specified.
    - e. Requirements for initial submittals apply to resubmittals.
  3. Do not change designs without approval of the Government after approval drawings, documentation, and technical data have been approved.

#### **1.06 TRANSMITTAL**

- A. Send submittals required by Table 01330A - List of Submittals, to following addresses:
  1. Area Manager, Bureau of Reclamation, Provo Area Office, 302 East 1860 South, Provo, UT 84606-7317
  2. Mr. Dan Clark, Utah Department of Natural Resources, 1594 West North Temple, Suite 116, P.O. Box 146001, Salt Lake City, UT 84114-6001
- B. Send a copy of each transmittal letter to offices listed above which are not sent the submittal.
- C. Submittals not listed in Table 01330A - List of Submittals: Submit in accordance with this Section.

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TABLE 01330A. - LIST OF REQUIRED SUBMITTALS

RSN	Item	Reference provision, article, or section	Responsible code	Submittals required	No. of Sets to be sent to:		Due date or delivery time
					AM	NR	
GC1	Construction schedule	General Conditions (3.7.2, 3.7.9, & 3.7.11))	AM	CPM schedule for the Work and submittal schedule. Mark submittal items requiring expedited review.	4	1	Promptly after award and a revised schedule with each pay request
GC2	Schedule of Values and application for payment	General Conditions (8.1 & 8.2)	AM	Schedule of values with bid items	4	1	Before the first application for payment and with each pay request.
GC3	Final Payment	General Conditions (8.8.2)	AM	All seven items listed in the General Conditions for final payment	4	1	With request for final payment
01135A	Preservation of Historical and Archeological Data	01135	AM	Map, showing location of proposed use or borrow areas	4	1	3 days after award of any subcontract requiring borrow
01141A	Contractor use of site	01141	AM	Land use and Landscape rehabilitation plan	4	1	At least 20 days prior to use of Government land
01335A	Material safety data sheets for hazardous materials	01335	AM	Updated List of Hazardous Materials and Material safety data sheets	4	1	Not less than 7 days prior to jobsite delivery of each hazardous material
01527A	Safety	01527	AM	Safety program	4	1	Submitted and accepted before commencing onsite work. See Section 3 of "Reclamation Safety and Health Standards." (2001) Edition
01555A	Traffic Control	01555	AM	Traffic control plan	4	1	Before starting work which requires traffic control
01562A	Air Quality Permit	01562	AM	Copy of Air Quality Permit	4	1	Before starting work
01563A	Water pollution control	01563	AM	Pollution prevention plan(s) as required by stormwater permit(s)	4	1	At least 7 days prior to the start of onsite construction work
01563B	Water pollution control	01563	AM	SPPC plan and certified statement regarding review and certification of the SPCC plan by a registered professional engineer	4	1	At least 7 days prior to the delivery or storage of oil
01740A	Construction cleaning	01740	AM	Hazardous waste manifest	4	1	Upon disposal of hazardous waste
01781A	Project Closeout	01781	AM	As Builts	4	1	15 days after construction
02220A	Demolition	02220	AM	Photographs	4	1	Before starting work
02316A	Imported Earth Materials	02316	AM	Material certificates and job mix gradation	4	1	At least 10 working days before placement
02371A	Geotextile	02371	AM	Certification and samples	4	1	At least 14 working days before installation
02375A	Riprap	02375	AM	Source of stone, laboratory analysis	4	1	At least 10 working days before placement
02514A	Valves	02514	AM	Manufacturer's data	4	1	Before purchase

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RSN	Item	Reference provision, article, or section	Responsible code	Submittals required	No. of Sets to be sent to:		Due date or delivery time
					AM	NR	
02515A	HDPE Pipe	02515	AM	Manufacturer's affidavit certifying that the pipe is NSF approved for potable water	4	1	Prior to purchasing pipe
02515B	Tracer wire testing stations	02515	AM	Detail of test stations	4	1	5 days after award
02742A	Bituminous Surfacing	02742	AM	Mix Design Data	4	1	At least 7 days prior to placement
02742B	Bituminous Surfacing	02742	AM	Certifications	4	1	Prior to placement
02763A	Traffic Paint	02763	AM	Certification	4	1	At least 7 days prior to use
02763B	Traffic Paint	02763	AM	Instructions	4	1	At least 7 days prior to use
02811A	Irrigation system	02811	AM	Product Data	4	1	Before purchase
02811B	Irrigation system	02811	AM	Drawings	4	1	Before purchase and installation of system
02811C	Irrigation system	02811	AM	As-built drawings	4	1	14 days after system installation
02822A	Chain Link Fence	02822	AM	Certifications and Samples	4	1	Before purchase
02846A	Signage	02846	AM	Drawings	4	1	Before purchase
02871A	Grills and Firerings	02871	AM	Manufacturer's data	4	1	Before purchase
02872A	Outdoor Tables	02872	AM	Manufacturer's data	4	1	Before purchase
02873A	Hydrant Assemblies	02873	AM	Manufacturer's data for hydrant and grate, drain rock gradation.	4	1	Before purchase
02875A	Shelters	02875	AM	Shop drawings, Color chips, Anchor bolt pattern.	4	1	Before purchase
02877A	Park Benches	02877	AM	Manufacturer cut sheets, Color chart.	4	1	Before purchase
03300A	Cast-in-Place Concrete	03300	AM	Name and manufacturer of each cementitious material, admixture, curing compound, and aggregate source	4	1	At least 7 days prior to placement of concrete
03300B	Cast-in-Place Concrete	03300	AM	Mix Design	4	1	At least 7 days prior to the use of the concrete mix
04822A	Reinforced Concrete Unit Masonry	04822	AM	Manufacturer's product data, Certifications, Cleaning Instructions	4	1	Before purchase
06100A	Wood Trusses	06100	AM	Truss shop drawings	4	1	Before fabrication
06600A	Plastic Ceiling Panels	06600	AM	Samples for color selection	4	1	Before purchase
07610A	Metal Roofing	07610	AM	Sample Kit, Approval Drawings, Approval Data, Instructions, Installer's qualifications	4	1	Before purchase
07610A	Metal Roofing	07610	AM	Warranty	4	1	After Installation
07920A	Sealants and Caulking	07920	AM	Product data, Certificates	4	1	Before purchase
08111A	Steel Doors and Frames	08111	AM	Shop drawings, product data	4	1	Before purchase

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RSN	Item	Reference provision, article, or section	Responsible code	Submittals required	No. of Sets to be sent to:		Due date or delivery time
					AM	NR	
08520A	Aluminum Windows	08520	AM	Shop drawings, product data, handling instructions	4	1	Before purchase
08711A	Door hardware	08711	AM	Hardware schedule, Product data, installation instructions	4	1	Before purchase
09901A	Paint	09901	AM	Product Data, Samples	4	1	Before purchase
10165A	HDPE Toilet Compartments	10165	AM	Product Data	4	1	Before purchase
10810A	Toilet Accessories	10810	AM	Product Data, Shop drawings	4	1	Before purchase
10210A	Wall Louvers	10210	AM	Product Data	4	1	Before purchase
15140A	Potable water piping systems	15140	AM	Report of Sterilization test	4	1	Before opening any building for use.
15410A	Plumbing Fixtures	15410	AM	Cut sheets	4	1	Before purchase
16050A	General Electrical Requirements	16050	AM	Names of licensed electricians	4	1	Prior to starting work
16050B	General Electrical Requirements	16050	AM	Product Data	4	1	Prior to purchase
16050C	General Electrical Requirements	16050	AM	Shop drawings	4	1	Prior to installation
16050D	General Electrical Requirements	16050	AM	Closeout Submittals	4	1	Project closeout
16270A	Transformers	16270	AM	Closeout Submittals	4	1	Project closeout

AM indicates Area Manager, NR indicates Utah Department of Natural Resources (State Parks). For mailing addresses, see subparagraph entitled "Addresses" of this Section.

**END OF SECTION**

**SECTION 01335 - MATERIAL SAFETY DATA SHEETS**

**PART 1 GENERAL**

**1.01 COST**

- A. Include cost of complying with this section in applicable prices offered in the schedule for items of work for which hazardous materials are required.

**1.02 DEFINITIONS**

- A. LHM: List of Hazardous Materials
- B. MSDS: Material Safety Data Sheet

**1.03 SUBMITTALS**

- A. Submit the following in accordance with Section 01330 - Submittals.
- B. RSN 01335A, Updated LHM and MSDS:

**1.04 DELIVERY**

- A. Do not deliver hazardous materials to jobsite which were not included on the original LHM and MSDS before receipt of updated LHM and MSDS by the Government.

**PART 2 PRODUCTS**

Not Used

**PART 3 EXECUTION**

Not Used

**END OF SECTION**

## SECTION 01420 - REFERENCES

### PART 1 GENERAL

#### 1.01 COST

- A. Include in prices offered in the schedule for items of work associated with this Section.

#### 1.02 REFERENCES

- A. Referenced editions of standard specifications, codes, and manuals form a part of this specification to the extent referenced.
- B. These specifications take precedence when conflicting requirements occur between specifications and referenced standard.

#### 1.03 JOBSITE REFERENCES

- A. Maintain at fabrication site, a copy of referenced standard specifications, codes, and manuals required for work in progress at fabrication site. Make available for use by the Government.
- B. Maintain onsite, a copy of referenced standard specifications, codes, and manuals required for onsite work in progress. Make available for use by the Government.

#### 1.04 AVAILABILITY

- A. Code of Federal Regulation (CFR):
  - 1. Available online, authorized by the National Archives and Records Administration (NARA) and the Government Printing Office (GPO), at [www.access.gpo.gov/nara/cfr](http://www.access.gpo.gov/nara/cfr).
- B. Federal Specifications, Standards, and Commercial Item Descriptions; and Military Specifications:
  - 1. Copies of Federal Specifications, Standards, and Commercial Item Descriptions may be obtained from GSA Federal Supply Service, see the provision at FAR 52.211-1, "Availability of Specifications Listed in the GSA Index of Federal Specifications, Standards and Commercial Item Descriptions, FPMR Part 101-29."
  - 2. Copies of Military Specifications may be obtained from Department of Defense, see the provision at FAR 52.211-2, "Availability of Specifications Listed in the DOD Index of Specifications and Standards (DODISS) and Descriptions Listed in the Acquisition Management Systems and Data Requirements Control List, DOD 5010.12-L".

C. Bureau of Reclamation Documents:

1. Printed copies of Reclamation Safety and Health Standards (RSHS), stock number 024-003-00190-2, may be purchased from the Superintendent of Documents at the U.S. Government Printing Office, phone number (202) 512-1800. RSHS may be downloaded at <http://www.usbr.gov/ssle/safety/RSHS/rshs.htm>
2. Printed copies of RSHS are dated 2001. Electronic versions of the RSHS are dated 2002. These documents are identical. These specifications use the 2001 date.
3. Bureau of Reclamation manuals and other publications including significant scientific, technical, and engineering works are available from the National Technical Information Service (NTIS). Information regarding availability and pricing may be obtained by contacting NTIS at the following address:

United States Department of Commerce  
 National Technical Information Service  
 5285 Port Royal Road  
 Springfield, Virginia 22161  
 Telephone: (703)487-4650 or 1-800-553-6847

4. Bureau of Reclamation was officially named Water and Power Resources Service for a short period. References to Water and Power Resources Service or any derivative form are synonymous with Bureau of Reclamation.

D. Industrial and Governmental Documents

1. When a reference has a joint designation (e.g. ANSI/IEEE) these specifications generally cite the proponent organization (e.g. IEEE).
2. Addresses for obtaining industrial and governmental (other than Federal and Bureau of Reclamation specifications and standards) specifications, standards, and codes are listed in table 01420A - Addresses for Specifications, Standards, and Codes.

Table 01420A - Addresses for Specifications, Standards, and Codes

Acronym	Name and Address	Telephone
AASHTO	American Association of State Highway and Transportation Officials 444 North Capitol St., NW, Suite 249 Washington, DC 20001 <a href="http://www.aashto.org">www.aashto.org</a>	(202) 624-5800 (800) 231-3475
ABAAS	Architectural Barriers Act Accessibility Standards. <a href="http://www.access-board.gov">www.access-board.gov</a>	(800) 872-2253

Table 01420A - Addresses for Specifications, Standards, and Codes

Acronym	Name and Address	Telephone
ADAAG	Americans with Disabilities Act Accessibility Guidelines <a href="http://www.access-board.gov">www.access-board.gov</a>	(800) 872-2253
AGC	Associated General Contractors of America 333 John Carlyle Street, Suite 200 Alexandria VA 22314 <a href="http://www.agc.org">www.agc.org</a>	(703) 548-3118
ANSI	American National Standards Institute 1819 L. Street, N.W. Washington, DC 20036 <a href="http://www.ansi.org">www.ansi.org</a>	(202) 293-8020
ASME	American Society of Mechanical Engineers 3 Park Ave. New York, NY 10016-5990 <a href="http://www.asme.org">www.asme.org</a>	(800) 843-2763
ASTM	ASTM International 100 Barr Harbor Dr. West Conshohocken, PA 19428-2959 <a href="http://www.astm.org">www.astm.org</a>	(601) 832-9585
AWS	American Welding Society 550 NW LeJeune Rd. Miami, FL 33126 <a href="http://www.amweld.org">www.amweld.org</a>	(800) 443-9353 (305) 443-9353
CLFMI	Chain Link Fence Manufacturers Institute 9891 Broken Land Pkwy, Suite 300 Columbia, MD 21046 <a href="http://www.chainlinkinfo.org">www.chainlinkinfo.org</a>	(301) 596-2583
IEEE	Institute of Electrical and Electronics Engineers 3 Park Ave., 17th Floor New York, NY 10016-5997 <a href="http://www.ieee.org">www.ieee.org</a>	(212) 419-7900
NACE	NACE International 1440 South Creek Drive Houston, TX 77084 <a href="http://www.nace.org">www.nace.org</a>	(281) 228-6200

Table 01420A - Addresses for Specifications, Standards, and Codes

Acronym	Name and Address	Telephone
NEMA	National Electrical Manufacturers Association 1300 N 17th St., Suite 1847 Rosslyn, VA 22209 <a href="http://www.nema.org">www.nema.org</a>	(703) 841-3200
NFPA	National Fire Protection Association One Batterymarch Park P.O. Box 9101 Quincy, MA 02269-9101 <a href="http://www.nfpa.org">www.nfpa.org</a>	(800) 344-3555 (617) 770-3000
NSF	NSF International P.O. Box 130140 789 N. Dixboro Road Ann Arbor, MI 48113-0140, USA <a href="http://www.nsf.org">www.nsf.org</a>	(800) NSF-MARK (734) 769-8010
SSPC	SSPC: The Society for Protective Coatings 40 24th St., 6th Floor Pittsburgh, PA 15222-4656 <a href="http://www.sspc.org">www.sspc.org</a>	(800) 837-8303 (412) 281-2331
UL	Underwriters Laboratories Inc. 333 Pfingsten Rd. Northbrook, IL 60062-2096 <a href="http://www.ul.com">www.ul.com</a>	(847) 272-8800

**PART 2 PRODUCTS**

Not Used

**PART 3 EXECUTION**

Not Used

**END OF SECTION**

## **SECTION 01510 - TEMPORARY UTILITIES**

### **PART 1 GENERAL**

#### **1.01 COST**

- A. Include cost of complying with this section in applicable prices offered in the schedule for items of work for which temporary utilities are required.

#### **1.02 REFERENCES**

- A. Institute of Electrical and Electronics Engineers (IEEE)
  - 1. IEEE C2-2002 National Electrical Safety Code (NESC)7

#### **1.03 TEMPORARY ELECTRICITY**

- A. Provide required electric power for construction.
- B. Provide generators, transmission lines, distribution circuits, transformers, and other electrical equipment and facilities required for obtaining power and distributing power to points of use.
  - 1. Check with Park Manager before using power supplied to and billed to the park.
- C. Comply with IEEE C2 clearances and spacing for temporary communications and supply lines.
- D. Remove temporary equipment and facilities upon completion of work under this contract.

#### **1.04 TEMPORARY WATER**

- A. Provide water required for construction purposes.
- B. Water may be obtained from Duchesne City. A fee will be charged by the city for water obtained from this source.
  - 1. Water in Starvation Reservoir is not available for construction purposes.
- C. Use water which meets specified requirements for water used in concrete, and other permanent work.
- D. Provide means of conveying water to points of use.
- E. Remove temporary equipment and facilities upon completion of work under this contract.

**1.05 TELEPHONE**

A. Provide telephone service.

**PART 2 PRODUCTS**

Not Used

**PART 3 EXECUTION**

Not Used

**END OF SECTION**

## SECTION 01527 - SAFETY AND HEALTH

### PART 1 GENERAL

#### 1.01 COST

- A. Include cost in prices offered in the schedule for other items of work.

#### 1.02 REFERENCES

- A. Bureau of Reclamation (USBR)
1. USBR RSHS Reclamation Safety and Health Standards, 2001 Edition.
    - a. Available on the Internet at: [www.usbr.gov/ssle/safety/RSHS/rshs.htm](http://www.usbr.gov/ssle/safety/RSHS/rshs.htm)
    - b. Hard copies available from:  
The Government Printing Office  
Superintendent of Documents  
North Capitol and H St. N. W.  
MS-SSMC - Room 566  
Washington, D.C. 20401  
(202) 512-1800  
(Stock item GPO-024-003-00190-2)

#### 1.03 SUBMITTALS

- A. Submit the following in accordance with Section 01330 - Submittals.
- B. RSN 01527A, Safety program: Written safety program in accordance with Section 3 of USBR RSHS.
- C. Monthly accident summary report: Form 7-2218 or other acceptable form in accordance with paragraph 3.8 of USBR RSHS.

#### 1.04 PROJECT CONDITIONS

- A. Comply with USBR RSHS.
- B. Provide and maintain a work environment and procedures that will:
1. Safeguard the public and Government's personnel exposed to Contractor operations and activities.
  2. Avoid interruptions of site operations and delays in project completion dates.
  3. Control costs in contract performance.

- C. Do not require persons employed in performance of this contract, including subcontracts, to work under conditions which are unsanitary, hazardous, or dangerous to the employee's health or safety.
- D. Provide appropriate safety barricades, signs, and signal lights.
- E. Maintain accurate record of and report to the Government the following occurrences during performance of this contract:
  - 1. Death.
  - 2. Occupational disease.
  - 3. Traumatic injury (i.e. injury requiring professional care) to employees or the public.
  - 4. Property damage in excess of \$2,500.

**PART 2 PRODUCTS**

Not Used

**PART 3 EXECUTION**

Not Used

**END OF SECTION**

## SECTION 01555 - TRAFFIC CONTROL

### PART 1 GENERAL

#### 1.01 COST

- A. Include cost in prices offered in the schedule for other items of work.

#### 1.02 REFERENCES

- A. Federal Highway Administration, Department of Transportation
  - 1. MUTCD, Part 6 Part 6, Temporary Traffic Control, MUTCD 2003, Manual on Uniform Traffic Control Devices, 2003 Edition, November 2003, with Revision No. 1 November, 2004. (<http://mutcd.fhwa.dot.gov/>)

#### 1.03 SUBMITTALS

- A. Submit the following in accordance with Section 01330 - Submittals.
- B. RSN 01555A, Traffic control plan: For approval.

### PART 2 PRODUCTS

Not Used

### PART 3 EXECUTION

#### 3.01 TRAFFIC CONTROL

- A. Meet requirements of MUTCD, Part 6.
- B. Provide cones, delineators, concrete safety barriers, barricades, flasher lights, danger signals, signs, and other temporary traffic control devices required to protect work and public safety.
- C. Provide trained, qualified, or certified flaggers and guards as required to prevent accidents and damage or injury to passing traffic.
- D. Do not begin work along public or private roads until proper traffic control devices for warning, channeling, and protecting motorists are in place in accordance with approved traffic control plan.
- E. Maintain traffic flow and conduct construction operations to minimize obstruction and inconvenience to public traffic.

- F. Provide unobstructed, smooth, and dustless passageway for two lanes of traffic through construction operations near the entrance station.
- G. Protect roads closed to traffic with effective barricades and warning signs. Illuminate barricades and obstructions from sunset to sunrise.
- H. Remove traffic control devices when no longer needed.

**END OF SECTION**

## SECTION 01562 - ENVIRONMENTAL CONTROLS

### PART 1 GENERAL

#### 1.01 COST

- A. Include cost in prices offered in the schedule for other items of work.
- B. Costs for damages and work stoppage are the Contractor's responsibility.

#### 1.02 REFERENCES

- A. Bureau of Reclamation (USBR)
  - 1. USBR RSHS Reclamation Safety and Health Standards, 2001 Edition

#### 1.03 SUBMITTALS

- A. Submit the following in accordance with Section 01330 - Submittals.
- B. RSN 01562A, Copy of applicable Air Quality Permit:
  - 1. For information.
  - 2. Air Quality Permits are required for certain construction-related activities including, but not limited to, earthmoving, sandblasting, aggregate processing, welding, spray-coating operations, or other processes which discharge pollutants into the open air.
  - 3. Air Quality Permits, and information concerning the requirements, are available by calling (801) 536-4100.

#### 1.04 REGULATORY REQUIREMENTS

- A. Comply with Federal, State, and local laws and regulations.
- B. Comply with USBR RSHS.
- C. Conform to most stringent requirement in cases of conflict between specifications, regulatory requirements, and USBR RSHS.
- D. Contractor shall be responsible for damages resulting from dust originating from Contractor operations.
- E. The Government may stop any construction activity in violation of Federal, State, or local laws and additional expenses resulting from work stoppage will be responsibility of Contractor.

**1.05 DUST CONTROL**

- A. Provide dust control and abatement during construction.
- B. Prevent, control, and abate dust pollution on rights-of-way provided by Government or elsewhere during performance of work.
- C. Provide labor, equipment, and materials, and use efficient methods wherever and whenever required to prevent dust nuisance or damage to persons, property, or activities, including, but not limited to, crops, orchards, cultivated fields, wildlife habitats, dwellings and residences, agricultural activities, recreational activities, traffic, and similar conditions.
- D. Provide means for eliminating atmospheric discharges of dust during mixing, handling, and storing of cement, pozzolan, and concrete aggregate.

**1.06 AIR POLLUTION CONTROL**

- A. Utilize reasonably available methods and devices to prevent, control, and otherwise minimize atmospheric emissions or discharges of air contaminants.
- B. Do not operate equipment and vehicles that show excessive exhaust gas emissions until corrective repairs or adjustments reduce such emissions to acceptable levels.

**PART 2 PRODUCTS**

Not Used

**PART 3 EXECUTION**

Not Used

**END OF SECTION**

## SECTION 01563 - WATER POLLUTION CONTROL

### PART 1 GENERAL

#### 1.01 MEASUREMENT AND PAYMENT

- A. Erosion control and water pollution prevention measures
  - 1. Measurement: Percentage of lump-sum quantity.
  - 2. Payment: Lump sum price offered in the schedule.

#### 1.02 REFERENCES

- A. Bureau of Reclamation (USBR)
  - 1. USBR RSHS Reclamation Safety and Health Standards - 2001 Edition
- B. Code of Federal Regulations (CFR)
  - 1. 40 CFR, Part 112 Oil Pollution Prevention
- C. Public Law
  - 1. Sections 311, 402, and 404 Clean Water Act (Public Law 92-500, as amended)

#### 1.03 SUBMITTALS

- A. Submit the following in accordance with Section 01330 - Submittals.
- B. RSN 01563A, Pollution Prevention Plan:
  - 1. As required by the stormwater permit for discharges from construction sites.
- C. RSN 01563B, Spill Prevention Control and Countermeasure Plan (SPCC):
  - 1. SPCC Plan required where location of construction site is such that oil from an accidental spillage could reasonably be expected to enter into or upon navigable waters of the United States or adjoining shorelines, and aggregate storage of oil at site is over 1,320 gallons.
  - 2. Reviewed and certified by a registered professional engineer in accordance with 40 CFR, part 112, as required by section 311 of the Clean Water Act (Public Law 92-500 as amended).

#### 1.04 QUALITY ASSURANCE

- A. Construction Safety Standards:
  - 1. Comply with sanitation and potable water requirements of section 7 of USBR RSHS.

B. Laws, Regulations, and Permits:

1. Perform construction operations to comply, and ensure subcontractors comply, with:
  - a. Applicable Federal, State, and local laws, orders, regulations, and Water Quality Standards concerning control and abatement of water pollution; and terms and conditions of applicable permits issued by permit issuing authority.
  - b. If conflict occurs between Federal, State, and local laws, regulations, and requirements, the most stringent shall apply.

C. Contractor Violations:

1. If noncompliance should occur, immediately (verbally) report noncompliance to the Government. Submit specific information within 2 days.
2. Consistent violations of applicable Federal, State, or local laws, orders, regulations, or Water Quality Standards may result in the Government stopping all site activity until compliance is ensured.
3. The Contractor shall not be entitled to extension of time, claim for damage, or additional compensation by reason of such a work stoppage.
4. Corrective measures required to bring activities into compliance shall be at the Contractor's expense.

**1.05 REQUIRED PERMITS**

A. Wastewater Discharge Permit:

1. Permit:
  - a. Prior to discharging wastewater or other pollutants, secure a permit to discharge pollutants as required under section 402 of the Clean Water Act (Public Law 92-500 as amended).]
2. Terms and Conditions: Comply with terms and conditions as stated in the permit.
3. Monitoring and Treatment:
  - a. Provide monitoring and water treatment, if necessary, to achieve compliance with permit conditions
  - b. Provide recordkeeping required of the section 402 permittee, as stated in the section 402 permit.
4. Sampling: Include sampling in monitoring required of the Contractor to meet section 402 requirements, as well as required laboratory tests to determine effluent characteristics.
5. Monitoring Results:

- a. Provide monitoring results to the Government 2 weeks prior to submittal deadline to appropriate State and/or Environmental Protection Agency (EPA) Regional Administrator.
  - b. Send copies of all information transmitted to EPA and/or the State to the Government.
6. Effluent Limitations and Monitoring Requirements of the wastewater discharge permit are given in Table 01563-1 (Effluent Limitations and Monitoring Requirements).

Table 01563-1. - Effluent limitations and monitoring requirements

Parameter	7-day average	30-day average	Daily maximum
Total suspended solids	25 mg/L*	35 mg/L	70 mg/L
Oil and grease**	Not Applicable	Not Applicable	10 mg/L
pH - maintain between 6.5 and 9.0.			

\*mg/L = milligrams per liter.

\*\* No visible oil and grease or sheen in the discharge.

B. Stormwater Discharge Permit Associated With a Construction Site:

- 1. Notice of Intent (NOI):
  - a. Both the Bureau of Reclamation and the Contractor shall sign the NOI to obtain coverage under a stormwater general permit to control stormwater discharges from the construction site as required under section 402 of the Clean Water Act (Public Law 92-500, as amended).
- 2. Pollution Prevention Plan:
  - a. The Contractor shall prepare a Pollution Prevention Plan as required by the permit.
  - b. Comply with terms and conditions to obtain and maintain this stormwater discharge permit.
- 3. Monitoring and Water Treatment:
  - a. Provide monitoring and water treatment, if necessary, to achieve compliance with applicable Water Quality Standards.
  - b. Provide the recordkeeping required by the stormwater discharge permit associated with construction activity.

## **1.06 CONTRACTOR RESPONSIBILITIES**

### **A. Monitoring:**

1. Conduct monitoring in order to meet the requirements of the permits which may include:
  - a. Sampling,
  - b. Site inspections, and
  - c. Required laboratory tests to determine effluent characteristics.

### **B. Reporting Results:**

1. The Government will report required monitoring results to appropriate agencies. The section 402 wastewater discharge permit has specific reporting requirements for the permittee for noncompliance when effluent limitations are exceeded.

### **C. Recordkeeping:**

1. Retain records and data required by permits.

## **PART 2 PRODUCTS**

Not Used

## **PART 3 EXECUTION**

### **3.01 POLLUTION CONTROLS**

A. Control pollutants by use of sediment and erosion controls, wastewater and stormwater management controls, construction site management practices, and other controls including State and local control requirements.

### **B. Sediment and Erosion Controls:**

1. Establish methods for controlling sediment and erosion which address vegetative practices, structural control, silt fences, straw dikes, sediment controls, and operator controls as appropriate.
2. Institute stormwater management measures as required, including velocity dissipators, and solid waste controls which address controls for building materials and offsite tracking of sediment.

### **C. Wastewater and Stormwater Management Controls:**

1. Pollution prevention measures:
  - a. Use methods of dewatering, unwatering, excavating, or stockpiling earth and rock materials which include prevention measures to control silting

and erosion, and which will intercept and settle any runoff of sediment-laden waters.

- b. Prevent wastewater from general construction activities such as drainwater collection, aggregate processing, concrete batching, drilling, grouting, or other construction operations, from entering flowing or dry watercourses without the use of approved turbidity control methods.
  - c. Divert stormwater runoff from upslope areas away from disturbed areas.
2. Turbidity prevention measures:
- a. Use methods for prevention of excess turbidity which include, but are not restricted to, intercepting ditches, settling ponds, gravel filter entrapment dikes, flocculating processes, recirculation, combinations thereof, or other approved methods that are not harmful to aquatic life.
  - b. Wastewaters discharged into surface waters shall meet conditions of section 402, the National Pollutant Discharge Elimination System (NPDES) permit.
  - c. Do not operate mechanized equipment in water bodies without having first obtained a section 404 permit, and then only as necessary to construct crossings or perform the required construction.

D. Construction Site Management:

- 1. Contractor construction operations:
  - a. Perform construction activities by methods that will prevent entrance, or accidental spillage, of solid matter, contaminants, debris, or other pollutants or wastes into streams, flowing or dry watercourses, lakes, wetlands, reservoirs, or underground water sources.
    - 1) Pollutants and wastes include, but are not restricted to: refuse, garbage, cement, sanitary waste, industrial waste, hazardous materials, radioactive substances, oil and other petroleum products, aggregate processing tailings, mineral salts, and thermal pollution.
- 2. Stockpiled or deposited materials:
  - a. Do not stockpile or deposit excavated materials or other construction materials, near or on, stream banks, lake shorelines, or other watercourse perimeters where they can be washed away by high water or storm runoff, or can in any way encroach upon the watercourse.
- 3. Petroleum product storage tanks management:
  - a. Place oil or other petroleum product storage tanks at least 20 feet from streams, flowing or dry watercourses, lakes, wetlands, reservoirs, and any other water source.
  - b. Do not use underground storage tanks.

- c. Construct storage area dikes at least 12 inches high or graded and sloped to permit safe containment of leaks and spills equal to the capacity located in each area plus a sufficient amount of freeboard to contain the 25-year rainstorm.
  - 1) Line diked areas with an impermeable barrier at least 50 mils thick.
- d. Areas for refueling operations: Lined with impermeable barrier at least 10 mils thick covered with 2 to 4 inches of soil.

**END OF SECTION**

## **SECTION 01569 - TREE AND PLANT PROTECTION**

### **PART 1 GENERAL**

#### **1.01 COST**

- A. Include cost of complying with this section in prices offered in the schedule for items of work for which tree and plant protection is required.

#### **1.02 SUBMITTALS**

- A. Submit the following in accordance with Section 01330 - Submittals.
- B. Removal Requests: Requests to remove vegetation not specifically required to be removed.
- C. Protection Plans: Description of protective barriers or other methods used to protect vegetation from damage or injury caused by construction operations.
- D. Anchorage Requests: Requests to use trees for anchorage, except for emergency operations, including a description of the protective material.

#### **1.03 QUALITY ASSURANCE**

- A. Horticulturist or Tree Surgeon: Employ the services of an experienced horticulturist or licensed tree surgeon to direct the repair, treatment, and replacement of vegetation.

### **PART 2 PRODUCTS**

#### **2.01 REPLACEMENT TREES AND SHRUBS**

- A. Species: Same as removed tree or shrub or other species approved by the Government.
- B. Size: Same size as removed tree or shrub, or maximum practicable size that can be planted and sustained in the particular environment as approved by the Government.

### **PART 3 EXECUTION**

#### **3.01 PRESERVATION AND PROTECTION**

- A. Preserve natural landscape and preserve and protect existing vegetation not required or otherwise authorized to be removed.
- B. Conduct operations to prevent unnecessary destruction, scarring, or defacing of natural surroundings in the vicinity of the work.

- C. Move crews and equipment within the rights-of-way and over routes provided for access to the work in a manner to prevent damage to grazing land, crops, or property.
- D. Protect vegetation from damage or injury caused by construction operations, personnel, or equipment by the use of protective barriers or other methods approved by the Government.
- E. Minimize, to the greatest extent practicable, clearings and cuts through vegetation. Irregularly shape authorized clearings and cuts to soften undesirable aesthetic impacts.
- F. Do not use trees for anchorages except in emergency cases or as approved by the Government. For such use, wrap the trunk with a sufficient thickness of approved protective material before any rope, cable, or wire is placed.
- G. Use safety ropes where tree climbing is necessary; do not use climbing spurs.

### **3.02 REPAIR OR TREATMENT**

- A. The Contractor is responsible for injuries to vegetation caused by Contractor operations, personnel, or equipment.
- B. Repair or treat injured vegetation without delay and as recommended by and under direction of an experienced horticulturist or licensed tree surgeon approved by the Government.

### **3.03 REPLACEMENT**

- A. Remove and dispose of trees or shrubs not required or otherwise authorized to be removed that, in the opinion of the Government, is damaged or injured beyond saving by Contractor operations, personnel, or equipment.
- B. Replace removed tree or shrub with tree or shrub approved by the Government.
- C. Guy as required, water, and maintain replacement trees and shrubs until contract completion.

**END OF SECTION**

**SECTION 01572 - PESTICIDES**

**PART 1 GENERAL**

**1.01 APPLICATION OF INSECTICIDES**

- A. Do not apply any insecticides or herbicides except for insect repellents to be applied directly to clothing or for small quantities of aerosol insecticides, such as fly and spider sprays, to be applied within or directly to offices or shop buildings.

**PART 2 PRODUCTS**

Not Used

**PART 3 EXECUTION**

Not Used

**END OF SECTION**

## SECTION 01600 - PRODUCT REQUIREMENTS

### PART 1 GENERAL

#### 1.01 COST

- A. When a separate item which includes furnishing of a material is provided in the offered schedule, include cost of furnishing, hauling, storing, and handling in the price offered in the schedule for the item.
- B. When a separate item is not provided in the schedule for furnishing a material, include cost of furnishing, hauling, storing, and handling in the price offered in the schedule for work for which the material is required.

#### 1.02 REFERENCES

- A. American Society of Mechanical Engineers (ASME)
  - 1. ASME B1.1-2003 Unified Inch Screw Threads, UN and UNR Thread Form
  - 2. ASME B1.20.1-1983(R2001) Pipe Threads, General Purpose, Inch
- B. Bureau of Reclamation (USBR)
  - 1. USBR RSHS Reclamation Safety and Health Standards 2001 Edition.

#### 1.03 DEFINITIONS

- A. Essential Characteristics: As used in these specifications, the term "essential characteristics" is synonymous with the term "salient characteristics."
- B. Salient Characteristics: Those qualities of an item that are essential to ensure that the intended use of the item can be satisfactorily realized.

#### 1.04 DELIVERY, STORAGE, AND HANDLING

- A. Transport and handle manufactured products in accordance with manufacturer's instructions.
- B. Store and protect manufactured products in accordance with manufacturer's instructions and USBR RSHS. Obtain these instructions from the manufacturer before delivery of materials to jobsite. Maintain a copy of these instructions at jobsite.
- C. Protect materials subject to adverse effects from moisture, sunlight, ultraviolet light, or weather during storage at jobsite.

- D. Store curing compounds, sealants, adhesives, paints, coatings, sealers, joint compounds, grouts, and similar products at the temperature and environmental conditions recommended by manufacturer.

## **1.05 MAINTENANCE**

- A. Extra Materials:
  - 1. Furnish additional maintenance materials specified as "extra materials" in the specifications. Provide maintenance material identical to installed material and provide from the same manufacturer's production lot as installed material.
  - 2. Package extra materials for storage and label with complete product identification on packaging.
  - 3. Deliver extra materials to the Government at jobsite and place in storage as directed by the Government.

## **PART 2 PRODUCTS**

### **2.01 MATERIALS**

- A. Provide materials required for completion of work.
- B. Provide type and quality described in these specifications. Make diligent effort to procure specified materials from any and all sources.
- C. Furnish new materials conforming to referenced standard unless otherwise specified.
- D. For materials not covered by Federal or other specifications, furnish materials of standard commercial quality.
- E. If materials to be used deviate from or are not covered by recognized specifications and standards, submit, for approval, justification for and exact nature of the deviation, and complete specifications for materials proposed for use.
- F. Make parts accurately to standard gauge where possible.
  - 1. Use unified screw threads conforming to ASME B1.1 or B1.20.1 for threads, including but not limited to those of bolts, nuts, screws, taps, pipes, and pipefittings.
  - 2. For internal connections only, the Contractor may deviate from ASME standards, provided a complete set of taps and dies are furnished as required to facilitate repair or replacement.
- G. Permanently mark fasteners with a symbol identifying the manufacturer and with symbol(s) indicating grade, class, type, and other identifying marks in accordance with reference or applicable standard.

## **2.02 SUBSTITUTIONS**

- A. If materials required by these specifications become unavailable, because of Government priorities or other causes, substitute materials may be used.
- B. Obtain written approval to use substitute materials from the Government. State in the request for approval the amount of the adjustment, if any, to be made in favor of the Government.
- C. The Government's determination as to whether substitution will be permitted and as to what substitute materials may be used, shall be final and conclusive.
- D. If approved substitute materials are of less value to the Government or involve less cost to the Contractor than specified material, a contract adjustment will be made in favor of the Government. Where the amount involved or the importance of substitution warrants, a deductive modification to the contract will be issued.
- E. No payments in excess of prices offered in the schedule will be made because of substitution of one material for another or because of use of one alternate material in place of another.

## **2.03 WORKMANSHIP**

- A. Accurately manufacture and fabricate materials in accordance with best modern practice and requirements of these specifications, notwithstanding minor errors or omissions therein.
- B. Use liberal factors of safety and adequate shock-absorbing features in designs, especially for parts subjected to variable stress or shock, including alternating or vibrating stress or shock.
- C. Include provisions which prevent components from loosening for shock-absorbing features and parts subject to vibration.

## **2.04 SOURCE QUALITY ASSURANCE**

- A. Materials will be subject to inspection in accordance with Article 9 of the General Conditions at any one or more of the following locations, as determined by the Government:
  - 1. At place of production or manufacture.
  - 2. At shipping point.
  - 3. At jobsite.
- B. To allow sufficient time to provide for inspection, submit at time of issuance, copies of purchase orders, including drawings and other pertinent information, covering material on

which inspection will be made as advised by the Government, or submit other evidence if such purchase orders are issued verbally or by letter.

- C. Inspection of materials at any location specified above or waiving of inspection shall not be construed as being conclusive as to whether materials and equipment conform to contract requirements nor shall the Contractor be relieved thereby of the responsibility for furnishing materials meeting the requirements of these specifications.
- D. Acceptance of materials will be made only at the jobsite.

### **PART 3 EXECUTION**

#### **3.01 FIELD QUALITY CONTROL**

- A. Final inspection and acceptance of materials will be made only at the jobsite after installation and testing. Equipment and materials shall be kept in working order up until the day of substantial completion of the project.

**END OF SECTION**

## SECTION 01721 - SURVEYING

### PART 1 GENERAL

#### 1.01 COST

- A. Include the cost of furnishing all necessary materials, equipment, and labor required for surveys for the layout of work and quantity surveys, and performing all work required by the Government in establishing lines and grades as described in this Section in the prices bid in the schedule for which the establishment of lines and grades is required.

#### 1.02 LINES AND GRADES

- A. The Government will provide primary control and alignment and grades to be used by the Contractor for completing the work required within the contract.
- B. The Contractor will be responsible for performing routine, day-to-day surveys (such as maintaining slope stakes as fill progresses) required for the computation of quantities and layout of the work to be accomplished under this contract.
- C. Survey work performed by the Contractor shall be subject to field and office review by the Government.

#### 1.03 SUBMITTALS

- A. For any Contractor performed surveys, submit the following in accordance with Section 01330, "Submittals:"
  - 1. Submit for review and filing, within 2 working days of completing and reducing notes for a survey or portion of survey, a copy of such notes. Submit for review and filing, within 2 working days of completing a field survey book, the original field survey book.
  - 2. Submit for approval, accompanying progress payment requests, a copy of applicable quantity survey notes and computations and an itemized statement for work performed or placed during the progress period measured on the basis of surveying.
  - 3. Submit for review and filing, if requested by the Government Inspector, a copy of the workday's survey notes at the conclusion at that workday.

## **PART 2 PRODUCTS**

### **2.01 CONTRACTOR'S SURVEYING MATERIALS AND EQUIPMENT**

- A. Provide all materials and equipment required for surveying work, including, but not limited to, instruments, stakes, spikes, steel pins, templates, platforms, and tools. Except as required to be incorporated in the work or left in place, all such materials and equipment shall remain property of the Contractor.
- B. Subject instruments to rigid inspection for proper operation at least every two weeks of use. Promptly replace, repair, or adjust defective instruments to the satisfaction of the Government.

### **2.02 CONTRACTOR'S RECORDS**

- A. Record the survey data in accordance with recognized professional surveying standards. Record original field notes, computations, and other surveying data in field books furnished by the Government. Rejection of part or all of the field books will be considered if notes or data are illegible or erasures are present. Copied notes or data will not be permitted; rejection of part or all of a field book may necessitate resurveying. Make corrections by ruling or lining out errors.

## **PART 3 EXECUTION**

### **3.01 LAYOUT OF WORK**

- A. The Government will establish from primary control points the original lines, grades, and slope staking necessary to control the work. The Government will also be responsible for all measurements and additional surveys that may be required for execution of the work to the tolerances prescribed in these specifications or on the drawings.
- B. The Contractor shall establish, place, and replace as required, such additional stakes, markers, and other controls as may be necessary for control, intermediate checks, and guidance of construction operations.

### **3.02 QUANTITY SURVEYS**

- A. The Contractor shall perform such surveys and computations as are necessary to determine quantities of work performed or placed during each progress payment period.
- B. The Government will perform all surveys necessary to determine final quantities of work in place. The Government will determine final quantities based on established original terrain data.

### **3.03 SURVEYING**

- A. Surveys Provided by the Government

1. Cross-sections, original and final.
  2. "As-built" surveys as required for utilities, final grading and other features of the work.
  3. Alignment staking each 50 feet on tangent and 25 feet on curves.
  4. Slope staking each 50 feet on tangent and 25 feet on curves.
  5. Stake out structures.
- B. Protection of Government's Survey Stakes - Offset stakes, usually 10 feet from disturbance area, will be provided only one time during construction. These offset stakes shall be protected by the Contractor. If any offset stakes are removed by the Contractor's forces before their purpose is served, then re-staking by the Government will be at the Contractor's expense (time and materials based on bill out rate).
- C. Surveys Provided by the Contractor
1. Spot check elevation and grade on various features of work.
- D. Accuracy (Government)
1. Degree of accuracy will be of an order high enough to satisfy tolerances specified for the work and following:
    - a. Set structure points within 0.01 foot, except where installation or operation considerations require tighter tolerances.
    - b. Locate cross-section points within 0.10 foot, horizontally and vertically.
    - c. Close vertical elevation surveys within 0.05 foot times the square root of the circuit length in miles.
- E. Accuracy (Contractor)
1. Degree of accuracy shall be of an order high enough to satisfy tolerances specified for the work and following:
    - a. Set structure points within 0.01 foot, except where installation or operation considerations require tighter tolerances.
    - b. Locate cross-section points within 0.10 foot, horizontally and vertically.
    - c. Close vertical elevation surveys within 0.05 foot times the square root of the circuit length in miles.

**END OF SECTION**

**SECTION 01726 - PROTECTION OF EXISTING UTILITIES**

**PART 1 GENERAL**

**1.01 COST**

- A. Include cost in prices offered in the schedule for other items of work.

**1.02 REFERENCES**

- A. Institute of Electrical and Electronics Engineers (IEEE)
  - 1. IEEE C2-2002 National Electrical Safety Code (NESC)
- B. Bureau of Reclamation (USBR)
  - 1. USBR RSHS Reclamation Safety and Health Standards 2001 Edition

**1.03 PROJECT CONDITIONS**

- A. Drawings included in these specifications show existing utilities, but may not show all utilities existing at the jobsite.
- B. Obtain location of buried conduit, pipe, cable, ground mat, and other buried items before excavating.

**PART 2 PRODUCTS**

Not Used

**PART 3 EXECUTION**

**3.01 INTERFERENCE WITH OPERATION OR MAINTENANCE**

- A. Do not interfere with operation or maintenance service on utilities that are existing on the date offers are received.
  - 1. Provide for access to utilities in a manner satisfactory to owners and operators and the Government.
- B. Provide required temporary structures; make necessary repairs, replacements, or similar operations; and furnish indemnity or other bonds.

**END OF SECTION**

## SECTION 01740 - CLEANING

### PART 1 GENERAL

#### 1.01 COST

- A. Include cost in prices offered in the schedule for other items of work.

#### 1.02 REFERENCES

- A. Bureau of Reclamation (USBR)
  - 1. USBR RSHS Reclamation Safety and Health Standards 2001 Edition
- B. Code of Federal Regulations (CFR)
  - 1. 40 CFR 261.3 Definition of Hazardous Waste
  - 2. 49 CFR 171-179 Transportation - Hazardous Waste Regulations

#### 1.03 DEFINITION

- A. Hazardous waste: Defined as hazardous by 40 CFR 261.3; or by other Federal, State, or local laws or regulations.

#### 1.04 SUBMITTALS

- A. Submit the following in accordance with Section 01330 - Submittals.
- B. Test results on unknown wastes.
- C. RSN 01740A, Hazardous wastes manifest.
- D. Waste production and disposal records.
- E. Environmental Government resume: Describe experience on similar project.
- F. Environmental site assessment.

#### 1.05 QUALIFICATIONS

- A. Environmental Government: Minimum 2 years experience in conducting environmental site assessments for similar construction.

#### 1.06 REGULATORY REQUIREMENTS

- A. Comply with Federal, State, and local laws and regulations.

- B. Comply with USBR RSHS.
- C. Conform to most stringent requirement in cases of conflict between specifications, regulatory requirements, and USBR RSHS.

### **1.07 PROJECT CONDITIONS**

- A. Report waste materials discovered at jobsite to the Government.
  - 1. If waste is hazardous, the Government may order delays in time of performance or changes in work, or both.
  - 2. If such delays or changes are ordered, an equitable adjustment will be made in the contract in accordance with applicable clauses of the contract.

## **PART 2 PRODUCTS**

Not Used

## **PART 3 EXECUTION**

### **3.01 TESTS**

- A. Test unknown waste materials found at the jobsite which may be hazardous.

### **3.02 PROGRESS CLEANING**

- A. Keep work and storage areas free from accumulations of waste materials and rubbish.

### **3.03 FINAL CLEANUP**

- A. Remove temporary plant facilities, buildings, concrete footings and slabs, rubbish, unused materials, concrete forms, and other similar materials which are not part of permanent work.
- B. Leave premises "broom clean."
- C. Clean equipment and fixtures to a sanitary condition.
- D. Clean debris from roofs.
- E. Sweep paved areas and rake clean landscaped areas.

### **3.04 DISPOSAL OF NONHAZARDOUS WASTE**

- A. Combustible waste materials: Dispose by removal from jobsite.

- B. Noncombustible waste: Dispose by removal from jobsite.
- C. Disposal by Removal:
  - 1. Dispose of waste materials at a permitted landfill. Make arrangements with owner for use of landfill and pay required fees.
- D. Do not burn waste materials.
- E. Do not bury waste materials.

### **3.05 DISPOSAL OF HAZARDOUS WASTE**

- A. Recycle hazardous waste whenever possible.
- B. Dispose of waste materials known or found to be hazardous at permitted treatment or disposal facilities.
- C. Transport hazardous waste in accordance with 49 CFR 171-179.

### **3.06 ENVIRONMENTAL SITE ASSESSMENT**

- A. Upon completion of work, employ qualified environmental Government or equivalent to perform assessment:
  - 1. At hazardous waste accumulation areas.
  - 2. At hazardous material and petroleum dispensing and storage areas where aggregate storage of hazardous materials or petroleum at jobsite has been over 110 gallons.
- B. Demonstrate and document by appropriate analytical sampling that site contamination is less than State action cleanup levels.

### **3.07 RECORDS**

- A. Keep records of types and amounts of waste materials produced.
- B. Keep records of disposal of waste materials on or off jobsite.

**END OF SECTION**

## SECTION 01781 - PROJECT CLOSEOUT

### PART 1 GENERAL

#### 1.01 COST

- A. Include cost in prices offered in the schedule for other items of work.

#### 1.02 SUBMITTALS

- A. Submit the following in accordance with Section 01330 - Submittals.
- B. RSN 01781A, As-built records
1. As-built Drawings: Certified marked prints.
  2. As-built Record of Materials: Record of materials used to complete a structure or work.
  3. Extra Materials: List of extra materials.
  4. Warranties

#### 1.03 AS-BUILT DOCUMENTS

- A. As-built Drawings:
1. Maintain 2 sets of full-size prints of contract drawings at the jobsite.
    - a. Mark and dimension to show variations between actual construction and that indicated or specified in contract documents.
    - b. Include buried or concealed construction and utilities.
    - c. Include existing items, topographic features, and utility lines revealed during construction which differ from those shown on contract drawings.
    - d. Where choice of materials or methods is permitted in specifications, or where variations in scope or character of methods is permitted in specifications, or where variations in scope or character of work from that of the original contract are authorized, mark drawings to define construction actually provided.
  2. Use standard drafting practice to represent changes and include supplementary notes, legends, and details necessary to clearly portray as-built construction.
  3. Mark as-built drawings in the following colors:
    - a. Red - Additions to original drawings
    - b. Green - Deletions to original drawings

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- c. Blue - Any notations necessary for as-built markings
- 4. Allow the Government to review the drawings at all times.
- 5. Maintain as-built drawings throughout the time period of the project.
- 6. Upon completion of work, sign marked prints as certified correct.
- 7. A Bureau of Reclamation draftsman will make the final as-built drawings.

B. As-built Record of Materials:

- 1. Where several manufacturers' brands, types, or classes of items have been used in the project, designate specific areas where each item was used. Key designations to the areas and spaces depicted on contract drawings.
- 2. Provide record of materials used in the following format:

<b>As-built record of materials</b>				
Specification Section	Materials Designation	Manufacturer	Materials Used (manufacturer's designation)	Where Used

C. Extra Materials:

- 1. List extra materials provided in accordance with the specifications and Section 01600.
- 2. Provide the list in the following format:

<b>List of extra materials</b>				
Specification Section	Material Designation	Material	Manufacturer	Extra Material Item

**1.04 WARRANTIES**

- A. Provide warranties in accordance with Article 9 of the General Conditions, and this Section.

B. Warranty of Construction

1. Submit data concerning warranty of construction including the warranty period (dates), and warranty contacts with names, addresses, and telephone numbers. Also, post this data, under glass, at a location as directed by the Government.

C. Other Warranties

1. For other warranties, including those warranties for equipment specified by the Contract Documents on a brand name and model basis, provide the following:
2. Warranty List
  - a. Bound and indexed notebook containing written warranties obtained, required, or furnished under the contract. Prepare complete list of warranted products, equipment, materials, processes, and other warranted items. Fully execute and deliver this list to the Government prior to final acceptance of contract work. Provide the list in the following format:

<b>Warranty list</b>			
Specification Section	Warranted Item	Warranty Period Dates	Point of Contact

3. Equipment Warranty Tags

- a. At installation, tag each warranted item with a durable, oil- and water-resistant tag approved by the Government.
  - 1) Attach tag with copper wire and spray with a clear silicone waterproof coating.
  - 2) Leave date of acceptance and inspector's signature blank until project is accepted.
  - 3) Provide tags showing the following information:

<b>WARRANTY TAG</b>	
Type of Item	
Warranty Period	[Period] or [Form ___ To ____]
Contract No.	
Inspector's Signature	
Date Accepted	
Construction Contractor	
Name	
Address	
Telephone	
Warranty Contact	
Name	
Address	
Telephone	

**PART 2 PRODUCTS**

Not Used

**PART 3 EXECUTION**

Not Used

**END OF SECTION**

## SECTION 02220 - DEMOLITION

### PART 1 GENERAL

#### 1.01 PAYMENT

##### A. Demolition

1. Payment: Lump sum price offered in the schedule.
  - a. Includes the cost of preparing and submitting all required submittals, and all other labor, equipment, and materials required to cut the existing asphalt, remove and dispose of asphalt and concrete, and perform demolition required by this Section.

#### 1.02 SUMMARY

##### A. Section Includes:

1. Demolition and removal of structural site elements.
2. Required demolition of concrete and asphalt, including cutting of the asphalt as indicated on the drawings.

##### B. Related Sections:

1. Environmental controls: Division 1.

#### 1.03 SUBMITTALS

##### A. Submit as per Section 01330.

##### B. RSN 02220A, Photographs:

1. Before starting work, file with the Government Inspector color photographs printed on 4x6 photo paper documenting existing conditions that later could be mistaken for damage caused by demolition operations as listed in the submittal list. Digital Photos or Photos on CD will not be acceptable.

#### 1.04 PROJECT CONDITIONS

##### A. Existing Conditions:

1. After the project is begun, the Contractor is responsible for the condition of structures to be demolished.
2. Unforeseen Conditions: Should unforeseen conditions be encountered that affect design or function of project, the procedures outlined in Article 7 of the General

Conditions will be followed. While awaiting the Government's response, the Contractor shall reschedule operations if necessary to avoid delay of overall project.

## **PART 2 PRODUCTS**

Not Used

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that utilities have been disconnected.
- B. Survey existing conditions and correlate with drawings and specifications to determine extent of demolition required.
- C. Insofar as is practicable, arrange operations to reveal unknown or concealed structural conditions for examination and verification before removal or demolition.

### **3.02 PREPARATION**

- A. Protection:
  - 1. Provide for the protection of persons passing around or through the area of demolition.
  - 2. Perform demolition so as to prevent damage to adjacent improvements and facilities to remain.
  - 3. Erect temporary protection such as walks, fences, railings, canopies, etc., where required by authorities having jurisdiction.
  - 4. Protect existing site appurtenances and landscaping to remain.

### **3.03 UTILITY SERVICES**

- A. Arrange with utility companies and the Government Inspector to shut off indicated utilities.
- B. Disconnect indicated utilities before starting demolition operations.

### **3.04 EXPLOSIVES**

- A. Do not use explosives.

**3.05 POLLUTION CONTROLS**

- A. Control as much as practicable the spread of dust and dirt.
- B. Observe environmental protection regulations.
- C. Do not allow water usage that result in freezing or flooding.
- D. Do not allow adjacent improvements to remain to become soiled by demolition operations.

**3.06 DEMOLITION – GENERAL**

- A. Remove: Unless items are otherwise indicated to be reinstalled or salvaged, remove and dispose of the materials. Asphalt surfacing designated to be removed may be recycled and utilized as roadbase if it meets the gradation requirements, or removed and disposed of at an approved site.
- B. Existing to Remain: Construction or items indicated to remain shall be protected against damage during demolition operations. Where practicable, and with the Government Inspector's permission, the Contractor may elect to remove items to a suitable storage location during demolition and then properly clean and reinstall the items.

**3.07 DEMOLITION ON OR BELOW GRADE**

- A. Remove concrete slabs-on-grade and asphalt as indicated on drawings.
- B. Remove footings and foundations below grade.

**3.08 DISPOSAL OF DEMOLISHED MATERIALS**

- A. Promptly dispose of materials resulting from demolition operations. Do not allow materials to accumulate on site.
- B. Dispose of bituminous materials off site or recycle where possible.
- C. Transport materials resulting from demolition operations and legally dispose of off-site.
- D. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.

**3.09 CLEANING**

- A. Remove tools and equipment. Dispose of scrap.
- B. Leave exterior areas free of debris.

- C. Return structures and surfaces that are to remain to the condition to which they existed prior to commencement of demolition.

**END OF SECTION**

## SECTION 02230 - SITE CLEARING

### PART 1 GENERAL

#### 1.01 PAYMENT

- A. Clearing, grubbing, and stripping topsoil
  - 1. Payment: Lump-sum price offered in the schedule.
    - a. Includes the cost of labor, equipment, and materials required by this Section, and includes the cost of stockpiling and placing topsoil.

#### 1.02 SUMMARY

- A. This Section includes the following:
  - 1. Removal of trees and other vegetation indicated for removal.
  - 2. Topsoil stripping.
  - 3. Clearing and grubbing.

#### 1.03 PROJECT CONDITIONS

- A. Protection of Existing Improvements: Provide protection necessary to prevent damage to existing improvements indicated to remain in place.
  - 1. Restore damaged improvements to their original condition.
- B. Protection of Existing Trees and Vegetation: Protect existing trees and other vegetation as per Section 01569.

### PART 2 PRODUCTS

Not Used

### PART 3 EXECUTION

#### 3.01 SITE CLEARING

- A. General: Remove trees, shrubs, grass, and other vegetation, as required, to permit installation of new construction. Removal includes digging out and off-site disposal of stumps and roots. To prevent excessive erosion do not remove any more vegetation than is necessary.

1. Cut minor roots and branches of trees to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
- B. Topsoil: Topsoil is defined as surface material found in a depth of not less than 6 inches.
1. In areas of new construction, strip topsoil to 6 inches below grade in a manner to prevent intermingling with underlying subsoil or other objectionable material.
    - a. Where existing trees are to remain, leave existing topsoil in place within drip lines to prevent damage to root system.
  2. Stockpile topsoil in storage piles. Construct storage piles to provide free drainage of surface water. Cover storage piles, if required, to prevent wind erosion.
  3. Place topsoil in areas that have been disturbed and will be revegetated.
- C. Clearing and Grubbing: Protect trees and shrubs except for those indicated to be removed.
1. Completely remove stumps, roots, and other debris protruding through ground surface.
  2. Use only hand methods for grubbing inside drip line of trees to remain.
  3. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
    - a. Place fill material in horizontal layers not exceeding 6 inches loose depth, and thoroughly compact each layer to a density equal to adjacent original ground.
  4. Removing abandoned underground piping or conduits interfering with construction are included under this Section.

### **3.02 DISPOSAL OF WASTE MATERIALS**

- A. Dispose of waste materials as per Section 01740.

**END OF SECTION**

## SECTION 02302 - COMPACTING EARTH MATERIALS

### PART 1 GENERAL

#### 1.01 COSTS

- A. Include the costs of compacting earth materials as described in this Section, including furnishing water and moistening the materials, in the prices bid in the schedule for items of work where earth materials are required to be compacted under these specifications.

#### 1.02 REFERENCES

- A. ASTM International (ASTM)
1. ASTM D 422-63(2002) Particle-Size Analysis of Soils
  2. ASTM D 653-07d Terminology Relating to Soil, Rock, and Contained Fluids
  3. ASTM D 698-07 Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>))
  4. ASTM D 1140-00(2006) Amount of Material in Soils Finer than the No. 200 (75- $\mu$ m) Sieve
  5. ASTM D 1556-07 Density and Unit Weight of Soil in Place by the Sand-Cone Method
  6. ASTM D 2216-05 Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
  7. ASTM D 2487-06 Classification of Soils for Engineering Purposes (Unified Soil Classification System)
  8. ASTM D 2488-06 Description and Identification of Soils (Visual-Manual Procedure)
  9. ASTM D 4253-00(2006) Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
  10. ASTM D 4254-00(2006) Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density
  11. ASTM D 4318-05 Liquid Limit, Plastic Limit, and Plasticity Index of Soils
  12. ASTM D 4564-02a Density of Soil in Place by the Sleeve Method
  13. ASTM D 4643-00 Determination of Water (Moisture) Content of Soil by the Microwave Oven Heating

14. ASTM D 4718-87(2001) Correction of Unit Weight and Water Content for Soils Containing Oversize Particles
15. ASTM D 4914-99 Density of Soil and Rock in Place by the Sand Replacement Method in a Test Pit
16. ASTM D 4959-07 Determination of Water (Moisture) Content of Soil by Direct Heating
17. ASTM D 5030-04 Density of Soil and Rock in Place by the Water Replacement Method in a Test Pit
18. ASTM D 5080-00 Rapid Determination of Percent Compaction
19. ASTM D 6938-07 In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depths)

B. Bureau of Reclamation (USBR)

1. USBR EM - Earth Manual, Part 2, Third Edition (1990)
2. Procedure No. and Title:
  - a. USBR 3900-89 Standard Definitions of Terms and Symbols
    - 1) Relating to Soil Mechanics
  - b. USBR 5000-86 Determining Unified Soil Classification (Laboratory Method)
  - c. USBR 5005-86 Determining Unified Soil Classification (Visual Method)
  - d. USBR 5300-89 Determining Moisture Content of Soil and Rock by the Oven Method
  - e. USBR 5315-89 Determining Moisture Content by the Microwave Method
  - f. USBR 5325-89 Performing Gradation Analysis of Gravel Size Fraction of Soils
  - g. USBR 5330-89 Performing Gradation Analysis of Fines and Sand Size Fraction of Soils, Including Hydrometer Analysis
  - h. USBR 5335-89 Performing Gradation Analysis of Soils Without Hydrometer
  - i. USBR 5350-89 Determining the Liquid Limit of Soils by the One-Point Method
  - j. USBR 5355-89 Determining the Liquid Limit of Soils by the Three-Point Method
  - k. USBR 5360-89 Determining the Plastic Limit and Plasticity Index of Soils

- l. USBR 5500-89 Performing Laboratory Compaction of Soils--5.5-lbm Rammer and 18-in Drop
- m. USBR 5525-89 Determining the Minimum Index Unit Weight of Cohesionless Soils
- n. USBR 5530-89 Determining the Maximum Index Unit Weight of Cohesionless Soils
- o. USBR 5605-89 Determining Permeability and Settlement of Soils Containing Gravel
- p. USBR 7205-89 Determining Unit Weight of Soils In-Place by the Sand-Cone Method
- q. USBR 7215-89 Determining the Unit Weight of Soils In-Place by the Sleeve Method
- r. USBR 7220-89 Determining Unit Weight of Soils In-Place by the Sand Replacement Method in a Test Pit
- s. USBR 7221-89 Determining Unit Weight of Soils In-Place by the Water Replacement Method in a Test Pit
- t. USBR 7230-89 Determining Unit Weight and Moisture Content of Soil In-Place - Nuclear Moisture-Density Gauge
- u. USBR 7240-89 Performing Rapid Method of Construction Control
- v. USBR 7250-89 Determination of Percent Relative Density
- w. USBR 7255-89 Determining the Percent Compaction of Earthwork for Construction Control
- x.

### 1.03 DEFINITIONS

- A. Use definitions from USBR 3900 or ASTM D 653.
- B. Control Fraction: The portion of a soil sample consisting of particles smaller than a designated sieve size. The fraction is used to compare in-place unit weight with standard laboratory unit weight. The control sieve size depends on the laboratory test used (USBR 7230).
- C. C-Value: The expressed as a percentage of (1) in-place unit weight at fill moisture content to (2) the wet unit weight of a laboratory-compacted specimen prepared at fill moisture content as determined by the rapid method of construction control (USBR 7240, ASTM 5080). The C-Value is a comparison of compactive effort of field compaction equipment to standard laboratory compactive effort.
- D. D-value: The ratio expressed as a percentage of (1) in-place wet unit weight at fill moisture content to (2) laboratory maximum wet unit weight as determined from a

compaction curve constructed at fill moisture content as determined by the rapid method of construction control. The D-value is the equivalent of percent compaction (USBR 7240, ASTM 5080).

- E. Percent Relative Compaction: The percent compaction of a cohesionless soil where the laboratory maximum density is determined by Maximum Index Unit Weight test (USBR 5530, ASTM 4253).
- F. Percent Relative Density - ( $D_d$  percent) : The ratio of, (1) the difference between void ratio of a cohesionless soil in the loosest state and any given void ratio, to (2) the difference between its void ratios in the loosest state and densest state (USBR 7250)

#### **1.04 PROJECT ENVIRONMENTAL REQUIREMENTS**

- A. Do not place and compact soil under following conditions:
  - 1. Air temperature below freezing in shade.
  - 2. Rain that creates puddles in clayey or silty materials or results in moisture content exceeding specifications.
  - 3. Heat or wind or both that dries material below specified moisture content.
  - 4. Ice or snow pockets are visible in soil being placed.

### **PART 2 PRODUCTS**

#### **2.01 CLASSIFICATION**

- A. When required, classify earth materials using the Unified Soil Classification System (USCS) according to ASTM D 2487 (or USBR 5000) or ASTM D 2488 (or USBR 5005).
  - 1. Gradation tests for classification: ASTM D 422 or D 1140 (USBR 5325, 5330, or 5335).
  - 2. Atterberg limits testing for classification: ASTM D 4318 (USBR 5350, 5355, or 5360).

#### **2.02 SOIL TYPES**

- A. Clean Fill:
  - 1. Any soil classification except for Peat (PT), Organic Silts and Organic Clays (OL and OH), and Elastic Silt (MH).
  - 2. Free of roots, stumps, limbs, vegetation, organic matter, and ice.
  - 3. Does not contain construction debris, scrap materials, refuse, man-made wastes, or chemical or hydro-carbon contamination.
- B. Do not use frozen soils.

C. Special Gradations/Plasticity

1. In some cases, such as embedment for buried pipe, special gradations and/or plasticity characteristics may be required. These requirements are given for each special material required in the appropriate section.

**2.03 DESIGNATION OF SOILS FOR COMPACTION**

A. Requirements for lift thickness, method of compaction, and method of determining degree of compaction depends on whether soil is considered to be silty or clayey, cohesionless, or cohesionless containing some silt and clay.

B. Silty or Clayey Soils:

1. Contain appreciable amounts of fines (generally more than 15 percent fines).
2. Classified as GM, GC, SM, SC, CL, ML, CH, or any dual symbol or borderline soil beginning with one of these symbols.

C. Cohesionless Soils:

1. Contain few fines (generally less than 5 percent fines).
2. Classified as GW, SW, GP, SP, or any borderline soil beginning with any of these symbols.

D. Cohesionless Soils Containing Some Clay and Silt:

1. Contain some clay and silt contain between 5 and 15 percent fines.
2. Classified with dual symbol soils such as GW-GM, GW-GC, GP-GM, GP-GC, SW-SM, SW-SC, SP-SM, SP-SC.

**2.04 MAXIMUM PARTICLE SIZE**

A. Backfill against specific structures:

1. Maximum particle size limitations described in appropriate sections.
2. Otherwise, no cobbles or boulders.

B. Compacted soil for embankment: No cobbles larger than 5 inches or boulders.

**PART 3 EXECUTION**

**3.01 SURFACE PREPARATION**

A. Clear, grub, and strip.

B. Prepare surface so that first compacted lift will be placed on firm, stable base. Compact surface to specified compaction, if necessary.

- C. Do not place soil on frozen surface.

### 3.02 SOIL MOISTURE CONTENT

- A. Moisten or aerate material, as necessary, to provide moisture content that will readily facilitate obtaining specified compaction. Add water to soil only in increments that will permit moisture content to be uniform and homogenous throughout each layer after mixing.
- B. Silty and Clayey Soils:
1. Moisture content during compaction: Not greater than 2 percentage points wet or not less than 2 percentage points dry of optimum moisture content.
  2. Add no more than 2 percent water to fill by sprinkling just prior to compaction when fill is clayey and contains dry clods of clay.
    - a. If clayey borrow soil is more than 2 percent below optimum moisture, pre-conditioning and curing may be required to obtain uniform and homogenous distribution of moisture in the clods.
    - b. Use of disks, harrows, or rakes may be required to blend moisture in the borrow area.
  3. Moisture content will be determined as follows:
    - a. Moisture content is determined on the minus no. 4 sieve size control fraction material.
    - b. Variation from Optimum Moisture Content:
      - 1) Difference between optimum moisture and compaction moisture can be measured in accordance with ASTM D 5080 (or USBR 7240).
    - c. Moisture Content Comparison:
      - 1) Optimum moisture content determined by ASTM D 698 (or USBR 5500).
      - 2) Compared to field compaction moisture content with moisture contents determined in accordance with:
        - a) ASTM D 2216 (or USBR 5300), or
        - b) ASTM D 3017 (USBR 7230). The moisture from the nuclear gage will require corrections for gage error for the specific soils tested and the moisture content of the total material may require adjustment for the control fraction (see USBR 7230, Method C; ASTM D 4718), or
        - c) ASTM D 4959, or ASTM D 4643 (USBR 5315), provided the results have been correlated to ASTM D 2216 (USBR 5300) for specific soil tested.

C. Cohesionless Soils:

1. Add water during compaction, as necessary, since these soils are free-draining.

**3.03 PLACEMENT**

A. Place soils to be compacted in horizontal layers.

- B. If necessary, blend materials so that compacted fill is homogenous and free from lenses, pockets, streaks, voids, laminations, or other imperfections.

**3.04 COMPACTION**

A. Compact material with following methods and techniques appropriate to type of soil.

1. Special compaction: Compaction close to structures or in confined space.

B. Silty or clayey material:

1. Compact with mechanical impact tampers, tamping rollers, vibrating pad foot rollers, rubber tire rollers, other suitable compaction equipment, or equipment travel.
  - a. Uniformly distribute equipment passes.
  - b. Compact in horizontal layers to compacted thickness of 6 inches or less.
2. Special compaction: Compact with hand held impact tampers, or small tamping equipment.
  - a. Uniformly distribute effort.
  - b. Compact in horizontal layers to compacted thickness of 4 inches.
3. Density:
  - a. Percent Compaction, minimum: 95 percent, or
  - b. D-value, minimum: 95 percent
  - c. As determined on portion of soil passing the No. 4 sieve.

C. Cohesionless free-draining material:

1. Compact in horizontal layers in maximum compacted lift thicknesses of:
  - a. Tampers or rollers: 6 inches
  - b. Crawler-type tractors, vibrating drum rollers, surface vibrator, or similar equipment: 12 inches
  - c. Saturation and internal vibration: Penetrating depth of vibrator.
2. Special compaction: Compact with hand held impact tampers, vibrating plate tampers, or small tamping equipment.

- a. Uniformly distribute effort.
  - b. Compact in horizontal layers to compacted thickness of 6 inches.
3. Density:
- a. Relative Density, minimum: 70 percent, or
  - b. Relative Compaction. Minimum: 95 percent.
  - c. As determined on portion passing the 3-inch sieve
- D. Cohesionless Soils Containing Some Silt and Clay:
1. Compact in accordance with either procedure above.
  2. Density:
    - a. Percent Compaction, minimum: 95 percent, or
    - b. Relative Density, minimum: 70 percent, or
    - c. Relative Compaction, minimum: 95 percent.
    - d. Using whichever testing procedure result requires higher in-place dry density.
- E. Adjustment:
1. Silty and clayey soils containing more than 50 percent gravel: Required D ratio or Percent Compaction may be adjusted in accordance with appropriate curve on Figure 4 in USBR 5605.
- F. Demonstration:
1. Lift thicknesses may vary depending on equipment and methods. Before changing requirements in this section, demonstrate that required density will be obtained.

### **3.05 MEASURE OF COMPACTION**

- A. Degree of soil compaction will be determined by one of the following.
- B. Silty or clayey soils:
1. Unit weight of soils in-place:
    - a. ASTM D 1556 (or USBR 7205), or
    - b. ASTM D 4914 (or USBR 7220), or
    - c. ASTM D 5030 (or USBR 7221), or
    - d. ASTM D 2922 and D 3017 (or USBR 7230).
  2. Percent Compaction will be determined by one of the following:
    - a. Rapid Method: ASTM D 5080 (or USBR 7240).

- b. Laboratory Compaction Test: Comparison of in-place density of minus no. 4 sieve size control fraction to laboratory maximum dry density as determined by ASTM D 698, Procedure A (or USBR 5500).
  - c. Silty and clayey soils containing more than 5 percent gravel:
    - 1) In-place unit weight of minus no. 4 size control fraction determined by screening gravel, washing, and determining mass and volume by assuming surface saturated dried moisture as outlined in ASTM D 4718 (USBR 7205).
- C. Cohesionless soils: Compaction will be measured by determination of Percent Relative Density or Percent Relative Compaction as specified.
- 1. Unit weight of soils in-place:
    - a. ASTM D 1556 (or USBR 7205), or
    - b. ASTM D 4564 (or USBR 7215), or
    - c. ASTM D 4914 (or USBR 7220), or
    - d. ASTM D 5030 (or USBR 7221), or
    - e. ASTM D 2922 and D 3017 (or USBR 7230).
  - 2. Percent Relative Density: ASTM D 4254 (or USBR 7250)
    - a. In-place density of minus 3-inch size control fraction is compared to minimum and maximum index densities.
    - b. Laboratory test for minimum index density: ASTM D 4254 (or USBR 5525)
    - c. Laboratory test for maximum index density, ASTM D 4253 (or USBR 5530).
    - d. Cohesionless soils containing more than 5 percent cobbles:
      - 1) In-place unit weight of minus 3-inch size control fraction determined by screening cobbles, washing, and determining mass and volume by assuming surface saturated dried moisture as outlined in ASTM D 4718 (or USBR 7205).
  - 3. Percent relative compaction:
    - a. In-place density of minus 3-inch size control fraction is compared to maximum index density determined by ASTM 4253 (or USBR 5530).
    - b. In-place unit weight of minus 3-inch size control fraction determined by screening cobbles, washing, and determining mass and volume by assuming surface saturated dried moisture as outlined in ASTM D 4718 (or USBR 7205).

### 3.06 FIELD QUALITY CONTROL

#### A. Testing

1. The Government or its representative will perform tests as required to verify that type of soil used, placement of soil, and compaction of soil conform to contract requirements.
2. Notify the Government 24 hours before compaction work begins and 24 hours before significant change in compaction operations (major change in equipment or procedure used).
3. Notify the Government immediately of equipment change due to breakdown, or re-deployment.

#### B. Testing Frequency

1. Frequency of testing is at discretion of the Government.
2. Greater frequency of testing is normally performed at beginning of new work, new work crew, or new equipment.
3. After a successful work operation pattern is established, testing frequency is normally performed at these minimum guidelines.
  - a. At least one test for each shift for each compaction operation.
  - b. Compacted backfill against structures, over pipe, and for building foundations: One test for every 500 yd<sup>3</sup>.
  - c. Compacted embedment: One test for every 1000 linear ft around pipe.
  - d. Additional tests may be performed at sites considered questionable by a Government Inspector; such as suspected incomplete compaction, surfaces that may have become excessively wet or dry since compaction, compacted surfaces torn up by subsequent equipment travel, or other similar circumstances.

#### C. Tests:

1. Standards listed in Table 02302A - Standard Used for Testing, will be used by the Government or its representative for testing compacted soil for conformance with specification requirements. Substitution or modification of standards shall be done only with concurrence of all parties.

Table 02302A - Standard Used For Testing

PROCEDURE	STANDARD NO.
Soil Classification	ASTM D 2487 (or USBR 5000) ASTM D 2488 (or USBR 5005)
Gradation Analysis	ASTM D 422 (or USBR 5325, 5330, 5335)
Atterberg Limits	ASTM D 4318 (or USBR 5350, 5355, 5360)
Moisture Content	ASTM D 2216 (or USBR 5300) ASTM D 3017 (or USBR 7230) ASTM D 4643 (or USBR 5315)
Relative Density of Cohesionless Soils	ASTM D 4253 and ASTM D 4254 (or USBR 5525 and 5530 and 7250)
In-Place Density: Sand Cone Test Pits Sleeve	ASTM D 1556 (or USBR 7205) ASTM D 4914 (or USBR 7220) ASTM D 5030 (or USBR 7221) ASTM D 4564 (or USBR 7215)
Rapid Construction Control	ASTM D 5080 (or USBR 7240)
Laboratory Maximum Density	ASTM D 698, Procedure A (USBR 5500)

#### D. Contractor Support

1. Provide timely access to areas for density testing and excavate and level an area in compacted material to provide a surface for testing.
  - a. Fills compacted by sheepsfoot rollers are normally tested one or two lifts below surface.
2. When density is being measured by a sand-cone device (ASTM D 1556, USBR 7205), cease construction activity in immediate vicinity of testing.
3. Dig test pits as requested to examine compacted soil against structures or pipe.
4. Backfill test pits to original requirements.
5. Provide warning lights, flags, or other safety devices as needed by testing personnel.
6. Provide adequate lighting for performing test if required because of darkness.

**END OF SECTION**

## SECTION 02311 - GRADING

### PART 1 GENERAL

#### 1.01 PAYMENT

##### A. Grading

1. Payment - Lump sum price offered in the schedule.
  - a. Includes all grading required to conform to the lines and grades as indicated on the drawings.

#### 1.02 SUMMARY

##### A. Includes but not limited to

1. Grading roadways and walkways, day use areas, camp sites, and parking areas to the lines and grades shown on the drawings or established by the Government.

### PART 2 PRODUCTS

Not Used

### PART 3 EXECUTION

#### 3.01 EXAMINATION

- A. Carefully examine site with the Government Inspector prior to beginning of work of this Section to pre-plan procedures for making cuts, placing fills, and other necessary work.
- B. Before making cuts, determine areas needing fill and organize to most efficiently place fill.
- C. Maintain graded areas at all times in such condition that they will drain readily and correctly.

#### 3.02 PREPARATION

##### A. Protection

1. Protect trunks and roots of existing trees on site which are intended to remain. Do not use heavy equipment within branch spread. Interfering branches may be removed only with permission of the Government Inspector.
2. Protect other plants and features which are to remain.

3. When existing grade around plants is higher than new finish grade, perform regrading by hand. Do not expose or damage shrub or tree roots.
- B. Before making cuts, remove top soil over areas to be cut and filled not previously removed by stripping specified in other sections and stockpile in suitable area.

### **3.03 PERFORMANCE**

- A. Site Tolerances
1. Maximum variation from indicated grades shall be 0.10 foot.
    - a. Slopes for accessible sites and routes shall remain within the tolerances indicated on the drawings.
    - b. Tolerances may be waived only by the Government Inspector on a pad site by pad site basis.
  2. Make proper allowance for final finish grades of parking lots and planting areas as described in Contract Documents.
- B. Compact fills under structures, concrete, and pavement to a minimum 95 percent of maximum laboratory density as specified in Section 02302. Extend compaction 3 feet beyond the edges of these features and then at a 45 degree angle until intersection with undisturbed earth.
- C. If soft spots, water, or other unusual excavating conditions are encountered, stop work and notify the Government Inspector.

**END OF SECTION**

## **SECTION 02315 - EXCAVATING, BACKFILLING, AND COMPACTING**

### **PART 1 GENERAL**

#### **1.01 COST**

- A. Cost: Include the cost of work required by this Section in the bid prices of work which requires excavating, backfilling, and compacting.

#### **1.02 SUMMARY**

- A. Includes But Not Limited To
1. Perform Project excavating, trenching, backfilling, and compacting as described in Contract Documents, except as specified below.

#### **1.03 REFERENCES**

- A. American Society For Testing And Materials
1. ASTM D 2216-98, "Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass"

#### **1.04 PROJECT/SITE CONDITIONS**

- A. Existing Conditions
1. If existing utility lines not described in Contract Documents are encountered, contact Government Inspector before proceeding. The Contractor is responsible for contacting "blue stakes" before excavation.
  2. Rock excavation may be required.
    - a. Blasting is not allowed.

#### **1.05 SEQUENCING**

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

## **PART 2 PRODUCTS**

### **2.01 MATERIALS**

- A. Backfill At Footings, Foundations, & Sitework Concrete
  - 1. Well graded material free from debris, organic material, stones over 5 inches diameter, frozen materials, brick, lime, concrete, and other material which would prevent adequate performance of backfill.
  - 2. Fill shall conform to AASHTO (2004) Spec M 145-91(2000), A-1-A, A-1-B, A-2-4, or A-2-5 granular, non-plastic material.
  - 3. 90 percent minimum of fill shall be smaller than 1-1/2 inch in any direction.
- B. Backfill in pipe trenches.
  - 1. Same as above except no material over 1-1/2 inches diameter within one foot of pipe.
- C. Utility trenches.
  - 1. Drawings may require sand or other imported bedding material in utility trenches.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

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

### **3.02 PERFORMANCE**

- A. Excavating
  - 1. Shelter 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 native material.
  - c. Remove and replace exposed material which becomes soft or unstable.
3. Site Utility Trenches –
    - a. Excavate to proper alignment, depth, and grade.
    - b. Excavate to sufficient width to allow adequate space for proper installation and inspection of site utility.
    - c. Backfill over-excavated areas with compacted native material.
  4. If unusual excavating conditions are encountered, stop work and notify Government Inspector.
- B. Backfilling
1. Around Structures
    - a. Hand backfill when close to structure or where damage to the structure might result.
  2. Site Utilities
    - a. Place backfill consisting of on-site soil in compacted as specified in Section 02302.
- 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 Slabs/Pads, Concrete Site Elements
      - 1) Mechanically tamp to 95 percent minimum of maximum density as established by Section 02302.
  3. Base & Backfill –
    - a. Site Utility Trenches –
      - 1) Moisture condition backfill to plus or minus 2 percent of optimum moisture and compact to 95 percent minimum of

maximum density as established by Section 02302 to within 12 inches of finish grade.

- b. Under Slabs - Dampen (do not soak), and mechanically tamp to 95 percent minimum of maximum density or 70 percent of relative density as established by Section 02302.
- c. Under Concrete Site Elements & Around Foundation Walls - Dampen (do not soak), and mechanically tamp to 95 percent minimum of maximum density or 70 percent of relative density as established by Section 02302.
- d. Backfill Under Footings - Not allowed.
- e. Other Backfills - Place other fills in 12 inch layers and compact to 95 percent minimum of maximum density as established by Section 02302.

### **3.03 REPAIR/RESTORATION**

- A. Damage to other portions of the Work due to work of this Section shall be repaired at no additional cost to the Government.

### **3.04 CLEANING**

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

**END OF SECTION**

## **SECTION 02316 - IMPORTED EARTH MATERIALS**

### **PART 1 GENERAL**

#### **1.01 MEASUREMENT AND PAYMENT**

- A. Crushed-gravel
  - 1. Measurement: Neat lines on the drawings.
  - 2. Payment: Unit price per cubic yard offered in the schedule.
- B. Drain rock
  - 1. Measurement: Neat lines on the drawings.
  - 2. Payment: Unit price per cubic yard offered in the schedule.
- C. Sand
  - 1. Measurement: Ton.
    - a. Sand shall not contain any more than 6% water weight.
  - 2. Payment: Unit price per ton offered in the schedule.

#### **1.02 SUMMARY**

- A. Section includes crushed gravel used for but not limited to the following:
  - 1. Structures as indicated on the drawings.
  - 2. As base for roads and walkways.
  - 3. Surfacing for trails.

#### **1.03 SUBMITTALS**

- A. General: Submit the following in accordance with Section 01330.
- B. RSN 02316A,
  - 1. Material Certificates signed by material producer and Contractor, certifying that each material item complies with or exceeds specified requirements.
  - 2. Job-mix gradation analysis, in writing at least 10 working days before placing begins.

**PART 2 PRODUCTS**

**2.01 CRUSHED GRAVEL OR CRUSHED ROCK**

- A. Angular, hard, dense, durable particles, free from vegetable matter, lumps or balls of clay, and other deleterious substances, crushed and graded uniformly to meet the grading requirements, by weight, as determined by laboratory sieves, shown in Table 02316A.

Table 02316A. - Grading Requirements (Crushed Gravel)	
Sieve Size	Percent by Weight Passing Sieve Size
1-inch square mesh sieve	100
3/4-inch square mesh sieve	70 to 98
No. 4-mesh sieve	36 to 60
No. 8-mesh sieve	25 to 47
No. 20-mesh sieve	12 to 31
No. 200-mesh sieve	8 to 15

1. Material passing the No. 200-mesh sieve to be less than 0.60 the material passing the No. 40-mesh sieve as determined by test.
  2. Material passing the No. 40-mesh sieve to have a liquid limit of not more than 25 and a plasticity index of not more than 6; except that where the plasticity index is zero, the liquid limit to be not more than 30.
- B. Material Source: Obtain materials from any source subject to the Government's approval.

- C. Binder: If surfacing material does not contain a sufficient quantity of natural cementitious material to bond readily under the action of traffic, add to and incorporate in the surfacing material a binder consisting of rock screenings or other cementitious material obtained from sources subject to the Government's approval. After the binder has been added, provide mixture having a combined grading within the limits specified in Table 02316A. The binder may be incorporated in the material at the point where the material is produced or may be incorporated uniformly on the roadway in the amounts directed.

## **2.02 DRAIN ROCK**

- A. Washed and screened material varying in size from 3/4 inch to 1 inch with less than 2 percent of the material passing the No. 200-mesh sieve and at least 90 percent of the material being retained on the 1/2 inch square mesh sieve.

## **2.03 SAND**

- A. Comply with ASTM C 33 for fine aggregate "concrete sand".

# **PART 3 EXECUTION**

## **3.01 STRUCTURES**

- A. Place crushed-gravel in 6-inch lifts and compact in accordance with Section 02302.

## **3.02 ROAD AND WALKWAY PREPARATION**

- A. Prepare subgrade of roads and walkways to conform to prescribed grades and cross sections by means of blade graders or motor patrols and compact subgrade so that crushed-gravel base material, when placed, will not mix with the subgrade material.

## **3.03 PLACING ON ROADS AND WALKWAYS**

- A. Place crushed-gravel in two lifts to the width and thickness shown on the drawings.
- B. Spread the material on the prepared subgrade to such depth that, when thoroughly compacted, it will conform to the prescribed grades and dimensions. Avoid segregation of coarse and fine particles and remix any segregated materials by harrowing and blading. Start the depositing and spreading of the material at the point nearest the point of loading. Route the hauling equipment over the surfacing material already in place. Distribute the travel evenly over the entire width of the surfacing so as to distribute the compacting effect of the equipment to the best practicable advantage. Accompany the hauling and spreading by blading or dragging, or both, to provide a smooth surface.

- C. Add water if necessary to produce proper compaction. Method of adding water to the surfacing material is subject to the approval of the Government Inspector.

**END OF SECTION**

## SECTION 02371 – GEOTEXTILE

### PART 1 GENERAL

#### 1.01 MEASUREMENT AND PAYMENT

A. Geotextile

1. Measurement: Area of installed geotextile in square feet.
2. Payment: Unit price per square foot offered in the schedule.

#### 1.02 REFERENCES

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1. American Society for Testing and Materials (ASTM)
  - a. ASTM D 3786-06 -- Test Method for Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics: Diaphragm Bursting Strength Tester Method
  - b. ASTM D 4491-99a(2004) -- Test Method for Water Permeability of Geotextiles by Permittivity
  - c. ASTM D 4533-04 -- Test Method for Trapezoid Tearing Strength of Geotextiles
  - d. ASTM D 4632-91(2003) -- Test Method for Gross Breaking Load and Elongation of Geotextiles
  - e. ASTM D 4751-04 -- Test Method for Determining the Apparent Opening Size of a Geotextile
  - f. ASTM D 4833-00 -- Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
  - g. ASTM D 5199-01 -- Test Method for Measuring Nominal Thickness of Textile Materials
  - h. ASTM D 5261-92(2003) -- Test Method for Measuring Mass per Unit Area of Geotextile

#### 1.03 SUBMITTALS

A. RSN 02371A, Submit the following in accordance with the Section 01330 not less than 14 days prior to installation:

1. Certification: The manufacturer's certification that the geotextile being furnished meets the chemical, physical, and manufacturing requirements of

these specifications. If sewn seams are used, submit a certification stating that the polymeric threads to be used for sewing have chemical resistance properties equal to or exceeding those of the geotextile. Include in the certification data showing that sewn seams have a tensile strength of not less than 70 percent of that of the parent geotextile material.

2. Samples and test results: Submit samples of geotextile material as required by Article 2.2, below. Submit a copy of the manufacturer's certified test results covering the properties listed in Table 02371A. - Geotextile Physical Properties, with each sample.
3. Description: Description of the Contractor's method to protect exposed geotextile in those cases where covering is not possible within 14 days.

#### **1.04 DELIVERY, STORAGE, AND HANDLING**

- A. The Contractor shall be responsible for the transportation, handling, storage, and care of the geotextile prior to acceptance by the Government.
- B. Wrap geotextile rolls in relatively impermeable and opaque protective covers. Mark or tag geotextile rolls with the manufacturer's name, product identification, lot number, roll number, and roll dimensions. Additionally, mark any special handling requirements such as "This Side Up" or "This Side Against Soil to be Retained" on the geotextile itself.
- C. Protect the geotextile at all times from ultraviolet light exposure, temperatures greater than 140 EF (60 EC), precipitation or other inundation, mud, dirt, dust, puncture, cutting, or any other damaging or deleterious conditions. Elevate and cover material stored outside with a waterproof membrane.

## **PART 2 PRODUCTS**

### **2.01 MATERIALS**

- A. Geotextiles
  1. Provide geotextiles having the minimum average roll values listed in Table 02371A.
  2. Provide geotextile nonwoven products comprised of long-chain polymeric filaments composed of at least 85 percent, by weight, polyolefins of polyesters. Orientate these filaments into a stable network which retains its structure during handling, placement, and long-term service.
  3. Provide geotextiles capable of withstanding direct exposure to sunlight for 14 days with no measurable deterioration.

Table 02371A. - Geotextile physical properties

Property	Test method	Required value
Seam Strength (lbs), minimum	ASTM D 4632	180 lb.
Grab tensile (lbs), minimum	ASTM D 4632	200 lb.
Trapezoidal tear (lb), minimum	ASTM D 4533	50 lb.
Puncture strength (lb), minimum	ASTM D 4833	80 lb.
Burst strength (lb/in <sup>2</sup> ), minimum	ASTM D 3786	320 lb./sq.in.
Mass Area (oz/yd <sup>2</sup> )	ASTM D 3776	8.0 oz/yd <sup>2</sup>

## 2.02 TESTING

- A. Submit manufacturer's certification that the material meets proper ASTM requirements. Samples of the geotextile material will be tested by the Government to determine that it meets specifications requirements. Submit samples from the actual rolls of the geotextile to be furnished. Sample the number of rolls as required in Table 02371B. Take the samples, one yard in length, from the entire roll width. Mark the samples as to project description and number, product identification, lot number, roll number, machine direction, quantity represented, and solicitation/specifications number.
- B. The frequency of sampling may be increased in the event that test results show that the geotextile does not meet specifications requirements.

Table 02371B. - Geotextile sampling requirements.

Number of rolls to be furnished	Number of rolls to be sampled
1-2	1
3-8	2
9-27	3
28-64	4
65-125	5
126-216	6
217-343	7
344-512	8
513-729	9
730-1000	10

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Ensure that the surface to receive geotextile are relatively free of obstructions, depressions, debris, and soft or low-density pockets of material. Remove rounded projections greater than 3 inch. Remove all sharp projections that have the potential of puncturing the fabric.

#### **3.02 INSTALLATION**

- A. Place the geotextile in the manner and at the locations shown on the drawings.
- B. Lay the geotextile smoothly, free of tension, stress, folds, wrinkles, or creases so far as is practical and except where required in these specifications. Handle all geotextiles in such a manner as to ensure they are not damaged in any way. Install the geotextile in accordance with the following:
1. In the presence of wind, weight geotextiles with sandbags or the equivalent. Install sandbags during placement and retain until replaced with cover material.
  2. During placement, take care not to entrap in the geotextile stones, soil, excessive dust, or moisture that could damage the geotextile, or which could hamper subsequent seaming.

### **3.03 SEWING**

- A. Sew geotextiles continuously (spot sewing is not allowed) or overlap a minimum of 36 inches. Shingle overlaps on slopes with the upstream roll placed over the downstream roll. The geotextile may be pinned, stapled, or weighted with sand bags to hold it in position. Anchor terminal ends of the geotextile with key trenches or aprons at the crest and toe of the slopes. Sew using polymeric thread of contrasting color with chemical resistance properties equal to or exceeding those of the geotextile. Provide sewn seams with strength not less than 70 percent of the parent material strength.

### **3.04 BACKFILL**

- A. Cover the geotextile with riprap within 14 days after geotextile placement. If covering of the geotextile with the specified material is not possible within 14 days, protect the exposed and positioned geotextile with a suitable method of cover approved by the Government Inspector. Replace geotextile not protected in this manner.
- B. Place riprap so as not to damage the geotextile, with the drop height not to exceed 1 foot. Before placement of the riprap, demonstrate that the placement technique will prevent damage to the geotextile. Begin riprap placement at the toe and proceed up the slope. Do not drive or operate equipment directly on the geotextile or riprap at any time.

### **3.05 REPAIRS**

- A. At the time of placement, the geotextile will be rejected if it has defects, rips, holes, flaws, deterioration, or damage.
- B. Replace or repair any part of the geotextile damaged during installation or placement of riprap prior to proceeding with the work, in the following manner:
  - 1. Remove the riprap or backfill material from the damaged area of geotextile and remove any soil or other material which may have penetrated the torn geotextile.
  - 2. Repair damaged geotextile by placing an additional layer of the specified geotextile so as to cover the damaged area and either sew the patch to undamaged geotextile according to the sewing requirements stated in Article 3.03 or overlap the undamaged geotextile by at least 3 feet on all sides.

### **3.06 SAFETY**

- A. If white colored geotextile is used, take precautions against "snowblindness" of personnel.

**3.07 INSPECTION**

- A. After installation, conduct an examination of the entire geotextile surface to ensure that no potentially harmful foreign objects, such as needles, are present. Remove any foreign objects or replace the geotextile.

**END OF SECTION**

## **SECTION 02375 - RIPRAP**

### **PART 1 GENERAL**

#### **1.01 MEASUREMENT AND PAYMENT**

- A. Riprap
1. Measurement: Area of installed riprap in square feet.
  2. Payment: Unit price per square foot offered in the schedule.

#### **1.02 DESCRIPTION**

- A. This section includes materials and installation of riprap for the protection of channels, structures, and embankments.

#### **1.03 SUBMITTALS**

- A. RSN 02375A, Submit in accordance with Section 01330.
1. Submit letter identifying source of stone.
  2. Submit analysis from an independent laboratory showing specific gravity, absorption, and durability of stone.

### **PART 2 PRODUCTS**

#### **2.01 STONE FOR RIPRAP**

- A. Stone for riprap shall be quarry stone, well-graded. Stone shall be of such shape as to form a stable protection for the required section. Do not use flat or elongated shapes unless the thickness of the individual pieces is at least one-third the length. Material shall be clean and free from deleterious impurities including alkali, earth, clay, refuse, and adherent coatings.
- B. Hand-placed riprap: Stones of not less than 3 inches in thickness, with seventy-five percent of stones being at least one-third of a cubic foot in volume.

#### **2.02 QUALITY CONTROL OF STONE**

- A. Visual evaluation of the quarry, including examination of blast samples and diamond drill core samples and suitable tests and service records, may be used to determine the acceptability of the stone. Notify the Government in writing of the intended source of stone at least 60 days prior to use.

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- B. To determine the required quality, provide specific gravity, absorption, and durability tests of stone as follows:

Test	Test Method	Requirement
Apparent Specific Gravity	ASTM C127-07	2.50 min
Absorption	ASTM C127-07	4.2% max
Durability	ASTM D3744-03	52 min

- C. Based on the formula below, absorption may exceed 4.2% if the durability absorption ratio (DAR) is greater than 10. Durability may be less than 52 if DAR is greater than 24.

Coarse Durability Index	DAR =	% Absorption + 1
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### **PART 3 EXECUTION**

#### **3.01 INSTALLATION**

- A. Grade areas to a smooth surface. Place riprap directly on the prepared slope in a manner which will produce a well-graded mass with the minimum practical percentage of voids. Place the riprap to its full course thickness in one operation and in such a manner as to avoid displacing the underlying material. Place over a geotextile (see Section 02371).

**END OF SECTION**

**SECTION 02512 - POTABLE WATER SYSTEMS**

**PART 1 GENERAL**

**1.01 COST**

- A. The cost of potable water systems shall be included in the unit price for furnishing and laying HDPE pipe.

**1.02 SUMMARY**

- A. Includes But Not Limited To
1. Perform trenching and backfilling required for work of this Section.
  2. Furnish and install piping complete with shut-off valves, and connections.
- B. Related Sections
1. Section 02315 - Excavation, Backfill, and Compaction.

**PART 2 PRODUCTS**

**2.01 MATERIALS**

- A. Materials that carry water shall comply with ANSI/NSF Standard 61-2004.
- B. Pipe - Use high density polyethylene pipe, Section 02515.
- C. Connection Material - As recommended by manufacture of polyethylene pipe.

**PART 3 EXECUTION**

**3.01 INSTALLATION**

- A. Excavate and backfill as specified in Section 02315 with following additional requirements –
1. Runs shall be as close as possible to those shown on Drawings.
  2. Excavate to required depth.
  3. Grade to obtain fall required.
  4. Bottom of trenches shall be hard. Tamp as required.
  5. Remove debris from trench prior to laying of pipe.

6. Do not cut trenches near footings without consulting Government's Representative.
  7. Excavate trenches to the depths indicated.
  8. Backfill only after pipe lines have been tested, inspected, and approved by the Government's Representative.
- B. Install piping system so it may contract and expand freely.
- C. Completely eliminate cross connections, backflow, and water hammer.
- D. Install shut-off valve.

### **3.02 FIELD QUALITY CONTROL**

- A. Site Tests
1. Sterilization & Negative Bacteriological Test - Disinfect and test potable water system as per Section 02519.
  2. Pressure Test - Before covering pipes, test system in presence of Government's Representative at 100 psi hydrostatic pressure for two hours and show no leaks.

### **3.03 CLEANING**

- A. Remove excess earth from site or place as directed by Government's Representative.

**END OF SECTION**

## SECTION 02514 - VALVES

### PART 1 GENERAL

#### 1.01 PAYMENT

- A. 1-inch curb valves:
  - 1. Payment: Unit price per each valve offered in the schedule.
    - a. Includes the cost of preparing and submitting all required submittals, and all other labor, equipment, and materials required by this Section.
- B. 2-inch curb valves:
  - 1. Payment: Unit price per each valve offered in the schedule.
    - a. Includes the cost of preparing and submitting all required submittals, and all other labor, equipment, and materials required by this Section.
- C. 4-inch curb valves:
  - 1. Payment: Unit price per each valve offered in the schedule.
    - a. Includes the cost of preparing and submitting all required submittals, and all other labor, equipment, and materials required by this Section.
- D. 1-inch stop and waste valves:
  - 1. Payment: Unit price per each valve offered in the schedule.
    - a. Includes the cost of preparing and submitting all required submittals, and all other labor, equipment, and materials required by this Section.
- E. 2-inch stop and waste valves:
  - 1. Payment: Unit price per each valve offered in the schedule.
    - a. Includes the cost of preparing and submitting all required submittals, and all other labor, equipment, and materials required by this Section.

#### 1.02 WORK INCLUDED

- A. This item consists of furnishing and installing various valves.

#### 1.03 SUBMITTALS

- A. RSN 02514A, Prior to purchase, submit in accordance with Section 01330 manufacturer's data for valves.

**PART 2 PRODUCTS**

**2.01 DRAIN AND SHUT-OFF VALVES**

- A. Curb and stop and waste valves with ends made to connect to HDPE pipe.
- B. Provide access pipe for valve as indicated on the drawings.
- C. Provide valve extensions as indicated on the drawings.
- D. Provide marked valve covers.

**PART 3 EXECUTION**

**3.01 INSTALLATION**

- A. Install each valve as per manufacturer's recommendation.

**END OF SECTION**

**SECTION 02515 - HIGH DENSITY POLYETHYLENE PIPE**

**PART 1 GENERAL**

**1.01 MEASUREMENT AND PAYMENT**

A. HDPE pipe:

1. Measurement: Along the centerline of the pipe, installed in place and accepted. The length will include all connections, fittings, and branches.

B. 1" HDPE pipe

1. Payment: Unit price per linear foot offered in the schedule.
  - a. This price shall include all costs of furnishing, hauling, and installing the necessary pipe connections, and fittings; of flushing, testing, and disinfecting the water piping system; and of excavation, backfill, and compaction.
  - b. Includes cutting and patching surface features.

C. 2" HDPE pipe

1. Payment: Unit price per linear foot offered in the schedule.
  - a. This price shall include all costs of furnishing, hauling, and installing the necessary pipe connections, and fittings; of flushing, testing, and disinfecting the water piping system; and of excavation, backfill, and compaction.
  - b. Includes cutting and patching surface features.

D. 4" HDPE pipe

1. Payment: Unit price per linear foot offered in the schedule.
  - a. This price shall include all costs of furnishing, hauling, and installing the necessary pipe connections, and fittings; of flushing, testing, and disinfecting the water piping system; and of excavation, backfill, and compaction.
  - b. Includes cutting and patching surface features.

**1.02 SUMMARY**

A. Includes but is not limited to:

1. Water pipe.

**1.03 SUBMITTALS**

- A. RSN 02515A, Prior to purchase, submit in accordance with Section 01330 manufacturer's affidavit certifying that all material furnished complies with specifications, standard references, and contract requirements.
- B. RSN 02515B, Submit a test station detail for the tracer wire.

**1.04 RELATED WORK**

- A. Section 02315 - Excavating, Backfilling, and Compacting.

**1.05 REFERENCES**

- A. ASTM D1248-05 - Standard Specifications for Polyethylene Plastic Molding and Extrusion Materials.
- B. ASTM D1509-95(2007) - Test for Time to Failure of Plastic Pipe Under Constant Internal Pressure.
- C. ASTM D1599-99(2005) - Test for Short Term Rupture Strength of Plastic Pipe, Tubing, and Fittings.
- D. NSF#14 (National Sanitation Foundation) Standard for Thermoplastic Materials, Pipe, Fittings, Valves, Traps, and Joining Materials.
- E. State Plumbing Code, as applicable.
- F. AWWA C800 - Standard for Threads for Underground Service Line Fittings
- G. AWWA C901 - Polyethylene (PE) Pressure Pipe, Tubing and Fittings, 2-inch through 6-inch, for Water

**1.06 QUALITY ASSURANCE**

- A. Reject any pipe which does not conform to specification or is cracked, chipped, or otherwise unacceptable.

**1.07 PRODUCT DELIVERY, STORAGE AND HANDLING**

- A. Protect pipe and components against dirt and damage during shipment and storage. Store in strict conformance with manufacturer's recommendations.
- B. Handle and store pipe to prevent damage by crushing or piercing and in such a way as to prevent contamination. Keep roll ends plugged.
- C. Keep jointing material sealed when not in use.

## **PART 2 PRODUCTS**

### **2.01 HIGH DENSITY POLYETHYLENE (HDPE) PLASTIC PIPE**

- A. High Density Polyethylene plastic pipe shall be PE-3408 as defined in ASTM D3035-95 with a minimum cell classification of 345434C in accordance with ASTM D3350-04.
- B. Wall Thickness: SDR11
- C. Provide HDPE pipe larger than 2-inch diameter in lengths rather than in rolls.
- D. Provide NSF certified blue stripe pipe for potable water supply.

### **2.02 TRACER WIRE**

- A. Provide copper or aluminum tracer wire not less than 0.10 - inch in diameter over water lines.
- B. Provide a tracer wire test station for every 500 feet of polyethylene pipe.

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. Install pipe as per manufacturer's instructions and AWWA C901.
- B. Join pipe together with heat-fusion connections.
- C. Make transitions to galvanized steel pipe as per manufacturer's recommendation.
- D. Ripped steel inserts with stainless steel clamps shall not be used.
- E. Pressure test all water pipes before backfill.

### **3.02 LATERAL CONNECTIONS**

- A. Use only connections, equipment and practices recommended by the manufacturer.

**END OF SECTION**

## **SECTION 02519 - DISINFECT WATER SYSTEMS**

### **PART 1 GENERAL**

#### **1.01 PAYMENT**

- A. Disinfect water system
  - 1. Payment - Lump sum price offered in the schedule.
    - a. Includes all work required by this section.

#### **1.02 SUMMARY**

- A. This Section includes cleaning and disinfection of piping for potable water service.

### **PART 2 PRODUCTS**

#### **2.01 CHEMICALS**

- A. Chemicals shall conform to ANSI/NSF Standard 60-2004.

### **PART 3 EXECUTION**

#### **3.01 CLEANING**

- A. Clean and disinfect water distribution piping as follows:
  - 1. Purge new water distribution piping systems and parts of existing systems that have been altered, extended, or repaired prior to use.
  - 2. Use purging and disinfecting procedure prescribed by authority having jurisdiction or, if method is not prescribed by that authority, use procedure described in AWWA C651 or as described below:
    - a. Fill system or part of system with water/chlorine solution containing at least 50 parts per million of chlorine. Isolate (valve off) system or part thereof and allow to stand for 24 hours.
    - b. Drain system or part of system of previous solution and refill with water/chlorine solution containing at least 200 parts per million of chlorine; isolate and allow to stand for 3 hours.
    - c. Following allowed standing time, flush system with clean, potable water until chlorine does not remain in water coming from system.

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- d. Submit water samples in sterile bottles to authority having jurisdiction. Repeat procedure if biological examination made by authority shows evidence of contamination. Have the Government's Representative present to witness the taking of water samples.
  - e. Thoroughly flush all disinfecting solution from the supply lines.
  - f. Dispose of the spent disinfecting solution using land disposal methods, do not allow discharge to the reservoir.
- B. Prepare reports for purging and disinfecting activities.

**END OF SECTION**

## **SECTION 02530 - SANITARY SEWAGE SYSTEMS**

### **PART 1 GENERAL**

#### **1.01 PAYMENT**

- A. Sanitary sewage system
  - 1. Payment - Lump sum price offered in the schedule.
    - a. Includes all work required by this section and as shown on the drawings.

#### **1.02 SUMMARY**

- A. Includes But Not Limited To
  - 1. Perform excavating and backfilling required for work of this Section.
  - 2. Furnish and install sanitary sewage system as described in Contract Documents.
- B. Related Sections
  - 1. Section 02315 - Excavation, Backfill, and Compaction

#### **1.03 QUALITY ASSURANCE**

- A. Regulatory Requirements –
  - 1. Install cleanouts in accordance with local governing authority and State codes.

### **PART 2 PRODUCTS**

#### **2.01 PIPE**

- A. PVC Pipe & Fittings
  - 1. Gasket-joint gravity sewer pipe and fittings meeting the requirements of ASTM D3034-08 SDR-35.
  - 2. Joints shall be integral wall bell and elastomeric gasket.
- B. Corrugated Outside Smooth Inside HDPE Pipe
  - 1. Gasket-joint gravity sewer pipe and fittings meeting the requirements of ASTM D3034-008.
- C. Pipe to Manhole connection
  - 1. Resilient connector meeting the requirements of ASTM C923-08.

## **2.02 MANHOLES**

- A. Floors - Cast-in-place concrete.
- B. Manhole Sections - Conform to the requirements of ASTM C478-09.
- C. Manhole Steps - Use polypropylene coated steel steps spaced on 12-inch centers.
- D. Frames and Covers - Cast iron or ductile iron. The frames and covers shall have of combined weight of not less than 400 pounds and shall conform to ASTM A48/A48M-03 (2008), Class 20B. The word "Sewer" at least 2-inches high, shall be stamped or cast into all covers so as to be plainly visible. Ductile iron for frames and covers shall conform to ASTM A536-84(2009). Fit manhole frame with a dustpan.
- E. Grade Ring - Cast-in-place concrete.

## **2.03 PRECAST CONCRETE SEPTIC TANKS**

- A. Description: Precast, reinforced-concrete tank and covers, designed for structural loading according to ASTM C890-06 and made according to ASTM C913-08. Include 2 chambers with coal-tar epoxy coating, 15-mil minimum thickness covering internal areas above water line and extending at least 4 inches below that point. Include pipe and fittings.
- B. Resilient Connectors: ASTM C923-08, of size required for piping, fitted into tank inlet and outlet openings.
- C. Inlet and Outlet Access: 12-inch diameter, reinforced-concrete access lids with steel lift rings. Include access centered over inlet and outlet.

## **PART 3 EXECUTION**

### **3.01 LOCATE AND PROTECT**

- A. Locate and protect the existing sewer system. Any damage to the existing system shall be at the expense of the Contractor.
- B. Keep the existing sewer system in working condition until the new sewer is fully functional including the sewage pump station.

### **3.02 INSTALLATION**

- A. Excavate and backfill as specified in Section 02315 with following additional requirements
  - 1. Runs shall be as close as possible to those shown on Drawings.

2. Excavate to required depth and grade to obtain fall required.
  3. Bottom of trenches shall be hard. Tamp as required.
  4. Remove debris from trench prior to laying of pipe.
  5. Do not cut trenches near footings without consulting the Government's Inspector.
- B. PVC Pipe & Fittings and Corrugated Outside Smooth Inside HDPE Pipe.
1. Install in accordance with Manufacturer's recommendations and ASTM D2321-08.
  2. Stabilize unstable trench bottoms.
  3. Bed pipe true to line and grade with continuous support from a firm base.
    - a. Bedding material - 1-1/2 inch minus material from trench excavation or imported.
    - b. Bedding depth - 4 to 6 inches.
    - c. Material and compaction to meet ASTM standard noted above.
  4. Excavate bell holes into bedding material so pipe is uniformly supported along its entire length. Blocking to grade pipe is forbidden.
  5. Trench width at top of pipe –
    - a. Minimum - 18 inches or diameter of pipe plus one foot, whichever is greater.
    - b. Maximum - Outside diameter of pipe plus two feet.
  6. Piping and joints shall be clean and installed according to Manufacturer's recommendations.
    - a. Break down contaminated joints, clean seats and gaskets and reinstall.
  7. Do not use a backhoe or power equipment to assemble pipe.
  8. Initial backfill shall be 12 inches above top of pipe with material specified in referenced ASTM standard.
  9. Minimum cover over top of pipe –
    - a. 12 inches before wheel loading.
- C. Manholes
1. Place manhole sections on cast-in-place base.
  2. Channel inverts shall be smooth and accurately shaped.
    - a. Make changes in direction of flow using as large of radius as the manhole size will permit.

- b. Slope the floor of the manhole outside the channels towards the channels at a minimum slope of 1-inch per foot.
- 3. Seal joints between manhole sections using concrete grout and round rubber gaskets in accordance with ASTM C361-08ae1. Joint may also be sealed using "Ram-Nek" flexible gaskets, or an approved equal.
- D. Cleanouts - Provide cleanouts as required by the latest edition of the Uniform Plumbing Code. Not all cleanouts are shown on the drawings.

### **3.03 FIELD QUALITY CONTROL**

- A. Failure to install joints properly shall be cause for rejection and replacement of piping system.

### **3.04 CLEANING**

- A. Remove excess earth from site or place as directed by the Government Inspector.

**END OF SECTION**

**SECTION 02610 - CORRUGATED METAL PIPE CULVERTS**

**PART 1 GENERAL**

**1.01 MEASUREMENT AND PAYMENT**

- A. Corrugated metal pipe:
  - 1. Measurement: Along the centerline of the pipe at the invert of the pipe and fittings; from end to end of the pipe in place except for end sections; and with no allowance for coupling bands and lap at joints.
- B. 8” Corrugated metal pipe:
  - 1. Payment: Unit price per linear foot offered in the schedule.
    - a. This price shall include the cost of furnishing and installing coupling bands and grating, of performing all earthwork, and all other work required by this Section.
- C. 12” Corrugated metal pipe:
  - 1. Payment: Unit price per linear foot offered in the schedule.
    - a. This price shall include the cost of furnishing and installing coupling bands and grating, of performing all earthwork, and all other work required by this Section.
- D. 24” Corrugated metal pipe:
  - 1. Payment: Unit price per linear foot offered in the schedule.
    - a. This price shall include the cost of furnishing and installing coupling bands and grating, of performing all earthwork, and all other work required by this Section.
- E. 8-Inch Diameter Metal Flared End Sections:
  - 1. Measurement: Number of flared end sections installed.
  - 2. Payment: End section price offered in the schedule.
- F. 12-Inch Diameter Metal Flared End Sections:
  - 1. Measurement: Number of flared end sections installed.
  - 2. Payment: End section price offered in the schedule.
- G. 24-Inch Diameter Metal Flared End Sections:
  - 1. Measurement: Number of flared end sections installed.
  - 2. Payment: End section price offered in the schedule.

## **1.02 REFERENCES**

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.
  - 1. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
    - a. ASTM A760/A760M-09 -- Corrugated Steel Pipe, Metallic - Coated for Sewers and Drains
    - b. ASTM A849-00(2005) -- Post-Applied Coatings, Pavings, and Lining for Corrugated Steel Sewer and Drainage Pipe
    - c. ASTM B745/B745M-97(2005) -- Standard Specification for Corrugated Aluminum Pipe for Sewers and Drains

## **1.03 HAULING AND HANDLING**

- A. Haul and handle the pipe in such a manner as to avoid damage to the pipe surface. Do not use rope, cable, or chain slings for handling the pipe, but use nylon slings not less than 3 inches in width.
- B. Replace and remove from the site of the work any pipe unit that, in the opinion of the Government Inspector, is damaged beyond repair in hauling, handling, or otherwise.

## **PART 2 PRODUCTS**

### **2.01 MATERIALS**

- A. Corrugated Metal Pipe - Provide galvanized steel 16-gauge pipe in accordance with ASTM A 760 Type I.
- B. Flared end sections
  - 1. Prefabricated sections of standard manufacture.
  - 2. Same metal as the pipe to which they are attached.

## **PART 3 EXECUTION**

### **3.01 CORRUGATED METAL PIPE**

- A. Furnish and lay corrugated metal pipe for culverts where shown on the drawings. Furnish and lay the pipe complete with coupling bands, flared end sections, and joint materials.

### **3.02 EXCAVATION**

- A. Excavate the trench in which the pipe is to be laid to the established line and grade to provide a firm and uniform bearing for the entire length of the pipe. Where directed to remove unsuitable foundation material, excavate the trench to a depth of 6 inches below the bottom of the pipe, and backfill with material approved by the Government Inspector. Compact the material to provide a firm and uniform bearing for the pipe.

### **3.03 LAYING**

- A. Lay corrugated metal pipe to the lines and grades shown on the drawings. Lay the pipe with outside laps of circumferential joints pointing upstream and with longitudinal joints at the sides. Draw all fastenings up tight. Lay the pipe in such manner that the departure from and return to established alignment and grade will not exceed 1/8 inch per foot of pipe but with no more than 1-inch total departure. Use coupling bands where necessary to join sections of pipe. Install the coupling bands properly, in a manner to ensure tight joints, with the joints between sections approximately at the center of the couplings. Install flared end sections in accordance with the manufacturer's instructions.

### **3.04 BACKFILL**

- A. As each unit of pipe is laid, tamp sufficient backfill material about the pipe to hold it rigidly in place until the joints are completed. After the joints have been completed, place and compact backfill in accordance with Section 02302. Insofar as practicable, obtain backfill material from material obtained in required excavations for pipe or from adjacent excavation.
- B. Place backfill to the lines and grades shown on the drawings. As each pipe unit is laid, tamp sufficient backfill material about the pipe to hold it rigidly in place until the joints are completed. After the joints are completed, place backfill carefully and spread backfill in uniform layers. Backfill with rocks larger than 3" will not be allowed. Place backfill to about the same elevation on both sides of the pipe to prevent unequal loading and displacement of the pipe. Do not exceed a difference in elevation of the backfill on both sides of the pipe 6 inches at any time.
- C. Place, moisten, and compact all material in backfill to be compacted as per Section 02302. Equipment travel over the pipe will not be permitted until backfill has been placed and compacted to the depth recommended by the pipe manufacturer, but not less than 1 foot above the top of the pipe. Prevent damage from construction equipment loads by providing adequate earth cover over pipe.

**END OF SECTION**

**SECTION 02742 - BITUMINOUS SURFACING**

**PART 1 GENERAL**

**1.01 MEASUREMENT AND PAYMENT**

- A. 3-inch bituminous surfacing:
  - 1. Measurement: Based on field measurements per square yard.
  - 2. Payment: Unit price per square yard offered in the schedule.
  
- B. Leveling courses:
  - 1. Measurement: Based on field measurements per square yard.
  - 2. Payment: Unit price per square yard offered in the schedule.
  
- C. 2-inch bituminous overlay:
  - 1. Measurement: Based on field measurements per square yard.
  - 2. Payment: Unit price per square yard offered in the schedule.
    - a. Includes the cost of furnishing and applying the tack coat.
  
- D. Paving fabric:
  - 1. Measurement: Based on field measurements per square yard.
  - 2. Payment: Unit price per square yard offered in the schedule.
  
- E. Wheel stops:
  - 1. Measurement: Each wheel stop furnished and installed.
  - 2. Payment: Unit price per wheel stop offered in the schedule
    - a. Includes the cost of all labor, equipment, and materials required by this Section.

**1.02 SUMMARY**

- A. Section includes:
  - 1. 3-inch bituminous surfacing:
  - 2. Leveling courses:
  - 3. 2-inch bituminous overlay:
    - a. Furnishing and applying the tack coat.

4. Paving fabric:
5. Wheel stops:

B. Prepared subbase is specified in Section 02316.

### **1.03 REFERENCES**

A. Utah Department of Transportation (UDOT)

1. UDOT Specifications Standard Specifications and Standards
  - a. Maintain a copy of UDOT Specifications at jobsite during paving work.

### **1.04 SUBMITTALS**

A. Submit the following in accordance with Section 01330 - Submittals.

B. RSN 02742A, Mix Design Data.

C. RSN 02742B, Certifications:

1. Manufacturer's certificate of compliance for aggregate and bituminous materials in accordance with UDOT Specifications, Section 02741.

### **1.05 ENVIRONMENTAL REQUIREMENTS**

A. Comply with UDOT Specifications weather limitations for asphaltic concrete placement.

## **PART 2 PRODUCTS**

### **2.01 AGGREGATE BASE**

A. UDOT Specifications, Sieve Size 1/2 inch.

### **2.02 ASPHALTIC CONCRETE**

A. UDOT Specifications, Section 02745 with Grade AC-10 asphalt cement.

### **2.03 TACK COAT**

A. Emulsified asphalt as per UDOT Specifications, Section 02745.

### **2.04 PAVING FABRIC**

A. Amopave 4599 as manufactured by Amoco Fabrics and Fibers Company or approved equal.

- B. Nonwoven material consisting of at least 85 percent by weight polyolefins, polyesters or polyamides.
- C. Resistant to chemical attack, rot and mildew.
- D. No tears or defects
- E. Heat bonded only on one side to reduce bleed-through of tack coat during installation.

## **2.05 WHEEL STOPS**

- A. 2500 psi compressive strength precast, air-entrained concrete, approximately 6 inches high, 9 inches wide, and 96 inches long. Provide chamfered corners and drainage slots on underside.

## **PART 3 EXECUTION**

### **3.01 SURFACE PREPARATION**

- A. Remove loose material from compacted subbase surface immediately before paving.
- B. Locate, reference, and protect all utility covers, monuments, curb and gutter, and other components affected by the paving operations.
- C. Repairs: Repair surfaces to be overlaid.
- D. Complete spot leveling 48 hours before placing pavement courses.
  - 1. Place, spread, and compact leveling mix on portions of the existing surface.
  - 2. Fill and compact any localized potholes more than 1 inch deep.
- E. Cutting: Cut edges of road by sawing or other approved methods that leave a straight uniform edge.
- F. Cleaning: Prior to tack coat, clean surfaces to receive overlay with power brooms or hand sweeping so that the surface is free from all foreign substances including dirt, water and oil.
- G. Tack Coat: Spread by means of a calibrated distributor spray bar. Apply at rate of 0.20 to 0.50 gallons per sq. yd. Do not allow traffic on the tack coat.
- H. Apply paving fabric to existing asphalt surfaces to be overlaid in areas that will have drive through traffic but not in parking.
- I. Exercise care in applying bituminous materials to avoid smearing of adjoining concrete surfaces. Remove and clean damaged surfaces.

### **3.02 PLACING, COMPACTING, AND FINISHING**

- A. Base Course: Place, compact, and finish aggregate base course in accordance with Section 02316.
- B. Asphaltic Concrete Paving: Place, finish, and compact asphaltic concrete in accordance with UDOT Specifications, Section 02741.

### **3.03 PLACING PAVING FABRIC**

- A. Place onto the tack coat using mechanical or manual laydown equipment capable of providing a smooth installation with a minimum amount of wrinkling or folding.
- B. Place prior to tack coat cooling and losing tackiness.
- C. Place in strips not less than 10 feet wide.
- D. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips.
- E. Slit and lay flat wrinkles or folds in excess of one inch. Shingle-lap transverse joints and slit folds or wrinkles in the direction of the paving operation.
- F. Place bituminous overlay the same day the fabric is placed.

### **3.04 MAINTENANCE**

- A. Maintain paved areas until acceptance of work by Government.

### **3.05 WHEEL STOPS**

- A. General: Secure wheel stops to hot-mixed asphalt surface with not less than two 3/4 inch diameter steel dowels. Length of dowel shall be 24". Drive dowel down till flush with top of wheel stop.

**END OF SECTION**

## SECTION 02763 - PAINTED TRAFFIC LINES AND MARKINGS

### PART 1 GENERAL

#### 1.01 MEASUREMENT AND PAYMENT

- A. Paint striping:
1. Measurement: Based on the number of linear feet of striping painted.
    - a. The universal symbol of accessibility will be measured as a 50 foot long stripe.
  2. Payment: Unit price per linear foot offered in the schedule.
    - a. Includes measurement or setup costs associated with ensuring that striping is placed as specified.

#### 1.02 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO)
1. AASHTO M 248-91(2000) Ready-Mixed White and Yellow Traffic Paints
- B. Federal Highway Administration (FHWA)
1. FHWA MUTCD Manual on Uniform Traffic Control Devices for Streets and Highways, 2003 Edition with Revision No. 1, July 21, 2004 (<http://mutcd.fhwa.dot.gov>)

#### 1.03 SUBMITTALS

- A. Submit the following in accordance with Section 01330 - Submittals.
- B. RSN 02763A, Certification:
1. Manufacturer's certification that paint meets specified requirements.
- C. RSN 02763B, Instructions:
1. Paint manufacturer's environmental, surface preparation, and application instructions.

#### 1.04 ENVIRONMENTAL REQUIREMENTS

- A. Apply when surface is dry and weather conditions are favorable.
- B. Do not apply when air or surface temperature is below 40 degrees F.
- C. Comply with paint manufacturer's environmental restrictions.

**PART 2 PRODUCTS**

**2.01 TRAFFIC PAINT**

- A. AASHTO M 248, Type S, N, or F.
- B. Colors: White and yellow.

**PART 3 EXECUTION**

**3.01 PREPARATION**

- A. Clean and dry surface in accordance with paint manufacturer's instructions.

**3.02 APPLICATION**

- A. Apply standard lines and markings in accordance with FHWA MUTCD.
- B. Apply paint at coverage rate of 100 square feet per gallon, maximum, in accordance with manufacturer's instructions.
- C. Apply with clean edges free of overspray and line width within plus or minus 1/4 inch of designated width.

**3.03 PROTECTION**

- A. Protect markings from traffic and damage until dry.

**END OF SECTION**

## **SECTION 02811 - UNDERGROUND IRRIGATION SYSTEMS**

### **PART 1 GENERAL**

#### **1.01 PAYMENT**

- A. Underground irrigation system
  - 1. Payment - Lump sum price offered in the schedule.
    - a. Includes all work required by this section.

#### **1.02 SUMMARY**

- A. Includes But Not Limited To
  - 1. Design, furnish and install irrigation system as described in Contract Documents complete with accessories necessary for proper function.

#### **1.03 SYSTEM DESCRIPTION**

- A. Design Requirements
  - 1. Site investigation
    - a. Determine capacity of existing pump and points of connection to the previously abandoned irrigation system.
    - b. Determine electrical equipment needed to activate the existing pump with the proposed irrigation controller.
  - 2. Layout of Irrigation Heads –
    - a. Locate heads to achieve full, even coverage without spraying onto buildings, sidewalks, fences, etc.
    - b. During layout, consult with the Government Inspector to verify proper placement and make recommendations, where revisions are advisable.
  - 3. Arrange valve stations to operate in an easy-to-view progressive sequence around site. Record sequence on controller lid.
    - a. Provide a minimum of four extra stations on the clock for future use.

#### **1.04 SUBMITTALS**

- A. See Section 01330.
- B. RSN 02811A, Product Data

1. Manufacturer's cut sheets for each element of system
  2. Part's lists for operating elements of system
  3. Manufacturer's printed literature on operation and maintenance of operating elements of system.
- C. RSN 02811B, Drawings - Submit layout drawings include pipe sizes, pipe types, head sizes, head types, distances between heads, and spray patterns.
1. Drawings will be reviewed for system efficiency.
- D. RSN 02811C, Closeout Submittals
1. See Section 01781.
  2. Record Drawings –
    - a. As installation proceeds, prepare accurate record drawing to be submitted prior to final inspection, including –
      - 1) Detail and dimension changes made during construction.
      - 2) Significant details and dimensions not shown in original Contract Documents.
      - 3) Field dimensioned locations of valve boxes, manual drains, automatic drain valves, quick-coupler valves, control wire runs not in mainline ditch, and both ends of sleeves.
      - 4) Take dimensions from permanent constructed surfaces or edges located at or above finish grade.
      - 5) Take and record dimensions at time of installation.
    - b. Reduce copy of record drawing to half-size, color key circuits, and laminate both sides with 5 mil thick or heavier plastic. Mount on 1/4 inch plywood board. Drill two 1/2 inch holes at top of board and hang on hooks in the restroom pipe chase.

## **1.05 QUALITY ASSURANCE**

- A. Regulatory Requirements
1. Work and materials shall be in accordance with latest rules and regulations, and other applicable state or local laws. Nothing in Contract Documents is to be construed to permit work not conforming to these codes.

## **1.06 SEQUENCING**

- A. Install sleeves prior to installation of cast-in-place concrete site elements and paving.

### **1.07 WARRANTY**

- A. Standard one year guarantee shall include –
  - 1. Filling and repairing depressions and replacing plantings due to settlement of irrigation trenches for one year following acceptance of Project.
  - 2. System can be adequately drained to protect from freeze damage in areas where freezing occurs.
  - 3. System has been adjusted to supply proper coverage of areas to receive water.

### **1.08 GOVERNMENT'S INSTRUCTIONS**

- A. After system is installed and approved, instruct Maintenance Personnel in complete operation and maintenance.

### **1.09 MAINTENANCE**

- A. Extra Materials
  - 1. Furnish following items at Substantial Completion Meeting –
    - a. One heavy-duty key for stop & waste or main shut-off valve.
    - b. Two valve box cover keys.
- B. Maintenance Service
  - 1. Drain entire system at end of first watering season following installation.
  - 2. Train Maintenance Personnel by having them assist in winterizing procedure.

## **PART 2 PRODUCTS**

### **2.01 MATERIALS**

- A. Rock-Free Soil
  - 1. Backfill soil around PVC pipe.
  - 2. Soil having rocks no larger than 1/4 inch in any dimension.
- B. Pea Gravel
  - 1. For use around drains.
  - 2. 1/2 inch maximum round, water worn, washed rock.
- C. Sand - Fine granular material naturally produced by rock disintegration and free from organic material, mica, loam, clay, and other deleterious substances.

- D. Native Material - Soil native to project site free of wood and other deleterious materials and rocks over 1-1/2 inches.
- E. Topsoil - Existing in-place topsoil material. Remove rocks, roots, sticks, clods, debris, and other foreign matter over 1-1/2 inches longest dimension encountered during trenching.

## 2.02 COMPONENTS

### A. Pipe, Pipe Fittings, & Connections

- 1. Pipe shall be continuously and permanently marked with Manufacturer's name, size, schedule, type, and working pressure.
- 2. Pipe –
  - a. Pressure Lines - Schedule 40 PVC.
  - b. Lateral Lines - Schedule 40 PVC.
- 3. Fittings –
  - a. Same material as pipe.
- 4. Sleeves –
  - a. Under Parking Area & Driveway Paving - Schedule 40 PVC Pipe.
  - b. All Other - Class 200 PVC Pipe.
  - c. Sleeve diameter shall be two sizes larger than pipe installed in sleeve.
  - d. Extend sleeves 6 inches minimum beyond walk or pavement edge.

### B. Sprinkler Heads

- 1. Conform to requirements shown on submitted Drawings as to type, size, radius of throw, pressure, and discharge. Equals as approved.
- 2. Each type of head shall be product of single Manufacturer.

### C. Sprinkler Risers

- 1. Rotor pop-up sprinkler or quick coupling valves shall have an adjustable riser assembly (three ell swing joint assembly) unless detailed otherwise on Drawings. These swing joint fittings shall be of schedule 40 PVC plastic and nipples schedule 80 (gray) PVC unless otherwise designated on Drawings.
  - a. Horizontal nipple parallel to side of lateral line shall be 8 inches long minimum. All other nipples on swing joint riser shall be of length required for proper installation of sprinkler heads.
- 2. Stationary spray pop-up sprinkler heads, shrub spray heads, bubbler heads, and stationary spray sprinkler heads shall have risers made up one of the following ways –

- a. 4 inch flex-riser #FR-100 connected directly to lateral tee with an appropriately sized schedule 40 PVC threaded ell and schedule 80 (gray) nipple.
- b. Three schedule 40 street ells connected to lateral tee to form an adjustable riser or pop-up riser as detailed.
- c. Risers for sprinkler heads shall be 14 inch long minimum and 24 inch maximum.
  - 1) Rainbird swing pipe with spiral barb fittings and street ell.
  - 2) Toro "Funny Pipe".
- d. Equal as approved by the Government.

D. Automatic Sprinkler Control Wiring & Controller

1. Control wire shall be UF-UL listed, color coded copper conductor direct burial size 14.
2. Waterproof Wire Connectors –
  - a. Quality Standard –
    - 1) DBY by 3M
    - 2) King "One Step"
3. Automatic Controller - Wall mounted 12 station controller.

E. Valves

1. Manual Drain Valves –
  - a. Brass ball valve with "T" handle on main lines and in valve boxes on lateral lines.
  - b. Quality Standard - NIBCO Brass Ball Gas Cock with teflon seat.
2. Automatic Drain Valves - Plastic "King Drain". Use only on lateral lines.
3. Electric Valves - Make and model submitted and approved.
4. Gate Valves –
  - a. Bronze construction, angle type, 150 pound class, threaded connections, with cross-type operating handle designed to receive operating key.
  - b. Quality Standard - NIBCO T-113 non-rising stem gate valve.
5. Pressure Reducing Valve - Make and model shown on submitted Drawings.
6. Quick Coupling Valve –
  - a. Brass one piece valve with locking top.

- b. Provide one key with hose swivel.

F. Valve Accessories

- 1. Valve Boxes –
  - a. Rectangular heavy duty
  - b. Lock top or snap top lids.
  - c. Large enough for easy removal or maintenance of valves.
  - d. Use extensions as required.
  - e. Approved Manufacturers –
    - 1) Ametek
    - 2) Brooks

G. Filter - 2-inch in/out diameter openings, 110 gpm flow, 100 psi minimum pressure, interchangeable filter element.

- 1. Furnish 2 extra filter elements.

H. Other Components

- 1. Recommended by Manufacturer and approved by submittal.
- 2. Provide components necessary to complete and make system operational.

**PART 3 EXECUTION**

**3.01 PREPARATION**

A. Protection

- 1. During construction and storage, protect materials from damage and prolonged exposure to sunlight.
- 2. Work of other Sections damaged during course of work of this Section shall be replaced or repaired by original installer at this Section's expense.
- 3. Do not cut existing tree roots measuring over 2 inches in diameter in order to install sprinkler lines.

**3.02 INSTALLATION**

A. Trenching & Backfilling

- 1. Pulling of pipe is not permitted.
- 2. Over-excavate trenches 2 inches and bring back to indicated depth by filling with fine, rock-free soil or sand.

3. Cover pipe both top and sides with 2 inches of rock-free soil material specified above. In no case shall there be less than 2 inches of rock-free soil or sand surrounding pipe.
  4. Do not cover pressure main, sprinkler pipe, or fittings until the Government Inspector has inspected and approved system.
  5. Perform balance of fill and compaction.
- B. Sleeving
1. Sleeve water lines and control wires under walks and paving.
  2. Use one water pipe maximum per sleeve. Sleeve control wiring in separate sleeve.
  3. Position sleeves with respect to buildings and other obstructions so pipe can be easily removed.
- C. Grades & Draining
1. Grade piping so system can be completely drained.
    - a. Slope pipe to drain to control valve box where possible.
    - b. Where this is not possible, slope pipe to a minimum number of low points. At these low points, install –
      - 1) 3/4 inch brass ball valve for manual drain or, if low point is in middle of lawn area or other area where manual drain would be hard to find, then install an automatic King drain.
      - 2) Install 2 inch Class 200 PVC pipe over top of manual drain and cut at finish grade.
      - 3) Provide rubber valve cap marker.
      - 4) Provide one cu ft gravel sump at outlet of each manual or automatic drain.
      - 5) Do not use automatic drain valves on pressure mains or in valve boxes.
    - c. Slope pipes under parking areas or driveways to drain outside these areas.
    - d. Provide and install quick-coupling valve or valves in location for easy blowout of entire system.
- D. Installation of Pipe
1. Install pipe in manner to provide for expansion and contraction as recommended by Manufacturer.

2. Unless otherwise indicated on Drawings, install mainlines and lateral lines connecting rotor pop-up sprinklers with minimum cover of 18 inches based on finished grade. Install remaining lateral lines with minimum of 12 inches of cover based on finish grade.
3. Install pipe and wires under driveways or parking areas in specified sleeves 18 inches minimum below finish grade or as shown on Drawings.
4. Locate no sprinkler head closer than 12 inches from building foundations. Heads immediately adjacent to mowstrips, walks, or curbs shall be one inch below top of mowstrip, walk, or curb and have 1/4 inch minimum clearance between head and mowstrip, walk, or curb.
5. Cut plastic pipe square. Remove burrs at cut ends prior to installation so unobstructed flow will result.
6. Make solvent weld joints as follows –
  - a. Do not make solvent weld joints if ambient temperature is below 40 deg F.
  - b. Clean mating pipe and fitting with clean, dry cloth and apply one coat of P-70 primer to each.
  - c. Apply uniform coat of 711 solvent to outside of pipe.
  - d. Apply solvent to fitting in a similar manner.
  - e. Re-apply light coat of solvent to pipe and quickly insert into fitting.
  - f. Give pipe or fitting a quarter turn to insure even distribution of solvent and make sure pipe is inserted to full depth of fitting socket.
  - g. Hold in position for 15 seconds minimum or long enough to secure joint.
  - h. Wipe off solvent appearing at outer shoulder of fitting.
  - i. Do not use excessive amount of solvent thereby causing obstruction to form on inside of pipe.
  - j. Allow joints to set at least 24 hours before applying pressure to PVC pipe.
7. Tape threaded connections with teflon tape.
8. If pipe is larger than 2 inches, install concrete thrust blocks wherever change of direction occurs on PVC main pressure lines.

E. Control Valves & Controller

1. Install controller, control wires, and valves in accordance with Manufacturer's recommendations and according to electrical code.

2. Install valves, except King Automatic Drains, in plastic boxes with reinforced heavy duty plastic covers. Locate valve box tops at finish grade. Do not install more than two valves in single box.
  3. Set valve boxes over valve so all parts of valve can be reached for service. Set cover of valve box even with finish grade. Place 6 inches minimum of gravel below valve for drainage. Maintain 4 inches minimum between bottom of valve and top of gravel. Valve box shall be reasonably free from dirt and debris.
  4. Install 3/4 inch brass ball drain valve in valve box on downstream side of automatic valves if lateral line slopes toward valve box.
  5. Wiring –
    - a. Tape control wire to side of main line every 10 feet. Where control wire leaves main or lateral line, enclose it in Class 200 PVC conduit.
    - b. Use waterproof wire connectors at splices and locate all splices within valve boxes.
    - c. Use white or gray color for common wire and other colors for all other wire. Each common wire may serve only one controller.
    - d. Run one extra control wire from panel continuously from valve to valve throughout system similar to common wire for use if a wire fails. Wire shall be different color than all other wires, shall not be green, and shall be marked in control box as an extra wire.
- F. Sprinkler Heads
1. Prior to installation of sprinkler heads, open control valves and use full head of water to flush out system.
  2. Set sprinkler heads and quick-coupling valves perpendicular to finish grade.
  3. Set lawn sprinkler heads adjacent to existing walks, curbs, and other paved areas to grade.

### **3.03 FIELD QUALITY CONTROL**

- A. Site Tests
1. Test pressure lines at line pressure and make certain there are no leaks before backfilling. Notify the Government Inspector two working days minimum prior to testing.

### **3.04 ADJUSTING**

- A. Adjust heads to proper grade when turf is sufficiently established to allow walking on it without appreciable harm. Such lowering or raising of heads shall be part of original contract with no additional cost to Government.

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- B. Adjust sprinkler heads for proper distribution and trim to stop overspray.
- C. Adjust watering time of valves to provide proper amounts of water to all plants.

**END OF SECTION**

## SECTION 02822 - CHAIN LINK FENCE

### PART 1 GENERAL

#### 1.01 MEASUREMENT AND PAYMENT

- A. 6 Foot high chain link fence
  - 1. Measurement: Linear foot of fence provided.
    - a. Includes the cost of concrete to set the post.
  - 2. Payment: Linear foot price offered in the schedule.

#### 1.02 REFERENCES

- A. ASTM International (ASTM)
  - 1. ASTM A392-07 Zinc-Coated Steel Chain-Link Fence Fabric
  - 2. ASTM A824-01(2007) Metallic-Coated Steel Marcellled Tension Wire for Use With Chain Link Fence
  - 3. ASTM C 33-03 Concrete Aggregates
  - 4. ASTM F 567-07 Installation of Chain-Link Fence
  - 5. ASTM F626-08 Fence Fittings
- B. Chain Link Fence Manufacturers Institute (CLFMI)
  - 1. CLFMI 2445-97 Product Manual ([www.chainlinkinfo.org/pdfs/manual](http://www.chainlinkinfo.org/pdfs/manual))

#### 1.03 SUBMITTALS

- A. Submit the following in accordance with Section 01330 - Submittals.
- B. RSN 02822A, Certifications and Samples:
  - 1. Manufacturers' certification that fence materials, fittings, and accessories meet specified requirements.
  - 2. Include manufacturers' names and product designations and specified product standards in the certification.
  - 3. Samples and color selection for privacy slats.

### PART 2 PRODUCTS

#### 2.01 CHAIN LINK FABRIC

- A. Zinc-Coated Steel Fabric: ASTM A 392

1. Size of mesh: 2-inch.
2. Coat before weaving.
3. Diameter of coated wire: 0.148 inch (no. 9-gauge)
4. Coating weight: Class 1

## **2.02 INTERMEDIATE POSTS**

- A. CLFMI 2445, Type I round pipe.

## **2.03 TERMINAL POSTS, BRACES, AND RAILS**

- A. CLFMI 2445, Type I round pipe.

## **2.04 TENSION WIRE**

- A. Zinc-coated steel marcelled tension wire: ASTM A 824
  1. Coating: Type II, Class 4.

## **2.05 FITTINGS**

- A. Post and Line Caps, Rail and Brace Ends, Braces, and Bands: ASTM F 626, zinc-coated steel or zinc-coated cast iron.
- B. Toprail Sleeves, Tension Bars, and Truss Rods: ASTM F 626, zinc-coated steel.

## **2.06 PRIVACY SLATS**

- A. Vinyl or HDPE

## **2.07 CONCRETE**

- A. In accordance with Section 03300 - Cast-In-Place Concrete.
- B. Fine and coarse aggregates: ASTM C 33.
  1. Coarse aggregate size, maximum: 3/4-inch.
- C. Compressive strength at 28 days, minimum: 2,500 lb/in<sup>2</sup>.

# **PART 3 EXECUTION**

## **3.01 PREPARATION**

- A. Clear and remove trees, brush, ground surface irregularities, and other obstacles which interfere with proper erection of fence in advance of starting fencing work.

**3.02 INSTALLATION**

- A. Erect chain-link fence and gates at locations shown on drawings.
- B. Install chain link fences of heights shown on drawings.
- C. Install chain link fence in accordance with ASTM F 567 and CLFMI 2445, except as shown on the drawing or specified.
- D. Terminal posts:
  - 1. At vertical and horizontal changes in alignment equal to or greater than 30 degrees.

**3.03 REPAIR**

- A. Repair damage to zinc coatings with commercial zinc-rich priming paint.

**END OF SECTION**

## **SECTION 02846 - SIGNAGE**

### **PART 1 GENERAL**

#### **1.01 MEASUREMENT AND PAYMENT**

- A. Accessible Parking Signs
  - 1. Measurement: Each sign provided.
    - a. Includes the cost of concrete to set the post.
  - 2. Payment: Price per each sign offered in the schedule.
- B. Road Signs
  - 1. Measurement: Each sign provided.
  - 2. Payment: Price per each sign offered in the schedule.

#### **1.02 SUMMARY**

- A. Includes But Not Limited To
  - 1. Furnishing and installing of exterior site signage as described in Contract Documents

#### **1.03 SUBMITTALS**

- A. Submit the following in accordance with Section 01330 - Submittals.
- B. RSN 02846A, Installation drawings for signs:
  - 1. Show post, post material, attachment to post.
  - 2. Show burial depth.

### **PART 2 PRODUCTS**

#### **2.01 COMPONENTS**

- A. Accessible Parking Signs
  - 1. Sign shall contain universal symbol of accessibility.
  - 2. Sign shall have rounded corners.
  - 3. Sign shall meet current ANSI A117.1 accessibility codes and ABAAS 703.7.
- B. Road Signs

1. Signs shall comply with the Manual on Uniform Traffic Control Devices as published by the U.S. Department of Transportation.

**PART 3 EXECUTION**

**3.01 INSTALLATION**

- A. Install signs square and plumb.
- B. Install road signs to minimum depth of 3 feet

**END OF SECTION**

## **SECTION 02871 - GRILLS AND FIRERINGS**

### **PART 1 GENERAL**

#### **1.01 MEASUREMENT AND PAYMENT**

- A. Grills
  - 1. Measurement: Each grill provided.
    - a. Includes the cost of concrete to set the post.
  - 2. Payment: Unit price per each grill offered in the schedule.
- B. Firerings Type 1
  - 1. Measurement: Each firering provided.
  - 2. Payment: Unit price per each firering offered in the schedule.
- C. Firerings Type 2
  - 1. Measurement: Each firering provided.
  - 2. Payment: Unit price per each firering offered in the schedule.

#### **1.02 SUBMITTALS**

- A. Prior to purchase, submit in accordance with Section 01330 the following:
  - 1. RSN 02871A, Manufacturer's data.

### **PART 2 PRODUCTS**

#### **2.01 GRILLS**

- A. Grill - Model N-20 B2 pedestal grill as manufactured by R.J. Thomas manufacturing company, Cherokee, Iowa, (phone (714) 225-5115) or approved equal.
- B. Concrete as per Division 3.

#### **2.02 FIRERINGS**

- A. Firering Type 1 - Model FSW-30/18/PA as manufactured by R.J. Thomas manufacturing company, Cherokee, Iowa, (phone (714) 225-5115) or approved equal.
- B. Firering Type 2 - Model FSWDW-30/18/TB as manufactured by R.J. Thomas manufacturing company, Cherokee, Iowa, (phone (714) 225-5115) or approved equal for Sites 18 and 25.

**PART 3 EXECUTION**

**3.01 INSTALLATION**

- A. Set steel legs in concrete footings.
- B. Install plumb and as per manufacturer's recommendations.
- C. Fill with drain rock half way up.

**END OF SECTION**

**SECTION 02873 - HYDRANT ASSEMBLIES**

**PART 1 GENERAL**

**1.01 MEASUREMENT AND PAYMENT**

- A. Day use accessible hydrants
  - 1. Measurement: Each hydrant provided.
    - a. Includes the cost of concrete.
    - b. Includes the cost of geotextile, concrete box, drain rock, and other items required by this Section and the drawings to make a complete hydrant assembly.
  - 2. Payment: Unit price per each hydrant offered in the schedule.
- B. Camp accessible hydrants
  - 1. Measurement: Each hydrant provided.
    - a. Concrete will be paid for under Section 03300.
    - b. Includes items required by this Section and the drawings to make a complete hydrant assembly.
  - 2. Payment: Unit price per each hydrant offered in the schedule.
- C. Day use hydrants
  - 1. Measurement: Each hydrant provided.
    - a. Includes the cost of geotextile, concrete box, drain rock, and other items required by this Section and the drawings to make a complete hydrant assembly.
  - 2. Payment: Unit price per each hydrant offered in the schedule.
- D. Camp hydrants
  - 1. Measurement: Each hydrant provided.
    - a. Drain rock will be paid for under Section 02316.
    - b. Includes items required by this Section and the drawings to make a complete hydrant assembly.
  - 2. Payment: Unit price per each hydrant offered in the schedule.

## **1.02 WORK INCLUDED**

- A. This item consists of a support post, grate, hydrant and galvanized pipe and fittings to be part of the hydrant assembly.
- B. This item includes grading and shaping the approach apron to the hydrant.

## **1.03 SUBMITTALS**

- A. RSN 02873A, Prior to purchase, submit in accordance with Section 01330 manufacturer's data for:
  - 1. Hydrant and grate.
  - 2. Gradation for the drain rock.

## **PART 2 PRODUCTS**

### **2.01 LUMBER**

- A. Lumber shall be Hem-Fir No. 1 as graded by the WWPA or the WCLIB and shall be CCA (Chromated Copper Arsenate) pressure treated wood. The minimum net retention shall be 0.40 lbs. of CCA per cubic foot. Equal methods of treating wood will be considered by submittal.
- B. Furnish lumber dimensions shown on the drawings.

### **2.02 SUPPORT POSTS**

- A. Pressure treated lumber, free of splits, checks, or other defects.

### **2.03 GRATE**

- A. Grate shall have the geometry indicated on the drawings.

### **2.04 GALVANIZED PIPE AND FITTINGS**

- A. Pipe and pipe fittings shall be Schedule 40, galvanized threaded steel, and conform to the requirements of ASTM Specifications A53/A53M-04a and A-338-84(2004).

### **2.05 DRAIN ROCK AND GEOTEXTILE**

- A. Drain rock shall be washed and screened material varying in size from 3/4 inch to 1 inch with less than 2 percent of the material passing the No. 200-mesh sieve and at least 90 percent of the material being retained on the 1/2 inch square mesh sieve.
- B. Geotextile as per Section 02371.

**2.06 SELF CLOSING ACCESSIBLE HYDRANT**

- A. T&S Brass (Telephone 1-800-423-0150) Model B-0708, modified with spindle 012449-40 and handle B-WH-4, or approved equal. If the hydrant is equipped with a timed shut-off, indicate with a sign that the water will turn off within one or two minutes. Submit the exact wording of the sign for approval.

**2.07 KEYED HOSE BIB WITH THREADS**

- A. T&S Brass (Telephone 1-800-423-0150) Model B-0736-RGH, or approved equal.

**2.08 3/4-INCH HOSE BIB**

- A. 3/4-inch male Sillcock IPS Heavy Duty Hydrants distributed by Tru-Serv Corporation, or approved equal.

**PART 3 EXECUTION**

**3.01 INSTALLATION**

- A. Install posts as shown and compact the ground around the posts in 6 inch lifts.
- B. Attach hydrants to posts or cap stubouts as indicated on the drawings and make connections to pipe.

**END OF SECTION**

## SECTION 02875 – SHELTERS

### PART 1 GENERAL

#### 1.01 MEASUREMENT AND PAYMENT

- A. 12 by 12 shelters
  - 1. Measurement: Number of shelters furnished and installed.
  - 2. Payment: Unit price per shelter offered in the schedule.
    - a. Includes the cost of preparing and submitting all required submittals, providing warranty, and all other labor, equipment, and materials required by this Section.
- B. 16 by 16 shelters
  - 1. Measurement: Number of shelters furnished and installed.
  - 2. Payment: Unit price per shelter offered in the schedule.
    - a. Includes the cost of preparing and submitting all required submittals, providing warranty, and all other labor, equipment, and materials required by this Section.

#### 1.02 SUBMITTALS

- A. RSN 02875A, Prior to purchase, submit in accordance with Section 01330 the following:
  - 1. Shop Drawings
    - a. Dimensions of vertical support members, cross section and length.
    - b. Dimensions of roof deck.
    - c. Dimensions of roof framing members.
    - d. Engineer's stamp for the State of Utah
  - 2. Color chips and options for color selection.
  - 3. Anchor bolt pattern. Anchor bolt depth and strength shall be sufficient enough to meet the design criteria described in Article 1.02 of this Section.
  - 4. Engineer's calculations (front cover stamped)

#### 1.03 DESIGN

- A. Design in accordance with the 2006 International Building Code.
  - 1. Minimum snow load of 42 psf ground (30 psf roof).

2. Minimum wind load based on 90 mph wind, exposure C.

B. Provide 80" to 82" head clearance.

#### **1.04 AREAS TO RECEIVE SHELTERS**

A. Install shelters in day-use area sites and at campsites where shown on the drawings.

#### **1.05 SHELTERS REQUIRED**

A. Thirty-one 12 foot square shelters.

B. Two 16 foot square shelters.

### **PART 2 PRODUCTS**

#### **2.01 SHELTERS**

A. Shelters (12 and 16 foot square) shall be hip roof structures with four vertical supports as manufactured by Poligon, W.H. Porter, Inc. of Holland, MI or approved equal.

#### **2.02 STRUCTURAL**

A. Shelters shall have the following features and characteristics:

1. Structural framing steel tube shall be a minimum of ASTM A500/A500M-09 grade B or equal. Do not use I beams, tapered columns, open channels or wood.
2. ASTM A325-09a structural bolts, self-tapping screws, rivets.
3. Compression ring, structural channel or welded plate minimum ASTM A36/A36M-08.
4. Metal roof shall be a minimum of 24-gauge galvalume factory finish with Kynar 500 paint system. Ribs shall be 1-3/16" high 12 inches on center. Panels shall be three feet wide, and angels shall be factory cut. Ribs shall run with the pitch of the roof for proper drainage. Color shall be selected from manufacturer's standard colors.
5. Metal roofing trim shall match the color of the roof and shall be formed from 26 gauge painted galvalume steel.
6. Base plates, stiffener plates, U-clips and end plates shall be factory welded into place and bolt connection holes shall be factory cut.
7. Factory frame finish Powder coated.
8. Head clearance of 80 to 82 inches.

9. Welding shall be done in the factory by certified welders in accordance with AWS specifications and be supervised by an AWS certified welding inspector.
10. Protect finish paint surface during shipment.

### **PART 3 EXECUTION**

#### **3.01 FOUNDATION**

- A. Construct concrete foundation as shown on the drawings.
- B. Set anchor bolts square with surrounding concrete slab.
  1. Anchor bolts may be set in fresh concrete or anchored using an approved epoxy anchoring system. Friction anchors are not allowed.

#### **3.02 SHELTER**

- A. Manufacture and assemble as per approved shop drawings.
- B. Touch up damaged paint surfaces with factory approved paint.
- C. Repair or replace any damaged materials at Contractor's expense as directed by the Government's Representative.

**END OF SECTION**

**SECTION 02876 – BOLLARDS**

**PART 1 GENERAL**

**1.01 MEASUREMENT AND PAYMENT**

- A. Bollards
  - 1. Measurement: Each bollard provided.
    - a. Includes concrete above and below ground.
  - 2. Payment: Unit price per each bollard offered in the schedule.

**1.02 SUMMARY**

- A. Pipe bollards for the protection of site utilities.

**PART 2 PRODUCTS**

**2.01 BOLLARDS**

- A. Galvanized steel pipe as per ASTM A 53.
  - 1. 5-inch nominal diameter, schedule 80.
- B. Concrete as per Section 03300.

**PART 3 EXECUTION**

**3.01 CONSTRUCTION**

- A. Construct bollards as shown on the drawings.

**END OF SECTION**

**SECTION 02877 – PARK BENCHES**

**PART 1 GENERAL**

**1.01 MEASUREMENT AND PAYMENT**

- A. Park benches
  - 1. Measurement: Each park bench provided.
  - 2. Payment: Unit price per each park bench offered in the schedule.

**1.02 SUBMITTALS**

- A. RSN 02877A, Prior to purchase, submit in accordance with Section 01330 the following:
  - 1. Manufacturer cut sheets
  - 2. Color selection chart

**PART 2 PRODUCTS**

**2.01 PARK BENCHES**

- A. 6' wide bench - Model PWB/G-6P? bench as manufactured by R.J. Thomas manufacturing company, Cherokee, Iowa, (phone (714) 225-5115) or approved equal.
- B. Color to be selected by the Park Manager.

**PART 3 EXECUTION**

**3.01 INSTALLATION**

- A. Anchor benches to the concrete slab.

**END OF SECTION**

**SECTION 02934 – LAWN SODDING**

**PART 1 GENERAL**

**1.01 MEASUREMENT AND PAYMENT**

- A. Sod:
  - 1. Measurement: Square yard of sod measured in place.
  - 2. Payment: Square yard price offered in the schedule.
    - a. Includes cost of labor and materials required by this section.

**1.02 SUMMARY**

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

**1.03 DELIVERY, STORAGE, & HANDLING**

- A. Cut and lift sod by approved methods. Cut sod in pieces approximately 3/4 to one inch thick. Roll or fold sod so it may be lifted and handled without breaking or tearing and without loss of soil.
- B. Schedule deliveries to coincide with topsoil operations and laying. Keep storage at job site to minimum without causing delays.
  - 1. Deliver, unload and store sod on pallets within 24 hours of being lifted.
  - 2. Do not deliver small, irregular or broken pieces of sod.
- C. During wet weather, allow sod to dry sufficiently to prevent tearing during lifting and handling. During dry weather, protect sod from drying. Water as necessary to insure vitality and to prevent excess loss of soil in handling. Sod which dries out will be rejected.

**1.04 SCHEDULING**

- A. Do not commence work of this Section until work of Sections 02311 and 02811 has been completed and approved

## **PART 2 PRODUCTS**

### **2.01 MATERIALS**

- A. Certified Sod
  - 1. Superior sod grown from certified, high quality, seed of known origin or from plantings of certified grass seedlings or stolons.
    - a. Assure satisfactory genetic identity and purity.
    - b. Assure over-all high quality and freedom from noxious weeds or an excessive amount of other crop and weedy plants at time of harvest.
  - 2. Sod shall be composed of two varieties minimum of Kentucky Bluegrass.
- B. Fertilizer - Commercial 16-16-8.

## **PART 3 EXECUTION**

### **3.01 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.
  - 3. Keep site well drained and landscape excavations dry.
- B. Surface Preparation
  - 1. Loosen area 4 inches deep, dampen thoroughly, and cultivate to properly break up clods and lumps.
  - 2. After cultivation, rake area to remove clods, rocks, weeds, roots, and debris. Perform grading and shaping refinements to bring surface to true uniform planes free from irregularities and to provide drainage and proper slope to catch basins.
  - 3. Just prior to sodding, 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.

### **3.02 INSTALLATION**

#### **A. Site Tolerances**

1. Final grade of soil after sodding of lawn areas is complete shall be one inch below top of adjacent pavement of any kind.

#### **B. Laying of Sod**

1. Lay sod during growing season. Sodding during dry summer period, at freezing temperatures, or over frozen soil is not acceptable.
2. Lay sod within 36 hours of being lifted.
3. Lay sod in rows with joints staggered. Butt sections closely without overlapping or leaving gaps between sections. Cut out irregular or thin sections with a sharp knife.
4. Lay sod flush with adjoining existing sodded surfaces.
5. Do not sod slopes steeper than 3:1. Consult with Architect for alternate treatment.

#### **C. After Sodding Is Complete**

1. Roll horizontal surface areas in two directions perpendicular to each other.
2. Repair and re-roll areas with depressions, lumps, or other irregularities. Heavy rolling to correct irregularities in grade will not be permitted.
3. Water sodded areas immediately after sod laying to obtain moisture penetration through sod into top 4 inches of topsoil.

### **3.03 FIELD QUALITY CONTROL**

#### **A. Inspection**

1. Sodded areas will be accepted at final inspection if –
  - a. Sodded areas are properly established.
  - b. Sod is free of bare and dead spots and without weeds.
  - c. No surface soil is visible when grass has been cut to height of 2 inches.
  - d. Sodded areas have been mowed a minimum of twice.
2. Areas sodded after November 1st will be accepted following spring (May 1st) approximately one month after start of growing season if specified conditions have been met.

**3.04 ADJUSTING**

- A. Replace damaged areas at no additional cost to the Government.

**3.05 CLEANING**

- A. Immediately clean up any soil or debris spilled onto pavement and dispose of all deleterious materials.

**3.06 PROTECTION**

- A. Protect sodded areas against traffic or other use immediately after sodding is completed by placing adequate warning signs and barricades.
- B. Provide adequate protection of sodded areas against trespassing, erosion, and damage of any kind. Remove this protection after sodded areas have been accepted by the Government Inspector.

**END OF SECTION**

## SECTION 03300 - CAST-IN-PLACE CONCRETE

### PART 1 GENERAL

#### 1.01 MEASUREMENT AND PAYMENT

- A. Concrete:
1. Measurement: Volume to neat lines shown on drawings.
  2. Payment: Cubic yard price offered in the schedule.
    - a. Includes cost of labor and materials, including reinforcing bars and forms and cementitious materials, required by this section.
- B. Boat Ramp Concrete:
1. Measurement: Volume of cubic yards measured in place.
    - a. Measurement shall be the average depth of the existing slab multiplied by the area of new concrete measured on the surface.
  2. Payment: Cubic yard price offered in the schedule.
    - a. Includes cost of labor and materials, including reinforcing bars and forms and cementitious materials, required by this section.
- C. Cost: Furnishing materials and performing work required in repair of concrete shall be borne by the Contractor.

#### 1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM)
1. ASTM / A615/A615M-09b Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
  2. ASTM A996/A996M-09b Rail Steel and Axle-Steel Deformed Bars for Concrete Reinforcement
  3. ASTM C33/C33M-08 Concrete Aggregates
  4. ASTM C94/C94M-09a Ready-Mixed Concrete
  5. ASTM C114-09a Chemical Analysis of Hydraulic Cement
  6. ASTM C150/C150M-09 Portland Cement
  7. ASTM C171-07 Sheet Materials for Curing Concrete
  8. ASTM C260-06 Air-Entraining Admixtures for Concrete
  9. ASTM C309-07 Liquid Membrane-Forming Compounds for Curing Concrete
  10. ASTM C494/C494M-08a Chemical Admixtures for Concrete

11. ASTM C595/C595M-09 Blended Hydraulic Cements
12. ASTM C618-08a Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete
13. ASTM C1017/C1017M-07 Chemical Admixtures for Use in Producing Flowing Concrete

B. Bureau of Reclamation (USBR)

1. USBR CM Concrete Manual, Eighth Edition
2. USBR CM2 Concrete Manual, Part 2, Ninth Edition
3. USBR M-47 Standard Specifications for Repair of Concrete, August 1996

**1.03 SUBMITTALS**

A. Submit the following in accordance with Section 01330 - Submittals.

B. RSN 03300A, Material Approval Data:

1. Name and manufacturer of each cementitious material, aggregate source, admixture, curing compound, and joint filler for approval.
2. Government reserves the right to require submission of manufacturer's test data and certification of compliance with specifications and to require submission of samples of concrete materials for testing before or during use in concrete.

C. RSN 03300A, Mix design: For approval prior to use of the concrete mix.

**1.04 DELIVERY, STORAGE, AND HANDLING**

A. Do not deliver concrete until ready for placement.

B. Store concrete aggregates to prevent contamination or segregation.

C. Reinforcement:

1. Store reinforcement of different sizes and shapes in separate piles or racks raised above the ground to avoid rusting.
2. Protect from contaminants such as grease, oil, and dirt.
3. Provide for identification after bundles are broken and tags removed.

## **PART 2 PRODUCTS**

### **2.01 MATERIALS**

- A. Cementitious Materials Options:
1. Specified portland cement plus 15 to 20 percent by weight specified pozzolan.
  2. Blended hydraulic cement.
- B. Portland Cement:
1. ASTM C150, Type II.
  2. Meet equivalent alkalis requirements of ASTM C150 - Table 2.
  3. Meet false-set requirements of ASTM C150 - Table 4.
- C. Pozzolan:
1. ASTM C618, Class F, except,
    - a. Sulfur trioxide for Class F, maximum: 4.0 percent.
    - b. Loss on ignition, maximum: 2.5 percent.
    - c. Test for effectiveness in controlling alkali-silica reaction under optional physical requirements in Table 2 of ASTM C 618. Use low-alkali cement for test.
    - d. Does not decrease sulfate resistance of concrete by use of pozzolan.
      - 1) Demonstrate pozzolan will have an "R" factor less than 2.5.
      - 2)  $R = (C-5)/F$
      - 3) C: Calcium oxide content of pozzolan in percent determined in accordance with ASTM C114.
      - 4) F: Ferric oxide content of pozzolan in percent determined in accordance with ASTM C114.
- D. Blended hydraulic cement:
1. ASTM C595, except,
    - a. Portland cement plus pozzolan only.
- E. Water: ASTM C94, Section 5.1.3 including Table 3.
- F. Sand: ASTM C33.
- G. Coarse Aggregate: ASTM C33, Gradings for either size No. 467 (1-1/2 in. to No. 4) or size No. 57 (1 in. to No. 4).
- H. Air-Entraining Admixture:

1. ASTM C260.
  2. Use a neutralized vinsol resin formulation for air-entraining admixture used with ASTM C494, Type F or G; and ASTM C1017, Type I or II chemical admixtures.
- I. Chemical Admixtures:
1. Allowable Chemical Admixtures:
    - a. ASTM C494, Type A, D, F, or G.
    - b. ASTM C1017, Type I or II.
    - c. ASTM C494, Type C and E, provided they do not contain chlorides.
  2. Do not use chemical admixtures which introduce more than 1/10 of 1 percent chloride, by weight of cementitious materials.
- J. Reinforcing Bars
1. Deformed reinforcing bars: ASTM A615 or ASTM A996 except rail steel not allowed, Grade 60.
- K. Expansion Joint Material: Asphalt-impregnated fiber sheeting.
- L. Curing Compound: ASTM C309.
- M. Polyethylene film: ASTM C171, 4 mils thick. Use white or clear in summer and black in winter.

**2.02 COMPOSITION**

- A. Unless otherwise directed, design the concrete mix in accordance with these specifications, and USBR CM2 (USBR 4211 - Selecting Proportions for Concrete Mixtures).
- B. Pozzolan is an acceptable partial replacement for cement and if used.
- C. Design mix for the minimum cementitious materials contents listed in Table 03300A (Minimum cementitious materials content).

Table 03300A - Minimum cementitious materials content.

Nominal maximum size aggregate in concrete (inches)	Minimum cementitious materials content without water-reducing admixture (lb/yd <sup>3</sup> )	Minimum cementitious materials content with water-reducing admixture (lb/yd <sup>3</sup> )
1-1/2	565	535
1	620	585

- D. The Government will test concrete for compliance with specifications and reserves the right to design and adjust concrete mix proportions.
- E. Air-entraining admixture: Use an amount that results in entrainment of 4 to 6 percent air, by volume, of concrete as discharged at placement.
- F. Slump: Not exceeding 3 inches plus or minus 1 inch when placed, nor 5 inches when first mixed, unless a type 1 or 2 plasticizing chemical admixture is used to provide flowing concrete for an unusual placing condition, in which case provide concrete having a slump appropriate for the placing conditions.
- G. Compressive Strength:
  - 1. At 28 days, minimum: 4,000 lb/in<sup>2</sup>.
  - 2. Compressive strength will be determined by Government in accordance with ASTM C31 and ASTM C39 for 6- by 12-inch cast cylinders. Acceptance criteria:
    - a. 90 Percent of test cylinders exceed specified compressive strength at 28 days.
    - b. Average compressive strength of any six consecutive test cylinders exceeds specified compressive strength at 28 days.
  - 3. Compressive strength may also be determined by Government in accordance with ASTM C42 for concrete cores. Concrete in an area represented by core tests will be considered structurally adequate when average compressive strength of three cores is equal to at least 3,400 lb/in<sup>2</sup> and no single core has a compressive strength of less than 3,000 lb/in<sup>2</sup>.

## **PART 3 EXECUTION**

### **3.01 BATCHING, MIXING, AND TRANSPORTING**

- A. Manufacture and delivery: ASTM C94, except as required by this Section.
- B. Batch ticket: ASTM C94.
  - 1. Deliver batch ticket to the Government Inspector at the jobsite as each batch is delivered.

### **3.02 CONCRETE PLACEMENT, CURING, AND PROTECTION**

- A. Steel reinforcing bars: As shown on drawings.
  - 1. Before reinforcement is placed, clean the reinforcement of heavy, flaky rust; loose mill scale; dirt; grease; or other foreign substances.
  - 2. Place and secure reinforcement in position so that it will not be displaced during concrete placement.

- B. Use forms to shape concrete to required lines.
- C. Vibrate concrete into place in walls and similar structures.
- D. Concrete temperature at placement: Between 50 degrees F and 90 degrees F.
- E. Cure concrete with water, curing compound, or polyethylene film.
  - 1. Water cured: Keep concrete continuously moist for at least 14 days after being placed by sprinkling or spraying, or by other methods approved by the Government.
  - 2. Application: Curing compound, USBR CM.
  - 3. Polyethylene film: Keep continuously moist for at least 14 days after placement.
- F. Protect concrete against damage until final acceptance by the Government.
- G. Protect concrete from damage by freezing:
  - 1. Maintain concrete temperature not lower than 50 degrees F for at least 72 hours after placement and, if water cured, protect concrete against freezing temperatures for the duration of curing period.
  - 2. After discontinuance of water curing, maintain concrete above freezing for the next 72 hours.
  - 3. Where artificial heat is employed, vent the heater and keep concrete from drying.
- H. Sandblast existing concrete to remove weak and loose material before placing new concrete against existing hardened concrete.

### **3.03 FINISHING**

- A. All finishes shall be made integral without use of cement or other dusting materials. Concrete shall be struck to proper grade, and coarse aggregate shall be forced below surface by tamping or floating and surface finished with steel trowels. Exterior slabs shall be finished with a steel trowel and then receive a light broom finish.
- B. Do not release or remove forms for at least 48 hours after placing concrete. At formed surfaces, remove ties, fill form tie holes and imperfections with dry cement mortar, remove fines, and then "sack" or finish to match existing adjacent surfaces.
- C. Broom Finishes, Exterior Flatwork
  - 1. Broom finish exterior slabs.
  - 2. Round edges including edges formed by expansion joints.
  - 3. Remove edger marks.

**3.04 CONCRETE REPAIR**

- A. Concrete repair: USBR M-47.
- B. Use the method of repair or replacement as directed by the Government in accordance with USBR M-47.

**END OF SECTION**

## SECTION 04822 - REINFORCED CONCRETE UNIT MASONRY ASSEMBLIES

### PART 1 GENERAL

#### 1.01 COST

- A. The cost of work and materials required by this section shall be included in the lump-sum prices for constructing restrooms.

#### 1.02 REFERENCES

- A. ASTM International (ASTM)
1. ASTM A82/A82M-07 Steel Wire, Plain, for Concrete Reinforcement
  2. ASTM A153/A153M-09 Zinc Coating (Hot-Dip) on Iron and Steel Hardware
  3. ASTM A615/A615M-09b Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
  4. ASTM A951/A951M-06 Masonry Joint Reinforcement
  5. ASTM C90-09 Loadbearing Concrete Masonry Units
  6. ASTM C140-09a Sampling and Testing Concrete Masonry Units and Related Units
  7. ASTM C144-04 Aggregate for Masonry Mortar
  8. ASTM C150/C150M-09 Portland Cement
  9. ASTM C207-06 Hydrated Lime for Masonry Purposes
  10. ASTM C270-08a Mortar for Unit Masonry
  11. ASTM C404-07 Aggregates for Masonry Grout
  12. ASTM C426-07 Linear Drying Shrinkage of Concrete Masonry Units
  13. ASTM C C476-09 Grout for Masonry
- B. Masonry Industry Council (MIC)
1. MIC Manual Hot and Cold Weather Masonry Construction Manual, 1999
- C. National Concrete Masonry Association (NCMA)
1. NCMA CM 260A Concrete Masonry Shapes and Sizes Manual, 1997

#### 1.03 SUBMITTALS

- A. RSN 04822A, Submit the following in accordance with Section 01330 - Submittals.

1. Approval Data:
  - a. Manufacturer's product data for each masonry unit, joint reinforcement, and accessory material.
    - 1) Include test results which show minimum compressive strength and maximum water absorption for masonry units.
2. Certifications:
  - a. Manufacturer's certification that masonry units meet specified requirements. Attach results from specified source sampling and testing to each certification.
  - b. Manufacturer's certification that portland cement and lime meet specified requirements.
3. Instructions: Manufacturer's instructions for cleaning masonry units.
4. Color selection charts.

#### **1.04 QUALITY ASSURANCE**

- A. Maintain a copy of MIC Manual at jobsite during work.

#### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Store materials off ground and under cover to prevent contact with moisture.

#### **1.06 ENVIRONMENTAL REQUIREMENTS**

- A. Comply with recommended practices of MIC Manual for hot and cold weather masonry.

### **PART 2 PRODUCTS**

#### **2.01 REGULAR MASONRY UNITS**

- A. ASTM C 90, lightweight, hollow units.
- B. Finish: NCMA CM 260A, 00 REG.
- C. Nominal Size: NCMA CM 260A, [080816].

#### **2.02 SPLIT FACE MASONRY UNITS**

- A. ASTM C 90, lightweight, hollow units.
- B. Finish: NCMA CM 260A, 00 SPF on exterior face and exposed end surfaces.
- C. Nominal Size: NCMA CM 260A, [080816].

### **2.03 MORTAR MATERIALS**

- A. Portland Cement: ASTM C 150; Type I, II, or III; standard gray color.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Aggregate: ASTM C 144.
- D. Water: Clean water free of detrimental amounts of silt, organic matter, alkali, salts, and other impurities.

### **2.04 GROUT MATERIALS**

- A. Portland Cement: ASTM C 150; Type I, II, or III.
- B. Aggregate: ASTM C 404.
- C. Water: Clean water free of detrimental amounts of silt, organic matter, alkali, salts, and other impurities.

### **2.05 REINFORCEMENTS**

- A. Joint Reinforcements:
  - 1. ASTM A 951, Truss Type, with deformed longitudinal wires butt welded to continuous diagonal cross wire at 16-inch intervals.
  - 2. Material: ASTM A 82 steel wire.
  - 3. Wire Size: No. [9] gage longitudinal and cross wires.
  - 4. Finish: ASTM A 153, Class B-2, hot-dipped zinc coating applied after fabrication.
  - 5. Width: 2 inches less than nominal wall thickness.
  - 6. Provide prefabricated corner and tee sections at wall corners and intersections.
- B. Reinforcing Bars: ASTM A 615, Grade 60, deformed steel bar, uncoated.

### **2.06 SOURCE QUALITY CONTROL**

- A. Sample and test masonry units in accordance with ASTM C 140 and ASTM C 426 before shipment to jobsite.

### **2.07 MORTAR MIX**

- A. Type: ASTM C 270, Type S, proportion specification using specified materials.
- B. Do not add calcium chloride or anti-freeze compounds.

- C. Retemper mortar in accordance with ASTM C 270 except use and place mortar within 1-1/2 hours after mixing.

## **2.08 GROUT MIX**

- A. Coarse Grout: ASTM C 476, proportion specification using specified materials.

## **PART 3 EXECUTION**

### **3.01 PREPARATION**

- A. Clean and roughen concrete substrate surfaces to be in contact with mortar or grout. Remove curing compounds, laitance, efflorescence, loose or defective concrete, sand, dirt, and foreign material.
- B. Clean top of unfinished masonry of loose mortar and foreign material before resuming work.
- C. Lay concrete masonry units dry. Do not prewet.
- D. Clean excess concrete and loose rust from dowel bars to be embedded in masonry.
- E. Clean loose rust and coatings from reinforcing bars, joint reinforcements, and metal items to be embedded in masonry.

### **3.02 COURSING**

- A. Place masonry plumb, level, and true to required lines.
- B. Maintain masonry courses to uniform width.
- C. Make vertical and horizontal joints equal and of uniform thickness.
- D. Lay units in running bond except as indicated on drawings. Course one unit and one mortar joint to equal nominal unit dimension.
- E. Form concave mortar joints.

### **3.03 PLACING AND BONDING**

- A. Lay masonry with completely filled mortar joints. Buttering corners of joints and deep or excessive furrowing of mortar joints are not permitted.
- B. Do not shift or tap units after mortar has taken initial set. Remove and replace with fresh mortar where adjustment must be made.
- C. Keep concrete foundation surfaces to be in contact with grout free of mortar.

- D. Keep cells to be grouted free of mortar.
- E. Keep wall cavities free of mortar.
- F. Remove excess mortar.
- G. Saw cut to form straight unchipped edges where jobsite cutting is required. Cut units dry.

### **3.04 TOLERANCES**

- A. Variation From Unit to Adjacent Unit: 1/32 inch, maximum.
- B. Variation From Plane of Wall: 1/4 inch in 10 feet and 1/2 inch in 20 feet or more.
- C. Variation From Plumb: 1/4 inch per story noncumulative, 1/2 inch in two stories or more.
- D. Variation From Level Coursing: 1/8 inch in 3 feet; 1/4 inch in 10 feet; 1/2 inch, maximum.
- E. Variation of Joint Thickness: 1/8 inch in 3 feet.
- F. Maximum Variation From Cross Sectional Thickness of Walls: Plus or minus 1/4 inch.

### **3.05 REINFORCEMENT INSTALLATION**

- A. Joint Reinforcements:
  - 1. Place so that longitudinal wires are fully embedded in mortar.
  - 2. Lap ends 6 inches, minimum, at joints between reinforcement sections.
- B. Reinforcing Bars:
  - 1. Place reinforcing bars supported and secured against displacement.
  - 2. Maintain position within 1/2 inch of true dimension.
  - 3. Lap bar splices 30 bar diameters, minimum.

### **3.06 GROUTING**

- A. Place and consolidate grout fill without disturbing reinforcements.
- B. Maintain grout thickness of 1/2 inch, minimum, between bar and masonry units.
- C. Place grout in lifts of 4 feet, maximum, as wall is built.
- D. Stop grout 1-1/2 inches below top of masonry when grouting is stopped for 1 hour or more.

- E. Agitate to consolidate grout and fill space.

### **3.07 BUILT-IN WORK**

- A. Build in steel doorframes, window frames, and other built-in items.
- B. Build in items plumb and level.
- C. Bed doorframe anchors in mortar joints.
- D. Fill doorframes solid with mortar.
- E. Rake joint between doorframes and masonry to 1/4 inch depth for sealant installation.

### **3.08 CUTTING AND FITTING**

- A. Cut and fit for pipes, conduits, sleeves, and similar items. Provide correct size, shape, and location.

### **3.09 POINTING AND CLEANING**

- A. Cut out and replace defective mortar. Match adjacent work.
- B. Remove excess mortar and mortar and grout smears.
- C. Clean soiled surfaces.
- D. Clean masonry in accordance with manufacturer's instructions. Do not mottle, discolor, stain, damage, or acid burn masonry.
- E. Obtain approval of each cleaning method from Government Inspector at jobsite before using method on work.

### **3.10 PROTECTION**

- A. Provide temporary bracing during erection to support finished work and withstand wind loads. Maintain bracing until structure provides permanent support.
- B. At workday's end, cover unfinished work with secure waterproof covers to prevent moisture infiltration. Keep unfinished work covered during work shutdown.

### **3.11 FIELD QUALITY CONTROL**

- A. Government will perform quality control tests on mortar and grout in accordance with appropriate ASTM test methods.

**END OF SECTION**

## SECTION 06100 - ROUGH CARPENTRY

### PART 1 GENERAL

#### 1.01 COST

- A. The cost of work and materials required by this section shall be included in the lump-sum prices for constructing restrooms.

#### 1.02 REFERENCES

- A. ASTM International (ASTM)
1. ASTM F1667-05 Driven Fasteners: Nails, Spikes, and Staples
- B. American Wood-Preservers' Association (AWPA)
1. AWPA C2-00 Lumber, Timber, Bridge Ties and Mine Ties - Preservative Treatment by Pressure Processes
  2. AWPA C9-97 Plywood - Preservative Treatment by Pressure Processes
  3. AWPA M4-99 Care of Preservative-Treated Wood Products
- C. Commercial Item Description (CID)
1. CID A-A-1923A Shield, Expansion (Lag, Machine and Externally Threaded Wedge Bolt Anchors), 18 July 1995
- D. Department of Commerce (DOC)
1. PS 1-95 Construction and Industrial Plywood
- E. APA – The Engineered Wood Association (APA)
1. APA Performance Rated Panels, 1999
- F. International Conference of Building Officials (ICBO)
1. IBC International Building Code, 2006
- G. Western Wood Products Association (WWPA)
1. WWPA G-5 Western Lumber Grading Rules 98

#### 1.03 SUBMITTALS

- A. Submit the following in accordance with Section 01330 - Submittals.
- B. RSN 06100A, Approval Data:
1. Truss shop drawings before fabricating trusses.

## **1.04 QUALITY ASSURANCE**

- A. Quality Standards and Inspection Stamps:
  - 1. Dimension Lumber: Meet requirements of WWPA G-5 grading rules. Stamp with official stamp of inspection association.
  - 2. Wood structural panels: Meet requirements of DOC PS 1 or PS 2. Stamp with stamp of qualified inspection agency.
  - 3. Preservative-Treated Materials: Stamp with quality mark of an inspection agency accredited by American Lumber Standards Committee (ALSC).
- B. Maintain a copy of IBC at jobsite during work.

## **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Protect wood materials from contact with moisture during shipment, storage, and handling.
- B. Store wood materials off ground, under cover, and properly supported to prevent damage and distortion. Provide air circulation under nonporous covers.
- C. Do not dump trusses.

## **PART 2 PRODUCTS**

### **2.01 DIMENSION LUMBER**

- A. Species:
  - 1. Douglas Fir #2.
- B. Dressed Finish: Surfaced four sides (S4S).
- C. Moisture Content: 19 percent, maximum, at shipment.

### **2.02 SHEATHING MATERIAL**

- A. APA Rated Structural Panels, 32/16 Span Rating, Exposure 1.

### **2.03 PRESERVATIVE-TREATED MATERIALS**

- A. Preservative-Treated Lumber:
  - 1. Specified dimension lumber treated with Chromated Copper Arsenate in accordance with AWPA C2.

## **2.04 ACCESSORIES**

- A. Nails:
  - 1. ASTM F 1667.
  - 2. Type and size suitable for application and in accordance with applicable nailing schedules in the IBC and shear wall schedules on the drawings.
- B. Expansion Anchors: CID A-A-1923A, Type 4.
- C. Bolts, Nuts, and Washers: Commercial quality, medium carbon steel, Galvanized.
- D. Other Screws and Fasteners: Type and size suitable for application with noncorrosive finish.

## **2.05 PREFABRICATED TRUSSES**

- A. Manufacture trusses as required by TPI 1 and the IBC.

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. Install preservative-treated lumber for Sill and base plates. Nail with zinc-coated nails.
- B. Provide solid wood blocking at mounting points of handrails, toilet compartments, toilet accessories, door bumpers, and doorstops.
- C. Install rigid, level, plumb, and in alignment with adjacent work.
- D. Do not shim or patch work.
- E. Replace split pieces.
- F. Install metal connectors in accordance with manufacturer's recommendations.
- G. Bore bolt holes straight and true from one side of lumber.
  - 1. Make holes 1/16-inch larger than bolt diameter.
- H. Apply field treatment to cut, bored, and injured surfaces of preservative-treated materials in accordance with AWP A M4.
  - 1. Use copper naphthenate preservative.
  - 2. Apply preservative in accordance with manufacturer's recommendations.
- I. Install structural panel sheathing with long dimension perpendicular to supports, ends bearing on supports, and staggered end joints.

1. Place with 1/8-inch space at panel edge and end joints.
- J. Nail framing and sheathing in accordance with IBC Table 2304.9.1 Nailing Schedule, except as noted on drawings for shear walls.
- K. Attach trusses to double top plate using an approved prefabricated anchor.

**END OF SECTION**

## **SECTION 06200 - FINISH CARPENTRY**

### **PART 1 GENERAL**

#### **1.01 COST**

- A. The cost of work and materials required by this section shall be included in the lump-sum prices for constructing restrooms.

#### **1.02 SUMMARY**

- A. Includes But Not Limited To
1. Furnish and install sealants required for items installed under this Section, as described in Contract Documents.
  2. Furnish and install following items as described in Contract Documents -
    - a. Job-built attic access panels.
    - b. Shelving.
    - c. Trim and Molding.
- B. Products Installed But Not Supplied Under This Section
1. Architectural Woodwork
  2. Pre-Manufactured Access Doors
  3. Windows
  4. Finish Hardware
  5. Selected Building Specialties
  6. Selected Equipment

### **PART 2 PRODUCTS**

#### **2.01 MATERIALS**

- A. Glue - Waterproof and of best quality.
- B. Softwood - Solid stock Pine, C or better, S4S.

### **PART 3 EXECUTION**

#### **3.01 INSTALLATION**

- A. General Woodwork

1. Work shall be made in accordance with measurements taken on the job.
  2. Scribe, miter, and join accurately and neatly to conform to details.
  3. Exposed surfaces shall be machine sanded, ready for finishing.
  4. Allow for free movement of panels.
  5. Countersink nails. Countersink screws and plug those exposed to view.
- B. Architectural Woodwork - Install plumb, level, and square.
- C. Items installed but not supplied under this Section - Install in accordance with requirements specified in Section supplying item.

**END OF SECTION**

**SECTION 06600 - PLASTIC FABRICATIONS**

**PART 1 GENERAL**

**1.01 COST**

- A. The cost of work and materials required by this section shall be included in the lump-sum prices for constructing restrooms.

**1.02 SUMMARY**

- A. Plastic panels for restroom ceilings.

**1.03 SUBMITTALS**

- A. RSN 06100A, Samples for color selection.

**PART 2 PRODUCTS**

**2.01 MATERIALS**

- A. Duro-Therm Lite as manufactured by Parkland Plastics or approved equal.
  - 1. Cracked Ice texture.
- B. Plastic molding.

**PART 3 EXECUTION**

**3.01 INSTALLATION**

- A. Install against 5/8-inch thick type X dry wall with fire taping.
- B. Install using approved adhesive and with divider moldings.
- C. Cover exposed double top plate with approved plastic molding.

**END OF SECTION**

## SECTION 07212 - FACED BATT AND BLANKET INSULATION

### PART 1 GENERAL

#### 1.01 COST

- A. The cost of work and materials required by this section shall be included in the lump-sum prices for constructing restrooms.

#### 1.02 SUMMARY

- A. Includes But Not Limited To
1. Furnish and install thermal and acoustic batt insulation as described in Contract Documents.

#### 1.03 REFERENCES

- A. American Society For Testing And Materials
1. ASTM C665-06, "Specification for Mineral-Fiber Thermal Insulation For Light Frame Construction and Manufactured Housing"

### PART 2 PRODUCTS

#### 2.01 MATERIALS

- A. Insulation
1. Kraft faced meeting requirements of ASTM C 665, Type II, Class C.
  2. Foil faced meeting requirements of ASTM C 665, Type III, Class B.
  3. Order insulation by "R" factor rather than "U" factor, rating, or thickness, either 16" or 24" wide according to framing spacing.
  4. "R" Factor Required -
    - a. Ceilings - 38
    - b. Nominal Wood or Metal Framing
      - 1) 2x6 - 19
      - 2) 2x4 - 11

#### 2.02 SOURCE QUALITY CONTROL

- A. Insulation shall be manufactured to be in compliance with IBC 2006.

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. Install in accordance with Manufacturer's directions, in compliance with IBC and the following -
1. If two layers of insulation are used to attain required "R" factor, only layer towards interior of building shall have facing.
  2. Leave no gaps in insulation envelope.
  3. Install insulation between jambs & framing, behind plumbing & wiring and in similar places.
  4. Fit ends of batts snug against top and bottom plates.
  5. Where insulation is not enclosed by structure or drywall, support in place with wire or other suitable material and use only foil faced insulation.
  6. Install baffles between trusses and rafters at ventilation spaces if necessary to prevent insulation from blocking air flow from soffit.
  7. Do not cover recessed light fixtures with insulation. Cut out insulation to provide a minimum of 6 inch clearance around recessed lighting fixtures.

**END OF SECTION**

## SECTION 07471 - METAL SOFFITS

### PART 1 GENERAL

#### 1.01 COST

- A. The cost of work and materials required by this section shall be included in the lump-sum prices for constructing restrooms.

#### 1.02 SUMMARY

- A. Includes But Not Limited To
1. Furnish and install metal soffit as described in Contract Documents.
- B. Related Sections
1. Section 07920 - Quality of sealants and submittal and installation requirements.

#### 1.03 SYSTEM DESCRIPTION

- A. Performance Requirements
1. Installed soffit system shall meet minimum required structural loading conditions when tested in accordance with Test Method #4 of AAMA Specification 1402-86.
  2. Face finish shall meet performance requirements of Test Method #6 of AAMA Specification 1402.-86. Reverse side coating shall pass requirements of paragraphs 1.1 through 1.4 of Test Method #6.

#### 1.04 WARRANTY

- A. Manufacturer's written 20 year guarantee for finish.

### PART 2 PRODUCTS

#### 2.01 COMPONENTS

- A. Aluminum Soffit
1. Panels -
    - a. 5010-H aluminum alloy 0.019 inch thick minimum.
    - b. "V" groove design complete with matching trim.
    - c. Panels shall be interlocked full length of panel.
    - d. Perforated full width of panel with holes designed so one dimension does not exceed 1/8 inch.

2. Finish - Double baked enamel to meet or exceed specifications of MIL-C-5541 and FHA BULLETIN UM 27 with protective coating on back side. Color as selected by Architect from Manufacturer's standard colors.
3. Fastening Devices - 1-1/4 inch galvanized staples or as recommended by Manufacturer.

### **PART 3 EXECUTION**

#### **3.01 INSTALLATION**

- A. Conceal fasteners where possible. Paint heads of exposed fasteners to match background.
- B. Isolate from dissimilar metals to prevent electrolytic action.
- C. Calk joints with specified sealants.
- D. Repair buckling or bowing due to improper installation at no cost to Owner.

**END OF SECTION**

## SECTION 07472 - METAL FASCIA

### PART 1 GENERAL

#### 1.01 COST

- A. The cost of work and materials required by this section shall be included in the lump-sum prices for constructing restrooms.

#### 1.02 SUMMARY

- A. Includes But Not Limited To
1. Furnish and install metal fascia as described in Contract Documents.
- B. Product Supplied But Not Installed Under This Section
1. Drip edge
- C. Related Sections
1. Section 07312 - Installation of drip edge
  2. Section 07920 - Quality of sealants and submittal and installation requirements

#### 1.03 WARRANTY

- A. Manufacturer's written 20 year guarantee for finish.

### PART 2 PRODUCTS

#### 2.01 MATERIALS

- A. Fascia and drip edge shall be of same material.
- B. Aluminum
1. 0.032 inch thick minimum aluminum complete with accessories recommended by Manufacturer for proper installation.
  2. Fastening Devices - Unpainted one inch aluminum screws.
- C. Steel
1. Minimum 24 gage steel, hot-dipped galvanized, 1.25 oz/sq ft and complete with accessories recommended by Manufacturer for proper installation.
  2. Fastening Devices - Galvanized steel screws.
- D. Finish

1. Face coating polyvinylidene Fluoride (PVF<sub>2</sub>) Resin-base finish (Kynar 500 or Hylar 5000) for coil coating components containing 70% minimum PVF<sub>2</sub> in resin portion of formula. Thermo cured two coat system consisting of corrosion inhibiting epoxy or acrylic latex primer and top coat factory applied over properly pretreated metal.
2. Reverse side coating thermo cured system consisting of corrosion inhibiting epoxy or acrylic latex primer applied over properly pretreated metal.
3. Color as selected by Owner from Manufacturer's standard colors.

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. Install in accordance with Manufacturer's instructions.
  1. Conceal fasteners except where details might require a minimum number to be exposed. Paint heads of exposed fasteners to match background.
  2. Install with slip joints at each end. Screw to substrate through pre-drilled, over-size holes.
  3. Isolate from dissimilar metals to prevent electrolytic action.
  4. Calk joints with specified sealants.
- B. Repair buckling or bowing due to improper installation at no cost to Owner.

### **3.02 FIELD QUALITY CONTROL**

- A. Inspections
  1. Government will inspect fascia system for compliance with Contract Documents. Remove and replace Sections not in compliance.

**END OF SECTION**

## SECTION 07610 - METAL ROOFING

### PART 1 GENERAL

#### 1.01 COST

- A. The cost of work and materials required by this section shall be included in the lump-sum prices for constructing restrooms.

#### 1.02 REFERENCES

- A. American Architectural Manufacturers Association (AAMA)

1. AAMA 2604-05 High Performance Organic Coatings on Aluminum Extrusions and Panels

- B. ASTM International (ASTM)

1. ASTM A 653/A 653M-07 Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process
2. ASTM A 792/A 792M-08 Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
3. ASTM B 117-07a Operating Salt Spray (Fog) Apparatus
4. ASTM D 226-06 Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
5. ASTM D 522-93a(2008) Mandrel Bend Test of Attached Organic Coatings
6. ASTM D 523-89(1999) Specular Gloss
7. ASTM D 968-05 Abrasion Resistance of Organic Coatings by Falling Abrasive
8. ASTM D 1654-05 Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments
9. ASTM D 2247-02 Testing Water Resistance of Coatings in 100% Relative Humidity
10. ASTM D 2794-93(2004) Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
11. ASTM D 3363-05 Film Hardness by Pencil Test
12. ASTM D 4214-07 Evaluating the Degree of Chalking of Exterior Paint Films
13. ASTM D 9051-05 Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nonconductive Coatings Applied to a Non-Ferrous Metals

C. Underwriters Laboratories Inc. (UL)

1. UL 580-06 Tests for Uplift Resistance of Roof Assemblies

**1.03 PERFORMANCE REQUIREMENTS**

A. Exterior Finish Performance Requirements:

Table 07610A - Exterior Finish Performance Requirements

Test	Method	Requirements
60-degree gloss	ASTM D 523	10-35
Pencil hardness	ASTM D 3363	F-H
Adhesion - impact	ASTM D 2794	No removal
Abrasion resistance	ASTM D 968	100 liters of falling sand per mil of coating, minimum, or a minimum abrasion coefficient value of 20 per AAMA 2604
Post formability	ASTM D 522 (method B)	180 degree bend around 1/8-inch mandrel; flexible to point of metal rupture without rupture of coating
Humidity resistance	ASTM D 2247	100 percent Relative Humidity at 100 degrees F for 4000 hours of exposure; less than 5 percent of No. 8 size blisters
Salt spray resistance	ASTM B 117 ASTM D 1654	4000 hours exposure, 5 percent salt solution, 95 degrees F minimum 7 rating for scribe and edges; less than 5 percent of No. 8 size blisters
Exterior chalk resistance	ASTM D 4214	45 degrees South Florida exposure, 10 years; maximum 8 rating-colors, 6 rating-whites
Acid, alkali, mortar, and detergent resistance	AAMA 2604	Minimums required by AAMA 2604

#### **1.04 SUBMITTALS**

- A. Submit the following in accordance with Section 01330 - Submittals.
- B. RSN 07610A, Sample Kit, Approval Drawings, Approval Data, Instructions, Installer's qualifications:
  - 1. Manufacturer's color sample kit for color selection.
  - 2. Kit consisting of finished metal chips.
  - 3. Shop drawings for approval.
  - 4. Show roof layout, dimensions, and spacings; eave, ridge, and transition details; flashing, closure, trim, anchor, and penetration details; anchor spacings; sealant locations; and other fabrication and installation details.
  - 5. Manufacturer's product data for approval.
  - 6. Include certified test data which demonstrates system meets specified performance criteria.
  - 7. Manufacturer's environmental, storage, handling, and installation instructions.
  - 8. Include instructions for underlayment installation and field "touch-up" of finish.
  - 9. Written evidence of installer's qualifications.
  - 10. Include signed statement from manufacturer attesting to manufacturer's approval of installer.
- C. RSN 07610B, Warranties:
  - 1. Installer's 2-year weathertightness guarantee.
  - 2. Manufacturer's 20-year finish guarantee.

#### **1.05 QUALIFICATIONS**

- A. Installer Qualifications: Experienced installer approved by roofing manufacturer.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Store and handle materials in accordance with manufacturer's instructions.

#### **1.07 ENVIRONMENTAL REQUIREMENTS**

- A. Comply with manufacturer's environmental restrictions.

## **PART 2 PRODUCTS**

### **2.01 ROOFING SYSTEM**

- A. Standard product of an established manufacturer regularly engaged in manufacture of roofing systems of specified type.
- B. Standing seam metal roofing system of interlocking flat panels anchored with concealed anchor clips.
- C. Includes flashings, closures, trim, and accessories required for complete, weathertight installation.
- D. BHP Steel Building Products USA Inc., 2110 Enterprise Boulevard, West Sacramento, California 95691, 800-726-2727.
  - 1. Metal shall be 24 ga steel with factory applied finish.
  - 2. Color shall match existing roofs in the park.
  - 3. Fasteners shall be concealed.
- E. Equals as approved by Engineer

### **2.02 SYSTEM COMPONENTS**

- A. Panels:
  - 1. Type and Style: Flat panel with integral standing seam preformed in panel edges which continuously interlocks along entire length of seam. Batten seams, cap seams, and crimped seams are not acceptable.
  - 2. Panel Width: Match other existing roofs in the park.
  - 3. Seam Size: Approximately 1-3/4 inches high by 3/8 inch wide.
  - 4. Sheet Steel Stock: ASTM A 653,
  - 5. Coating Designation G90 or ASTM A 792
  - 6. Coating Designation AZ55.
  - 7. Thickness: 24 gauge, minimum.
  - 8. Exterior Finish: Factory-applied, oven-cured, 70-percent polyvinylidene fluoride paint system on exposed surfaces with a minimum coating thickness of 0.20 mils for primer coat and 0.80 mils for topcoat.
  - 9. Underside Finish: Manufacturer's standard factory-applied backer coating.
  - 10. Seam Seal: Manufacturer's standard factory-installed sealant.
- B. Flashings, Closures, Trim, and Similar Items: Same material, gauge, finish, and color as panels.

- C. Panel Anchor Clips:
  - 1. Manufacturer's standard anchor clip designed for concealed installation which allows for thermal expansion and contraction of panels, prevents distortion of panels from wind uplift forces.
  - 2. Material: 24 -gauge, minimum, zinc-coated steel.
- D. Fasteners:
  - 1. Corrosion-resistant fasteners recommended by system manufacturer for application.
  - 2. Provide pop rivets colored to match system finish where exposed pop rivets are permitted in prefinished materials.
- E. Sealants and Sealing Materials: Materials suitable for application furnished or recommended by system manufacturer.
- F. Underlayment: ASTM D 226, Type II, asphalt-saturated roof felt.

### **2.03 FABRICATION**

- A. Fabricate in accordance with approved shop drawings.
- B. Fabricate panels in continuous lengths to match building dimensions. Do not make horizontal laps or seams in installed system.
- C. Fabricate flashings, closures, trim, and similar items in longest possible lengths.
- D. Provide for thermal expansion and contraction in system.

## **PART 3 EXECUTION**

### **3.01 PREPARATION**

- A. Prepare clean, smooth, and dry substrate. Maintain in clean and dry condition during installation of underlayment and roof system components.
- B. Underlayment Installation:
  - 1. Install in accordance with roof system manufacturer's instructions.
  - 2. Cover entire roof area.
  - 3. Place horizontally beginning at eave and proceeding up roof surface.
  - 4. Shingle lap sheets with horizontal and end laps as recommended by roof system manufacturer. Stagger end laps in successive courses.
  - 5. Place additional felt at flashing conditions as recommended by roof system manufacturer.

6. Place smooth and free from wrinkles.
7. Repair tears and punctures with additional felt.
8. Do not allow felt to dry out by extended exposure to elements.

### **3.02 INSTALLATION**

- A. Install in accordance with approved shop drawings and manufacturer's instructions.
- B. Install straight and true with building lines and adjacent work.
- C. Install components with concealed fastening except as permitted. Exposed pop rivets are permitted at seam transitions and in flashings, closures, trim, and similar items.
- D. Mechanically fasten to roof deck with panel clips and fasteners.
- E. Make installation weathertight.

### **3.03 CLEANING**

- A. Remove grease, finger marks, and stains in accordance with manufacturer's instructions.

### **3.04 REPAIR**

- A. Touch-up paint minor scratches and abrasions to finish in accordance with manufacturer's instructions. Use matching paint furnished by manufacturer.
- B. Replace materials with damaged finish detrimental to appearance.

### **3.05 PROTECTION**

- A. Protect completed roof from construction traffic in accordance with manufacturer's recommendations.

**END OF SECTION**

## **SECTION 07630 - ROOF FLASHING AND SPECIALTIES**

### **PART 1 GENERAL**

#### **1.01 COST**

- A. The cost of work and materials required by this section shall be included in the lump-sum prices for constructing restrooms.

#### **1.02 SUMMARY**

- A. Products Supplied But Not Installed Under This Section
1. Valley flashing
  2. Valley metal complete with clips and necessary accessories as specified and detailed.
  3. Pipe flashing
  4. Skylights
- B. Related Sections
1. Section 07312 - Installation
  2. Section 07920 - Quality of sealants

#### **1.03 REFERENCES**

- A. American Society For Testing And Materials
1. ASTM B101-07, "Standard Specification for Copper Sheets"
  2. ASTM A924/A924M-09a "Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process"

### **PART 2 PRODUCTS**

#### **2.01 MATERIALS**

- A. Valley Flashing - 26 gauge galvanized iron or steel meeting requirements of ASTM A 924, G 90.
- B. Valley Metal
1. 16 ounce minimum copper meeting requirements of ASTM B 101, Grade I or II.
  2. 26 gauge AISI Type 304 stainless steel with #2 or 2B finish.

- C. Valley Metal Cleats - Same material as valley metal.
- D. Pipe Flashing For Plumbing Vent Lines
  - 1. 16 oz sheet copper flashing for metal vent pipes.
  - 2. Prefabricated plastic roof jacks for plastic vent pipes.
  - 3. Flashing base shall be at least 24 inches square.
- E. Roof Jacks For Flues & Furnace Piping - Factory-made galvanized steel.
- F. Screws, Bolts, Nails, & Accessory Fasteners - Of strength and type consistent with function.
- G. Skylights
  - 1. 10 inch Solatube from the Brighten Up Series or approved equal.

## **2.02 FABRICATION**

- A. Form accurately to details. Provide valley flashing in 10 foot lengths with break in center to match roof slopes.
- B. Profiles, bends, and intersections shall be even and true to line.

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. Interface With Other Work
  - 1. Coordinate with pipe installers for proper size of roof jacks and pipe flashing.
- B. Pipe Flashing For Plumbing Vent Lines
  - 1. Copper - Fit snugly around pipes. Calk between copper flashing and pipe with specified sealant.
- C. Solatubes to be installed by the supplier or by an installer approved and trained by the manufacturer.

**END OF SECTION**

## **SECTION 07920 - SEALANTS AND CAULKING**

### **PART 1 GENERAL**

#### **1.01 COST**

- A. The cost of work and materials required by this section shall be included in the lump-sum prices for constructing restrooms.

#### **1.02 SUMMARY**

- A. Includes But Not Limited To
1. Quality of sealants to be used on Project, including submittal, material, and installation requirements not specified elsewhere.

#### **1.03 SUBMITTALS**

- A. See Section 01330.
- B. RSN 07920A, Product Data
1. Manufacturer's literature and installation recommendations for each Product.
  2. Schedule showing joints requiring sealants with backing and primer to be used.
  3. Quality Assurance/Control
    - a. Furnish certificate from Manufacturer indicating date of manufacture.

#### **1.04 DELIVERY, STORAGE, & HANDLING**

- A. Handle to prevent inclusion of foreign matter, damage by water, or breakage.
- B. Deliver and keep in original containers until ready for use.
- C. Do not use damaged or deteriorated materials.
- D. Store in a cool place, but never under 40 deg F.

### **PART 2 PRODUCTS**

#### **2.01 MATERIALS**

- A. Sealants
1. Sealants provided shall meet Manufacturer's shelf-life requirements.
  2. Exterior Building Elements -

- a. Joints and cracks around windows
  - b. Door frames
  - c. Louvers
  - d. Wall penetrations
  - e. Connections
  - f. Other joints necessary to seal off building from outside air and moisture
  - g. Approved Products -
    - 1) Dow Corning -
      - a) Primer - 1200
      - b) Sealant - 791
    - 2) Approved Equal
3. Exterior Concrete -
- a. Expansion joints in concrete slabs -
    - 1) Sika-Flex 1A
    - 2) Approved Equal
4. Interior At Masonry Walls -
- a. Inside jambs and heads of exterior door frames
  - b. Both sides of interior door frames
  - c. Inside perimeters of windows
  - d. Approved Manufacturers & Products -
    - 1) Paintable by Dow Corning
    - 2) Tremflex 834 by Tremco
    - 3) Approved equal
5. Interior Joints Formed By -
- a. Countertops and backsplash to wall
  - b. Sinks to countertops
  - c. Termination joints in showers
  - d. Approved Manufacturers & Products -
    - 1) Dow Corning 786
    - 2) General Electric Sanitary L007-1
    - 3) Approved Equal
6. Color - As selected by Owner from Manufacturer's standard colors.

- B. Backing - Flexible closed cell polyurethane or polyolefin rod or bond breaker tape as recommended by Sealant Manufacturer for joints being sealed.

## **PART 3 EXECUTION**

### **3.01 PREPARATION**

- A. Surfaces shall be clean, dry, and free of dust, oil, grease, dew, or frost.
- B. Apply primer.
- C. Joint Backing -
  - 1. Rod for open joints shall be at least 1-1/2 times width of open joint and of thickness to give solid backing. Backing shall fill up joint so depth of sealant bite is no more than 3/8 inch deep.
  - 2. Apply bond-breaker tape in shallow joints as recommended by Sealant Manufacturer.

### **3.02 APPLICATION**

- A. Apply sealant with hand caulking gun with nozzle of proper size to fit joints. Use sufficient pressure to insure full contact to both sides of joint to full depth of joint.
- B. Tool joints immediately after application of sealant if required to achieve full bedding to substrate or to achieve smooth sealant surface.
- C. Depth of sealant bite shall be 1/4 inch minimum and 1/2 inch maximum, but never more than one half or less than one fourth joint width.
- D. Do not apply caulking at temperatures below 40 deg F.
- E. Caulk opening perimeters unless indicated otherwise.

### **3.03 CLEANING**

- A. Clean adjacent materials which have been soiled immediately (before setting) as recommended by Manufacturer.

**END OF SECTION**

## SECTION 08111 - STEEL DOORS AND FRAMES

### PART 1 GENERAL

#### 1.01 COST

- A. The cost of work and materials required by this section shall be included in the lump-sum prices for constructing restrooms.

#### 1.02 REFERENCES

- A. American National Standards Institute (ANSI)
1. ANSI A250.8-1998 Standard Steel Doors and Frames
- B. ASTM International (ASTM)
1. ASTM A153/A153M-09 Zinc Coating (Hot-Dip) on Iron and Steel Hardware
  2. ASTM A1008/A1008M-09a Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability
  3. ASTM C1036-06 Flat Glass
- C. Commercial Item Description (CID)
1. CID A-A-1923A Shield, Expansion (Lag, Machine and Externally Threaded Wedge Bolt Anchors), 21 August 2001
- D. National Fire Protection Association (NFPA)
1. NFPA 80 – 1999 Fire Doors and Fire Windows
  2. NFPA 252 - 1999 Standard Methods of Fire Tests of Door Assemblies
- E. Steel Door Institute (SDI)
1. SDI-111-C-00 Recommended Louver Details for Standard Steel Doors
- F. Underwriters Laboratories Inc. (UL)
1. UL 10C Positive Pressure Fire Tests of Door Assemblies, 1998

#### 1.03 PERFORMANCE REQUIREMENTS

- A. Fire Resistance Requirements: 1 hour fire rating. Provide fire door and frame assemblies which meet positive pressure fire test requirements for required rating when tested in accordance with NFPA 252 or UL 10C.

## **1.04 SUBMITTALS**

- A. Submit the following in accordance with Section 01330 - Submittals.
- B. RSN 08111A, Approval Drawings and Data:
  - 1. Shop drawings:
    - a. Show dimensions, material gauges, framing members, reinforcements, hardware preparation and locations, anchorage details, and other fabrication and installation details.
  - 2. Manufacturer's product data:
    - a. Include complete descriptions and specifications for materials, construction, and finish.
    - b. Instructions: Manufacturer's storage, handling, and installation instructions.

## **1.05 QUALITY ASSURANCE**

- A. Fire-rated Doors and Frames:
  - 1. Label door and frame with permanent metal label of Underwriter's Laboratories, Inc. (UL) or Factory Mutual Research Corporation (FM) or Warnock Hersey International (WHI) attesting to required rating.
  - 2. For doors and frames which exceed size for which testing and labeling are available, provide a manufacturer's certificate stating door and frame are identical in design, materials, and construction to a door which has been tested and meets requirements for required rating.

## **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Store and handle materials at jobsite in accordance with manufacturer's instructions and ANSI A250.8.

## **PART 2 PRODUCTS**

### **2.01 HOLLOW STEEL DOORS**

- A. Exterior Doors:
  - 1. ANSI A250.80-2003 Level 3, Model 1, hot-dipped zinc coated steel.
  - 2. Core Construction: Vertical steel stiffeners and fiberglass insulation.
  - 3. End Closure: Flush end closure at top.

## **2.02 HOLLOW STEEL FRAMES**

- A. Exterior Door Frames: ANSI A250.8, hot-dipped zinc coated steel, face welded type.

## **2.03 DOOR ACCESSORIES**

- A. Louvers - Exterior Doors (when shown on the drawings):
1. Type: Stationary inserted louver.
  2. Blade Design: Baffled weatherproof blade.
  3. Material: 16 gauge, minimum, steel
  4. Finish: Factory-applied baked enamel primer.
  5. Insect Screen: Removable framed aluminum or galvanized steel insect screen rigidly attached to louver on inside of door.
  6. Mounting: Nonremovable mounting from outside of door.

## **2.04 FRAME ACCESSORIES**

- A. Frame Anchors - Masonry Openings:
1. Type: T-type anchor with corrugated shank.
  2. Size: 1-1/2-inch-wide shank, 10-inch length, and cross piece sized to match frame dimensions.
  3. Thickness: 16 gauge, minimum.
  4. Material: ASTM A 1008, Commercial Steel (CS), Type B.
  5. Finish: ASTM A 153, Class B-2, hot-dipped zinc coating.
- B. Frame Anchors - Other Openings: ANSI A250.8.
- C. Floor Anchors: ANSI A250.8.
- D. Expansion Anchors for Floor Anchors: CID A-A-1923A, Type 4.

## **2.05 FABRICATION**

- A. Fabricate in accordance with approved shop drawings and ANSI A250.8.
- B. Reinforce frames 4 feet or greater in width with 12-gauge formed steel channel stiffener welded into head. Install stiffener flush with top of frame.
- C. Reinforce and prepare for hardware in accordance with ANSI A250.8. Use hardware manufacturer's templates for hardware preparation.
- D. Attach removable transom panel to inside of frame with fasteners which can be easily removed with standard hand tools.

- E. Repair damage to zinc-coated materials with commercial zinc-rich priming paint.

## **2.06 FINISH**

- A. Prime finish in accordance with ANSI A250.8.
- B. Use lead- and chromate-free priming paint compatible with finish paint to be field applied.

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. Install in accordance with approved shop drawings, manufacturer's instructions, and ANSI A250.8.
- B. Install plumb, level, and in alignment with adjacent work.
- C. Plumb and brace frames in position before masonry is laid up.
- D. Fill frames set in masonry with masonry mortar as masonry is laid up.
- E. Rake joint between frame and concrete or masonry to minimum depth of 1/4 inch and caulk joint with sealant in accordance with Section 07920.
- F. Test and adjust door operation for proper operation.

### **3.02 PAINTING**

- A. Paint installed doors and frames in accordance with manufacturer's recommendations.

**END OF SECTION**

## SECTION 08520 - ALUMINUM WINDOWS

### PART 1 GENERAL

#### 1.01 COST

- A. The cost of work and materials required by this section shall be included in the lump-sum prices for constructing restrooms.

#### 1.02 REFERENCES

- A. Aluminum Association (AA)
1. AA 45-2003 Designation System for Aluminum Finishes
- B. American National Standards Institute (ANSI), American Architectural Manufacturers Association (AAMA), National Wood Window and Door Association (NWWDA)
1. ANSI/AAMA/NWWDA 101/I.S.2-97 Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors
- C. ASTM International (ASTM)
1. ASTM C1036-06 Flat Glass
  2. ASTM C1048-04 Heat-Treated Flat Glass - Kind HS, Kind FT Coated and Uncoated Glass
  3. ASTM E 774-97 Classification of the Durability of Sealed Insulating Glass Units

#### 1.03 SUBMITTALS

- A. Submit the following accordance with Section 01330 - Submittals.
- B. RSN 08520A, Approval drawings, data, instructions:
1. Shop drawings.
    - a. Show dimensions, materials, relationship to structure, glazing details, anchor locations and details, and other fabrication and installation details.
    - b. Identify windows by Government designations on drawings.
  2. Manufacturer's product data.
    - a. Include complete descriptions and specifications for frame, glazing, construction, and finish.
  3. Manufacturer's storage, handling, and installation instructions.

#### **1.04 DELIVERY, STORAGE, AND HANDLING**

- A. Store and handle at jobsite in accordance with manufacturer's instructions.
- B. Store windows off ground, under cover, and protected from contact with moisture.

### **PART 2 PRODUCTS**

#### **2.01 HORIZONTAL SLIDING ALUMINUM WINDOWS**

- A. Preglazed, operable type, individual window units.
- B. Weatherstripped.
- C. Glazing Beads - Manufacturer's standard
- D. Screens - Extruded aluminum frames with mitered corners and 18 x 14 mesh with 0.013 inch diameter aluminum wire or fiberglass.

#### **2.02 GLAZING MATERIALS**

- A. Plastic Glazing for restroom building windows
  - 1. 0.250 inch thick pebble pattern obscure ultraviolet-stabilized polycarbonate
  - 2. Color - clear.
- B. Exterior Window Glazing
  - 1. Thickness -
    - a. Glass Panes - 1/8 Inch minimum, Double Strength
    - b. Sealed Units - 5/8 inch minimum
  - 2. Double pane, sealed Insulating glass units meeting requirements of ASTM E 774, Class A.
  - 3. Glazing shall have following characteristics -
    - a. Obscure - ASTM C 1036, Type II, Class I, Form 3, Quality q8, pattern as approved.

#### **2.03 FABRICATION**

- A. Fabricate in accordance with approved shop drawings and ANSI/AAMA/NWWDA 101/I.S.2.
- B. Prevent galvanic action between aluminum and dissimilar metals.

**2.04 FINISH**

- A. AAMA Architectural Class II clear anodic coating on exposed aluminum for restroom buildings.

**PART 3 EXECUTION**

**3.01 PREPARATION**

- A. Coat aluminum surfaces to be in contact with concrete or mortar with a suitable alkali-resistant coating.

**3.02 INSTALLATION**

- A. Install in accordance with approved shop drawings and manufacturer's instructions.
- B. Install level, square, plumb, and in alignment with adjacent structure.
- C. Anchor frame securely in place.

**3.03 CLEANING**

- A. Clean frame and glass surfaces in accordance with manufacturer's recommendations after installation.
- B. Remove temporary labels from plastic glazing.

**END OF SECTION**

## SECTION 08711 - DOOR HARDWARE

### PART 1 GENERAL

#### 1.01 COST

- A. The cost of work and materials required by this section shall be included in the lump-sum prices for constructing restrooms.

#### 1.02 REFERENCES

- A. American National Standards Institute (ANSI)
- |    |                   |  |
|----|-------------------|--|
| 1. | ANSI A156.1-2000  | Butts and Hinges   |
| 2. | ANSI A156.3-2001  | Exit Devices   |
| 3. | ANSI A156.4-2000  | Door Controls - Closers  |
| 4. | ANSI A156.6-2001  | Architectural Door Trim  |
| 5. | ANSI A156.13-2002 | Mortise Locks and Latches  |
| 6. | ANSI A156.15-2001 | Release Devices - Closer Holder, Electromagnetic and Electromechanical |
| 7. | ANSI A156.16-2002 | Auxiliary Hardware   |
| 8. | ANSI A156.21-2001 | Thresholds   |
| 9. | ANSI A156.22-1996 | Door Gasketing Systems   |

#### 1.03 SUBMITTALS

- A. Submit the following in accordance with Section 01330 - Submittals.
- B. RSN 087711A
- Hardware schedule, for approval.
    - Include complete hardware group, door, handing, hardware, accessories, and finish identification.
  - Approval Data: Manufacturer's product data.
  - Instructions: Manufacturer's installation instructions.

#### 1.04 QUALITY ASSURANCE

- A. Hardware for Fire-Rated Doors: Listed by UL for fire door class.
- B. Provide manufacturers' templates for door and frame preparation.
- C. Provide matching products from single manufacturer for each type of hardware.

## **1.05 SEQUENCING**

- A. Do not install surface-mounted hardware, gasketing systems, or weatherstripping on steel doors and frames until doors and frames have been painted.

## **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Label each hardware container with item number in approved hardware schedule.

## **PART 2 PRODUCTS**

### **2.01 BUTT HINGES**

- A. Heavy-Weight Steel Butt Hinges: ANSI A156.1, A8111, full-mortise template hinge with five knuckles, four ball bearings, nonrising pin, spring loaded, and flat button tips.

### **2.02 LOCKSETS**

- A. Lockset
  - 1. Type, Series, and Grade: ANSI A 156.2, Series 4000, Grade 1, cylindrical lockset for exterior doors.
  - 2. Lever handle both inside and out.
  - 3. U.S 26D finish.
- B. Deadbolt: 1-inch-throw, solid stainless steel bolt with two enclosed hardened steel roller pins.
  - 1. U.S 26D finish.

### **2.03 BUMPERS AND STOPS**

- A. Wall Bumpers: , Round bumper with gray rubber bumper and concealed anchor suitable for 90 and 180 degree walls.
  - 1. U.S 26D finish.
  - 2. 2-3/8" diameter bumper with a 1" projection.

### **2.04 DOOR SWEEP**

- A. Adjustable brush type.

### **2.05 LOCK KEYING**

- A. Key locks alike.
- B. Furnish 3 keys to the Government for use during construction.

C. Deliver all keys to Government at jobsite after completion of work.

**PART 3 EXECUTION**

**3.01 INSTALLATION**

- A. Install in accordance with manufacturer’s instructions.
- B. Mount hardware in accordance with approved shop drawings for doors and frames.
- C. Use manufacturer’s templates for field mounting of hardware.
- D. Test door operation and correct defects in operation.

**3.02 HARDWARE SCHEDULE**

Table 08710A - Door Hardware Schedule

Building	Description	Required Hardware for Each Door
Flush Restrooms	All doors except shower room doors	Heavy-weight butt hinges (Spring loaded) - 4-1/2- by 4-1/2- inch size - 3 per door - US 26D finish. ADA Lever with Classroom Lock - US 26D finish. Dead Bolt - US 26D finish Wall bumper - US 26D finish. Door sweep. Silencers.
Flush Restrooms	Shower room doors	Heavy-weight butt hinges (Spring loaded) - 4-1/2- by 4-1/2- inch size - 3 per door - US 26D finish. ADA Lever with Bathroom Privacy Lock - US 26D finish. Dead Bolt - US 26D finish Wall bumper - US 26D finish. Door sweep. Silencers.

**END OF SECTION**

## SECTION 09260 - GYPSUM WALLBOARD

### PART 1 GENERAL

#### 1.01 COST

- A. The cost of work and materials required by this section shall be included in the lump-sum prices for constructing restrooms.

#### 1.02 SUMMARY

- A. Includes But Not Limited To
1. Furnish and install gypsum wallboard as described in Contract Documents.

#### 1.03 REFERENCES

- A. American Society For Testing And Materials
1. ASTM C 36-91, "Specification for Gypsum Wallboard"
  2. ASTM C475/C475M-02(2007), "Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board"
  3. ASTM C1002-07, "Specification for Steel Drill Screws for Application of Gypsum Board or Metal Plaster Bases"

#### 1.04 DELIVERY, STORAGE, & HANDLING

- A. Deliver materials in original packages, containers, or bundles bearing brand name, applicable standard designation, and Manufacturer's name.
- B. Store material under roof and keep dry. Stack gypsum board flat and protect from damage.

#### 1.05 PROJECT/SITE CONDITIONS

- A. Environmental Requirements
1. Temperature shall be 50 deg F minimum and 95 deg F maximum day and night during entire joint operation and until execution of Certificate of Substantial Completion.
  2. Provide ventilation to eliminate excessive moisture.
  3. Avoid hot air drafts which will cause too rapid drying.

## **PART 2 PRODUCTS**

### **2.01 MATERIALS**

#### **A. Gypsum Board**

1. Any manufacturer's product meeting requirements of ASTM C 36, Type X, UL one-hour rated, tapered edge, face paper suitable for painting.

### **2.02 ACCESSORIES**

#### **A. Metal Accessories**

1. 26 gauge steel, electrolytic galvanized zinc-coated, treated for maximum cement and paint adhesion. Surfaces to receive bedding cement shall be knurled for maximum bonding.
  - a. Corner Beads - 1-1/8 inch leg minimum.
  - b. Casing - Channel type.
  - c. Furring Channels -
    - 1) Walls - Galvanized USG DWC-25
    - 2) Ceilings - Galvanized USG DWC-20
  - d. Resilient Channels - RC-1 by USG
  - e. Other accessories as required by Manufacturer's fire tests to provide necessary fire ratings.

#### **B. Joint Compound & Reinforcing**

1. Best grade or type recommended by Wallboard Manufacturer and meeting requirements of ASTM C 475.
2. Use Taping Compound for first coat to embed tape and Finishing Compound for subsequent coats.

#### **C. Fasteners**

1. Bugle head screws meeting requirements of ASTM C 1002.
  - a. Types -
    - 1) Type W - For fastening gypsum board to wood members other than truss members and plywood web joists.
    - 2) Type S - For fastening gypsum board to steel framing members, truss members, and plywood web joists.
  - b. Lengths -
    - 1) Of length to penetrate wood framing 5/8 inch minimum.
    - 2) Of length to penetrate steel framing 3/8 inch minimum.

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

#### **A. Interface With Other Work**

1. Coordinate with Division 06 for location of backblocking for edges and ends and for blocking for equipment and building specialties.

#### **B. Fastening**

1. Apply from center of wallboard towards ends and edges.
2. Apply screws 3/8 inch minimum from ends or edges, one inch maximum from edges, and 1/2 inch maximum from ends.
3. Space screws not over 7 inches on center at edges where blocking or framing occurs. In panel field, space screws 7 inches on center.
4. Set screw heads 1/32 inch below plane of board.
5. Do not break face paper. If face is accidentally broken, apply additional screw 2 inches away.
6. Screws on adjacent ends or edges shall be opposite each other.
7. Drive screws with shank perpendicular to face of board.

#### **C. Single Layer Application**

1. Apply ceilings first using minimum of two men.
2. Use board of length to give minimum number of joints.
3. On walls over 9 feet high and on ceilings, apply board perpendicular to support.
4. Stagger end joints. End and edge joints of board applied on ceilings shall occur over framing members or be back blocked with 2x4 blocking. End joints of board horizontally applied on walls shall occur over framing members. Edge joints of board vertically applied on walls shall occur over framing members.
5. Butt edges in moderate contact. Do not force in place. Shim to level.
6. Leave facings true with joint, finishing flush. Vertical work shall be plumb and ceiling surfaces level.
7. Scribe work closely. Keep joints as far from openings as possible. If joints occur near an opening, apply wallboard so vertical joints are centered over openings. No vertical joints shall occur within 8 inches of external corners or openings.
8. Install board tight against support with joints even and true. Tighten loose screws.

#### **D. Metal Trim**

1. Corner Beads - Apply on outside corners with screws spaced 8 inches apart maximum.

2. Trim - Apply where gypsum board abuts dissimilar material in accordance with Manufacturer's instructions.
  - a. Exterior Metal Window & Door frames - Hold metal trim back from frames 1/8 inch to allow for caulking.
3. Furring Strips - Apply with screws through flanges into each framing member.

E. Finishing

1. General -
  - a. Tape and finish joints as specified below to correspond with final finish material to be applied to gypsum board. When sanding, do not raise nap of gypsum board face paper.
  - b. First Coat -
    - 1) Apply tape over center of joint in complete, uniform bed of taping compound.
    - 2) Completely fill gouges, dents, and fastener dimples.
    - 3) Allow to dry and sand lightly if necessary to eliminate high spots or excessive compound.
  - c. Second Coat -
    - 1) Apply coat of finishing compound over embedded tape extending 3-1/2 inches on both sides of joint center.
    - 2) Re-coat gouges, dents, and fastener dimples.
    - 3) Allow to dry and sand lightly to eliminate high spots or excessive compound.
2. Finishing Levels -
  - a. Painted and unpainted Gypsum Board Surfaces in Mechanical, Storage, & Utility Areas -
    - 1) GA-214-90 Level Three - "All joints and interior angles shall have tape embedded in joint compound and two separate coats of joint compound applied over all joints, angles, fastener heads, and accessories. All joint compound shall be smooth and free of tool marks and ridges."

**3.02 CLEANING**

- A. Remove from site debris resulting from work of this Section including taping compound spills.

**END OF SECTION**

## **SECTION 09901 - GENERAL PAINTING REQUIREMENTS**

### **PART 1 GENERAL**

#### **1.01 COST**

- A. The cost of work and materials required by this section shall be included in the lump-sum prices for constructing restrooms.

#### **1.02 SUMMARY**

- A. Includes But Not Limited To
1. Finishing elements of the building shown on Finish Schedule or specified below.

#### **1.03 SUBMITTALS**

- A. See Section 01330.
- B. RSN 09901A
1. Product Data
    - a. Submit written list of specific products proposed.
      - 1) Data shall be specific as to Manufacturer's brand name and identifying numbers.
      - 2) Outline preparation and application procedures to be followed including application methods, time between coats, and environmental and other conditions which may cause alteration of outlined procedures.
      - 3) Provide Manufacturer's cut sheets which indicate paint components.
    - b. Maintenance instructions
    - c. Color schedule
    - d. Maintain copy of submission on Project site.
  2. Samples
    - a. Provide paint card for each color and for each paint system. Card to show each component of system as well as total system.

#### **1.04 DELIVERY, STORAGE, & HANDLING**

- A. Deliver specified products in original containers with labels intact on each container. Deliver amount of material indicated on submittal for Project in single shipment. Notify Government Inspector two working days prior to delivery.
- B. Store materials in single place.
- C. Keep storage area clean and rectify any damage to area at completion of work of this Section.

#### **1.05 PROJECT/SITE CONDITIONS**

- A. Environmental Conditions
  - 1. Maintain temperature of paint storage area at 55 deg F minimum.
  - 2. Perform painting operations at temperature conditions recommended by Manufacturer for each operation.

#### **1.06 SCHEDULING**

- A. Coordinate with other Sections for work that requires painting prior to installation.
- B. Examine Contract Documents for painting requirements of other trades. Become familiar with their painting provisions and the painting of finish surfaces left unfinished by the requirements of other Sections.

#### **1.07 MAINTENANCE**

- A. Extra Materials
  - 1. Provide one quart of each finish coat material in Manufacturer's original container in each color used. Provide one pint of each primer and of each undercoat in each color used.

### **PART 2 PRODUCTS**

#### **2.01 MATERIALS**

- A. Linseed oil, shellac, turpentine, and other painting materials shall be pure, of highest quality, and bear identifying labels on containers.
- B. Tinting color shall be best grade of type recommended by Manufacturer of paint or stain used on Project.
- C. Paint compositions shall not only meet specified requirements but also contain sufficient miscellaneous components to promote proper drying and performance during and after application.

## **PART 3 EXECUTION**

### **3.01 ACCEPTABLE APPLICATORS**

- A. Applicator shall have experience in application of specified products for five years minimum and be acceptable to the Government and Manufacturer.

### **3.02 PREPARATION**

- A. Protection
1. Remove all oily rags and waste from building each night. Take every precaution to avoid danger of fire.
  2. Protect finish work and adjacent materials during painting.
  3. Good painting practice excludes splattering, dripping or painting any surfaces not intended to be painted. These items will not be spelled out in detail but pay special attention to the following -
    - a. Do not paint finish copper, bronze, chromium plate, nickel, stainless steel, anodized aluminum, or monel metal except as explicitly specified.
- B. Surface Preparation
1. Surfaces to be painted shall be clean and free of loose dirt. Clean and dust surfaces before painting or finishing.
  2. Do no exterior painting while surface is damp, unless recommended by Manufacturer, nor during rainy or frosty weather. Interior surfaces shall be dry before painting.
  3. Wash metal surfaces with mineral spirits to remove dirt and grease before applying materials. Where rust or scale is present, use wire brush or sandpaper to clean before painting. Clean shop coats of paint that have become marred and touch up with proper type primer.
  4. Treat galvanized metal and zinc surfaces as specified and in accordance with Manufacturer's directions before applying first paint coat.
  5. Sand woodwork smooth with 220 sandpaper and clean surfaces before proceeding with stain or first coat application.
  6. Fill holes and cracks in surfaces to receive paint or stain.

### **3.03 APPLICATION**

- A. Carefully follow Specifications and color schedule, painting complete all surfaces to be painted.
- B. Tint priming coat and undercoat to approximate shade of final coat, but with enough difference so it is possible to check application of specified number of coats.

- C. Spread materials smoothly and evenly.
- D. Putty nail holes in wood after application of first finish coat using natural colored type to match wood finish. Bring putty flush with adjoining surfaces.
- E. Touch up suction spots after application of first coat.
- F. Paint shall be thoroughly dry and surfaces clean before applying succeeding coats.
- G. Use fine sandpaper between coats as necessary to produce even, smooth surfaces.
- H. Make edges of paint adjoining other materials or colors clean, sharp, and without overlapping.
- I. Finished work shall be uniform, of approved color, smooth, and free from runs, sags, defective brushing, rolling, clogging, and excessive flooding.

#### **3.04 ADJUSTMENT**

- A. At completion of Project, touch up work to match specified finish. Repaint areas damaged during construction with specified finish at no additional cost to Owner.

#### **3.05 CLEANING**

- A. Do not discard paint containers without the Governments written approval to allow count to determine if paint delivered was applied.
- B. Upon completion of work of this Section, remove paint spots from floors, walls, glass, or other surfaces and leave work clean, orderly, and in acceptable condition. Remove debris caused by work of this Section from premises.

**END OF SECTION**

## **SECTION 09921 - PAINT ON INTERIOR HOLLOW MASONRY BLOCK**

### **PART 1 GENERAL**

#### **1.01 COST**

- A. The cost of work and materials required by this section shall be included in the lump-sum prices for constructing restrooms.

#### **1.02 SUMMARY**

- A. Includes But Not Limited To
1. Preparing and painting interior CMU walls as described in Contract Documents.
- B. Related Sections
1. Section 09901 - General Painting Requirements

### **PART 2 PRODUCTS**

#### **2.01 APPROVED MANUFACTURERS**

- A. First Coat
1. Benjamin Moore - Moorcraft Super Craft Latex Block Filler 285
  2. Fuller O'Brien - Interior/Exterior Latex Block Filler
  3. Pittsburgh Paints - 6-12 Speedhide Latex Hi-Fill Block Filler
  4. Sherwin-Williams - Heavy Duty Block Filler White
- B. Second Coat
1. Benjamin Moore - Regal AquaGlo Semi- Gloss 333
  2. Fuller O'Brien - Professional Finishes Interior/Exterior Semi-Gloss Latex Enamel
  3. Pittsburgh Paints - 88-110 Stainhide Lo Lustre
  4. Sherwin-Williams - ProMar 200 Semi-Gloss
- C. Similar systems approved by submittal.

**PART 3 EXECUTION**

**3.01 APPLICATION**

A. New Work

1. See appropriate paragraphs in General Section 09901.

**END OF SECTION**

## **SECTION 09922 - PAINT ON INTERIOR GYPSUM WALLBOARD AND WOOD**

### **PART 1 GENERAL**

#### **1.01 COST**

- A. The cost of work and materials required by this section shall be included in the lump-sum prices for constructing restrooms.

#### **1.02 SUMMARY**

- A. Includes But Not Limited To
1. Preparing, priming, and finish painting new interior gypsum wallboard surfaces as described in Contract Documents.
  2. Priming new interior gypsum wallboard surfaces to receive wall covering.
- B. Related Sections
1. Section 09901 - General Painting Requirements

#### **1.03 SEQUENCING**

- A. Properly clean and paint light cove interiors prior to installation of light fixtures.

### **PART 2 PRODUCTS**

#### **2.01 APPROVED MANUFACTURERS**

- A. Primer Under Wallcoverings
1. Product by a specified manufacturer for priming/sizing under wallcoverings and acceptable to Wallcovering Manufacturer.
  2. Equal product intended for use behind wallcovering as recommended by Wallcovering Manufacturer and approved by the Government.
- B. Rest Rooms
1. Benjamin Moore -
    - a. First Coat - Super Spec Latex Enamel Undercoater & Primer Sealer 253
    - b. Second Coat - Moorcraft Super Spec Acrylic Epoxy Coating 256
  2. Devoe -
    - a. First Coat Drywall - Wonder-Tones, Semi-gloss interior Latex Enamel DR 39XX

- b. First Coat Wood - DR 51701 Interior Latex Wood Primer-Sealer
  - c. Second Coat - Wonder-Tones, Semi-gloss interior Latex Enamel DR 39XX
  - 3. Fuller O'Brien -
    - a. First Coat Drywall - Pro-Tech, Interior Latex Wall Primer, FOB 220-20
    - b. First Coat Wood - Interior Latex Enamel, Undercoat, FOB 220-02
    - c. Second Coat - Liquid Glo, Interior Latex Semi-Gloss, Enamel, FOB 614-XX
  - 4. Pittsburgh Paint -
    - a. First & Second Coats - 98-Series, Aquapon WB, Waterborne Epoxy
  - 5. Sherwin-Williams -
    - a. First Coat Drywall - PrepRite® 200 Primer, B28W200
    - b. First Coat Wood - As recommended by manufacturer.
    - c. 2nd Coat: - Water Based Catalyzed Epoxy, B70 Series/ B60V15
- C. Remaining Wallboard
- 1. Benjamin Moore -
    - a. First Coat - Fresh Start All-Purpose 100% Acrylic Primer 023
    - b. Second & Third Coats - Regal AquaGlo 333
  - 2. Devoe -
    - a. First Coat Drywall - DR 50801 Interior Latex Primer-Sealer
    - b. First Coat Wood - DR 51701 Interior Latex Wood Primer-Sealer
    - c. Second & Third Coats - DR 525XX Wonder - Speed, Semi-gloss Interior, Latex Enamel
  - 3. Fuller O'Brien -
    - a. First Coat Drywall - Pro-Tech, Interior Latex Wall Primer, FOB 220-20
    - b. First Coat Wood - Interior Latex Enamel, Undercoat, FOB 220-02
    - c. Second & Third Coats - AA Interior Acrylic, Latex Semi-Gloss Enamel, FOB 214-XX
  - 4. Pittsburgh Paints -
    - a. First Coat Drywall - 6-2 SpeedHide Quick Dry Primer
    - b. First Coat Wood - 6-855 SpeedHide Interior Latex Enamel Undercoater
    - c. Second Coat - 6-8510 Interior High Lustre Semi-Gloss Latex
  - 5. Sherwin-Williams -

- a. First Coat - S-W PrepRite® 200 Latex Primer, B28W200
- b. Second Coat: - S-W ProMar® 200 Latex Semi-Gloss, B31W2200 Series

D. Paint Colors

1. To be selected by State Parks (Generally some shade of white).

**PART 3 EXECUTION**

**3.01 APPLICATION**

A. Interface With Other Work

1. Coordinate with wallcovering installers regarding suitability of primer.

B. New Work

1. See appropriate paragraphs of Section 09901.
2. Primer Only - On surfaces designated on Drawings to receive wall covering, apply one coat of specified primer.
3. Apply primer to be covered with other paint coats with roller only, or with spray gun and back-rolled.

**END OF SECTION**

## **SECTION 10165 - SOLID PLASTIC HDPE TOILET COMPARTMENTS**

### **PART 1 GENERAL**

#### **1.01 COST**

- A. The cost of work and materials required by this section shall be included in the lump-sum prices for constructing restrooms.

#### **1.02 SUBMITTALS**

- A. See Section 01330.
- B. RSN 10165A, Product Data
1. Manufacturer's literature or cut sheet
  2. Color selection

### **PART 2 PRODUCTS**

#### **2.01 COMPONENTS**

- A. Toilet & Miscellaneous Partitions
1. Panels -
    - a. Floor mounted, overhead-braced
    - b. 1" Thick High Density Polyethylene.
  2. Pilasters - Of same construction and finish as panels.
  3. Posts & Headrails - Aluminum anti-grip
  4. Pilaster shoe - Stainless Steel
  5. Hardware -
    - a. Each Door -
      - 1) Gravity type hinges with double handed, nylon bottom cam, adjustable for door closing position.
      - 2) Sliding door bolt.
      - 3) Door strike and keeper with rubber bumper.
    - b. Finish - Die cast, chrome plated Zamak alloy, extruded aluminum, or stainless steel.
- B. Urinal Partition

1. Basic construction specified above, floor mounted.
2. Minimum width 16 inches.

### **PART 3 EXECUTION**

#### **3.01 INSTALLATION**

- A. Install pilasters rigid, plumb, and level. Anchor pilaster to floor with 3/8 inch minimum threaded studs in expansion shields embedded 2 inches into concrete slab below setting bed.
- B. Secure panels to walls with two stirrup brackets minimum attached near top and bottom of each panel. Use fasteners of length to provide one inch embedment into blocking or masonry.
- C. Secure overhead brace to face sheets with two fasteners minimum per face. Set door tops parallel with brace. Set door bottom 12 inches above floor.
- D. Pilaster shoe to be level with and snug to floor.

#### **3.02 ADJUSTING**

- A. Lubricate hardware as recommended by Manufacturer.
- B. Set hinges on out-swinging doors to return to fully closed position.
- C. Perform final adjustments to pilaster leveling devices, door hardware, and other operating parts of partition assembly just prior to final inspection.

#### **3.03 CLEANING**

- A. Remove protective masking. Clean exposed surfaces of partitions, hardware, fittings, and accessories.
- B. Touch-up minor scratches and other finish imperfections using materials and methods recommended by Manufacturer.
- C. Replace damaged or scratched materials with new materials.

**END OF SECTION**

**SECTION 10810 - TOILET ACCESSORIES**

**PART 1 GENERAL**

**1.01 COST**

- A. The cost of work and materials required by this section shall be included in the lump-sum prices for constructing restrooms.

**1.02 SUBMITTALS**

- A. See Section 01330.
- B. RSN 10810A
  - 1. Product Data
    - a. Manufacturer's literature or cut sheets
  - 2. Shop Drawings
    - a. Submit schedule showing items used, location where installed, and proper attaching devices for substrate.

**PART 2 PRODUCTS**

**2.01 MANUFACTURED UNITS**

- A. Rest Rooms
  - 1. Toilet Tissue Dispensers - Owner Supplied (Jumbo Roll Type).
  - 2. Sanitary Napkin Disposal Container

A & J	Model U590
ASI	Model 0852
Bobrick	Model B270
Bradley	Model 4781-15
Gamco	Equal
McKinney	Model 626

- 3. Single Robe Hook with Exposed Fasteners

A & J	Model UX110
ASI	Model 7340
Bobrick	Model B-671
Bradley	Model 9114
Gamco	Model 5153
McKinney	Model 1444

4. Clothes Hook Strip

A & J	UJ9B-26
ASI	Four Hook Equal
Bobrick	Four Hook Equal
Bradley	SA33
Gamco	Four Hook Equal
McKinney	Four Hook Equal

5. Mirrors - Glass with stainless steel channel frame. Size as shown on Drawings.

6. Grab Bars

a. Rest Rooms and Showers - Concealed mount, 18 ga, type 304 stainless steel, 1-1/2 inch diameter, and non-slip finish in configuration shown on Drawings.

7. Hand Dryers

- a. Surface mounted stainless steel or chrome plated
- b. Automatic Sensor or push button operated
- c. Fan - 180 CFM minimum with brushless motor
- d. Heating element - Vandal proof
- e. Time cycle - 30 seconds or automatic

8. Soap Dispensers

a. Owner supplied

9. Shower Seats

a. Folding with stainless steel frame and phenolic seat.

**PART 3 EXECUTION**

**3.01 INSTALLATION**

- A. Install items in accordance with Manufacturer's instructions. Provide mounting devices proper for base structure.
- B. Where possible, mount like items in adjoining compartments back-to-back on same partition.
- C. Locate as shown on Drawings if location is indicated, or as specified below.
  - 1. Toilet Tissue Dispenser - One at each water closet.
  - 2. Robe Hook - One on door or partition door to each water closet.
  - 3. Clothes Hook Strips - Four hooks per shower stall and located as directed.

**END OF SECTION**

## SECTION 10210 - WALL LOUVERS

### PART 1 GENERAL

#### 1.01 COST

- A. The cost of work and materials required by this section shall be included in the lump-sum prices for constructing restrooms.

#### 1.02 SUBMITTALS

- A. Submit the following in accordance with Section 01330 - Submittals.
- B. RSN 10210A, Approval Data: Manufacturer's product data.

### PART 2 PRODUCTS

#### 2.01 WALL LOUVERS

- A. Type: Stationary sightproof louver with fixed blades.
- B. Blade Design: V shaped angled blade.
- C. Net Free Area: Approximately 120 square inches.
- D. Blade and Frame Material:
  - 1. Zinc coated steel.
  - 2. Blade Thickness: 18 gage, minimum.
  - 3. Frame Thickness: 18 gage, minimum.
- E. Finish: Color to compliment exterior finish.

#### 2.02 ACCESSORIES

- A. Insect Screen:
  - 1. Aluminum insect screen.
  - 2. Mounted in extruded aluminum frame fastened to inside of louver.
  - 3. Removable and rewirable for screen replacement.
- B. Fasteners: Stainless steel fasteners furnished or recommended by louver manufacturer for application.

**PART 3 EXECUTION**

**3.01 INSTALLATION**

- A. Install in accordance with manufacturer's recommendations.
- B. Install plumb and level in alignment with adjacent work.
- C. Securely fasten to CMU block.

**END OF SECTION**

## SECTION 15140- POTABLE WATER PIPING SYSTEMS

### PART 1 GENERAL

#### 1.01 COST

- A. The cost of work and materials required by this section shall be included in the lump-sum prices for constructing restrooms.

#### 1.02 SUMMARY

- A. Includes But Not Limited To
1. 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.
  2. Perform excavating and backfilling required by work of this Section.
- B. Related Sections
1. Division 02 -
    - a. Potable water piping from 5 feet from building to main.
    - b. Criteria for performance of excavation and backfill.

#### 1.03 REFERENCES

- A. American Society For Testing And Materials
1. ASTM B 88-03, "Standard Specification for Seamless Copper Water Tube"

#### 1.04 SUBMITTALS

- A. RSN 15140A, Quality Assurance Submittals
1. Written report of sterilization test.

### PART 2 PRODUCTS

#### 2.01 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
      - 2) 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.

## **PART 3 EXECUTION**

### **3.01 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.

### **3.02 FIELD QUALITY CONTROL**

- A. Site Tests

- 1. Before pipes are covered, test systems in presence of Government Inspector at 100 psi hydrostatic pressure for two hours and show no leaks.

### **3.03 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 the Government. 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 15150 - SOIL, WASTE, AND VENT SYSTEM

### PART 1 GENERAL

#### 1.01 COST

- A. The cost of work and materials required by this section shall be included in the lump-sum prices for constructing restrooms.

#### 1.02 SUMMARY

- A. Section Includes:
1. Soil, waste, and vent system.
  2. Pipe and fittings.
- B. Related Sections:
1. Sanitary sewerage: Division 2.

#### 1.03 REFERENCES

- A. ASME B16.18-2001 -- Cast Copper Alloy Solder Joint Pressure Fittings; The American Society of Mechanical Engineers.
- B. ASME B16.22-2001 -- Wrought Copper and Copper Alloy Solder Joint Pressure Fittings; The American Society of Mechanical Engineers.
- C. AWWA C600-99 -- AWWA Standard for Installation of Ductile-Iron Water Mains and their Appurtenances; American Water Works Association.
- D. ASTM A A74-09-- Standard Specification for Cast Iron Soil Pipe and Fittings.
- E. ASTM B306-09 -- Standard Specification for Copper Drainage Tube (DWV).
- F. ASTM C564-09a -- Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
- G. ASTM D2729-03-- Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
- H. ASTM D2751-05 -- Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings.
- I. ASTM D2855-96(2002) -- Standard Practice for Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings.

- J. CISPI -- Cast Iron Soil Pipe & Fittings Handbook; Volume I; Cast Iron Soil Pipe Institute, <http://www.cispi.org/handbook.htm>.

#### **1.04 QUALITY ASSURANCE**

- A. Installer Qualifications: A company installing products specified in this section and whose installations have performed in a satisfactory manner for a period of 5 years.

#### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Packing and Shipping:
1. All materials shall be protected from damage by factory packing. Label packing, indicating contents.
  2. Handle all products in a manner to prevent damage. Follow manufacturer's recommendations.
  3. Cap ends of pipes and tubes at the factory. Maintain end caps until pipe or tube is installed.
- B. Acceptance at Site:
1. Reject any damaged materials upon arrival.
- C. Storage and Protection:
1. Store the following items out of direct sunlight:
    - a. PVC pipe and fittings.
    - b. ABS sewer pipe and fittings.
  2. Store all materials above grade and in a manner to prevent damage.

#### **1.06 PROJECT CONDITIONS**

- A. Location and arrangement of plumbing materials are indicated on drawings. Install as indicated. Obtain approval of the Engineer for any significant deviation from the system design or from the intent of the design, before installation is executed.

#### **1.07 COORDINATION**

- A. Use manufacturer's instructions and data to determine rough-in requirements and locations of products connected to piping.

#### **1.08 SEQUENCING AND SCHEDULING**

- A. Coordinate work of this section with work of other sections as necessary.

## **PART 2 PRODUCTS**

### **2.01 SOIL, WASTE, AND VENT SYSTEM**

- A. Pipe and Fitting Materials - Within Building or Above Grade:
1. DWV copper tube: conform to ASTM B 306.
    - a. Application: Piping 1-1/2-inches and smaller.
    - b. Joints: Soldered.
    - c. Fittings:
      - 1) Soldered joint, wrought copper fittings: Conform to ASME B16.22.
      - 2) Soldered joint cast bronze fittings: Conform to ASME B16.18.
  2. Cast iron soil pipe and fittings: Conform to ASTM A 74.
    - a. Application: Piping over 1-1/2-inches.
    - b. Service weight.
    - c. Hub and spigot joints.
    - d. Push-on joints with rubber gaskets.
      - 1) Rubber gaskets: Conform to ASTM C 564.
  3. PVC sewer pipe and fittings: Conform to ASTM D 2729.
    - a. Application: All soil, waste, and vent piping.
    - b. Joints: Solvent-welded.
  4. ABS sewer pipe and fittings: Conform to ASTM D 2751.
    - a. Application: All soil, waste, and vent piping.
    - b. Joints: Solvent-welded or elastomeric.
- B. Pipe and Fitting Materials - Underground or Below Slab:
1. DWV copper tube: Conform to ASTM B 306.
    - a. Application: Piping 1-1/2-inches and smaller.
    - b. Joints: Soldered.
    - c. Fittings:
      - 1) Soldered joint, wrought copper fittings: Conform to ASME B16.22.
  2. Cast iron soil pipe and fittings: Conform to ASTM A 74.
    - a. Application: Piping over 1-1/2-inches.
    - b. Service weight.

- c. Hub and spigot joints:
  - 1) Push-on joints with rubber gaskets.
  - 2) Rubber gaskets: Conform to ASTM C 564.
- 3. PVC sewer pipe and fittings: Conform to ASTM D 2729.
  - a. Application: All soil, waste, and vent piping.
  - b. Joints: Solvent-welded.
- 4. ABS sewer pipe and fittings: Conform to ASTM D 2751.
  - a. Application: All soil, waste, and vent piping.
  - b. Joints: Solvent-welded.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Examine areas and conditions under which plumbing piping is to be installed.
- B. Verify placement of fixtures and equipment to determine locations of rough-in connections.
- C. Correct any unsatisfactory conditions before beginning installing piping products of this section. Commencement of installation indicates acceptance of conditions.

### **3.02 PREPARATION**

- A. Pipe and Fittings:
  - 1. Preparation of pipe and tubes: Ream and deburr.
  - 2. Clean all debris from pipe (inside and outside) and fittings (inside and outside) before installation.

### **3.03 INSTALLATION**

- A. General Piping Requirements:
  - 1. Install piping as indicated on the drawings. Avoid interferences with other work.
  - 2. Install fittings at all branch connections and changes in direction.
    - a. Install long-turn tees for back to back fixtures sharing a common drain.
    - b. Maximum change in direction of flow: 90 degrees.
  - 3. Exposed piping is indicated on drawings. Conceal all other piping.
  - 4. Connecting components of unequal size: Install standard reducers or increasers, correctly sized for application indicated.

- a. Do not reduce size of drainage piping in the direction of flow.
  5. Install piping parallel or at right angles to building walls. Diagonal pipe runs are only permitted as indicated on the drawings.
  6. Install pipes in parallel groups.
  7. Space individual pipes to allow servicing of plumbing system components.
  8. Install piping bend-free and sag-free.
  9. Support and anchor pipe as specified elsewhere in Division 15.
- B. Joints:
1. Copper tubing:
    - a. Brazing: Conform to soldering procedures and techniques described in the Copper Tube Handbook (CDA 404/0-R).
  2. Cast iron soil pipe:
    - a. Install joints in accordance with CISPI "Cast Iron Soil Pipe & Fittings Handbook," Chapter IV.
  3. ABS sewer pipe:
    - a. Solvent-welded joints:
    - b. Solvent-welded and elastomeric joints.
      - 1) Conform to the manufacturer's recommended installation procedures and techniques.
  4. PVC pipe:
    - a. Solvent-welded joints:
      - 1) Conform to requirements of ASTM D 2855.
- C. Soil, Waste, and Vent System:
1. Pitch: 1/8 inch per foot (1 percent), minimum.
  2. Underground building drains:
    - a. Locate connection of sewer pipe and building drain at point designated for service entrance into building.
    - b. Start drain installation at system's lowest point. Maintain alignment and grade indicated and provide uninterrupted continuity of invert.
    - c. Install piping with hub on upstream end of pipe.
    - d. Comply with manufacturer's instructions for installation of gaskets. Use only recommended lubricants and sealants.
    - e. Draw swab or drag through pipeline in continuous process, passing each new joint as it is formed.

- f. Underground soil, waste, and vent drain pipe packing: Begin packing (minimum 1-inch thick all around) where the drain pipe exits the building. Extend beyond perimeter of the building a minimum of ten feet.
  - 1) Packing material: Extruded polystyrene.
- 3. Connections:
  - a. Piping runouts to fixtures: Provide piping runouts, with traps, to fixtures and drains.
  - b. Position runouts as close as possible to underside of floor slabs.

### **3.04 CLEANING**

- A. Soil, Waste, and Vent System:
  - 1. Clean inside surfaces of piping.
  - 2. Clean debris from system components before installation.

### **3.05 PROTECTION**

- A. Plug all piping system openings whenever installation is temporarily interrupted or halted for the day.

**END OF SECTION**

## SECTION 15410 - PLUMBING FIXTURES

### PART 1 GENERAL

#### 1.01 COST

- A. The cost of work and materials required by this section shall be included in the lump-sum prices for constructing restrooms.

#### 1.02 SUMMARY

- A. Includes But Not Limited To
  - 1. Furnish and install plumbing fixtures as described in Contract Documents.

#### 1.03 SUBMITTALS

- A. RSN 15410A, Manufacturer's cut sheets for each type of fixture.

### PART 2 PRODUCTS

#### 2.01 GENERAL

- A. Interior exposed pipe, valves, and fixture trim, including trim behind custom casework doors, shall be chrome plated.
- B. Do not use flexible water piping.
- C. Flow Control Fittings
  - 1. Vandal proof type and fit faucet spout of fixture used. Flow shall be controlled as required by local codes.

#### 2.02 MANUFACTURED UNITS

- A. Water Closets -
  - 1. Standard Fixture -
    - a. Maximum water usage of 1.6 gallons per flush.
    - b. Supply carrier system
  - 2. ADA Fixture -
    - a. 18 inch rim height.
    - b. Maximum water usage of 1.6 gallons per flush.
    - c. Supply carrier system

3. Seat -
    - a. Provide split front type with check hinge.
  4. Supply Pipe & Stop -
    - a. Provide stuffing box and chrome plating.
  5. Urinals
    - a. Use ADA Fixture for urinals\
    - b. Supply carrier system
  6. Flush Valve -
    - a. Low flow, 1.6 gal per flush maximum
- B. ADA Lavatories
1. Self Supporting Fixture with carrier system
  2. Size - 20" x 27"
  3. Supply pipes with stops -
    - a. Provide stuffing box and chrome plating.
  4. Traps -
    - a. 17 ga tube "P" trap, chrome plated
  5. Safety Covers -
    - a. Provide protection on hot and cold water supply pipes and on trap.
- C. Floor Drains
1. Shallow trap, chrome plated 5 inch diameter strainer, and 2-1/2 to 4 inch diameter by 4-1/4 inch high chrome plated funnel.
- D. Cleanouts
1. Furnish wall cleanouts with chrome wall cover and screw.

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. Install fixtures including traps and accessories with accessible stop or control valve in each hot and cold water branch supply line.
- B. Mounting
1. Urinals -
    - a. ADA - 17 inches from floor to bottom lip.

- b. Install urinals using carriers.
- 2. Self Supporting Lavatories - Install using carriers.
- C. Make fixture floor connections with approved brand of cast iron floor flange, soldered or calked securely to waste pipe.
- D. Make joints between fixtures and floor flanges tight with approved fixture setting compound or gaskets.
- E. Calk between fixtures and wall and floor with white butyl rubber non-absorbent caulking compound. Point edges.

**3.02 CLEANING**

- A. Polish chrome finish at completion of Project.

**END OF SECTION**

## SECTION 16050 - GENERAL ELECTRICAL REQUIREMENTS

### PART 1 GENERAL

#### 1.01 PAYMENT

- A. Electrical Work:
1. Payment: Lump sum price bid offered in the schedule, which lump sum price shall include the cost of the following:
    - a. Utility fees (Fees charged by the local electric utility to bring power into a certain location and to provide transformers etc.)
    - b. Providing a complete grounding system.
    - c. Providing electrical conduit.
    - d. Furnishing and installing all brackets, fastenings, bolts, nuts, lockwashers, and other accessories, and drilling holes as required for mounting or installing electrical materials.
    - e. Electrical design where required.
    - f. Receptacles.
    - g. Wiring.
    - h. Lights.
    - i. Campground power pedestals.
    - j. Testing of complete electrical system.
- B. Components shall be connected, energized, and properly functioning in order for payment to take place.
- C. Concrete for transformer pads will be paid for under Section 03300.

#### 1.02 SUMMARY

- A. Includes But Not Limited To
1. Provide labor, materials, and equipment necessary for completion of work of this Division as described in Contract Documents.

#### 1.03 SUBMITTALS

- A. See Section 01330.
- B. RSN 16050A, Submit names of licensed electricians that will be working on the project.
- C. RSN 16050B, Product Data

1. Submit for following –
    - a. Wiring devices
    - b. Disconnects
    - c. Panelboards
    - d. Light fixtures
    - e. Campground power pedestals
  2. Provide following information for each item of equipment –
    - a. Catalog Sheets.
    - b. Assembly details or dimension drawings.
    - c. Installation instructions.
    - d. Manufacturer's name and catalog number
    - e. Name of local supplier.
  3. Do not purchase equipment before approval of product data.
- D. RSN 16050C, Shop Drawings, prior to installation
1. Panelboards
- E. RSN 16050D, Closeout Submittals
1. Operations & Maintenance Manual Data –
    - a. Modify and add to requirements of Section 01781 as follows –
      - 1) Provide operating and maintenance instructions for each item of equipment submitted under Product Data.
      - 2) Include copy of approved shop drawings.

#### **1.04 QUALITY ASSURANCE**

- A. Requirements of Regulatory Agencies
1. NEC and local ordinances and regulations shall govern unless more stringent requirements are specified.
  2. Material and equipment provided shall be new, meet standards of NEMA or UL, and bear their label wherever standards have been established and label service is available.

**PART 2 PRODUCTS**

**2.01 CAMPGROUND POWER PEDESTALS**

- A. Provide Parkmate Model VNKJHAUT, as manufactured by Midwest Electric Products, Inc. or equal. The unit has a 50Amp 14-50R Receptacle with 2-Pole Non-GFI Breaker, a 30Amp R-32U Receptacle with 1-Pole Non-GFI Breaker, a 20Amp 5-20R2GFI Receptacle with 1-Pole Non-GFI Breaker, and a photo cell controlled light.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

- A. Confirm dimensions, ratings, and specifications of equipment to be installed and coordinate these with site dimensions and with other Sections.

**3.02 FIELD QUALITY CONTROL**

- A. Site Tests
1. Test systems and demonstrate equipment as working and operating properly. Notify the Government Inspector prior to test. Rectify defects at no additional cost to the Government.

**END OF SECTION**

## **SECTION 16060 – GROUNDING**

### **PART 1 GENERAL**

#### **1.01 SUMMARY**

- A. Includes But Not Limited To
  - 1. Furnish and install grounding for entire electrical installation as described in Contract Documents.
- B. Related Sections
  - 1. Section 16050 - General Electrical Requirements

### **PART 2 PRODUCTS**

#### **2.01 COMPONENTS**

- A. Size materials in accordance with applicable codes.
- B. Grounding Conductors - Copper with green insulation or bare.
- C. Make grounding conductor connections to ground rods using approved bolted clamps of bronze or brass designed for such use.

### **PART 3 EXECUTION**

#### **3.01 INSTALLATION**

- A. Provide grounding for the following:
  - 1. Electrical service, its equipment and enclosures.
  - 2. Conduits and other conductor enclosures.
  - 3. Neutral or identified conductor of interior wiring system.
  - 4. Panelboards.
  - 5. Non-current-carrying metal parts of fixed equipment such as motors, starter and controller cabinets, instrument cases, and lighting fixtures.
- B. Interface With Other Work
  - 1. Coordinate with Division 03 when installing grounding conductors and placing concrete. Do not allow placement of concrete prior to Government Inspector's inspection of grounding conductor installation.

- C. Ground identified grounded (neutral) conductor of electrical system on supply side of main service disconnect.
- D. Pull grounding conductors in non-metallic raceways, in flexible steel conduit exceeding 72 inches in length, and in flexible conduit connecting to mechanical equipment.

### **3.02 FIELD QUALITY CONTROL**

- A. Inspections
  - 1. Notify the Government Inspector for inspection two days minimum prior to placing concrete over grounding conductor.

**END OF SECTION**

## SECTION 16120 - CONDUCTORS

### PART 1 GENERAL

#### 1.01 SUMMARY

- A. Includes But Not Limited To
  - 1. Quality of conductors used on Project except as excluded below.
- B. Related Sections
  - 1. Section 16050 - General Electrical Requirements

### PART 2 PRODUCTS

#### 2.01 COMPONENTS

- A. Conductors
  - 1. Copper (do not substitute aluminum for copper)-
    - a. Minimum size shall be No. 12 except where specified otherwise.
    - b. Conductor size No. 8 and larger shall be stranded.
  - 2. Insulation –
    - a. Conductor size No. 10 and smaller - 600V type THWN or XHHW (75 deg C)
    - b. Conductor Size No. 8 and larger - 600V Type THW, THWN, or XHHW (75 deg C).
    - c. Higher temperature insulation as required by NEC or local codes.
- B. High Voltage Power Cable
  - 1. Provided by Utah Power.

#### 2.02 ACCESSORIES

- A. Connectors
  - 1. Steel spring wire connectors or pressure type terminal lugs as specified.

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. Install conductors in raceway unless indicated otherwise.
- B. Pulling Conductors
  - 1. Do not pull conductors into conduit until raceway system is complete and cabinets and outlet boxes are free of foreign matter and moisture.
  - 2. Do not use heavy mechanical means for pulling conductors.
  - 3. Only wire pulling lubricant may be used.
- C. Conductors shall be continuous between each piece of equipment.
- D. Make splices for conductors No. 8 and smaller with steelspring wire connections. Splice larger conductors with pressure type terminal lugs.
- E. Route circuits as shown on drawings.
- F. Where common neutral is run for two or three home run circuits, connect phase conductors to breakers in panel which are attached to separate phase legs in order that neutral conductors will carry only unbalanced current. Neutral conductors shall be of same size as phase conductors unless specifically noted otherwise.
- G. Run conductors of different voltage systems in separate conduits.
- H. Conductors size #10 and smaller shall be colored throughout. Color code conductors as follows
  - 1. Black - Phase A
  - 2. Red - Phase B
  - 3. Blue - Phase C
  - 4. Green - Ground
  - 5. White - Neutral

**END OF SECTION**

## SECTION 16130 - RACEWAYS

### PART 1 GENERAL

#### 1.01 SUMMARY

- A. Includes But Not Limited To
  - 1. Quality of material and installation procedures for raceway and fittings used on Project.
- B. Related Sections
  - 1. Section 16050 - General Electrical Requirements
  - 2. See Sections specifying individual electrical systems for additional requirements.

### PART 2 PRODUCTS

#### 2.01 COMPONENTS

- A. Raceway
  - 1. Size as indicated on drawings, otherwise in accordance with applicable codes.
  - 2. Galvanized rigid steel or galvanized intermediate metal conduit (IMC) is permitted for use in all areas.
  - 3. Schedule 40 Polyvinyl Chloride (PVC) Conduit - Permitted for use only underground or below concrete with galvanized rigid steel or IMC elbows and risers.
  - 4. Listed, Liquidtight Flexible Metal Conduit - Use in outdoor final connections to mechanical equipment, length not to exceed 36 inches.
  - 5. Prohibited Raceway Materials –
    - a. Aluminum conduit.
    - b. Electrical Nonmetallic Tubing (ENT) conduit.
    - c. Armored cable type AC (BX) cable
    - d. Metal-clad cable type MC cable
- B. Fittings For
  - 1. Rigid Steel Conduit & IMC - Threaded and designed for conduit use.
  - 2. PVC Conduit –
    - a. PVC type. Use PVC adapters at all boxes.

- b. PVC components, (conduit, fittings, cement) shall be from same Manufacturer.
- 3. Liquidtight Flexible Metal Conduit - Sealtite type
- 4. Prohibited Fitting Materials –
  - a. Crimp-on, tap-on, indenter type fittings.
  - b. Malleable iron or cast set-screw fittings for EMT.
  - c. Spray (aerosol) PVC cement.
- C. Trench tape
  - 1. Polyethylene underground tape.
  - 2. Lettering to read "Caution Buried Electrical Line Below".

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. Securely mount raceway supports, boxes, and cabinets in an approved manner by
  - 1. Expansion shields in concrete or solid masonry.
  - 2. Toggle bolts on hollow masonry units.
  - 3. Wood screws on wood.
  - 4. Metal screws on metal.
- B. Cap raceway ends during construction. Clean or replace raceway in which water or foreign matter have accumulated.
- C. Install insulated bushings on each end of raceway 1-1/4 inches in diameter and larger.
- D. Bending of PVC shall be by hot box bender and, for PVC 2 inches in diameter and larger, expanding plugs. Apply PVC adhesive by brush.
- E. Bury underground raceway 24 inches deep minimum.
- F. Install trench warning tape as shown on drawings.
- G. Prohibited Procedures
  - 1. Use of wooden plugs inserted in concrete or masonry units for mounting raceway, supports, boxes, cabinets, or other equipment.
  - 2. Installation of raceway which has been crushed or deformed.
  - 3. Use of torches for bending PVC.

4. Spray applied PVC cement.
5. Nail drive straps for supporting raceway.

**END OF SECTION**

## **SECTION 16270 – TRANSFORMERS**

### **PART 1 GENERAL**

#### **1.01 RELATED DOCUMENTS**

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

#### **1.02 SUMMARY**

- A. This Section includes transformers supplied by Moon Lake Power

#### **1.03 SUBMITTALS**

- A. Submit in accordance with this section and Section 01330, Submittals:
  - 1. Product and any other data furnished to the Contractor by Moon Lake Power.

### **PART 2 PRODUCTS**

**Not Used**

### **PART 3 EXECUTION**

#### **3.01 INSTALLATION**

- A. Make arrangements for the installation of transformers with Moon Lake Power.
- B. Provide concrete pads for transformers.

**END OF SECTION**

## SECTION 16500 – LIGHTING

### PART 1 GENERAL

#### 1.01 SUMMARY

- A. Includes But Not Limited To
  - 1. Furnish and install exterior and interior lighting system as described in Contract Documents.
- B. Related Sections
  - 1. Section 16050 - General Electrical Requirements

### PART 2 PRODUCTS

#### 2.01 EQUIPMENT

- A. Six unit restrooms with showers and six unit restroom.
  - 1. As indicated on Drawings.
- B. Conduit - As specified in Section 16130.
- C. Exterior Lighting Control
  - 1. Photo Cell -
    - a. 120 volts
    - b. Approved Manufacturers -
      - 1) General Electric
      - 2) Approved equals prior to purchase.

#### 2.02 FIXTURE SUPPORT COMPONENTS

- A. Mountings, Fastenings, and Appurtenances: Corrosion-resistant items compatible with support components. Use materials that will not cause galvanic action at contact points. Use mountings that correctly position luminaire to provide indicated light distribution.

### PART 3 EXECUTION

#### 3.01 INSTALLATION

- A. Interface With Other Work
- B. Insure that fixtures are mounted solidly.

- C. Locate photo cells away from any light source and direct sunlight.
- D. Adjust photo cells as required so that light fixtures turn on/off at approximately the same time.

**3.02 FIELD QUALITY CONTROL**

- A. Inspect each installed unit for damage. Replace damaged fixtures and components.

**END OF SECTION**