



State of Utah

GARY R. HERBERT  
Governor

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Lt. Governor

Department of Administrative Services

KIMBERLY K. HOOD  
Executive Director

Division of Facilities Construction and Management

DAVID G. BUXTON  
Director

## ADDENDUM NO. 2

Date: January 7, 2010

To: Contractors

From: Wayne Smith – Project Manager

Reference: Manti Armory Upgrade  
Utah National Guard – Manti, Utah  
DFCM Project No. 09241470

Subject: **Addendum No. 2**

Pages	Addendum Cover Sheet	1 page
	<u>Architect's Addendum</u>	<u>98 pages</u>
	Total	99 pages

**Note: This Addendum shall be included as part of the Contract Documents. Items in this Addendum apply to all drawings and specification sections whether referenced or not involving the portion of the work added, deleted, modified, or otherwise addressed in the Addendum. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to Disqualification.**

While we contend that SB220 should only be potentially applicable to a contract issued after the effective date of said bill, this is to clarify that for purposes of this contract, regardless of the execution or effective dates of this contract, the status of Utah Law and remedies available to the State of Utah and DFCM, as it relates to any matter referred to or affected by said SB220, shall be the Utah law in effect at the time of the issuance of this Addendum.

**2.1 SCHEDULE CHANGES:** No Project Schedule changes.

**2.2 GENERAL ITEMS:** See attached Architect's Addendum No. 2 dated January 7, 2010.



January 7, 2010

## ADDENDUM #2

### *Principals*

*John C. Shirley, AIA*

*Corey R. Solum, AIA*

*Christopher D. Jensen, AIA*

### *Assoc. Principals*

*Tyler K. Kirk, AIA*

*John M. Shirley, AIA*

### *architects*

### *planners*

### *interior designers*

**PROJECT:** Utah National Guard  
Manti Armory Upgrades  
Project No. - 09241470  
110 E 100 N  
Manti, UT 84642

**BID DATE:** January 12, 2010

**BID TIME:** 3:00 p.m.

Please note and include the following items to the contract documents. The General Contractor shall be responsible to incorporate these changes into the Contract Documents and shall also be responsible to notify all sub-contractors of this addendum.

### **PROJECT MANUAL:**

1. SECTION 012100 – ALLOWANCES:
  - 1.1. As a reminder there is an allowance on this project, see section for amount, and should be part of the Base Bid. The successful bidder should include this amount as a separate line item on the schedule of values on the Certificate For Payment, AIA Document G703.
2. SECTION 015639 – TREE PROTECTION
  - 2.1. This section has been updated, and is being re-issued. **See Attached Section as part of this addendum.**
3. SECTION 075113 – BUILT-UP ASPHALT ROOFING:
  - 3.1. The existing roofing material is still under an active warranty by the manufacturer specified. The new and remodel roofing work specified in the Construction Drawings must maintain this in-place warranty.
  - 3.2. Paragraph 1.8.B- Inspection: The DFCM Roofing Program Manger is Matt Boyer (p: 801-541-0945). At the Pre-installation, during if needed, and at the time of completion of the roofing Matt will need to be contacted to be able to review and sign-off on the work for the DFCM.
  - 3.3. Paragraph 1.10 Warranty: Current warranty information for both the manufacturer and contractor can be found at the DFCM State website:  
[www.dfc.utah.gov/constManage/roofingNpaving.html](http://www.dfc.utah.gov/constManage/roofingNpaving.html).
4. SECTION 081416 – FLUSH WOOD DOORS:
  - 4.1. Paragraph 2.1.A: Add VT Industries to the approved manufacturers listed.
5. SECTION 093000– TILING:
  - 5.1. Paragraph 2.2.F should be modified as follows:
    - 5.1.1. Modular Size: change from 4-1/4 by 4-1/4 to a nominal 6 by 6 inches.
    - 5.1.2. WT2 and WT3 are reversed and should match the schedule.
    - 5.1.3. WT4 should be eliminated.
    - 5.1.4. WT5 should be added as per schedule to match the existing tile.
6. SECTION 099123 – INTERIOR PAINTING:
  - 6.1. Paragraph 2.7 Interior Painting Schedule:
    - 6.1.1. Add paragraph ‘D’ which states the following:

JSA Architects, LLC  
6465 South 3000 East  
Suite 205  
Salt Lake City, Utah  
84121  
Ph: 801.733-2500  
Fax: 801.733.2501  
[www.jsa-llc.com](http://www.jsa-llc.com)

6.1.1.1. D. Wood Substrates: Including wood trim, glued-laminated construction, exposed beams, and T&G decking.

1. Alkyd System:

- a. Prime Coat: Primer sealer, alkyd, interior, MPI #102.
- b. Topcoat: Alkyd, interior, satin, MPI #102.

7. SECTION 096813- TILE CARPETING

7.1. Part 2- Products

**7.1.1.1.** Section 2.1- B Products: This should read the following: “ **Subject to compliance with requirements, The following carpet selection is the basis of design, with approved manufacturer may be Lees or approved State of Utah Contract Carpet. Approved manufacturers shall meet or exceed the minimum requirements set forth within the specification section”**

7.1.1.2. Section 2.1.B.1 Change to Read ; Carpet: **Lees or Equal (State Contract)**

**7.1.1.3.** Section 2.2- B Products: This should read the following: “ **Subject to compliance with requirements, The following carpet selection is the basis of design, with approved manufacturer may be Lees or approved State of Utah Contract Carpet. Approved manufacturers shall meet or exceed the minimum requirements set forth within the specification section”**

7.1.1.4. Section 2.2.B.1 Change to Read ; Carpet: **Lees or Equal (State Contract)**

8. SECTION 099600 – HIGH PERFORMANCE COATINGS:

8.1. Add this section to Division 09- Finishes as part of the Table of Contents and see **attached section** to be added to the specifications.

9. SECTION 102113– TOILET COMPARTMENTS:

9.1. Paragraph 2.1.A: Add Accurate Toilet Partitions and Columbia Partitions to the approved manufacturers listed.

10. SECTION 102226.13– ACCORDION FOLDING PARTITIONS:

10.1. Paragraph 2.1.A: Add Moderco Accordion Doors to the approved manufacturers listed.

11. SECTION 102800– TOILET ROOM ACCESSORIES:

11.1. Paragraph 2.1.A: Add Colombia Accessories to the approved manufacturers listed.

12. SECTION 129300 – SITE FURNISHINGS

12.1. This section has been updated, and is being re-issued. **See Attached Section as part of this addendum.**

13. SECTION 238113– PACKAGED TERMINAL AIR CONDITIONERS:

13.1. This section should be deleted from the Table of Contents. The text of the section is not currently part of the Project Manual.

14. SECTION 238233– CONVECTORS

14.1. The title of this section should be ‘Convection Heating Units’.

15. SECTION 238127– VARIABLE REFRIGERATED SPLIT SYSTEMS:

15.1. This section should be added to the Table of Contents. The text of the section is already part of the Project Manual.

16. SECTION 264313– SURGE PROTECTIVE DEVICES (SPD’S):

16.1. This section should be added to the Table of Contents and to the Project Manual- **See attached section.**

17. DIVISION 27 – COMMUNICATION SERVICES:

17.1. This Division 27 should be included in the Table of Contents and should include the following information:

**17.1.1.1. Attached as part of the addendum is the National Guard Telecommunication General Information and Conditions.**

18. SECTION 283112– ZONED (DC LOOP) FIRE-ALARM SYSTEM:

18.1. Division 28 ‘Electronic and Safety and Security’ this Division should be included in the Table of Contents and should include this section which is already part of the Project Manual

- 18.2. Paragraph 2.1.A: The approved manufacturers listed should be changed so that manufacturers 1-5 are deleted and replaced with 1- Fire Light and 2- Silent Knight as the two approved manufacturers.
19. SECTION 321313- CONCRETE PAVEMENT  
19.1. This section has been updated, and is being re-issued. **See Attached Section as part of this addendum.**
20. SECTION 322000- SITE STONE  
20.1. This section has been updated, and is being re-issued. **See Attached Section as part of this addendum**
21. SECTION 328400- LANDSCAPE IRRIGATION  
21.1. This section has been updated, and is being re-issued. **See Attached Section as part of this addendum**
22. SECTION 329200- LANDSCAPE PLANTING  
22.1. This section has been updated, and is being re-issued. **See Attached Section as part of this addendum**
23. SECTION 329210 – LANDSCAPE EDGING  
23.1. This section has been updated, and is being re-issued. **See Attached Section as part of this addendum**

### **CONSTRUCTION DOCUMENTS:**

24. SHEET L-L1 LAYOUT/GRADING PLAN & SITE DETAILS:  
**24.1. Sheet reissued. See sheet for added information.**
25. SHEET L-R1 IRRIGATION PLAN & DETAILS-ADD ALTERNATE #2:  
**25.1. Sheet reissued. See sheet for added information.**
26. SHEET L-P1 LANDSCAPE PLAN & DETAILS- ADD ALTERNATE #2:  
**26.1. Sheet reissued. See sheet for added information.**
27. SHEET G008  
27.1. Detail D6 has been added.- **See attached Detail**
28. SHEET A-101 SITE PLAN:  
**28.1. Sheet reissued. See sheet for added information.**  
28.2. The ramp and stair systems as noted here and also on sht. L-L1 should be part of the base bid.  
28.3. New handrail is required at existing stairs at rear elevations has been added, and referenced to Detail D6 on sheet G008. See sheet for added information.
29. SHEET A-105 MAIN REFLECTED CEILING PLAN:  
29.1. Main Level Ceiling Plan A5: Drill Hall #129 The ceiling type tag CT-5 should be replaced with CT-7.  
29.1.1. This ceiling and beams, exposed to view, should be cleaned and prepared to receive the finish as recommended by the finish manufacturer.  
29.1.2. This ceiling should be finished as per Section 099123 Interior Painting Schedule noted above.
30. SHEET A-201 EXTERIOR ELEVATIONS:  
30.1. Elevation D5: The specification keynote 042000-10 near gridline 'C' should be deleted at this location as the brick is existing at this location.  
30.2. Elevation B5: The specification keynote 042000-10 and keynote #2 near gridline 'H' should be deleted at this location as the brick is existing at this location.
31. SHEET A-303  
**31.1. Sheet reissued. See sheet for added information.**
32. SHEET A-400 MAIN LEVEL INTERIOR FINISH FLOOR PLAN:  
32.1. Room Finish Schedule:  
32.1.1. 'E' means the existing finish/material is to remain.  
32.2. Floor Finish Schedule:

32.2.1. WF- Wood Sports Floor: This Mark should be deleted as this flooring is existing in the Drill Hall and is to remain as is. This floor should be protected as needed for the other work that takes place in the Drill Hall.

32.2.2. Drill Hall #129 should have EP added as a floor finish. **See attached sheet A-104 showing extent of this finish.**

32.3. Base Finish Schedule:

32.3.1. CB and CB-2: The size should be changed from 4 x 4 to 6 x6.

32.4. Wall Finish Schedule:

32.4.1. WT-1 thru WT-5: The size should be changed from 4x4 to 6x6. This will match the dimensions of the elevations.

32.4.2. WT-4: This call out was not used.

33. STRUCTURAL ITEMS:

33.1 The table in A.12 on Sheet S-101 has been revised with updated Importance factors and Seismic Occupancy factor. **(See attached Sheet S-101.)**

33.2 Section C on Sheet S-101 has been revised to show Strong-Bolt anchors, Epoxy grouted anchors, and Titen-HD anchors at anchor bolts for interior walls.

33.3 Section L - CMU Special Inspection has been revised to be Level 2 Special Inspection. Titen HD Screw Anchors, and Strong-Bolt Expansion Anchors have been added to the Special Cases item in the same section. Concrete special inspection requirements have been added in the same section.

33.4 Sheet S-301 (**see attached Sheet S301**), at HU hangers for new beams attached directly to existing CMU with Titen screws, a note has been added to the plans that states, "Field verify that Titen screws are installed into solid grouted CMU. If needed, remove existing face shell and dry pack existing CMU cells to provide solid grouting at connection where no existing bond beam occurs."

33.5 The structural items requiring special inspection per the DFCM Special Inspection and Testing Form (from [http://dfcm.utah.gov/downloads/bldg\\_official/Special\\_Inspection\\_Form.pdf](http://dfcm.utah.gov/downloads/bldg_official/Special_Inspection_Form.pdf)) are the following:

Structural Steel to be Fabricated by an Approved Fabricator per DFCM Approved

Fabricator List.

High Strength Bolting (1704.3) - Periodic

Single Pass Fillet Welds < or = 5/16" - Periodic

Reinforcing Steel Placement (in new footings) - Periodic

Use of Required Concrete Design Mix - Periodic

Concrete Sampling for Strength Test, Slum, Air Content, and Temperature of Concrete - Continuous

Masonry Construction - Site Prepared Mortar – Periodic

Masonry Construction - Construction of Mortar Joints – Periodic

Masonry Construction - Location of Reinforcement, Connectors, and Anchorages

- Periodic

Masonry Construction – Size and Location of Structural Elements, Size and Location of Anchors – Periodic

Masonry Construction – Size, Grade and Type of Reinforcement – Periodic

Masonry Construction – Cold and Hot Weather Protection – Periodic

Masonry Construction – Placement of Reinforcement and Grout Mix – Periodic

Masonry Construction – Clean Grout Space and Grout Placement – Continuous

Masonry Construction – Grout and Mortar Specimens and Prisms – Continuous

Masonry Construction – Construction and Submittal Compliance Verification – Periodic

Structural Fill Soil Densities - Periodic

Post-Installed Mechanical Anchors (Strong-Bolt or Titen HD) - Periodic

Epoxy Grouted Anchor Bolts - Periodic

Seismic Supports for Duct Work and Sealing of Joints for Duct Work - Periodic

Seismic Supports for Electrical Raceways, Cable Trays and Lights - Periodic

Seismic Supports for Plumbing Lines including Gas, Water, and Steam and  
Condensation - Periodic

34. MECHANICAL ITEMS:

**34.1. See the attached addendum #2 comments from WHW Engineering dated 01-06-10 for changes/clarifications to the specifications and drawings.**

35. ELECTRICAL ITEMS:

35.1. SHEET E-001:

35.1.1. Light fixture schedule:

35.1.1.1. All 4 foot lamps are to be Sylvania F028/SS or equal.

35.1.1.2. All fluorescent ballasts for 4 foot lamps should have .78 ballast factor.

35.2. SHEET E-003:

35.2.1. Reference note #2 should read as follows:

Contractor is to extend existing ground electrodes (water line ground, ground rods ground, steel structure ground) to new ground bus bar in new main distribution panelboard.

20.3 SHEET E-902:

20.3.1 Delete type T-3 light fixture in Foyer 101. See attached drawing.

20.3.2 Delete circuits to cabinet lights.

20.3.3 Add track lights under the cove to light the display cabinets. Refer to attached drawing for more information. Tie the track lights to a new dimmer switch. Provide conduit and conductors for a complete installation.

20.4 Lighting

20.4.1 The following fixture manufacturer's are approved:

20.4.1.1	T-1	Williams
20.4.1.2	T-2	Williams
20.4.1.3	T-3	Williams
20.4.1.4	T-4	LSI
20.4.1.5	T-5	Williams
20.4.1.6	T-6	Williams
20.4.1.7	T-7	Williams
20.4.1.8	T-8	Williams
20.4.1.9	T-9	Williams
20.4.1.10	T-10	Williams
20.4.1.11	T-11	Williams
20.4.1.12	T-12	Williams
20.4.1.13	T-13	LSI
20.4.1.14	EX-1	Exitronix
20.4.1.15	EX-2	Exitronix
20.4.1.16	EX-3	Exitronix

**End of Addendum #2**

SECTION 015639 TREE PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the protection and trimming of trees that interfere with, or are affected by, execution of the Work, whether temporary or new construction.
- B. Related Sections include the following:
  - 1. Division 1 Sections and General and Supplementary Conditions..
  - 2. Division 31 Section "Site Clearing" for removal limits of trees, shrubs, and other plantings affected by new construction.
  - 3. Division 31 Section "Earth Moving" for building and utility trench excavation, backfilling, compacting and grading requirements, and soil materials.
  - 4. Division 32 Section "Landscape Planting" for tree and shrub planting and transplanting, tree support systems, and soil materials.
  - 5. Division 32 Section "Landscape Irrigation" for irrigation system.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- C. Certification: From a qualified arborist that trees indicated to remain have been protected during all phases of construction according to recognized standards and those trees were promptly and properly treated and repaired when damaged.
- D. Maintenance Recommendations: From a qualified arborist for care and protection of trees affected by construction during and after completing the Work.

1.4 QUALITY ASSURANCE

- A. Tree Service Qualifications: An experienced tree service firm that has successfully completed tree protection and trimming work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site during execution of the Work.

## UTNG – MANTI ARMORY REMODEL

- B. Arborist Qualifications: An arborist certified by the International Society of Arboriculture or licensed in the jurisdiction where Project is located.
- C. Tree Pruning Standards: Comply with ANSI A300, "Trees, Shrubs, and Other Woody Plant Maintenance--Standard Practices," unless more stringent requirements are indicated.
- D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."
  - 1. Before starting tree protection and trimming, meet with representatives of authorities having jurisdiction, Owner, Architect, consultants, and other concerned entities. Review tree protection and trimming procedures and responsibilities. Notify participants at least three working days before convening conference. Record discussions and agreements and furnish a copy to each participant.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Drainage Fill: Selected crushed stone, or crushed or uncrushed gravel, washed, ASTM D 448, Size 24, with 90 to 100 percent passing a 2-1/2-inch (63-mm) sieve and not more than 10 percent passing a 3/4-inch (19-mm) sieve.
- B. Topsoil: Fertile, friable, surface soil, containing natural loam and complying with Landscape Planting 329200. Provide topsoil that is free of stones larger than 1 inch (25 mm) in any dimension and free of other extraneous or toxic matter harmful to plant growth.
- C. Filter Fabric: Manufacturer's standard, nonwoven, pervious, geotextile fabric of polypropylene, nylon, or polyester fibers.
- A. Tree protection barrier: Refer to Drawings.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Temporary Fencing: Install temporary fencing located as indicated or outside the drip line of trees to protect remaining vegetation from construction damage. As indicated on the Drawings. Contractor to meet with Architect and Arborist to define specific fencing locations for this project during phases of construction.
  - 1. Install fence according to ASTM F 567 and manufacturer's written instructions.
- B. Protect tree root systems from damage due to noxious materials caused by runoff or spillage while mixing, placing, or storing construction materials. Protect root systems from flooding, eroding, or excessive wetting caused by dewatering operations.

- C. Do not store construction materials, debris, or excavated material within the drip line of remaining trees. Do not permit vehicles or foot traffic within the drip line; prevent soil compaction over root systems.
- D. Do not allow fires under or adjacent to remaining trees or other plants.

### 3.2 EXCAVATION

- A. Install shoring or other protective support systems to minimize sloping or benching of excavations.
- B. Do not excavate within drip line of trees, unless otherwise indicated.
- C. Where excavation for new construction is required within drip line of trees, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks and comb soil to expose roots.
  - 1. Relocate roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and relocate them without breaking. If encountered immediately adjacent to location of new construction and relocation is not practical, cut roots approximately 3 inches (75 mm) back from new construction.
  - 2. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.
- D. Where utility trenches are required within drip line of trees, tunnel under or around roots by drilling, auger boring, pipe jacking, or digging by hand.

### 3.3 REGRADING

- A. Grade Lowering: Where new finish grade is indicated below existing grade around trees, slope grade beyond drip line of trees. Maintain existing grades within drip line of trees.
- B. Grade Lowering: Where new finish grade is indicated below existing grade around trees, slope grade away from trees as recommended by qualified arborist, unless otherwise indicated.
  - 1. Root Pruning: Prune tree roots exposed during grade lowering. Do not cut main lateral roots or taproots; cut only smaller roots. Cut roots with sharp pruning instruments; do not break or chop.
- C. Minor Fill: Where existing grade is 6 inches (150 mm) or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.

- D. Moderate Fill: Where existing grade is more than 6 inches (150 mm), but less than 12 inches (300 mm), below elevation of finish grade, place drainage fill, filter fabric, and topsoil on existing grade as follows:
  - 1. Carefully place drainage fill against tree trunk approximately 2 inches (50 mm) above elevation of finish grade and extend not less than 18 inches (450 mm) from tree trunk on all sides. For balance of area within drip-line perimeter, place drainage fill up to 6 inches (150 mm) below elevation of grade.
  - 2. Place filter fabric with edges overlapping 6 inches (150 mm) minimum.
  - 3. Place fill layer of topsoil to finish grade. Do not compact drainage fill or topsoil. Hand grade to required finish elevations.

### 3.4 TREE PRUNING

- A. Prune remaining trees affected by temporary and new construction.
- B. Prune remaining trees to compensate for root loss caused by damaging or cutting root system. Provide subsequent maintenance during Contract period as recommended by qualified arborist.
- C. Pruning Standards: Prune trees according to ANSI A300 as follows:
  - 1. Type of Pruning: Crown cleaning.
  - 2. Type of Pruning: Crown thinning.
  - 3. Type of Pruning: Crown raising.
  - 4. Type of Pruning: Crown reduction.
  - 5. Type of Pruning: Vista pruning.
  - 6. Type of Pruning: Crown restoration.
- D. Cut branches with sharp pruning instruments; do not break or chop.
- E. Chip branches removed from trees. Spread chips where indicated or as directed by Architect.

### 3.5 TREE REPAIR AND REPLACEMENT

- A. Promptly repair trees damaged by construction operations within 24 hours. Treat damaged trunks, limbs, and roots according to written instructions of the qualified arborist.
- B. Remove and replace dead and damaged trees that the qualified arborist determines to be incapable of restoring to a normal growth pattern.
  - 1. Provide new trees of the same size and species as those being replaced; plant and maintain as specified in Division 32 Section "Landscape Planting ."
  - 2. Provide new trees of 6-inch (150-mm) caliper size and of a species selected by Owner's Representative when trees more than 6 inches (150 mm) in caliper size, measured 12 inches (300 mm) above grade, are required to be replaced.

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- C. Aerate surface soil, compacted during construction, 10 feet (3 m) beyond drip line and no closer than 36 inches (900 mm) to tree trunk. Drill 2-inch- (50-mm-) diameter holes a minimum of 12 inches (300 mm) deep at 24 inches (600 mm) o.c. Backfill holes with an equal mix of augered soil and sand.

### 3.6 DISPOSAL OF WASTE MATERIALS

- A. Burning is not permitted.
- B. Disposal: Remove excess excavated material, displaced trees, and excess chips from Owner's property.

END OF SECTION 015639

## SECTION 099600 - HIGH-PERFORMANCE COATINGS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section includes surface preparation and application of high-performance coating systems on the following substrates:
  - 1. Interior Substrates:
    - a. Concrete, horizontal surfaces.
- B. Related Requirements:
  - 1. Division 05 Sections for shop priming of metal substrates with primers specified in this Section.
  - 2. Division 09 painting Sections for special-use coatings and general field painting.

#### 1.3 DEFINITIONS

- A. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.

#### 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include preparation requirements and application instructions.
- B. Samples for Initial Selection: For each type of topcoat product indicated.
- C. Samples for Verification: For each type of coating system and in each color and gloss of topcoat indicated.
  - 1. Submit Samples on rigid backing, 8 inches (200 mm) square.
  - 2. Step coats on Samples to show each coat required for system.
  - 3. Label each coat of each Sample.
  - 4. Label each Sample for location and application area.
- D. Product List: For each product indicated, include the following:

1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.
3. VOC content.

#### 1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Coatings: 5 percent, but not less than 1 gal. of each material and color applied.

#### 1.6 QUALITY ASSURANCE

- A. Mockups: Apply mockups of each coating system indicated to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each coating system specified in Part 3.
  - a. Other Items: Architect will designate items or areas required.
2. Final approval of color selections will be based on mockups.
  - a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

#### 1.8 FIELD CONDITIONS

- A. Apply coatings only when temperature of surfaces to be coated and surrounding air temperatures are between 50 and 95 deg F (10 and 35 deg C).

- B. Do not apply coatings when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.
- C. Do not apply exterior coatings in snow, rain, fog, or mist.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Benjamin Moore & Co.
  - 2. Pittsburg Paints.
  - 3. Pratt & Lambert.
  - 4. Sherwin-Williams Company (The).
- B. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles for the paint category indicated.

### 2.2 HIGH-PERFORMANCE COATINGS, GENERAL

- A. MPI Standards: Provide products that comply with MPI standards indicated and are listed in "MPI Approved Products List."
- B. Material Compatibility:
  - 1. Provide materials for use within each coating system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
  - 2. For each coat in a coating system, provide products recommended in writing by manufacturers of topcoat for use in coating system and on substrate indicated.
  - 3. Provide products of same manufacturer for each coat in a coating system.
- C. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction and, for interior coatings applied at project site, the following VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
  - 1. Flat Paints and Coatings: 50 g/L.
  - 2. Nonflat Paints and Coatings: 150 g/L.
  - 3. Primers, Sealers, and Undercoaters: 200 g/L.
  - 4. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: 250 g/L.
  - 5. Zinc-Rich Industrial Maintenance Primers: 340 g/L.
  - 6. Pre-Treatment Wash Primers: 420 g/L.
  - 7. Floor Coatings: 100 g/L.
  - 8. Shellacs, Clear: 730 g/L.
  - 9. Shellacs, Pigmented: 550 g/L.

- D. Low-Emitting Materials: Interior coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- E. Colors: As selected by Architect from manufacturer's full range.

## 2.3 EPOXY COATINGS

- A. Epoxy, Gloss: MPI #77.
  - 1. Benjamin Moore & Co, Montvale, NJ (201) 573-9600
    - a. Penetrating Sealer – M36-00/M37 Polyamide Epoxy Coating
    - b. Clear Sealer/Finish catalyzed and reduced 1 to 1 with M95Epoxy Thinner.
    - c. Base Coat – Series M36/M39 Polyamide Epoxy Coating Hi-Build Gloss
    - d. Top Coat – Series M36/M39 Polyamide Epoxy Coating Hi-Build Gloss
    - e. Thinner – M95 Epoxy Thinner.
  - 2. Pittsburg Paints, Pittsburg, PA (412) 274-7900
    - a. Penetrating Sealer – Polyamide Epoxy Coating Clear
    - b. Sealer/Finish catalyzed and reduced 1 to 1 with Epoxy Thinner.
    - c. Base Coat – Aquapon Polyamide-Epoxy Coating Ready Mixed Colors.
    - d. Top Coat – Aquapon Polyamide-Epoxy Coating Ready Mixed Colors.
    - e. Thinner – Pittsburgh Epoxy Thinner, 97-725.
  - 3. Pratt & Lambert, Cleveland, OH (716) 873-6000
    - a. Base Coat – Palgard Epoxy
    - b. Second Coat – Palgard Epoxy
    - c. Top Coat – Palgard Epoxy
    - d. Thinner – Do not thin
  - 4. E. Sherwin- Williams, Cleveland, OH (216) 566-2000
    - a. Sealer – Hi-Solids Catalyzed Epoxy reduced with one Pint per gallon Reducer.
    - b. Base Coat – Hi-Solids Catalyzed Epoxy
    - c. Top Coat – Hi-Solids Catalyzed Epoxy
    - d. Thinner – No 54 Epoxy Reducer, R7K54

## 2.4 SOURCE QUALITY CONTROL

- A. Testing of Coating Materials: Owner reserves the right to invoke the following procedure:
  - 1. Owner will engage the services of a qualified testing agency to sample coating materials. Contractor will be notified in advance and may be present when samples are taken. If coating materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
  - 2. Testing agency will perform tests for compliance with product requirements.
  - 3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying coating materials from Project site, pay for testing, and recoat surfaces coated with rejected materials. Contractor will be required to remove rejected materials from

previously coated surfaces if, on recoating with complying materials, the two coatings are incompatible.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
  - 1. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
    - a. Concrete: 12 percent.
- B. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- C. Proceed with coating application only after unsatisfactory conditions have been corrected.
  - 1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

#### 3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
  - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.
- C. Clean substrates of substances that could impair bond of coatings, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
  - 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce coating systems indicated.
- D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
- E.
  - 1. Abrasive blast clean surfaces to comply with SSPC-SP 7/NACE No. 4, "Brush-Off Blast Cleaning."

### 3.3 APPLICATION

- A. Apply high-performance coatings according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."
  - 1. Use applicators and techniques suited for coating and substrate indicated.
  - 2. Coat surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, coat surfaces behind permanently fixed equipment or furniture with prime coat only.
  - 3. Coat back sides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
  - 4. Do not apply coatings over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of the same material are to be applied. Tint undercoats to match color of finish coat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.
- D. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.

### 3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner will engage the services of a qualified testing and inspecting agency to inspect and test coatings for dry film thickness.
  - 1. Contractor shall touch up and restore coated surfaces damaged by testing.
  - 2. If test results show that dry film thickness of applied coating does not comply with coating manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with coating manufacturer's written recommendations.

### 3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from coating operation. Correct damage by cleaning, repairing, replacing, and recoating, as approved by Architect, and leave in an undamaged condition.

- D. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces.

### 3.6 INTERIOR HIGH-PERFORMANCE COATING SCHEDULE

- A. Concrete Substrates, Horizontal Surfaces.

- 1. Epoxy System:

- a. Prime Coat: Epoxy, gloss, MPI #77.
- b. Intermediate Coat: Epoxy, gloss, MPI #77.
- c. Topcoat: Epoxy, gloss, MPI #77.

END OF SECTION 099600

## UTNG – MANTI ARMORY REMODEL

### SECTION 129300 - SITE FURNISHINGS (ADD ALTERNATE #2)

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.2 SUMMARY

- A. This Section includes the following site and street furnishings:
  - 1. Bench
- B. Related Sections include the following:
  - 1. Division 3 “Concrete” for installation of concrete footings and anchors.
  - 2. Division 31 Section “Earth Moving” for excavation for installation of concrete footings.

##### 1.3 SAMPLES & SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, finishes, field-assembly requirements and installation details.
- B. The Contractor shall provide copies of product specification sheets on all proposed site furnishings to be installed to the Owner's Representative for approval prior to the start of work, in accordance with the parameters of Division-1. Work may not commence until product sheets are submitted and approved. Submittals shall be marked up to show proper model, finish, etc.

##### 1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain all site furnishings through one source from a single manufacturer for each item.
- B. Product Delivery, Storage and Handling:
  - 1. Furnish materials in manufacturer’s unopened, original containers, bearing original labels showing quantity, description and name of manufacturer.
  - 2. Deliver and unload at the site on pallets and bound in such a manner that no damage occurs to product.
  - 3. Store products in a manner which will preclude damage. Damaged materials will be rejected. Remove all damaged material from the job site immediately, and replace at no cost to the Owner.
  - 4. Furnish suitable equipment to locate all site furnishing materials carefully and efficiently. Lift materials using lifting inserts provided by manufacturer where applicable.

## UTNG – MANTI ARMORY REMODEL

### PART 2 - PRODUCTS

#### 2.1 BENCH

- A. Shall be DuMor Inc. 58-series model as indicated on drawings or as manufactured by Urban Accessories, Iron Age or approved equal.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Do not install site furnishings prior to acceptance by Owner of area to receive such materials.
- B. Examine area and conditions for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance.
- C. Verify drawing dimensions with actual field conditions.
- D. Report to the Owner all conditions which prevent proper execution of this work or that are different from those shown. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 INSTALLATION

- A. Comply with manufacturer's written installation instructions, unless more stringent requirements are indicated on Drawings.
- B. All metal inserts, anchor slots, anchors, anchor bolts, fastenings, and other fastening devices, for attachment of site improvement items to concrete and masonry, shall be stainless steel.
- C. Concrete footings shall be the size noted in the Drawings and / or installed per manufacturer's specifications.
- D. Contractor shall be responsible for the correct location of site improvement items. Free-standing site improvement items shall be set plumb and horizontal regardless of the pitch of the finished surrounding grade unless otherwise shown on Drawings.

#### 3.3 GUARANTEE

- A. Contractor will furnish and deliver standard written manufacturer's guarantee in Owner's name covering all materials and workmanship under this Division 12 Section, in addition to, and not in lieu of, other liabilities which the Contractor may have by law or other provisions of the Contract Documents.

## UTNG – MANTI ARMORY REMODEL

- B. Contractor shall pay for repairs of any damage to any part of the project, or caused by defects in his work and for any repair to the materials or equipment caused by replacement. Complete all repairs to the satisfaction of the Owner's Representative.
- C. Replace any part of the work installed under this contract requiring excessive maintenance. Work of this nature will be considered defective. Replace at no cost to the Owner upon notification during the one-year guarantee period.

### 3.4 CLEANING

- A. Keep all areas of work clean, neat and orderly at all times.
- B. Clean up and remove all debris from the work area to satisfaction of Owner prior to Final Acceptance.

END OF SECTION 129300

SECTION 264313 - SURGE PROTECTIVE DEVICES (SPDs) LOW VOLTAGE AC SURGE PROTECTION FOR ELECTRICAL DISTRIBUTION SYSTEMS

PART 1 GENERAL

1.01 SCOPE

- A. The Contractor shall furnish and install the Surge Protective Device (SPD) equipment having the electrical characteristics, ratings, and modifications as specified herein and as shown on the contract drawings. To maximize performance and reliability and to obtain the lowest possible let-through voltages, the ac surge protection shall be integrated into electrical distribution equipment such as switchgear, switchboards, panelboards, busway (integrated within bus plug), or motor control centers. Refer to related sections for surge requirements in:

1.02 RELATED SECTIONS

- A. Section 26 24 16 – Panelboards

1.03 REFERENCES

- A. SPD units and all components shall be designed, manufactured, and tested in accordance with the latest applicable UL standard (ANSI/UL 1449 3<sup>rd</sup> Edition).

1.04 SUBMITTALS – FOR REVIEW/APPROVAL

- A. The following information shall be submitted to the Engineer:
  - 1. Provide verification that the SPD complies with the required ANSI/UL 1449 3rd Edition listing by Underwriters Laboratories (UL) or other Nationally Recognized Testing Laboratory (NRTL). Compliance may be in the form of a file number that can be verified on UL's website or on any other NRTL's website, as long as the website contains the following information at a minimum: model number, SPD Type, system voltage, phases, modes of protection, Voltage Protection Rating (VPR), and Nominal Discharge Current ( $I_n$ ).
  - 2. For sidemount mounting applications (SPD mounted external to electrical assembly), electrical/mechanical drawings showing unit dimensions, weights, installation instruction details, and wiring configuration.
- B. Where applicable the following additional information shall be submitted to the engineer:
  - 1. Descriptive bulletins
  - 2. Product sheets

1.05 SUBMITTALS – FOR CONSTRUCTION

- A. The following information shall be submitted for record purposes:
  - 1. Final as-built drawings and information for items listed in Section 1.04 and shall incorporate all changes made during the manufacturing process

1.06 QUALIFICATIONS

## UTNG – MANTI ARMORY REMODEL

- A. The manufacturer of the assembly shall be the manufacturer of the major components within the assembly.
- B. For the equipment specified herein, the manufacturer shall be ISO 9001 or 9002 certified.
- C. The manufacturer of this equipment shall have produced similar electrical equipment for a minimum period of five (5) years. When requested by the Engineer, an acceptable list of installations with similar equipment shall be provided demonstrating compliance with this requirement.
- D. The SPD shall be compliant with the Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC.

### 1.07 DELIVERY, STORAGE AND HANDLING

- A. Equipment shall be handled and stored in accordance with manufacturer's instructions. One (1) copy of manufacturer's instructions shall be included with the equipment at time of shipment.

### 1.08 OPERATION AND MAINTENANCE MANUALS

- A. Operation and maintenance manuals shall be provided with each SPD shipped.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

- A. Eaton Cutler-Hammer
- B. Current Technology, Inc.
- C. United Power, Inc.
- D. Intermatchi.
- E. LEA International.
- F. EFI Electronics.

The listing of specific manufacturers above does not imply acceptance of their products that do not meet the specified ratings, features, and functions. Manufacturers listed above are not relieved from meeting these specifications in their entirety. Products in compliance with the specification and manufactured by others not named will be considered only if pre-approved by the Engineer ten (10) days prior to bid date.

### 2.02 VOLTAGE SURGE SUPPRESSION – GENERAL

- A. Electrical Requirements
  - 1. Unit Operating Voltage – Refer to drawings for operating voltage and unit configuration.
  - 2. Maximum Continuous Operating Voltage (MCOV) – The MCOV shall not be less than 125% of the nominal system operating voltage.
  - 3. The suppression system shall incorporate thermally protected metal-oxide varistors (MOVs) as the core surge suppression component for the service entrance and all other distribution levels. The system shall not utilize silicon avalanche diodes, selenium cells,

air gaps, or other components that may crowbar the system voltage leading to system upset or create any environmental hazards.

4. Protection Modes – The SPD must protect all modes of the electrical system being utilized. The required protection modes are indicated by bullets in the following table:

Configuration	Protection Modes			
	L-N	L-G	L-L	N-G
Wye	•	•	•	•
Delta	N/A	•	•	N/A
Single Split Phase	•	•	•	•
High Leg Delta	•	•	•	•

5. Nominal Discharge Current ( $I_n$ ) – All SPDs applied to the distribution system shall have a 20kA  $I_n$  rating regardless of their SPD Type (includes Types 1 and 2) or operating voltage. SPDs having an  $I_n$  less than 20kA shall be rejected.
6. ANSI/UL 1449 3rd Edition Voltage Protection Rating (VPR) – The maximum ANSI/UL 1449 3rd Edition VPR for the device shall not exceed the following:

Modes	208Y/120	480Y/277	600Y/347
L-N; L-G; N-G	700	1200	1500
L-L	1200	2000	3000

**B. SPD Design**

1. Maintenance Free Design – The SPD shall be maintenance free and shall not require any user intervention throughout its life. SPDs containing items such as replaceable modules, replaceable fuses, or replaceable batteries shall not be accepted. SPDs requiring any maintenance of any sort such as periodic tightening of connections shall not be accepted. SPDs requiring user intervention to test the unit via a diagnostic test kit or similar device shall not be accepted.
2. Balanced Suppression Platform – The surge current shall be equally distributed to all MOV components to ensure equal stressing and maximum performance. The surge suppression platform must provide equal impedance paths to each matched MOV. Designs incorporating replaceable SPD modules shall not be accepted.
3. Electrical Noise Filter – Each unit shall include a high-performance EMI/RFI noise rejection filter. Noise attenuation for electric line noise shall be up to 50 dB from 10 kHz to 100 MHz using the MIL-STD-220A insertion loss test method. Products unable able to meet this specification shall not be accepted.
4. Internal Connections – No plug-in component modules or printed circuit boards shall be used as surge current conductors. All internal components shall be soldered, hardwired with connections utilizing low impedance conductors.

5. Monitoring Diagnostics – Each SPD shall provide the following integral monitoring options:
  - a. Protection Status Indicators - Each unit shall have a green / red solid-state indicator light that reports the status of the protection on each phase.
    - i. For wye configured units, the indicator lights must report the status of all protection elements and circuitry in the L-N and L-G modes. Wye configured units shall also contain an additional green / red solid-state indicator light that reports the status of the protection elements and circuitry in the N-G mode. SPDs that indicate only the status of the L-N and L-G modes shall not be accepted.
    - ii. For delta configured units, the indicator lights must report the status of all protection elements and circuitry in the L-G and L-L modes.
    - iii. The absence of a green light and the presence of a red light shall indicate that damage has occurred on the respective phase or mode. All protection status indicators must indicate the actual status of the protection on each phase or mode. If power is removed from any one phase, the indicator lights must continue to indicate the status of the protection on all other phases and protection modes. Diagnostics packages that simply indicate whether power is present on a particular phase shall not be accepted.
  - b. Remote Status Monitor – The SPD must include Form C dry contacts (one NO and one NC) for remote annunciation of its status. Both the NO and NC contacts shall change state under any fault condition.
  - c. Audible Alarm and Silence Button – The SPD shall contain an audible alarm that will be activated under any fault condition. There shall also be an audible alarm silence button used to silence the audible alarm after it has been activated.
  - d. ~~Surge~~ Surge Counter – The SPD shall be equipped with an LCD display that indicates to the user how many surges have occurred at the location. The surge counter shall trigger each time a surge event with a peak current magnitude of a minimum of  $50 \pm 20A$  occurs. A reset pushbutton shall also be standard, allowing the surge counter to be zeroed. The reset button shall contain a mechanism to prevent accidental resetting of the counter via a single, short-duration button press. In order to prevent accidental resetting, the surge counter reset button shall be depressed for a minimum of 2 seconds in order to clear the surge count total.
    - i. The ongoing surge count shall be stored in non-volatile memory. If power to the SPD is completely interrupted, the ongoing count indicated on the surge counter's display prior to the interruption shall be stored in non-volatile memory and displayed after power is restored. The surge counter's memory shall not require a backup battery in order to achieve this functionality.
6. Overcurrent Protection
  - a. The unit shall contain thermally protected MOVs. These thermally protected MOVs shall have a thermal protection element packaged together with the MOV in order to achieve overcurrent protection of the MOV. The thermal protection element shall disconnect the MOV(s) from the system in a fail-safe manner should a condition occur that would cause them to enter a thermal runaway condition.
7. Fully Integrated Component Design – All of the SPD's components and diagnostics shall be contained within one discrete assembly. SPDs or individual SPD modules that must be ganged together in order to achieve higher surge current ratings or other functionality shall not be accepted.

8. Safety Requirements

- a. The SPD shall minimize potential arc flash hazards by containing no user serviceable / replaceable parts and shall be maintenance free. SPDs containing items such as replaceable modules, replaceable fuses, or replaceable batteries shall not be accepted. SPDs requiring any maintenance of any sort such as periodic tightening of connections shall not be accepted. SPDs requiring user intervention to test the unit via a diagnostic test kit or similar device shall not be accepted.
- b. SPDs designed to interface with the electrical assembly via conductors shall require no user contact with the inside of the unit. Such units shall have any required conductors be factory installed.
- c. Sidemount SPDs shall be factory sealed in order to prevent access to the inside of the unit. Sidemount SPDs shall have factory installed phase, neutral, ground and remote status contact conductors factory installed and shall have a pigtail of conductors protruding outside of the enclosure for field installation.

2.03 SYSTEM APPLICATION

- A. The SPD applications covered under this section include distribution and branch panel locations, busway, motor control centers (MCC), switchgear, and switchboard assemblies. All SPDs shall be tested and demonstrate suitability for application within ANSI/IEEE C62.41 Category C, B, and A environments.
- B. Surge Current Capacity – The minimum surge current capacity the device is capable of withstanding shall be as shown in the following table:

Minimum surge current capacity based on ANSI / IEEE C62.41 location category			
Category	Application	Per Phase	Per Mode
C	Service Entrance Locations (Switchboards, Switchgear, MCC, Main Entrance)	250 kA	125 kA
B	High Exposure Roof Top Locations (Distribution Panelboards)	160 kA	80 kA
A	Branch Locations (Panelboards, MCCs, Busway)	120 kA	60 kA

- C. SPD Type – all SPDs installed on the line side of the service entrance disconnect shall be Type 1 SPDs. All SPDs installed on the load side of the service entrance disconnect shall be Type 1 or Type 2 SPDs.

2.04 LIGHTING AND DISTRIBUTION PANELBOARD REQUIREMENTS

- A. The SPD application covered under this section includes lighting and distribution panelboards. The SPD units shall be tested and demonstrate suitability for application within ANSI/IEEE C62.41 Category B environments.
  - 1. The SPD shall not limit the use of through-feed lugs, sub-feed lugs, and sub-feed breaker options.

2. SPDs shall be installed immediately following the load side of the main breaker. SPDs installed in main lug only panelboards shall be installed immediately following the incoming main lugs.
  3. The panelboard shall be capable of re-energizing upon removal of the SPD.
  4. The SPD shall be interfaced to the panelboard via a direct bus bar connection. Alternately, an SPD connected to a 30A circuit breaker for disconnecting purposes may be installed using short lengths of conductors as long as the conductors originate integrally to the SPD. The SPD shall be located directly adjacent to the 30A circuit breaker.
  5. The SPD shall be included and mounted within the panelboard by the manufacturer of the panelboard.
  6. The SPD shall be of the same manufacturer as the panelboard.
  7. The complete panelboard including the SPD shall be UL67 listed.
- B. Sidemount Mounting Applications Installation (SPD mounted external to electrical assembly)
1. Lead length between the breaker and suppressor shall be kept as short as possible to ensure optimum performance. Any excess conductor length shall be trimmed in order to minimize let-through voltage. The installer shall comply with the manufacturer's recommended installation and wiring practices.
- C. Switchgear, Switchboard, MCC and Busway Requirements
1. The SPD application covered under this section is for switchgear, switchboard, MCC, and busway locations. Service entrance located SPDs shall be tested and demonstrate suitability for application within ANSI/IEEE C62.41 Category C environments.
  2. The SPD shall be of the same manufacturer as the switchgear, switchboard, MCC, and busway
  3. The SPD shall be factory installed inside the switchgear, switchboard, MCC, and/or bus plug at the assembly point by the original equipment manufacturer
  4. Locate the SPD on the load side of the main disconnect device, as close as possible to the phase conductors and the ground/neutral bar.
  5. The SPD shall be connected through a disconnect (30A circuit breaker). The disconnect shall be located in immediate proximity to the SPD. Connection shall be made via bus, conductors, or other connections originating in the SPD and shall be kept as short as possible.
  6. The SPD shall be integral to switchgear, switchboard, MCC, and/or bus plug as a factory standardized design.
  7. All monitoring and diagnostic features shall be visible from the front of the equipment.

## 2.05 ENCLOSURES

- A. All enclosed equipment shall have NEMA 1 general purpose enclosures, unless otherwise noted. Provide enclosures suitable for locations as indicated on the drawings and as described below:
1. NEMA 1 – Constructed of a polymer (units integrated within electrical assemblies) or steel (sidemount units only), intended for indoor use to provide a degree of protection to

## UTNG – MANTI ARMORY REMODEL

personal access to hazardous parts and provide a degree of protection against the ingress of solid foreign objects (falling dirt).

2. NEMA 4 – Constructed of steel intended for either indoor or outdoor use to provide a degree of protection against access to hazardous parts; to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (dirt and windblown dust); to provide a degree of protection with respect to the harmful effects on the equipment due to the ingress of water (rain, sleet, snow, splashing water, and hose directed water); and that will be undamaged by the external formation of ice on the enclosure. (sidemount units only)
3. NEMA 4X – Constructed of stainless steel providing the same level of protection as the NEMA 4 enclosure with the addition of corrosion protection. (sidemount units only)

### PART 3 EXECUTION

#### 3.01 EXAMINATION

#### 3.02 FACTORY TESTING

- A. Standard factory tests shall be performed on the equipment under this section. All tests shall be in accordance with the latest version of NEMA and UL standards.

#### 3.03 INSTALLATION

- A. The Contractor shall install all equipment per the manufacturer's recommendations and the contract drawings.

#### 3.04 WARRANTY

- A. The manufacturer shall provide a full ten (10) year warranty from the date of shipment against any SPD part failure when installed in compliance with manufacturer's written instructions and any applicable national or local code.

END OF SECTION 264313

UTAH NATIONAL GUARD STATEMENT OF WORK  
PERFORMING TELECOMMUNICATION PROJECTS  
UT-G6-C (12/31/2009)

**GENERAL INFORMATION AND CONDITIONS**

Purpose and Intent:

The Utah Army National Guard (UTARNG) desires to have Telecommunication parts installed in accordance with Industry Standard TIA/568B. All projects must be coordinated and approved through the UTARNG State Telecommunications Manager (Mike Hansen, 801-432-4118) to ensure that industry standards are adhered to.

Key Dates:

Proposal Review: The Contractor should allow the Owner two weeks for review of proposals and award. A start date will be provided in the Notice of Award.

Site Visits:

Site visits for telecommunication projects will be arranged by contacting Mike Hansen by telephone at 801-432-4118(office), or by e-mail at [john.m.hansen1@us.army.mil](mailto:john.m.hansen1@us.army.mil)

Questions:

Questions regarding this Statement of Work should be presented in writing to:

Utah Army National Guard  
UT-G6-C, ATTN: Mike Hansen  
P.O. Box 1776  
Draper, UT 84020  
FAX (801) 523-4844

E-mail questions to [john.m.hansen1@us.army.mil](mailto:john.m.hansen1@us.army.mil)

A written answer to any such questions will be provided to all respondents to this request for proposals.

**CONTRACT INFORMATION**

**Required Contractor Training**

This is a list of all approved SYSTIMAX contractors and installers in the State of Utah

**Americom Technology** Contact: Mark Monsen  
5123 South Commerce Drive  
Murray, UT 84107  
Tel: 801-892-0529  
FAX: 801-892-0585

**Cache Valley Electric** Contact: Tim Hadden  
2345 South John Henry Dr  
Salt Lake City, UT 84119  
Tel: 801-908-2680  
FAX: 801-908-7041

UTAH NATIONAL GUARD STATEMENT OF WORK  
PERFORMING TELECOMMUNICATION PROJECTS  
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**Federal Communication** Contact: Justin Thomas

1990 South Milestone Drive  
Suite D  
Salt Lake City, UT 84104-4853  
Tel: 801-972-2262  
FAX: 801-972-9095

**Wasatch Electric** Contact: Ryan Wallwork

1574 South West Temple  
Salt Lake City, UT 84155  
Tel: 801-487-4511  
FAX: 801-487-5032

**The Contractor shall be fully conversant and capable in the cabling of low voltage applications such as, but not limited to data, voice and imaging network systems. The Contractor shall at a minimum possess the following qualifications:**

**Personnel trained and certified in the design of the Systimax Cabling Solution.**

**Personnel trained and certified to install the Systimax Cabling Solution.**

**The Designer and Installer shall show proof of current certification of the Systimax Cabling Solution via an updated card given after attending the 5- day course or a re-certification class given every two years.**

**Provide references of the type of installation provided in this specification.**

**Personnel trained and certified in fiber optic cabling, splicing, termination and testing techniques. Personnel must have experience using a light meter and OTDR.**

**Personnel trained in the installation of pathways and support for housing horizontal and backbone cabling.**

**System Warranty**

**A twenty (20) year warranty available for the category \_ structured cabling system shall be provided for an end-to-end channel model installation which covers applications assurance, cable, connecting hardware and the labor cost for the repair or replacement thereof. CommScope will receive a warranty registration form no later than 60 days after the installation. This will include all testing results.**

**Proposal Organization:** The Contractor should break down his proposal deliverables and costs into parts and labor.

**Cost Basis:** The Contractor should show a unit price breakdown for the personnel, materials and tasks to be provided, as well as lump sum prices per project.

**Selection Criteria:** The UTNG will use the following criteria, equally weighted, to select the successful Contractor for this work.

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**Technical Abilities and Approach:** The qualifications and experience of key personnel, as well as the proposed methodologies and resources will be considered.

**Past Performance:** The experiences of the Contractor most closely related to this project will be considered, particularly successful completion of projects using Industry Standard TIA/568B.

**Responsiveness:** The ability of the Contractor to dedicate sufficient resources to the project and to be readily available will be considered.

**Cost:** The overall costs proposed by the Contractor and the completeness of detail of these costs will be considered.

**Award of Contract:** Award of any Contract is contingent upon availability of state/federal funds to perform this work. The UTNG anticipates award of all work to a single Contractor, but reserves the right to split the award or make a partial award.

## BACKGROUND

**Agency Need Description:** The UTNG requires that the following parts (brand specific) be used in conjunction with TIA/568B guidelines:

**This is a list of all Telecommunication Standards for all Utah Army National Guard facilities, except for AGCW MDF.**

**MDF / IDF (Main or Intermittent Distribution Frame)**  
Standard Equipment:

1. CS-SYSTEMX 110UB1-366FT 366 PR BLOCK 110 CAT6 FIELD TERM KIT W/4PR CONN  
BLAOCKS 108651143 VISIPATCH
2. CS-SYSTEMX 110U2R VISIPATCH DISTRIBUTION RING SNAPS ONTO BACK PANEL  
108523937 (FOR EVERY 1 OF PART ONE YOU NEED 6 OF THIS PART)
3. CS-SYSTEMX 110UTC VISIPATCH TROUGH COVER USED TO HIDE PATCH CORDS  
108593203 GRAY
4. CS-SYSTEMX 110UHD-S8 VISIPATCH, HORIZONTAL DUCT SNAPS INTO BOTTOM OF  
VISIPATCH SYSTEM 108637737
5. CS-SYSTEMX MGS400BH-262 1-PORT MOD JACK 110 8W8P UTP T568A/B CAT6 GIGASPEED  
700206725 ELEC. WHITE
6. CS-SYSTEMX M12L-262 2-PORT FLUSH MT UNLOADED SGL GANG M-SERIES 108168469  
WHITE
7. CS-SYSTEMX CPC5512-03F003 CBL ASSY 110 24-4PR STRANDED CAT6 T568B 3FT  
VISIPATCH CPC5512-03F003 GRAY
8. CS-SYSTEMX CPC5512-03F003 CBL ASSY 110 24-4PR STRANDED CAT6 T568B 5FT  
VISIPATCH CPC5512-03F005 GRAY
9. CS-SYSTEMX CPC5512-03F003 CBL ASSY 110 24-4PR STRANDED CAT6 T568B 7FT  
VISIPATCH CPC5512-03F007 GRAY
10. CS-SYSTEMX CPC5312-03F007 CBL ASSY 110-MOD 24-4PR STR CAT6 T568B 7FT  
VISIPATCH CPC5312-03F007 GRAY
11. CS-SYSTEMX CPC5312-03F005 CBL ASSY 110-MOD 24-4PR STR CAT6 T568B 5FT  
VISIPATCH CPC5312-03F005 GRAY
12. CS-SYSTEMX CPC5312-03F003 CBL ASSY 110-MOD 24-4PR STR CAT6 T568B 3FT  
VISIPATCH CPC5312-03F003 GRAY
13. CS-SYSTEMX CPC5312-03F025 CBL ASSY 110 24-4PR STRANDED VISIP-RJ-45 CAT6 T568B  
25FT GRAY CPC5312-03F025

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14. CS-SYSTIMX 600G2-1U-MOD-SD MODULAR COMBINATION SHELF SLIDE ACCEPT 4  
MODULES 760028324
15. CS-SYSTIMX MODG2-6SC-MM 6 MODULE ADAPTER BEIGE 72 MAX FIB MODG2-6SC-MM  
760032177
16. CS-SYSTIMX P6201B-Z 125 SC CONNECTOR MM CER EZ&EPOXY OC 900UM ONLY, NON-  
TUNABLE 760007070
17. COMMSCOPE 75N4 (CAT 6 BLUE)
18. COMMSCOPE 75N4 (CAT 6 YELLOW)
19. MARCONI R66P25QC LIGHTING PROTECTION PANEL
20. MARCONI R66P50QC LIGHTING PROTECTION PANEL
21. MARCONI R66P100QC LIGHTING PROTECTION PANEL
22. GAS PROTECTION FUSES 104410147

**MDF (Main Distribution Frame) for AGCW**

Standard Equipment:

1. AVAYA 107894966 100 PAIR LIGHTING PROTECTION 110 TERMINATION STYLE
2. SECOR CCH03U 72 STRAND RACK MOUNT LIU.

The MDF at AGCW is in building 6170. To gain access to this area you will have to contact Mike Hansen at (801-432-4118). **All work to be bid on or done at AGCW will contact Mike prior to starting.**

**Manholes**

1. Copper Splice Cases 3M KB6 (is the series). You will need to talk to Mike or Toby to determine what ends need to be placed on the ends of the splice case.
2. Fiber Splice Case Coyote 80805514 (Splice tray will depend on amount of fiber)

There are several Manholes at AGCW. When pulling Backbone Cable you will leave a 20 ft maintenance loop in every manhole between the IDF and the MDF. All splices will be sealed water tight. If a case is open, it will be resealed to maintain a water tight seal. All splices in the fiber cable will be fusion spliced. Splices in the copper cable will be done in a splice case and made water tight. To find a path from the IDF to the MDF you will need to speak with Mike or Toby.

All telecommunication work to be done on any Utah Army National Guard Facility will be coordinated and approved through Mike Hansen (801-432-4118). Layout of the Systimax Solution will be coordinated through Mike Hansen. There will be one blue and one yellow CAT 6 wire pulled to each location. They will correlate with the same number on the VisiPatch System (ex. Jack 101 will have one blue and one yellow wire that will be in the same location on the VisiPatch System). Fiber will be terminated in an LIU can. Termination of fiber will be done on the SC style connector unless specified otherwise. This will depend on location. You will need to speak with Mike in order to know what facility has what termination.

**PROJECT DELIVERABLES**

The Contractor will provide progress reports throughout the term of the Contract to the UTARNG Telecommunications Manager.

All wire must be tested by the contractor with a cable analyzer for its appropriate rating in accordance with TIA/568B standards. The Contractor will turn-in written results of the cable analyzer testing to the UTNG Telecommunications Manager.

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**PROPOSAL PREPARATION INSTRUCTIONS**

The proposal must include the following components: a technical proposal, a cost proposal, a delivery schedule, and a presentation of the Contractor's personnel qualifications and experience. Proposals that do not include the specified elements may be rejected. The Contractor is encouraged to submit copies of relevant projects performed (TIA/568B) within the last two years within his proposal.

Technical Proposal: The technical proposal should describe the tasks to be performed, the methods to be used and the proposed parts to be installed.

Cost Proposal:

The cost proposal should be provided as lump sums by project, and each project should be broken down by task. The cost proposal should include projected labor categories, hours and billing rates. The cost proposal should identify any proposed subcontractors and their labor categories, hours and billing rates.

Delivery Schedule:

The Contractor should provide a proposed schedule of activities, both on-site and in office, identifying work to be performed for each location.

Personnel, Qualifications and Experience:

The proposal should identify Contractor resources, offices, and personnel available to the project. The proposal should identify the actual personnel proposed for use on the project, including their relevant qualifications and experience with TIA/568B standards. Contractors must be certified installers of the parts and equipment proposed and install in accordance with manufacturer warranty. Experience should be listed in the following categories: Similar work performed in Utah, similar work performed in the Western United States, and similar work performed for DOD and specifically National Guard. Failure to use the proposed personnel may be grounds for termination of the project.

**PROPOSAL SUBMISSION**

The completed proposal should be mailed to:

Utah Army National Guard  
UT-AAG-SMD, ATTN: Claire Gee  
P.O. Box 1776  
Draper, UT 84020

Electronic copies should be sent to [cgee@utah.gov](mailto:cgee@utah.gov) accompanied by a hard copy cover letter on letterhead.

SECTION 321313 - CONCRETE PAVEMENT (ADD ALTERNATE #2)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes exterior cement concrete pavement for the following:
  - 1. Walkways.
- B. Related Sections include the following:
  - 1. Division 31 Section "Earthwork" for subgrade preparation, grading, and subbase course.
  - 2. Division 3 Section "Cast-in-Place Concrete" for general building applications of concrete.

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, expansive hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume.

1.4 SUBMITTALS

- A. Product Data: For each type of manufactured material and product indicated.
- B. Design Mixes: For each concrete pavement mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.
- C. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated, based on comprehensive testing of current materials:
- D. Material Certificates: Signed by manufacturers certifying that each of the following materials complies with requirements:
  - 1. Cementitious materials and aggregates.
  - 2. Steel reinforcement and reinforcement accessories.
  - 3. Fiber reinforcement.
  - 4. Admixtures.

5. Curing compounds.
  6. Applied finish materials.
  7. Bonding agent or adhesive.
  8. Joint fillers.
- E. Samples for Initial Selection: Manufacturer's color charts showing full range of colors available and sample of Type A concrete, representing natural color.

#### 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed minimum five years pavement work similar in scope, material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.
1. Manufacturer must be certified according to the National Ready Mix Concrete Association's Plant Certification Program.
  2. Manufacturer for coloring agent must have minimum ten years experience in the production of specified products.
- C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.
- D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant and each aggregate from one source.
- E. ACI Publications: Comply with ACI 301, "Specification for Structural Concrete," unless modified by the requirements of the Contract Documents.
- F. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixes.
- G. Comply with local governing regulations.
- H. Mockups: Cast mockups of full-size sections of concrete pavement to demonstrate typical joints, surface finish, texture, color, and standard of workmanship for all concrete pavement types, as indicated on drawings.
1. Build mockups in the location and of the size indicated or, if not indicated, as directed by Architect.
  2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
  3. For accurate color the quantity of concrete mixed to produce the sample should not be less than 3 cubic yards (or not less than 1/3 the capacity of the mixing drum on the ready-mix truck) and should always be in full cubic yard increments. Excess material shall be discarded according to local regulations

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4. Obtain Architect's approval of mockups before starting construction.
  5. Maintain approved mockups during construction in an undisturbed condition as a standard for judging the completed pavement.
  6. Demolish and remove approved mockups from the site when directed by Architect.
  7. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- I. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Meetings."
1. Before submitting design mixes, review concrete pavement mix design and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with concrete pavement to attend, including the following:
    - a. Contractor's superintendent.
    - b. Independent testing agency responsible for concrete design mixes.
    - c. Ready-mix concrete producer.
    - d. Concrete subcontractor.

### 1.6 PROJECT CONDITIONS

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.
- B. Integrally Colored Concrete Environmental Requirements:
1. Schedule placement to minimize exposure to wind and hot sun before curing materials are applied.
  2. Avoid placing concrete if rain, snow, or frost is forecast within 24-hours. Protect fresh concrete from moisture and freezing.
  3. Comply with professional practices described in ACI 305R and ACI 306R.
- C. Schedule delivery of concrete to provide consistent mix times from batching until discharge. Mix times shall meet manufacturer's written recommendations

## PART 2 - PRODUCTS

### 2.1 CONCRETE PAVING TYPE A – Natural Color Concrete

### 2.2 CONCRETE PAVING TYPE B – Integrally Colored Concrete. Color as selected by Architect from manufacturer's full color range.

### 2.3 FORMS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.
1. Use flexible or curved forms for curves of a radius 100 feet (30.5 m) or less.

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- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

### 2.4 STEEL REINFORCEMENT

- A. Plain-Steel Welded Wire Fabric: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.
- B. Joint Dowel Bars: Plain steel bars, ASTM A 615/A 615M, Grade 60 (Grade 420). Cut bars true to length with ends square and free of burrs.
- C. Tie Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.
- D. Hook Bolts: ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6), internally and externally threaded. Design hook-bolt joint assembly to hold coupling against pavement form and in position during concreting operations, and to permit removal without damage to concrete or hook bolt.
- E. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcement bars, welded wire fabric, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete or fiber-reinforced concrete of greater compressive strength than concrete, and as follows:
  - 1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.

### 2.5 CONCRETE MATERIALS

- A. General: Use the same brand and type of cementitious material from the same manufacturer throughout the Project.
- B. Portland Cement: ASTM C 150, Type I or II (as per geotechnical report recommendation).
  - 1. Fly Ash: ASTM C 618, Class F or C.
- C. Aggregate: ASTM C 33, uniformly graded, from a single source, with coarse aggregate as follows:
  - 1. Class: 4S.
  - 2. Maximum Aggregate Size: 1 inch (25 mm) nominal.
  - 3. Do not use fine or coarse aggregates containing substances that cause spalling.
- D. Water: ASTM C 94.

### 2.6 ADMIXTURES

- A. General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cement and to be compatible with other admixtures.

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- B. Air-Entraining Admixture: ASTM C 260.

### 2.7 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Clear Waterborne Membrane-Forming Curing Compound: ASTM C 1315, Type 1, Class A.

### 2.8 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.
- B. Coloring Agent:
  - 1. Admixture shall be a colored, water-reducing, admixture containing no calcium chloride with coloring agents that are limeproof and ultra-violet resistant.
  - 2. Colored admixture shall conform to the requirements of ACI 303.1, ASTM C979, ASTM C494 and ASSHTO M194.
  - 3. CHROMIX P Admixture and CHROMIX ML; L.M. SCOFIELD COMPANY Douglasville, Georgia and Los Angeles, California (800) 800-9900 or the appropriate local contact: Eastern Division – 201-672-9050; Western Division – 714-568-1870; Central Division Office – 630-377-5959 or APPROVED EQUAL.
  - 4. Color: As selected by Architect from manufacturer's full range.
- C. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- D. Curing Compound for Integrally Colored Concrete: Curing compound shall comply with ASTM C309 and be of same manufacturer as colored admixture, for use with integrally colored concrete.
  - 1. Exterior Integrally Colored Concrete: LITHOCHROME® COLORWAX; L.M. SCOFIELD COMPANY OR APPROVED EQUAL.

### 2.9 CONCRETE MIXES

- A. Prepare design mixes, proportioned according to ACI 211.1 and ACI 301, for each type and strength of normal-weight concrete determined by either laboratory trial mixes or field experience.
- B. Use a qualified independent testing agency for preparing and reporting proposed mix designs for the trial batch method.
  - 1. Do not use Owner's field quality-control testing agency as the independent testing agency.
- C. Proportion mixes to provide concrete with the following properties:
  - 1. Compressive Strength (28 Days): 4000 psi (20.7 MPa).
  - 2. Maximum Water-Cementitious Materials Ratio: 0.45.

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3. Slump Limit: 3 inches (75 mm).
- D. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
  1. Fly Ash: 25 percent.
- E. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content as follows within a tolerance of plus or minus 1.5 percent:
  1. Air Content: 6.0 percent for 1-inch (25-mm) maximum aggregate.
- F. Coloring Agent: Add coloring agent to mix according to manufacturer's written instructions.

### 2.10 CONCRETE MIXING

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Proof-roll prepared subbase surface to check for unstable areas and verify need for additional compaction. Proceed with pavement only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.
- B. Remove loose material from compacted subbase surface immediately before placing concrete.

### 3.2 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
- B. Clean forms after each use and coat with form release agent to ensure separation from concrete without damage.

### 3.3 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating reinforcement and with recommendations in CRSI's "Placing Reinforcing Bars" for placing and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.
- C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.
- D. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

- E. Install fabricated bar mats in lengths as long as practicable. Handle units to keep them flat and free of distortions. Straighten bends, kinks, and other irregularities, or replace units as required before placement. Set mats for a minimum 2-inch (50-mm) overlap to adjacent mats.

### 3.4 JOINTS

- A. General: Construct construction, isolation, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.
  - 1. When joining existing pavement, place transverse joints to align with previously placed joints, unless otherwise indicated.
- B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour, unless pavement terminates at isolation joints.
  - 1. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of pavement strips, unless otherwise indicated.
  - 2. Provide tie bars at sides of pavement strips where indicated.
  - 3. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.
  - 1. Locate expansion joints at intervals of 25 feet (7.625 m), unless otherwise indicated.
  - 2. Extend joint fillers full width and depth of joint.
  - 3. Terminate joint filler less than 1/2 inch (12 mm) or more than 1 inch (25 mm) below finished surface if joint sealant is indicated.
  - 4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
  - 5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
  - 6. Protect top edge of joint filler during concrete placement with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.
- D. Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt-coat one-half of dowel length to prevent concrete bonding to one side of joint.
- E. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows:
  - 1. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/4-inch- (6-mm-) wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.

- F. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to the following radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

- 1. Radius: 1/4 inch (6 mm).

### 3.5 CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcement steel, and items to be embedded or cast in. Notify other trades to permit installation of their work.
- B. Remove snow, ice, or frost from subbase surface and reinforcement before placing concrete. Do not place concrete on frozen surfaces.
- C. Moisten subbase to provide a uniform dampened condition at the time concrete is placed. Do not place concrete around manholes or other structures until they are at the required finish elevation and alignment.
- D. Comply with requirements and with recommendations in ACI 304R for measuring, mixing, transporting, and placing concrete.
- E. Do not add water to concrete during delivery, at Project site, or during placement.
- F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- G. Consolidate concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures to consolidate concrete according to recommendations in ACI 309R.
  - 1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand-spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels, and joint devices.
- H. Screed pavement surfaces with a straightedge and strike off. Commence initial floating using bull floats or darbies to form an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading dry-shake surface treatments.
- I. When adjoining pavement lanes are placed in separate pours, do not operate equipment on concrete until pavement has attained 85 percent of its 28-day compressive strength.
- J. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
  - 1. When air temperature has fallen to or is expected to fall below 40 deg F (4.4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture

temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.

2. Do not use frozen materials or materials containing ice or snow.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators, unless otherwise specified and approved in mix designs.

K. Hot-Weather Placement: Place concrete according to recommendations in ACI 305R and as follows when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 deg F (32 deg C). Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover reinforcement steel with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, reinforcement steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

### 3.6 CONCRETE FINISHING

A. General: Wetting of concrete surfaces during screeding, initial floating, or finishing operations is prohibited.

B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and the concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots, and fill low spots. Refloat surface immediately to uniform granular texture.

1. Medium-to-Fine-Textured Broom Finish: Draw a soft bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture.

### 3.7 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and follow recommendations in ACI 305R for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Begin curing after finishing concrete, but not before free water has disappeared from concrete surface.

D. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these as follows:

1. Curing and Sealing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to

heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

### 3.8 PAVEMENT TOLERANCES

A. Comply with tolerances of ACI 117 and as follows:

1. Elevation: 1/4 inch (6 mm).
2. Thickness: Plus 3/8 inch (9 mm), minus 1/4 inch (6 mm).
3. Surface: Gap below 10-foot- (3-m-) long, unlevelled straightedge not to exceed 1/4 inch (6 mm).
4. Lateral Alignment and Spacing of Tie Bars and Dowels: 1 inch (25 mm).
5. Vertical Alignment of Tie Bars and Dowels: 1/4 inch (6 mm).
6. Alignment of Tie-Bar End Relative to Line Perpendicular to Pavement Edge: 1/2 inch (13 mm).
7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Pavement Edge: Length of dowel 1/4 inch per 12 inches (6 mm per 300 mm).
8. Joint Spacing: 3 inches (75 mm).
9. Contraction Joint Depth: Plus 1/4 inch (6 mm), no minus.
10. Joint Width: Plus 1/8 inch (3 mm), no minus.

### 3.9 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing and inspection agency to sample materials, perform tests, and submit test reports during concrete placement. Sampling and testing for quality control may include those specified in this Article.

B. Testing Services: Testing shall be performed according to the following requirements:

1. Sampling Fresh Concrete: Representative samples of fresh concrete shall be obtained according to ASTM C 172, except modified for slump to comply with ASTM C 94.
2. Slump: ASTM C 143; one test at point of placement for each compressive-strength test, but not less than one test for each day's pour of each type of concrete. Additional tests will be required when concrete consistency changes.
3. Air Content: ASTM C 231, pressure method; one test for each compressive-strength test, but not less than one test for each day's pour of each type of air-entrained concrete.
4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each set of compressive-strength specimens.
5. Compression Test Specimens: ASTM C 31/C 31M; one set of four standard cylinders for each compressive-strength test, unless otherwise indicated. Cylinders shall be molded and stored for laboratory-cured test specimens unless field-cured test specimens are required.
6. Compressive-Strength Tests: ASTM C 39; one set for each day's pour of each concrete class exceeding 5 cu. yd. (4 cu. m), but less than 25 cu. yd. (19 cu. m), plus one set for each additional 50 cu. yd. (38 cu. m). One specimen shall be tested at 7 days and two specimens at 28 days; one specimen shall be retained in reserve for later testing if required.

7. When frequency of testing will provide fewer than five compressive-strength tests for a given class of concrete, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
8. When total quantity of a given class of concrete is less than 50 cu. yd. (38 cu. m), Architect may waive compressive-strength testing if adequate evidence of satisfactory strength is provided.
9. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, current operations shall be evaluated and corrective procedures shall be provided for protecting and curing in-place concrete.
10. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive compressive-strength test results equal or exceed specified compressive strength and no individual compressive-strength test result falls below specified compressive strength by more than 500 psi (3.4 MPa).

- C. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 24 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing agency, concrete type and class, location of concrete batch in pavement, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
- D. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as the sole basis for approval or rejection.
- E. Additional Tests: Testing agency shall make additional tests of the concrete when test results indicate slump, air entrainment, concrete strengths, or other requirements have not been met, as directed by Architect. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed.

### 3.10 REPAIRS AND PROTECTION

- A. Remove and replace concrete pavement that is broken, damaged, or defective, or does not meet requirements in this Section.
- B. Drill test cores where directed by Architect when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.
- C. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 0321313

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### SECTION 322000 – SITE STONE (ADD ALTERNATE #2)

#### PART 1 - GENERAL

##### 1.1 SECTION INCLUDES

- A. Materials and procedures for installing the following stone products:
  - 1. Stone Monument

##### 1.2 RELATED SECTIONS

- A. Related Sections include the following:
  - 1. Division 3 Section "Cast-in-Place Concrete" for general building applications of concrete.
  - 2. Division 31 Section "Earthwork" for subgrade preparation, grading, and subbase course.

##### 1.3 REFERENCES

- A. ASTM C-99 Modulus of Rupture (Dry & Wet)
- B. ASTM C-170 Compressive Strength (Dry & Wet)
- C. ASTM C-241 Abrasion Resistance
- D. ASTM C-615 Standard Specification for Granite Dimension Stone
- E. ASTM C-880 Flexural Strength (Dry & Wet), Absorption, and Bulk Specific Gravity
- F. ASTM C-1028 Static Coefficient of Friction (Dry & Wet)
- G. American with Disabilities Act, Part 36, Appendix A – Standards for accessible design.

##### 1.4 DEFINITIONS – not used

##### 1.5 SUBMITTALS

- A. For all products listed, submit shop drawings, including structural engineering drawings for footings, based on geotech report.
- B. At least thirty (30) days prior to ordering materials, the Contractor shall submit samples and installation instructions to the Owner's representative. No materials shall be ordered or delivered until the required submittals have been reviewed and stamped approved by the Owner's representative. Delivered materials shall match the approved samples.

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Approval shall not constitute final acceptance. The Owner's representative reserves the right to reject, on or after delivery, any material that does not meet these Specifications. Submittals are required for the following:

### 1.6 QUALITY ASSURANCE

- A. Verify drawing dimensions with actual field conditions. Inspect related work and adjacent surfaces. Report to the Owner's representative all conditions which prevent proper execution of this work, or that are different from those shown.
- B. Contractor must have successfully completed at least 3 stone applications of similar size and scope and will assign installers from these earlier applications to the Project, of which one will serve as lead installer.
- D. All materials and methods of installation shall conform to federal, state, and city codes and regulations having jurisdiction. Where Contract requirements are in excess of applicable standards the Contract provision shall govern.
- E. Each color shall be mined out of a single quarry. The quarry shall provide material of a consistent quality in appearance and physical properties to include the capacity to cut and finish the material.
- G. The Contractor shall take proper precautions not to damage any existing site conditions specifically excluded or accepted from the Contract and will be held solely responsible for any damage occurring during the course of the work under construction. The Contractor shall, at his own expense; make any and all repairs as required to restore to the original condition any area or item so damaged.
- H. Pre-installation Conference: Conduct conference at project site
- I. During the construction period, the Contractor shall take special measures including, but not limited to, wetting down, adding approved dust palliatives, etc., to control dust on site, in order to prevent annoyance and/or damage to adjacent property whether public or private.
- J. Product Handling
  - 1. Protect site stones against soilage. Protect sand against intermixture with earth or other types of materials.
  - 3. Remove damaged pavers.
  - 4. Stone products shall be stacked on wooden palettes and wrapped with heavy plastic. Materials may be stored outside at job site. Stone shall not be permitted to be in direct contact with the ground any time during storage. Remove units from containers only when ready to be set.
- K. Project Conditions
  - 1. Cold-Weather Protection: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen sub-grade or setting beds. Remove and replace unit pavers damaged by frost or freezing.

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### PART 2 PRODUCTS

2.1 Stone Supplier shall as specified below, or approved equal:

- A. Stone Link: Phone: 801.580.6222
- B. Artistic Stone: 801.796.6681

2.2 Physical Requirements:

- A. The stone samples shall comply with ASTM C615.
- B. Visual Inspection:
  - 1. The stone products shall be free of chips that extend more than (1/4") in from the edge. The cumulative length of chips on a single edge shall not exceed 5% of the length of that edge.
  - 2. All stone products shall be free from defects that would interfere with the proper placing of the pavers or impair the strength or performance thereof.

2.3 Stone Monument

- A. Stone type: Granite.
- B. Dimensions: As indicated on Drawings.
- C. Finish: Honed.
- D. Color: Salt and Pepper.
- E. Sawn edge products have a face size tolerance of 1/8".

### PART 3 EXECUTION

3.1 Inspection

- A. Examine existing or prepared concrete Flatwork (sub-slab) and footing for uniformity and planarity. Proceed with stone product installation only after deficient concrete footing issues have been corrected.

3.2 Preparation

- A. Layout: Check final elevations for conformance to Drawings
- B. Do not use stone products with chips, cracks, voids, discolorations, and other defects that might be visible in finished work.

3.3 Installation

- A. Setting Monument:
  - 1. Install flush with footing and plumb. Install in accordance with approved shop drawings submittal.

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### 3.5 Adjust and Clean

- A. During installation, the finished work should be cleaned with water and sawdust or sand to remove impurities on the surface. It can be pressure washed. The surface shall be made clean and free from oil, lateen, dust and any loose material. The surface should be dry for its' full depth prior to commencing work.

### 3.6 Repair

- A. Make any repairs necessary from construction.

END OF SECTION 322000

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SECTION 328400 – LANDSCAPE IRRIGATION (**ADD ALTERNATE #2**)

PART 1 - GENERAL

1.1 THE REQUIREMENT

- A. The CONTRACTOR shall construct an automatic irrigation system, complete and operable, in accordance with the requirements of the Contract Documents.
- B. Said irrigation system shall include but not be limited to all pipes, fittings, irrigation heads, valves, automatic control valves, controllers, valve boxes, drain valves, quick coupler valves, operating wrenches, backflow preventer, riser assemblies, direct burial wires, electrical connections, wiring and other appurtenances, piping, connections, testing, cleaning-up, maintenance and adjustments necessary for a complete operating system, ready for immediate use upon completion. Minor items necessary for proper construction and functional operation of this system, not specifically described in the Contract Documents, shall be included as a part of the work of this Section.
- C. The Section cross references the following sections:
  - 1. Contractor Submittals 013300
  - 2. Landscaping - 329200

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Codes: All codes, as referenced herein, are as specified in Division-01, General Requirements
- B. Commercial Standards.
  - ASTM B 3 Specification for Soft or Annealed Copper Wire
  - ASTM D2564 Specification for Solvent Cements for Poly (VinylChloride) (PVC) Plastic Pipe and Fittings
  - AWWA C 500 Gate Valves for Water and Sewerage Systems

1.3 CONTRACTOR SUBMITTALS

- A. Manufacturer's literature, samples (where requested by the OWNER'S REPRESENTATIVE), and installation instructions shall be submitted in accordance with Section 013300, "Contractor Submittals."
- B. Record drawings, showing locations of all valves, pipes (lines), heads, dimensions, controllers, control lines, and electrical wires shall be submitted prior to final inspection.
- C. Controller literature, specifications, installation wiring diagram, and circuit breaker information shall be submitted to the OWNER'S REPRESENTATIVE for review prior to ordering.

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- D. Equipment for Operation: The CONTRACTOR shall provide the following equipment, in addition to what is indicated on the Drawings.
1. Two keys for locking automatic controller door.
  2. One Gate valve key.
  3. Two keys for locking valve boxes.
  4. 2 Valve Keys for Quick Coupler – coordinate with Owner’s Representative.
  5. One Valve Key for Manual Drain Valve.
- E. A reduced copy of the irrigation plan shall be laminated and mounted in the controller.

### 1.4 QUALITY ASSURANCE

- A. In addition to other inspections, as provided by the OWNER’S REPRESENTATIVE and or OWNER, the CONTRACTOR shall give at least 72 hours notice to the OWNER’S REPRESENTATIVE for scheduling the following special inspections:
1. Layout of the system
  2. Inspection of trenches, backfilling, and equipment.
  3. Pressure tests
  4. Coverage adjustment
  5. Automatic operation
- B. The CONTRACTOR shall notify the OWNER’S REPRESENTATIVE at least 72 hours prior to performing the tests. All tests shall be performed in the presence of the OWNER’S REPRESENTATIVE Test requirements shall be as follows:
1. After assembly and installation, all water pipes, fittings, automatic equipment, and appurtenances shall be tested at a hydrostatic pressure of 150 psi at the lowest point of the system for not less than 60 minutes.
  2. The first test shall be made in such a manner that all valves in the new water pipe irrigation lines will be tested for watertight closure. Valves may be tested in groups or singly while subjected to 150 psi water pressure for a period of not less than 60 minutes.
  3. The second test shall be made by forcing all air from the pipes with water and capping or plugging pipe risers. After the pipe risers have been plugged or capped, all line valves shall be fully opened and the pipe lines subjected to the full static water pressure for a period of not less than 120 minutes. Pressure pipelines 150 PSI).
  4. The third test required that lateral lines be tested at 100 psi for 120 minutes.
  5. The fourth test requires that all pressure lines be tested at 120 psi for 24 hours.
  6. Water lines and valves which show evidence of leakage or fail to be watertight shall be repaired or replaced. After all repairs or replacements have been made, the above-required tests shall be performed again.

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7. When the irrigation system is completed, the CONTRACTOR, in the presence of the OWNER'S REPRESENTATIVE, shall perform test coverage of water afforded the lawn and planting areas. The CONTRACTOR shall furnish all material and perform all work required to correct any inadequacies of coverage disclosed. The CONTRACTOR shall inform the OWNER'S REPRESENTATIVE of any deviation from the Drawings required due to wind, planting, soil, or site conditions that bear on proper coverage.
8. Upon completion of each phase of the work, the CONTRACTOR shall check and adjust each irrigation head to meet the site requirements and the requirements of the Contract Documents.

(Testing as noted in 1 through 5 is at the owner's option, and generally will not be required unless verification of the contractor's workmanship and quality is required.)

### 1.5 INSTRUCTION

- A. The CONTRACTOR shall, upon completion of the maintenance period of the irrigation instruct the OWNER and the OWNER'S personnel as to the proper operation and maintenance of the system.

### 1.6 EXISTING UTILITIES AND CONDITIONS

- A. Prior to cutting into the soil, the CONTRACTOR shall locate all cables, conduits, sewers, septic tanks, and other such underground utilities, and shall take proper precautions not to damage or disturb such improvements. If a conflict exists between such obstacles and the proposed work, the CONTRACTOR shall promptly notify the OWNER'S REPRESENTATIVE
- B. The CONTRACTOR shall be responsible for coordinating its work with the operation of existing utilities and new utilities on the Project. The CONTRACTOR shall notify the OWNER'S REPRESENTATIVE or its representative when utilities which are in operation require shut-off.
- C. Due to the scale of Drawings, it is not possible to indicate all offset, fittings, etc., which may be required. The CONTRACTOR shall carefully investigate the structural and finished conditions affecting all its work, and plan its work accordingly, furnishing such fittings, etc., as may be required to meet such conditions. The Contract Documents are generally diagrammatic and indicative of the work to be installed. The work shall be installed in the most direct and workmanlike manner, so that conflicts between irrigation systems, planting, structures, piping, and etc. will be avoided.
- D. The CONTRACTOR shall verify the location of the existing culinary water line and the water pressure available at the site before installation of the system to make sure there is adequate pressure (design pressure 40-65 psi) to properly operate irrigation heads and valves, and shall also provide pressure reducing valves if required before commencement of any work. Minor additions and adjustments of heads, piping, and circuits shall be made at no additional cost to

## UTNG – MANTI ARMORY REMODEL

OWNER where it is necessary to make the irrigation system operate properly.

### 1.7 STORAGE OF MATERIALS

- A. The CONTRACTOR shall be responsible for storage of materials and for damage to the WORK covered by these Contract Documents before final acceptance of its work. The CONTRACTOR shall securely cover openings into the system, and shall cover all apparatus, equipment, and appliances both before and after being set in place to prevent obstruction in the pipes and the breakage, misuse, or disfigurement of said apparatus, equipment, or appliances.

### 1.8 SCHEDULING AND COORDINATION

- A. The CONTRACTOR shall be responsible for making arrangements for the coordination of its construction operations with those of all others on the job. The CONTRACTOR shall permit others engaged in work to accomplish their portion of the WORK without undue interference or delay.
- B. The CONTRACTOR shall be responsible for the scheduling and coordination of the electrical and water connections and the installation of the piping and equipment in a manner that will effect the earliest completion of the WORK in conformance with the construction progress schedules.

### 1.9 GUARANTEE/WARRANTY OF THE IRRIGATION SYSTEM

- A. The CONTRACTOR shall guarantee the complete irrigation system to be free from leaks or breakage due to defective material or workmanship for a period of one year from the date of acceptance of the complete work by the OWNER. Damage due to sabotage and/or vandalism is specifically excepted from this guarantee.
- B. Other items of the required guarantee shall be as specified in the Section 329200, “Landscape Planting”
- C. The CONTRACTOR shall repair any settling of backfilling trenches occurring during a one year period after final acceptance without expense to the OWNER including complete restoration of all damaged planting, paving, or other improvements of any kind.
- D. The CONTRACTOR shall provide winterization of the irrigation system during the one year guarantee period.
- E. When defective material or workmanship is discovered which will require repair or replacement, all such repair work or replacement work shall be done by the CONTRACTOR at its own expense within 24 hours after written notification is given to the CONTRACTOR by the OWNER of such required repairs. However, if the CONTRACTOR fails to comply with the requirements of the above guarantee within the 24 hours after notification is given, the OWNER shall proceed to have the repairs made by others at the CONTRACTOR'S expense.

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### PART 2 -- PRODUCTS

#### 2.1 GENERAL

- A. The CONTRACTOR shall furnish, at no additional charge, all samples necessary for testing as outlined in the Specifications or, when requested, certified evidence of off-site testing.
- B. Equipment compatibility: automatic controller and automatic (remote) control valves shall be products of the same manufacturing company.
- C. The electrical point of connection for the irrigation system shall be 120-volt building electrical supply.

#### 2.2 PLASTIC PIPE AND FITTINGS

- A. Pipe shall be continuously and permanently marked with the following information: manufacturer's name, nominal pipe size, PVC type, pressure rating, and extrusion date.
- B. All plastic pipes for lateral lines shall be PVC (polyvinyl chloride) SDR 21, Schedule 40, NSF approved.
- C. Materials for pressure main lines shall be PVC (polyvinyl chloride) SDR 21, Schedule 40, or NSF approved.
- D. All fittings shall be PVC (polyvinyl chloride) Schedule 40, Type II, NSF, and Schedule 80 mainline fitting up to valve on mainline as called for in the Contract Documents, see Drawings.
- E. Ductile iron fitting shall be grade 65-45-12 in accordance with ASTM A-536. Fitting shall be deep bell push-on joints with gaskets meeting ASTM F-477. Fittings shall be Harco Deep Bell or approved equal. Transition gaskets are not allowed.
- F. Swing joint ells and nipples shall be Schedule 80 PVC as noted on Drawings.

#### 2.3 VALVES

- A. Stop and Waste valve shall be as indicated on the Drawings.
- B. Remote Control Valves shall be as indicated on the Drawings.
- C. Quick-coupling valves shall be as indicated on the Drawings.

#### 2.4 RAIN/FREEZE SENSOR

- A. Rain sensor shall be Hunter Wireless Rain/Freeze-Clik Model WRFC.

#### 2.5 AUTOMATIC CONTROLLER

- A. The automatic controller shall be an electrically-timed device for automatically opening and closing remote control valves. All controllers and remote control valves supplied under this contract shall be of the same manufacturer and have similar operational and adjustment
- B. The controller shall be enclosed in a weatherproof metal housing having locking cover or covers to protect all adjustment and breakable equipment from vandalism. Exterior controllers shall be provided with locking covers. Keys for covers shall be interchangeable keys. The controllers shall be wall and pedestal mounted.
- C. Controller shall be shall be as indicated on the Drawings.

## 2.6 IRRIGATION HEADS

- A. Irrigation heads shall be the model and type indicated on the Drawings.

## 2.7 CONTROL WIRING

- A. Control wire shall be Standard PE Direct Burial Copper Wire, Type UF Bearing, UL approved for direct underground burial in National Electrical Code Class II circuits, AWG sizes.
- B. Conductor of electrical conductivity shall be grade copper meeting requirement of ASTM B 3
- C. All splices shall be made with wire connectors, such as manufactured by Rain Bird, Scotch Lock, 3M DBY or approved equal.

## 2.8 PVC SOLVENT CEMENT AND PRIMERS

- A. Solvent Cement shall be NSF approved and shall meet requirements of ASTM D 2564.
- B. Primer shall be NSF approved and shall be Weld-On, P-70 Industrial Polychemical Service or approved equal.

## 2.9 VALVE AND CONTROLLER BOXES

- A. Boxes for irrigation equipment located in shrub beds shall be heavy duty plastic Rain Bird, Carson-Brooks, complete with locking lids, or approved equal. See drawings for locations where plastic valve boxes are located.
- B. Heavy duty plastic boxes and lids shall MATCH surrounding ground mulch material color.

## 2.10 MANUAL DRAIN VALVE

- A. Manual Drain Valve shall be 1" Ford Model B11-444, or Mueller or approved equal.

## 2.11 BACKFLOW PREVENTION ASSEMBLY

- A. Backflow prevention device and enclosure shall be as indicated on the drawings.

## 2.12 OTHER MATERIALS

- A. Other materials required or necessary shall be as shown and/or as required for best quality

work.

## PART 3 -- EXECUTION

### 3.1 GENERAL

- A. Installation of the irrigation system shall be performed after the finish grading, but prior to landscaping.
- B. All valves, fittings, heads, and piping shall be installed as indicated on the Drawings and all connections made to permit the irrigation system to function properly through its entire length.
- C. All materials and equipment shall be installed in strict accordance with manufacturer's written instructions and recommendations and all local and state codes, laws, ordinances, and regulations.
- D. Before proceeding with the installation of any section or unit of the irrigation system, the CONTRACTOR shall check and verify the correlation between ground measurements and Drawings and shall advise the OWNER'S REPRESENTATIVE of any discrepancies.
- E. The total number of irrigation heads and circuits and size of pipes shall be not less than shown unless otherwise approved. The stated maximum spacing for each type of irrigation head shall not be exceeded.

### 3.2 EXCAVATION

- A. Trenches shall be dug as wide and as deep as necessary to properly install the irrigation pipe.
- B. Pipe trenches shall be straight, or "snaked" slightly allowing for expansion and contraction of PVC pipe.
- C. Subsoil shall be kept separate from topsoil, where possible.
- D. Minimum cover depth shall be as follows:
  - 1. Supply pressure lines from water source to control valves: 24 to 30 inches unless otherwise indicated on the Drawings.
  - 2. Lateral lines from control valves to irrigation heads; 8 and 16 inches unless otherwise indicated on the Drawings. Lateral lines under paving, roadways, and driveways shall have 18 inches of cover and located in Schedule 40 PVC sleeves
  - 3. Trenches for control wire only shall be 24 to 30 inches deep unless otherwise indicated on the Drawings. Control wires under concrete walks and slabs, paving, roadways, and driveways shall be installed in Schedule 40 PVC sleeves
- E. A trench of sufficient width shall be provided to allow for proper tamping around pipe.

### 3.3 PIPING-GENERAL

- A. Piping shall be laid out and installed in accordance with manufacturer's printed

recommendations and industry standards. Substantial support shall be provided at all points, and pipes shall be snaked slightly allowing for expansion and contraction.

- B. Minimum 1-inch vertical clearance shall be between lines crossing at angles greater than 45 degrees.
- C. Minimum 3 inches horizontal and vertical clearances shall be between all other lines.
- D. All swing or swivel joints shall provide a leak-resistant joint with freedom of movement.
- E. Teflon thread sealant 3/4-inch wide (tape or liquid), or approved equal shall be used at all threaded joints.
- F. Pipe sleeves shall be provided under all paving and where necessary for passage under finish surface material, future replacement, and for protection of PVC piping and control wire.

### 3.4 PLASTIC PIPE

- A. The pipe shall be guaranteed by the manufacturer to be suitable for operation under the conditions of this installation and shall be guaranteed free from defects in workmanship and quality.
- B. The pipe shall be connected by O-ring type or by solvent-weld joints as outlined below. Joints shall be made in strict accordance with the manufacturer's printed recommendation.
- C. The plastic pipe sections shall be placed accurately to line and grade in the prepared trenches. The inside of all pipe shall be clean and free from foreign matter and shall be end-reamed to remove burrs and provide full inside diameter of the pipe end.
- D. Pipe assembly shall have a firm, uniform bearing for the entire length of each pipeline to prevent uneven settlement. All adjustments to grade shall be made by scraping away or filling in with clean earth backfill material, well compacted under the body of the pipe. Wedging of pipe will not be permitted. The inside of all pipes shall be clean and free from foreign materials before joints are assembled.
- E. Sealant tape shall be used on all threaded joints.
- F. All pipeline open ends upon which the WORK has been stopped shall be closed at the end of each day's construction work with a suitable temporary plug to prevent entrance of any foreign materials into the assembled pipeline.
- G. Pressure pipe shall be defined as all piping lying "upstream" from remote control valves and quick-coupling lines.
- H. O-Ring type flexible coupling pipe shall be used on pressure pipes 4-inch diameter and larger.
- I. Three inch and smaller mainlines and fittings of pressure piping shall be solvent-weld type.
- J. Pressure piping 3-inch and larger shall be provided with Portland cement concrete thrust blocks. Thrust blocks shall be constructed at the following places:
  - 1. Where pipe changes direction at fittings.

2. Where pipe changes size.
  3. Where line terminates.
- K. Thrust blocks shall be constructed of 2000 psi concrete, as noted on Drawings and details.
- L. The thrust block areas noted on the details table shall be measured in a place perpendicular to the longitudinal axis of the pipe or to the longitudinal axis of the thrust developed. The thrust block bearing area shall be against undisturbed around.
- M. Compression fitting (compression by compression slip joint PVC) shall be provided on mainline at 250 on center for expansion and contraction of mainline on straight runs on solvent welded pipe.

### 3.5 VALVES

- A. Piping systems shall be supplied with valves at all points as indicated on the Drawings or specified herein so arranged to give complete regulating control throughout. Automatic control valves and gate valves, shall be as detailed in the Contract Documents or as otherwise directed by the OWNER'S REPRESENTATIVE.
- B. Valves shall be the full size of the line in which they are installed, unless otherwise indicated on the Drawings.
- C. Remote control valves shall be adjusted so the most remote irrigation heads operate at the pressure recommended by the head manufacturer. Remote control valves shall be adjusted so a uniform distribution of water is applied by the irrigation heads to the planting areas for each individual valve system. A union fitting shall be provided on the discharge side of the control valve. They shall be wired to operate in the order as shown. They shall be capable of being operated manually entirely independent of the controller.
- D. Isolation valves shall be installed as indicated on the Drawings.
- E. Stop and Waste valves shall be line (pipeline) size, shall be installed where indicated on the Drawings.
- F. Quick-coupling valves shall be provided, located, and installed as indicated on the Drawings.

### 3.6 VALVE BOXES

- A. All remote control irrigation valves, master valve / flow sensor assembly, isolation valves, gate valves, and manual drain valve assembly shall be enclosed in a heavy duty plastic boxes as indicated on the Drawings and Specifications. Valve boxes shall be installed in shrub beds wherever possible. Avoid placing valve boxes in turf or ground cover areas.

### 3.7 RAIN/FREEZE SENSOR

- A. Install per manufacturer's recommendations.

### 3.8 IRRIGATION HEADS

- A. All nozzles on irrigations shall be tightened after installation. All irrigations having an adjustment stem shall be adjusted on a lateral line for the proper radius diameter and/or flow.

- B. All irrigation heads shall be set perpendicular to finished grades and at finish ground level.
- C. All irrigation heads shall be installed as detailed on the Drawings.
- D. The irrigation system shall be thoroughly flushed remove all possible foreign material prior to installation of the irrigation heads.
- E. The CONTRACTOR shall protect against re-entry of contaminated water into risers or piping. After flushing, the CONTRACTOR shall immediately install irrigation heads or cap risers until irrigation heads are installed.

### 3.9 AUTOMATIC CONTROLLER

- A. The CONTRACTOR shall install controller as indicated on the Drawings complete with required waterproof circuit breaker type disconnect switch, per manufacturer's printed recommendations.
- B. Controller location is diagrammatic, and the actual installation shall be as specifically located by the Owner's Representative.
- C. All local and applicable codes shall be followed in furnishing and/or connecting a 110-volt electrical service to the controller.
- D. The controller shall be wall mounted as indicated on the Drawings, in such a manner that all normal adjustments can be conveniently reached by the operator while in a standing position.
- E. Adjustment of the controller shall be such that each control valve in the circuit will remain open for a readily adjustable period of 5 or less minutes to 60 minutes. Readily made field adjustments shall include a provision whereby any number of days in a week can be skipped and whereby one or more positions on the controller may be skipped. When any or all of the above adjustments have been made, the controller shall continue to operate automatically as set until further adjustments are made. Provision shall be made for conveniently resetting the start of the irrigation cycle at any time and also for advancing from one position to any other position at will.
- F. The CONTRACTOR shall properly ground the control boxes to copper ground rods driven into the ground.
- G. Timing, sequence and period will be supplied to the CONTRACTOR by the OWNER'S REPRESENTATIVE. At this time, the CONTRACTOR shall adjust the controller for normal operation.
- H. The controller shall be single-phase; 110-volt (approx.) ac operated and shall contain an "On-Off" switch and fuse assembly. The controllers shall be equipped with a transformer to reduce voltage to a 24-volt system. Controller station shall be provided as indicated on the Drawings.

### 3.10 WIRING AND ELECTRICAL WORK

- A. All electrical equipment and wiring shall comply with local and state codes and shall be installed by those skilled and licensed in the trade. Unless the governing codes specify otherwise, low voltage control wire may be installed by the CONTRACTOR when code allows.

- B. All 110-volt wire shall be installed in conduit and taken from appropriate sources as indicated on the Drawings. CONTRACTOR shall coordinate manufacturer and installer
- C. The CONTRACTOR shall provide low voltage, 24-volt direct burial wires. Wire size shall be as shown but shall be not less than No. 14. Where sizes are not shown, they shall be sized per wire manufacturer's sizing charts and specifications.
- D. The CONTRACTOR shall provide all wiring, conduits, sleeves, and connection for the low voltage electrical system between controller and valves, and where else shown and necessary for a complete and operable irrigation system.
- E. Wires shall be color coded as follows:
  - 1. Each automatic control valve shall be provided with a separate control wire running from the valve to the proper station on the controller that is controlling the valve. All control valves operated by one controller shall have common ground wire running from the control valves to controller. All wire to be direct burial P.E. and UL approved, red-lawn, white-ground, yellow-shrubs, Run one extra valve wire (wire color blue) for every five valves installed with a minimum of two wires run through each group of valves of two or more.
- F. All splices shall be moisture proof using specified electrical connectors.
- G. Wires shall be bundled together and wrapped with electrical tape similar to PVC at 15-ft intervals. Install wire in the bottom of the main line trench maintaining 12" offset from the main line.
- H. An expansion curl should be provided within 3 ft of each wire connection and at pull box locations. Provide three feet of extra wire in each valve box.
- I. All conduits and sleeves necessary for running wires under concrete, walks, and paving shall be furnished and installed before said concrete, walks, and paving work is installed.
- J. Wire shall be continuous without splices except at control valves, and shall be routed in main line trench whenever possible.
- K. All wire under paving shall be encased in PVC pipe; changes in direction under paving shall be made with sweep ells
- L. Provide one extra wire for every five valves. Run two extra wires to the furthest valve both directions for each controller.

### 3.11 PIPE TRENCH BACKFILL

- A. After pipe and wires have been installed, the trenches shall be backfilled. The backfill operation must provide a firm continuous support for the pipe.
- B. Backfill material shall be free of rocks and other materials that may damage the piping.
- C. Bottom of trenches shall be smooth and free of sharp rocks and other object that may damage pipe.

- D. The initial backfill shall be accomplished by carefully tamping selected material (from material excavated from the trench) under the pipe and between the pipe and the trench.
- E. The pipes shall be filled with water and pressurized during backfilling operations if necessary, to prevent drainage to piping.
- F. The backfill shall be carefully installed around and over the pipe to approximately 10 inches of the ground surface, then water shall be allowed to flow in the trench. After this puddling operation has been completed and allowed to stand for 24 hours, the balance of the materials shall be placed in the trench to the sub-grade line (leaving room for topsoil) Rocks and other materials found in the backfill shall be removed. The backfill shall be compacted carefully and thoroughly.
- G. Couplings and fittings shall be left exposed until leakage tests have been completed
- H. Topsoil shall be installed prior to planting.
- I. Install detectable warning tape above mainline as indicated on the Drawings.

### 3.12 TESTING AND ADJUSTMENTS

- A. The OWNER'S REPRESENTATIVE shall be notified by the CONTRACTOR prior to performing hydrostatic tests on the irrigation system in place. This test shall be done by the CONTRACTOR in the presence of the OWNER'S REPRESENTATIVE. The test results will be acceptable to the OWNER'S REPRESENTATIVE when no leakage or loss of pressure is evident during the test period. Defects shall be detected and repaired prior to retesting.
- B. The irrigation heads shall be adjusted and balanced for optimum and uniform coverage without excessive fogging and overthrow on walks, paving, and structures. The height and elevations of risers and irrigation heads shall be adjusted.
- C. Following adjusting and balancing of the irrigation heads, an operating test of the entire system shall be performed by the CONTRACTOR in the presence of the OWNER'S REPRESENTATIVE at normal operating pressures. The test will be considered as acceptable if the system operates in a satisfactory manner providing uniform coverage of irrigated areas for a one week period of automatic operation with no leaks.

### 3.13 RECORD DRAWINGS

- A. The Contractor shall keep, as his work is installed, an accurate record of exact dimensioned locations, grades, elevations, color of hot and spare wires - splice boxes and the size of all underground piping, valves, and drains. Dimensions shall be indicated distances from columns, buildings, curbs, and similar permanent features on the site. This information shall be recorded on a print as the work progresses, but shall be permanently recorded on a reproducible original which shall be given to the Authorized owner's representative before the project is accepted.
- B. Record Drawings shall be furnished to the OWNER'S REPRESENTATIVE at the time of the irrigation system inspection and before acceptance of the operating system by the OWNER.

END OF SECTION 329200

## UTNG – MANTI ARMORY REMODEL

### SECTION 329200 – LANDSCAPE PLANTING

#### PART 1 - GENERAL

##### 1.1 THE REQUIREMENT

- A. The CONTRACTOR shall perform all the landscaping and all appurtenant work, complete, in accordance with the requirements of the Contract Documents.
- B. Scope of Work: Landscaping as referred to herein shall include, but not be limited to the following work: soil preparation, weed control, finish grading, furnishing and installing plant materials, tree staking and tying, cleanup, maintenance, and guarantee.
- C. The Section cross references the following sections:
  - 1. Reference Standards 014200
  - 2. Contractor Submittals 013300
  - 3. Project Closeout 017700
  - 4. Landscape Irrigation 328400
  - 5. Landscape Edging 329200

##### 1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Federal Specifications:
  - 1. FS O-F-241 D Fertilizer, Mixed, Commercial
- B. Commercial Standards:
  - 1. ANSI/ASTM D 422 Method for Particle-Size Analysis of Soils
  - 2. ANSI Z601 Nursery Stock
  - 3. American Association of Rules and Grading Provisions Nurserymen, Inc.

##### 1.3 CONTRACTOR SUBMITTALS

- A. General: The CONTRACTOR shall furnish a certificate with each delivery or bulk material delivery, stating source, quantity, and type of material. All materials shall conform to specification requirements. All certificates shall be delivered to the LANDSCAPE ARCHITECT (here in referred to as L.A.) at time of each delivery. All bulk delivered materials shall be delivered with level load volume plainly marked on the truck bed.
- B. Submittals required shall be submitted as specified in Section 013300 - Contractor Submittals:
  - 1. Topsoil Report.
  - 2. Literature on Fertilizers and Additives.
  - 3. Bark mulch – ½ Gallon.

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4. Literature on staking materials.
5. Turf grass mix literature.

### 1.4 QUALITY ASSURANCE

- A. General: All plants furnished by the CONTRACTOR shall be true to type or name as shown in the Contract Documents and shall be tagged in accordance with the standard practice recommended by the Agricultural Code of the State of Utah; however, determination of plant species or variety will be made by the L.A..
- B. All plants shall comply with Federal and State laws requiring inspection for plant diseases and infestations. Inspection certificates required by law shall accompany each shipment of plants, and certificates shall be delivered to the L.A..
- C. All inspections herein specified will be made by the L.A. or its representative. The CONTRACTOR shall request inspection at least 24 hours in advance of the time inspection is required. Inspection will be required on the following stages of the WORK:
  1. During preliminary grading, soil preparation, and initial weeding.
  2. When trees are spotted for planting, but before planting holes have been excavated.
  3. When finish grading has been completed.
  4. When all specified work, except the maintenance period has been completed.
  5. Final inspection at the completion of the maintenance period.
- D. Plants shall be subject to inspection and approval or rejection by the L.A. at place of growth and upon delivery to the site at any time before or during progress of the WORK and according to:
  1. Quantity, quality, size, and variety;
  2. Ball and root condition; and
  3. Latent defects and injuries resulting from handling, disease, and insects.
- E. Plants approved at pre-planting inspection shall still be subject to rejection during planting if found to be below Specifications.
- F. Rejected plants shall be identified in an obvious manner, promptly removed from the site and replaced.
- G. Plants shall have been grown in nurseries which have been inspected by the governing authorities. Inspection of plant materials required by City, County, State, or Federal authorities shall be the responsibility of the CONTRACTOR, who shall have secured permits or certificates prior to delivery of plants to site.

### 1.5 CLEANUP

- A. Upon completion of all planting operations, the portion of the project site used for a work or

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storage area by the CONTRACTOR shall be cleaned of all debris, superfluous materials, and equipment. All such materials and equipment shall be entirely removed from the project site as specified in Section 017700 - Project Closeout.

- B. All walks or pavement shall be swept or washed clean upon completion of the WORK of this Section.
- C. During the entire Contract period, plant containers that have been cut or removed from plant materials shall be removed from the project site daily, in accordance with the provisions for maintenance and guarantee as specified in Section 017700 - Project Closeout.

### 1.6 MAINTENANCE OF LANDSCAPE PLANTING PRIOR TO ACCEPTANCE OF PROJECT

- A. General: The CONTRACTOR shall be responsible for protecting, watering, and maintaining all planting and irrigation systems until final acceptance of all work under the contract.
- B. At time of acceptance of the complete project, the lawn shall be totally established with no bare spots, mowed a minimum of 2 times, and the grass shall be at least 1-1/4 to 2 inches in height.
- C. Watering: Trees and shrubs shall be thoroughly soaked after planting and provided with additional water at intervals as necessary to provide for good health and growth of the planting.
- D. Upon completion of lawn sodding, the entire area shall be soaked to saturation by a fine spray. The new planting shall be kept watered by the irrigation system existing on the site during dry weather or whenever necessary for proper establishment of the lawn. Care shall be taken to avoid excessive washing or puddling on the surface and any such damage caused thereby shall be repaired by the CONTRACTOR at his own expense.
- E. Protection: The CONTRACTOR shall provide adequate protection to all newly planted areas including the installation of approved temporary fences to prevent trespassing and damage, as well as erosion control, until acceptance.
- F. The CONTRACTOR shall replace any materials or equipment it has damaged or which has been damaged by its employees or subcontractors.
- G. Partial utilization of the project shall not relieve the CONTRACTOR of any of the requirements contained in the Contract Documents.
- H. Mowing of Lawn Areas: First mowing of lawn areas shall begin as soon as the grass has reached a height of 3 inches and subsequent mowing shall be at least once a week, or as often as necessary to maintain all lawn areas at a uniform height of 1-1/2 to 2 inches.
- I. All lawns shall be fertilized every 3 weeks with 6 lb of 16-8-8 commercial fertilizer per 1000 sq ft for the first 7 weeks and fertilized thereafter once each 5 months prior to acceptance.
- J. Plants shall be maintained in a vigorous, thriving condition by watering, cultivating, weeding, pruning, spraying, and other operations necessary. No trees or shrubs will be accepted unless they are healthy and show satisfactory foliage conditions.

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- K. All planted areas shall be cultivated at least every 2 weeks and raked smooth, to present a neat appearance and additional mulch shall be added where necessary.
- L. Maintenance shall include, in addition to the foregoing, cleaning, edging, repairs to stakes, wire, and wrappings, the repair of erosion, and all other necessary work of maintenance. Sidewalks and other paved areas shall be kept clean while planting and maintenance are in progress.
- M. Any and all irrigation lines broken or disrupted during this construction shall be replaced to proper working order prior to contract work and be acceptable to the OWNER.

### 1.7 FINAL INSPECTION AND GUARANTEE

- A. Inspection of work of lawns and planting will be made at conclusion of maintenance.
- B. Written notice requesting inspection shall be submitted to the L.A. at least 10 days prior to the anticipated inspection date.
- C. Final acceptance of the WORK prior to guarantee period of the contract will be accepted upon written approval by the L.A., on the satisfactory completion of all work, including maintenance, but exclusive of the replacement of plant material.
- D. Any delay in the completion of any item of work in the planting operation which extends the planting into more than one season shall extend the guarantee in accordance with the date of completion given above.
- E. The CONTRACTOR shall replace, as soon as weather conditions permit, all dead plants and all plants not in a vigorous, thriving condition which are noted at the end of the one year guarantee period.
- F. Plants used for replacement shall be of the same size and variety specified in the plant list. Plants shall be furnished, planted, staked, and mulched as specified.
- G. All work done under this contract shall be left in good order to the satisfaction of the OWNER and the L.A. and the CONTRACTOR shall, without additional expense to the OWNER, replace any trees, shrubs, etc., which develop defects or die during the one-year guarantee period.

### 1.8 GUARANTEE FOLLOWING ACCEPTANCE OF PROJECT

- A. General: The CONTRACTOR shall be responsible for a period of one year after date of acceptance of all work under the Contract, for all necessary plant or tree replacements. The CONTRACTOR shall provide a written guarantee to the OWNER from the landscaping subcontractor, embodying the provisions of this Section of the Specifications.
- B. The WORK covered by the guarantee portions of these specifications consists of providing all

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replacements of plants, labor, materials, equipment, and supplies and in performing all operations in connection with guarantees.

- C. The CONTRACTOR shall clean-up and remove unused or waste materials from the site and leave the area in a neat condition (satisfactory to the OWNER) whenever it performs work during the guarantee Period.
- D. Final Inspection: The OWNER and CONTRACTOR shall make a final inspection at the end of the one-year guarantee period. Any plants and materials found defective at time of final inspection shall be replaced within a time agreed upon by both parties. If it is too late in the planting season for replanting, the replacements shall be made during the next planting season even though such planting may run beyond the maintenance and correction period

## PART 2 -- PRODUCTS

### 2.1 GENERAL

- A. All landscaping materials for soil conditioning, weed abatement, or planting shall be first-grade, commercial quality and shall have certificates indicating the source of material, analysis, quantity, or weight attached to each sack or container or provided with each delivery. Delivery certificates shall be given to the L.A. as each shipment of material is delivered. A list of the materials used, together with typical certificates of each material, shall be submitted to the L.A. prior to the final acceptance of the job.

### 2.2 TERMINOLOGY AND QUALIFICATIONS

- A. Plants or plant material having characteristics not conforming to terms as defined will not be accepted. The terms "plant material" or "plants" refer to all vegetation, whether trees, shrubs, ground cover, or herbaceous vegetation.
- B. Quality refers to structure and form, as evidenced by density and number of canes and branches, compactness, symmetry, and general development without consideration of size or condition. Standard quality indicates the least acceptable quality. Plants shall be typical of the species and variety of good average uniform growth, shall be well formed and uniformly branched, and shall have the minimum number of canes specified, free from irregularities, or shall conform to minimum quality index. Where the number of canes is not specifically stated in describing this grade, the standards of the "Horticultural Standards" as adopted by the American Association of Nurserymen, shall apply. In this case, the number of canes and other factors for the appropriate classification under "quality definition" in the Horticultural Standards shall be the Quality index. Plant material below this standard will be considered "culls" and are not acceptable. Plants shall be nursery grown.
- C. Specimen means an exceptionally heavy, symmetrical, tightly-knit plant, so trained or favored in its development and appearance as to be outstanding, superior in form, number of branches, compactness, and symmetry.

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- D. Size is the factor controlled by dimensions representing height or spread, or both, without consideration of quality or conditions. For standard quality, a dimension is given for height or container size, or a dimension is given for height as well as container size.
- E. Height is usually indicated with a tolerance. The smaller dimension is the minimum acceptable. The larger dimension represents a permissible size. The average dimension of all plants must equal the average of the tolerance figures shown on each item
- F. Condition is the factor controlled by vitality and ability to survive and thrive and be comparable with normal plants of the same species and variety in the vicinity, at the same season of the year. In addition, plants shall be free from physical damage or adverse conditions that would prevent thriving. Conditions also sometimes refer to state of growth, i.e., whether "dormant condition" or "growing condition" and this state shall be comparable to plants of similar species in the vicinity or leaves, formation of buds, and the like.
- G. Cane means a primary stem which starts from the ground, or close to the ground, at a point not higher than 1/4 the height of the plant.
- H. Caliper shall be taken 12 inches above the finish grade or ground, as a guide, or where a dimension in trunk appears to form the head of the tree.
- I. Foliage line is maximum dimension in case of specimen plants. It measures from ground to lowest part of body of plant.
- J. Collected plants shall not be used.

### 2.3 TOPSOIL (**ADD ALTERNATE #2**)

- A. Imported topsoil borrow shall be obtained from naturally drained areas and shall be fertile, friable loam suitable for plant growth. Topsoil borrow shall be subject to inspection and approval at the source of supply and upon delivery.
- B. The topsoil borrow shall be of uniform quality, free from subsoil stiff or lumpy clay, hard clods, hardpan, rocks, disintegrated debris, plants, roots, seeds, and any other materials that would be toxic or harmful to plant growth. Topsoil borrow shall contain no noxious weeds or noxious weed seeds.
- C. Topsoil borrow shall meet all specifications below for either "Ideal" or "Acceptable" categories. Soil that falls within the "Not-Acceptable" range shall not be used (see information following).

TOPSOIL QUALITY\*

Category	pH	Soluble Salts dS/m or mho/cm	Sodium Absorption Ratio (SAR)	Organic Matter %	Sand %	Silt %	Clay %	Texture Class
Ideal	5.5- 7.5	<2	<3	≥2.0	<70	<70	<30	Loam (L), Silt Loam (SiL)
Acceptable	5.0- 8.2	<4	3 to 7 SiL, SiCL, CL 3 to 10 SCL, SL, L	≥1.0	<70	<70	<30	Sandy Clay Loam (SCL) Sandy Loam (SL) Clay Loam (CL) Silty Clay Loam (SiCL)
Not- Acceptable	<5. 0  >8. 2	>4	>10	<1.0	≥70	≥70	≥30	Loamy Sand (LS) Sandy Clay (SC) Silty Clay (SiC) Sand (S), Silt (S), Clay (C)

COARSE FRAGMENTS\*

Category	%>2 mm (>5.0% exceeds guidelines)	Rocks Present >1.5" (>1.5" exceeds guidelines)
Ideal	.2.0	—
Acceptable	2.1-5.0	—
Not-Acceptable	>5.0	—

TOPSOIL NUTRIENT SPECIFICATION\*

	Nitrate Nitrogen ppm	Phosphorus ppm	Potassium ppm	Iron ppm
Ideal / Acceptable	>20	>15	>150	>10

\*from “Topsoil Quality Guidelines for Landscaping”, June 2002, AG/SO-02, prepared by Rich Koenig, Utah State University Cooperative Extension Soil Specialist, and Von Isaman, QA Consulting and Testing, LLC.

- D. Mechanical Analysis shall be performed and shall conform to ANSI/ASTM D 422. QUALITY ASSURANCE.

2.4 FERTILIZER AND ADDITIVES

- A. Fertilizer shall be furnished in bags or other standard containers with name, weight, and guaranteed analysis of contents clearly marked thereon.
- B. Chemical fertilizers shall be a mixed commercial fertilizer conforming to FS O-F-241 D, Type I, with percentages of nitrogen, phosphoric acid, and potash at 5-10-5 and 16-16-8. The combined N-P-K content shall be following percentages of total weight: 5 percent nitrogen 10 percent phosphoric acid and 5 percent potash. Fertilizers shall be uniform in composition, dry, and free flowing.
- C. Tablets shall be 21 grams each 20-10-5 Agriform, Lesslie, or approved equal.
- D. Organic Soil Amendments: Well-composted, stable, and weed-free organic matter, pH range of 6 to 8; moisture content 25 to 35 percent by weight; 100 percent passing through 1/2-inch sieve; soluble salt content of <5 dS/m or mmho/cm; sodium absorption rate (SAR) of <10; carbon : nitrogen ratio (C:N) of  $\leq 20:1$ ; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings.

Toxic Elements Maximum Concentration (mg/kg dry weight)

Arsenic	41
Cadmium	39
Copper	1500
Lead	300
Mercury	17
Molybdenum	75
Nickel	420

Selenium	36
Zinc	2800

- E. Peat: Coir dust, reed peat, sedge peat, moss peat (fine shreds only), reed muck or sedge muck must all comply with Q-P166e, class B coarseness. PH range of 3.4 to 4.8.

## 2.5 MULCH

- A. Rock Mulch: **(BASE BID)**

Shall be as indicated on drawings, dimensions, methods, products and procedures.

2-4" diameter rounded (not fractured) cobble rock, available from the following suppliers:

-Mt. Nebo Sand & Gravel 435.623.5138

-Staker & Parson Companies 435.409.9500

-Geneva Rock Sand & Gravel 801.479.6550

-Or approved equal

- B. Bark Mulch : **(ADD ALTERNATE #2)**

Shredded bark mulch in planting beds shall be clean, pine bark free of sticks and pieces over 2 inches in size produced by "chipping and shredding" tree branches or similar means, placed to a depth of 3 inches. Use around tree pits in turf areas.

## 2.6 PLANT MATERIALS **(ADD ALTERNATE #2)**

- A. Plants shall meet requirements of the Contract Documents and shall be in accordance with the botanical names and applicable standards of quality, size, condition, and type. They shall be true to name, genera, species, and variety in accordance with reference publications.
- B. Plant names are defined in "Standardized Plant Names" and "Bailey's Encyclopedia of Horticulture." When a name is not found in either reference, the accepted name used in the nursery trade shall apply.
- C. Plants shall be marked for identification. Each bundle of plants and at least 25 percent of each species and variety of separate plants in any one shipment shall have legible labels securely attached before delivery to the site.
- D. All trees and shrubs shall be measured while their branches are in their normal position. Height and spread dimensions specified refer to the main body of the plant and not from branch or root tip to tip. No trees will be accepted with their leaders cut, or so damaged that cutting is necessary.
- E. All plants shall be symmetrical and shall conform to the size, age, and condition as specified on the plant list shown in the Contract Documents. Exceptions are as follows:

1. Plants larger than specified in the plant list may be used if approved by the L.A., but use of such plants shall not increase the contract price. If the use of larger plants is approved, the spread of roots or ball earth shall be increased in proportion to the size of the plant. Bare root plants furnished in size greater than specified shall be balled and burlaped when required by the L.A.
  2. Where caliper or other dimensions of any plant materials are omitted from the Plant List, it shall be understood that such plant materials shall be normal stock for type
- F. Plants shall be of sound health, vigorous, and free from plant disease and shall be well-branched, shall have full foliage when in leaf, and shall have a healthy well-developed normal root system. Cold storage plants will not be accepted. Plants that are sensitive to shock from elevation change shall be grown at elevations close enough to site to alleviate any plant damage due to such change for at least 2 years.
- G. Bare rooted (BR) plants shall have well-developed branch systems and vigorous root systems. They shall be dug to sufficient depth to insure full recovery and development of the plants. Roots of these plants shall be covered with a uniformly thick coating of mud being puddled immediately after they are dug
- H. Balled and burlaped (BB) plants shall have firm, natural balls of earth, or diameter not less than that specified and of sufficient depth to include all the fibrous and feeding roots. No plant moved with a ball will be accepted if the ball is cracked or broken before or during plant operations, except on special approval of the L.A.
- I. Roots or balls of all plants shall be adequately protected at all times from sun and drying winds.
- J. Plants (indicated to be in marked cans, pots, or other containers on the plant list) shall have been grown in the containers for a minimum of 6 months and a maximum of 2 years. Roots shall fill the containers but show no evidence of being or having been root bound.
- K. Trees shall have straight trunks and all old abrasions and cuts shall be completely callused over. In no case shall trees be topped before delivery.
- L. Plants shall have been transplanted or root-pruned at least once in the 2 years. Plants shall not be pruned prior to delivery except as authorized by the L.A..

## 2.7 SOD GRASS (**ADD ALTERNATE #2**)

- A. The sod shall be nursery grown drought tolerant blend of seed as indicated on Drawings. It shall be uniformly cut approximately 3/4-inch or more thick and shall be well rooted, 2-year old growth of permanent and desirable grasses indigenous to this general location. The sod shall be practically free from weeds and undesirable grasses.

## 2.8 STAKING MATERIALS (**ADD ALTERNATE #2**)

- A. Staking System: As indicated on Drawings
- B. Guying System: As indicated on Drawings.

- C. Flags: Standard surveyor's plastic flagging tape, white, 8 inches long.

## PART 3 -- EXECUTION

### 3.1 GENERAL

- A. The landscape work shall not be performed at any time when it may be subject to damage by climatic conditions.
- B. The CONTRACTOR shall verify all dimensions in the Contract Documents. Dimensions and plant locations shown shall be coordinated with L.A. and final location shall be site-oriented by the planter and L.A.. Any discrepancies or inconsistencies discovered shall be brought to the attention of the L.A..
- C. In case of conflict between the plant list totals and total plant count of the Contract Documents, the CONTRACTOR shall provide the higher number of plants.
- D. Delivery of materials may begin only after samples and tests have been approved by the L.A.. All materials furnished for the work shall be not less than the approved sample.
- E. Substitutions for the indicated plant materials may be permitted only as approved in writing by the L.A..
- F. The CONTRACTOR shall provide temporary fencing, barricades, covering, or other protections to preserve existing landscaping items indicated to remain and to protect the adjacent properties and other structures when they may be damaged by the landscape work. As indicated on Drawings.
- G. Waste materials shall be removed and disposed of off the OWNER's property, unless otherwise indicated.
- H. It shall be the responsibility of the CONTRACTOR to avail itself of any information regarding utilities which are in the area of work and to prevent damage to the same. The CONTRACTOR shall provide protection to the utilities as necessary.
- I. Burning of combustible materials on the site shall not be permitted.
- J. The CONTRACTOR shall provide protection to structures, sidewalks, pavements, and other facilities in areas of work which are subject to damage during landscape work. Open excavations shall be provide with barricades and warning lights which conform to the requirements of governing authorities and the State's OSHA safety requirements from dusk to dawn each day and when needed for safety.
- K. Planting areas include all areas to be landscaped unless, specified or shown, otherwise.

### 3.2 SOIL PREPARATION

- A. PRIOR to placement of topsoil and/or amending topsoil, a Topsoil Report shall be preformed for imported topsoil. Proposed topsoil shall be amended to meet the above specifications in

### Section 2.3 Topsoil.

- B. The landscape work shall not begin until all other trades have repaired all areas of settlement, erosion, rutting, etc., and the soils have been re-established, recompacted, and refinished to finish grades. The L.A. shall be notified of all areas which prevent the landscape work from being executed.
- C. Areas requiring grading, including adjacent transition areas, shall be uniformly level or sloping between finish elevations to within 0.10-ft above or below required finish elevations.
- D. The landscape work shall not proceed until after walks, curbs, pavings, edging, and irrigation systems are in place. The contract operations shall be completed to a point where the landscape areas will not be disturbed. The subgrade shall be cleaned free of all waste material.
- E. During grading waste materials in the planting areas such as weeds, rocks (1 inches and larger) building materials, road base, rubble, wires, cans, glass, lumber, sticks, etc., shall be removed from the site. Weeds shall be dug out by the roots.
- F. Fertilizers, additives, peat, etc. subject to moisture damage shall be kept in a weatherproof storage place in such a manner that they will be kept dry.
- G. After removal of waste materials the planting areas subgrade shall be scarified and pulverized to a depth of not less than 6 inches and all surface irregularities below the cover of soil removed.
- H. Finish subgrade and amended topsoil placement and grading shall consist of:
  - 1. Prepare subgrade by rough grading and removing all irregularities and debris, then till and scarify subsoil to a depth of 6 inches before placing amended topsoil. Dig subgrade down as required in shrub beds, turf areas for the placement of amended topsoil. Provide laser leveling on large flat areas to create a uniform level subgrade.
  - 2. Landscape contractor is responsible for the last 7 inches of grade in turf sod areas (6 inches of topsoil and 1 inch for sod) and 15 inches in shrub bed areas (3 inches of bark mulch and 12" of amended topsoil). The planting islands in the parking lots shall have all road base removed prior to placement of topsoil. Refer to grading plan for finish grade and drainage. Subgrade soil shall be in a loosened and rough surface finish before amended topsoil is placed over subgrade. (Sub-grade surface shall not be smooth, but a rough surface shall exist for a transition zone of amended topsoil to subsoil.) If areas of subgrade become compacted before amended topsoil is placed, subgrade shall be tilled again before amended topsoil placement.
  - 3. Placing all soil additives and fertilizers for the areas as noted on the plan and per the topsoil report.
  - 4. Till lawn and planting area subsoil's and topsoils that are compacted.
  - 5. After tilling, bring areas to uniform grades by floating and/or hand raking. In large open level areas, perform laser leveling to create uniform level areas.
  - 6. Make minor adjustment of finish grades as directed by the landscape architect or owner.
  - 7. Remove waste materials over 1" in size such as stones, roots, or other undesirable foreign materials and finish raking, dishing, dragging, and smoothing soil ready for planting.
  - 8. No grading or soil placement shall be undertaken when soils are wet or frozen

- I. Any unusual subsoil condition that will require special treatment shall be reported to the L.A.
- J. Amended topsoil shall be uniformly distributed over all areas where required. Subgrade and amended topsoil shall be damp and free from frost.
- K. Surface drainage shall be provided as shown by molding the surfaces to facilitate the natural run-off of water. Low spots and pockets shall be filled with amended topsoil and graded to drain properly.
- L. Finish grade for sodded areas shall be 2 inches below finish grade of adjacent pavement. Finish grade (top of bark mulch) shrub bed areas shall be 1 inches below finish grades of adjacent pavement.

### 3.3 DELIVERY, STORAGE, AND HANDLING OF PLANT MATERIALS

- A. No plants other than the required samples shall be dug or delivered to the site until the required inspections have been made and the plant samples are approved
- B. Plants shall not be pruned prior to delivery except upon approval by the L.A..
- C. Plant material shall be planted on the day of delivery if possible. The CONTRACTOR shall protect the stock in a temporary nursery at the project site where it shall be protected from sun and drying winds and shall be shaded, kept moist, and protected with damp soil, moss, or other acceptable material. Plants shall be planted within 2 days after delivery.
- D. All balled and burlapped plants which cannot be planted immediately in delivery shall be set on the ground and shall be well protected with soil, wet moss, or other acceptable material. Bare rooted plants, which cannot be planted immediately, shall be planted on heeled-in trenches immediately upon delivery. No material heeled-in more than one week may be used. Bundles of plants shall be opened and the plants separated before the roots are covered. Care shall be taken to prevent air pockets among the roots.
- E. During planting operations, bare roots shall be covered with canvas, wet straw, or other suitable materials. No plants shall be bound with wire or rope at any time so as to damage the bark or break branches.
- F. Plants shall not be picked up or moved by stem or branches, but shall be lifted the ball or container.
- G. Plants shall be lifted and handled from the bottom of the ball or container. Plants with balls cracked or broken before or during planting operations will not be accepted and shall be immediately removed from the site.

### 3.4 TREE AND PLANT LOCATIONS

- A. The CONTRACTOR shall locate and stake all tree and shrub locations and have the locations approved by the L.A. before starting excavation for same. The plant locations shall be observed, and their locations shall be adjusted as directed by L.A. before final approval.
- B. No trees shall be located closer than 72 inches to structures unless otherwise shown. Ground

covers and shrubs may be planted up to structures or curbs.

### 3.5 PLANT PITS

- A. Plant pits, centered on location stakes, shall be excavated circular pits with vertical sides and flat or saucer shape bottom in accordance with the following sizes unless shown
  - 1. Tree pits shall be at least 3 times greater in diameter than the specific diameter of ball or spread of roots, and at depth of ball or roots.
  - 2. Shrubs shall be planted in pits or holes of soil the depth of ball below finished grade, or as much deeper as necessary to properly set the plant at finished grade.

### 3.6 PREPARED BACKFILL

- A. Tree and shrub pit backfilling soil shall consist of 1/2 existing topsoil borrow from plant pit and 1/2 imported topsoil borrow.
- B. Tree and shrub pits shall be provided with fertilizer tablets as follows:
  - 1 per one-gallon can plant
  - 3 per 5-gallon can plant
  - 5 per 15-gallon can plant

### 3.7 ROCKS OR UNDERGROUND OBSTRUCTIONS

- A. In the event that rock or underground obstructions are encountered in the excavation of plant pits, alternative locations shall be selected by the L.A.. Moving of trees to alternative locations shall not entail additional costs to the OWNER.

### 3.8 SETTING PLANT MATERIALS

- A. The soil shall not be worked when the moisture content is so great that excessive compaction will occur, nor when it is so dry that dust will form in the air or that clods will not break readily. Water shall be applied if necessary to provide ideal moisture for filling and for planting as herein specified.
- B. Plants shall be set in center of pits as shown in the Contract Documents. They shall be set plumb and straight, and at such a level that after settlement that the crown of the plant will be 1 to 2 inches above the finished grade.
- C. Balled and burlapped trees shall have planting soil placed and compacted around base of ball to fill all voids. All burlap ropes or wires shall be removed from the sides and tops of balls.
- D. All ground cover plants shall be evenly spaced, staggered in rows, and set at intervals specified, so as to produce a uniform effect. Plants shall be watered immediately after planting operations have been completed.
- E. All shrubs and vines shall be pruned to remove damaged branches. All bare root shrubs shall be pruned and shaped to compensate for transplant root loss.

- F. Planting soil around roots or balls shall be thoroughly compacted and watered. After planting, the soil in the shrub beds shall be cultivated between shrubs, raked smooth, and neatly outlined. Muddy soil shall not be used for backfilling. All broken or frayed roots shall be properly cut off.
- G. Trees and shrubs on slopes steeper than 6 to 1 shall be provided with watering dams or berms at least 6 inches high and 8 inches wider than planting pit (hole) unless specified or shown otherwise.
- H. All trees shall be thoroughly watered immediately after planting.
- I. Remove all tags and labels when directed by L.A..

### 3.9 STAKING AND TREE WRAPPING

- A. Staking of trees shall be done immediately after they are planted. Plants shall stand plumb after staking. Staking shall be as indicated on Drawings.
- B. Trees 2-inch caliper and less shall be supported by 2 stakes placed diametrically opposite at perimeter line of ball and to sufficient depth to hold tree rigid. Stakes shall be driven vertically and not twisted or pulled. Trees shall be wired to each stake as indicated on Drawings.
- C. All deciduous trees greater than 2-inch caliper and all evergreen trees 6'-0" and taller shall be triple staked or guyed as indicated on Drawings.

### 3.10 PRUNING AND MULCHING

- A. Each tree and shrub shall be pruned in accordance with standard horticultural practice to preserve the natural character of the plant in the manner fitting its use in the landscape design. Prune plant material only as approved by the L.A..
- B. All dead wood or suckers and all broken or badly bruised branches shall be removed by thinning out and shortening branches. Deciduous bare-rooted plants shall have not less than 1/3 of their respective leaf surfaces removed. All cuts shall be made just above a healthy bud. Pruning shall be done with clean, sharp tools.
- C. Plants shall be mulched after planting and cultivating have been completed. A layer of mulch materials, as hereinbefore specified, shall be spread on finished landscaping grade within all planting areas to a depth of 3 inches. The mulch around isolated trees shall be 3 feet in diameter. All shrub and ground cover beds shall be completely covered with the mulch as indicated on the Drawings.

### 3.11 SODDING

- A. Grass sod shall be provided where shown or specified and shall be maintained.
- B. The soil shall be prepared and fertilized before sodding. The CONTRACTOR shall prepare only enough ground that can be planted within 24 hours thereafter.
- C. Soil preparation shall consist of the following:

1. Preparation of sub-grade grading shall be per "Part 3 -- Execution" in Paragraphs entitled "General" and "Soil Preparation," herein.
  2. Finish grading of soil per Paragraph entitled "Soil Preparation", herein.
- D. Sod shall be cut and laid on site the same day.
- E. The sod shall be placed over leveled, compacted, and prepared finish graded soil. The amended topsoil and sub-base shall be moist enough to resist shifting.
- F. Sod may be placed at any time when the ground is not frozen. The surface on which the sod is to be laid should be firm and free from footprints or other depressions. A string or line of boards may be used as a guide for setting the first line of sod across the area. Sods of the next course are matched against the edge of this first line in such a way the joints between the individual sod pieces in the 2 lines do not coincide. Successive courses are matched against the last line laid, in the same manner.
- G. Sod shall always be laid across slopes.
- H. After sodding has been completed, the sodded area shall be cleaned up and thoroughly moistened by irrigation system.

### 3.12 MISCELLANEOUS ITEMS

- A. Mulch shall be placed in the planting areas as shown, spread carefully and evenly to a minimum depth of 3 inches over the entire area. Use bark mulch only around tree pits in turf areas.

END OF SECTION 329200

## UTNG – MANTI ARMORY REMODEL

### SECTION 329210 - LANDSCAPE EDGING (**ADD ALTERNATE #2**)

#### PART 1 - GENERAL

##### 1.1 SECTION INCLUDES

- A. Steel edging

##### 1.2 RELATED SECTIONS

- A. Section 328400 – Landscape Irrigation: Installation and requirements for underground lines.
- B. Section 329200 – Landscape Planting: Installation and requirements for plant materials.

##### 1.3 SUBMITTALS

- A. Submit under provisions of Section 013000.
- B. Steel Edging: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Product characteristics, including materials and finishes.
  - 3. Storage and handling requirements and recommendations.
  - 4. Installation methods.
  - 5. Maintenance methods.
- C. Verification Samples: For each finish product specified, two 4 inch (101 mm) long samples representing actual product and color.

##### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Store products in accordance with manufacturer's requirements.
- B. Store products in manufacturer's unopened packaging with labels intact until ready for installation.

#### **PART 2 - PRODUCTS**

##### 2.1 STEEL EDGING

- A. Landscape Edging: Steel alloy, interlocking system with sections to lock together without offset or overlap and stake punch-outs. Stakes not less than 14 inches (355 mm) long, with two stakes at every joint. Sure-loc Steel Landscape Edging, as manufactured by Sure-loc Edging Corporation, Holland, MI 49423; Toll Free Tel: 800-787-3562; Tel: 616-392-3209; Fax: 616-392-5134; Email: info@surelocedging.com; Web: www.surelocedging.com or approved equal.
  - 1. Height and Length: 5 inches by 16 feet (127 mm by 4877 mm).

## UTNG – MANTI ARMORY REMODEL

2. Thickness: Approximately 1/4 inch (6 mm); average: 0.182 - 0.188 inch (4.62 - 4.78 mm).
3. Finish: Powder coating; color black.

### PART 3 - EXECUTION

#### 1.5 EXAMINATION

- A. Verify location of underground lines, irrigation hoses and other cables.

#### 1.6 EDGING INSTALLATION

- A. Install in accordance with manufacturer's instructions, including staking requirements.
- B. Steel Edging: Install edging with stake pockets on inside of planting bed.
- C. Back fill both sides of edging. Compact back fill so that top of edging is not more than 1/2 inch (13 mm) above finish grade.

#### 1.7 PROTECTION

- A. Protect installed products until completion of project.
- B. Repair or replace damaged products before Substantial Completion.

END OF SECTION 329210

## **SECTION 224700 - DRINKING FOUNTAINS AND WATER COOLERS**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

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

#### **1.2 SUMMARY**

- A. This Section includes the following water coolers and related components:
  - 1. Pressure water coolers.
  - 2. Fixture supports.

#### **1.3 DEFINITIONS**

- A. Accessible Water Cooler: Fixture that can be approached and used by people with disabilities.
- B. Cast Polymer: Dense, cast-filled-polymer plastic.
- C. Drinking Fountain: Fixture with nozzle for delivering stream of water for drinking.
- D. Fitting: Device that controls flow of water into or out of fixture.
- E. Fixture: Drinking fountain or water cooler unless one is specifically indicated.
- F. Remote Water Cooler: Electrically powered equipment for generating cooled drinking water.
- G. Water Cooler: Electrically powered fixture for generating and delivering cooled drinking water.

#### **1.4 SUBMITTALS**

- A. Product Data: For each fixture indicated. Include rated capacities, furnished specialties, and accessories.
- B. Shop Drawings: Diagram power, signal, and control wiring.
- C. Field quality-control test reports.
- D. Operation and Maintenance Data: For fixtures to include in operation, and maintenance manuals.

## 1.5 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Regulatory Requirements: Comply with requirements in ICC A117.1, "Accessible and Usable Buildings and Facilities"; Public Law 90-480, "Architectural Barriers Act"; and Public Law 101-336, "Americans with Disabilities Act"; for fixtures for people with disabilities.
- C. NSF Standard: Comply with NSF 61, "Drinking Water System Components--Health Effects," for fixture materials that will be in contact with potable water.
- D. ARI Standard: Comply with ARI's "Directory of Certified Drinking Water Coolers" for style classifications.
- E. ARI Standard: Comply with ARI 1010, "Self-Contained, Mechanically Refrigerated Drinking-Water Coolers," for water coolers and with ARI's "Directory of Certified Drinking Water Coolers" for type and style classifications.
- F. ASHRAE Standard: Comply with ASHRAE 34, "Designation and Safety Classification of Refrigerants," for water coolers. Provide HFC 134a (tetrafluoroethane) refrigerant, unless otherwise indicated.

## 1.6 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Filter Cartridges: Equal to 100 percent of amount installed for each type and size indicated, but no fewer than 1 of each.

## PART 2 - PRODUCTS

### 2.1 PRESSURE WATER COOLERS

- A. Water Coolers:
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Elkay Manufacturing Co. **model EZSTL8C or equal by**
    - b. Acorn Aqua.
    - c. Haws Corporation.
    - d. Prior approved equal.

2. Description: Accessible, ARI 1010, Type PB, pressure with bubbler, Style W, Bi-level wall-mounting water cooler for adult and child-mounting height.
  - a. Cabinet: Bilevel with two attached cabinets and with bilevel skirt kit,.
  - b. Bubbler: One, with adjustable stream regulator, located on each cabinet deck.
  - c. Control: Push bar.
  - d. Supply: NPS 3/8 with ball, gate, or globe valve.
  - e. Filter: One or more water filters complying with NSF 42 and NSF 53 for cyst and lead reduction to below EPA standards; with capacity sized for unit peak flow rate.
  - f. Drain(s): Grid with NPS 1-1/4 minimum horizontal waste and trap complying with ASME A112.18.1.
  - g. Cooling System: Electric, with hermetically sealed compressor, cooling coil, air-cooled condensing unit, corrosion-resistant tubing, refrigerant, corrosion-resistant-metal storage tank, and adjustable thermostat.
    - 1) Capacity: 8 gph of 50 deg F cooled water from 80 deg F inlet water and 90 deg F ambient air temperature.
    - 2) Electrical Characteristics: hp; 120-V ac; single phase; 60 Hz.
  - h. Support: Type II, water cooler carrier. Refer to "Fixture Supports" Article.

## 2.2 FIXTURE SUPPORTS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Josam Co.
  2. MIFAB Manufacturing, Inc.
  3. Smith, Jay R. Mfg. Co.
  4. Tyler Pipe; Wade Div.
  5. Watts Drainage Products Inc.; a div. of Watts Industries, Inc.
  6. Zurn Plumbing Products Group; Specification Drainage Operation.
  7. Or equal by.
- B. Description: ASME A112.6.1M, water cooler carriers. Include vertical, steel uprights with feet and tie rods and bearing plates with mounting studs matching fixture to be supported.
  1. Type I: Hanger-type carrier with two vertical uprights.
  2. Type II: Bilevel, hanger-type carrier with three vertical uprights.
  3. Supports for Accessible Fixtures: Include rectangular, vertical, steel uprights instead of steel pipe uprights.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine roughing-in for water and waste piping systems to verify actual locations of piping connections before fixture installation. Verify that sizes and locations of piping and types of supports match those indicated.
- B. Examine walls and floors for suitable conditions where fixtures are to be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 APPLICATIONS**

- A. Use carrier off-floor supports for wall-mounting fixtures, unless otherwise indicated.
- B. Use mounting frames for recessed water coolers, unless otherwise indicated.
- C. Set freestanding and pedestal drinking fountains on floor.
- D. Set remote water coolers on floor, unless otherwise indicated.
- E. Use chrome-plated brass or copper tube, fittings, and valves in locations exposed to view. Plain copper tube, fittings, and valves may be used in concealed locations.

### **3.3 INSTALLATION**

- A. Install off-floor supports affixed to building substrate and attach wall-mounting fixtures, unless otherwise indicated.
- B. Install mounting frames affixed to building construction and attach recessed water coolers to mounting frames, unless otherwise indicated.
- C. Install fixtures level and plumb. For fixtures indicated for children, install at height required by authorities having jurisdiction.
- D. Install water-supply piping with shutoff valve on supply to each fixture to be connected to water distribution piping. Use ball, gate, or globe valve. Install valves in locations where they can be easily reached for operation. Valves are specified in Division 15 Section "Valves."
- E. Install trap and waste piping on drain outlet of each fixture to be connected to sanitary drainage system.
- F. Install pipe escutcheons at wall penetrations in exposed, finished locations. Use deep-pattern escutcheons where required to conceal protruding pipe fittings. Escutcheons are specified in Division 15 Section "Basic Mechanical Materials and Methods."

- G. Seal joints between fixtures and walls and floors using sanitary-type, one-part, mildew-resistant, silicone sealant. Match sealant color to fixture color. Sealants are specified in Division 7 Section "Joint Sealants."

### **3.4 CONNECTIONS**

- A. Piping installation requirements are specified in other Division 15 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.
- C. Ground equipment according to Division 16 Section "Grounding and Bonding."
- D. Connect wiring according to Division 16 Section "Conductors and Cables."

### **3.5 FIELD QUALITY CONTROL**

- A. Water Cooler Testing: After electrical circuitry has been energized, test for compliance with requirements. Test and adjust controls and safeties.
  - 1. Remove and replace malfunctioning units and retest as specified above.
  - 2. Report test results in writing.

### **3.6 ADJUSTING**

- A. Adjust fixture flow regulators for proper flow and stream height.
- B. Adjust water cooler temperature settings.

### **3.7 CLEANING**

- A. After completing fixture installation, inspect unit. Remove paint splatters and other spots, dirt, and debris. Repair damaged finish to match original finish.
- B. Clean fixtures, on completion of installation, according to manufacturer's written instructions.

END OF SECTION 224700

# ADDENDUM

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Project Name: Manti Armory Upgrade

Addendum No.: 2

DFCM Project # 09241470

Date: 01-06-10

From: WHW Engineering Inc  
8619 South Sandy Parkway  
Sandy, Utah 84070  
Phone (80) 466-4021 Fax (801) 466-8536

To: All bidders

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This Addendum forms and becomes a part of the Contract Documents and modifies the original Bidding Documents dated December 2009 as noted below. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of 7 pages and 5 drawings.

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## **I - CHANGES TO PRIOR ADDENDA: NA**

## **II - CHANGES/CLARIFICATIONS TO SPECIFICATIONS:**

**Item II-1.** See attached specification section 224700 Drinking Fountains.

**Item II-2.** Specification section 238127 – 1.4.A. shall be changed to read as follows:

“VRF equipment shall be warranted by the manufacturer’s warranty for a period of 2 years parts and labor for the entire system, from the date of project substantial completion. An extended warranty including 6 years parts and labor on the compressors shall be included. When warranty service is required, manufacturers authorized service representative shall be required to respond within 2 business days of being notified. Any repair or replacement parts shall be guaranteed to be shipped next day air as part of the standard warranty. “

**Item II-3.** Specification section 238127 – 3.3.A. shall be changed to read as follows:

“Within 24 months of completion, manufacturer’s service reps shall provide a minimum of 6 site visits to make adjustments, repairs, modifications, etc., as well as provide an additional 4 hours of training at each visit. Site visits shall be scheduled and coordinated with the Utah National Guard energy manager and the Utah National Guard maintenance supervisor or maintenance coordinator, and coordinated with the automatic temperature controls contractor. Factory site visits shall be performed by a factory authorized service technician, as well as a factory authorized controls technician. This may be the same person as long as they are capable of servicing and training in both areas.”

**Item II-4.** Specification section 230900-3.4: Insert the following paragraph D:

“Within 24 months of completion, manufacturer’s service reps shall provide a minimum of 6 site visits to make adjustments, repairs, etc., as well as provide an additional 4 hours of training at each visit. Site visits shall be scheduled and coordinated with the Utah National Guard energy manager and the maintenance supervisor or maintenance coordinator, and coordinated with the variable volume refrigerant manufacturer’s service representative”

## **III - CHANGES/CLARIFICATIONS TO DRAWINGS:**

**Item III-1.** Sheet ME501: See revised detail C5 for ceiling mounted cassettes.

**Item III-2.** Sheet PD102, PE102, PE601: See revised sheets for new drinking fountain.

**Item III-3.** Sheet PE101 and PE102: See revised sheets for new ADA shower.

### PRIOR APPROVALS

THE FOLLOWING ITEMS, AS SUBMITTED, ARE CONSIDERED, IN GENERAL AND IN NAME ONLY, AS EQUAL TO THOSE ITEMS SPECIFIED. THIS REVIEW DOES NOT RELIEVE THE CONTRACTOR OR SUPPLIER OF THE RESPONSIBILITY OF CONFORMING TO THE DRAWINGS AND SPECIFICATIONS, NOR DOES IT RELIEVE THE CONTRACTOR OF THE REQUIREMENTS OF THE SPECIFICATIONS FOR COORDINATION WITH OTHER TRADES. ALL DIMENSIONS SHALL BE CONFIRMED AND CORRELATED AT THE JOBSITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXISTING CONDITIONS AND THE SUITABILITY OF "EQUAL" PRODUCTS FOR THE SPECIFIED APPLICATION.

#### Description

#### Manufacturer

224000 – Toilet Seats  
230593 – Test and Balance Contractor  
233300 – Volume Dampers  
233813 – Kitchen Hood  
237433 – Make up air unit  
237433 – Make up air unit  
238127 – Variable Refrigerant Split Systems  
238233 – Convection Heating Unit Grilles

Zurn  
Tempco  
Greenheck  
Greenheck  
Greenheck  
Reznor  
Sanyo  
ETI

End of Addendum

## **SECTION 224700 - DRINKING FOUNTAINS AND WATER COOLERS**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

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

#### **1.2 SUMMARY**

- A. This Section includes the following water coolers and related components:
  - 1. Pressure water coolers.
  - 2. Fixture supports.

#### **1.3 DEFINITIONS**

- A. Accessible Water Cooler: Fixture that can be approached and used by people with disabilities.
- B. Cast Polymer: Dense, cast-filled-polymer plastic.
- C. Drinking Fountain: Fixture with nozzle for delivering stream of water for drinking.
- D. Fitting: Device that controls flow of water into or out of fixture.
- E. Fixture: Drinking fountain or water cooler unless one is specifically indicated.
- F. Remote Water Cooler: Electrically powered equipment for generating cooled drinking water.
- G. Water Cooler: Electrically powered fixture for generating and delivering cooled drinking water.

#### **1.4 SUBMITTALS**

- A. Product Data: For each fixture indicated. Include rated capacities, furnished specialties, and accessories.
- B. Shop Drawings: Diagram power, signal, and control wiring.
- C. Field quality-control test reports.
- D. Operation and Maintenance Data: For fixtures to include in operation, and maintenance manuals.

## 1.5 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Regulatory Requirements: Comply with requirements in ICC A117.1, "Accessible and Usable Buildings and Facilities"; Public Law 90-480, "Architectural Barriers Act"; and Public Law 101-336, "Americans with Disabilities Act"; for fixtures for people with disabilities.
- C. NSF Standard: Comply with NSF 61, "Drinking Water System Components--Health Effects," for fixture materials that will be in contact with potable water.
- D. ARI Standard: Comply with ARI's "Directory of Certified Drinking Water Coolers" for style classifications.
- E. ARI Standard: Comply with ARI 1010, "Self-Contained, Mechanically Refrigerated Drinking-Water Coolers," for water coolers and with ARI's "Directory of Certified Drinking Water Coolers" for type and style classifications.
- F. ASHRAE Standard: Comply with ASHRAE 34, "Designation and Safety Classification of Refrigerants," for water coolers. Provide HFC 134a (tetrafluoroethane) refrigerant, unless otherwise indicated.

## 1.6 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Filter Cartridges: Equal to 100 percent of amount installed for each type and size indicated, but no fewer than 1 of each.

## PART 2 - PRODUCTS

### 2.1 PRESSURE WATER COOLERS

- A. Water Coolers:
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Elkay Manufacturing Co. **model EZSTL8C or equal by**
    - b. Acorn Aqua.
    - c. Haws Corporation.
    - d. Prior approved equal.

2. Description: Accessible, ARI 1010, Type PB, pressure with bubbler, Style W, Bi-level wall-mounting water cooler for adult and child-mounting height.
  - a. Cabinet: Bilevel with two attached cabinets and with bilevel skirt kit,.
  - b. Bubbler: One, with adjustable stream regulator, located on each cabinet deck.
  - c. Control: Push bar.
  - d. Supply: NPS 3/8 with ball, gate, or globe valve.
  - e. Filter: One or more water filters complying with NSF 42 and NSF 53 for cyst and lead reduction to below EPA standards; with capacity sized for unit peak flow rate.
  - f. Drain(s): Grid with NPS 1-1/4 minimum horizontal waste and trap complying with ASME A112.18.1.
  - g. Cooling System: Electric, with hermetically sealed compressor, cooling coil, air-cooled condensing unit, corrosion-resistant tubing, refrigerant, corrosion-resistant-metal storage tank, and adjustable thermostat.
    - 1) Capacity: 8 gph of 50 deg F cooled water from 80 deg F inlet water and 90 deg F ambient air temperature.
    - 2) Electrical Characteristics: hp; 120-V ac; single phase; 60 Hz.
  - h. Support: Type II, water cooler carrier. Refer to "Fixture Supports" Article.

## 2.2 FIXTURE SUPPORTS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Josam Co.
  2. MIFAB Manufacturing, Inc.
  3. Smith, Jay R. Mfg. Co.
  4. Tyler Pipe; Wade Div.
  5. Watts Drainage Products Inc.; a div. of Watts Industries, Inc.
  6. Zurn Plumbing Products Group; Specification Drainage Operation.
  7. Or equal by.
- B. Description: ASME A112.6.1M, water cooler carriers. Include vertical, steel uprights with feet and tie rods and bearing plates with mounting studs matching fixture to be supported.
  1. Type I: Hanger-type carrier with two vertical uprights.
  2. Type II: Bilevel, hanger-type carrier with three vertical uprights.
  3. Supports for Accessible Fixtures: Include rectangular, vertical, steel uprights instead of steel pipe uprights.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine roughing-in for water and waste piping systems to verify actual locations of piping connections before fixture installation. Verify that sizes and locations of piping and types of supports match those indicated.
- B. Examine walls and floors for suitable conditions where fixtures are to be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 APPLICATIONS**

- A. Use carrier off-floor supports for wall-mounting fixtures, unless otherwise indicated.
- B. Use mounting frames for recessed water coolers, unless otherwise indicated.
- C. Set freestanding and pedestal drinking fountains on floor.
- D. Set remote water coolers on floor, unless otherwise indicated.
- E. Use chrome-plated brass or copper tube, fittings, and valves in locations exposed to view. Plain copper tube, fittings, and valves may be used in concealed locations.

### **3.3 INSTALLATION**

- A. Install off-floor supports affixed to building substrate and attach wall-mounting fixtures, unless otherwise indicated.
- B. Install mounting frames affixed to building construction and attach recessed water coolers to mounting frames, unless otherwise indicated.
- C. Install fixtures level and plumb. For fixtures indicated for children, install at height required by authorities having jurisdiction.
- D. Install water-supply piping with shutoff valve on supply to each fixture to be connected to water distribution piping. Use ball, gate, or globe valve. Install valves in locations where they can be easily reached for operation. Valves are specified in Division 15 Section "Valves."
- E. Install trap and waste piping on drain outlet of each fixture to be connected to sanitary drainage system.
- F. Install pipe escutcheons at wall penetrations in exposed, finished locations. Use deep-pattern escutcheons where required to conceal protruding pipe fittings. Escutcheons are specified in Division 15 Section "Basic Mechanical Materials and Methods."

- G. Seal joints between fixtures and walls and floors using sanitary-type, one-part, mildew-resistant, silicone sealant. Match sealant color to fixture color. Sealants are specified in Division 7 Section "Joint Sealants."

### **3.4 CONNECTIONS**

- A. Piping installation requirements are specified in other Division 15 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.
- C. Ground equipment according to Division 16 Section "Grounding and Bonding."
- D. Connect wiring according to Division 16 Section "Conductors and Cables."

### **3.5 FIELD QUALITY CONTROL**

- A. Water Cooler Testing: After electrical circuitry has been energized, test for compliance with requirements. Test and adjust controls and safeties.
  - 1. Remove and replace malfunctioning units and retest as specified above.
  - 2. Report test results in writing.

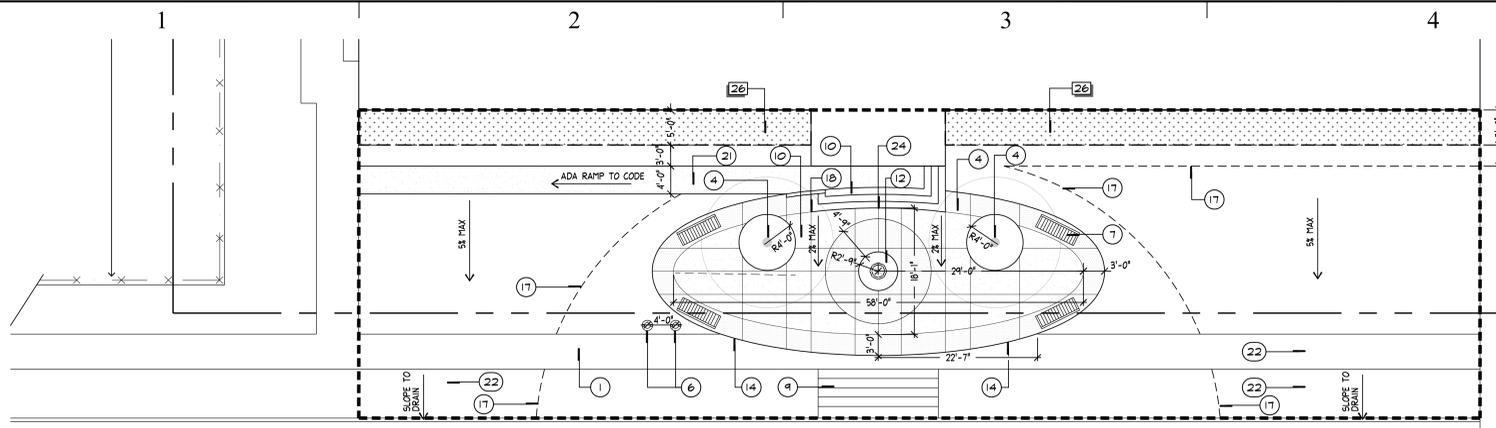
### **3.6 ADJUSTING**

- A. Adjust fixture flow regulators for proper flow and stream height.
- B. Adjust water cooler temperature settings.

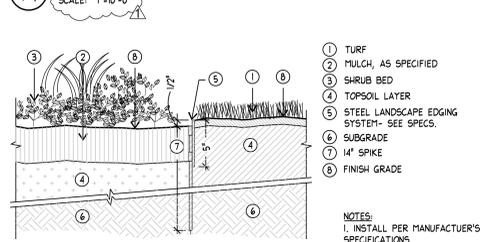
### **3.7 CLEANING**

- A. After completing fixture installation, inspect unit. Remove paint splatters and other spots, dirt, and debris. Repair damaged finish to match original finish.
- B. Clean fixtures, on completion of installation, according to manufacturer's written instructions.

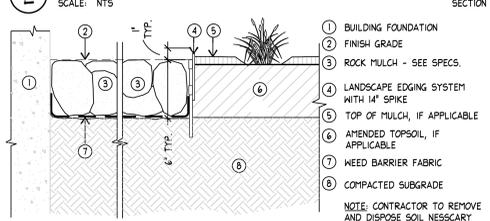
END OF SECTION 224700



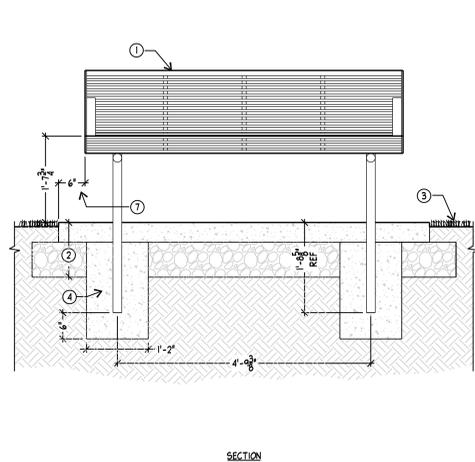
**A LAYOUT / GRADING PLAN**  
SCALE: 1"=10'-0"



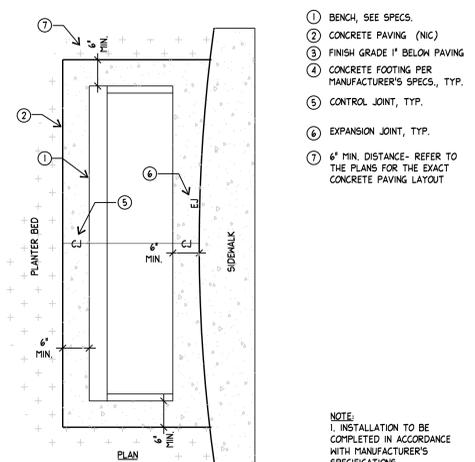
**E STEEL LANDSCAPE EDGING** ADD ALTERNATE #2  
SCALE: NTS



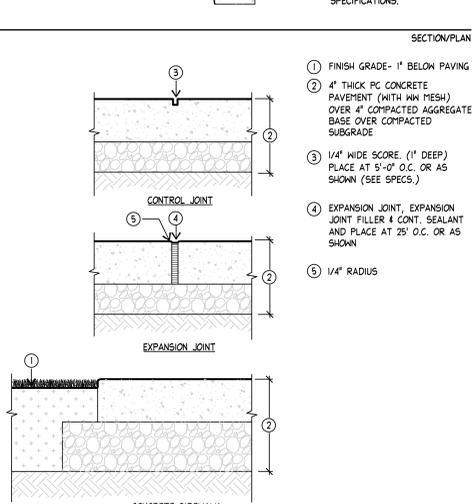
**F ROCK MULCH** BASE BID  
SCALE: NTS



**B BENCH** ADD ALTERNATE #2  
SCALE: NTS



**D STONE MONUMENT** ADD ALTERNATE #2  
SCALE: 1/2" = 1'-0"



**C CONCRETE PAVING AND JOINTS** ADD ALTERNATE #2  
SCALE: NTS

**BLUE STAKES**  
Call: TOLL FREE  
1-800-662-4111  
TWO WORKING DAYS BEFORE YOU DIG

**LEGEND - DETAIL A**

--- PROPERTY BOUNDARY LINE	○ STONE MONUMENT
- - - - - LIMIT OF WORK	○ FLAGPOLE
● ROCK MULCH (SEE SHT. L-L1, DTL. A & F)	○ SALVAGED MISSILE BOLLARD, RELOCATED
- - - - - LANDSCAPE EDGE	▭ BENCH
	▭ CONCRETE PAVING
	▭ CONCRETE PAVING
	▭ CRUSHED STONE PAVING
	○ EXISTING TREE - PROTECT IN PLACE, UNLESS NOTED OTHERWISE.

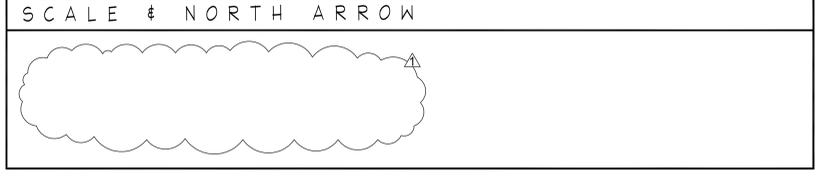
**KEYNOTES - DETAIL A**

SYMBOL	DESCRIPTION	QTY	REMARKS
1	EXISTING CONCRETE PAVEMENT		
2	CONCRETE PAVING TYPE A - SEE SHT. L-L1, DTL. C	855 sf	ADD ALTERNATE #2
3	CONCRETE PAVING TYPE B - SEE SHT. L-L1, DTL. C	501 sf	ADD ALTERNATE #2
4	EXISTING TREE TO REMAIN - FIELD VERIFY LOCATION, PROTECT IN PLACE ACCORDING TO DETAILS AND SPECS		
6	FLAGPOLE - SEE ARCHITECTURAL DRAWINGS, PROVIDE ELECTRICAL POWER TO FLAGPOLES, COORDINATE WITH ELECTRICAL PLANS.		
7	BENCH - SEE SHT. L-L1, DTL. B & B2		ADD ALTERNATE #2
8	EXISTING STEPS		
10	PROPOSED CONCRETE STEPS - REFER TO ARCHITECTURAL PLANS		ADD ALTERNATE #2
14	SAW-CUT EXISTING CONCRETE AND REMOVE CONCRETE PAVEMENT AS NECESSARY FOR PROPOSED CONSTRUCTION, PATCH AND REPAIR EXISTING CONCRETE AS NECESSARY.		
17	LANDSCAPE EDGING - SEE SHT. L-L1, DTL. E		ADD ALTERNATE #2
18	ALIGN SCORE JT. AND/OR EDGE OF PAVEMENT WITH EDGE OF STEPS OR INTERSECTING WALK		
20	ADA ACCESS INTENT SHOWN, CONTRACTOR RESPONSIBLE TO VERIFY GRADES AND INSTALL IN ACCORDANCE WITH ADA ACCESSIBILITY GUIDELINES, HANDRAIL MATERIALS TO MATCH STAIR HANDRAILS - SEE ARCHITECTURAL PLANS, SUBMIT SHOP DNGS, SHOWING GRADES, RAMP, & HANDRAILS.		
22	PROTECT EXISTING LANDSCAPING - PATCH AND REPAIR ANY DAMAGE CAUSED BY CONSTRUCTION OPERATIONS.		
24	CENTER JOINT ON DOOR, SCORE PATTERN IS MIRRORRED ON BOTH SIDES OF THIS JOINT.		
24	ROCK MULCH - SEE SHT. L-L1, DTL. F		BASE BID

\*QUANTITIES FOR REFERENCE ONLY, CONTRACTOR TO VERIFY.

**GRADING NOTES**

- FINISHED GRADES, CONTOURS, AND ELEVATIONS INDICATED ON THE GRADING AND DRAINAGE PLAN DESCRIBE FINAL SURFACE ELEVATIONS FOR COMPLETED CONSTRUCTION. THE CONTRACTOR SHALL REVIEW THE DETAILS AND SPECIFICATIONS TO ASCERTAIN SPECIFIC WORK LIMITS AND REQUIREMENTS.
- CONTRACTOR SHALL BLEND NEW EARTHWORK SMOOTHLY INTO EXISTING. ALL RIDGES AND VALLEYS SHALL HAVE A SMOOTH TRANSITION FROM THE VALLEYS TO THE RIDGES.
- THE LOCATION OF UNDERGROUND UTILITIES SHOWN ON THIS PLAN ARE DIAGNOSTIC ONLY, AND ALL UTILITIES MAY NOT BE SHOWN. THE CONTRACTOR SHALL CONTACT THE PROPER LOCAL AUTHORITIES OR RESPECTIVE UTILITY COMPANY TO CONFIRM THE LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. ANY DAMAGE DUE TO FAILURE OF THE CONTRACTOR TO CONTACT THE PROPER AUTHORITIES SHALL BE BORNE BY THE CONTRACTOR.
- CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT NO COST TO THE OWNER.
- ANY AREA OUTSIDE THE LIMIT OF DISTURBANCE/PROPERTY LINE THAT IS DISTURBED SHALL BE RESTORED TO ITS ORIGINAL CONDITION AT NO COST TO THE OWNER.
- CONSULT ALL OF THE DRAWINGS AND SPECIFICATIONS FOR COORDINATION REQUIREMENTS BEFORE COMMENCING CONSTRUCTION.
- CONTRACTOR SHALL SUPPLY AND MAINTAIN FOR THE DURATION OF CONSTRUCTION ALL NECESSARY DEVICES FOR EROSION, SEDIMENT AND DUST CONTROL.
- CONTRACTOR SHALL VERIFY ALL EXISTING GRADES IN THE FIELD AND REPORT ANY DISCREPANCIES TO THE LANDSCAPE ARCHITECT.
- ALL WALKS, ADA RAMP, STAIRS AND ALL HARDSURFACING ARE TO MEET CODE REQUIREMENTS.



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1058 East 2100 South  
Salt Lake City, Utah 84106  
office 801.487.4923  
fax 801.466.3046  
www.arcsitiodesign.com

**BUILDING NAME:**

**MANTI ARMORY**

**UTAH NATIONAL GUARD**

**PROJECT TITLE:**

**MANTI ARMORY REMODEL**

MARK	DATE	DESCRIPTION
A	12-30-09	PLAN SCALE UPDATE

ISSUE TYPE: CONSTRUCTION DOC. SET

ISSUE DATE: 12/17/2009

DCFM PROJECT NO: 09241470  
CAD PROJECT NO: 09068  
CAD DWG FILE:  
DRAWN BY: SG/KS  
CHK'D BY: SG  
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SHEET TITLE

**LAYOUT / GRADING PLAN & SITE DETAILS**

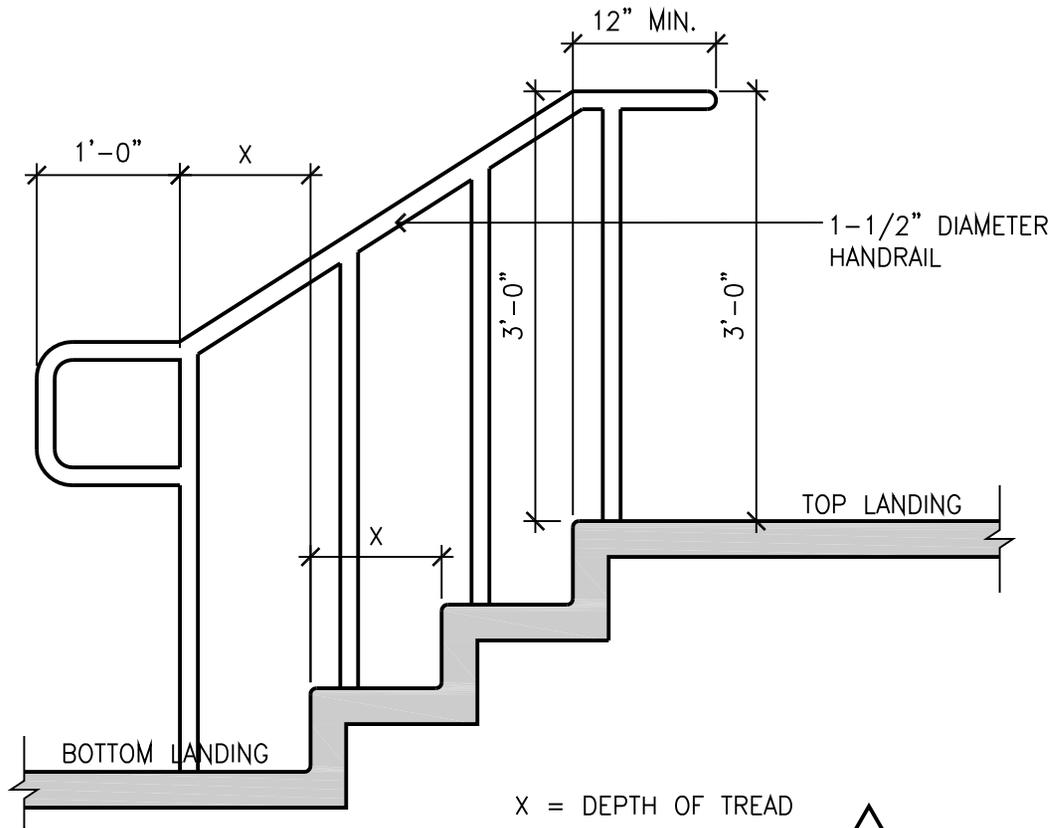
SHEET NUMBER

**L-L1**

SHEET 9 OF 62







ICC/ANSI A117.1-2003 SECTION 505.10



**HANDRAIL EXTENSIONS**

SCALE: 3/4" = 1'-0"

DA-AC-46

**D6**  
**G008**





C1  
A302

W11 WINDOW ABOVE

A1

W11 WINDOW ABOVE

129C

B1

6'-0"

A1  
A302

C5  
A302

CONCRETE

EP

2

WOOD

EXIST.

129B

ORAGE  
116

6'-4"

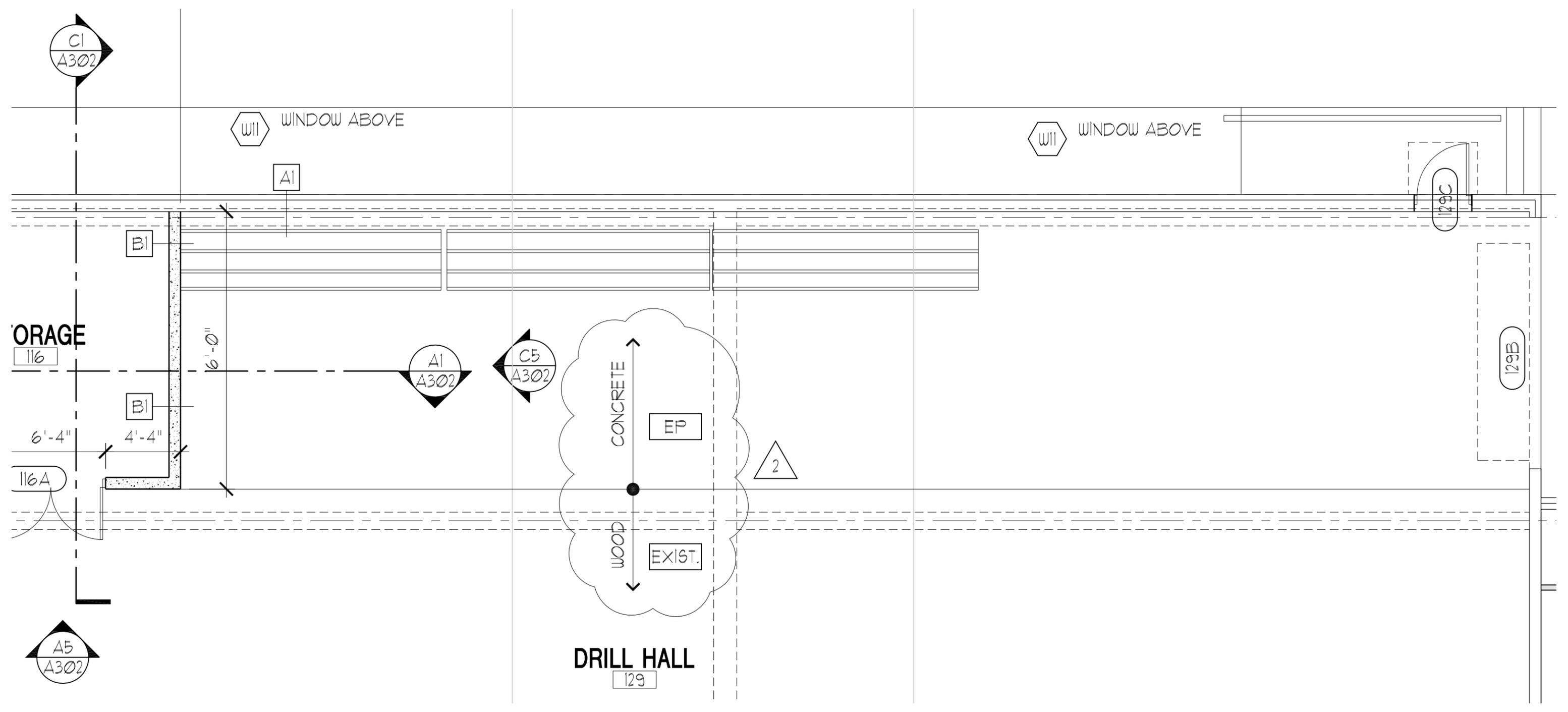
B1

4'-4"

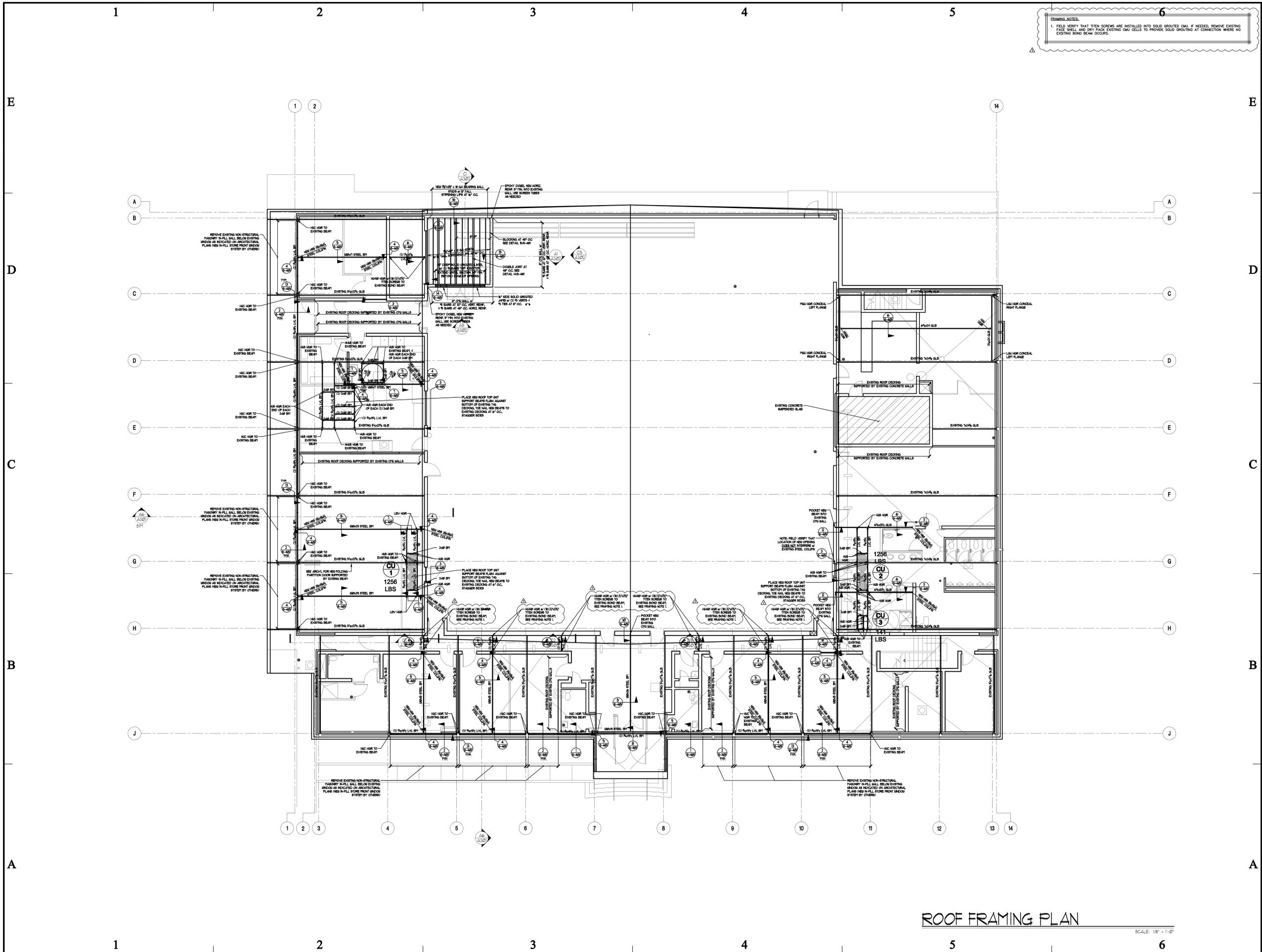
116A

A5  
A302

DRILL HALL  
129







**FRAMING NOTES:**  
 1. FIELD VERIFY THAT TIE SCREWS ARE INSTALLED INTO SOLID GROUTED CMU. IF NEEDED, REMOVE EXISTING FACE SHELL AND DRY PACK EXISTING CMU CELLS TO PROVIDE SOLID GROUTING AT CONNECTION WHERE NO EXISTING BOND BEAM OCCURS.



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**CONSULTANT:**

**L.R. NELSON ENGINEERS**  
 51 WEST 9000 SOUTH  
 SANDY, UTAH 84070  
 (801) 565-8580

**JOB # U915-086-091**

**BUILDING NAME:**

**MANTI ARMORY**

**UTAH NATIONAL GUARD**

**PROJECT TITLE:**

**MANTI ARMORY REMODEL**

MARK	DATE	DESCRIPTION
▲	1-7-10	ADDENDUM 1

**ISSUE TYPE: CONSTRUCTION DOC. SET**

**ISSUE DATE: 12/17/2009**

**DCPM PROJECT NO: 09241470**

**CAD PROJECT NO: 09066**

**CAD DWG FILE:**

**DRAWN BY: GJJ**

**CHK'D BY:**

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**SHEET TITLE**

**ROOF FRAMING PLAN**

**SHEET NUMBER**

**S-301**

**SHEET 14 OF 62**

**ROOF FRAMING PLAN**  
 SCALE: 1/8" = 1'-0"