State of Utah

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Department of Administrative Services
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Division of Facilities Construction and Management
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Director

ADDENDUM NO. 4

Date: April 8, 2009

To: Contractors

From: Jeff Reddoor , Project Manager, DFCM

Reference: Hurricane Maintenance Complex
Utah Department of Transportation – Hurricane, Utah
DFCM Project No. 07292900

Subject: **Addendum No. 4**

Pages			
	Addendum Cover Sheet	1	page
	Architect's Addendum	93	pages
	Total	94	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.

4.1 SCHEDULE CHANGES: None

4.2 GENERAL ITEMS: See attached Architect's Addendum.

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April 8, 2009

DFCM Project Number: 07292900
UDOT Hurricane Maintenance Complex

Addendum Number 4

General Addendum Items:

1. Sheet AE1.02, Detail A3 - wall type at grid 8 is not shown. Is there protection board on both sides? Full height? On the perimeter wall (Grid C)?

   Response: Wall type would be similar to M, see attached detail. With protection board on both sides up to 10' on the mezzanine. Along the perimeter wall would be wall type F.

2. Sheet AE1.02, Detail A2 - floor sink is noted but not shown. Is there protection board on both walls (grid 1 and grid C)? Full height?

   Response: Please see Sheet P201 for floor sinks. Protection board is on both walls up to 10'.

3. Detail D4.1, Sheet S5.01 is called for but not shown. Please clarify.

   Response: Please see Detail C2/S504.

4. Details B4 and A5 on S5.01 show footing elevation but are not called out on any of the "plan sheets". Are these details for exterior walls? Which ones?

   Response: Please refer to the "FOOTING SCHEDULE" on sheet S101. The appropriate detail is called out for each footing type.

5. Civil drawings show what appears to be a new fence along the south and east property lines. How far north and west do these fences need to run.?

   Response: The fences will extend to the existing property line fence along Highway 9 right of way. The length of the fence is on sheet C-101, the contractor must verify the actual length of the fence based on the actual site conditions.

6. Please provide detail of footing/pier/column along grid B main building.

   Response: Please see detail B2/S504.

7. Provide detail D4.1 S501.

   Response: Please see detail C2/S504.

8. What is the TOF and TOW elev. on exterior wall of main building.?

   Response: Please see details A1 and B4/S501.

9. Provide TOF elev. for salt storage building.

   Response: Please see detail B1/S502, according to the Civil Plans the lowest floor elevation is 2925.91'. Therefore TOF would be that number minus 3'-6" plus 1'-6" = 2923.91'.

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10. Do interior footings step down to exterior footing elev. on main building.? provide detail.

Response: No, these footings are thickened slab footings.

11. If your Metal Building Manufacturers does not appear on the current DFCM approved list (the list does change periodically) the Metal Building Manufacture who wants to be on the DFCM approved list and approved for this project needs to go to the following web page for information on requirements - http://dfcm.utah.gov/downloads/bldg_official/approved_fabricator_requirments.pdf The architect cannot approve or add any manufacturer to the list. The manufacturer must be added by the DFCM Building Official per the approved fabricator requirements.

12. As indicated in Spec Section 14620 provide 5 ton hoist. Hoist to be mounted to manufacturer recommended hoist rail and attached per manufacturers standards to center columns of the metal building. Metal building manufacturer to design center columns to carry trolley hoist loads.

13. Metal Building Manufacturer –

    a. Manufacturers standard steel downspouts are acceptable.

    b. Wall panels to be 22 gauge.

    c. Ridge vents that work with the VP SSR roof are acceptable.

    d. All exterior walls to have R-19 insulation.

    e. Structural members to be primed and painted.

14. Open Storage Building –

    a. The clear opening to be 16’-0”.

15. Listed below are the earthwork quantities requested. These earthwork quantities are from existing ground to finish grade. Finish grade meansing top of asphalt, top of curb, top of rip-rap, etc. No over-x or compaction loss has been calculated in these numbers.

    a. Total Cut = 13,836 c.y.

    b. Total Fill = 12,129 c.y.

    c. Total Asphalt = 184,019 s.f.

16. The chainlink part of the fence will be 6' which does not include the barbed wire section. See attached fence specification.

17. If the metal building sandwich panels are accepted than walls where the sandwich panel will be used the plywood that was part of the interior finish at those walls will be eliminated. Plywood will remain at all other location indicated.

18. Cast iron frame rails are acceptable at the trench drains if they have an equivalent load rating to that of the ductile iron specified.

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19. See Specification 08710 for door hardware schedule for man doors. Door D118B is the same as D11A and the door for the fire riser room will have the same hardware as door D110A.

20. See attached Wall Type M detail. Wall Type M occurs along Grid Line 8 where the mezzanine does not occur. Door D111C door and door hardware to comply with Wall Type M fire rating.

21. The main access gate into the facility will be a cantilever sliding gate instead of the sliding gate identified in the Civil Drawings. See attached specification sections 02822 – Gates and Fencing and 02831 – Horizontal Sliding Gate Operators.

22. Attached is the specification for the flag pole. Flag pole will be placed per the civil site plan.

23. UDOT is purchasing a scissor truss lift from Stertil-Koni. The scissor truss will not be part of this contract. However, the maintenance bay will need to be prepped for the scissor truss lift which will be part of this contract. The contractor will need to include the following in preparation for the scissor truss lift: 1. Two recessed areas for the lift at 30" wide and 30' long spaced at 9' apart with the 9' centered on the 30" wide dimension. The depth of each would be 16" and the thickness of the slab will be 8". 2. The drawings currently show a control panel which will function as the control panel location for the scissor truss lift. Provide conduit from the control panel to the location of the lift. 3. The lift will be centered in the maintenance bay. 4. Drainage will also need to be provided for the recessed areas for the lift.

24. See attached detail - 4/A-6 Sill Detail – Revised Salt Building Detail, Sheet AE7.02. This detail is typical for all similar conditions on the Salt Building Walls.

25. We received the following questions:

    a. It doen't make a huge difference, but the architect contradicted himself with some of his responses. He said to use C2/S504 in place of D4.1/S501. This shows a thickened slab footing. Then he said to reference the footing schedule for typical details. F10 sends you to B4/S501, which shows a footing and wall up to elevation 102. The detail for F11 which is the other half of grid 8 sends you to A5/S501, which also shows a wall up to elevation 102. Also wall type B along Grid 8 calls for a concrete curb.

       Response: 1. The footing for the metal stud wall is a thickened slab. 2. The foundation wall along grid 8 does extend up to 102'. 3. Refer to the footing schedule for the correct details.

26. The correct roof loading for this project is:
    a. Roof Live Load = 20 psf
    b. Roof Snow Load = 15 psf/0.7 = 21.43 psf Ground Snow Load.

27. Disregard the note on P101 referring to Detail/P1401 for connection to air compressor, this note was in error.

28. The question about brazing the copper pipe, we do not recommend brazing copper air pipe as the excessive heat required for brazing forms a residue inside the pipe that is detrimental to air tools. Pipe is to be soldiered and compression fittings are acceptable for connections to equipment.

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Specifications:

02510 – Water Distribution
02511 – Asphaltic concrete Paving (Zero Voids Mix)
02740 – Asphaltic concrete Paving
02822 – Gates and Fencing
02831 – Horizontal Sliding Gate Operators
09130 – Acoustical Panel Suspension System
09511 – Acoustical Panel Ceilings
09690 – Carpet Tile
10751 – Ground-Set Flagpoles
14620 – Trolley Hoist

Drawings:

C2/Tile/Tile Base Detail – AE5.02 Revised Detail
4/A-6 Sill Detail – Revised Salt Building Detail, Sheet AE7.02
Wall Type M
Civil Drawings – All Sheets that have been changed by items identified in Addendum 4 and also includes sheets that where changed due to Addendum 3 with the changes clouded.
Structural Drawings – All Sheets that have been changed by items identified in Addendum 4 and also includes sheets that where changed due to Addendum 3 with the changes clouded.

If you have any questions please feel free to email me.

John Colton Sargent
Architect

SECTION 02510

WATER DISTRIBUTION

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 water-distribution piping and related components outside the building for combined water service and fire-service mains.

B. Utility-furnished products include water meters that will be furnished to the site, ready for installation.

1.3 DEFINITIONS

A. EPDM: Ethylene propylene diene terpolymer rubber.

B. LLDPE: Linear, low-density polyethylene plastic.

C. PA: Polyamide (nylon) plastic.

D. PE: Polyethylene plastic.

E. PP: Polypropylene plastic.

F. PVC: Polyvinyl chloride plastic.

G. RTRF: Reinforced thermosetting resin (fiberglass) fittings.

H. RTRP: Reinforced thermosetting resin (fiberglass) pipe.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Detail precast concrete vault assemblies and indicate dimensions, method of field assembly, and components.

1. Wiring Diagrams: Power, signal, and control wiring for alarms.

C. Coordination Drawings: For piping and specialties including relation to other services in same area, drawn to scale. Show piping and specialty sizes and valves, meter and specialty locations, and elevations.

D. Field quality-control test reports.

E. Operation and Maintenance Data: For water valves and specialties to include in emergency, operation, and maintenance manuals.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Comply with requirements of utility company supplying water. Include tapping of water mains and backflow prevention.
2. Comply with standards of authorities having jurisdiction for potable-water-service piping, including materials, installation, testing, and disinfection.
3. Comply with standards of authorities having jurisdiction for fire-suppression water-service piping, including materials, hose threads, installation, and testing.

B. Piping materials shall bear label, stamp, or other markings of specified testing agency.

C. 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.

D. Comply with ASTM F 645 for selection, design, and installation of thermoplastic water piping.

E. Comply with FMG's "Approval Guide" or UL's "Fire Protection Equipment Directory" for fire-service-main products.

F. NFPA Compliance: Comply with NFPA 24 for materials, installations, tests, flushing, and valve and hydrant supervision for fire-service-main piping for fire suppression.

G. NSF Compliance:

1. Comply with NSF 14 for plastic potable-water-service piping. Include marking "NSF-pw" on piping.
2. Comply with NSF 61 for materials for water-service piping and specialties for domestic water.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Preparation for Transport: Prepare valves, including fire hydrants, according to the following:

1. Ensure that valves are dry and internally protected against rust and corrosion.
2. Protect valves against damage to threaded ends and flange faces.
3. Set valves in best position for handling. Set valves closed to prevent rattling.

B. During Storage: Use precautions for valves, including fire hydrants, according to the following:

1. Do not remove end protectors unless necessary for inspection; then reinstall for storage.
2. Protect from weather. Store indoors and maintain temperature higher than ambient dew-point temperature. Support off the ground or pavement in watertight enclosures when outdoor storage is necessary.

C. Handling: Use sling to handle valves and fire hydrants if size requires handling by crane or lift. Rig valves to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

D. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.

E. Protect stored piping from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor when storing inside.

F. Protect flanges, fittings, and specialties from moisture and dirt.

G. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

1.7 PROJECT CONDITIONS

A. Interruption of Existing Water-Distribution Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water-distribution service according to requirements indicated:

1. Notify Construction Manager and Owner no fewer than two days in advance of proposed interruption of service.
2. Do not proceed with interruption of water-distribution service without Construction Manager's written permission.

1.8 COORDINATION

A. Coordinate connection to water main with Southern Utah University Facilities Management.

PART 2 - PRODUCTS

2.1 COPPER TUBE AND FITTINGS

A. Soft Copper Tube: ASTM B 88, Type K water tube, annealed temper.

1. Copper, Solder-Joint Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper, solder-joint pressure type. Furnish only wrought-copper fittings if indicated.
2. Copper, Pressure-Seal Fittings:

a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
b. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1) Viega; Plumbing & Heating Systems.

c. NPS 2 and Smaller: Wrought-copper fitting with EPDM O-ring seal in each end.
d. NPS 2-1/2 to NPS 4 :Bronze fitting with stainless-steel grip ring and EPDM O-ring seal in each end.

B. Hard Copper Tube: ASTM B 88, Type K, water tube, drawn temper.

1. Copper, Solder-Joint Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper, solder-joint pressure type. Furnish only wrought-copper fittings if indicated.
2. Copper, Pressure-Seal Fittings:

a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
b. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1) Viega; Plumbing & Heating Systems.

c. NPS 2 and Smaller: Wrought-copper fitting with EPDM O-ring seal in each end.
d. NPS 2-1/2 to NPS 4 : Bronze fitting with stainless-steel grip ring and EPDM O-ring seal in each end.

C. Bronze Flanges: ASME B16.24, Class 150, with solder-joint end. Furnish Class 300 flanges if required to match piping.

D. Copper Unions: MSS SP-123, cast-copper-alloy, hexagonal-stock body with ball-and-socket, metal-to-metal seating surfaces, and solder-joint or threaded ends.

2.2 DUCTILE-IRON PIPE AND FITTINGS

A. Mechanical-Joint, Ductile-Iron Pipe: AWWA C151, with mechanical-joint bell and plain spigot end unless grooved or flanged ends are indicated.

1. Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
2. Glands, Gaskets, and Bolts: AWWA C111, ductile- or gray-iron glands, rubber gaskets, and steel bolts.

B. Push-on-Joint, Ductile-Iron Pipe: AWWA C151, with push-on-joint bell and plain spigot end unless grooved or flanged ends are indicated.

1. Push-on-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
2. Gaskets: AWWA C111, rubber.

C. Grooved-Joint, Ductile-Iron Pipe: AWWA C151, with cut, rounded-grooved ends.

1. Grooved-End, Ductile-Iron Pipe Appurtenances:

a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
b. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1) Anvil International, Inc.
2) Victaulic Company of America.

c. Grooved-End, Ductile-Iron Fittings: ASTM A 47/A 47M, malleable-iron castings or ASTM A 536, ductile-iron castings with dimensions matching pipe.
d. Grooved-End, Ductile-Iron-Piping Couplings: AWWA C606, for ductile-iron-pipe dimensions. Include ferrous housing sections, gasket suitable for water, and bolts and nuts.

D. Flanges: ASME 16.1, Class 125, cast iron.

2.3 PE PIPE AND FITTINGS

A. PE, ASTM Pipe: ASTM D 2239, SIDR No. 5.3, 7, or 9; with PE compound number required to give pressure rating not less than 200 psig.

1. Insert Fittings for PE Pipe: ASTM D 2609, made of PA, PP, or PVC with serrated male insert ends matching inside of pipe. Include bands or crimp rings.
2. Molded PE Fittings: ASTM D 3350, PE resin, socket- or butt-fusion type, made to match PE pipe dimensions and class.

B. PE, AWWA Pipe: AWWA C906, DR No. 7.3, 9, or 9.3; with PE compound number required to give pressure rating not less than 200 psig.

1. PE, AWWA Fittings: AWWA C906, socket- or butt-fusion type, with DR number matching pipe and PE compound number required to give pressure rating not less than 200 psig.

C. PE, Fire-Service Pipe: ASTM F 714, AWWA C906, or equivalent for PE water pipe; FMG approved, with minimum thickness equivalent to FMG Class 150.

1. Molded PE Fittings: ASTM D 3350, PE resin, socket- or butt-fusion type, made to match PE pipe dimensions and class.

2.4 PVC PIPE AND FITTINGS

A. PVC, Schedule 40 Pipe: ASTM D 1785.

1. PVC, Schedule 40 Socket Fittings: ASTM D 2466.

B. PVC, Schedule 80 Pipe: ASTM D 1785.

1. PVC, Schedule 80 Socket Fittings: ASTM D 2467.
2. PVC, Schedule 80 Threaded Fittings: ASTM D 2464.

C. PVC, AWWA Pipe: AWWA C900, Class 150, with bell end with gasket, and with spigot end.

1. Comply with UL 1285 for fire-service mains if indicated.
   PVC Fabricated Fittings: AWWA C900, Class 150, with bell-and-spigot or double-bell ends. Include elastomeric gasket in each bell.
2. PVC Molded Fittings: AWWA C907, Class 150, with bell-and-spigot or double-bell ends. Include elastomeric gasket in each bell.
3. Push-on-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.

   a. Gaskets: AWWA C111, rubber.

4. Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.

   a. Glands, Gaskets, and Bolts: AWWA C111, ductile- or gray-iron glands, rubber gaskets, and steel bolts.

2.5 SPECIAL PIPE FITTINGS

A. Ductile-Iron Rigid Expansion Joints:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. EBAA Iron, Inc.
   b. U.S. Pipe and Foundry Company.

3. Description: Three-piece, ductile-iron assembly consisting of telescoping sleeve with gaskets and restrained-type, ductile-iron, bell-and-spigot end sections complying with AWWA C110 or AWWA C153. Select and assemble components for expansion indicated. Include AWWA C111, ductile-iron glands, rubber gaskets, and steel bolts.

   a. Pressure Rating: 250 psig minimum.

B. Ductile-Iron Flexible Expansion Joints:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. EBAA Iron, Inc.
    b. Hays Fluid Controls; a division of ROMAC Industries Inc.
    c. Star Pipe Products.

3. Description: Compound, ductile-iron fitting with combination of flanged and mechanical-joint ends complying with AWWA C110 or AWWA C153. Include two gasketed ball-joint sections and one or more gasketed sleeve sections. Assemble components for offset and expansion indicated. Include AWWA C111, ductile-iron glands, rubber gaskets, and steel bolts.

    a. Pressure Rating: 250 psig minimum.
    b.

C. Ductile-Iron Deflection Fittings:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. EBAA Iron, Inc.

3. Description: Compound, ductile-iron coupling fitting with sleeve and 1 or 2 flexing sections for up to 15-degree deflection, gaskets, and restrained-joint ends complying with AWWA C110 or AWWA C153. Include AWWA C111, ductile-iron glands, rubber gaskets, and steel bolts.

    a. Pressure Rating: 250 psig minimum.

2.6 JOINING MATERIALS

A. Refer to Division 2 Section "Piped Utilities - Basic Materials and Methods" for commonly used joining materials.

B. Brazing Filler Metals: AWS A5.8, BCuP Series.

C. Bonding Adhesive for Fiberglass Piping: As recommended by fiberglass piping manufacturer.

D. Plastic Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.

2.7 PIPING SPECIALTIES

A. Transition Fittings: Manufactured fitting or coupling same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.

B. Tubular-Sleeve Pipe Couplings:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Cascade Waterworks Manufacturing.
    b. Dresser, Inc.; Dresser Piping Specialties.
    c. Ford Meter Box Company, Inc. (The); Pipe Products Div.
    d. Hays Fluid Controls; a division of ROMAC Industries Inc.
    e. JCM Industries.
    f. Smith-Blair, Inc.
    g. Viking Johnson.

3. Description: Metal, bolted, sleeve-type, reducing or transition coupling, with center sleeve, gaskets, end rings, and bolt fasteners and with ends of same sizes as piping to be joined.

    a. Standard: AWWA C219.
    b. Center-Sleeve Material: Manufacturer's standard.
    c. Gasket Material: Natural or synthetic rubber.
    d. Pressure Rating: 150 psig minimum.
    e. Metal Component Finish: Corrosion-resistant coating or material.

C. Split-Sleeve Pipe Couplings:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Victaulic Depend-O-Lok.

3. Description: Metal, bolted, split-sleeve-type, reducing or transition coupling with sealing pad and closure plates, O-ring gaskets, and bolt fasteners.

    a. Standard: AWWA C219.
    b. Sleeve Material: Manufacturer's standard.
    c. Sleeve Dimensions: Of thickness and width required to provide pressure rating.
    d. Gasket Material: O-rings made of EPDM rubber, unless otherwise indicated.
    e. Pressure Rating: 150 psig minimum.
    f. Metal Component Finish: Corrosion-resistant coating or material.

D. Flexible Connectors:

1. Nonferrous-Metal Piping: Bronze hose covered with bronze wire braid; with copper-tube, pressure-type, solder-joint ends or bronze flanged ends brazed to hose.
2. Ferrous-Metal Piping: Stainless-steel hose covered with stainless-steel wire braid; with ASME B1.20.1, threaded steel pipe nipples or ASME B16.5, steel pipe flanges welded to hose.

E. Dielectric Fittings: Combination of copper alloy and ferrous; threaded, solder, or plain end types; and matching piping system materials.

1. Dielectric Unions: Factory-fabricated union assembly, designed for 250-psig minimum working pressure at 180 deg F. Include insulating material that isolates dissimilar metals and ends with inside threads according to ASME B1.20.1.
2. Dielectric Flanges: Factory-fabricated companion-flange assembly, for 150- or 300-psig minimum working pressure to suit system pressures.
3. Dielectric-Flange Insulation Kits: Field-assembled companion-flange assembly, full-face or ring type. Components include neoprene or phenolic gasket, phenolic or polyethylene bolt sleeves, phenolic washers, and steel backing washers.

    a. Provide separate companion flanges and steel bolts and nuts for 150- or 300-psig (minimum working pressure to suit system pressures.

4. Dielectric Couplings: Galvanized-steel couplings with inert and noncorrosive thermoplastic lining, with threaded ends and 300-psig minimum working pressure at 225 deg F.
5. Dielectric Nipples: Electroplated steel nipples with inert and noncorrosive thermoplastic lining, with combination of plain, threaded, or grooved end types, and 300-psig minimum working pressure at 225 deg F.

2.8 GATE VALVES

A. AWWA, Cast-Iron Gate Valves:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

    a. American AVK Co.; Valves & Fittings Div.
    b. American Cast Iron Pipe Co.; American Flow Control Div.
    c. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
    d. Crane Co.; Crane Valve Group; Stockham Div.
    e. East Jordan Iron Works, Inc.
    f. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
    g. McWane, Inc.; Kennedy Valve Div.

h. McWane, Inc.; M & H Valve Company Div.
i. McWane, Inc.; Tyler Pipe Div.; Utilities Div.
j. Mueller Co.; Water Products Div.
k. NIBCO INC.
l. U.S. Pipe and Foundry Company.

4. Nonrising-Stem, Metal-Seated Gate Valves:

   a. Description: Gray- or ductile-iron body and bonnet; with cast-iron or bronze double-disc gate, bronze gate rings, bronze stem, and stem nut.

      1) Standard: AWWA C500.
      2) Minimum Pressure Rating: 200 psig.
      3) End Connections: Mechanical joint.
      4) Interior Coating: Complying with AWWA C550.

5. Nonrising-Stem, Resilient-Seated Gate Valves:

   a. Description: Gray- or ductile-iron body and bonnet; with bronze or gray- or ductile-iron gate, resilient seats, bronze stem, and stem nut.

      1) Standard: AWWA C509.
      2) Minimum Pressure Rating: 200 psig.
      3) End Connections: Mechanical joint.
      4) Interior Coating: Complying with AWWA C550.

6. Nonrising-Stem, High-Pressure, Resilient-Seated Gate Valves:

   a. Description: Ductile-iron body and bonnet; with bronze or ductile-iron gate, resilient seats, bronze stem, and stem nut.

      1) Standard: AWWA C509.
      2) Minimum Pressure Rating: 250 psig.
      3) End Connections: Push on or mechanical joint.
      4) Interior Coating: Complying with AWWA C550.

7. OS&Y, Rising-Stem, Metal-Seated Gate Valves:

   a. Description: Cast- or ductile-iron body and bonnet, with cast-iron double disc, bronze disc and seat rings, and bronze stem.

      1) Standard: AWWA C500.
      2) Minimum Pressure Rating: 200 psig.
      3) End Connections: Flanged.

8. OS&Y, Rising-Stem, Resilient-Seated Gate Valves:

   a. Description: Cast- or ductile-iron body and bonnet, with bronze or gray- or ductile-iron gate, resilient seats, and bronze stem.

      1) Standard: AWWA C509.

2) Minimum Pressure Rating: 200 psig.
3) End Connections: Flanged.

B. UL/FMG, Cast-Iron Gate Valves:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

a. American Cast Iron Pipe Co.; American Flow Control Div.
b. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
c. Crane Co.; Crane Valve Group; Stockham Div.
d. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
e. McWane, Inc.; Kennedy Valve Div.
f. McWane, Inc.; M & H Valve Company Div.
g. Mueller Co.; Water Products Div.
h. NIBCO INC.
i. U.S. Pipe and Foundry Company.

4. UL/FMG, Nonrising-Stem Gate Valves:

a. Description: Iron body and bonnet with flange for indicator post, bronze seating material, and inside screw.

1) Standards: UL 262 and FMG approved.
2) Minimum Pressure Rating: 175 psig.
3) End Connections: Flanged.

5. OS&Y, Rising-Stem Gate Valves:

a. Description: Iron body and bonnet and bronze seating material.

1) Standards: UL 262 and FMG approved.
2) Minimum Pressure Rating: 175 psig .
3) End Connections: Flanged.

C. Bronze Gate Valves:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

a. Crane Co.; Crane Valve Group; Crane Valves.

b. Crane Co.; Crane Valve Group; Jenkins Valves.
c. Crane Co.; Crane Valve Group; Stockham Div.
d. Hammond Valve.
e. Milwaukee Valve Company.
f. NIBCO INC.
g. Red-White Valve Corporation.

4. OS&Y, Rising-Stem Gate Valves:

a. Description: Bronze body and bonnet and bronze stem.

1) Standards: UL 262 and FMG approved.
2) Minimum Pressure Rating: 175 psig.
3) End Connections: Threaded.

5. Nonrising-Stem Gate Valves:

a. Description: Class 125, Type 1, bronze with solid wedge, threaded ends, and malleable-iron handwheel.

1) Standard: MSS SP-80.

2.9 GATE VALVE ACCESSORIES AND SPECIALTIES

A. Tapping-Sleeve Assemblies:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

a. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
b. East Jordan Iron Works, Inc.
c. Flowserve.
d. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
e. McWane, Inc.; Kennedy Valve Div.
f. McWane, Inc.; M & H Valve Company Div.
g. Mueller Co.; Water Products Div.
h. U.S. Pipe and Foundry Company.

4. Description: Sleeve and valve compatible with drilling machine.

a. Standard: MSS SP-60.
b. Tapping Sleeve: Cast- or ductile-iron or stainless-steel, two-piece bolted sleeve with flanged outlet for new branch connection. Include sleeve matching size and type of pipe material being tapped and with recessed flange for branch valve.

c. Valve: AWWA, cast-iron, nonrising-stem, resilient-seated gate valve with one raised face flange mating tapping-sleeve flange.

B. Valve Boxes: Comply with AWWA M44 for cast-iron valve boxes. Include top section, adjustable extension of length required for depth of burial of valve, plug with lettering "WATER," and bottom section with base that fits over valve and with a barrel approximately 5 inches in diameter.

1. Operating Wrenches: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut.

C. Indicator Posts: UL 789, FMG-approved, vertical-type, cast-iron body with operating wrench, extension rod, and adjustable cast-iron barrel of length required for depth of burial of valve.

2.10 CHECK VALVES

A. AWWA Check Valves:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

a. American AVK Co.; Valves & Fittings Div.
b. American Cast Iron Pipe Co.; American Flow Control Div.
c. APCO Williamette; Valve and Primer Corporation.
d. Crane Co.; Crane Valve Group; Crane Valves.
e. Crane Co.; Crane Valve Group; Stockham Div.
f. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
g. McWane, Inc.; Kennedy Valve Div.
h. McWane, Inc.; M & H Valve Company Div.
i. Mueller Co.; Water Products Div.
j. NIBCO INC.
k. Watts Water Technologies, Inc.

4. Description: Swing-check type with resilient seat. Include interior coating according to AWWA C550 and ends to match piping.

a. Standard: AWWA C508.
b. Pressure Rating: 175 psig .

B. UL/FMG, Check Valves:

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

2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

    a. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
    b. Crane Co.; Crane Valve Group; Stockham Div.
    c. Globe Fire Sprinkler Corporation.
    d. Kidde Fire Fighting.
    e. MATCO-NORCA, Inc.
    f. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
    g. McWane, Inc.; Kennedy Valve Div.
    h. Mueller Co.; Water Products Div.
    i. NIBCO INC.
    j. Reliable Automatic Sprinkler Co., Inc.
    k. Tyco Fire & Building Products.
    l. United Brass Works, Inc.
    m. Victaulic Company of America.
    n. Viking Corporation.
    o. Watts Water Technologies, Inc.

4. Description: Swing-check type with pressure rating; rubber-face checks, unless otherwise indicated; and ends matching piping.

    a. Standards: UL 312 and FMG approved.
    b. Pressure Rating: 175 psig.

2.11 DETECTOR CHECK VALVES

A. Detector Check Valves:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

    a. Ames Fire & Waterworks; a division of Watts Regulator Co.
    b. Badger Meter, Inc.
    c. FEBCO; SPX Valves & Controls.
    d. Globe Fire Sprinkler Corporation.
    e. McWane, Inc.; Kennedy Valve Div.
    f. Mueller Co.; Hersey Meters.
    g. Victaulic Company of America.
    h. Viking Corporation.
    i. Watts Water Technologies, Inc.

4. Description: Galvanized cast-iron body, bolted cover with air-bleed device for access to internal parts, and flanged ends. Include one-piece bronze disc with bronze bushings, pivot, and replaceable seat. Include threaded bypass taps in inlet and outlet for bypass meter connection. Set valve to allow minimal water flow through bypass meter when major water flow is required.

    a. Standards: UL 312 and FMG approved.
    b. Pressure Rating: 175 psig.
    c. Water Meter: AWWA C700, disc type, at least one-fourth size of detector check valve. Include meter, bypass piping, gate valves, check valve, and connections to detector check valve.

5. Description: Iron body, corrosion-resistant clapper ring and seat ring material, flanged ends, with connections for bypass and installation of water meter.

    a. Standards: UL 312 and FMG approved.
    b. Pressure Rating: 175 psig.

2.12 BUTTERFLY VALVES

A. AWWA Butterfly Valves:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

    a. DeZURIK/Copes-Vulcan; a unit of SPX Corporation.
    b. Milliken Valve Company.
    c. Mosser Valve; a division of Olson Technologies, Inc.
    d. Mueller Co.; Water Products Div.
    e. Pratt, Henry Company.
    f. Val-Matic Valve & Manufacturing Corp.

4. Description: Rubber seated.

    a. Standard: AWWA C504.
    b. Body: Cast or ductile iron.
    c. Body Type: Flanged.
    d. Pressure Rating: 150 psig.

B. UL Butterfly Valves:

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

2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

    a. McWane, Inc.; Kennedy Valve Div.
    b. Milwaukee Valve Company.
    c. Mueller Co.; Water Products Div.
    d. NIBCO INC.
    e. Pratt, Henry Company.

4. Description: Metal on resilient material seating.

    a. Standards: UL 1091 and FMG approved.
    b. Body: Cast or ductile iron.
    c. Body Type: Flanged.
    d. Pressure Rating: 175 psig.

2.13 PLUG VALVES

A. Plug Valves:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

    a. DeZURIK/Copes-Vulcan; a unit of SPX Corporation.
    b. Homestead Valve; a division of Olson Technologies, Inc.
    c. Milliken Valve Company.
    d. McWane, Inc.; M & H Valve Company Div.
    e. Pratt, Henry Company.
    f. Val-Matic Valve & Manufacturing Corp.

4. Description: Resilient-seated eccentric.

    a. Standard: MSS SP-108.
    b. Body: Cast iron.
    c. Pressure Rating: 175-psig minimum CWP.
    d. Seat Material: Suitable for potable-water service.

2.14 PRESSURE-REDUCING VALVES

A. Water Regulators:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

    a. Cash Acme; a division of The Reliance Worldwide Corporation.
    b. Conbraco Industries, Inc.
    c. Honeywell Water Controls.
    d. Watts Water Technologies, Inc.
    e. Zurn Plumbing Products Group; Wilkins Water Control Products Div.

4. Standard: ASSE 1003.
5. Pressure Rating: Initial pressure of 150 psig.

B. Water Control Valves:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

    a. CLA-VAL Automatic Control Valves.
    b. Flomatic Corporation.
    c. OCV Control Valves.
    d. Watts Regulator Co.; Ames Fluid Control Systems.
    e. Watts Regulator Co.; Watts ACV Division.
    f. Zurn Plumbing Products Group; Wilkins Water Control Products Div.

4. Description: Pilot-operation, diaphragm-type, single-seated main water control valve with AWWA C550 or FDA-approved, interior epoxy coating. Include small pilot control valve, restrictor device, specialty fittings, and sensor piping.

    a. Pressure Rating: Initial pressure of 150 psig minimum.
    b. Main Valve Body: Cast- or ductile-iron body with AWWA C550 or FDA-approved, interior epoxy coating; or stainless-steel body.

2.15 RELIEF VALVES

A. Air-Release Valves:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

    a. Crispin-Multiplex Manufacturing Co.
    b. GA Industries, Inc.
    c. Val-Matic Valve & Manufacturing Corp.

4. Description: Hydromechanical device to automatically release accumulated air.

    a. Standard: AWWA C512.
    b. Pressure Rating: 300 psig .
    c. Body Material: Cast iron.
    d. Trim Material: Stainless steel

B. Air/Vacuum Valves:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

    a. Crispin-Multiplex Manufacturing Co.
    b. GA Industries, Inc.
    c. Val-Matic Valve & Manufacturing Corp.

4. Description: Direct-acting, float-operated, hydromechanical device with large orifice to automatically release accumulated air or to admit air during filling of piping.

    a. Standard: AWWA C512.
    b. Pressure Rating: 300 psig.
    c. Body Material: Cast iron.
    d. Trim Material: Stainless steel.

C. Combination Air Valves:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

a. Crispin-Multiplex Manufacturing Co.
b. GA Industries, Inc.
c. Val-Matic Valve & Manufacturing Corp.

4. Description: Float-operated, hydromechanical device to automatically release accumulated air or to admit air.

a. Standard: AWWA C512.
b. Pressure Rating: 300 psig.
c. Body Material: Cast iron.
d. Trim Material: Stainless steel.

2.16 VACUUM BREAKERS

A. Pressure Vacuum Breaker Assembly:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

a. Ames Fire & Waterworks; a division of Watts Regulator Co.
b. Conbraco Industries, Inc.
c. FEBCO; SPX Valves & Controls.
d. Flomatic Corporation.
e. Toro Co. (The); Irrigation Division.
f. Watts Water Technologies, Inc.
g. Zurn Plumbing Products Group; Wilkins Water Control Products Div.

4. Standard: ASSE 1020.
5. Operation: Continuous-pressure applications.
6. Pressure Loss: 5 psig maximum, through middle 1/3 of flow range.
7. Accessories: Ball valves on inlet and outlet.

2.17 BACKFLOW PREVENTERS

A. Reduced-Pressure-Principle Backflow Preventers:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

a. Ames Fire & Waterworks; a division of Watts Regulator Co.
b. Conbraco Industries, Inc.
c. FEBCO; SPX Valves & Controls.
d. Flomatic Corporation.
e. Watts Water Technologies, Inc.
f. Zurn Plumbing Products Group; Wilkins Water Control Products Div.

4. Standard: AWWA C511.
5. Operation: Continuous-pressure applications.
6. Pressure Loss: 12 psig maximum, through middle 1/3 of flow range.

B. Double-Check, Backflow-Prevention Assemblies:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

a. Ames Fire & Waterworks; a division of Watts Regulator Co.
b. Conbraco Industries, Inc.
c. FEBCO; SPX Valves & Controls.
d. Flomatic Corporation.
e. Watts Water Technologies, Inc.
f. Zurn Plumbing Products Group; Wilkins Water Control Products Div.

4. Standard: AWWA C510.
5. Operation: Continuous-pressure applications, unless otherwise indicated.
6. Pressure Loss: 5 psig maximum, through middle 1/3 of flow range.

C. Reduced-Pressure-Detector, Fire-Protection Backflow Preventer Assemblies:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

a. Ames Fire & Waterworks; a division of Watts Regulator Co.
b. Conbraco Industries, Inc.
c. FEBCO; SPX Valves & Controls.
d. Watts Water Technologies, Inc.
e. Zurn Plumbing Products Group; Wilkins Water Control Products Div.

4. Standards: ASSE 1047 and UL listed or FMG approved.
5. Operation: Continuous-pressure applications.
6. Pressure Loss: 12 psig maximum, through middle 1/3 of flow range.

7. Accessories:

    a. Valves: UL 262, FMG-approved, OS&Y gate type with flanged ends on inlet and outlet.
    b. Air-Gap Fitting: ASME A112.1.2, matching backflow preventer connection.
    c. Bypass: With displacement-type water meter, shutoff valves, and reduced-pressure backflow preventer.

D. Double-Check, Detector-Assembly Backflow Preventers:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

    a. Ames Fire & Waterworks; a division of Watts Regulator Co.
    b. Conbraco Industries, Inc.
    c. FEBCO; SPX Valves & Controls.
    d. Watts Water Technologies, Inc.
    e. Zurn Plumbing Products Group; Wilkins Water Control Products Div.

4. Standards: ASSE 1048 and UL listed or FMG approved.
5. Operation: Continuous-pressure applications.
6. Pressure Loss: 5 psig maximum, through middle 1/3 of flow range.
7. Accessories:

    a. Valves: UL 262, FMG-approved, OS&Y gate type with flanged ends on inlet and outlet.
    b. Bypass: With displacement-type water meter, shutoff valves, and reduced-pressure backflow preventer.

E. Backflow Preventer Test Kits:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

    a. Conbraco Industries, Inc.
    b. FEBCO; SPX Valves & Controls.
    c. Flomatic Corporation.
    d. Watts Water Technologies, Inc.
    e. Zurn Plumbing Products Group; Wilkins Water Control Products Div.

4. Description: Factory calibrated, with gages, fittings, hoses, and carrying case with test-procedure instructions.

2.18 FIRE HYDRANTS

A. Dry-Barrel Fire Hydrants:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

    a. American AVK Co.; Valves & Fittings Div.
    b. American Cast Iron Pipe Co.; American Flow Control Div.
    c. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
    d. American Foundry Group, Inc.
    e. East Jordan Iron Works, Inc.
    f. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
    g. McWane, Inc.; Kennedy Valve Div.
    h. McWane, Inc.; M & H Valve Company Div.
    i. Mueller Co.; Water Products Div.
    j. Troy Valve; a division of Penn-Troy Manufacturing, Inc.
    k. U.S. Pipe and Foundry Company.

4. Description: Freestanding, with one NPS 4-1/2 and two NPS 2-1/2 outlets, 5-1/4-inch main valve, drain valve, and NPS 6 mechanical-joint inlet. Include interior coating according to AWWA C550. Hydrant shall have cast-iron body, compression-type valve opening against pressure and closing with pressure.

    a. Standard: AWWA C502.
    b. Pressure Rating: 150 psig minimum.

5. Description: Freestanding, with one NPS 4-1/2 and two NPS 2-1/2 outlets, 5-1/4-inch main valve, drain valve, and NPS 6 mechanical-joint inlet. Hydrant shall have cast-iron body, compression-type valve opening against pressure and closing with pressure.

    a. Standards: UL 246, FMG approved.
    b. Pressure Rating: 150 psig minimum.
    c. Outlet Threads: NFPA 1963, with external hose thread used by local fire department. Include cast-iron caps with steel chains.
    d. Operating and Cap Nuts: Pentagon, 1-1/2 inches point to flat.
    e. Direction of Opening: Open hydrant valve by turning operating nut to left or counterclockwise.
    f. Exterior Finish: Red alkyd-gloss enamel paint, unless otherwise indicated.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Refer to Division 2 Section "Earthwork" for excavating, trenching, and backfilling.

3.2 PIPING APPLICATIONS

A. General: Use pipe, fittings, and joining methods for piping systems according to the following applications.

B. Transition couplings and special fittings with pressure ratings at least equal to piping pressure rating may be used, unless otherwise indicated.

C. Do not use flanges or unions for underground piping.

D. Flanges, unions, grooved-end-pipe couplings, and special fittings may be used, instead of joints indicated, on aboveground piping and piping in vaults.

E. Underground water-service piping NPS 3/4 to NPS 3 shall be the following:

1. Soft copper tube, ASTM B 88, Type wrought-copper, solder-joint fittings; and brazed joints.

F. Underground water and fire-service piping NPS 4 to NPS 8 shall be the following:
1. Ductile-iron, push-on-joint pipe; and gasketed mechanical-joint pipe; ductile-iron, mechanical-joint fittings; joints.

3.3 VALVE APPLICATIONS

A. General Application: Use mechanical-joint-end valves for NPS 3 and larger underground installation. Use threaded- or flanged-end valves for installation in vaults. Use UL/FMG, nonrising-stem gate valves for installation with indicator posts. Use corporation valves and curb valves with ends compatible with piping, for NPS 2 and smaller installation.

B. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:

1. Underground Valves, NPS 3 and Larger: AWWA, cast-iron, nonrising-stem, resilient-seated gate valves with valve box.
2. Underground Valves, NPS 4 and Larger, for Indicator Posts: UL/FMG, cast-iron, nonrising-stem gate valves with indicator post.
3. Use the following for valves in vaults and aboveground:

a. Gate Valves, NPS 2 and Smaller: Bronze, nonrising stem.
b. Gate Valves, NPS 3 and Larger: AWWA, cast iron,
c. Check Valves: AWWA C508, swing type.

4. Pressure-Reducing Valves: Use for water-service piping in vaults and aboveground to control water pressure.
5. Relief Valves: Use for water-service piping in vaults and aboveground.

    a. Air-Release Valves: To release accumulated air.
    b. Air/Vacuum Valves: To release or admit large volume of air during filling of piping.
    c. Combination Air Valves: To release or admit air.

6. Detector Check Valves: Use for water-service piping in vaults and aboveground to detect unauthorized use of water.

3.4 PIPING SYSTEMS - COMMON REQUIREMENTS

A. See Division 2 Section "Piped Utilities - Basic Materials and Methods" for piping-system common requirements.

3.5 PIPING INSTALLATION

A. Water-Main Connection: Arrange with utility company for tap of size and in location indicated in water main.

B. Water-Main Connection: Tap water main according to requirements of water utility company and of size and in location indicated.

C. Make connections larger than NPS 2 with tapping machine according to the following:

1. Install tapping sleeve and tapping valve according to MSS SP-60.
2. Install tapping sleeve on pipe to be tapped. Position flanged outlet for gate valve.
3. Use tapping machine compatible with valve and tapping sleeve; cut hole in main. Remove tapping machine and connect water-service piping.
4. Install gate valve onto tapping sleeve. Comply with MSS SP-60. Install valve with stem pointing up and with valve box.

D. Make connections NPS 2 and smaller with drilling machine according to the following:

1. Install service-saddle assemblies and corporation valves in size, quantity, and arrangement required by utility company standards.
2. Install service-saddle assemblies on water-service pipe to be tapped. Position outlets for corporation valves.
3. Use drilling machine compatible with service-saddle assemblies and corporation valves. Drill hole in main. Remove drilling machine and connect water-service piping.
4. Install corporation valves into service-saddle assemblies.
5. Install manifold for multiple taps in water main.
6. Install curb valve in water-service piping with head pointing up and with service box.

E. Comply with NFPA 24 for fire-service-main piping materials and installation.

1. Install PE corrosion-protection encasement according to ASTM A 674 or AWWA C105.

2. Install copper tube and fittings according to CDA's "Copper Tube Handbook."

F. Install ductile-iron, water-service piping according to AWWA C600 and AWWA M41.

1. Install PE corrosion-protection encasement according to ASTM A 674 or AWWA C105.

G. Install PVC, AWWA pipe according to ASTM F 645 and AWWA M23.

H. Bury piping with depth of cover over top at least 36 inches.

I. Install piping by tunneling or jacking, or combination of both, under streets and other obstructions that cannot be disturbed.

J. Extend water-service piping and connect to water-supply source and building-water-piping systems at outside face of building wall in locations and pipe sizes indicated.

1. Terminate water-service piping at 5’ outside of building wall until building-water-piping systems are installed. Terminate piping with caps, plugs, or flanges as required for piping material. Make connections to building-water-piping systems when those systems are installed.

K. Mechanical sleeve seals are specified in Division 15 Section "Basic Mechanical Materials and Methods."

L. Install underground piping with restrained joints at horizontal and vertical changes in direction. Use restrained-joint piping, thrust blocks, anchors, tie-rods and clamps, and other supports.

M. See Division 13 Section "Fire-Suppression Piping" for fire-suppression-water piping inside the building.

N. See Division 15 Section "Domestic Water Piping" for potable-water piping inside the building.

3.6 JOINT CONSTRUCTION

A. See Division 2 Section "Piped Utilities - Basic Materials and Methods" for basic piping joint construction.

B. Make pipe joints according to the following:

1. Copper-Tubing, Pressure-Sealed Joints: Use proprietary crimping tool and procedure recommended by copper, pressure-seal-fitting manufacturer.
2. Ductile-Iron Piping, Gasketed Joints for Water-Service Piping: AWWA C600 and AWWA M41.
3. Ductile-Iron Piping, Gasketed Joints for Fire-Service-Main Piping: UL 194.
4. Ductile-Iron Piping, Grooved Joints: Cut-groove pipe. Assemble joints with grooved-end, ductile-iron-piping couplings, gaskets, lubricant, and bolts according to coupling manufacturer's written instructions.
5. PE Piping Insert-Fitting Joints: Use plastic insert fittings and fasteners according to fitting manufacturer's written instructions.

6. PVC Piping Gasketed Joints: Use joining materials according to AWWA C900. Construct joints with elastomeric seals and lubricant according to ASTM D 2774 or ASTM D 3139 and pipe manufacturer's written instructions.
7. Fiberglass Piping Bonded Joints: Use adhesive and procedure recommended by piping manufacturer.
8. Dissimilar Materials Piping Joints: Use adapters compatible with both piping materials, with OD, and with system working pressure. Refer to Division 2 Section "Piped Utilities - Basic Materials and Methods" for joining piping of dissimilar metals.

3.7 ANCHORAGE INSTALLATION

A. Anchorage, General: Install water-distribution piping with restrained joints. Anchorages and restrained-joint types that may be used include the following:

1. Concrete thrust blocks.
2. Locking mechanical joints.
3. Set-screw mechanical retainer glands.
4. Bolted flanged joints.
5. Heat-fused joints.
6. Pipe clamps and tie rods.

B. Install anchorages for tees, plugs and caps, bends, crosses, valves, and hydrant branches. Include anchorages for the following piping systems:

1. Gasketed-Joint, Ductile-Iron, Water-Service Piping: According to AWWA C600.
2. Gasketed-Joint, PVC Water-Service Piping: According to AWWA M23.
3. Bonded-Joint Fiberglass, Water-Service Piping: According to AWWA M45.
4. Fire-Service-Main Piping: According to NFPA 24.

C. Apply full coat of asphalt or other acceptable corrosion-resistant material to surfaces of installed ferrous anchorage devices.

3.8 VALVE INSTALLATION

A. AWWA Gate Valves: Comply with AWWA C600 and AWWA M44. Install each underground valve with stem pointing up and with valve box.

B. AWWA Valves Other Than Gate Valves: Comply with AWWA C600 and AWWA M44.

C. UL/FMG, Gate Valves: Comply with NFPA 24. Install each underground valve and valves in vaults with stem pointing up and with vertical cast-iron indicator post.

D. UL/FMG, Valves Other Than Gate Valves: Comply with NFPA 24.

E. MSS Valves: Install as component of connected piping system.

F. Corporation Valves and Curb Valves: Install each underground curb valve with head pointed up and with service box.

G. Pressure-Reducing Valves: Install in vault or aboveground between shutoff valves.

H. Relief Valves: Comply with AWWA C512. Install aboveground with shutoff valve on inlet.

3.9 DETECTOR-CHECK VALVE INSTALLATION

A. Install in vault or aboveground.

B. Install for proper direction of flow. Install bypass with water meter, gate valves on each side of meter, and check valve downstream from meter.

C. Support detector check valves, meters, shutoff valves, and piping on brick or concrete piers.

3.10 VACUUM BREAKER ASSEMBLY INSTALLATION

A. Install pressure vacuum breaker assemblies of type, size, and capacity indicated. Include valves and test cocks. Install according to requirements of plumbing and health department and authorities having jurisdiction.

B. Do not install pressure vacuum breaker assemblies in vault or other space subject to flooding.

3.11 BACKFLOW PREVENTER INSTALLATION

A. Install backflow preventers of type, size, and capacity indicated. Include valves and test cocks. Install according to requirements of plumbing and health department and authorities having jurisdiction.

B. Do not install backflow preventers that have relief drain in vault or in other spaces subject to flooding.

C. Do not install bypass piping around backflow preventers.

D. Support NPS 2-1/2 and larger backflow preventers, valves, and piping near floor and on brick or concrete piers.

3.12 FIRE HYDRANT INSTALLATION

A. General: Install each fire hydrant with separate gate valve in supply pipe, anchor with restrained joints or thrust blocks, and support in upright position.

B. Wet-Barrel Fire Hydrants: Install with valve below frost line. Provide for drainage.

C. AWWA Fire Hydrants: Comply with AWWA M17.

D. UL/FMG Fire Hydrants: Comply with NFPA 24.

3.13 CONNECTIONS

A. Piping installation requirements are specified in other Division 2 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.

B. See Division 2 Section "Piped Utilities - Basic Materials and Methods" for piping connections to valves and equipment.

C. Connect water-distribution piping to existing water main with tee and gate valve.

D. Connect water-distribution piping to interior domestic water and fire-suppression piping.

E. Ground equipment according to Division 16 Section "Grounding and Bonding."

F. Connect wiring according to Division 16 Section "Conductors and Cables."

3.14 FIELD QUALITY CONTROL

A. Piping Tests: Conduct piping tests before joints are covered and after concrete thrust blocks have hardened sufficiently. Fill pipeline 24 hours before testing and apply test pressure to stabilize system. Use only potable water.

B. Hydrostatic Tests: Test at not less than one-and-one-half times working pressure for two hours.

1. Increase pressure in 50-psig increments and inspect each joint between increments. Hold at test pressure for 1 hour; decrease to 0 psig . Slowly increase again to test pressure and hold for 1 more hour. Maximum allowable leakage is 2 quarts per hour per 100 joints. Remake leaking joints with new materials and repeat test until leakage is within allowed limits.

C. Prepare reports of testing activities.

3.15 IDENTIFICATION

A. Install continuous underground warning tape during backfilling of trench for underground water-distribution piping. Locate below finished grade, directly over piping. Underground warning tapes are specified in Division 2 Section "Earthwork."

B. Permanently attach equipment nameplate or marker indicating plastic water-service piping, on main electrical meter panel. See Division 2 Section "Piped Utilities - Basic Materials and Methods" for identifying devices.

3.16 CLEANING

A. Clean and disinfect water-distribution piping as follows:

1. Purge new water-distribution piping systems and parts of existing systems that have been altered, extended, or repaired before use.

2. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in AWWA C651 or do as follows:

    a. Fill system or part of system with water/chlorine solution containing at least 50 ppm of chlorine; isolate and allow to stand for 24 hours.
    b. Drain system or part of system of previous solution and refill with water/chlorine solution containing at least 200 ppm of chlorine; isolate and allow to stand for 3 hours.
    c. After standing time, flush system with clean, potable water until no chlorine remains in water coming from system.
    d. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedure if biological examination shows evidence of contamination.

B. Prepare reports of purging and disinfecting activities.

END OF SECTION 02510

SECTION 02511

ASPHALTIC CONCRETE PAVING (ZERO VOIDS MIX)

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Subgrade preparation.
2. Prime coat.
3. Tack coat.
4. Asphaltic finish courses.
5. Full depth asphalt paving.

B. Related Sections:

1. Section 02576 Asphalt Slurry Seal Coat

1.2 REFERENCES

A. Reference Standards:

1. ASTM D 1559-76.
2. Utah Dept. of Transportation (UDOT) Standards (UDOT SPEC), latest edition.

1.3 SUBMITTALS

A. Quality Control Submittals:

1. Certificates: Submit oil supplier's written certification that quality of asphaltic binder conforms to requirements of this Section.
2. Certificate: Submit supplier's written certification supported by weight tickets indicating following:
   a. Calculation indicating minimum amount of asphaltic concrete materials required for total area to be paved.
   b. Amounts actually installed.
3. Mixes: Submit asphalt concrete mixes design from accepted testing laboratory in accordance with ASTM 1559-76. Include information used in designing mixes. Include the cost of the above test in the unit bid price for asphaltic concrete paving.

1.4 QUALITY ASSURANCE

A. Record or Work: Keep record listing time and date of placement of asphalt work. Retain until completion of Project and make available to Architect for examination at any time.

B. Inspection of Batching Plants: Architect shall be offered uninterrupted access to batching plant while Work is in progress.

C. Testing: Samples and tests shall be in accordance with approved ASTM procedures.

1. Materials not conforming to specified requirements are defective.
2. Reject defective materials whether or not in place.

1.5 PROJECT CONDITIONS

A. Environmental Requirements:

1. Do not install asphalt paving when temperature is below 50 degrees F without specific notification of Architect.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Base Course, Prime Coat, Tack Coat, and Asphaltic Concrete: Comply with UTAH SPEC.

1. Prime coat: UDOT SPEC, Section 403, Bituminous Prime Coat
2 Tack coat: UDOT SPEC, Section 404, Bituminous Tack Coat.
3. Asphaltic concrete surface course: UTAH SPEC, Section 704 and 402

B. Contractor shall provide the following:

1. Prime coat: Grade MC-250 Liquid Asphalt.
2. Tack coat: Grade CSS-1h Emulsified Asphalt.
3. Asphaltic concrete surface course mix design: dense graded, central plant-mix.
   a. Viscosity Graded original, AC-20, conforming to requirements of ASTM D-3381 (AASHTO M-226, Table 2), and Section 02741 – Utah Department of Transportation, "2005 Standard Specifications for Road and Bridge Construction". Asphalt Binder – PG 64-28.
   b. Mineral aggregate grading and percent asphalt binder: Job-mix formula determined by Marshall Method of Mix Design, ASTM D1559.
   c. Mineral aggregate grading: Fall within ranges required by designation minus 3/4" as indicated by following tabulation:

	Percent Passing	
	2 Inch Gradation	3/4 Inch Gradation
Sieve Size		
¾	---	100
2	100	---
3/8	---	84-94
No. 4	70-84	63-89
No. 16	38-56	34-53
No. 50	19-33	17-32
No. 200	8-15	8-15

   d. Percentage of wear: Maximum 40.
   e. Stability: 1800 pounds minimum.
   f. Flow: 8 to 16.
   g. Air voids: 0 - 2 percent.
   h. Retained strength: 60 percent minimum.
   i. Asphalt cement content: 6.5 - 9.0 percent

PART 3 - EXECUTION

3.1 PAVEMENT DESIGN

A. Pavement Thicknesses: See plans for thickness of base course and asphaltic concrete.

3.2 INSTALLATION

A. General: Comply with UTAH SPEC

B. Prime Coat: Comply with UDOT SPEC Section 403, Bituminous Prime Coat.

1. Preparation: Before applying prime coat, remove loose material from surface.
   a. Surface: Dry and in satisfactory condition.
2. Placing:

a. Place prime coat by means of pressure distributor capable of applying prime coat uniformly.
b. Apply at rate of 0.1 gal/sq yd.
c. Apply prime coat carefully.
d. Allow prime coat to cure for minimum of 24 hours prior to paving operation.

C. Asphaltic concrete:
1. Compact to at least 90 percent of maximum Marshall density, ASTM D1559.
2. Maximum lift thickness: 3 inches for pavement section.
3. Remove coarse aggregate which has surfaced due to raking in hand raked areas.
4. No rubber tire rollers will be allowed to be used to compact the asphaltic surface. All rollers need to be of the metallic wheel type.

3.3 FIELD QUALITY CONTROL

A. Field Testing: Schedule and cooperate fully with those making the tests. The Owner will provide testing for the following.
1. Compaction Testing Frequency: Ten random tests for basin and pad.
2. Gradation and Oil Content Testing Frequency: Three random tests per day.

END OF SECTION

SECTION 02740

ASPHALTIC CONCRETE PAVING

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Proof roll base course to reveal soft and yielding spots.

B. Place and compact asphaltic concrete paving.

C. Protection of newly placed pavement.

1.2 RELATED WORK

A. Section 02721 – Aggregate Base Course

B. Section 02763 – Pavement Marking

1.3 QUALITY ASSURANCE

A. Do not place asphaltic concrete paving when the air temperature in the shade and/or the roadbed temperature are below 50□F, or during rain, when the base course surface is wet, or during other adverse weather conditions.

B. Do not place tack coat when air temperature in the shade and the road base temperature are below 50□F, or during rain, fog, or other adverse weather conditions.

C. All work shall be performed by experienced and qualified workmen with equipment standard with the industry.

D. Approval by Engineer of sources of supply of materials shall be obtained prior to delivery of materials.

E. Comply with federal, state and/or local codes and regulations.

1.4 REFERENCES

A. American Society for Testing Materials (ASTM):
1. D1557, “Tests for Moisture – Density Relationship of Soils using 10 lb (4.5 kg) Rammer in 18 inch (457 mm) Drop”.
2. D1559, “Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus”.
3. D2041, “Standard Test Method for Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures”.
4. D2170, “Kinematic Viscosity of Asphalts (Bitumens)”.

B. THE ASPHALT INSTITUTE (A.I.) Specification Series No. 2 (SS-2).

C. American Association of State Highway and Transportation Officials (AASHTO):
1. Materials and compaction tests.
a. AASHTO T-180

D. Utah Department of Transportation, “2008 Standard Specifications For Road and Bridge

Construction".
1. Section 02741 Hot Mix Asphalt (HMA).

1.5 SUBMITTALS

A. An asphaltic concrete paving mix design prepared by a certified laboratory and materials certificates signed by material producer and Contractor, certifying that each material item complies with, or exceeds, specified requirements shall be submitted for review and approval at least one week prior to commencement of the work.

B. Written certification of compliance for pavement marking paint.

C. Product Data: Submit data for herbicide. Indicate compliance with applicable codes for environmental protection.

1.6 WARRANTY

A. See General Conditions.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Asphaltic cement:
1. Viscosity Graded original, AC-20, conforming to requirements of ASTM D-3381 (AASHTO M-226, Table 2), and Section 02741 – Utah Department of Transportation, "2008 Standard Specifications for Road and Bridge Construction". Asphalt Binder – PG 64-28.
2. Shall not foam when heated to 350□F.

B. Mineral Aggregate:
1. Shall consist of crushed stone, crushed gravel, or crushed slag, or a combination thereof; free of clay, silt, organic matter or other deleterious materials.
2. Gradation shall be in accordance with the following:
a. Asphaltic concrete surface course:

Sieve Size	Percent Passing by Weight
1/2"	100
3/8"	70 - 100
#4	50 - 78
#16	30 - 48
#50	18 - 31
#200	7 – 13

b. Asphaltic concrete base course:

Sieve Size	Percent Passing by Weight
3/4"	100
3/8"	75 – 91
#4	60 - 80
#16	28 - 38
#50	11 - 23
#200	5 – 9

3. Course aggregate, retained on the No. 4 sieve shall consist of clean, hard, rough,

durable and sound fragments, with not less than 50 percent of particles by weight with at least one mechanically fractured face or clean angular face.

4. Fine aggregate passing the No. 4 sieve may be either a natural or manufactured product. The aggregate shall be clean, hard grained and moderately sharp, and shall contain not more than 2 percent by weight of vegetable matter or other deleterious substances.
5. That portion of the fine aggregate passing the No. 40 sieve be nonplastic when tested in accordance with ASTM D-424.
6. The weight of minus 200 mesh material retained in the aggregate, as determined by the difference in percent passing a No. 200 sieve by washing and dry sieving without washing, shall not exceed 6 percent of the total sample weight. That portion of the fine aggregate passing the No. 200 sieve shall be determined by washing with water in accordance with ASTM C-117.
7. The aggregate shall be of uniform density and quality and shall have a rodded weight of not less than 100 pounds per cubic foot when tested in accordance with ASTM C-29.
8. The aggregate shall have a percentage of wear not exceeding forty when tested in accordance with ASTM C-131 and C-535.
9. The aggregate shall have a weighted loss not exceeding 12 percent by weight when subject to five cycles of sodium sulfate and tested in accordance with ASTM C-88, D-1073, D-692.

2.2 ASPHALTIC CONCRETE PAVING MIXTURE

A. Combine mineral constituents and asphalt cement in proportions per mix design at a central plant to produce an asphaltic concrete pavement mix.

B. Mix design shall be based on the Marshall Method. The combined mineral aggregate plus any approved additives when mixed with the asphaltic cement in accordance with ASTM D-1559 shall conform to the following requirements:

Requirement	Value
Percentage of Wear:	40
Marshall Stability:	1200 lb. Minimum
Flow (0.01 inch):	10 -18
Air Voids:	1.5% to 3.0%
Retained Strength:	60% Minimum
Asphalt Cement Content:	4.0% to 6.0% by weight

C. The asphaltic cement shall be heated at the mixing plant to a temperature at which it can be applied uniformly to the aggregate.

D. Coarse and fine aggregate shall be stored separately at the mixing plant in a manner that will prevent intermingling.

E. When it is necessary to blend aggregates from one or more sources to produce the combined gradation, each source or size of aggregate shall be stockpiled individually. Aggregate from the individual stockpiles shall be fed through separate bins to the cold elevator feeders. They shall not be blended in the stockpile.

F. Cold aggregates shall be fed carefully to the plant so that surpluses and shortages will not occur and cause breaks in the continuous operation.

G. The aggregate shall be dried and heated to provide a paving mixture temperature in

conformance with placing conditions, but not to exceed 163□C (325□F).

H. The heated and dried aggregates shall not contain enough moisture to cause the mixture to slump, the asphalt to foam, or the aggregate to segregate during hauling and placing.

I. The shortest mixing time consistent with satisfactory coating of the aggregate shall be used. The mineral aggregate shall be considered satisfactorily coated with asphaltic cement when all of the particles passing the No. 4 sieve and 96 percent of the particles retained on the No. 4 sieve are coated with asphaltic cement. The required mixing time, as determined above, shall be in accordance with ASTM D-2489.

J. If a dryer drum mixing process is used, the mineral aggregate shall be considered satisfactorily coated with asphaltic cement when all of the particles passing the No. 4 sieve and 98 percent of the particle retained on the No. 4 sieve are coated with asphaltic cement. The moisture content of the asphaltic cement sampled behind the laydown machine prior to compaction shall not exceed 1 percent by weight.

2.3 UDOT ASPHALTIC CONCRETE PAVING MIXTURE
A. In accordance with UDOT 2008 standard specification 02741.

2.4 TACK COAT
A. Emulsified asphalt CSS-1H or SS-1H.

2.5 FABRICS – Not required.

PART 3 - EXECUTION

3.1 PREPARATION
A. Clean overlay area in accordance with Section 02230.

B. Install risers for manholes, valves and cleanouts to match finished grade of asphalt surface course.

C. Sawcut all asphalt edges to a clean straight line when patching.

3.2 TRANSPORTING THE ASPHALTIC CONCRETE PAVEMENT
A. Transport time from the mixing plant to the job site shall not exceed 1 hour.

B. Hauling truck shall have no direct frame contact with the paver or bear down on the paver during dumping operations.

3.3 TACK COAT
A. Prior to placing pavement, tack coat shall be applied to the vertical edges of concrete and "cold" pavement (over ½ hour old) which will be in contact with new pavement. Tack coat shall extend 12 inches onto adjacent base course material. The tack coat shall be carefully applied at a rate of 0.15 gal/SY. Tack coat shall be applied uniformly at the same rate to the horizontal top surface of each lift of bituminous pavement prior to placing the next lift of bituminous pavement to promote a bond between the two courses of pavement. None of the material shall penetrate into the pavement and for this reason the application should be limited.

B. Prior to applying the material, the surface to be treated shall be swept or flushed free of

dust or other foreign material.

C. Protect all surfaces not required to receive tack coat from any inadvertent application.

D. The temperature range of the tack coat at the time of application shall be such that the viscosity will be between 50 and 100 centistokes as determined in accordance with ASTM Designation D-2170.

E. Under no circumstances shall traffic be permitted to travel over the tacked surface. If detours cannot be provided, restrict operation to a width that will permit at least one-way traffic over the remaining portion of the roadbed. If one-way traffic is provided, the traffic shall be controlled in accordance with governing authority.

F. After application of tack coat, sufficient time shall be given to allow for complete separation of asphalt and water before paving operations begin. The tack coat shall be applied on only as many surfaces as will be paved against in the same day.

3.4 PLACEMENT OF ASPHALTIC CONCRETE PAVEMENT

A. Place asphalt pavement to provide a compacted depth as indicated on the plans. Placing the pavement shall be a continuous operation. The machine shall spread mixture and shall strike a finish that is smooth, true to cross section, uniform in density and texture, and free from hollows and other irregularities. If any irregularities occur, they shall be corrected before final compaction of the mixture. The paving machine shall be selfpropelled, equipped with hoppers, distributing screws, adjustable screeds and equalizing devices, capable of spreading hot asphaltic concrete paving mixture without tearing, shoving or gouging, and of producing a finished surface of specified quality. Place inaccessible and small areas by hand.

B. Ensure asphalt pavement temperature is between 150 and 300 centistokes as determined with ASTM D-2170 when mixing with a pugmill, or between 220□F and 260□F when using the dryer-drum mixing process, immediately after placing and prior to initial rolling.

C. Ensure joints made during paving operations are straight, clean, vertical and free of broken or loose material. Carefully make joints to insure a continuous bond between old and new pavement, or between successive day's work. A continuous bond between adjoining work is required.

D. If more than ½ hour elapses between adjacent paving passes, the "cold joint" shall have tack coat applied to the "cold" pavement prior to placing the adjacent pass.

3.5 COMPACTION

A. Roll and compact to specified density before temperature of the mixture drops below 180□F.

B. Compact asphalt paving course to required density, with a steel wheeled tandem roller steel three-wheeled roller, vibratory roller, or a pneumatic-tired roller, weighing not less than five tons. Start compaction as soon as pavement will bear equipment without checking or undue displacement. Speed of the roller shall be slow enough to avoid displacement of hot mixture, and any displacements occurring as a result of changing the direction of the roller, or from any other cause, shall at once be corrected by the use of rakes and of fresh mixture where required. Ensure each pass of roller overlaps previous

passes by at least ½ of the roller width to ensure smooth surface free of roller marks. Keep roller wheels sufficiently moist so as not to pick up material. Rolling shall continue until roller marks are eliminated and no further compression is possible. The finished compacted pavement shall have a density of 91% minimum, (no test less than 91% of the density determined in accordance with ASTM D-2041), as determined by ASTM D2170.

C. Leave pavement with a uniform, dense surface.

D. Perform hand tamping in areas not accessible to rolling equipment. Thorough compaction must be achieved, and joints between curbs, headers, manholes and similar structures must be effectively sealed.

E. Do not allow vehicular traffic on newly paved areas until surface has cooled to atmospheric temperature.

3.6 PLACEMENT OF UDOT ASPHALTIC CONCRETE PAVEMENT

A. Place pavement in accordance with UDOT Standard Specification 02741.

3.7 SCHEDULE

A. Asphalt type and thickness:
1. Trench Patching – 4 inches minimum, Regular Asphaltic Surface Course
2. Patching on interior of Salt Storage Pond – 4 inches minimum, Zero Voids Surface Course
3. Driveway and parking area – 4 inches, Regular Asphaltic Surface Course

END OF SECTION

SECTION 02822 – CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Chain Link Fences and Gates.

1.2 SITE VISIT: The site conditions are unique.

1.3 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions.

1.4 RELATED SECTIONS

A. Division 1 Specification Sections including, but not limited to following:

1. Section 01335 Shop Drawings, Product Data and Samples.

B. Section 02200 Earthwork.

C. Section 03300 Cast-In-Place Concrete.

D. Section 02831 Horizontal Sliding Gate Operators.

1.5 SUBMITTALS

A. Product data in form of manufacturer's technical data, specifications, and installation instructions for fence and gate posts, fabric, gates, and accessories.

B. Shop drawings showing location of fence, gates, each post, and details of post installation, extension arms, gate swing, hardware, and accessories.

C. NOT USED. Wiring diagrams from manufacturer for electrically operated gates.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Engage Installed with minimum 5 years' experience and has completed at least 5 chain link fence projects with same material and of similar scope to that indicated for this Project with successful construction record of in-service performance.

B. Single-Source Responsibility: Obtain chain link fences and gates, including accessories, fittings, and fastenings, from single source. Fence installer and gate operator installer are responsible to provide a coordinated and completely operational sliding gate design and installation with selected horizontal gate operator and accessories and functionality requested.

C. Engineering of cantilevered gate is responsibility of gate provider.

1.7 PROJECT CONDITIONS AND PREPARTION FOR FENCING

A. Soil and Rock: See soils report (attached to specifications).

B. Grubbing and Clearing: All vegetation and debris within 3 feet of the new fence line, on both sides, shall be removed by the Contractor. All roots will be removed I the top 10 inches of soil.

C. Grading: A six-foot wide strip, centered on the new fence line, shall be smoothed and graded, so that no rocks will project above the plane surface more than 1 foot and no depressions will project below the plane surface more than one foot.

1.8 PREPARATION FOR FENCING

A. Field Measurements: Verify layout information for fences and gates indicated on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

PART 2 - PRODUCTS

2.1 FABRIC

A. Selvage: As indicated.

B. Steel Chain-Link Fence Fabric: Fabricated in one-piece widths for fencing 12 feet and less in height to comply with Chain Link Fence Manufactures Institute (CLFMIO) “Product Manual” and with requirements indicated below:

1. Mesh and Wire Size: 2-inch mesh, o.120-inch diameter (11 gage).
2. Coating: ASTM A 817, Type 2, Class 1, zinc-coated (galvanized) applied after weaving.

2.2 FRAMING

A. Round member sizes are given in actual outside diameter (OD) to nearest thousandth of inch. Round fence posts and rails are often referred to in ASTM standard specifications by nominal pipe sizes (NPS) or equivalent trade sizes in inches. Following indicates these equivalents all measured in inches:

Actual Outside Diameter (OD)	NPS Size	Trade Size
1.900	1-1/2	2
2.375	2	2-1/2
2.875	2-1/2	3
3.500	3	3-1/2
4.000	3-1/2	4

B. Type I Round Posts: Standard weight (schedule 40) galvanized-steel pipe conforming to ASTM F 1083, according to heavy industrial requirements of ASTM F 669, Group 1A, with minimum yield strength of 25,000 phi, not less than 1.8 ounces of zinc per square foot. Type A coating inside and outside according to ASTM F 1234, as determined by ASTM A 90, and weights per foot as follows:

Actual Outside Diameter (OD)	Weight (pounds per foot)	NPS Size
1.900	2.72	1-1/2
2.375	3.65	2
2.875	5.79	2-1/2
3.500	7.58	3
4.000	9.11	3-1/2

C. Roll-Formed Steel: Rolled form steel shapes (e.g., C section) produced from structural-quality steel conforming to ASTM A 570, grade 45, or ASTM A 446, grade D, galvanized, conforming to heavy industrial requirements of ASTM F 669, Group II, with minimum yield strength of 45,000 psi. Protective coating system according to ASTM F 1234, Type A, hot-dip galvanized with minimum of 2.0 ounces of zinc per square foot according to ASTMA A 123, 4.0 ounces of zinc per square foot according to ASTM A 525; or Type C, minimum of 1.0 ounce of zinc – 5 percent aluminum-mischmetal alloy per square foot according to ASTM A 875.

D. Roll-Formed Steel: Hot-rolled steel shape H section with minimum yield strength of 45,000 psi conforming to ASTM F 669, group III. Protective coating system according to ASTM F 1234, Type A, hot-dip galvanized with minimum of 2.0 ounces of zinc per square foot according to ASTM A 123, or 4.0 ounces of zinc per square foot according to ASTM A 525.

E. Square Tubing: Cold-formed steel structural tubing conforming to ASTM A 500, Grade B with minimum yield strength of 42,000 psi and not less than 1.8 ounces of zinc per square foot Type A coating inside and outside according to ASTM F 1234, as determined by ASTM A 90.

F. Bottom Rail: Manufacturer's longest lengths (17 to 21 feet) with swedged-end or expansion-type coupling. Approximately 6 inches long for joining. Provide rail ends or other means for attaching rail securely to each gate corner, pull, and end post. Bottom rail shall be 1.90-inch outside diameter Type I and II steel pipe.

G. Steel posts for fabric heights up to (and including) 6 feet:

1. Round Line or Intermediate posts: 3.5-inch outside diameter Type I or II steel Pipe.
2. Round End, Corner, and Pull Posts: 4.0 inches outside diameter Type I or II steel pipe.

H. Swing Gate Posts: Finish posts to support single gate leaf, or 1 leaf of double-gate installation, according to ASTM F 900, sized as follows for fabric up to and including 6 feet and gates up to 10' in width: 4.0 inch OD pipe weighting at least 8.65 pounds per foot.

2.3 FITTINGS AND ACCESSORIES

A. Material: Comply with ASTM F 626. Galvanized iron or steel to suit manufacturer's standards.

1. Steel and Iron: Unless specified otherwise, hot-dip galvanize pressed steel or cast-iron fence fittings and accessories with at least 1.2 ounces zinc per square

foot as determined by ASTM A 90.

B. Post and Line Caps: Provide weather tight closure cap for each post. Provide line post caps with loop to receive tension wire.

C. Post Brace Assembly: Manufacturer's standard adjustable brace. Use material specified below for brace, and truss to line posts with 3/8-iknch diameter rod and adjustable tightener. Provide manufacturer's standard galvanized-steel, cast-iron or cast-aluminum cap for each end.

1. Round Steel: 1.900-inch OD Type I or II steel pipe.
2. Roll-Formed Steel: C section weighing minimum o f2.72 pounds per linear foot.

D. Bottom (and Center Rail, if required): 1.900-inch OD Type I or II steel pipe. Provide manufacturer's standard galvanized-steel, cast-iron or cast-aluminum cap for each end.

E. Tension or Stretcher Bars: Hot-dip galvanized steel with minimum length 2 inches less than full height of fabric, minimum cross section of 3/16 inch by ¾ inch, and minimum of 1.2 ounces of zinc coating per square foot. Provide one bar for each gate and end post, and two for each corner and pull post, except where fabric is integrally woven into post.

F. Tension and Brace Bands: 3/4 inch wide minimum hot-dip galvanized steel with minimum of 1.2 ounces of zinc coating per square foot.

1. Tension Bands: 0.74 inch thick (14 gage) minimum
2. Brace Bands: 0.1056 inch thick (12 gage) minimum

G. Tension Wire: 0.177-inch-diameter metallic-coated tension wire conforming to ASTM A 824 with finish to match fabric.
1. Coating Type II zinc in following class as determined by ASTM A 90: Class 2, with minimum coating weight of 1.20 ounce per square foot of uncoated wire surface.

2.4 CONCRETE

A. Concrete: Provide concrete consisting of Portland cement per ASTM C 150, aggregate per ASTM C 33, and potable water. Mix materials to obtain concrete with minimum 28-day compressive strength of 3000 psi. Use at least four sacks of cement per cu. Yd., 1-inch maximum size aggregate, 3-inch maximum slump.

2.5 GATES

A. Fabricate perimeter frames of gates from same material and finish as fence framework. Assemble gate frames by welding. Provide horizontal and vertical members to ensure proper gate operation and attachment of fabric, hardware, and accessories. Space frame members maximum of 8 feet apart unless otherwise indicated.

1. Fabric: Same as for fence unless otherwise indicated. Secure fabric at vertical edges with tension bars and bands and to top and bottom of frame with tie wires.
2. Bracing: Install diagonal cross-bracing consisting of 5/16-inch-diameter adjustable-length truss rods on gates to ensure frame rigidity without sag or twist.
3. Barbed Wire: Extend end members of gate frames 12 inches above top

member and prepare to receive three strands of wire. Provide necessary clips for securing wire to extension.

B. Industrial Horizontal – Slide Gates

1. General: Comply with ASTM F 1184 for single slide gate types.

   a. Classification: Type II Cantilever Slide, Class I with external roller assemblies.
   b. Metal Pipe and Tubing: Galvanized steel. Comply with ASTM F 1184 for materials and protective coatings.

2. Frames and Bracing: Fabricate members from round galvanized steel tubing with outside dimension and weight according to ASTM F 1184 and the following:

   a. Gate Fabric Height: 6 feet (1.83 m) .
   b. Gate Opening Width: As indicated on drawings.
   c. Frame Members: Tubular Steel: 1.90 inches (48 mm) round or greater as required structurally..
   d. Bracing Members: Tubular Steel: 1.90 inches (48 mm) round or greater as required structurally.

3. Frame Corner Construction:

   a. Welded frame with 5/16-inch- (7.9-mm-) diameter, adjustable truss rods for panels 5 feet (1.52 m) wide or wider.

4. Roller Guards: As required per ASTM F 1184 for Type II, Class 1 gates.

5. Hardware: Latches permitting operation from both sides of gate, and stops fabricated from galvanized steel. Fabricate latches with integral eye openings for padlocking; padlock accessible from both sides of gate. Provide female receiver(s) to secure gate in closed position.

C. Swing Gates: Comply with ASTM F 900.

1. Steel: Single-swing Gates up to 10 feet wide:

   a. Up to and including 6 feet high: Fabricate perimeter frames of 1.900-inch minimum OD Type I and II steel pipe or 2-inch-square galvanized-steel tubing weighting 2.52 pounds per foot.

2. Gate Hardware: Provide galvanized hardware and accessories for each gate according to following:

   a. Keeper: Provide keeper for vehicle gates that automatically engages gate leaf and holds it in open position until manually released.

2.6 GATE OPERATOR

A. See Section 02831.

B. Coordinate and provide necessary fencing and gate accessories, fittings, components for a complete finished installation of gates and operators. Provide mounting hardware and location for accessories including intercoms and keypads as shown in the drawings.

PART 3- EXECUTION

3.1 INSTALLATION

A. General: Install fence to comply with ASTM F 567. Do not begin installation and erection before final grading is completed, unless otherwise permitted.

B. Excavation: Drill holes for posts to diameters and spacings indicated.

1. Unless otherwise indicated, excavate hole depths approximately 3 inches lower than post bottom, with bottom of posts set not less than 36 inches below finish grade surface or greater if required to exceed frostline.

C. Setting Posts: Center and align posts in holes 3 inches above bottom of excavation. Space maximum of 10 feet on center, unless otherwise indicated.

1. Protect portion of posts above ground from concrete splatter. Place concrete around posts and vibrate or tamp for consolidation. Check each post for vertical and top alignment, and hold in position during placement and finishing operations.
   a. Unless otherwise indicated, extend concrete footings 2 inches above grade and trowel to crown to shed water.

D. Bottom Rails: Run rail continuously to line posts, bending to radius for curved runs and at other posts terminating into rail end attached to posts. Provide expansion couplings as recommended by fencing manufacturer. Bottom rail must be not more than 3” and not less than 1” above the soil. Localized grading by the contractor will be required to accomplish this.

E. (Not Used) Center Rails:

F. Brace Assemblies: Install braces at gate posts and at both sides of corner and pull posts. Locate horizontal braces at mid-height of fabric on gate (which has top rail) and at ¾ fabric height on both sides of corners. Install so posts are plumb when diagonal rod is under proper tension.

G. Top Tension Wire: Install tension wire within 6 inches of top of fabric before stretching fabric and tie to each post with not less than same gage and type of wire. Pull wire taut, without sags. Fasten fabric to tension wire with 0.120-inch-diameter (11-gage) hog rings of same material and finish as fabric wire, spaced maximum of 24 inches on center.

H. Fabric: Leave approximately 2 inches between finish grade and bottom selvage unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Install fabric on outside of security area, and anchor to framework so that fabric remains under tension after pulling force is released.

I. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts with tension bands spaced not over 15 inches on center.

J. Tie Wires: Use wire or proper length to secure fabric firmly to posts and rails. Bend ends of wire to minimize hazard to persons or clothing.

1. Maximum Spacing: Tie fabric to line posts 12 inches on center and to rails and

braces 24 inches on center.

K. Fasteners: Install nuts for tension bands and carriage bolts on side of fence opposite fabric side. Peen ends of bolts or score threads to prevent removal of nuts for added security.

3.2 GATE INSTALLATION

A. Install all gates plumb, level, and secure for full opening without interference. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary. Install gates according to manufacturer's instructions, plumb, level, and secure.

3.3 GATE OPERATOR INSTALLATION

A. See Section 02831.

3.4 ADJUSTING

A. Gates and Gate Operators: After repeated operation of completed installation equivalent to 3 days' use by normal traffic, readjust gates and gate operators and controls for optimum operating condition and safety. Lubricate operating equipment and clean exposed surfaces. Return in six months for repeat adjustments.

3.5 DEMONSTRATION

A. Instruct Owner's personnel on proper operation and maintenance of gate operators.

END OF SECTION 02822

SECTION 02831 – HORIZONTAL SLIDING GATE OPERATORS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Pre-wired, self-contained, slide gate operator for horizontal cantilever sliding gates, including selected attachments and accessory equipment.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of contract, including General and Supplementary Conditions.

1.3 RELATED SECTIONS

A. Division 1 Specification Sections including, but not limited to, following:
   1. Section 01330 Submittal Procedures.

B. Fencing: See Section 02815.

C. Cast-in-Place Concrete: See Section 03300

D. Division 16 Electrical: Electrical service and connections.

1.4 SUBMITTALS

A. General: Comply with requirements of Section 01330.

B. Shop drawings: Submit drawings showing connections to adjacent construction, range of travel, and all electrical and mechanical connections to operator. Drawings shall also show size and location of concrete mounting pad

C. Installation instructions.

D. Test reports:
   1. Submit affidavit(s) from manufacturer demonstrating that gate mechanism has been tested to 2000,000 cycles without breakdown.
   2. Each Operator shall bear label indicating that operator mechanism has been tested for full power and pressure of all hydraulic components, full stress tests of all mechanical components and electrical tests of overload devices.

E. Operations and Maintenance Manual: Identify parts of equipment for future procurement.

1.5 QUALITY ASSURANCE

A. Manufacturer: company specializing in manufacture of hydraulic security gate operators of type specified, with minimum of 7 years experience with gate operators of this type and design.

B. Installer: Minimum of 3 years experience installing similar equipment.

C. Fence installer and gate operator installer are responsible to provide a coordinated and completely operational sliding gate design and installation with selected horizontal gate operator and accessories, and functionality requested.

1.6 CODES AND REGULATORY REQUIREMENTS

A. Operators shall be built to standards of Underwriters Laboratories UL325 Class III and bear U.L. Listed Label. Complete electrical work according to applicable codes including local codes and National Electrical code. Field work shall be performed in neat and professional manner, completed to journeyman standards.

B. Current safety standards require the use of multiple external sensors to be capable of reversing the gate in either direction upon sensing an obstruction.

1.7 PRODUCT DELIVERY AND STORAGE

A. Store products upright in the original shpping containers, covered, ventilated and protected from all weather conditions.

1.8 WARRANTY

A. Provide 5-year limited warranty against defects in materials or workmanship. Replace defective materials with comparable materials furnished by manufacturer at no cost to Owner.

PART 2 - PRODUCTS

2.1 GATE OPERATORS

A. Acceptable Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into Work include following:
1. Hy-Security Gate Operators 222 EX-ST.
2. The Tymetal Corporation.
3. or equal.

B. Basis for Design: Model 222 EX-ST Class III by Hy-Security Gate Operators.

2.2 OPERATION

A. Operation shall be by means of metal rail passing between pair of solid aluminum wheels with polyurethane threads. Operator motors shall be hydraulic, geroller type, and system shall not include belts gears, pulleys, roller chains or sprockets to transfer power from operator to gate panel. Operator shall generate minimum horizontal pull of 300 pounds without drive wheels slipping and without distortion of supporting arms. Gate panel velocity shall not be less than 3.3 feet per second and shall be stopped gradually to prevent shock loads to gate and operator assembly. “Soft stop” feature of fate operator shall be adjustable from minimum of 1 second, to accommodate gates.

B. Standard mechanical components shall include as minimum:
1. Supporting arms: Cast aluminum channel. Arms shall incorporate fully bushed, 1-1/2 inch bearing surface.
2. Arm pivots: ¾ inch diameter, stainless steel pins, in hinge configuration with supporting arm channel.
3. Tension spring: 2-1/2 inch heavy duty, 800 pound capacity.
4. Tension adjustment: Finger tightened nut, not requiring us of tools.
5. Drive release: instant release tension of both drive wheels and be capable of disengaging from contact with rail in single motion, for manual operation.
6. Push-button operation: 3 button station mounted permanently on exterior of electrical panel.
7. Limit switches: Fully adjustable, toggle type, NEMA 4.

8. Electrical enclosure: Oversized metal type with hinged lid and gasketed to provide protection from intrusion of foreign objects.
9. Chassis base: ¼ inch steel plate, welded and ground edges, powder paint finish smooth to touch.
10. Cover: 10 gage galvanized steel metal with zinc flame spray finish. Joints welded, filled and ground smooth. Finished corners square and true with no visible joints.
11. Drive wheels: Aluminum hub with polyurethane tread and durometer hardness not less than 80.
12. Drive rail: Extruded 6061 T6, not less than 1/8 inch thick. Incorporate alignment pins for ease of replacement, splicing and for break-away design. Pins shall provide perfect butt splice.
13. Hydraulic hose: ¼ inch synthetic, rated to 2750 psi.
14. Hydraulic valves: Individually replaceable in integrated hydraulic manifold.
15. Hose fittings: At manifold shall be quick disconnect type, swivel type at other locations.
16. Hydraulic fluids: High performance type with viscosity index greater than 375.

C. Minimum standard electrical components: Operator assembly shall be “Listed” by Underwriters Laboratories, Inc.
1. Pump motor: Minimum service factor of 1.15 HP. Standard voltages available, single or 3-phase.
2. Components: Overload protected.
3. Controls: Industrial grade relays, hard-wired with individually numbered wires.
4. Transformer: 75 VA, non jumpered taps, for common voltages.
5. Maximum run timer: Included in operators.
6. Control Circuit: 24 VAC.
7. Two pole “dry contact” output for interlocking 2 gate operators, and/or output for operation of secure/unsecured indication lights.
8. Sensitive, low current interface for connection of remotely located control stations.
9. Output contact to initiate unlocking operation of external solenoid locks.
10. Input terminals to allow interface connection of external solenoid interlocking contacts.
11. Start delay timer to allow external locks time to release before gate moves.

D. Safety devices: Provide all safety devices as necessary for compliance with applicable codes and regulations for intended use, including but not limited to: reversing edge, and for stopping or reversing gate travel: photo cell beams.

E. Adjustable brake valves to effect soft stop control for gates weighing up to 4000 pounds.

F. Additional Features:
1. Heater with thermostat control for cold or damp climates.
2. Weather-stripped operator covers.
3. Remote Control gate release devices. Places operator in “Manual mode” from remote location.
4. Remote control gate operators to automatically open and close the gates: 10 remotes for north gate, 2 remotes for south gate.
5. Special controls for extra duty or gates weighing in excess of 1000 pounds.
6. High speed operations for more than 1 foot per second travel.
7. Electrical 208 VAC, 3-phase
8. One Keypad – at north gate.
9. One Intercom at north gate to receiving unit in office.
10. Ground obstruction safety loops for exit calls on west side of both south and north gates.
11. All controls necessary to operate features provided including controls which allow for systems functionality to be flexibly modified by User as their security and operational needs require.

2.3 FACTORY TESTING

A. Fully assemble and test, at factory, each gate operator to assure smooth operation, sequencing and electrical connection integrity. Apply physical loads to operator to simulate field conditions. Tests shall simulate physical and electrical loads equal to fully rated capacity of operator components.

B. Check mechanical connections for tightness and alignment. Check welds for completeness and continuity. Check welded corners and edges to assure they are square and straight.

C. Inspect painted finish for completeness and gloss. Touch up any imperfections prior to shipment.

D. Check hydraulic hoses and electrical wires to assure that chafing cannot occur during shipping or operation.

PART 3 - EXECUTION

3.1 SITE EXAMINATION

A. Locate on existing concrete mounting pad in accordance with approved shop drawings.

B. Make sure that gate is operating smoothly under manual conditions before installation of gate operators. Do not proceed until gate panel is properly aligned and operates without binding.

C. Operators shall be built to standards of Underwriters Laboratories and bear U.L. Listed Label. Complete electrical work according to local codes and National Electrical code. Field work shall be performed in neat and professional manner, completed to journeyman standards.

3.2 INSTALLATION

A. Install gate operator in accordance with manufacturers printed instruction, current at the time of installation. Coordinate locations of operators with contract drawings, other trades and shop drawings.

B. Installer shall insure that electric service delivered to operator is at least 20 AMP

3.3 FIELD QUALITY CONTROL

A. Test gate operator through 10 full cycles and adjust for operation without binding, scraping or uneven motion. Test limit switches for proper “at rest” gate position. Installer shall return 6 months after substantial completion and fully adjust gates, operator and related components to function within manufacturer’s tolerances and optimum operating condition and safety.

B. Anchor bolts shall be fully concealed in finished installation.

3.4 CONTINUED SERVICE AND DOCUMENTATION

A. Train owner’s personnel in general maintenance of gate operator and accessories.

END OF SECTION 02831

SECTION 09130

ACOUSTICAL PANEL SUSPENSION SYSTEM

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Furnish and install acoustical suspension system as described in Contract Documents to receive acoustical ceiling panels.

B. Related Sections
   1. Division 26 - Light fixtures in ceilings

1.2 REFERENCES

A. American Society For Testing And Materials
   1. ASTM C 635, "Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile & Lay-In Panel Ceilings"
   2. ASTM C 636, "Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile & Lay-In Panels"

1.3 QUALITY ASSURANCE

A. Regulatory Requirements - Meet seismic bracing requirements of IBC.

PART 2 PRODUCTS

2.1 COMPONENTS

A. Systems shall meet requirements of ASTM C 635, Intermediate Duty or Heavy Duty.

B. Exposed surfaces shall be finished with factory-applied white baked enamel.

C. Main runners and cross T's shall have one inch exposed face.

D. Hanger Wire - 12 gauge cold-rolled electro-galvanized steel.

E. Edge Molding - Channel section of cold-rolled electro-galvanized steel.

F. Hold-down Clips - As required by UL to prevent lifting of panels under unusual draft conditions.

G. Design Standards - DX or DXL Systems by USG Interiors

2.2 APPROVED MANUFACTURERS

A. Armstrong World Industries, Lancaster, PA (800) 448-1405
B. Chicago Metallic Corporation, Chicago, IL (800) 323-7164
C. USG Interiors Inc, Chicago, IL (800) 950-3839
D. National Rolling Mills Inc, Malvern, PA (215) 644-6700

PART 3 EXECUTION

3.1 INSTALLATION

A. Work shall be in accordance with Manufacturer's recommendations insofar as they are concerned with Contract Documents. Installation shall meet requirements of ASTM C 636.

B. Lay out suspension system symmetrically about center lines of room unless shown otherwise by Drawings.

C. Leave suspension system in true plane with straight, even joints.

D. Suspension system joints shall be straight and in alignment, and exposed surface flush and level. Wherever system abuts walls, columns, and other vertical surfaces, furnish and install appropriate molding.

E. Locate fixtures symmetrically in room insofar as possible (unless shown otherwise). Locate fixtures within suspension system spaces.

F. Pay particular attention to required hanger wire placement and fixture protection. Individual component deflection not to exceed 1/360 of span.

G. Do not attach suspension system to adjustable folding partition headers.

END OF SECTION

SECTION 09511

ACOUSTICAL PANEL CEILINGS

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Furnish and install tile for suspended acoustical ceilings as described in Contract Documents.

B. Related Sections
   1. Section 09130 - Acoustical Panel Suspension System

1.2 SUBMITTALS

A. See Section 01300.

B. Product Data
   1. Manufacturer's literature
   2. Color and pattern selection

1.3 DELIVERY, STORAGE, & HANDLING

A. Store materials where protected from moisture and damage.

B. Use no soiled, scratched, or broken material in the Work.

1.4 MAINTENANCE

A. Extra Materials - Provide Owner with one carton of each type of tile for future use.

PART 2 PRODUCTS

2.1 MATERIALS

A. Acoustic Panels
   1. Cast panels, core color to match surface color.
   2. Finish - Use tile from same color run in individual rooms to assure color match.
   3. Rating - Match UL fire-resistance classification of suspension system.
   4. Thickness - 3/4 inch minimum
   5. Approved Patterns & Manufacturers -
      a. 9 Feet & Below -
         1) Natural Fissured by Celotex, Tampa, FL (813) 873-1700
         2) "F" Fissured by USG Interiors, Chicago, IL (800) 950-3839
      b. Above 9 Feet -
         1) Texture-Tone by Celotex, Tampa, FL (813) 873-1700
         2) Glacier by USG Interiors, Chicago, IL (800) 950-3839

PART 3 EXECUTION

3.1 EXAMINATION

A. Inspect for defects in support which are not acceptable. Report defects to Architect in writing. Do not install ceiling panels until defects in support are corrected.

3.2. INSTALLATION

A. Materials shall be dry and clean at time of application.

B. Install lay-in panels in accordance with Manufacturer's instructions.

3.3 CLEANING

A. "Touch-up" minor abraded surfaces.

B. Remove from site all debris connected with work of this Section.

C. Remove and replace discolored tile to match adjacent tile.

D. Remove and replace damaged or out-of-level tile at no additional cost to Owner.

END OF SECTION

SECTION 09690

CARPET TILE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Carpet tiles.

B. Accessories.

1.2 REFERENCES

A. ASTM D2859 - Test Method for Flammability of Finished Textile Floor Covering Materials.

B. ASTM E84 - Surface Burning Characteristics of Building Materials.

C. ASTM E648 - Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.

D. NFPA 253 - Test for Critical Radiant Flux of Floor Covering Systems.

E. Carpet tile to comply with DFCM General Standards.

1.3 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.

1.4 QUALIFICATIONS

A. Installer: Company specializing in performing the work of this Section with minimum 3 years documented experience.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Store materials for 3 days prior to installation in area of installation, to achieve temperature stability.

B. Maintain minimum 70 degrees F (21 degrees C) ambient temperature three days prior to, during and 24 hours after installation materials.

1.6 MAINTENANCE DATA

A. Submit under provisions of Section 01700.

B. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and

suggested schedule for cleaning.

1.7 EXTRA MATERIALS

A. Furnish under provisions of Section 01700.

B. Provide 10 % of the total square footage of carpet tiles of each color and pattern selected.

PART 2 PRODUCTS

2.1 MANUFACTURERS - CARPET TILE

A. Shaw Contract Group, www.shawcontractgroup.com

B. Or Approved Equal

2.2 CARPET TILE

A. No Rules Collection

B. Or Approved Equal

2.3 ACCESSORIES

A. Sub-Floor Filler: type recommended by flooring material manufacturer.

B. Primers and Adhesives: Recommended by carpet manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that surfaces are smooth and flat with maximum variation of 1/4 inch in 10 ft, and are ready to receive work.

3.2 PREPARATION

A. Remove subfloor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with subfloor filler.

B. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.

C. Vacuum clean substrate.

3.3 INSTALLATION

A. Install carpet tile, accessories and adhesive in accordance with manufacturer's instructions.

B. Integrate and blend carpet from different cartons to ensure minimal variation in color match.

C. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.

D. Locate change of color or pattern between rooms under door centerline.

E. Place carpet tile dry over substrate.

F. Extend carpet tile as base finish up vertical surfaces to form base. Terminate top of base with cap strip.

3.4 CLEANING

A. Clean work under provisions of 01700.

B. Remove excess adhesive without damage, from floor, base, and wall surfaces.

C. Clean and vacuum carpet surfaces.

3.5 PROTECTION OF FINISHED WORK

A. Protect finished Work under provisions of Section 01500.

B. Do not permit traffic over unprotected floor surface.

END OF SECTION

SECTION 10751

GROUND-SET FLAGPOLES

PART 1 - GENERAL

1.1 SUMMARY

A. Products Furnished But Not Installed Under This Section:
   1. Flagpole, baseplate, and foundation sleeve.

B. Related Sections:
   1. Concrete foundation and installation of base plate and foundation sleeve.

1.2 SUBMITTALS

A. Quality Assurance / Control: Manufacturer's installation instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURED UNITS

A. Flagpole:
   1. Cone tapered aluminum of alloy 6063-T6.
   2. Dimensions:
      a. Wall Thickness: 1/8 inch minimum.
      b. Height: 30 feet above ground level.
      c. Butt Diameter: 5 inches.
   3. Finish: Natural clear anodized finish.
   4. Fittings:
      a. Gold anodized aluminum flush seam ball with copper lightning terminal. Ball diameter no larger than pole butt.
      b. One 9-inch cast metal cleat, finished to match pole, with cover.
      c. One continuous halyard, 5/16 inch polypropylene with metal core.
      d. Chrome-plated bronze swivel flag snaps for halyard.
      e. Aluminum flash collar.
   5. Type One Acceptable Manufacturers:
      a. American Flagpole, Abingdon, VA www.americanflagpole.com.
      b. Colonial Flag & Specialty, Sandy, UT www.zflags.com.
      c. Concord Industries, Addison, TX www.flagpoles.com.
      d. Eder Flag Manufacturing Co Inc, Oak Creek, WI www.ederflag.com.
      e. EMC, Milwaukee, WI www.olympus-flag,com.
      f. Ewing Flagpole, Buffalo, NY www.ewingflagpole.com.
      g. House of Flags, Littleton, CO www.ahouseofflags.com.
      h. Morgan-Francis Div, Rushville, IN (800) 814-9568 or (765) 932-3610.
      i. Pole-Tech Co Inc, East Setauket, NY (800) 633-6733 or (516) 689-5525. www.poletech.com
      j. Equal as approved by Architect before bidding.

2.2 ACCESSORIES

A. Foundation tube complete with welded base and support plate, ground spike, and centering wedges, hot-dip galvanized after construction.

B. Hardwood wedges for plumbing pole.

PART 3 - EXECUTION

3.1 ERECTION

A. Paint portions of pole below grade with heavy coat of bituminous paint.

END OF SECTION

SECTION 14620 - MONORAIL TROLLEY HOISTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the complete monorail trolley hoist system, including mon orail beam and bracing, trolley, hoist, all appurtenances, and installation.

B. Related Sections:
1. Division 13 Section "Metal Building Systems" for fabrication and erection requirements for special joists at monorail beam supports.
2. Division 5 Section ,Metal Fabrications" for fabrications and erection requirements for monorail beam and bracing.
3. Division 16 Electrical.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product Data for each trolley hoist unit, indicating capacities, sizes, per formances, operations, safety features, controls, finishes, and similar information. Indicate any variations from specified requirements.

C. Shop Drawings including dimensioned drawings showing plans, elevations, sections and large-scale details showing monorail beams, trolley, monorail beam bracing, hoist and all appurtenances.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Engage the hoist manufa cturer or an installer approved by the manufacturer and who has completed crane and hoist installations similar in material, design, and extent to that indicated for Projects which have resulted in installations with a record of successful in-service performance

B. Regulatory Requirements: Comply with local governing regulations and the requirements of OSHA, the standards of the Crane Manufacturer's Association of America (CMAA), and the Hoist Manufacturer's Institute (HMI).

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

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

1. Five ton motorized trolley hoist:

a. ACCO Hoists
b. R & M Material Handling ˜ SX Series Hoists
c. Yale Hoists - EW

2.2 MATERIALS AND COMPONENTS

A. Five ton motorized trolley hoist:

1. Trolley: Adjustable for 6-inch to 18-inch flange width.

a. Wheels: Cast iron with sealed, lifetime lubricated ball bearings.
b. Provide sideplates with heavy-duty bumpers to protect wheels.
c. Capacities: 5 tons
d. Operation: motorized
e. Motor: 1/3 hp min.
f. Speed: 45 fpm min.
g. Provide hoist rail seismic bracing per 2006 IBC

2. Hoist: electric wire rope operation.

a. Configuration: Single reeved, low headroom wire rope
b. Brakes: Provide a dc rectified magnetic disc motor brake rated at 250% of motor torque. In addition, provide regenerative control braking.
c. Motor: 5 hp min. 30 min, Class ‚F", TENV or TEFC motors
d. Speed: 20 fpm min. Single or two speed
f. H4 duty rating
g. Provide an overload limit switch set at 115% of rated capacity.
h. Upper and lower limit switches
il. NEMA 3R control enclosure
j. Helical-spur gear train
k. Cast alloy gear case
l. Metallic sheaves
m. Vertical lift: 18'-0" feet min. Coordinate with plans.

3. Hoist Beam: ASTM A-992. Hoist manufacturer shall size the beams using acceptable engineering practices. Provide beam calculations stamped by a Utah Professional Engineer. Provide straight beams with minimal sweep. Orient the beams so that the natural camber will be up. Provide proper splices that will not interfere with the operation of the trolley hoist. Weld the tread line at each splice and grind smooth to provide an even transition without a ‚bump". Monorail hangers will b e sized to meet the requirements of the trolley hoist capacity and duty cycle. All-thread rod will not be allowed. Beams shall be braced to prevent lateral movement due to trolley loads.

4. Electrification: Provide rolled galvanized insulated steel con ductor system. 4 conductor (3 phase, 1 ground) mounted 2 on each side of monorail for bottom

contact. Provide conductor hangers and all necessary hardware required for installation and operation of complete system (See plans for length).

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Comply with manufacturer's instructions and recommendations for work during installation.

B. Provide permanent / removable stops on the beam to prevent trolley overrun.

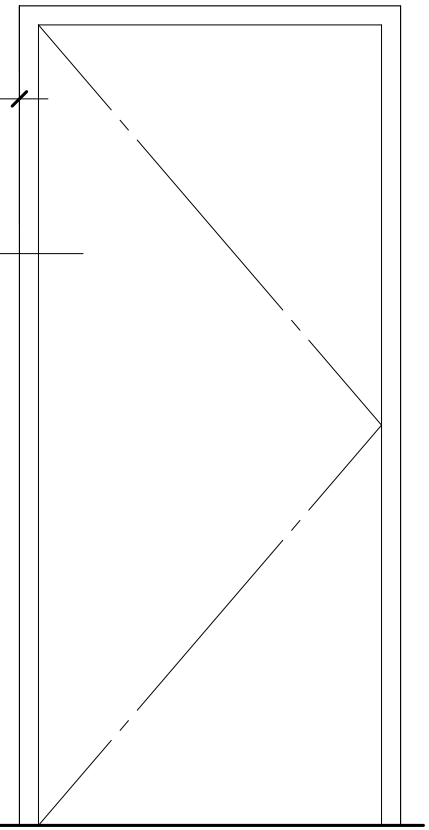
C. Provide final electrical connection from junction box adjacent to monorail to conductor system (See plans for length).

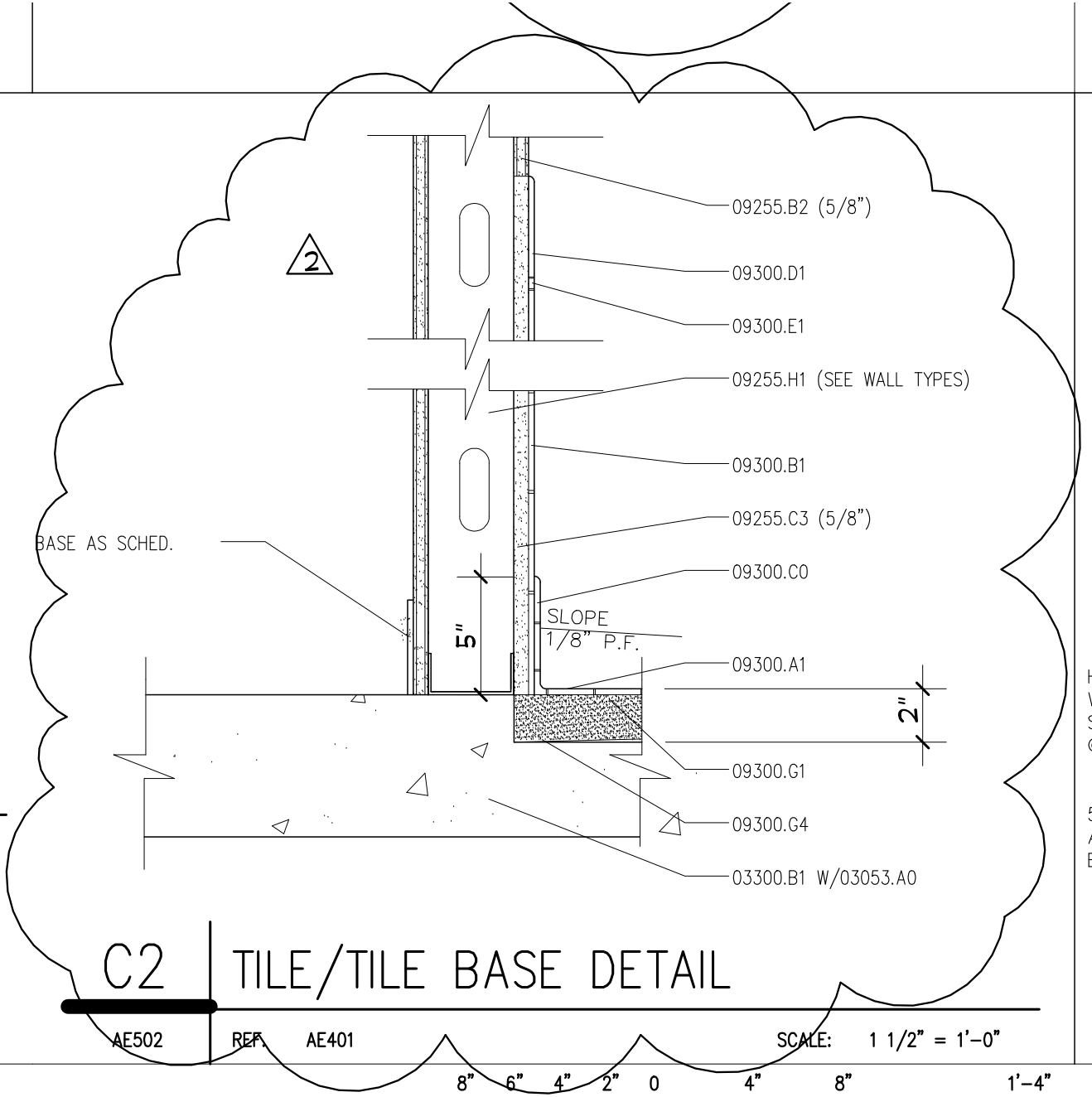
3.2 LOAD TEST

A. Upon completion of the installation, installer will provide a 125% of capacity load test of the equipment using test weights provided by the installer. The load test will comply with OSHA and a certificate of satisfactory completion will be issued by the installer.

END OF SECTION 14620

SCALE: NO SCALE



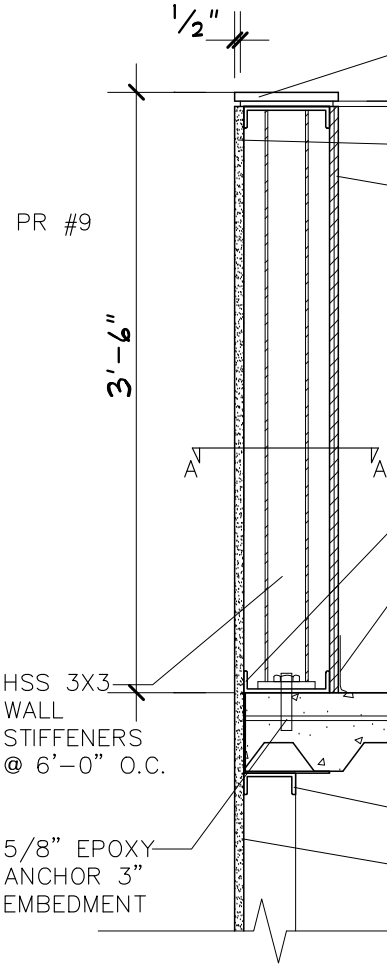


C2 | TILE/TILE BASE DETAIL

SCALE: NO SCALE AE502 REF. AE401 SCALE: 1 1/2" = 1'-0"

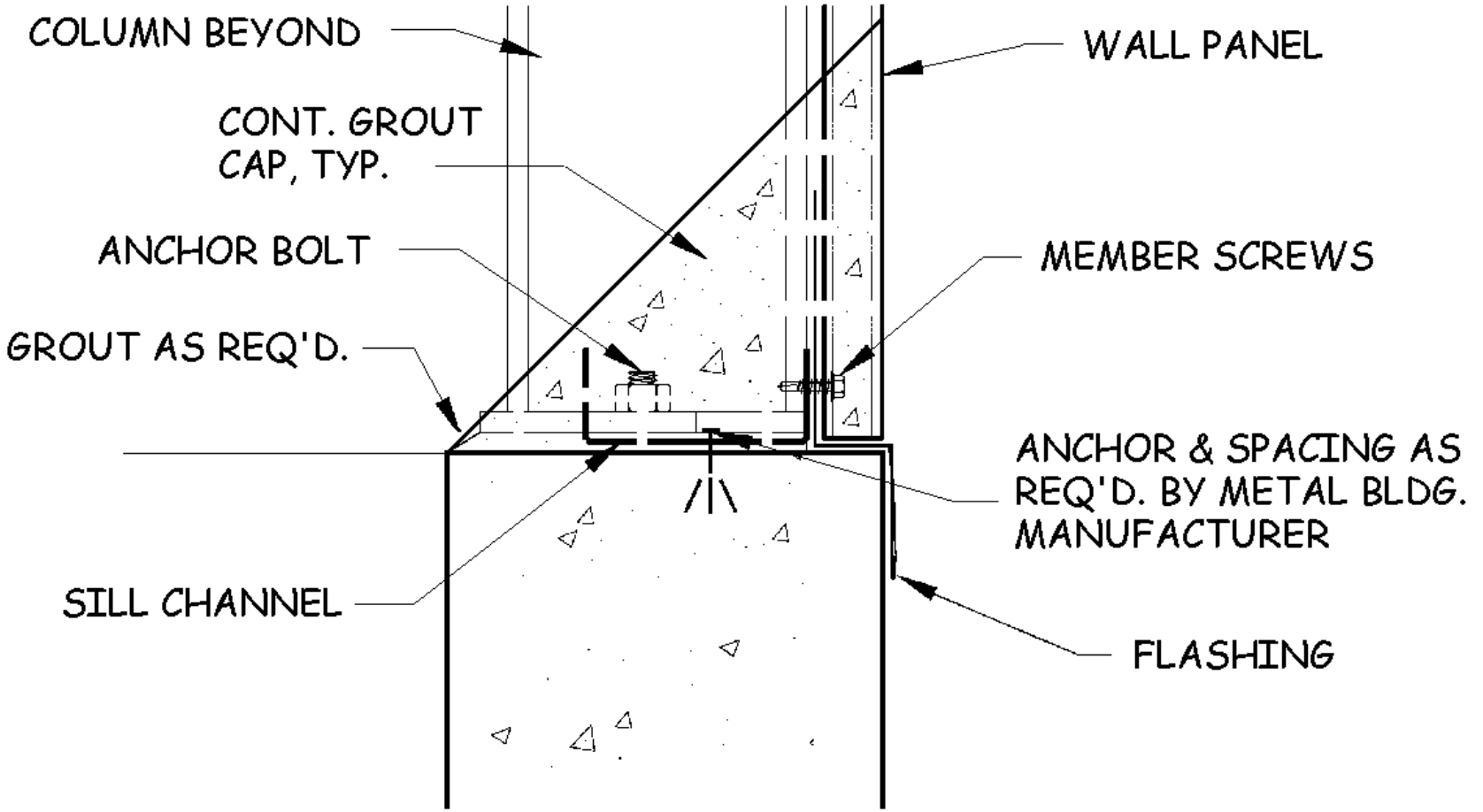
8" 6" 4" 2" 0 4" 8" 1'-4"

AE502 REF. AE101



C3 | LOW P

AE502 REF. AE101



4
A-6

SILL DETAIL

CIVIL CONSTRUCTION DRAWINGS FOR:
THE UDOT HURRICANE FACILITIES
DFCM PROJECT # 07292900

N

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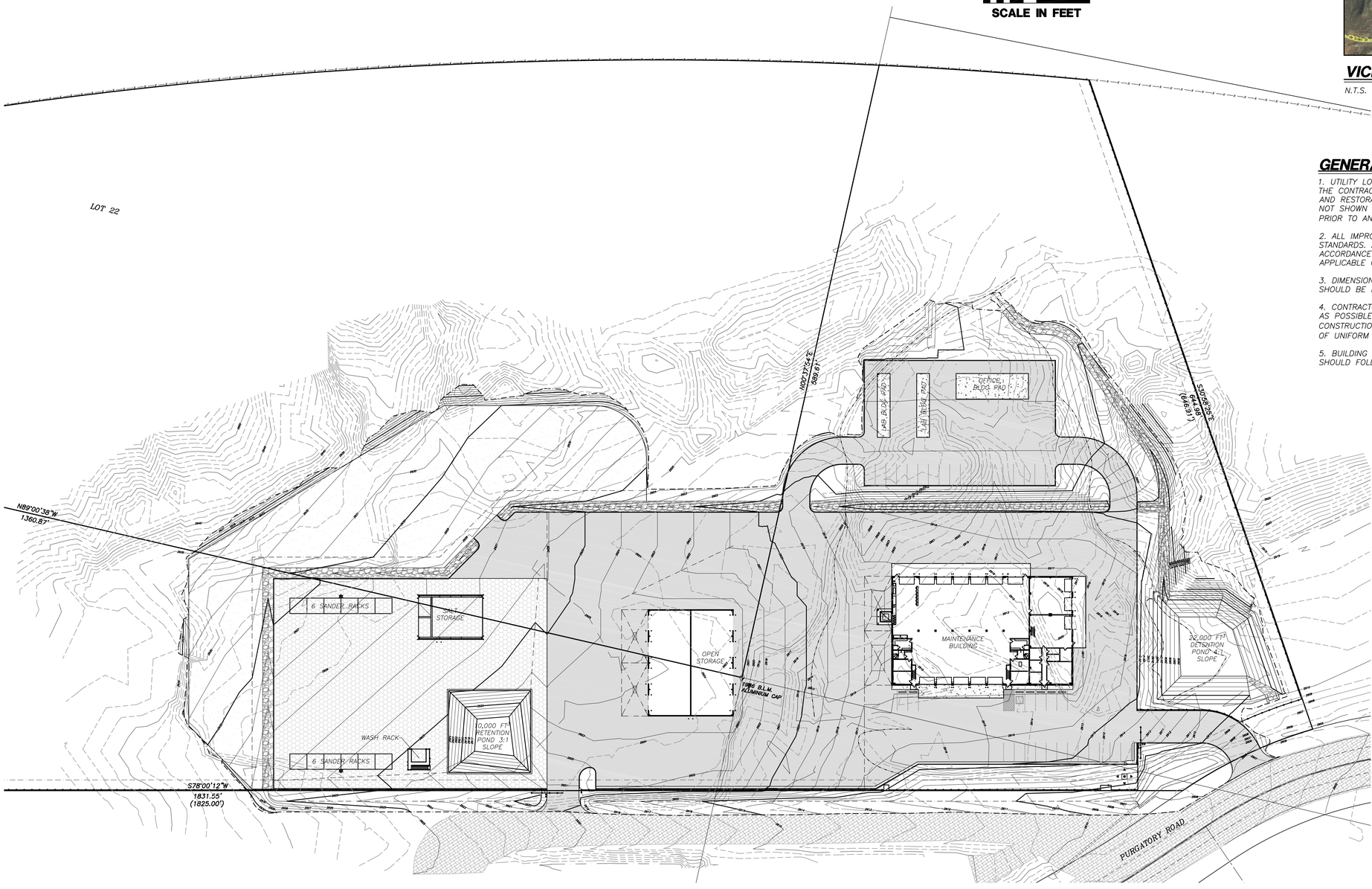
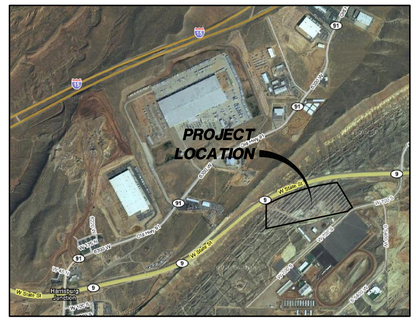
50 0 50

SCALE IN FEET





VICINITY MAP

N.T.S.

GENERAL NOTES

1. UTILITY LOCATIONS MUST BE VERIFIED IN THE FIELD BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION, PROTECTION AND RESTORATION OF ALL BURIED OR ABOVE GROUND UTILITIES, SHOWN OR NOT SHOWN ON THE PLANS. THE CONTRACTOR MUST CALL BLUE STAKES PRIOR TO ANY EXCAVATION. (BLUE STAKES 1-800-662-4111)

2. ALL IMPROVEMENTS MUST BE BUILT TO DFCM SPECIFICATIONS AND STANDARDS. ALL CONSTRUCTION SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH DFCM STANDARDS AND SPECIFICATIONS AND ALL APPLICABLE CODES.

3. DIMENSIONS TAKE PRECEDENCE OVER SCALING, ANY DISCREPANCIES SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER.

4. CONTRACTOR TO MINIMIZE ROAD CLOSURES OF EXISTING ROADS AS MUCH AS POSSIBLE. PROVIDE TRAFFIC CONTROL DEVICES AS REQUIRED FOR CONSTRUCTION AND ROAD CLOSURES PER REQUIREMENTS OF MUTCD (MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION).

5. BUILDING FOUNDATION, EXCAVATION, RETAINING WALLS, AND PAVEMENT SHOULD FOLLOW THE RECOMMENDATIONS OF THE SOILS REPORT.

SHEET INDEX

NOTE: ALL EXISTING UTILITY LOCATIONS MUST BE FIELD VERIFIED PRIOR TO CONSTRUCTION.

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State of Utah-Department of Administrative Services
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4110 State Office Building/Salt Lake City, Utah 84114/538-3018

Project:
UDOT HURRICANE FACILITY
DFCM PROJECT NO. 07292900

Sheet Title:
CIVIL COVER PAGE

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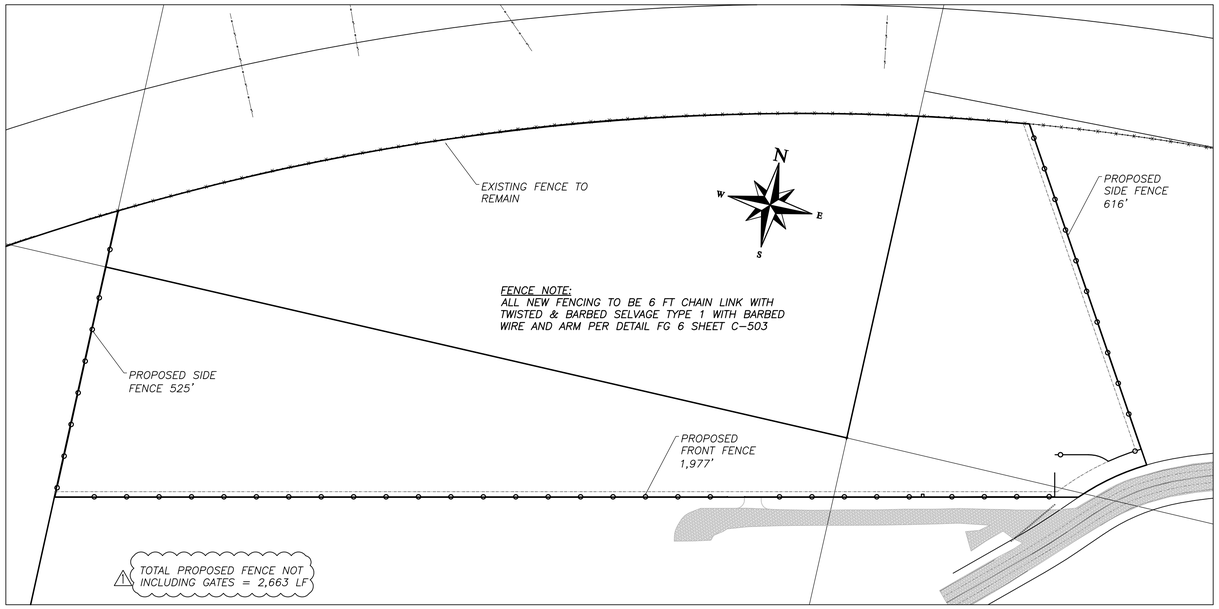
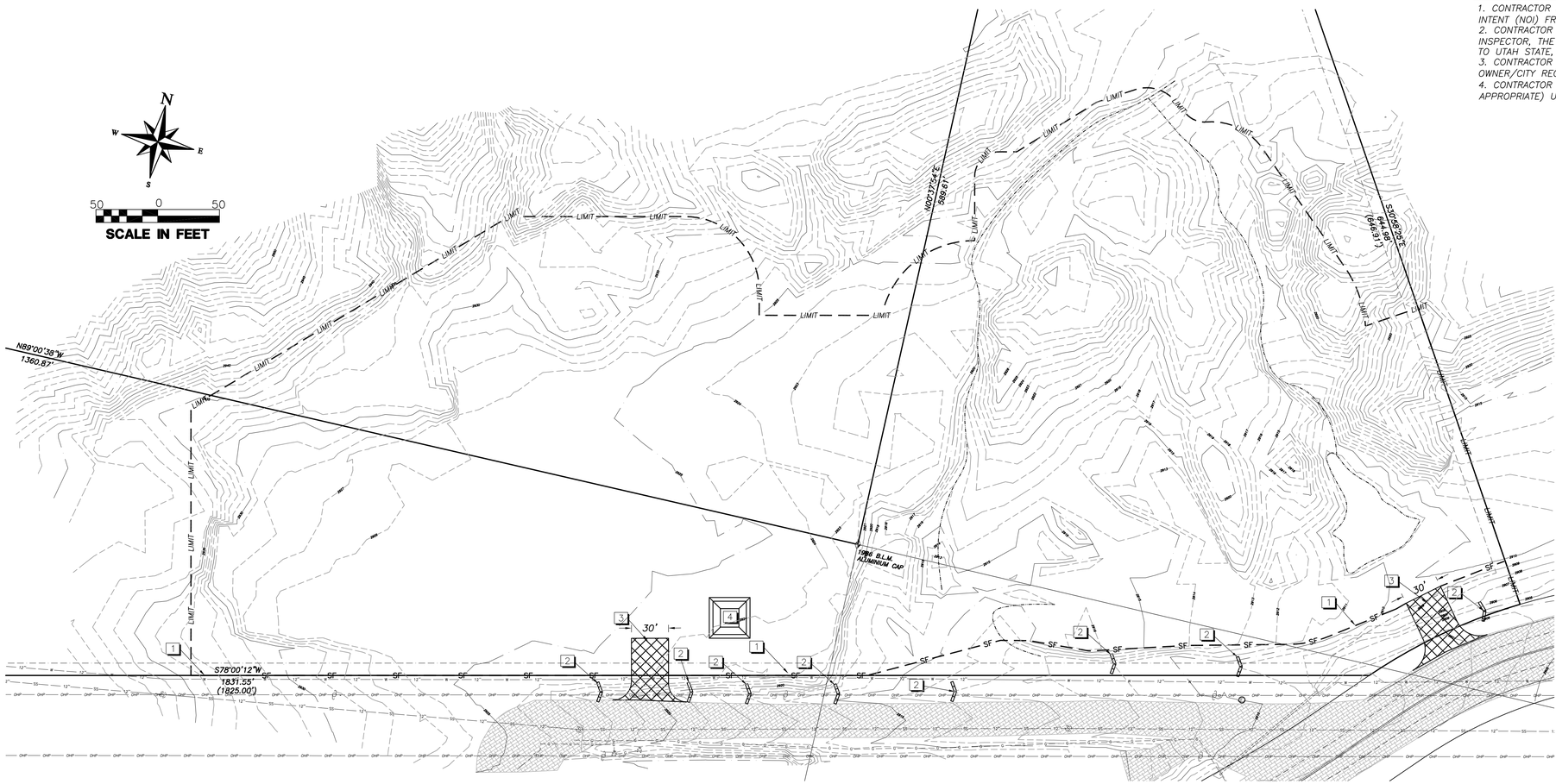


FENCE PLAN

N.T.S.



STORM WATER POLLUTION PREVENTION PLAN

PROJECT LEGEND

- LIMIT — CONSTRUCTION LIMITS
- SF — SILT FENCE
- STABILIZED CONSTRUCTION ENTRANCE

CONSTRUCTION NOTES

1. PROPOSED SILT FENCE PER DETAIL EN2 SHEET C-501
2. PROPOSED TEMPORARY EROSION CONTROLE CHECK DAMS PER DETAIL EN1 SHEET C-501
3. PROPOSED STABILIZED CONSTRUCTION ENTRANCE PER DETAIL EN6 SHEET C-502
4. PROPOSED CONCRETE WASHOUT CONTAINMENT PER DETAIL SHEET C-501

NOTE:
SEE SHEETS C-500 TO C-502 FOR ALL STORM WATER POLLUTION PREVENTION PLAN NOTES AND DETAILS.

CONTRACTORS NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A NOTICE OF INTENT (NOI) FROM UTAH STATE, DIVISION OF WATER QUALITY.
2. CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE INSPECTOR, THE SUBMITTAL OF A NOTE OF TERMINATION (NOT) TO UTAH STATE, DIVISION OF WATER QUALITY.
3. CONTRACTOR SHALL PROVIDE STREET SWEEPING UPON OWNER/CITY REQUEST.
4. CONTRACTOR SHALL REMOVE ALL SWPPP ITEMS (AS APPROPRIATE) UPON FILING N.O.T.

NOTE: ALL EXISTING UTILITY LOCATIONS MUST BE FIELD VERIFIED PRIOR TO CONSTRUCTION.

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410 State Office Building/Salt Lake City, Utah 84114/538-3018

Project:
UDOT
HURRICANE
FACILITY
DFCM PROJECT NO.
07292900

Sheet Title:
STORM WATER POLLUTION PREVENTION PLAN

Revisions:
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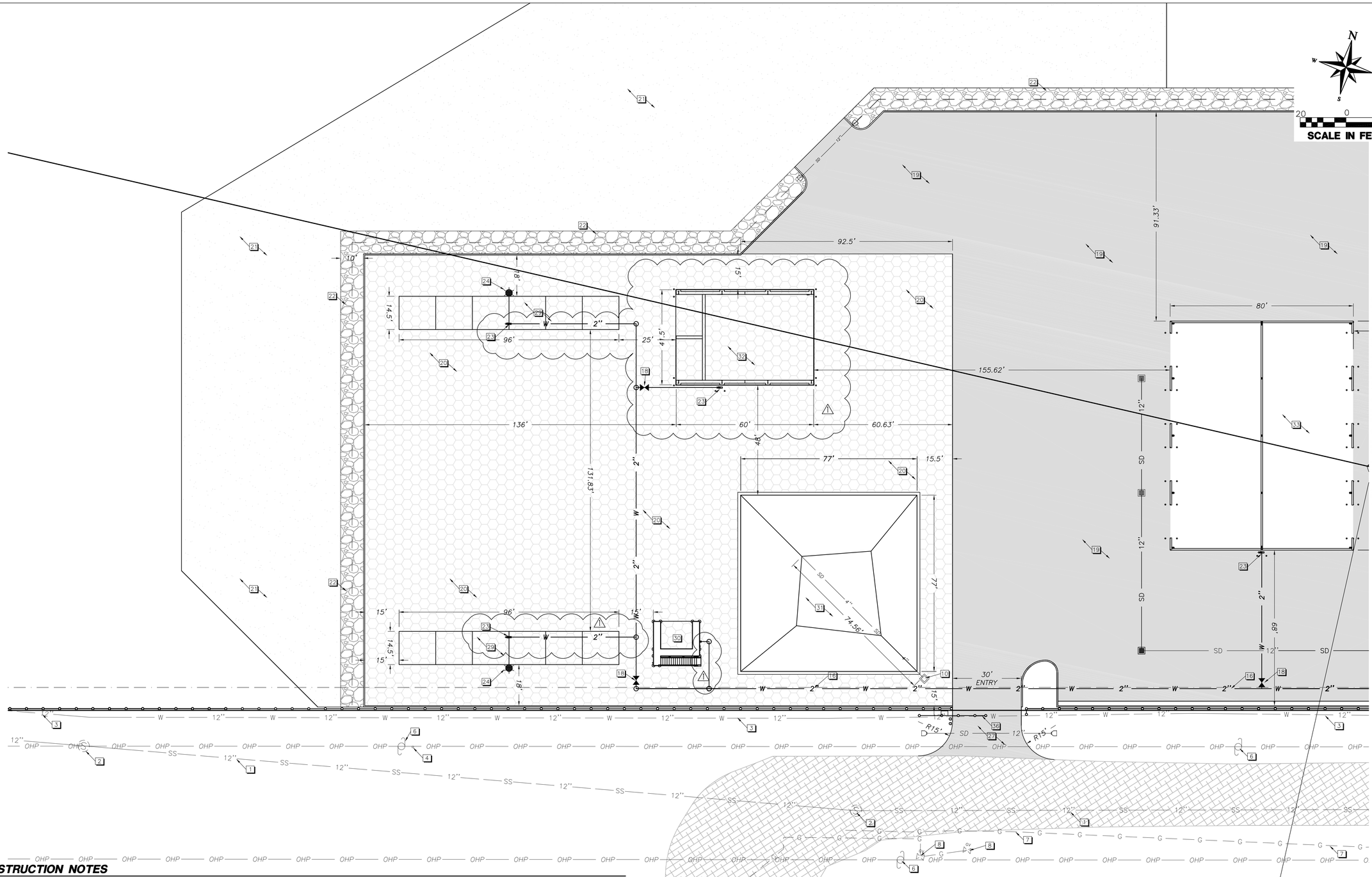

CONSTRUCTION NOTES

1. EXISTING 12"ø SEWER MAIN
2. EXISTING SEWER MANHOLE
3. EXISTING 12"ø PVC C-900 WATER MAIN ⚠1
4. EXISTING PHONE BOX
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6. EXISTING POWER POLE
7. EXISTING GAS MAIN
8. EXISTING GAS VALVE
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10. MONITORING JUNCTION BOX PER DETAIL SHEET C-508
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PROJECT LEGEND

- SS — NEW SEWER LINE (PVC-SDR-35)
- W — NEW WATER LINE (DUCTILE IRON)
- SS — EXISTING SANITARY SEWER
- W — EXISTING WATER LINE
- NEW SEWER LATERAL PER DETAIL
- STOP — NEW STOP SIGN
- NEW STREET SIGN
- S — EXISTING SEWER MANHOLE
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NOTE:
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2- SEE SHEET C-105 FOR DRAINAGE INFORMATION AND DESIGN ⚠1

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Project: UDOT HURRICANE FACILITY DFCM PROJECT NO. 07292900

Sheet Title: SITE & UTILITIES PLAN

Revisions:
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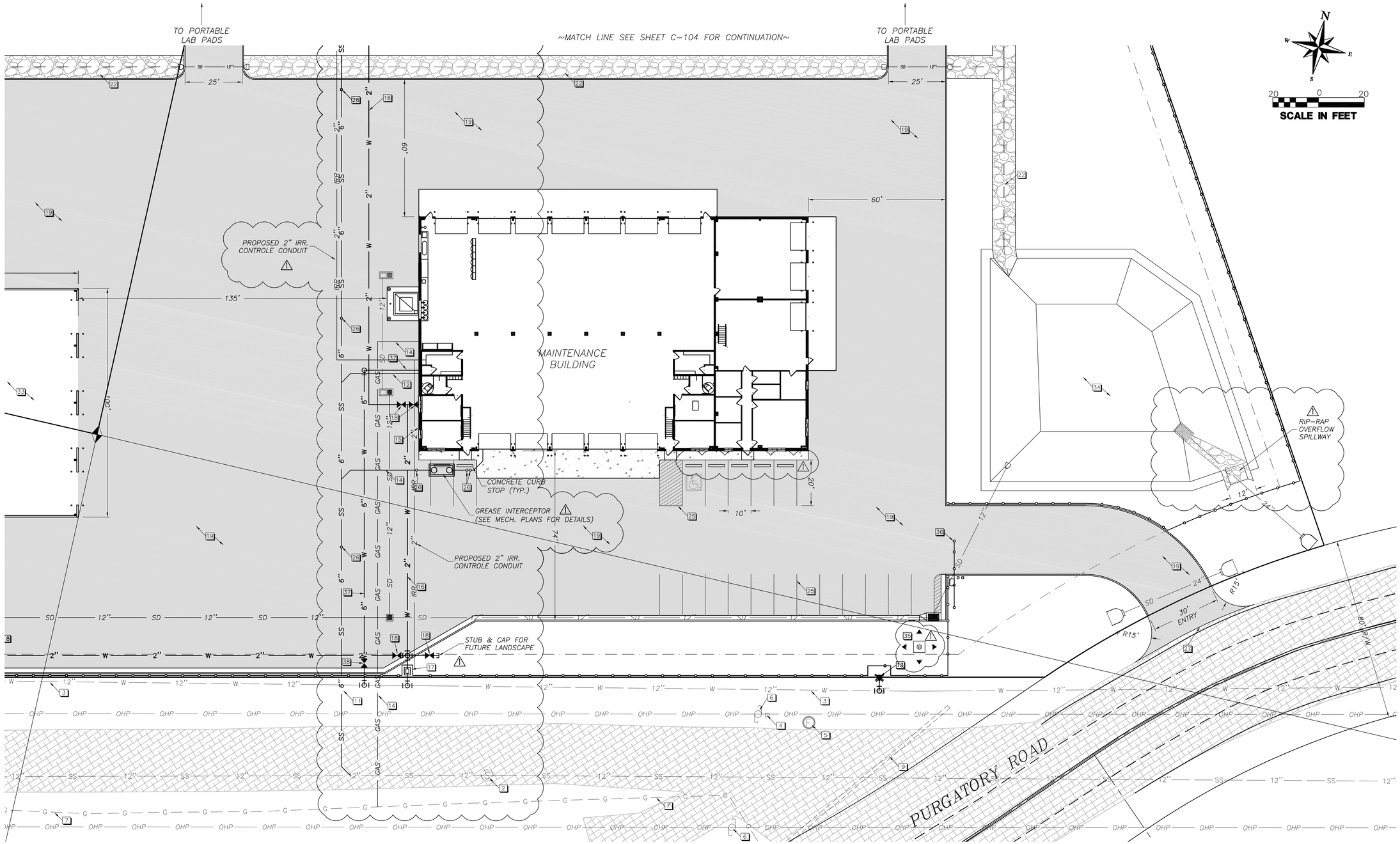

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Project:
UDOT HURRICANE FACILITY
DFCM PROJECT NO. 07292300

Sheet Title:
SITE & UTILITIES PLAN CONTINUED

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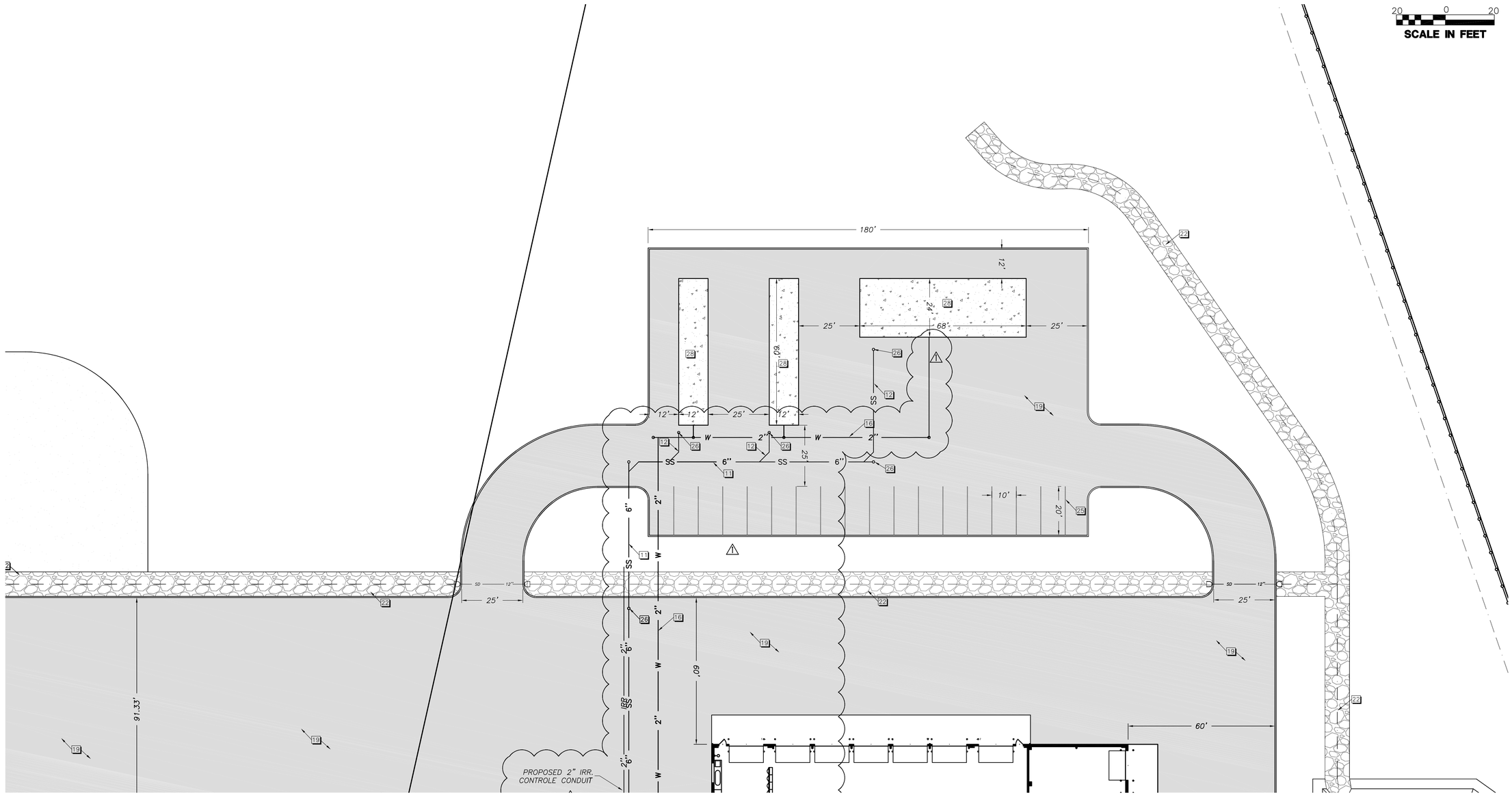

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Project:
UDOT HURRICANE FACILITY
DFCM PROJECT NO. 07292900

Sheet Title:
SITE & UTILITIES PLAN CONTINUED

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DATE: MARCH 26, 2009
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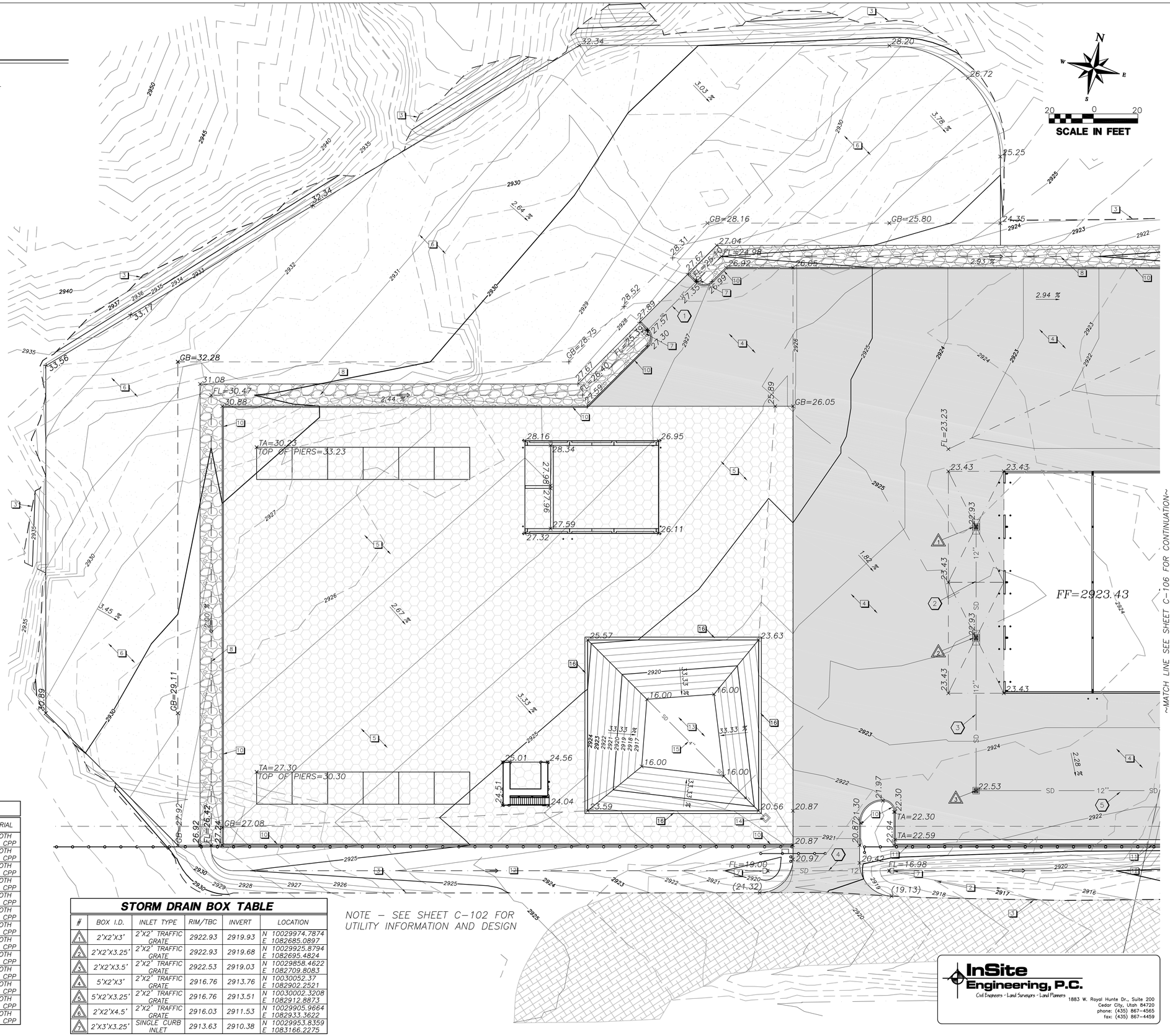
C-104

GRADING LEGEND

- EXISTING ASPHALT
- PROPOSED ZERO VOIDS ASPHALT
- PROPOSED ASPHALT
- PROPOSED RIP-RAP
- PROPOSED DRAINAGE FLOW
- XX.XX — TBC GRADE
- (XX.XX) — EXISTING GRADE
- XX.XX — TOP OF ASPHALT/CONCRETE
- PROPOSED GRADE BREAK

SITE GRADING NOTES

1. EXISTING 18"ø CULVERT
2. EXISTING DRAINAGE SWALE
3. PROPOSED MATCH LINE TO EXISTING GROUND
4. PROPOSED ASPHALT PER DETAIL SHEET C-506
5. PROPOSED ZERO-VOID ASPHALT PER DETAIL SHEET C-506
6. PROPOSED GRADED AND COMPACTED NATIVE EARTH
7. PROPOSED END SECTION PER DETAIL SHEET C-506
8. PROPOSED DRAINAGE DITCH PER DETAIL SHEET C-507
9. PROPOSED DETENTION POND OUTLET PER DETAIL SHEET C-508
10. PROPOSED 6" CURB FLUSH W/ ASHPHALT PER DETAIL SHEET C-506
11. PROPOSED TYPE B1 CURB & GUTTER PER UDOT DETAIL GW-2 SHEET C-503
12. PROPOSED DRAINAGE SWALE PER DETAIL C-508
13. PROPOSED FIRESTONE PONDGUARD PER DETAIL C-508
14. MONITORING JUNCTION BOX PER DETAIL C-508
15. PROPOSED 4"ø PERF. PIPE PER DETAIL C-508
16. PROPOSED TYPE M2 CURB PER DETAIL SHEET C-503



STORM DRAIN PIPE TABLE

#	INV. IN	INV. OUT	SIZE	SLOPE	LENGTH	MATERIAL
1	2925.39	2925.10	12"ø	0.92%	31.50 LF	SMOOTH LINED CPP
2	2919.93	2919.68	12"ø	0.50%	48.00 LF	SMOOTH LINED CPP
3	2919.68	2919.03	12"ø	0.97%	66.92 LF	SMOOTH LINED CPP
4	2919.00	2916.98	12"ø	3.69%	54.69 LF	SMOOTH LINED CPP
5	2919.03	2911.53	12"ø	3.31%	226.55 LF	SMOOTH LINED CPP
6	2917.16	2916.09	12"ø	4.04%	26.50 LF	SMOOTH LINED CPP
7	2912.91	2912.78	12"ø	0.50%	26.50 LF	SMOOTH LINED CPP
8	2913.76	2913.51	12"ø	0.50%	49.17 LF	SMOOTH LINED CPP
9	2913.51	2911.53	12"ø	2.06%	96.50 LF	SMOOTH LINED CPP
10	2911.53	2910.38	12"ø	0.49%	234.39 LF	SMOOTH LINED CPP
11	2910.38	2909.04	12"ø	1.88%	71.42 LF	SMOOTH LINED CPP
12	2905.30	2904.92	24"ø	0.80%	47.25 LF	SMOOTH LINED CPP
13	2905.47	2904.99	24"ø	0.72%	66.11 LF	SMOOTH LINED CPP

STORM DRAIN BOX TABLE

#	BOX I.D.	INLET TYPE	RIM/TBC	INVERT	LOCATION
1	2'X2'X3'	2'X2' TRAFFIC GRATE	2922.93	2919.93	N 10029974.7874 E 1082685.0897
2	2'X2'X3.25'	2'X2' TRAFFIC GRATE	2922.93	2919.68	N 10029925.8794 E 1082695.4824
3	2'X2'X3.5'	2'X2' TRAFFIC GRATE	2922.53	2919.03	N 10029858.4622 E 1082709.8083
4	5'X2'X3'	2'X2' TRAFFIC GRATE	2916.76	2913.76	N 10030052.37 E 1082902.2521
5	5'X2'X3.25'	2'X2' TRAFFIC GRATE	2916.76	2913.51	N 10030002.3208 E 1082912.8873
6	2'X2'X4.5'	2'X2' TRAFFIC GRATE	2916.03	2911.53	N 10029905.9664 E 1082933.3622
7	2'X3'X3.25'	SINGLE CURB INLET	2913.63	2910.38	N 10029953.8359 E 1083166.2275

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Project:
UDOT
HURRICANE
FACILITY
DFCM PROJECT NO.
07292900

Sheet Title:

SITE GRADING PLAN

Revisions:
1 REVISION 3/26/09

PROJECT NUMBER: 28493
DATE: MARCH 26, 2009
DRAWN BY: T.S.
CHECKED BY:
APPROVED BY:
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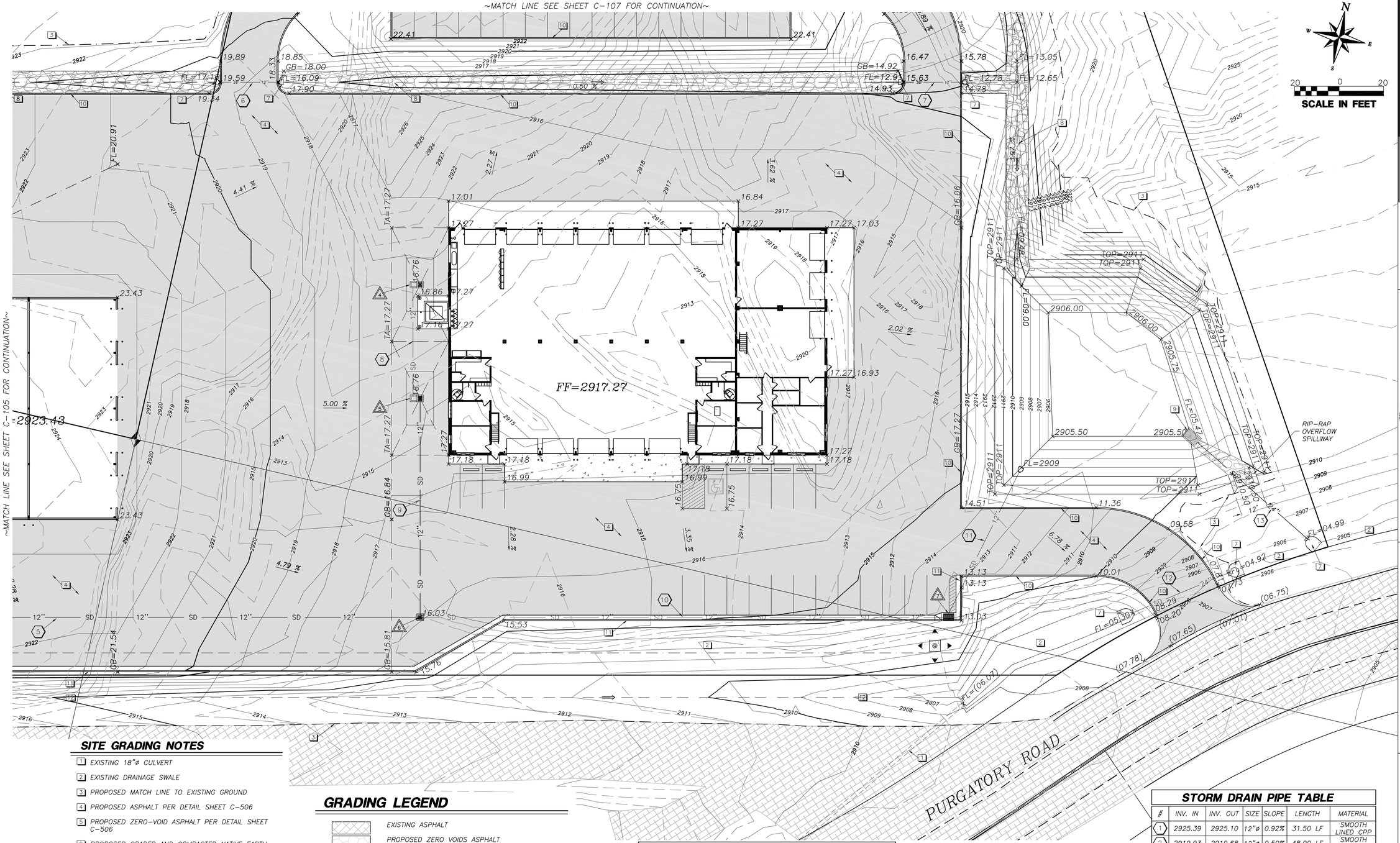
C-105



SITE GRADING NOTES

1. EXISTING 18"ø CULVERT
2. EXISTING DRAINAGE SWALE
3. PROPOSED MATCH LINE TO EXISTING GROUND
4. PROPOSED ASPHALT PER DETAIL SHEET C-506
5. PROPOSED ZERO-VOID ASPHALT PER DETAIL SHEET C-506
6. PROPOSED GRADED AND COMPACTED NATIVE EARTH
7. PROPOSED END SECTION PER DETAIL SHEET C-506
8. PROPOSED DRAINAGE DITCH PER DETAIL SHEET C-507
9. PROPOSED DETENTION POND OUTLET PER DETAIL SHEET C-508
10. PROPOSED 6" CURB FLUSH W/ ASHPHALT PER DETAIL SHEET C-506
11. PROPOSED TYPE B1 CURB & GUTTER PER UDOT DETAIL GW-2 SHEET C-503
12. PROPOSED DRAINAGE SWALE PER DETAIL C-508
13. PROPOSED FIRESTONE PONDGUARD PER DETAIL C-508
14. MONITORING JUNCTION BOX PER DETAIL C-508
15. PROPOSED 4"ø PERF. PIPE PER DETAIL C-508
16. PROPOSED TYPE M2 CURB PER DETAIL SHEET C-503

GRADING LEGEND

- EXISTING ASPHALT
- PROPOSED ZERO VOIDS ASPHALT
- PROPOSED ASPHALT
- PROPOSED RIP-RAP
- ⟹ PROPOSED DRAINAGE FLOW
- XX.XX TBC GRADE
- (XX.XX) EXISTING GRADE
- XX.XX TOP OF ASPHALT/CONCRETE
- PROPOSED GRADE BREAK

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NOTE - SEE SHEET C-103 FOR UTILITY INFORMATION AND DESIGN

STORM DRAIN PIPE TABLE

#	INV. IN	INV. OUT	SIZE	SLOPE	LENGTH	MATERIAL
1	2925.39	2925.10	12"ø	0.92%	31.50 LF	SMOOTH LINED CPP
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Project:
UDOT
HURRICANE
FACILITY
DFCM PROJECT NO.
07292900

Sheet Title:
SITE GRADING PLAN CONTINUED

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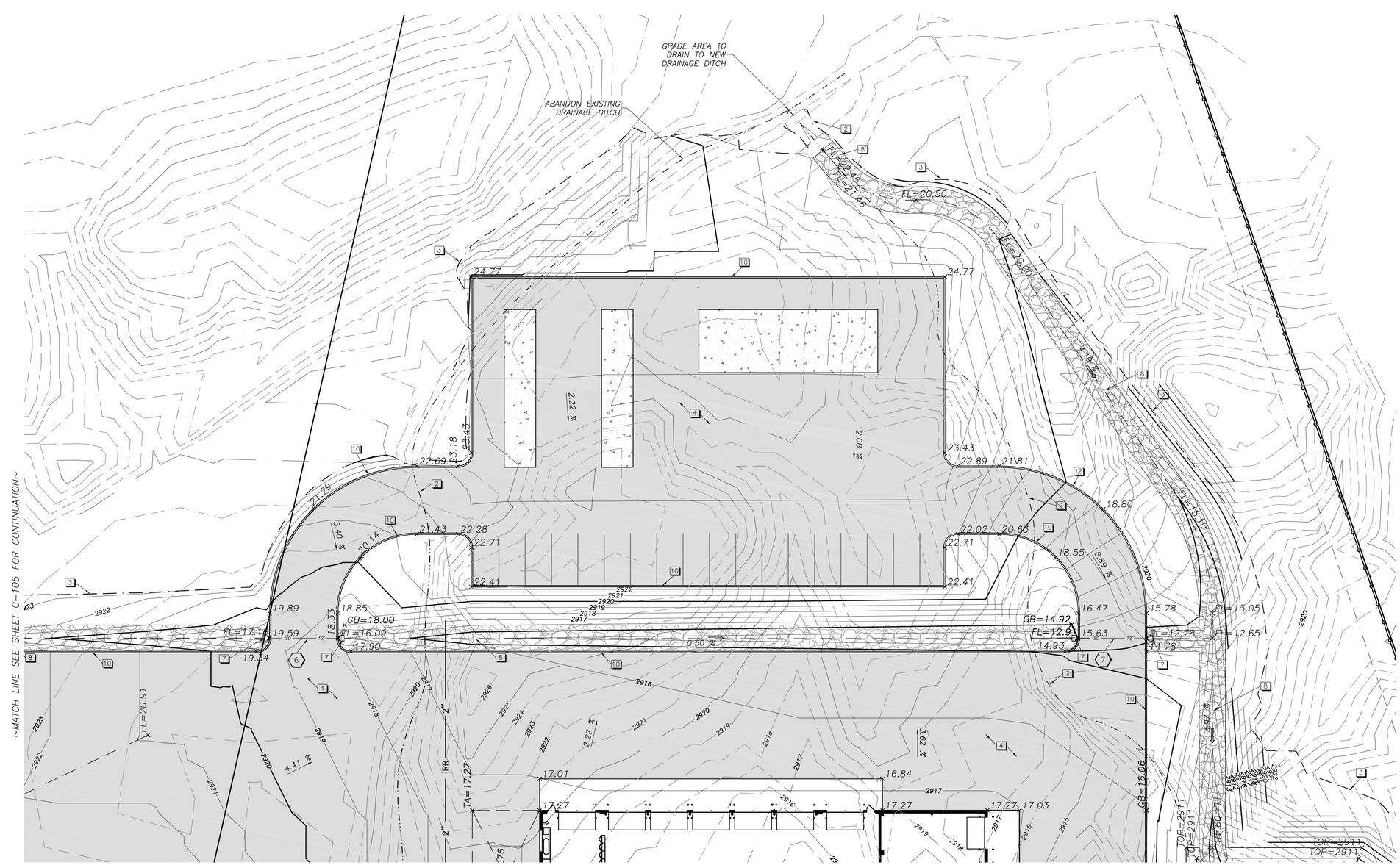

SITE GRADING NOTES

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NOTE - SEE SHEET C-104 FOR UTILITY INFORMATION AND DESIGN

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4110 State Office Building/Salt Lake City, Utah 84114/538-3018

Project: UDOT HURRICANE FACILITY DFCM PROJECT NO. 07292900

Sheet Title: SITE GRADING PLAN CONTINUED

Revisions:
1 REVISION 3/26/09

PROJECT NUMBER: 28495
DATE: MARCH 26, 2009
DRAWN BY: T.S.
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SHEET NUMBER:

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PERFORMANCE STANDARDS:
THE GENERAL REQUIREMENTS FOR EROSION CONTROL WORK SHALL BE AS FOLLOWS:
1. ANY LAND DISTURBING ACTIVITY SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO EFFECTIVELY REDUCE ACCELERATED SOIL EROSION AND RESULTING SEDIMENTATION.

2. STRUCTURAL EROSION CONTROL MEASURES INCLUDED IN THE APPROVED PLAN ARE TO BE INSTALLED PRIOR TO SOIL DISTURBANCE. INSTALLATION WILL MEET SPECIFICATIONS SHOWN ON THE DETAIL SHEET.

3. ALL LAND DISTURBING ACTIVITIES SHALL BE DESIGNED, CONSTRUCTED AND COMPLETED IN SUCH A MANNER THAT THE EXPOSURE TIME OF DISTURBED LAND SHALL BE LIMITED TO THE SHORTEST POSSIBLE PERIOD OF TIME.

4. SEDIMENT CAUSED BY ACCELERATED SOIL EROSION SHALL BE REMOVED FROM RUNOFF WATER BEFORE LEAVING THE SITE.

5. ANY TEMPORARY OR PERMANENT FACILITY DESIGNED AND CONSTRUCTED FOR THE CONVEYANCE OF WATER AROUND, THROUGH OR FROM THE LAND DISTURBING ACTIVITY SHALL BE DESIGNED TO LIMIT THE WATER FLOW TO A NON-EROSIVE VELOCITY.

6. TEMPORARY SOIL EROSION CONTROL FACILITIES SHALL BE REMOVED AND AREAS OF LAND DISTURBANCE GRADED TO FINAL GRADE

7. THE PERMITEE IS RESPONSIBLE FOR MAINTENANCE OF ALL EROSION CONTROL STRUCTURES. THESE STRUCTURES ARE TO BE INSPECTED BY THE PERMITEE WEEKLY AND AFTER EVERY PRECIPITATION EVENT TO INSURE THEIR EFFICIENCY AND TO EVALUATE MAINTENANCE NEEDS OR PER LOCAL INSPECTION REQUIREMENTS. MAINTENANCE OF THESE STRUCTURES MAY BE DIRECTED AT ANY TIME BY A STATE REPRESENTATIVE.

MANAGEMENT STRATEGIES:
1. THE STABILIZED CONSTRUCTION ENTRANCE AND SILT FENCE BARRIERS SHALL BE INSTALLED AS FIRST STEP IN THE GRADING PROCESS.

2. THE SILT FENCE SHOWN ON THE ENCLOSED EROSION CONTROL PLAN SHALL BE SECURED ACCORDING TO THE DETAILS CONTAINED ON THIS PLAN.

3. THE CONSTRUCTION SUPERINTENDENT SHALL HAVE OVERALL RESPONSIBILITY FOR PLAN IMPLEMENTATION. SUPERINTENDENT RESPONSIBLE FOR SEEING THAT APPROPRIATE CONSTRUCTION WORKERS AND SUBCONTRACTORS ARE AWARE OF ALL PROVISIONS OF THE PLAN.

4. CONTRACTOR SHALL ESTABLISH FINAL GRADE PER THE GRADING PLANS AT THE COMPLETION OF THE PROJECT.

5. CLEAN-UP:

A. TRANSPORT TRASH AND DEBRIS, AND SURPLUS AND UNACCEPTABLE SOIL MATERIALS FROM PROJECT SITE AND LEGALLY DISPOSE OF THEM.

B. REMOVE ALL TEMPORARY SHORING, BRACING, EROSION CONTROL, AND OTHER PROTECTION DEVICES WHEN NO LONGER REQUIRED BY OWNER.

GENERAL NOTES:
1. AT ALL TIMES DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREVENTING AND CONTROLLING EROSION DUE TO WIND AND RUNOFF. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR MAINTAINING EROSION CONTROL FACILITIES SHOWN.

2. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED DUE TO UNFORESEEN PROBLEMS OR IF THE PLAN DOES NOT FUNCTION AS INTENDED.

3. CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING DRAINAGE AND EROSION CONTROL FACILITIES AS REQUIRED. STREETS SHALL BE KEPT CLEAN OF DEBRIS FROM TRAFFIC FROM THIS SITE.

4. EROSION CONTROL STRUCTURES BELOW SODDED AREAS MAY BE REMOVED ONCE SOD AND FINAL LANDSCAPING IS IN PLACE. EROSION CONTROL STRUCTURES BELOW SEEDED AREAS MUST REMAIN IN PLACE UNTIL THE ENTIRE AREA HAS ESTABLISHED A MATURE COVERING OF HEALTHY VEGETATION. EROSION CONTROL IN PROPOSED PAVED AREAS SHALL REMAIN IN PLACE UNTIL PAVEMENT IS COMPLETE.

5. THIS PLAN IS ONLY TO BE USED FOR INSTALLATION OF EROSION CONTROL FACILITIES. DO NOT USE THIS PLAN FOR GRADING OR STORM SEWER CONSTRUCTION.

6. CONTRACTOR SHALL USE A STABILIZED CONSTRUCTION ENTRANCE AT ALL LOCATIONS WHERE VEHICLE WILL ENTER OR EXIT THE SITE. CONTROL FACILITIES WILL BE MAINTAINED WHILE CONSTRUCTION IS IN PROGRESS, MOVED WHEN NECESSARY, AND REMOVED WHEN THE SITE IS PAVED.

MAINTENANCE:
IN GENERAL, ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CHECKED WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL. THE FOLLOWING ITEMS WILL BE CHECKED IN PARTICULAR:

1. THE CONSTRUCTION ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING AND FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH STONE AS CONDITIONS DEMAND. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLE OR SITE ONTO ROADWAY MUST BE REMOVED IMMEDIATELY.

2. THE PERIMETER SILT FENCE BARRIERS WILL BE CHECKED REGULARLY FOR UNDERMINING.

3. GRAVEL FILTERS AND GRAVEL SOCKS WILL BE CHECKED REGULARLY FOR SEDIMENTATION BUILDUP AND CLEANED AS REQUIRED.

EROSION CONTROL STANDARD NOTES
1. THIS EROSION AND SEDIMENTATION CONTROL PLAN HAS BEEN PLACED IN THE CITY OR STATES FILE FOR THIS PROJECT AND APPEARS TO FULFILL THE CITY AND STATES EROSION CONTROL CRITERIA AND REQUIREMENTS. IT IS UNDERSTOOD THAT ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED OF THE OWNER DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT FUNCTION AS INTENDED. IF UNFORESEEN EROSION PROBLEMS DO OCCUR OR IF THE PLAN DOES NOT FUNCTION AS INTENDED, THE CITY OR STATE INSPECTOR MAY REQUIRE MODIFICATIONS, ADDITIONS, OR REPAIRS AT THE TIME OF INSPECTION.

2, THESE REQUIREMENTS SHALL BE THE OBLIGATION OF THE OWNER, SITE DEVELOPER, CONTRACTOR, AND/OR THEIR AUTHORIZED AGENTS, UNTIL SUCH TIME AS THE PLAN IS CERTIFIED AS PROPERLY COMPLETED, OR UNTIL SUCH TIME AS OTHERWISE ALLOWED BY THE CITY OR STATE TO BE VOIDED, MODIFIED, OR REPLACED.

3. THIS PLAN SHALL BE KEPT ON SITE AT ALL TIMES AND MODIFIED AS NECESSARY. THE MODIFIED (LIVING MAP) SHALL BE ACCESSIBLE TO INSPECTORS DURING WORKING HOURS. A COPY OF THE STATE SWPPP PERMIT ALONG WITH ALL INSPECTION REPORTS SHALL BE KEPT IN A BINDER AVAILABLE TO INSPECTORS DURING WORKING HOURS.

4. ANY DISCREPANCY BETWEEN THIS PLAN AND AN APPROVED STORM WATER MANAGEMENT PLAN FOR THIS SITE SHALL REQUIRE COMPLIANCE WITH THE MORE RESTRICTIVE PLAN.

5. THE OWNER, SITE DEVELOPER, CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL REMOVE ALL SEDIMENT, MUD, AND CONSTRUCTION DEBRIS THAT MAY ACCUMULATE IN THE FLOW LINES, PRIVATE PROPERTY, AND PUBLIC RIGHTS OF WAYS OF THE CITY AS A RESULT OF THIS CONSTRUCTION PROJECT. REMOVAL SHALL BE CONDUCTED WITHIN 48 HOURS.

6, THE OWNER, SITE DEVELOPER, CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL PREVENT SEDIMENT, DEBRIS, AND ALL OTHER POLLUTANTS FROM ENTERING THE STORM SEWER SYSTEM DURING ALL DEMOLITION, EXCAVATION, TRENCHING, BORING, GRADING OR OTHER CONSTRUCTION OPERATIONS THAT ARE PART OF THIS PROJECT. THE OWNER, SITE DEVELOPER, CONTRACTOR, AND/OR THEIR AUTHORIZED AGENTS SHALL BE RESPONSIBLE FOR REMEDIATION OF ANY ADVERSE IMPACTS TO ADJACENT WATERWAYS, WETLANDS, OTHER PROPERTIES, ETC., RESULTING FROM WORK DONE AS PART OF THIS PROJECT.

7. ROUGH-CUT STREETS SHALL BE MULCHED OR SIMILARLY PROTECTED WITHIN THE 30-DAY PERIOD AFTER COMPLETION OF OVERALL GRADING.

8. THE OWNER, SITE DEVELOPER, CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL PREVENT LOSS OF CUT AND FILL MATERIAL BEING TRANSPORTED TO AND FROM THE SITE BY TAKING APPROPRIATE MEASURES. ALL MUD AND SEDIMENT TRACKED ONTO PUBLIC STREETS SHALL BE CLEANED IMMEDIATELY BY OWNER, SITE DEVELOPER, CONTRACTOR, AND/OR THEIR AUTHORIZED AGENTS. STREET CLEANING INCLUDES SHOVELING AND SWEEPING ACTIVITIES. AT NO TIME SHALL SEDIMENTS BE WASHED DOWN UNPROTECTED INLETS INTO THE CITY STORM SEWER SYSTEM.

9 SOILS THAT WILL BE STOCKPILED FOR MORE THAN 30 DAYS SHALL BE MULCHED AND SEEDED WITH A TEMPORARY OR PERMANENT GRASS COVER WITHIN 14 DAYS OF STOCKPILE CONSTRUCTION.

10. IF STOCKPILES ARE LOCATED WITHIN 100 FEET OF A DRAINAGEWAY, ADDITIONAL SEDIMENT CONTROLS SUCH AS TEMPORARY DIKES OR SILT FENCE SHALL BE REQUIRED.

11. TOPSOIL SHALL BE SALVAGED AND NOT REMOVED FROM THE SITE EXCEPT AS SET FORTH IN THE APPROVED PLANS. TOPSOIL AND OVERBURDEN SHALL BE SEGREGATED AND STOCKPILED SEPARATELY. SUITABLE OVERBURDEN AND THEN TOPSOIL SHALL BE REDISTRIBUTED WITHIN THE GRADED AREA AFTER ROUGH GRADING TO PROVIDE A SUITABLE BASE FOR AREAS WHICH WILL BE VEGETATED. RUNOFF FROM STOCKPILE AREAS SHALL BE CONTROLLED TO PREVENT SEDIMENT ENTERING RECEIVING WATERS.

12. TEMPORARY SOIL STABILIZATION MEASURES SHALL BE APPLIED: (1) TO DISTURBED AREAS AND STOCKPILES WITHIN 14 DAYS AFTER FINAL GRADE IS REACHED, (2) WITHIN 14 DAYS TO DISTURBED AREAS WHICH MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 30 DAYS, AND (3) WITHIN 14 DAYS OF STOCKPILE CONSTRUCTION ON ANY STOCKPILE WHICH WILL REMAIN DORMANT FOR LONGER THAN 30 DAYS.

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Project:
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Sheet Title:
SWPP
PLAN
NOTES

Revisions:
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PROJECT NUMBER: 28495
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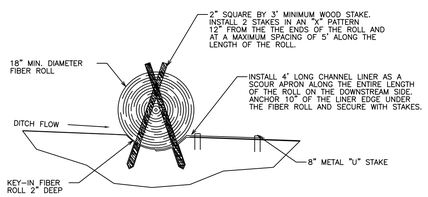
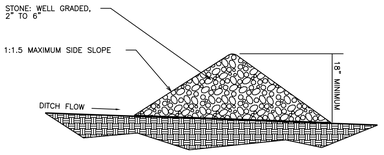
C-500

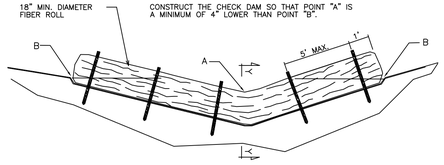
CHECK DAMS



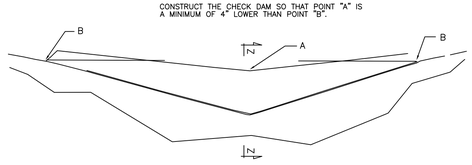
SECTION Y – Y



SECTION Z – Z



FIBER ROLL CHECK DAM



STONE CHECK DAM

MATERIAL QUANTITY CHART		
DITCH SIDE SLOPE	LENGTH OF FIBER ROLL REQUIRED FOR HALF OF DITCH	CUBIC YARDS OF STONE REQUIRED FOR HALF OF DITCH
2:1	4.5'	0.25
3:1	6'	0.35
4:1	8'	0.5
6:1	11.5'	0.7
8:1	15'	1.0
10:1	18.5'	1.2
12:1	22.5'	1.4

EXAMPLE: A CUT DITCH WITH A 6:1 FORE SLOPE AND A 2:1 BACK SLOPE WOULD REQUIRE A 16' MIN. FIBER ROLL OR 0.95 CUBIC YARDS MIN. OF STONE.

NOTES FOR CHECK DAMS:

1. PLACE A CHECK DAM AT EVERY TWO–FOOT DROP IN ELEVATION ALONG THE CUT DITCH.
2. A 9" TO 12" DIAMETER FIBER ROLL CAN BE USED IN PLACE OF THE 18" ROLL PROVIDED A ROLL IS INSTALLED AT EVERY ONE–FOOT DROP IN ELEVATION ALONG THE CUT DITCH.
3. PLACE CHECK DAMS PERPENDICULAR TO THE FLOW LINE OF THE DITCH.
4. DO NOT PLACE CHECK DAMS ACROSS NATURAL STREAM BEDS.
5. DO NOT USE STONE CHECK DAMS WITHIN CLEAR ZONES.
6. CONSTRUCT CHECK DAMS SO THAT WATER DOES NOT FLOW AROUND THE ENDS OF THE DAM.
7. REMOVE SEDIMENT AS IT ACCUMULATES AND PLACE IT IN A STABLE AREA APPROVED BY THE ENGINEER.
8. AFTER SURROUNDING AREAS HAVE BEEN SEEDED AND MULCHED, SPREAD ROCK FROM CHECK DAMS TO LINE THE CUT DITCH AND BREAK APART FIBER ROLLS AND SPREAD THE STRAW OVER SEEDED AREAS.

REVISIONS | NO. | DATE | APPR. | REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

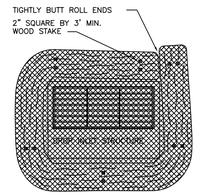
RECOMMENDED FOR APPROVAL — JAN.01.2008 DATE
CHAIRMAN, STANDARDS COMMITTEE
APPROVED — JAN.01.2008 DATE
DEPUTY DIRECTOR

STANDARD DRAWING TITLE: TEMPORARY EROSION CONTROL (CHECK DAMS)

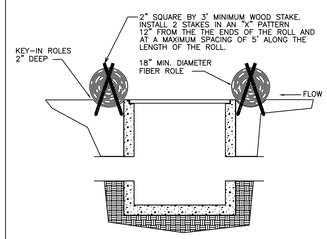
STD DWG EN 1

DROP INLET BARRIERS

FIBER ROLL DROP INLET BARRIER



PLAN VIEW

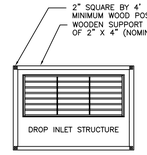


SECTION

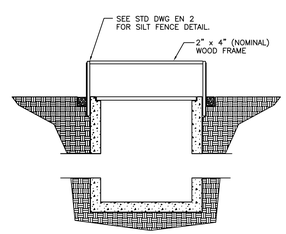
NOTES:

1. KEY–IN FIBER ROLLS 2" DEEP AROUND THE PERIMETER OF THE DROP INLET STRUCTURE AND STAKE AS SHOWN.
2. OVERLAP THE ENDS OF THE FIBER ROLL AT LEAST 18".
3. IN MEDIAN AREAS, CONSTRUCT SO THAT THE TOPS OF THE ROLLS ARE NOT HIGHER THAN THE ADJACENT ROADWAY.
4. MAINTAIN A PROPERLY FUNCTIONING FIBER LOG BARRIER THROUGHOUT CONSTRUCTION OR UNTIL DISTURBED AREAS CONTRIBUTING TO THE INLET HAVE BEEN PAVED OR VEGETATED.
5. REMOVE SEDIMENT AS IT ACCUMULATES AND PLACE IT IN A STABLE AREA APPROVED BY THE ENGINEER.

SILT FENCE DROP INLET BARRIER



PLAN VIEW

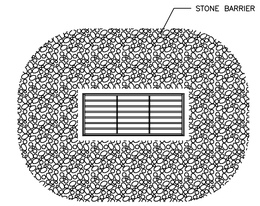


SECTION

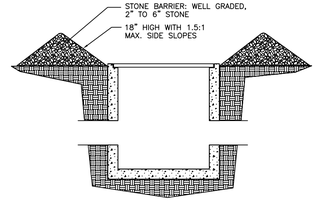
NOTES:

1. ENTRENCH THE BOTTOM 18" OF SILT FENCE SECURELY IN THE GROUND AROUND THE PERIMETER OF THE DROP INLET.
2. DRIVE POSTS AT EACH CORNER OF THE INLET STRUCTURE. IF THE DISTANCE BETWEEN CORNER POSTS EXCEEDS 4', PLACE ANOTHER POST(S) BETWEEN THEM.
3. CROSS–BRACE THE TOPS OF ALL POSTS WITH A WOODEN FRAME MADE OF 2X4 STUDS. USE NAILS OR SCREWS FOR FASTENING.
4. IN MEDIAN AREAS, CONSTRUCT SO THAT THE TOP OF THE SILT FENCE IS NOT HIGHER THAN THE ADJACENT ROADWAY.
5. MAINTAIN A PROPERLY FUNCTIONING SILT FENCE BARRIER THROUGHOUT CONSTRUCTION OR UNTIL DISTURBED AREAS CONTRIBUTING TO THE INLET HAVE BEEN PAVED OR VEGETATED.
6. REMOVE SEDIMENT AS IT ACCUMULATES AND PLACE IT IN A STABLE AREA APPROVED BY THE ENGINEER.

STONE DROP INLET BARRIER



PLAN VIEW



SECTION

NOTES:

1. PLACE STONE BARRIER AS SHOWN AROUND THE INLET OPENING.
2. DO NOT USE STONE BARRIERS WITHIN THE CLEAR ZONE. INSTEAD USE THE FIBER ROLL OR SILT FENCE BARRIER.
3. IN MEDIAN AREAS, CONSTRUCT SO THAT THE TOP OF THE STONE BARRIER IS NOT HIGHER THAN THE ADJACENT ROADWAY.
4. MAINTAIN A PROPERLY FUNCTIONING STONE BARRIER THROUGHOUT CONSTRUCTION OR UNTIL DISTURBED AREAS CONTRIBUTING TO THE INLET HAVE BEEN PAVED OR VEGETATED.
5. REMOVE SEDIMENT AS IT ACCUMULATES AND PLACE IT IN A STABLE AREA APPROVED BY THE ENGINEER.

REVISIONS | NO. | DATE | APPR. | REMARKS

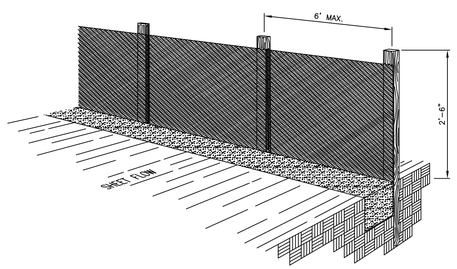
UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — JAN.01.2008 DATE
CHAIRMAN, STANDARDS COMMITTEE
APPROVED — JAN.01.2008 DATE
DEPUTY DIRECTOR

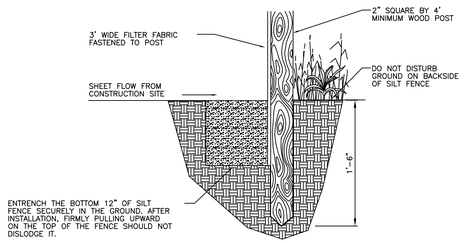
STANDARD DRAWING TITLE: TEMPORARY EROSION CONTROL (DROP INLET BARRIERS)

STD DWG EN 4

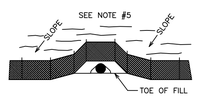
SILT FENCE



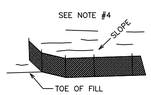
PERSPECTIVE VIEW



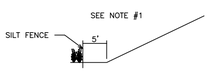
SECTION



AROUND A PIPE OUTLET



AT END OF SILT FENCE



AT TOE OF FILL SLOPE

SPLICES (TOP VIEW)

SILT FENCE INSTALLATIONS

NOTES FOR SILT FENCE:

1. WHERE PERMITTED, POSITION THE SILT FENCE 5' BEYOND THE TOE OF SLOPE.
2. TO AVOID CREATING LOW POINTS ALONG THE SILT FENCE, ALIGN THE FENCE ALONG THE CONTOUR AS MUCH AS POSSIBLE. WHERE EXCESSIVE RUNOFF WILL ACCUMULATE AT A LOW POINT, PROVIDE AN OPENING IN THE FENCE AND INSTALL A SEDIMENT TRAP.
3. WHEN EXCAVATING THE TRENCH, USE MACHINERY THAT WILL MINIMIZE DISTURBANCE.
4. TO PREVENT RUNOFF FROM FLOWING AROUND THE ENDS OF THE SILT FENCE, RUN THE ENDS OF THE FENCE UP SLOPE.
5. DO NOT PLACE SILT FENCE ACROSS POTENTIAL CONCENTRATED FLOWS (e.g., PIPE OUTLETS, DRAINAGE CHANNELS, CUT DITCHES).
6. AVOID USING SPLICES ALONG THE FENCE AS MUCH AS POSSIBLE. IF A SPLICE IS NECESSARY, BEFORE POUNDING IN THE END POSTS, OVERLAP THE END POSTS AND TWIST 180 DEGREES.
7. MAINTAIN A PROPERLY FUNCTIONING SILT FENCE THROUGHOUT THE DURATION OF THE PROJECT OR UNTIL DISTURBED AREAS HAVE BEEN VEGETATED.
8. WHEN A STORM EVENT DEPOSITS SEDIMENT BEHIND THE FENCE, REMOVE THE SEDIMENT AND PLACE IT IN A STABLE AREA APPROVED BY THE ENGINEER.
9. IN AREAS THAT HAVE BEEN SEEDED AND MULCHED, REMOVE SILT FENCE UNLESS THEY ARE PROTECTING A WETLAND OR WATER BODY.

REVISIONS | NO. | DATE | APPR. | REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

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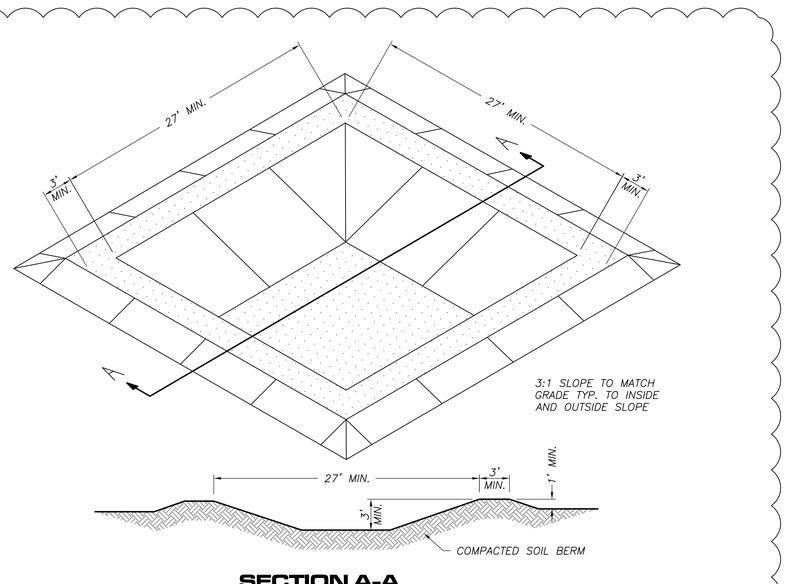
APPROVED — JAN.01.2008 DATE
DEPUTY DIRECTOR

STANDARD DRAWING TITLE: TEMPORARY EROSION CONTROL (SILT FENCE)

STD DWG EN 2



SECTION A-A
N.T.S.

PROPOSED CONCRETE WASHOUT CONTAINMENT DETAIL ⚠

InSite Engineering, P.C.
Civil Engineers - Land Surveyors - Land Planners
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OFFICE: (435) 586-8510
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jcoltons@email.com

State of Utah-Department of Administrative Services
DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT
4110 State Office Building/Salt Lake City, Utah 84114/538-3018

Project:
UDOT
HURRICANE
FACILITY
DFCM PROJECT NO.
07232900

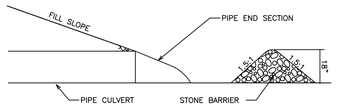
Sheet Title:
SWPP
PLAN
DETAILS

Revisions:
⚠ REVISION 3/26/09

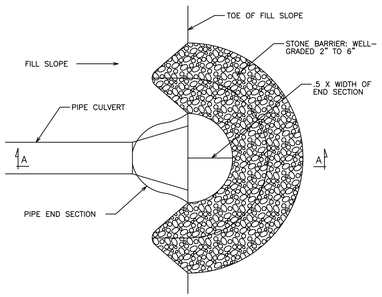
PROJECT NUMBER: 28495
DATE: MARCH 26, 2009
DRAWN BY: T.S.
CHECKED BY:
APPROVED BY:
SHEET NUMBER:

C-501

PIPE INLET BARRIER



SECTION A–A

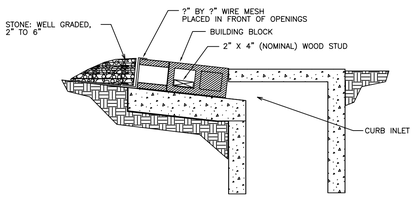


PLAN VIEW

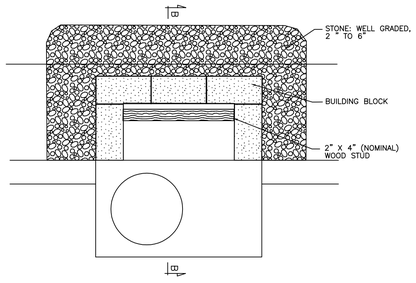
NOTES FOR PIPE INLET BARRIER:

1. PLACE PIPE INLET BARRIERS AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
2. MAINTAIN A PROPERLY FUNCTIONING SEDIMENT BARRIER THROUGHOUT CONSTRUCTION.
3. REMOVE SEDIMENT AS IT ACCUMULATES AND PLACE IT IN A STABLE AREA APPROVED BY THE ENGINEER.
4. WHEN SURROUNDING AREAS HAVE BEEN SEEDED AND MULCHED, REMOVE THE STONE BARRIER BY SPREADING THE STONE ALONG THE CUT DITCH.
5. AN 18" MINIMUM DIAMETER FIBER ROLL MAY BE USED AS A SUBSTITUTE FOR THE STONE BARRIER. STAKE AS SHOWN ON STD DRW EN 1.

CURB INLET BARRIER



SECTION B–B



PLAN VIEW

NOTES FOR CURB INLET BARRIER:

1. PLACE BUILDING BLOCKS, WIRE MESH AND STONE AS SHOWN AROUND THE CURB INLETS.
2. MAINTAIN A PROPERLY FUNCTIONING STONE BARRIER THROUGHOUT CONSTRUCTION OR UNTIL DISTURBED AREAS CONTRIBUTING TO THE INLET HAVE BEEN PAVED OR VEGETATED.
3. REMOVE SEDIMENT AS IT ACCUMULATES AND PLACE IT IN A STABLE AREA APPROVED BY THE ENGINEER.

REVISIONS

NO	DATE	APPR	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
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SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — JAN.01.2008 DATE
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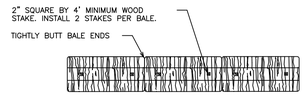
APPROVED
DEPUTY DIRECTOR

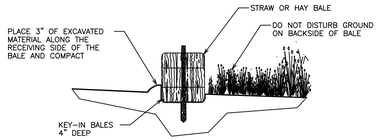
STANDARD DRAWING TITLE: TEMPORARY EROSION CONTROL (PIPE INLET AND CURB INLET BARRIERS)

STD DWG
EN 5

STRAW BALE BARRIER



PLAN VIEW



SECTION

NOTES FOR STRAW BALE BARRIER:

1. PLACE STRAW BALE BARRIERS BEFORE BEGINNING EARTH DISTURBING ACTIVITIES.
2. DO NOT PLACE STRAW BALE BARRIERS ACROSS NATURAL STREAM BEDS.
3. MAINTAIN A PROPERLY FUNCTIONING STRAW BALE BARRIER THROUGHOUT THE DURATION OF THE PROJECT OR UNTIL DISTURBED AREAS HAVE BEEN SEEDED AND MULCHED.
4. AFTER SURROUNDING AREAS HAVE BEEN STABILIZED, REMOVE BALES AND STAKES AND LEVEL AND SEED THE AREA. BALES MAY BE BUSTED APART AND SPREAD AS MULCH.

REVISIONS

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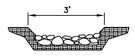
APPROVED
DEPUTY DIRECTOR

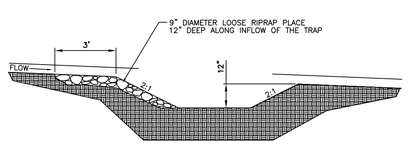
STANDARD DRAWING TITLE: TEMPORARY EROSION CONTROL (STRAW BALE BARRIER)

STD DWG
EN 7

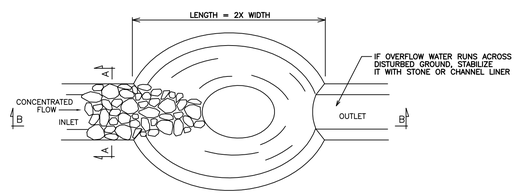
SEDIMENT TRAP



SECTION A–A



SECTION B–B

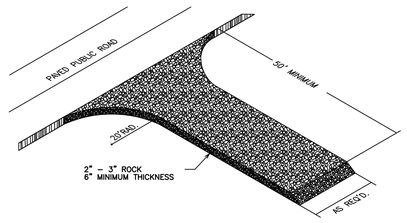


PLAN VIEW

NOTES FOR SEDIMENT TRAPS:

1. PLACE SEDIMENT TRAPS AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
2. IDENTIFY THE STORAGE CAPACITY OF EACH SEDIMENT TRAP IN THE PROJECT PLAN SET.
3. CONSTRUCT TRAP LENGTH TWICE AS LONG AS THE WIDTH.
4. MAINTAIN A PROPERLY FUNCTIONING SEDIMENT TRAP THROUGHOUT CONSTRUCTION OR UNTIL DISTURBED AREAS CONTRIBUTING TO THE BASIN HAVE BEEN PAVED OR SEEDED AND MULCHED.
5. REMOVE SEDIMENT AS IT ACCUMULATES AND PLACE IT IN A STABLE AREA APPROVED BY THE ENGINEER.

STABILIZED CONSTRUCTION ENTRANCE



NOTES FOR STABILIZED CONSTRUCTION ENTRANCE:

1. PLACE STABILIZED CONSTRUCTION ENTRANCES AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
2. MAINTAIN A PROPERLY FUNCTIONING CONSTRUCTION ENTRANCE THROUGHOUT CONSTRUCTION OR UNTIL DISTURBED AREAS HAVE BEEN PAVED.
3. DO NOT ALLOW VEHICLES LEAVING THE CONSTRUCTION SITE TO TRACK MUD ONTO PAVED ROADS.

REVISIONS

NO	DATE	APPR	REMARKS

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SALT LAKE CITY, UTAH

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APPROVED
DEPUTY DIRECTOR

STANDARD DRAWING TITLE: TEMPORARY EROSION CONTROL (SEDIMENT TRAP AND STABILIZED CONSTRUCTION ENTRANCE)

STD DWG
EN 6

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State of Utah-Department of Administrative Services
DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT
4110 State Office Building/Salt Lake City, Utah 84114/538-3018

Project:
UDOT
HURRICANE
FACILITY
DFCM PROJECT NO.
07292900

Sheet Title:
SWPP
PLAN
DETAILS
CONTINUED

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⚠ REVISION 3/26/09

PROJECT NUMBER: 28493
DATE: MARCH 26, 2009
DRAWN BY: T.S.
CHECKED BY:
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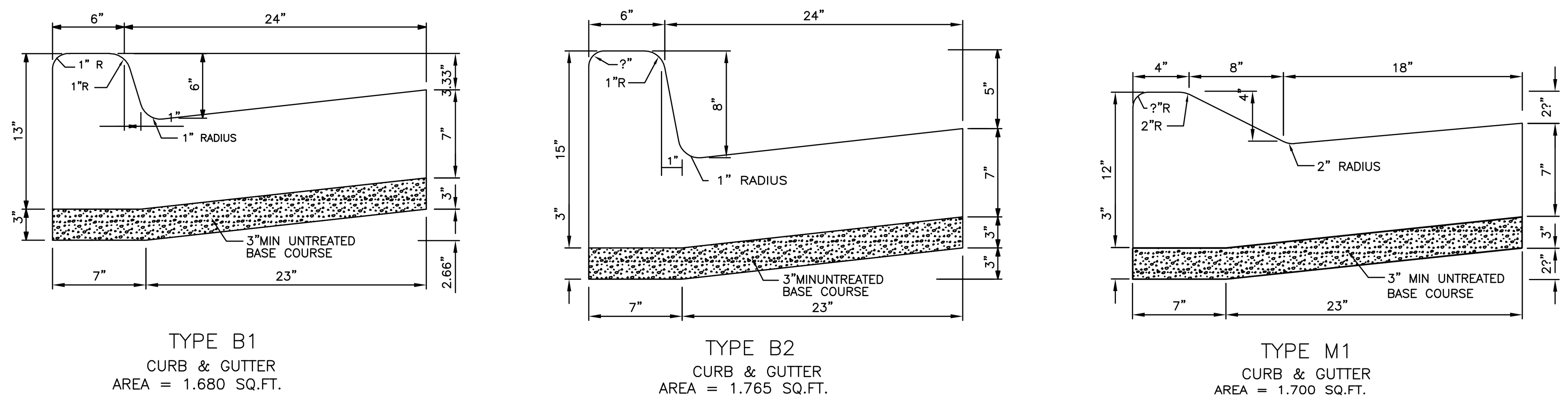
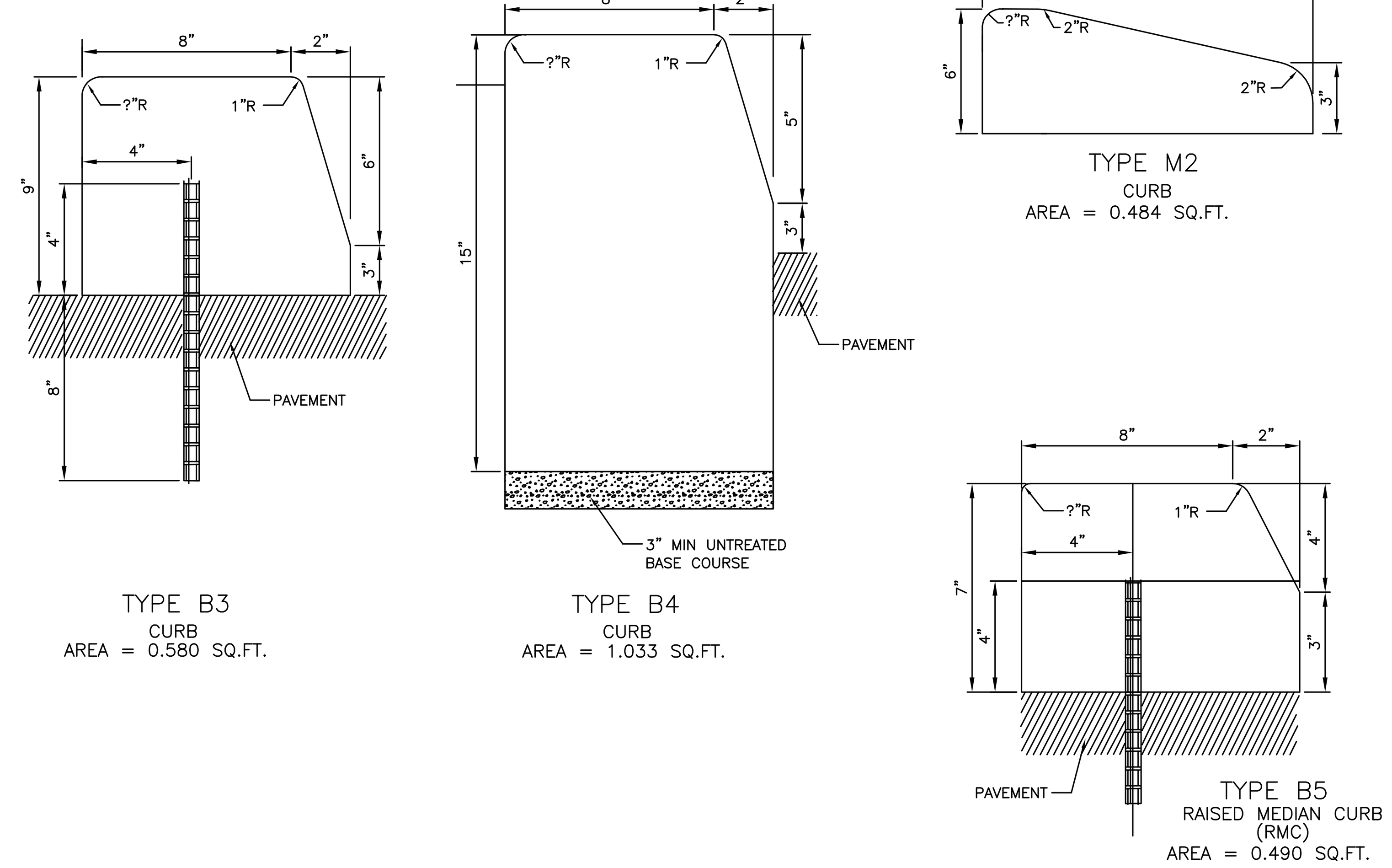
C-502



TYPE B1
CURB & GUTTER
AREA = 1.680 SQ.FT.

TYPE B2
CURB & GUTTER
AREA = 1.765 SQ.FT.

TYPE M1
CURB & GUTTER
AREA = 1.700 SQ.FT.



TYPE B3
CURB
AREA = 0.580 SQ.FT.

TYPE B4
CURB
AREA = 1.033 SQ.FT.

TYPE M2
CURB
AREA = 0.484 SQ.FT.

TYPE B5
RAISED MEDIAN CURB
(RMC)
AREA = 0.490 SQ.FT.

NOTES:

1. DRAINAGE CURBS: TYPE B1, B2 & M1
2. MOUNTABLE CURBS: TYPES M1 & M2 FOR APPLICATION REFER TO THE AASHTO POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS.
3. CURBS TYPES B1, B2, B3, B4 & B5 USED WITH DESIGN SPEED UP TO 40 MPH EXCEPT IN PREDOMINATELY URBAN OR RAPIDLY DEVELOPING RURAL AREAS WHERE CURB MAY BE USED WITH DESIGN SPEEDS UP TO 50 MPH.
4. DOWELS: ?" DEFORMED BARS ON 5' MAX.CENTERS.
5. PRECAST CURBS:
   A. MINIMUM OF 10' IN LENGTH.
   B. DOWELS AT A MINIMUM OF 3 PER 10' LENGTH.
   C. INCLUDE ADEQUATE REINFORCING STEEL TO WITH STAND HANDLING STRESSES.
6. CONCRETE CLASS AA "AE"
7. USE TYPE B4 ONLY AS BORDER CURB.
8. CURB HEIGHT IS MEASURED VERTICALLY FROM THE FLOW LINE OF THE GUTTER TO TOP BACK OF CURB.
9. REFER TO ROADWAY PLANS FOR UNTREATED BASE COURSE SIZE.
10. ADJUST CURB FACE TO 4" MAXIMUM HEIGHT WHEN USED IN CONJUNCTION WITH GUARDRAIL BARRIER.
11. REFER TO STD DWG GW 3 FOR CURB AND GUTTER AT ADA RAMPS.

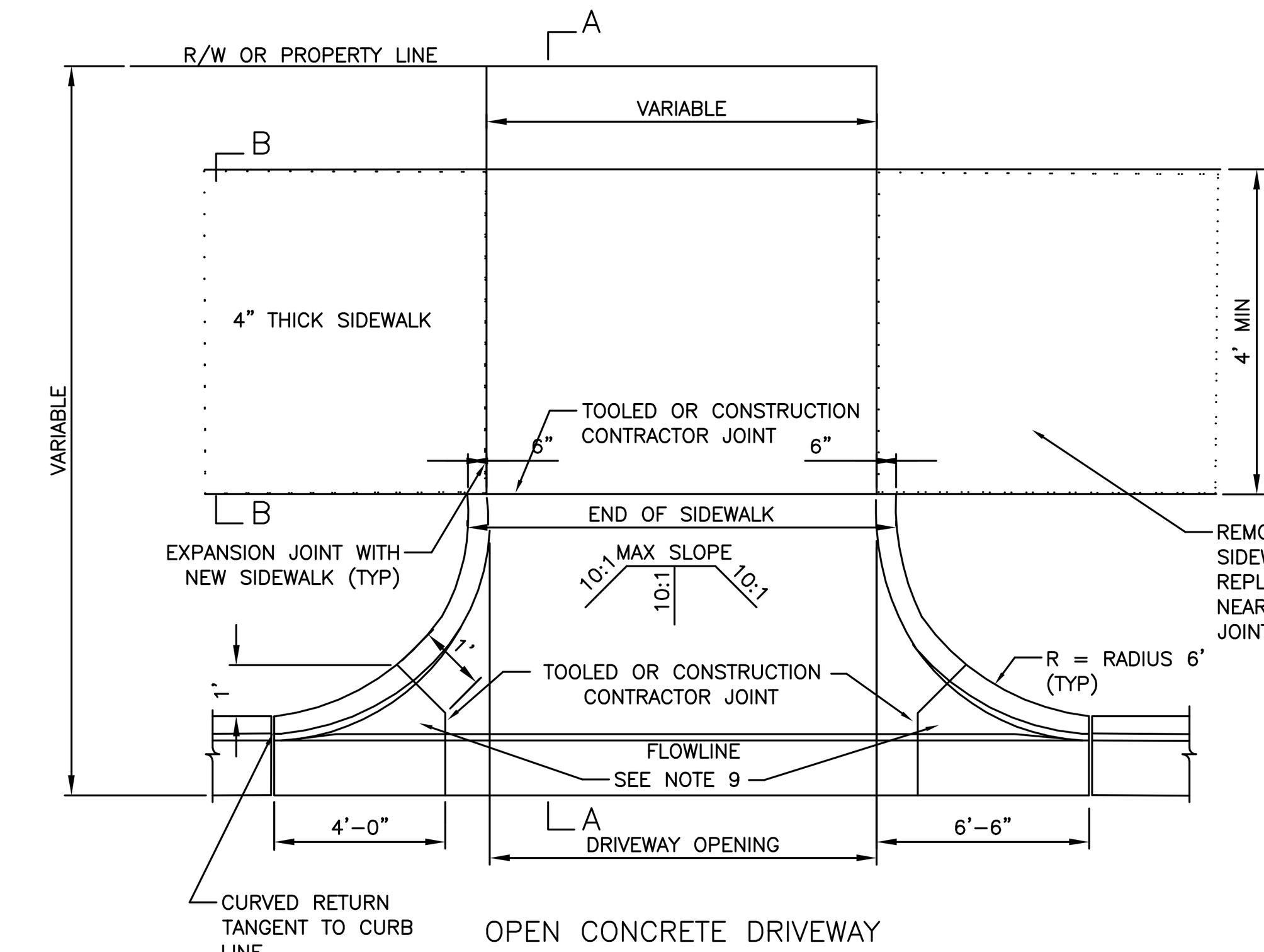
REVISIONS | NO | DATE | APPR | REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

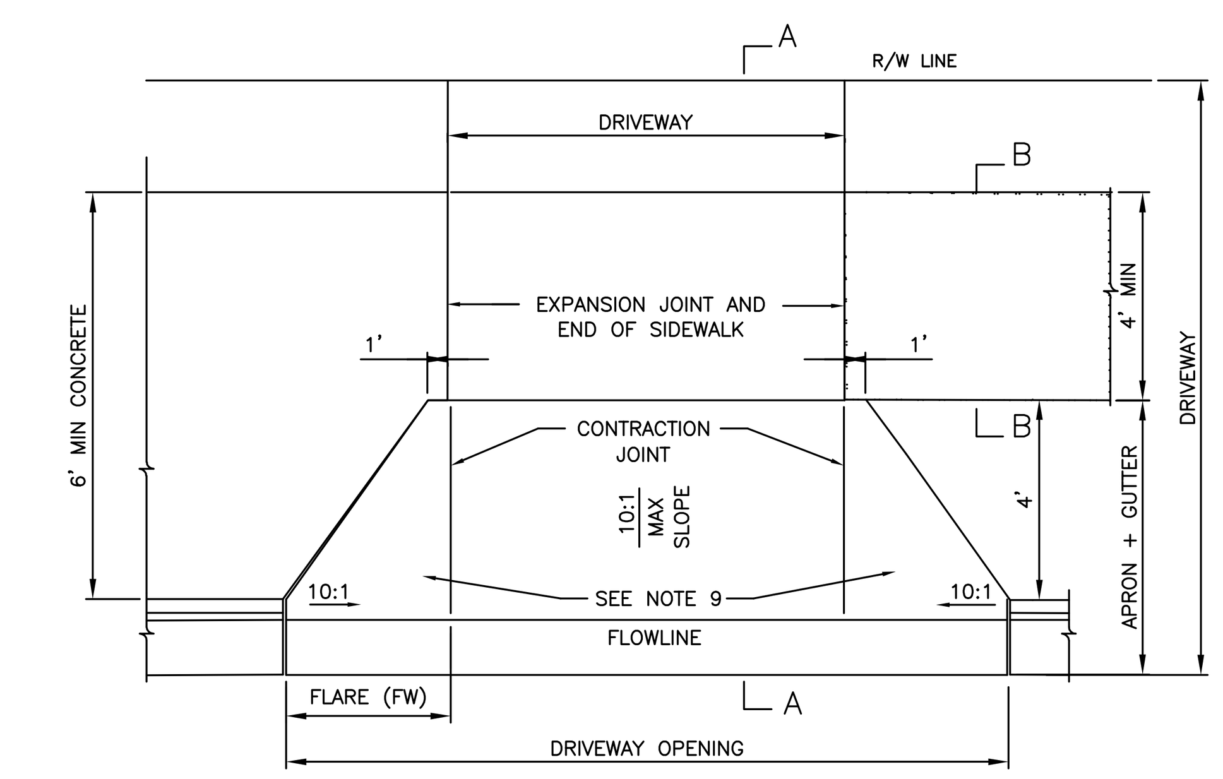
RECOMMENDED FOR APPROVAL — JAN.01.2008 DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED
DEPUTY DIRECTOR — JAN.01.2008 DATE

CONCRETE CURB AND GUTTER
STANDARD DRAWING TITLE

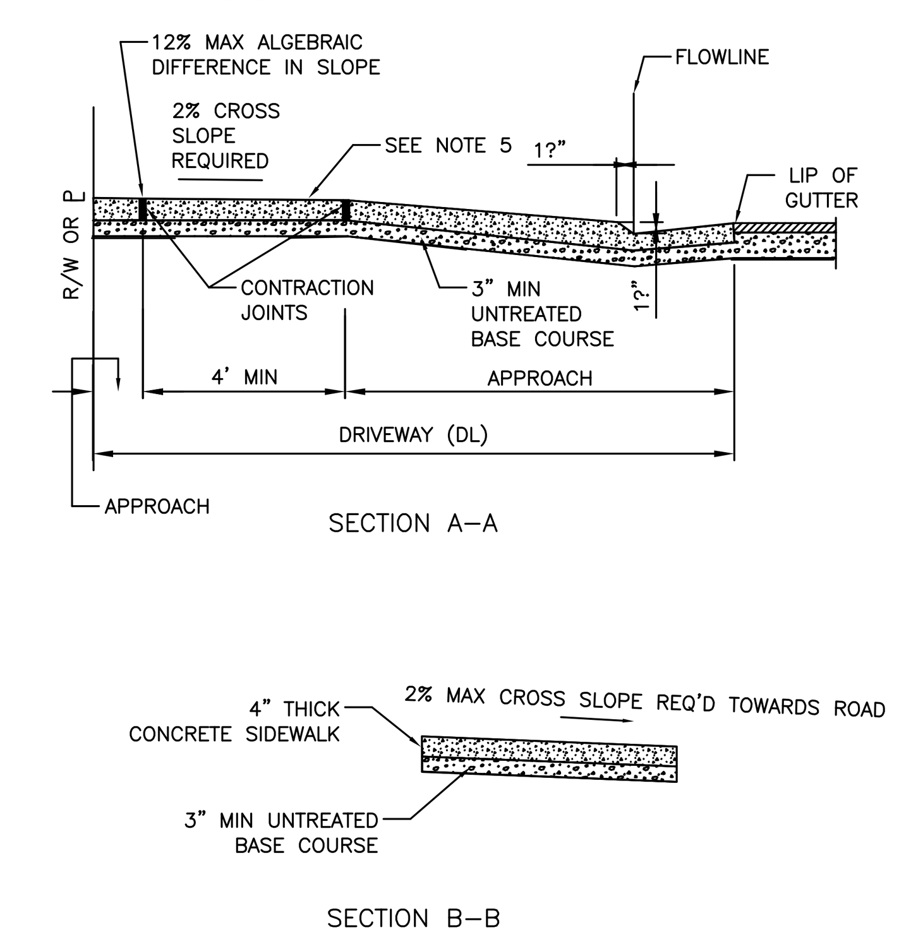
STD DWG GW 2



OPEN CONCRETE DRIVEWAY



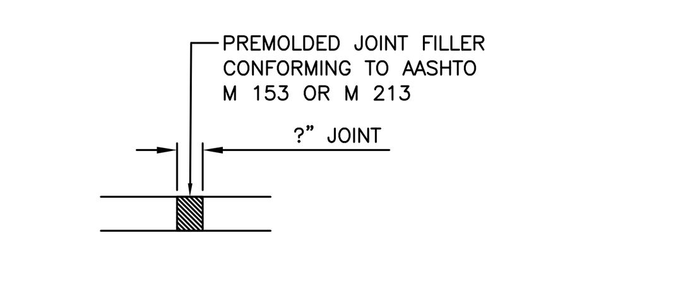
FLARED DRIVEWAY



SECTION A–A

SECTION B–B

DRIVEWAY RADIUS AND FLARE AREA CHART			
OPEN CONCRETE DRIVEWAY	ft 2	FLARED DRIVEWAY	
6' RADIUS	44.13	DISTANCE FROM BACK OF CURB TO SIDEWALK	FLARE AREA
NOTE:		4'	49 ft 2
ft 2QUANTITY = BOTH SIDES OF		6'	61 ft 2
DRIVEWAY ROUNDED TO THE		8'	89 ft 2
NEAREST 0.5 ft 2		10'	105 ft 2
		ADD (DL)(DW) FOR TOTAL QUANTITY	



EXPANSION–CONTRACTION JOINT DETAIL

NOTES:

1. DRIVEWAY DIMENSIONS (MAX.& MIN.) ARE LOCATED IN UDOT ADMINISTRATIVE RULE R930–6 ACCOMMODATION OF UTILITIES AND THE CONTROL AND PROTECTION OF STATE HIGHWAY RIGHTS OF WAY" CURRENT EDITION.
2. MAXIMUM DISTANCE BETWEEN TOOLED OR CONSTRUCTION JOINTS 10' LATERALLY AND LONGITUDINALLY SPACED EQUALLY.
3. PROVIDE EXPANSION JOINTS WHERE CONCRETE SIDEWALK BUTTS AGAINST CONCRETE DRIVEWAYS AND IN CONCRETE SIDEWALK AT 30 FEET INTERVALS.
4. SIDEWALK INSIDE THE DRIVEWAY LIMITS IS PAID AS PART OF DRIVEWAY, NOT AS PART OF SIDEWALK.
5. OPEN CONCRETE DRIVEWAY – FLARED DRIVEWAY
   A: RESIDENTIAL = 6 inch THICK, COMMERCIAL = 7 inch THICK USE THESE THICKNESSES FOR APRON, SIDEWALK, APPROACH, FLARE, AND RADII.
   B: EXTEND DRIVEWAY APPROACH TO R/W – PROPERTY LINE OR 25' WHICHEVER IS LESS.
   C: IF THE GRADES SHOWN ON THE SLOPE DETAIL CANNOT BE MET, DEPRESS THE LONGITUDINAL SLOPE OF THE SIDEWALK AT A MAXIMUM RATE OF 5 PERCENT TO MEET THE APRON – APPROACH ELEVATION.
6. USE CLASS AA(AE) CONCRETE FOR SIDEWALK AND DRIVEWAYS
7. USE UNTREATED BASE COURSE UNDER ALL SIDEWALKS AND DRIVEWAYS.
8. 10:1 = 10% SLOPE.
9. QUANTITIES FOR DRIVEWAYS INCLUDE RADIUS AND FLARES TO LIP OF GUTTER.

REVISIONS | NO | DATE | APPR | REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

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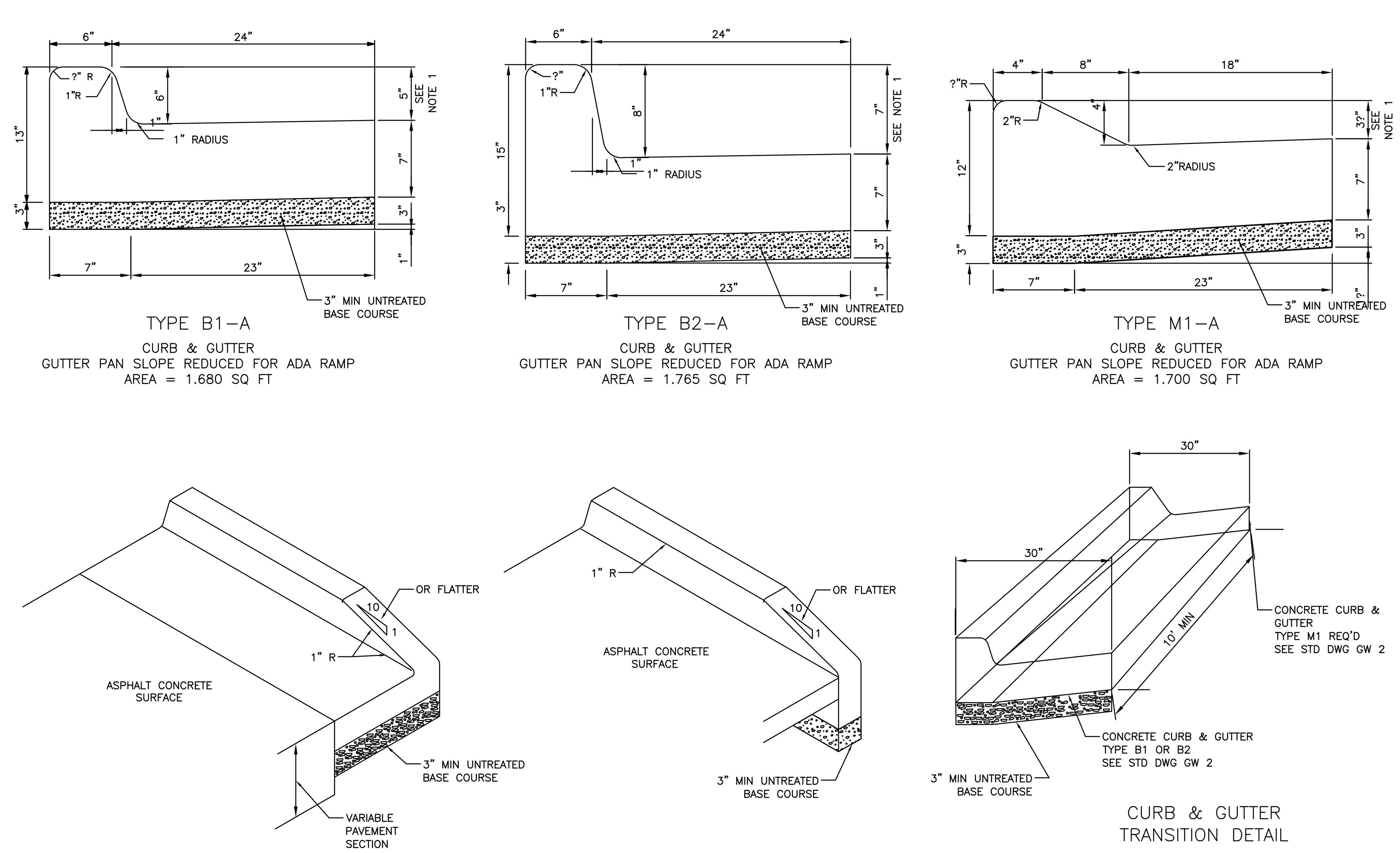
CHAIRMAN STANDARDS COMMITTEE APPROVED
DEPUTY DIRECTOR — JAN.01.2008 DATE

CONCRETE DRIVEWAYS AND SIDEWALKS
STANDARD DRAWING TITLE

STD DWG GW 4



TYPE B1–A
CURB & GUTTER
GUTTER PAN SLOPE REDUCED FOR ADA RAMP
AREA = 1.680 SQ FT

TYPE B2–A
CURB & GUTTER
GUTTER PAN SLOPE REDUCED FOR ADA RAMP
AREA = 1.765 SQ FT

TYPE M1–A
CURB & GUTTER
GUTTER PAN SLOPE REDUCED FOR ADA RAMP
AREA = 1.700 SQ FT

TYPICAL CURB & GUTTER END DETAIL

TYPICAL CURB END DETAIL

CURB & GUTTER TRANSITION DETAIL

NOTE:

1. AT ADA RAMP LOCATIONS, FLATTEN GUTTERS AS SHOWN. WHERE MORE THAN ONE RAMP WILL BE CONSTRUCTED AT A CORNER, FLATTEN GUTTER BETWEEN RAMPS AS WELL AS AT CURB RAMPS.

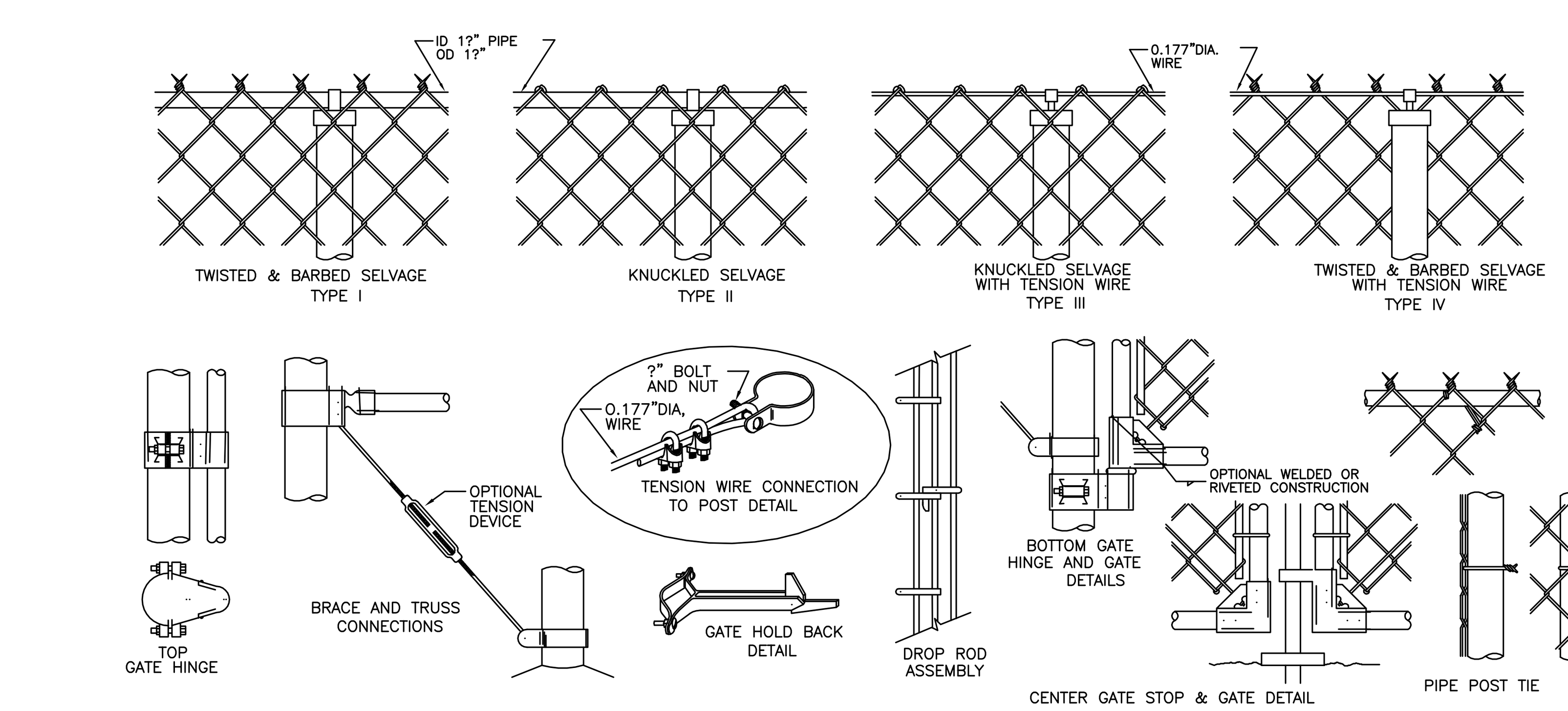
REVISIONS | NO | DATE | APPR | REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — JAN.01.2008 DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED
DEPUTY DIRECTOR — JAN.01.2008 DATE

CONCRETE CURB AND GUTTER DETAILS
STANDARD DRAWING TITLE

STD DWG GW 3



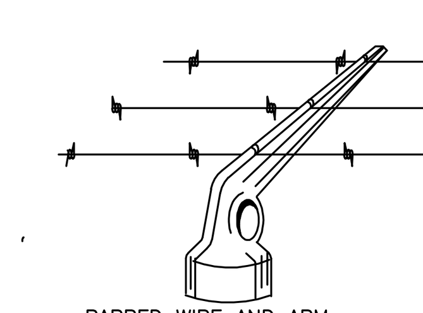
TWISTED & BARBED SELVAGE TYPE I

KNUCKLED SELVAGE TYPE II

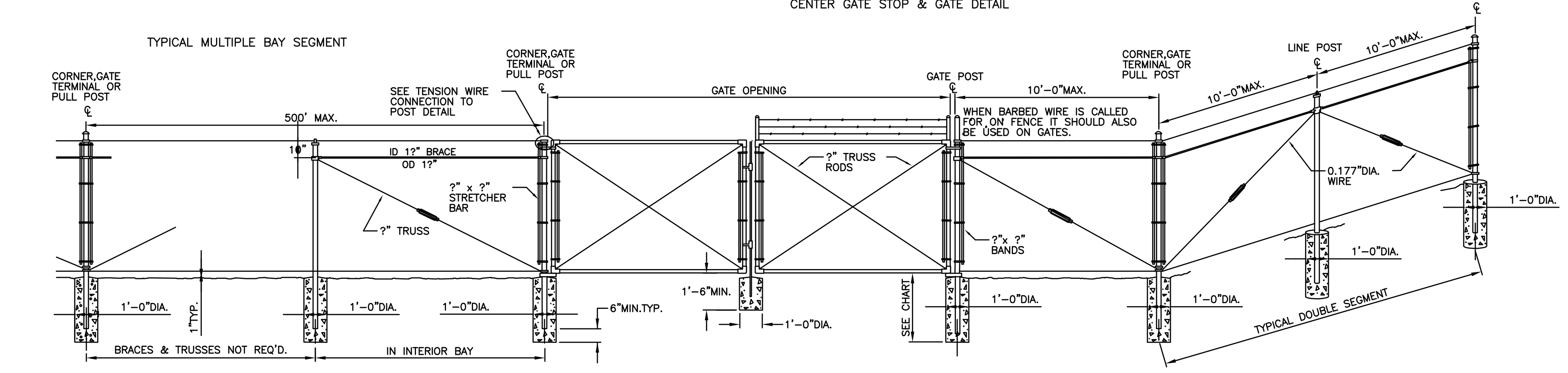
KNUCKLED SELVAGE WITH TENSION WIRE TYPE III

TWISTED & BARBED SELVAGE WITH TENSION WIRE TYPE IV

NOTES:
1. POSTS: SCHEDULE 40 PIPE. TRIPLE COATED HIGH TENSILE STEEL PIPE OR ROLL–FORMED C–SECTION OF THE SIZE SHOWN IN THE CHART AND AS DEFINED IN THE STANDARD SPECIFICATION. WEIGHT IN lb/ft WITH TOLERANCE OF 5 PERCENT. OTHER TYPES OF POSTS WITH EQUAL OR GREATER SECTION MODULUS MAY BE USED IF APPROVED, IN ADVANCE, BY THE ENGINEER.
2. FABRIC HEIGHTS LESS THAN 5': TRUSS RODS AND BRACES NOT REQUIRED.



BARBED WIRE AND ARM (WHEN REQUIRED)



TYPICAL MULTIPLE BAY SEGMENT

HEIGHT	GATE OPENING	GATE POST	GATE FRAME
UNDER 6'	SINGLE TO 6' OR DOUBLE TO 12'	2"	1"
	SINGLE OVER 6' TO 8' OR DOUBLE OVER 12' TO 16'	2?"	1?"
	SINGLE OVER 8' TO 12' OR DOUBLE 16' TO 24'	3?"	
6' AND OVER *	SINGLE TO 6' OR DOUBLE TO 12'	2?"	1?"
	SINGLE OVER 6' TO 13' OR DOUBLE OVER 12' TO 24'	3?"	
	SINGLE OVER 13' TO 18' OR DOUBLE OVER 24' TO 36'	6"	
	SINGLE OVER 18' OR DOUBLE OVER 36'	8"	

* GATES OVER 6' IN HEIGHT AND WIDER THAN 12' WILL REQUIRE 3 INDUSTRIAL PRESSED STEEL HINGES.

HEIGHT OF FABRIC	DEPTH OF POSTS	LENGTH OF END CORNER OR PULL POSTS	LENGTH OF LINE POSTS	END, CORNER & PULL POSTS: NOM. SIZE	OUTSIDE DIA.	PIPE WEIGHT ASTM A 120	PIPE WEIGHT TRIPLE COAT	LINE POST MIN.SIZE: NOM. SIZE	OUTSIDE DIA.	PIPE WEIGHT ASTM A 120	PIPE WEIGHT TRIPLE COAT	OUTSIDE DIMENSIONS C–SECTION	WT/FT
7'	3'	10'	9'–8"	2?"	2.875"	5.79	4.64	2"	2.375"	3.65	3.11	1.875 x 1.625	2.28
6'	3'	9'	8'–8"	2"	2.375"	3.65	3.11	1?"	1.900"	2.72	2.23	1.875 x 1.625	1.85
5'	3'	8'	7'–8"	2"	2.375"	3.65	3.11	1?"	1.900"	2.72	2.23	1.875 x 1.625	1.85
4'	2'	6'	5'–8"	2"	2.375"	3.65	3.11	1?"	1.900"	2.72	2.23	1.875 x 1.625	1.85
3'	2'	5'	4'–8"	2"	2.375"	3.65	3.11	1?"	1.900"	2.72	2.23	1.875 x 1.625	1.85

REVISIONS | NO. | DATE | APPR. | REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — JAN.01.2008 DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED
DEPUTY DIRECTOR — JAN.01.2008 DATE

CHAIN LINK FENCE
STANDARD DRAWING TITLE

STD DWG FG 6

SARGENT DESIGN GROUP
ARCHITECTURE | PLANNING
36 NORTH 300 WEST, SUITE B
CEDAR CITY, UTAH 84720
OFFICE: (435) 586-8510
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State of Utah–Department of Administrative Services
DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT
4110 State Office Building/Salt Lake City, Utah 84114/538–3018

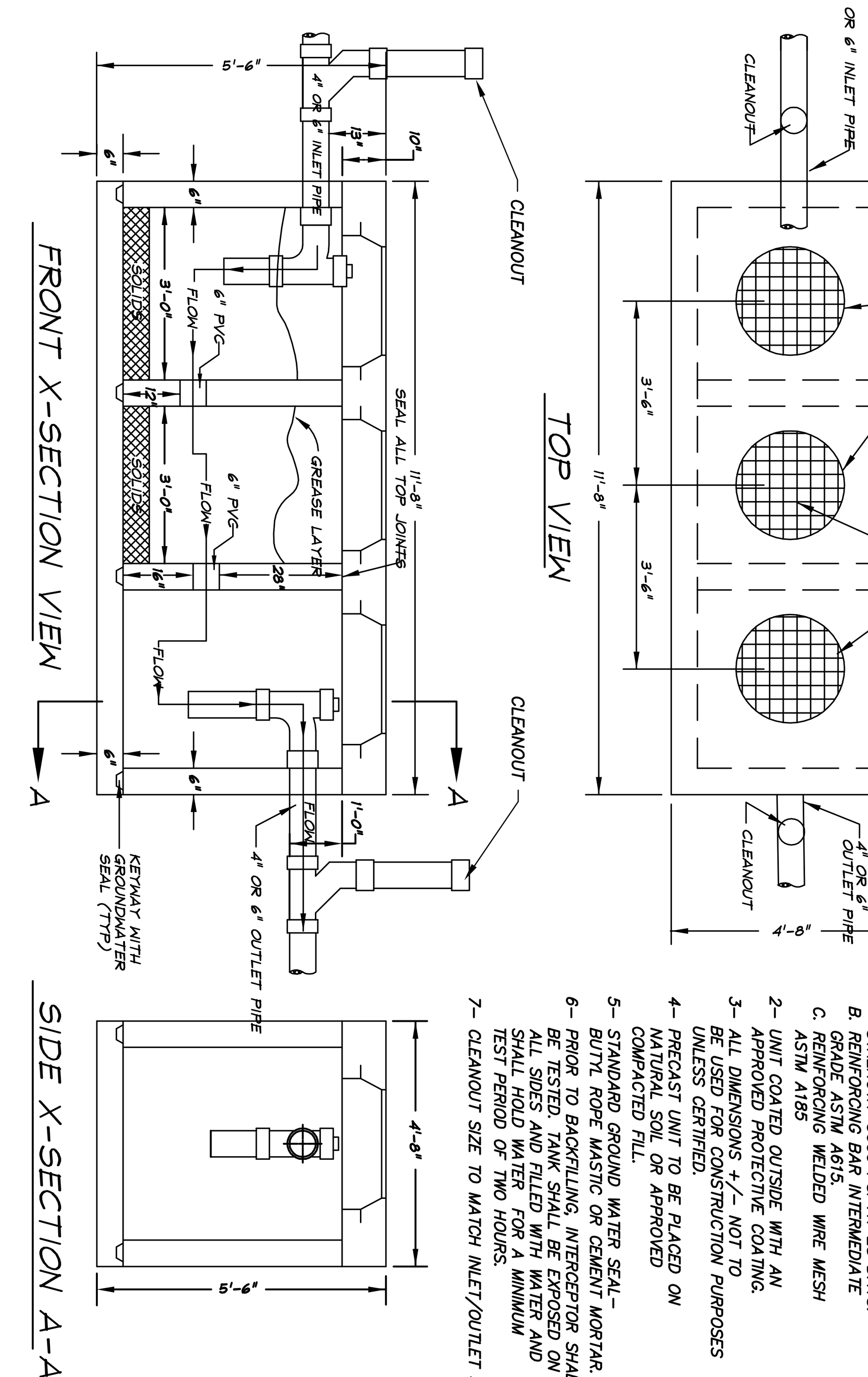
Project:
UDOT HURRICANE FACILITY
DFCM PROJECT NO. 07292900

Sheet Title:
UDOT DETAILS

Revisions:
⚠ REVISION 3/26/09

PROJECT NUMBER: 28495
DATE: MARCH 26, 2009
DRAWN BY: T.S.
CHECKED BY:
APPROVED BY:
SHEET NUMBER:

C-503



NOTES:

1– MATERIAL SPEC'S:
A. CONCRETE PORTLAND CEMENT TYPE II. MINIMUM COMPRESSIVE STRENGTH=3000 PSI AT 28 DAYS.
B. REINFORCING BAR INTERMEDIATE GRADE ASTM A615.
C. REINFORCING WELDED WIRE MESH ASTM A185

2– UNIT COATED OUTSIDE WITH AN APPROVED PROTECTIVE COATING.

3– ALL DIMENSIONS +/– NOT TO BE USED FOR CONSTRUCTION PURPOSES UNLESS CERTIFIED.

4– PRECAST UNIT TO BE PLACED ON NATURAL SOIL OR APPROVED COMPACTED FILL.

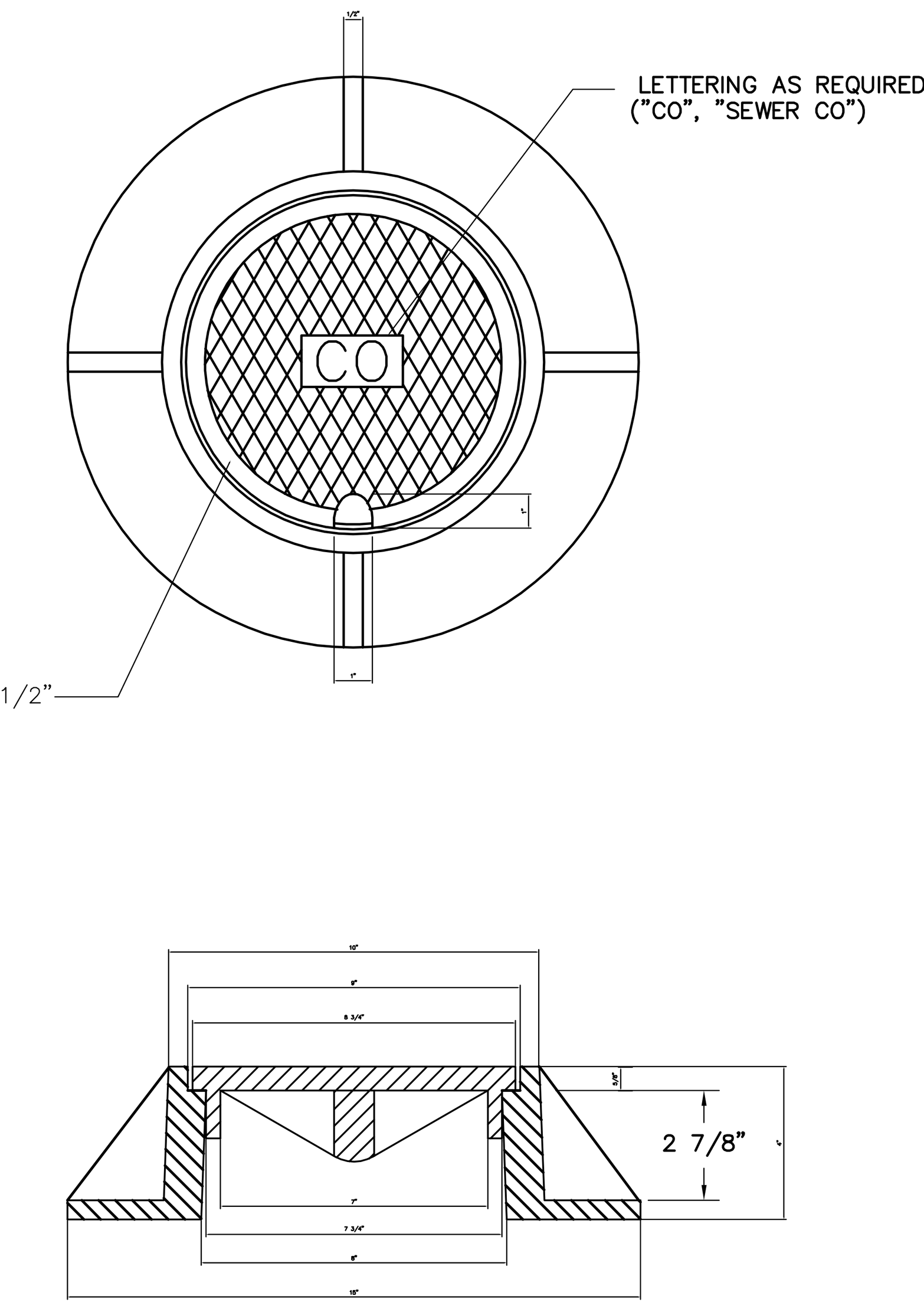
5– STANDARD GROUND WATER SEAL– BUTYL ROPE MASTIC OR CEMENT MORTAR.

6– PRIOR TO BACKFILLING, INTERCEPTOR SHALL BE TESTED. TANK SHALL BE EXPOSED ON ALL SIDES AND FILLED WITH WATER AND SHALL HOLD WATER FOR A MINIMUM TEST PERIOD OF TWO HOURS.

7– CLEANOUT SIZE TO MATCH INLET/OUTLET SIZE.

TOWN OF HURRICANE

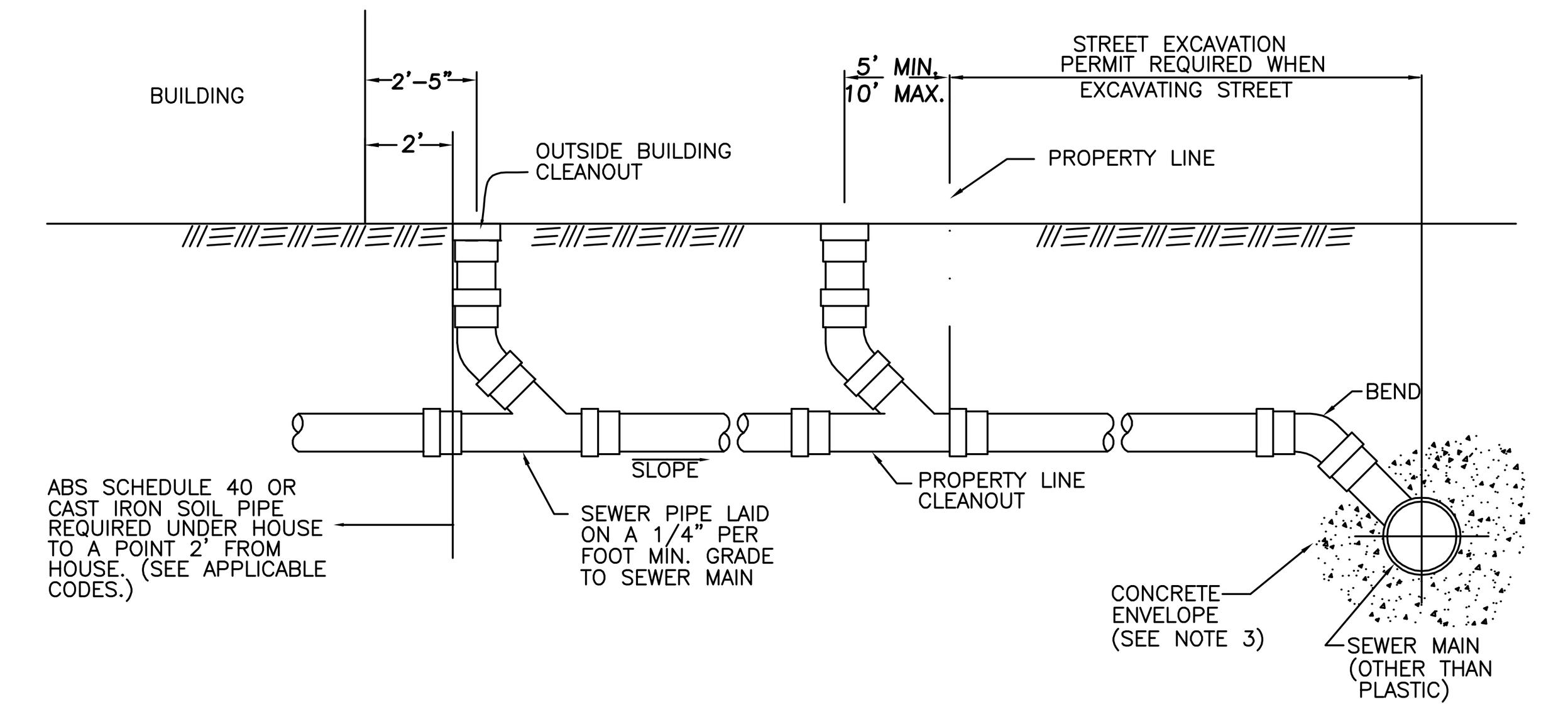
REVISIONS				STANDARD DWG. NO.	
DATE	DESCRIPTION	BY	GREASE/SAND INTERCEPTOR DETAILS	234	1 OF 1
				APPROVED:	
				DATE:	BY: LBB



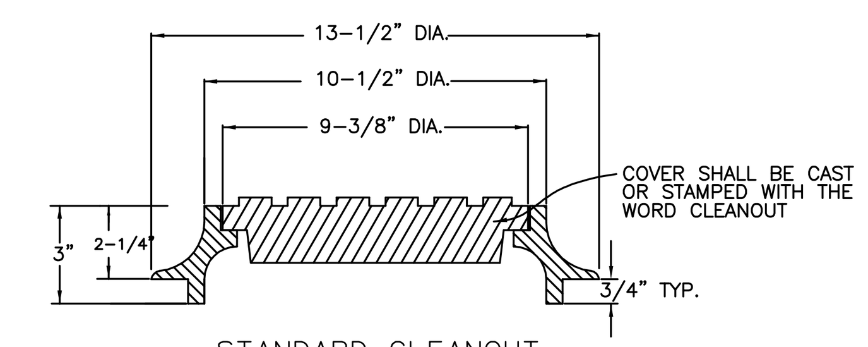
NOTES:
1– MATERIAL SHALL BE CAST IRON ASTM A48, CL30
2– H-20 RATING

TOWN OF HURRICANE

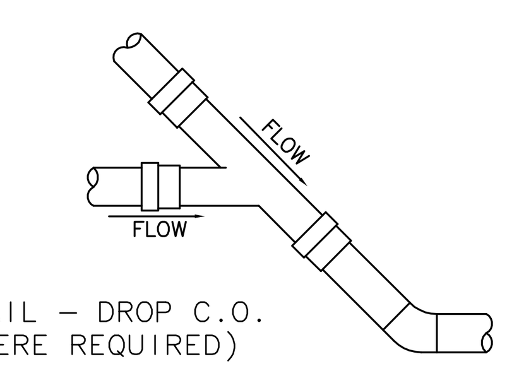
REVISIONS				STANDARD DWG. NO.	
DATE	DESCRIPTION	BY	(OPTIONAL) SEWER CLEANOUT COVER DETAIL	233	1 OF 1
				APPROVED:	
				DATE:	BY: LBB



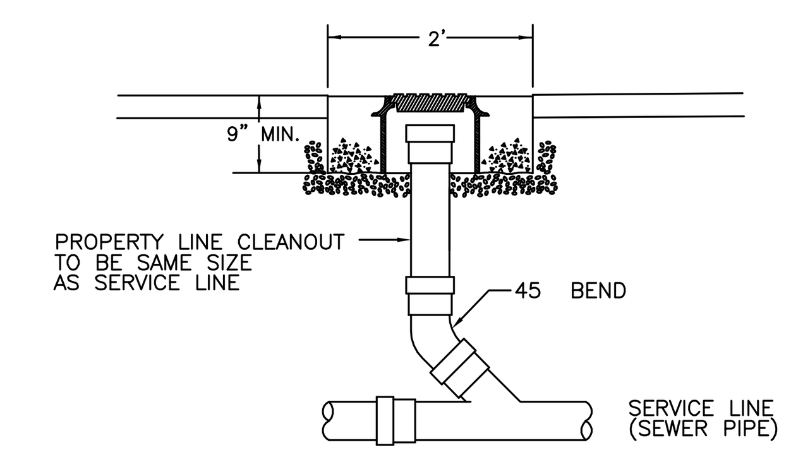
NOTES:
1– PROPERTY LINE AND OUTSIDE BUILDING CLEANOUTS ARE REQUIRED AS SHOWN.
2– CLEANOUT REQUIRED AT 100' MAX. SPACING (STRAIGHT RUNS) AND FOR EACH AGGREGATE CHANGE IN DIRECTION, WHERE TOTAL AGGREGATE CHANGE EXCEEDS 135 DEGREES.
3– ALL LATERALS CUT INTO EXISTING MAINS SHALL BE ADAPTED WITH SADDLES. WHERE SADDLES ARE NOT WATER TIGHT, A CONCRETE ENVELOPE SHALL BE REQUIRED. LATERALS SHALL NOT PROTRUDE INTO SEWER MAINS.
4– ALL CLEANOUTS LOCATED IN DRIVEWAYS, WALKWAYS OR OTHER AREAS SUBJECT TO VEHICLE OR PEDESTRIAN TRAFFIC SHALL HAVE A CAST IRON RING AND COVER OR OTHER APPROVED PROTECTIVE DEVICE WITH CONCRETE COLLAR.
5– FOR COMMERCIAL APPLICATION CONTACT WASTE WATER DIVISION.
6– NO BRASS CLEAN-OUT CAPS ALLOWED OUTSIDE.



STANDARD CLEANOUT RING & LID (H-20 RATING)



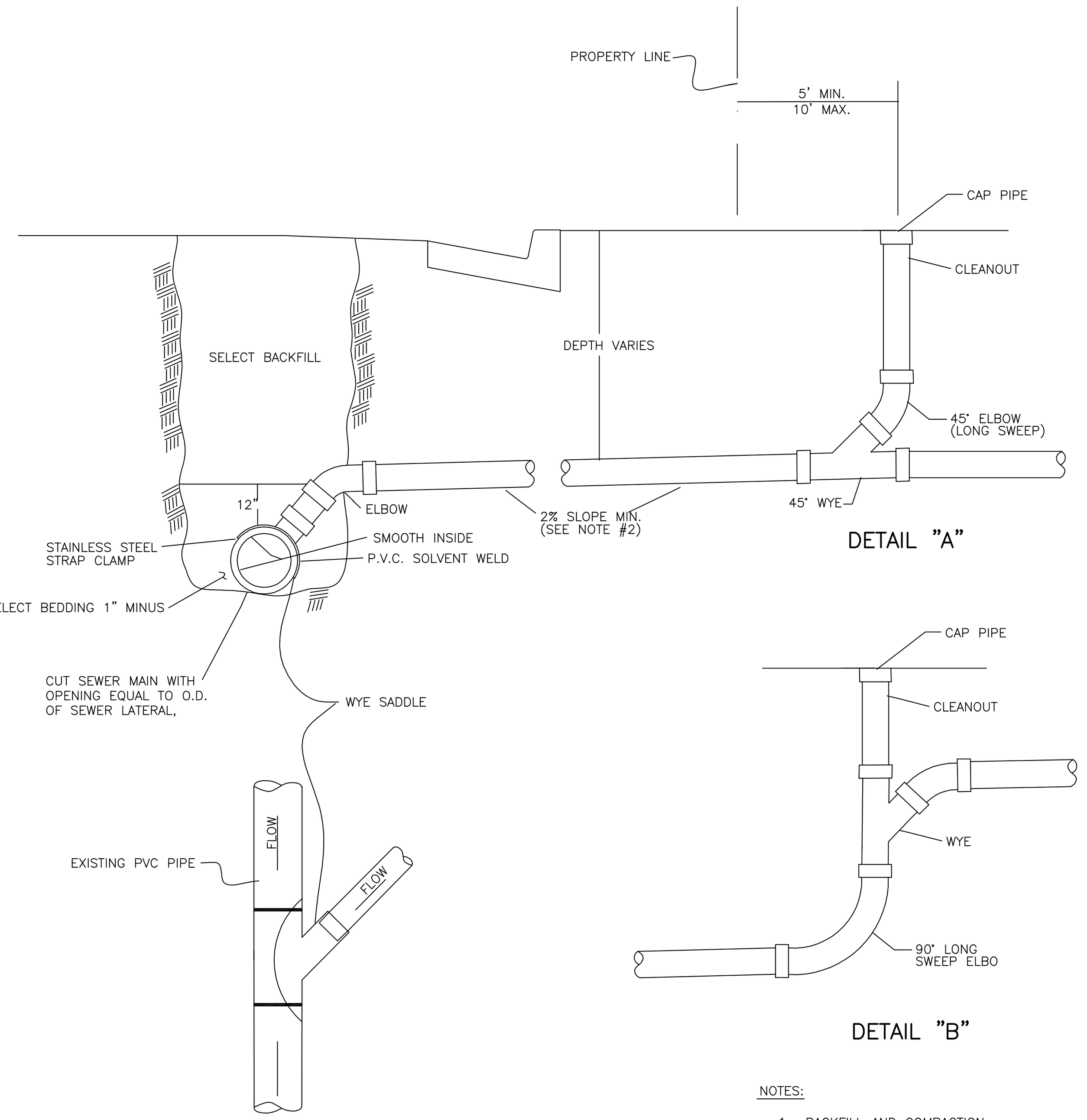
DETAIL – DROP C.O. (WHERE REQUIRED)



CLEANOUT DETAIL B

CITY OF HURRICANE ENGINEERING DEPARTMENT

REVISIONS				STANDARD DWG. NO.	
DATE	DESCRIPTION	BY	TYPICAL SEWER CONNECTION DETAILS	230	1 OF 1
7-2004	ADDED NOTE 6	LBB		APPROVED:	
				DATE:	BY: LBB



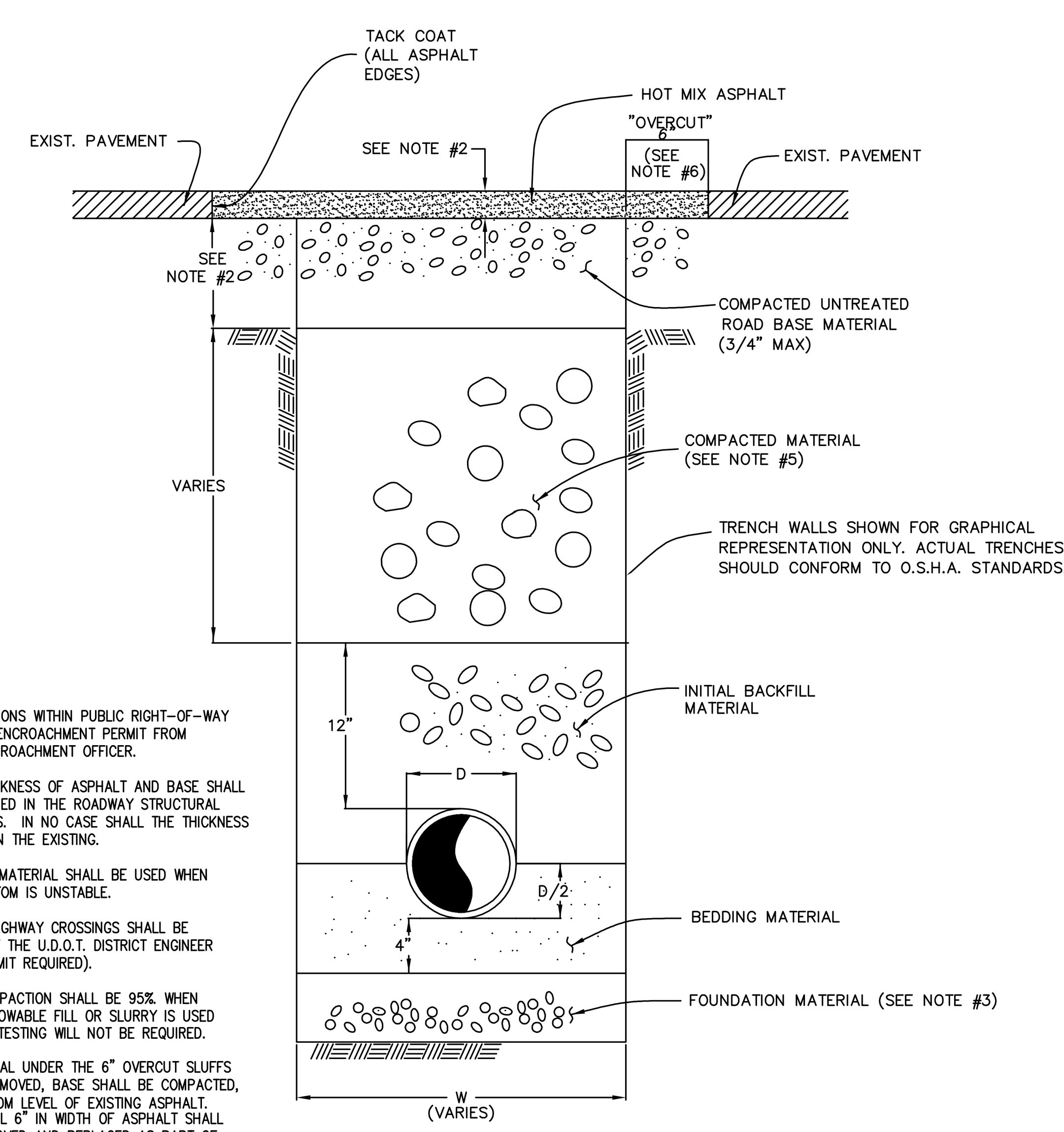
DETAIL "A"

DETAIL "B"

NOTES:
1– BACKFILL AND COMPACTION REQUIREMENTS SHALL CONFORM TO CITY STANDARD SPECIFICATIONS. SPECIFICATIONS.
2– 4" DIAMETER–2% MINIMUM. 6" DIAMETER– 1% MINIMUM.
3– CLEANOUT DIAMETER TO BE SAME SIZE AS LATERAL.
4– INSTALL WYE SADDLE PER MANUFACTURER'S RECOMMENDATIONS.
5– PIPE LAID WITH BELL OR COLLARD ENDS UP-GRADE.

CITY OF HURRICANE ENGINEERING DEPARTMENT

REVISIONS				STANDARD DWG. NO.	
DATE	DESCRIPTION	BY	P.V.C. SERVICE CONNECTION EXISTING P.V.C. SEWER MAINS	231	1 OF 1
7-2004	ADDED NOTE 5/DETAIL "B"	LBB		APPROVED:	
				DATE:	BY: LBB



NOTES:
1– ALL EXCAVATIONS WITHIN PUBLIC RIGHT-OF-WAY REQUIRE AN ENCROACHMENT PERMIT FROM THE CITY ENCROACHMENT OFFICER.
2– MINIMUM THICKNESS OF ASPHALT AND BASE SHALL BE AS OUTLINED IN THE ROADWAY STRUCTURAL REQUIREMENTS. IN NO CASE SHALL THE THICKNESS BE LESS THAN THE EXISTING.
3– FOUNDATION MATERIAL SHALL BE USED WHEN TRENCH BOTTOM IS UNSTABLE.
4– ALL STATE HIGHWAY CROSSINGS SHALL BE APPROVED BY THE U.D.O.T. DISTRICT ENGINEER (U.D.O.T. PERMIT REQUIRED).
5– MINIMUM COMPACTION SHALL BE 95%. WHEN APPROVED FLOWABLE FILL OR SLURRY IS USED COMPACTION TESTING WILL NOT BE REQUIRED.
6– WHEN MATERIAL UNDER THE 6" OVERCUT SLUFFS OFF OR IS REMOVED, BASE SHALL BE COMPACTED, TO THE BOTTOM LEVEL OF EXISTING ASPHALT. AN ADDITIONAL 6" IN WIDTH OF ASPHALT SHALL BE CUT, REMOVED AND REPLACED AS PART OF THE OVERALL PATCH.
7– WHERE ROAD SECTION HAS A DESIGNED GRANULAR SUB-BASE, IT SHALL BE REPLACED IN KIND OR WITH ROAD BASE GRAVEL.
8– IN GENERAL, STREET SURFACES LESS THAN 24 MONTHS OLD WILL NOT BE CUT ! IF A CUT MUST BE MADE, ADDITIONAL, STRICTER REQUIREMENTS MAY BE INVOKED. SEE ENCROACHMENT OFFICER.
9– 24 HOUR NOTICE REQUIRED ON ALL INSPECTIONS.
10– ALL TRENCH BACKFILL SHALL MEET MIN. COMPACTION REQUIREMENTS.
11– EXCLUDING EMERGENCY CLOSURES ALL ROAD CLOSURES AND DETOURS REQUIRE 48 HOURS PRIOR NOTICE.

CITY OF HURRICANE

REVISIONS				STANDARD DWG. NO.	
DATE	DESCRIPTION	BY	TRENCH BACKFILL AND REPAIR DETAIL	170	1 OF 1
				APPROVED:	
				DATE:	BY: LBB

SARGENT DESIGN GROUP
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State of Utah–Department of Administrative Services
DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT
4110 State Office Building/Salt Lake City, Utah 84114/538-3018

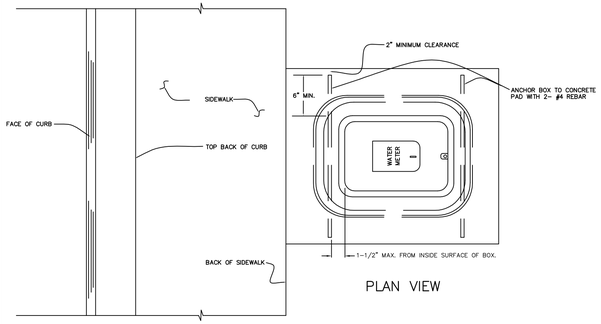
Project:
UDOT
HURRICANE
FACILITY
DFCM PROJECT NO.
07292900

Sheet Title:
HURRICANE
DETAILS A

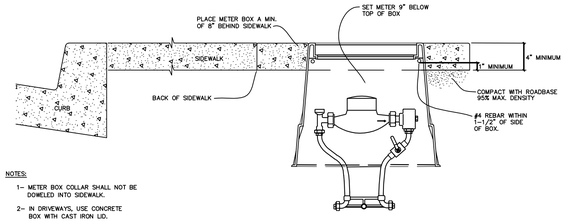
Revisions:
⚠ REVISION 3/26/09

PROJECT NUMBER: 28493
DATE: MARCH 26, 2009
DRAWN BY: T.S.
CHECKED BY:
APPROVED BY:
SHEET NUMBER:

C-504



PLAN VIEW



NOTES:

1- METER BOX COLLAR SHALL NOT BE DOWELED INTO SIDEWALK.

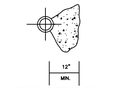
2- IN DRIVEWAYS, USE CONCRETE BOX WITH CAST IRON LID.

SECTION

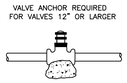
TOWN OF HURRICANE			
REVISIONS			STANDARD DWG. NO.
DATE	DESCRIPTION	BY	300 1 OF 1
			APPROVED:
			DATE: BY: LBB
WATER METER BOX DETAILS			

THRUST BLOCK BEARING AREA IN SQUARE FEET								
PIPE SIZE	CONDITION							
	I	II	III	IV	V	VI	VII	VIII
4"	2.6	3.3	2.6	1.3	1.3	2.0	3.3	2.6
6"	4.6	6.5	3.9	2.0	2.6	3.3	6.5	4.6
8"	7.8	11.0	5.9	3.3	3.9	5.9	11.0	7.8
10"	12.4	17.5	9.8	5.2	6.5	9.1	17.5	12.4
12"	17.5	24.8	13.6	7.8	9.1	12.3	24.8	17.5
14"	24.0	33.8	18.2	9.7	12.3	16.9	33.8	24.0
16"	31.1	44.0	23.6	12.7	15.5	23.2	44.0	31.1

1. CALCULATED ON 225 LB. TEST PRESSURE & ALLOWABLE BEARING PRESSURE OF 2000 LBS. PER SQUARE FOOT.
2. IN POOR SOILS SPECIAL DESIGN IS REQUIRED.
3. CONCRETE SHALL BE CLASS "C" OR BETTER.
4. ALL THRUST BLOCK BEARING FACES SHALL BE POURED AGAINST UNDISTURBED SOIL OR APPROVED COMPACTED BACKFILL.
5. PRIOR APPROVAL FROM THE WATER DEPARTMENT REQUIRED FOR USE OF CONCRETE THRUST BLOCKS.

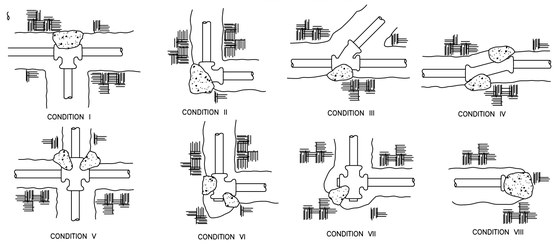


TYPICAL SECTION THRU THRUST BLOCKS

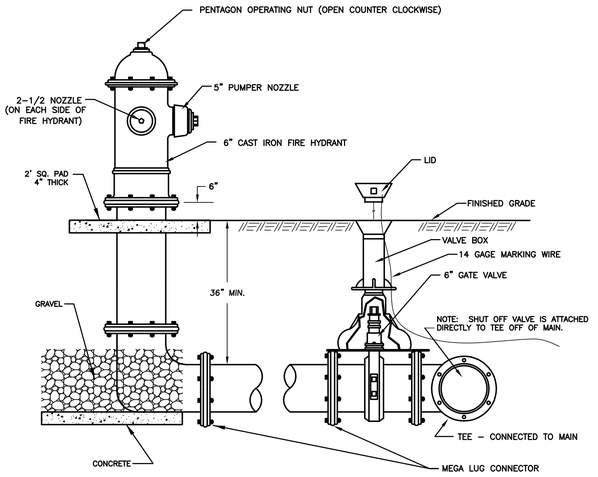


VALVE ANCHOR REQUIRED FOR VALVES 12" OR LARGER

THRUST BLOCKING



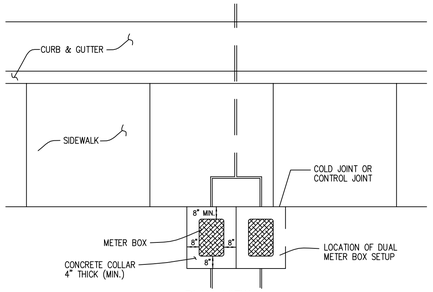
CITY OF HURRICANE			
REVISIONS			STANDARD DWG. NO.
DATE	DESCRIPTION	BY	306 1 OF 1
			APPROVED:
			DATE: BY: LBB
WATER LINE THRUST BLOCK DETAILS			



NOTES:

1- IN GENERAL, HYDRANTS SHALL BE PLACED A MINIMUM OF 1' BEHIND SIDEWALK. WHERE A PLANTER STRIP IS USED, HYDRANT MAY BE PLACED IN CENTER PROVIDED WIDTH OF PLANTER IS 4' OR GREATER.

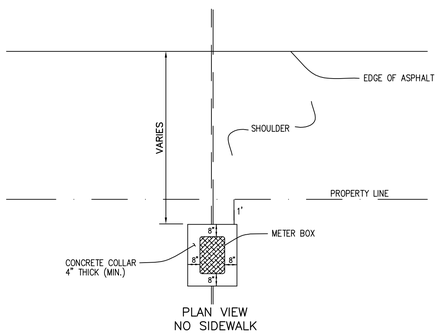
HURRICANE CITY			
REVISIONS			STANDARD DWG. NO.
DATE	DESCRIPTION	BY	302 1 OF 1
			APPROVED:
			DATE: BY: LBB
STANDARD FIRE HYDRANT DETAILS			



PLAN VIEW W/SIDEWALK

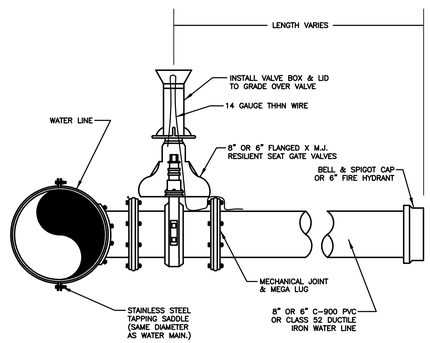
NOTES:

1- DO NOT DOWEL METER BOX COLLAR INTO SIDEWALK.

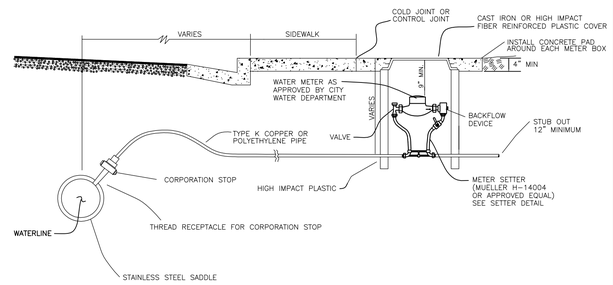


PLAN VIEW NO SIDEWALK

TOWN OF HURRICANE			
REVISIONS			STANDARD DWG. NO.
DATE	DESCRIPTION	BY	301 1 OF 1
			APPROVED:
			DATE: BY: LBB
WATER METER BOX LOCATION DETAILS			



CITY OF HURRICANE			
REVISIONS			STANDARD DWG. NO.
DATE	DESCRIPTION	BY	304 1 OF 1
			APPROVED:
			DATE: BY: LBB
8" OR 6" WATER LATERAL (CONNECTION TO EXISTING LINE)			



NOTES:
1- ALL TRENCH EXCAVATION AND COMPACTION SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS.

CITY OF HURRICANE			
REVISIONS			STANDARD DWG. NO.
DATE	DESCRIPTION	BY	305 1 OF 1
			APPROVED:
			DATE: BY: LBB
3/4" WATER SERVICE CONNECTION & METER			

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Project:
UDOT HURRICANE FACILITY
DFCM PROJECT NO. 07292900

Sheet Title:
HURRICANE DETAILS B

Revisions:
⚠ REVISION 3/26/09

PROJECT NUMBER: 28493
DATE: MARCH 26, 2009
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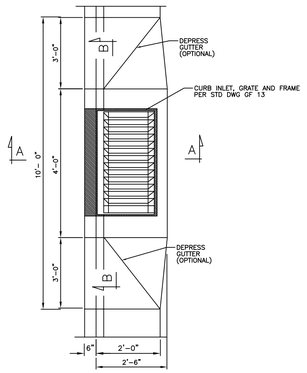
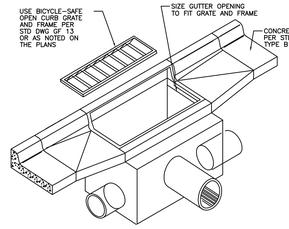
CHECKED BY:
APPROVED BY:
SHEET NUMBER:

C-505



PLAN



ISOMETRIC VIEW

NOTES:

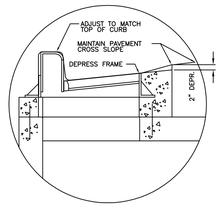
1. USE COATED DEFORMED REINFORCING STEEL BARS CONFORMING TO AASHTO M 284 OR M 111 AND M 31 GRADE 60 RESPECTIVELY.
2. FIELD CUT AND BEND REINFORCING STEEL AS NECESSARY TO CLEAR PIPES AND MAINTAIN 2" COVER. REPAIR ANY DAMAGE OR CUTS TO THE EPOXY COATING ON REINFORCING BARS.
3. USE CLASS AA (AE) CONCRETE.
4. USE TYPE II CEMENT (LOW ALKALI).
5. PROVIDE 2" CONCRETE COVER TO REINFORCING STEEL.
6. FOR NUMBER, LOCATION, AND SIZE OF PIPE SEE ROADWAY PLANS.
7. SEE PLANS FOR DEPRESSION DIMENSIONS.
8. PROVIDE 1/2" CHAMFER ON ALL EXPOSED CONCRETE CORNERS.
9. FOR GRATE AND FRAME SEE STD DWG GF 13.

DESIGN DATA

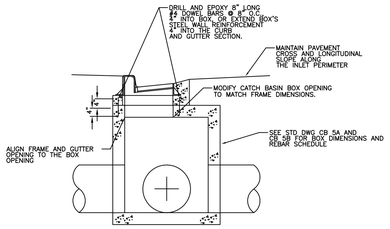
HS 20 STANDARD SPECIFICATION FOR HIGHWAY BRIDGES 17 TH EDITION.

STRUCTURAL STEEL F_y = 36,000 psi

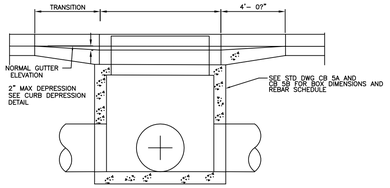
STRUCTURAL CONCRETE f'_c = 4,000 psi
F_y = 60,000 psi
n = 8



CURB DEPRESSION DETAIL



SECTION A–A



SECTION B–B

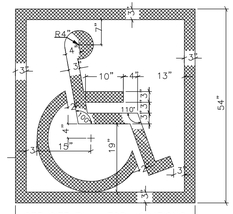
REVISIONS			
NO	DATE	APP'D	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL: JAN 31 2008 (DATE)
CHAIRMAN STANDARDS COMMITTEE
APPROVED: JAN 31 2008 (DATE)
DEPUTY DIRECTOR

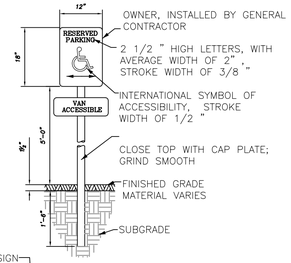
OPEN CURB INLET

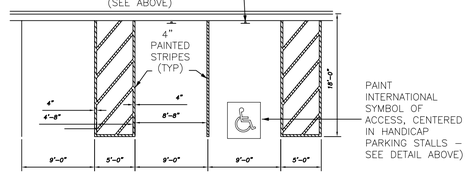
STD DWG CB 2



SEE SITE PLAN FOR LOCATIONS
50"

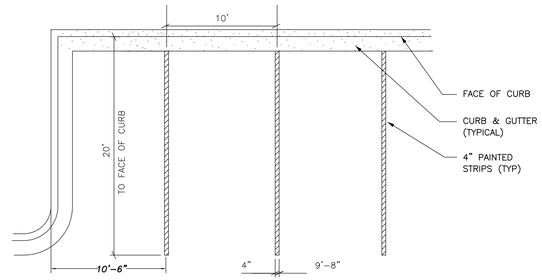
12" X 18" HANDICAP PARKING





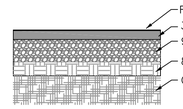
TYPICAL HANDICAP STALLS

N.T.S.



PARKING STALLS

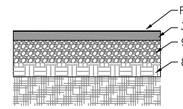
N.T.S.



NOTE:
SEE SOILS REPORT RECOMMENDATIONS FOR ALL SITE WORK.

TYPICAL APSHALT SECTION

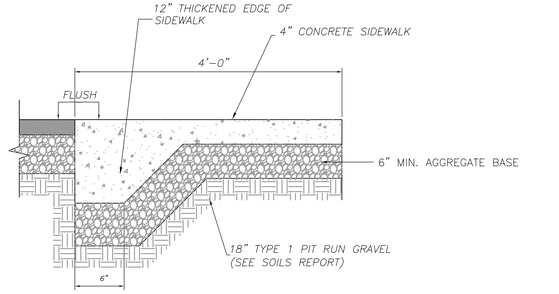
N.T.S.



NOTE:
SEE CIVIL SPECIFICATIONS FOR ZERO VOID ASPHALT DESIGN.

ZERO VOID APSHALT SECTION

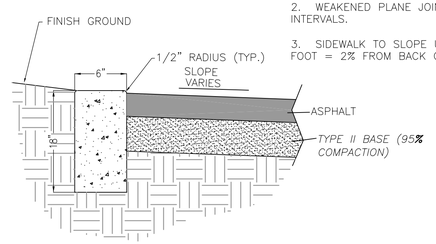
N.T.S.



SIDEWALK SECTION

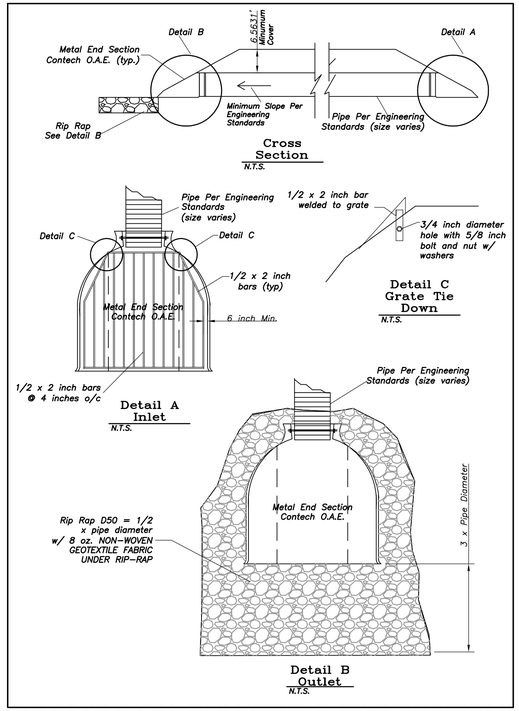
N.T.S.

NOTES:
1. 1/2" EXPANSION JOINT AT 40' INTERVALS, AT COLD JOINTS AND AT BEGINNING & END OF CURVE RETURN.
2. WEAKENED PLANE JOINT AT 5' INTERVALS.
3. SIDEWALK TO SLOPE UP 1/4" PER FOOT = 2% FROM BACK OF CURB.



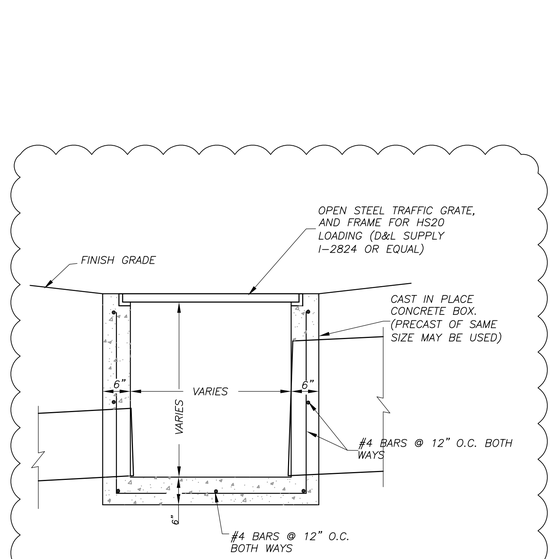
6" CURB DETAIL

N.T.S.



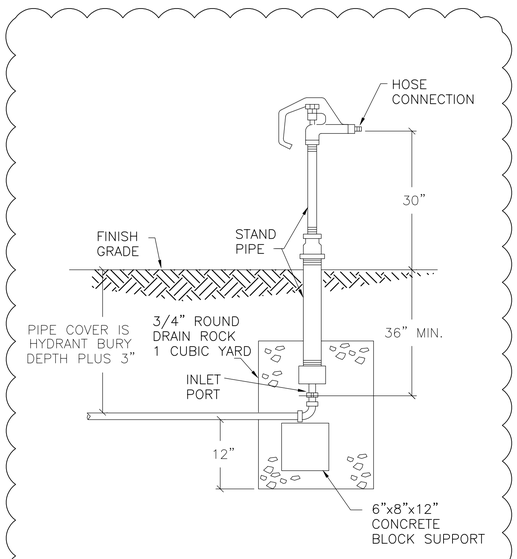
STORM DRAIN, CULVERT, & END SECTIONS

N.T.S.



CONCRETE STORM DRAIN BOX ⚠

N.T.S.



FROST-PROOF HYDRANT ⚠

N.T.S.

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Project:
UDOT
HURRICANE
FACILITY
DFCM PROJECT NO.
07292900

Sheet Title:
CIVIL DETAILS

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PROJECT NUMBER: 28495
DATE: MARCH 26, 2009
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APPROVED BY:
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C-506

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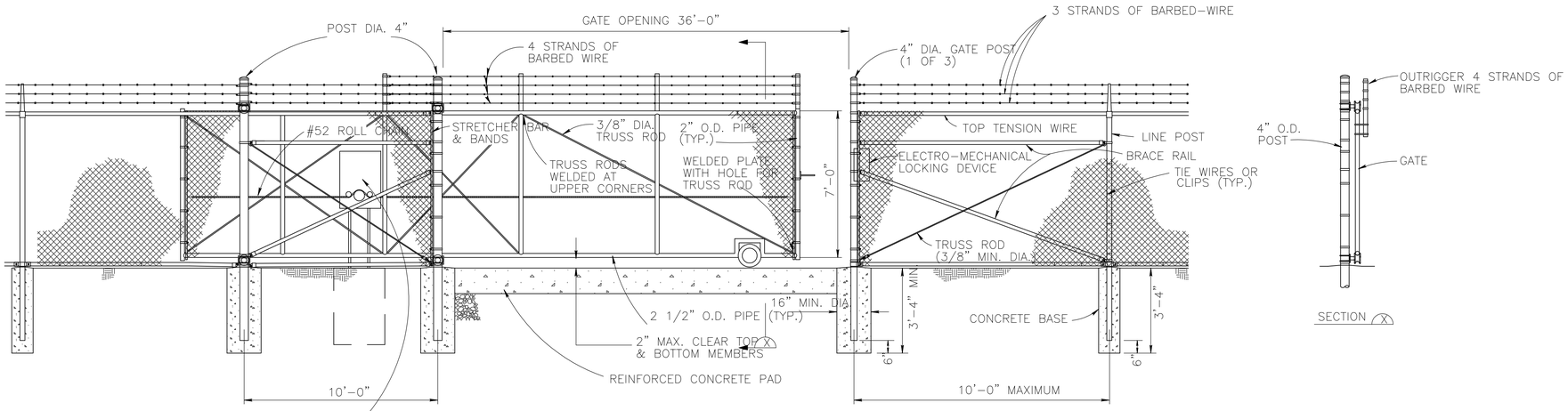
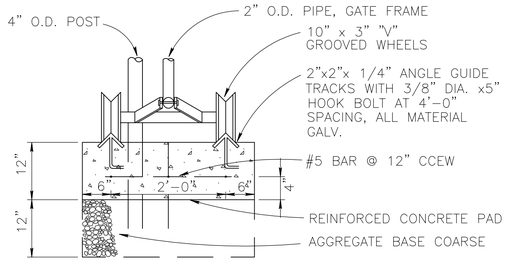


SLIDING GATE DETAILS

N.T.S.



SLIDE GATE DETAIL

N.T.S.

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DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT
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Project:
UDOT HURRICANE FACILITY
DFCM PROJECT NO. 07292900

Sheet Title:
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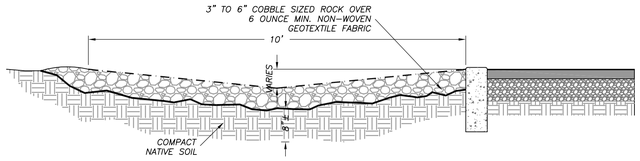
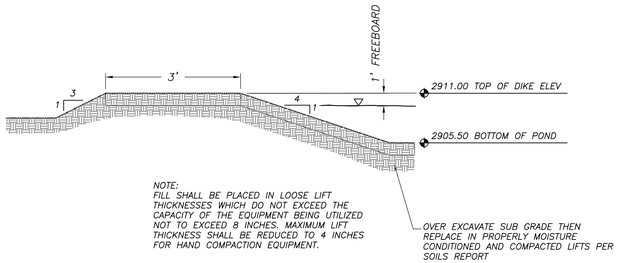
APPROVED BY:
SHEET NUMBER:
C-507



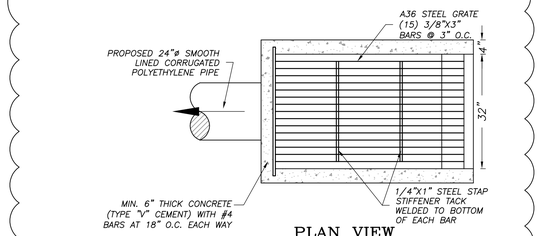
TYPICAL CROSS SECTION OF DRAINAGE SWALE

N.T.S.

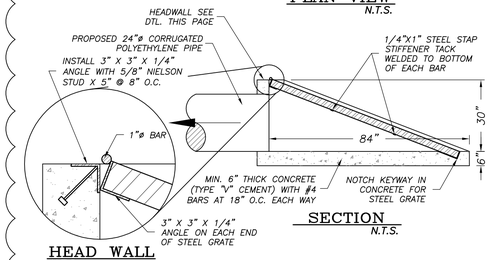


DETENTION POND SECTION

N.T.S.



PLAN VIEW
N.T.S.

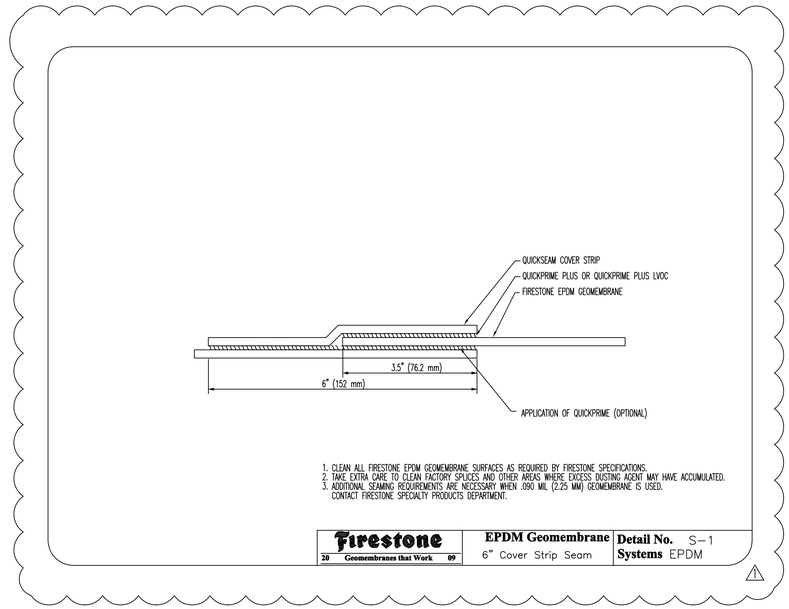


SECTION
N.T.S.

HEAD WALL
N.T.S.

CONCRETE POND OUTLET DETAIL ⚠

N.T.S.



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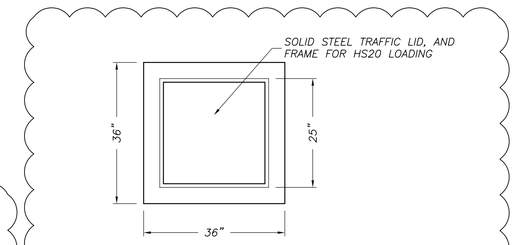
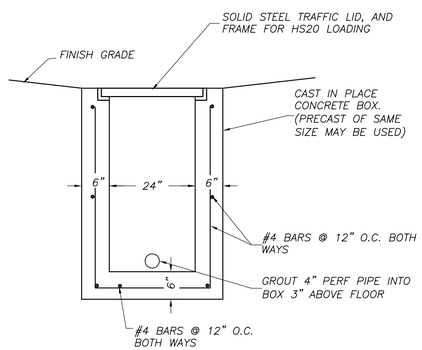
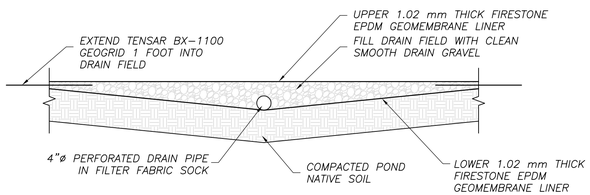


PLAN VIEW



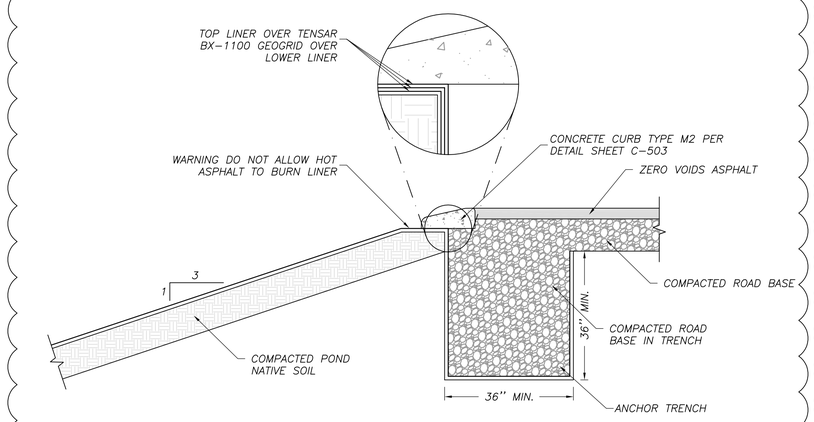
MONITORING JUNCTION BOX ⚠

N.T.S.



LINER FERFORATED DRAIN FIELD DETAIL

N.T.S.



RETENTION POND ANCHOR / PAVING DETAIL ⚠

N.T.S.

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Project:
UDOT
HURRICANE
FACILITY
DFCM PROJECT NO.
07292900

Sheet Title:

POND
DETAILS

Revisions:
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PROJECT NUMBER: 28498
DATE: MARCH 26, 2009
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CHECKED BY:
APPROVED BY:
SHEET NUMBER:

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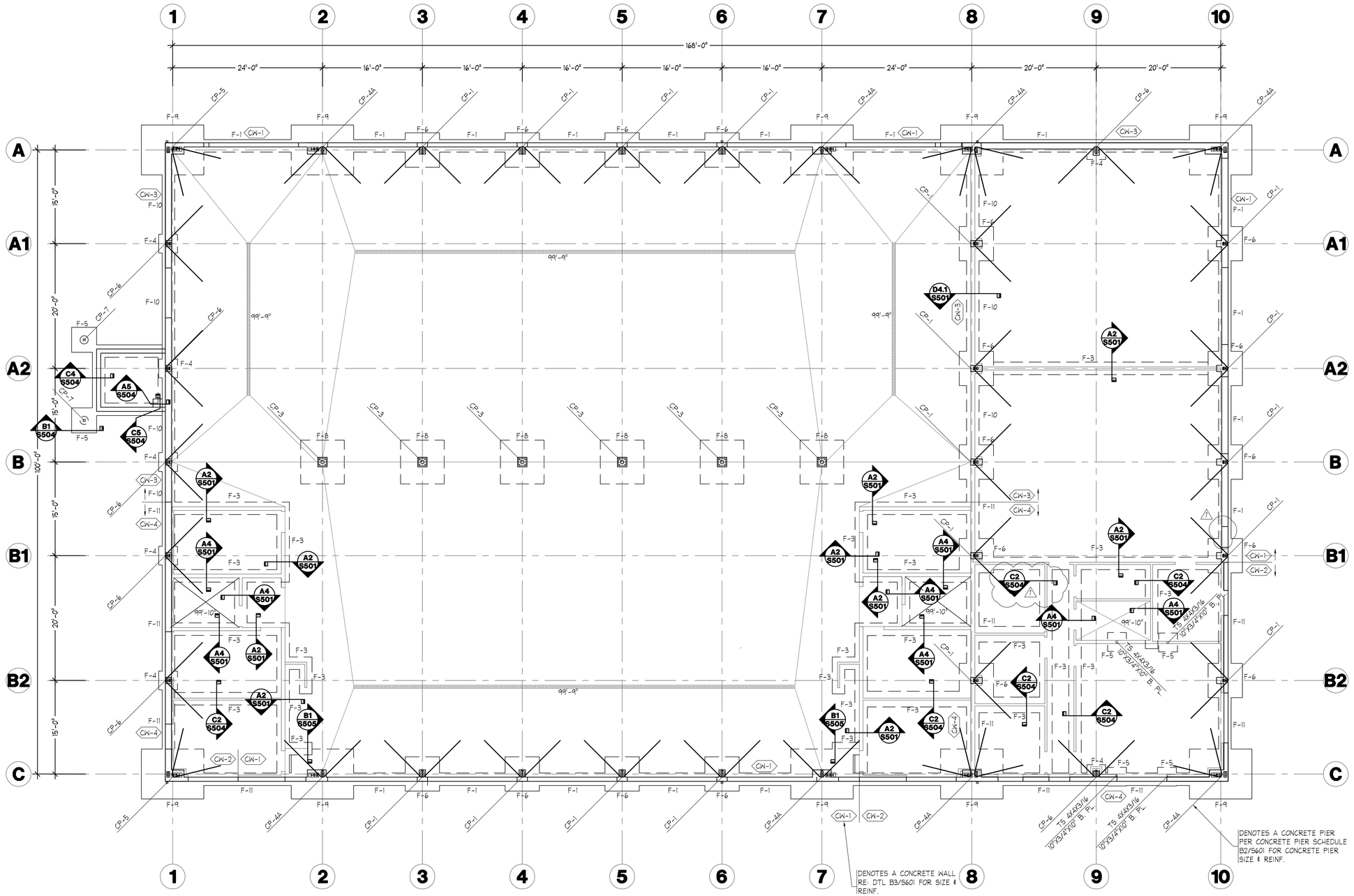

FOOTING SCHEDULE

MARK	ANCHOR BOLT EMBEDMENT	FOOTING W	FOOTING t	FOOTING L	REINF. LENGTH WISE	REINF. CROSS WISE	HAIRPINS	DETAIL
F-1	–	2'-0"	1'-0"	CONT.	(3)-#4	–	–	B4/S501
F-2	NOT USED	–	–	–	–	–	–	–
F-3	7"	2'-0"	1'-0"	CONT.	(3)-#4	–	–	RE: PLAN
F-4	9"	4'-0"	1'-0"	4'-0"	(4)-#5	(4)-#5	(2)-#4	A1/S501
F-5	9"	4'-0"	1'-0"	4'-0"	(4)-#5	(4)-#5	–	C5/S501
F-6	9"	5'-6"	1'-0"	5'-6"	(5)-#5	(5)-#5	(2)-#4	A1/S501
F-7	10"	6'-6"	1'-2"	6'-6"	(7)-#5	(7)-#5	–	B2/S504
F-8	10"	7'-6"	1'-2"	7'-6"	(7)-#6	(7)-#6	–	B2/S504
F-9	12"	8'-0"	1'-4"	10'-0"	(8)-#5	(9)-#4	(4)-#4	A1/S501
F-10	–	2'-6"	1'-0"	CONT.	(4)-#4	–	–	B4/S501
F-11	–	2'-6"	1'-0"	CONT.	(4)-#4	–	–	A5/S501

NOTES:
1. PROVIDE 24'-0" TOTAL LENGTH HAIR PIN BARS TYPICAL @ ±45 DEG. TO EXTERIOR GRID LINE
2. PROVIDE ANCHOR BOLT SIZE PER STEEL BUILDING MANUFACTURER
3. NOTE ALL FOOTING REINFORCEMENT PROVIDE EACH DIRECTION & TOP & BOTTOM OF FOOTING EXCEPT FTGS F-1, F-2, F-3, & F-5.
4. CENTER SPOT FTG'S ON METAL BUILDING COLUMNS

FOUNDATION PLAN

SCALE: 1/8" = 1'-0"

FOUNDATION NOTES
1. TOP OF SLAB ELEVATION = 100'-0" UNLESS NOTES THUS: EL.= XX'-XX" SLOPE UNIFORMLY TO FLOOR DRAINS.
2. STEPS IN SLAB SHOWN THUS: ON PLAN, REFER TO DETAIL C4/S503 FOR TYPICAL STEP IN SLAB. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION OF STEPS.
3. SLAB ON GRADE SHALL BE 6" CONCRETE OVER 6" FREE DRAINING GRAVEL. REINFORCE SLAB WITH #4 @ 18" O.C. EACH DIRECTION, UNLESS NOTED OTHERWISE ON PLAN.
4. PLACE CONTROL JOINTS AND CONSTRUCTION JOINTS IN SLAB PER GENERAL NOTES. REFER TO DETAIL C4/S501.
5. FOOTING TYPES NOTES THUS: "F-X". REFER TO SCHEDULE FOR SIZE AND REINFORCEMENT. REFER TO SECTIONS FOR TOP OF FOOTING ELEVATIONS.
6. CENTER FOOTINGS ON WALLS AND COLUMNS UNLESS DIMENSIONED OTHERWISE ON PLANS. ALL FOOTINGS SHALL BEAR ON ENGINEERED COMPACTED FILL.
7. REFER TO SECTIONS FOR TOP OF FOUNDATION WALL ELEVATIONS.
8. STEEL COLUMNS AND BASE PLATES SIZES DENOTED ON PLAN. REFER TO DETAIL C5/S501 FOR TYPICAL DETAIL.
9. REFER TO DETAIL C5/S503 FOR TYPICAL CONCRETE WALL REINFORCEMENT DETAILS.
10. FOUNDATION DESIGN INFORMATION WAS OBTAINED FROM THE SOILS REPORT PREPARED BY GEM ENGINEERING. ALL SITE PREPARATION, EXCAVATION, FILL, COMPACTION AND PLACEMENT WORK PERFORMED SHALL COMPLY WITH RECOMMENDATIONS OUTLINED IN THE ABOVE REFERENCED REPORT.
11. REFER TO ARCHITECTURAL/SITE DRAWINGS FOR INFORMATION AND LOCATION OF SITE WALLS, STEPS, PLANTERS, RAMPS, ETC.
12. REFER TO GENERAL NOTES ON SHEET S001 FOR ADDITIONAL INFORMATION.

FOOTING AND FOUNDATION PLAN NOTES

1. COORDINATE LOCATION OF DEPRESSED SLABS, SLOPED SLABS, AND FLOOR DRAINS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.
2. SEE ARCHITECTURAL AND CIVIL DRAWINGS FOR EXTERIOR CONCRETE WORK AT DOORS, SIDEWALKS, ETC.
4. ALL SPOT FOOTINGS SHALL BE CENTERED UNDER COLUMNS (UNO).
5. SEE DETAILS C1/S503 AND C2/S503 FOR CONDITION WHERE BURIED PIPES RUN PARALLEL AND PERPENDICULAR TO FOOTINGS.
6. SEE DETAIL C4/S501 AND C4/S503 FOR TYPICAL CONTROL/CONSTRUCTION JOINTS IN CONCRETE SLAB ON GRADE AND AT SLAB DEPRESSIONS.
7. SEE DETAIL C3/S503 FOR SLAB REINFORCING WHERE CONTROL JOINTS ARE DISCONTINUOUS.
8. SEE DETAIL B1/S503 FOR ADDITIONAL REINFORCING AT MISCELLANEOUS OPENINGS IN CONCRETE WALLS.
9. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS TO ALL STEEL COLUMNS.
10. FOOTING AND CONCRETE PIER SIZES SHOWN ARE AN ESTIMATE OF ACTUAL SIZES. ACTUAL SIZES WILL BE PROVIDED AFTER PREFABRICATED METAL BUILDER IS SELECTED. ALL BIDDERS SHALL PROVIDE UNIT PRICES FOR ADDING OR SUBTRACTING VOLUME OF CONCRETE, WEIGHT OF REINFORCING STEEL AND VOLUME OF EARTHWORK.

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State of Utah-Department of Administrative Services
DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT
4110 State Office Building•Salt Lake City, Utah 84114•538-3018

Project:
UDOT HURRICANE FACILITY
DFCM PROJECT NO. 07292900

Sheet Title:
FOOTING & FOUNDATION PLAN

Revisions:
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PROJECT NUMBER: 28495
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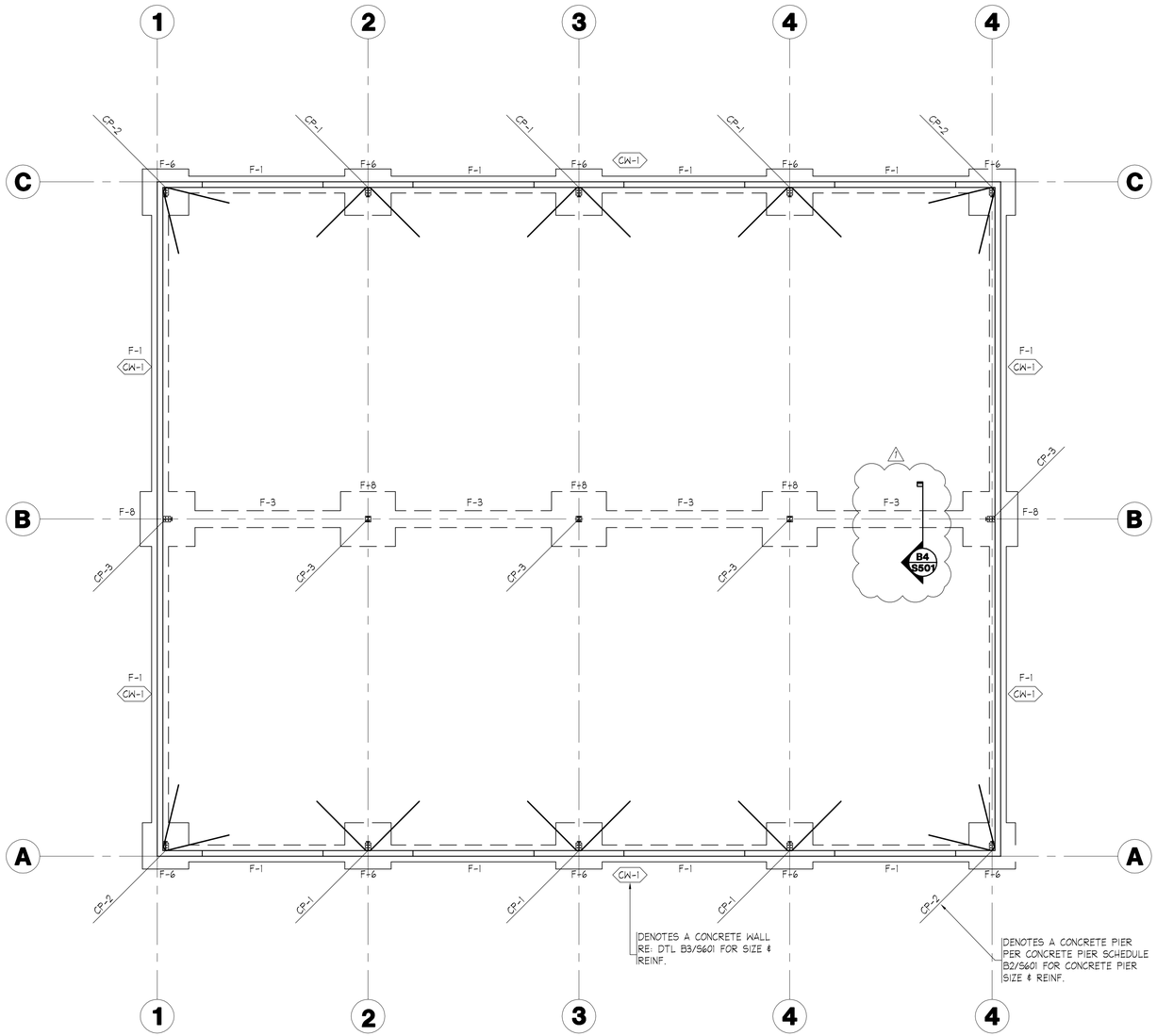

FOUNDATION PLAN

SCALE: 1/8" = 1'-0"

FOOTING SCHEDULE

MARK	ANCHOR BOLT EMBEDMENT	FOOTING			REINF.		HAIRPINS	DETAIL
		W	t	L	LENGTH WISE	CROSS WISE		
F-1	–	2'-0"	1'-0"	CONT.	(3)-#4	–	–	B4/S501
F-2	NOT USED	–	–	–	–	–	–	–
F-3	7"	2'-0"	1'-0"	CONT.	(3)-#4	–	–	RE: PLAN
F-4	9"	4'-0"	1'-0"	4'-0"	(4)-#5	(4)-#5	(2)-#4	A1/S501
F-5	9"	4'-0"	1'-0"	4'-0"	(4)-#5	(4)-#5	–	C5/S501
F-6	9"	5'-6"	1'-0"	5'-6"	(5)-#5	(5)-#5	(2)-#4	A1/S501
F-7	10"	6'-6"	1'-2"	6'-6"	(7)-#5	(7)-#5	–	B2/S501
F-8	10"	7'-6"	1'-2"	7'-6"	(7)-#6	(7)-#6	–	B2/S501
F-9	12"	8'-0"	1'-4"	10'-0"	(8)-#5	(9)-#4	(4)-#4	A1/S501
F-10	–	2'-6"	1'-0"	CONT.	(4)-#4	–	–	B4/S501
F-11	–	2'-6"	1'-0"	CONT.	(4)-#4	–	–	A5/S501

NOTES:
1. PROVIDE 24'-0" TOTAL LENGTH HAIR PIN BARS TYPICAL @ ±45 DEG. TO EXTERIOR GRID LINE
2. PROVIDE ANCHOR BOLTS PER STEEL BUILDING MANUFACTURER
3. NOTE ALL FOOTING REINFORCEMENT PROVIDE EACH DIRECTION & TOP & BOTTOM OF FOOTING EXCEPT FTGS F-1, F-2, F-3, & F-5.
4. AT F-3 SIMILAR WALL IN DETAIL D4.1/S501 IS A METAL STUD WALL PER ARCH.
5. CENTER SPOT FTG'S ON METAL BUILDING COLUMNS

FOUNDATION NOTES
1. TOP OF SLAB ELEVATION = 100'-0" UNLESS NOTES THUS: EL.= XX'-XX" SLOPE UNIFORMLY TO FLOOR DRAINS.
2. STEPS IN SLAB SHOWN THUS: ON PLAN, REFER TO DETAIL C4/S503 FOR TYPICAL STEP IN SLAB. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION OF STEPS.
3. SLAB ON GRADE SHALL BE 6" CONCRETE OVER 6" FREE DRAINING GRAVEL. REINFORCE SLAB WITH #4 @ 18" O.C. EACH DIRECTION, UNLESS NOTED OTHERWISE ON PLAN.
4. PLACE CONTROL JOINTS AND CONSTRUCTION JOINTS IN SLAB PER GENERAL NOTES. REFER TO DETAIL C4/S501.
5. FOOTING TYPES NOTES THUS: "F-X". REFER TO SCHEDULE FOR SIZE AND REINFORCEMENT. REFER TO SECTIONS FOR TOP OF FOOTING ELEVATIONS.
6. CENTER FOOTINGS ON WALLS AND COLUMNS UNLESS DIMENSIONED OTHERWISE ON PLANS. ALL FOOTINGS SHALL BEAR ON ENGINEERED COMPACTED FILL.
7. REFER TO SECTIONS FOR TOP OF FOUNDATION WALL ELEVATIONS.
8. STEEL COLUMNS AND BASE PLATES SIZES DENOTED ON PLAN. REFER TO DETAIL C5/S501 FOR TYPICAL DETAIL.
9. REFER TO DETAIL C5/S503 FOR TYPICAL CONCRETE WALL REINFORCEMENT DETAILS.
10. FOUNDATION DESIGN INFORMATION WAS OBTAINED FROM THE SOILS REPORT PREPARED BY GEM ENGINEERING. ALL SITE PREPARATION, EXCAVATION, FILL, COMPACTION AND PLACEMENT WORK PERFORMED SHALL COMPLY WITH RECOMMENDATIONS OUTLINED IN THE ABOVE REFERENCED REPORT.
11. REFER TO ARCHITECTURAL/SITE DRAWINGS FOR INFORMATION AND LOCATION OF SITE WALLS, STEPS, PLANTERS, RAMPS, ETC.
12. REFER TO GENERAL NOTES ON SHEET S001 FOR ADDITIONAL INFORMATION.

FOOTING AND FOUNDATION PLAN NOTES

1. COORDINATE LOCATION OF DEPRESSED SLABS, SLOPED SLABS, AND FLOOR DRAINS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.
2. SEE ARCHITECTURAL AND CIVIL DRAWINGS FOR EXTERIOR CONCRETE WORK AT DOORS, SIDEWALKS, ETC.
4. ALL SPOT FOOTINGS SHALL BE CENTERED UNDER COLUMNS (UNO).
5. SEE DETAILS C1/S503 AND C2/S503 FOR CONDITION WHERE BURIED PIPES RUN PARALLEL AND PERPENDICULAR TO FOOTINGS.
6. SEE DETAIL C4/S501 AND C4/S503 FOR TYPICAL CONTROL/CONSTRUCTION JOINTS IN CONCRETE SLAB ON GRADE AND AT SLAB DEPRESSIONS.
7. SEE DETAIL C3/S503 FOR SLAB REINFORCING WHERE CONTROL JOINTS ARE DISCONTINUOUS.
8. SEE DETAIL B1/S503 FOR ADDITIONAL REINFORCING AT MISCELLANEOUS OPENINGS IN CONCRETE WALLS.
9. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS TO ALL STEEL COLUMNS.
10. FOOTING AND CONCRETE PIER SIZES SHOWN ARE AN ESTIMATE OF ACTUAL SIZES. ACTUAL SIZES WILL BE PROVIDED AFTER PREFABRICATED METAL BUILDER IS SELECTED. ALL BIDDERS SHALL PROVIDE UNIT PRICES FOR ADDING OR SUBTRACTING VOLUME OF CONCRETE, WEIGHT OF REINFORCING STEEL AND VOLUME OF EARTHWORK.

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Project:
UDOT HURRICANE FACILITY
DFCM PROJECT NO. 07232900

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OPEN STORAGE FOOTING & FOUNDATION PLAN

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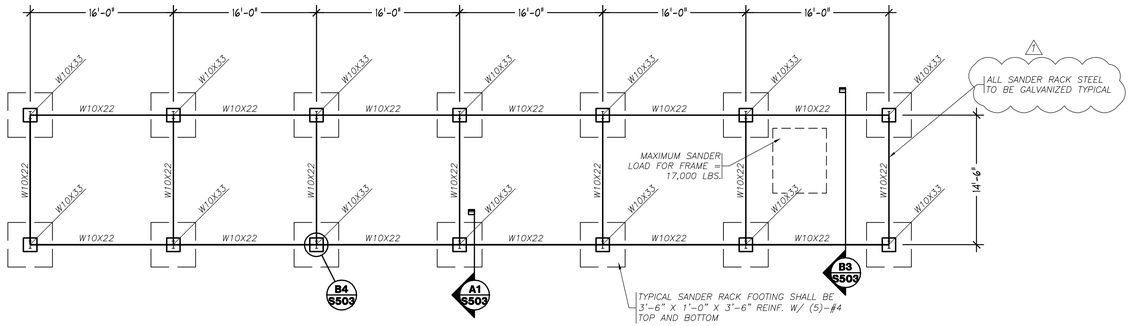
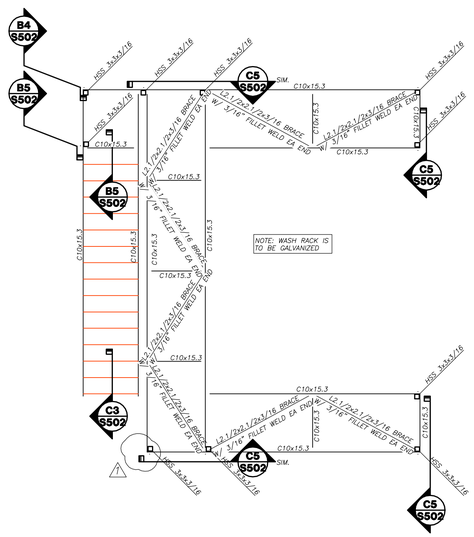


SANDER RACK PLAN

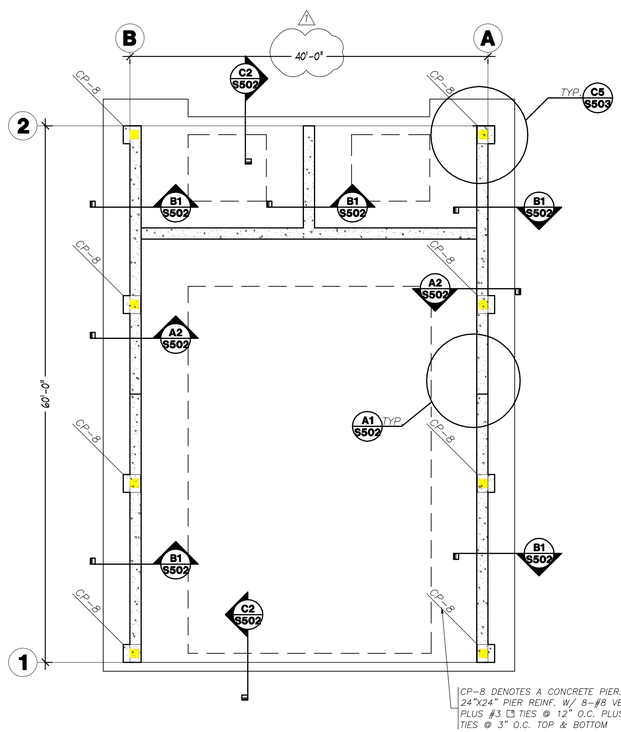
SCALE: 1/8" = 1'-0"

(PROVIDE (2) – PER SITE PLAN C102)



WASH RACK PLAN

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



SALT STORAGE FOOTING & FOUNDATION PLAN

SCALE: 1/8" = 1'-0"

FOUNDATION NOTES

1. CENTER FOOTINGS ON WALLS AND COLUMNS UNLESS DIMENSIONED OTHERWISE ON PLANS. ALL FOOTINGS SHALL BEAR ON ENGINEERED COMPACTED FILL.
2. REFER TO SECTIONS FOR TOP OF FOUNDATION WALL ELEVATIONS.
3. STEEL COLUMNS AND BASE PLATES SIZES DENOTED ON PLAN. REFER TO DETAIL D5/S501 FOR TYPICAL DETAIL.
4. REFER TO DETAIL C5/S503 FOR TYPICAL CONCRETE WALL REINFORCEMENT DETAILS.
5. FOUNDATION DESIGN INFORMATION WAS OBTAINED FROM THE SOILS REPORT PREPARED BY GEM ENGINEERING. ALL SITE PREPARATION, EXCAVATION, FILL, COMPACTION AND PLACEMENT WORK PERFORMED SHALL COMPLY WITH RECOMMENDATIONS OUTLINED IN THE ABOVE REFERENCED REPORT.
6. REFER TO ARCHITECTURAL/SITE DRAWINGS FOR INFORMATION AND LOCATION OF SITE WALLS, STEPS, PLANTERS, RAMPS, ETC.
7. REFER TO GENERAL NOTES ON SHEET S001 FOR ADDITIONAL INFORMATION.

FOOTING AND FOUNDATION PLAN NOTES

1. SEE ARCHITECTURAL AND CIVIL DRAWINGS FOR EXTERIOR CONCRETE WORK AT DOORS, SIDEWALKS, ETC.
2. ALL SPOT FOOTINGS SHALL BE CENTERED UNDER COLUMNS (UNO).
3. SEE DETAILS C1/S503 AND C2/S503 FOR CONDITION WHERE BURIED PIPES RUN PARALLEL AND PERPENDICULAR TO FOOTINGS.
4. SEE DETAIL B1/S503 FOR ADDITIONAL REINFORCING AT MISCELLANEOUS OPENINGS IN CONCRETE WALLS.
5. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS TO ALL STEEL COLUMNS.
6. FOOTING AND CONCRETE PIER SIZES SHOWN ARE AN ESTIMATE OF ACTUAL SIZES. ACTUAL SIZES WILL BE PROVIDED AFTER PREFABRICATED METAL BUILDER IS SELECTED. ALL BIDDERS SHALL PROVIDE UNIT PRICES FOR ADDING OR SUBTRACTING VOLUME OF CONCRETE, WEIGHT OF REINFORCING STEEL AND VOLUME OF EARTHWORK.

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Project:
UDOT
HURRICANE
FACILITY
DFCM PROJECT NO.
07292900

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OUT BUILDING PLANS

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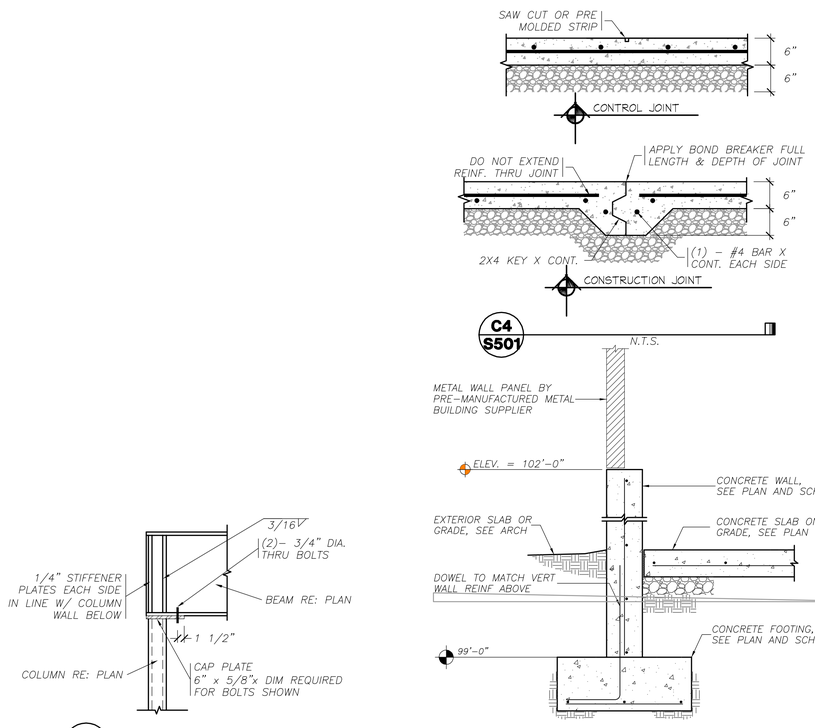

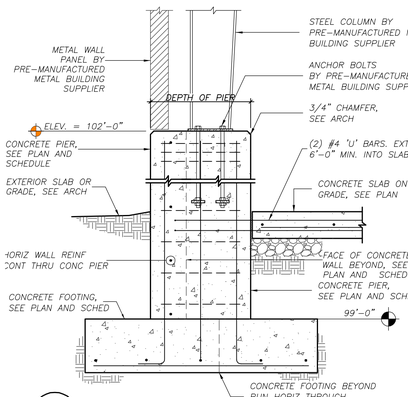

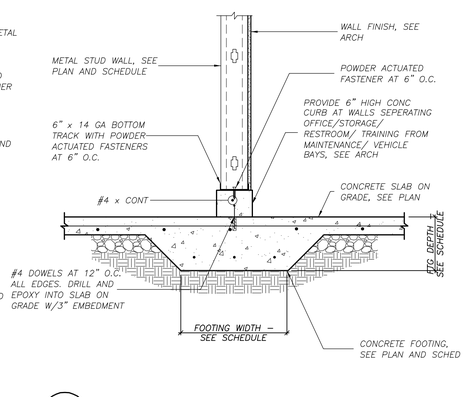

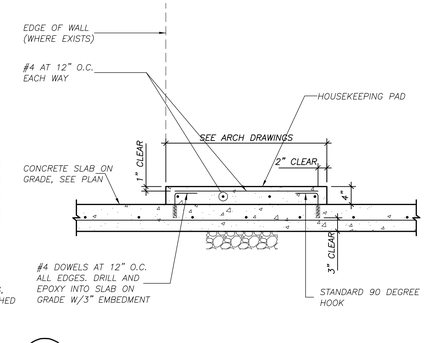

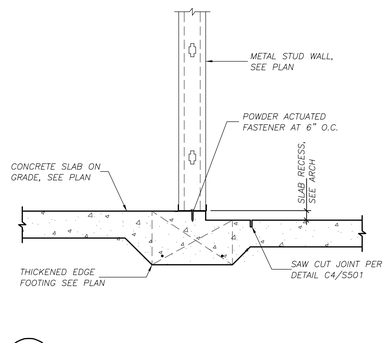

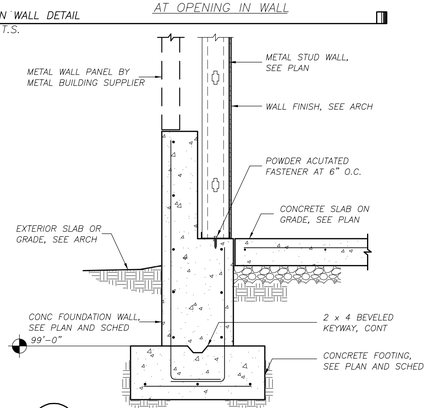

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DFCM PROJECT NO. 07292900

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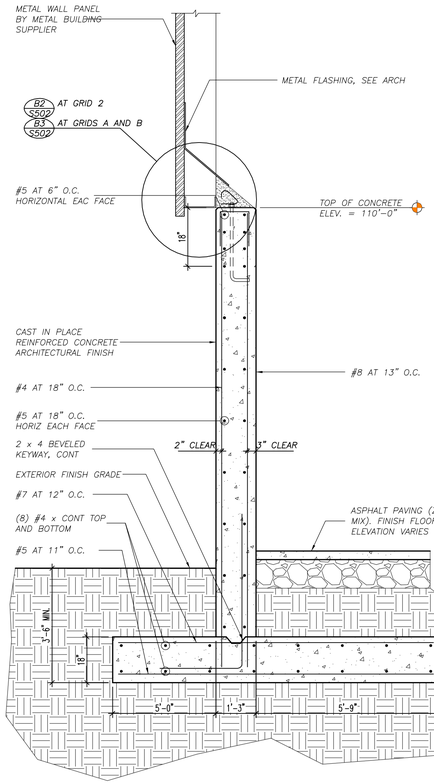
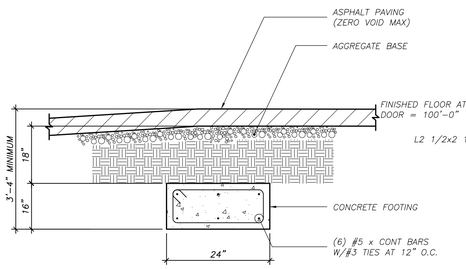


B1 S502 WALL AND FOOTING DETAIL–SALT STORAGE
N.T.S.



C2 S502 FOOTING DETAIL – SALT STORAGE
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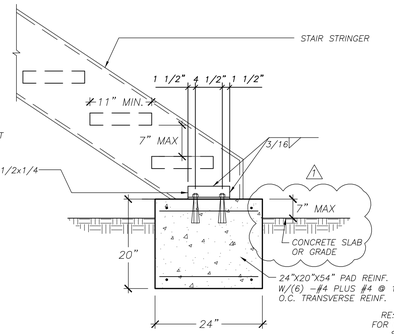

C3 S502 STRINGER ANCHORAGE DETAIL – WASH RACK
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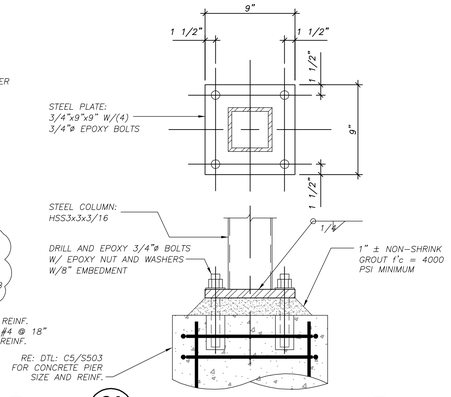

C4 S502 STEEL COLUMN BASE – WASH RACK
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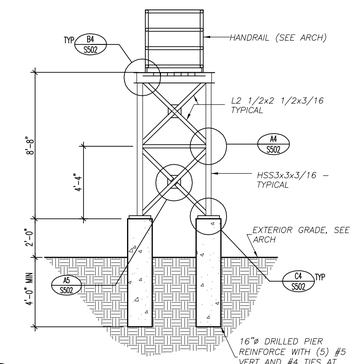

C5 S502 WASH RACK ELEVATION
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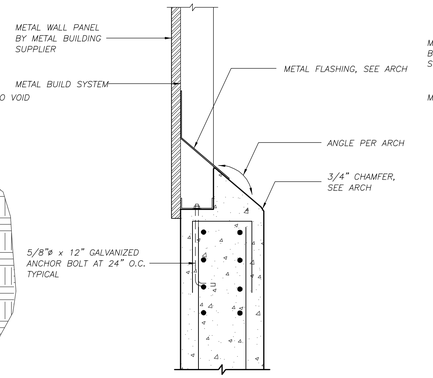

B2 S502 WALL SECTION AT GRID 2–SALT STORAGE
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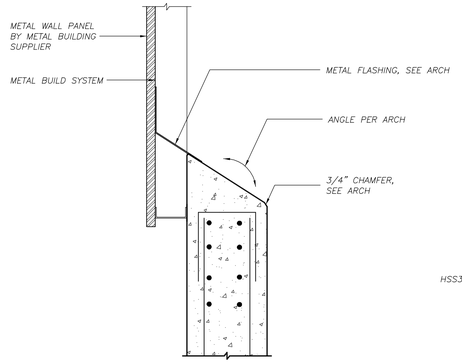

B3 S502 WALL SECTION AT GRIDS A AND B – SALT STORAGE
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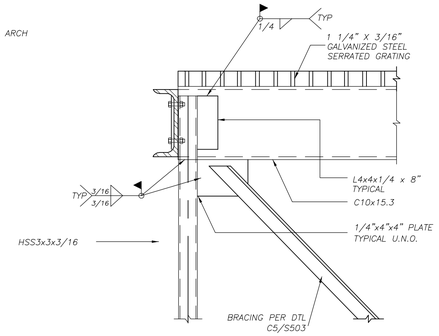

B4 S502 TYPICAL BRACE DETAIL – WASH RACK
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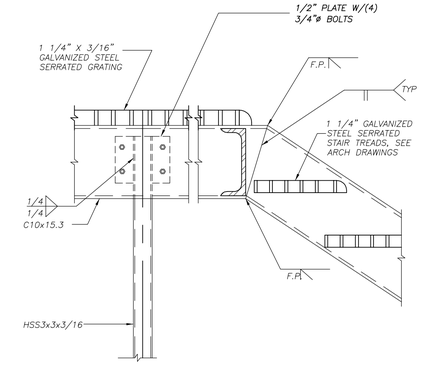

B5 S502 STAIR SUPPORT DETAIL – WASH RACK
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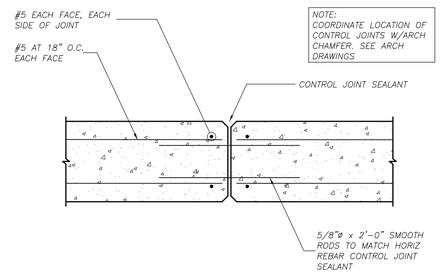

A1 S502 JOINT DETAIL – SALT STORAGE
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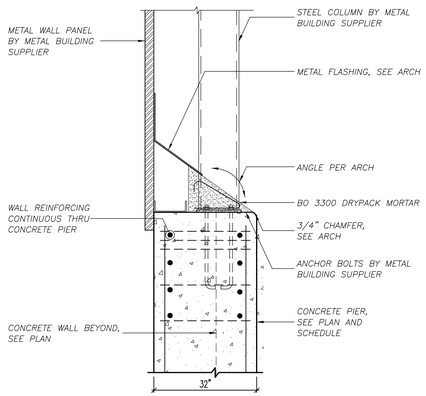
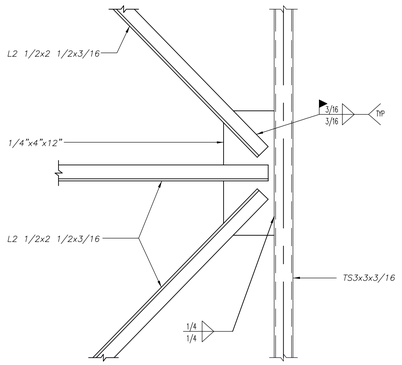


A2 S502 WALL SECTION AT COLUMNS AT GRIDS A AND B – SALT STORAGE
N.T.S.

NOT USED

A3 S502
N.T.S.



A4 S502 BRACE DETAIL – WASH RACK
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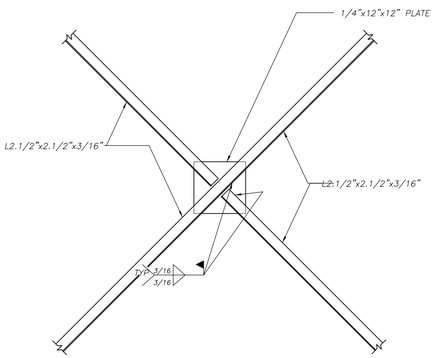

A5 S502 N.T.S.

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DFCM PROJECT NO. 07292900

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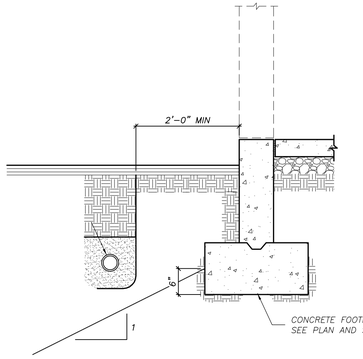

C1 S503 — CONDITION AT PIPE PARALLEL TO CONCRETE FOOTING
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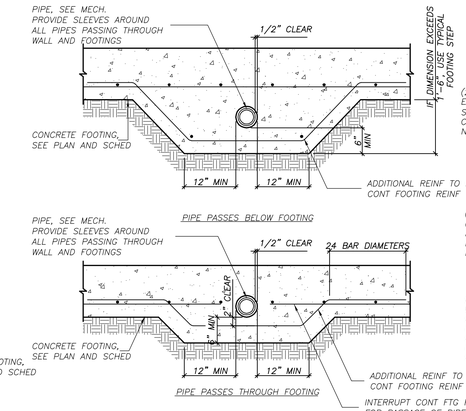
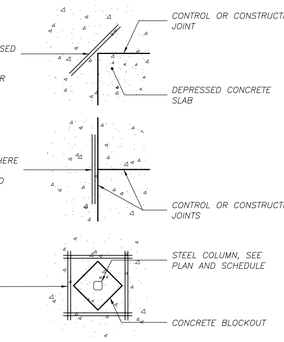
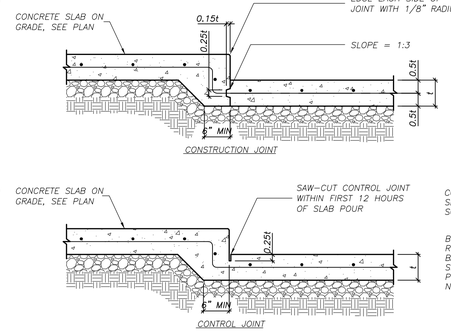


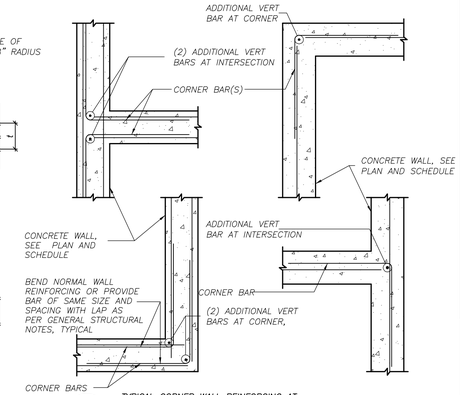
C2 S503 — CONDITIONS AT PIPE PERPENDICULAR TO FOOTING
N.T.S.



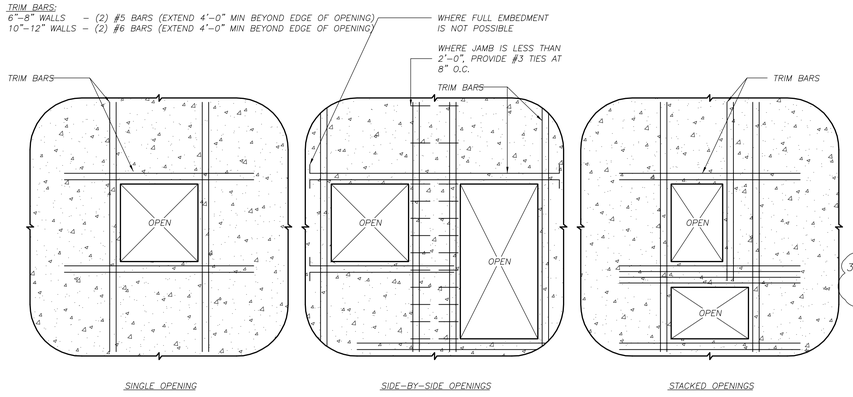
C3 S503 — LOCATIONS REQUIRING ADDITIONAL SLAB REINFORCING [PLAN VIEW]
N.T.S.



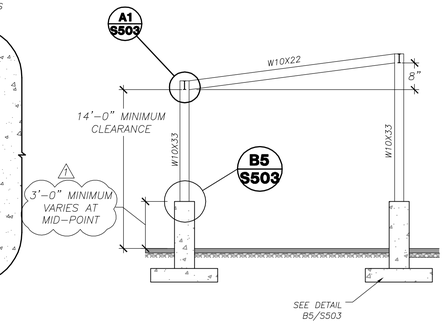
C4 S503 — JOINT DETAILS AT SLAB DEPRESSIONS
N.T.S.



C5 S503 — TYPICAL CORNER WALL REINFORCING AT CONCRETE WALLS [PLAN VIEW]
N.T.S.



B1 S503 — TYPICAL REINFORCING FOR MISCELLANEOUS OPENINGS LESS THAN 3'–0" IN CONCRETE WALLS WHERE MISCELLANEOUS OPENING WIDTH IS GREATER THAN 3'–0" WIDE, CONTACT STRUCTURAL ENGINEER.
N.T.S.



B3 S503 — SECTION AT SANDER RACK
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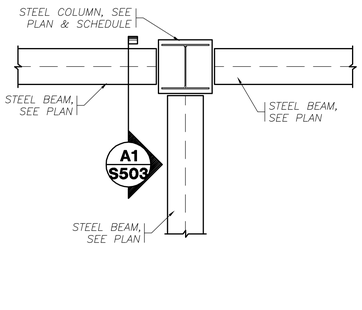

B4 S503
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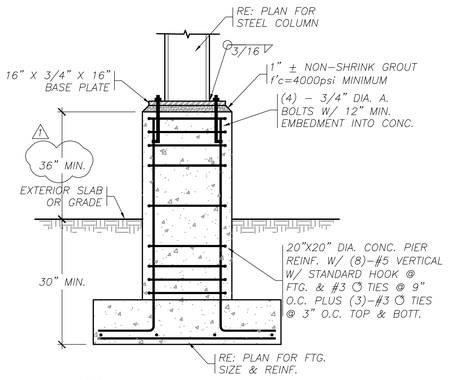

B5 S503
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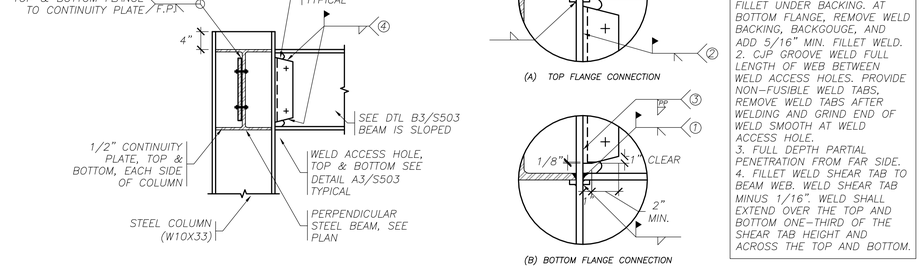
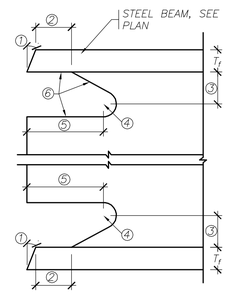


NOTES:
1. CJP GROOVE WELD AT TOP AND BOTTOM FLANGES. AT TOP FLANGE, EITHER (1) REMOVE WELD BACKING, BACKGOUGE, AND ADD 5/16" MIN. FILLET WELD, OR (2) LEAVE BACKING IN PLACE AND ADD 5/16" FILLET UNDER BACKING. AT BOTTOM FLANGE, REMOVE WELD BACKING, BACKGOUGE, AND ADD 5/16" MIN. FILLET WELD.
2. CJP GROOVE WELD FULL LENGTH OF WEB BETWEEN WELD ACCESS HOLES. PROVIDE NON–FUSIBLE WELD TABS, REMOVE WELD TABS AFTER WELDING AND GRIND END OF WELD SMOOTH AT WELD ACCESS HOLE.
3. FULL DEPTH PARTIAL PENETRATION FROM FAR SIDE.
4. FILLET WELD SHEAR TAB TO BEAM WEB. WELD SHEAR TAB MINUS 1/16". WELD SHALL EXTEND OVER THE TOP AND BOTTOM ONE–THIRD OF THE SHEAR TAB HEIGHT AND ACROSS THE TOP AND BOTTOM.

A1 S503
N.T.S.



NOTES:
1. BEVEL AS REQUIRED BY AWS D1.1 FOR SELECTED GROOVE WELD PROCEDURE.
A. TOLERANCES SHALL NOT ACCUMULATE TO THE EXTENT THAT THE ANGLE OF THE ACCESS HOLE CUT OT THE FLANGE SURFACE EXCEEDS 25°.
2. LARGER OF T_1 OR 1/2".
3. 3/4" T_1 TO T_1 3/4" MIN.
4. 3/8" MIN. RADIUS.
5. 3 T_1.
6. SEE FEMA–353, RECOMMENDED SPECIFICATIONS & QUALITY ASSURANCE GUILDELINES FOR STEEL MOMENT–FRAME CONSTRUCTION FOR SEISMIC APPLICATION, FOR FABRICAITON DETAILS INCLUDING CUTTING METHODS AND SMOOTHNESS REQUIREMENTS.

A3 S503 — SECTION AT SANDER RACK
N.T.S.

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Project:
UDOT
HURRICANE
FACILITY
DFCM PROJECT NO.
07292900

Sheet Title:
DETAILS

Revisions:
1 REVISION 3/24/09

PROJECT NUMBER: 28495
DATE: MARCH 2, 2009
DRAWN BY: BD
CHECKED BY:
APPROVED BY:
SHEET NUMBER:
S503

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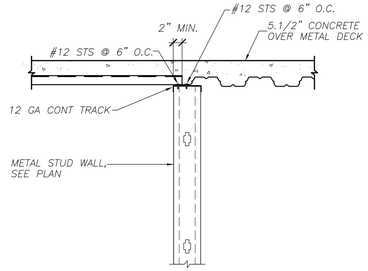
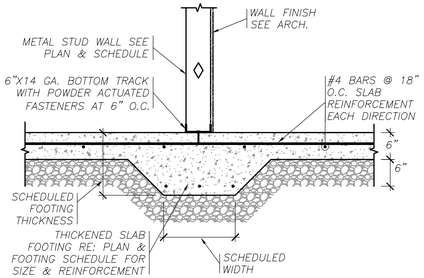
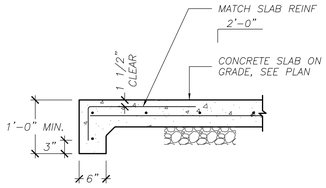


C1 S504



C2 S504 THICKENED SLAB FOOTING AT INTERIOR STUD WALL
N.T.S.



C3 S504 SLAB TURNDOWN DETAILS
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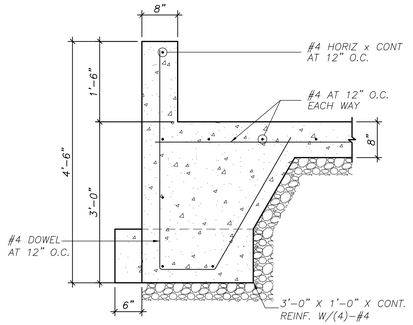

C4 S504 WASTE OIL SLAB DETAIL
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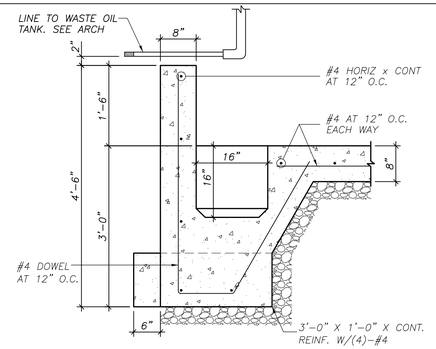

C5 S504 WASTE OIL SLAB DETAIL
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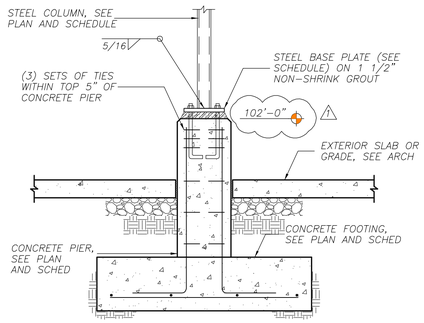

B1 S504 EXTERIOR STEEL COLUMN BEARING ON CONCRETE PIER
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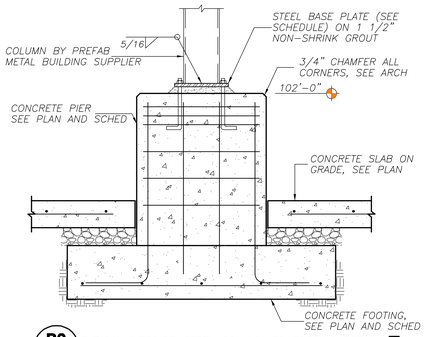

B2 S504 TYPICAL INTERIOR STEEL COLUMN TO FOOTING DETAIL
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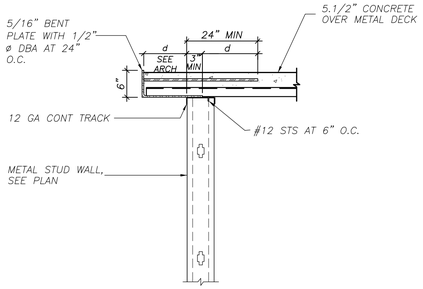

B3 S504 STEEL DECK EDGE DETAIL PERPENDICULAR TO WALL
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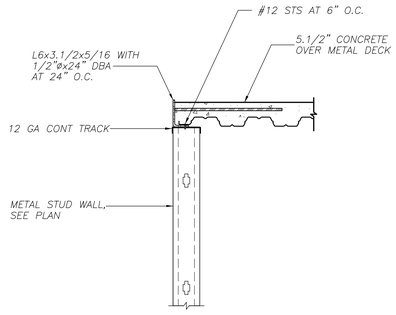

B4 S504 STEEL DECK EDGE DETAIL PERPENDICULAR TO WALL
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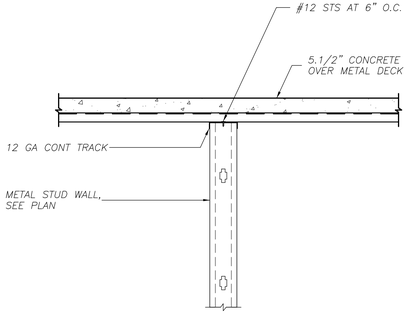

B5 S504 STEEL DECK ON INTERIOR BEARING WALL
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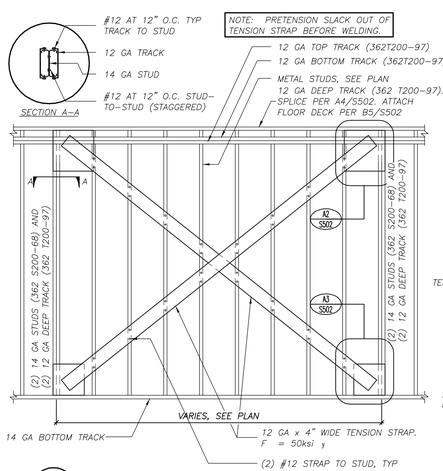
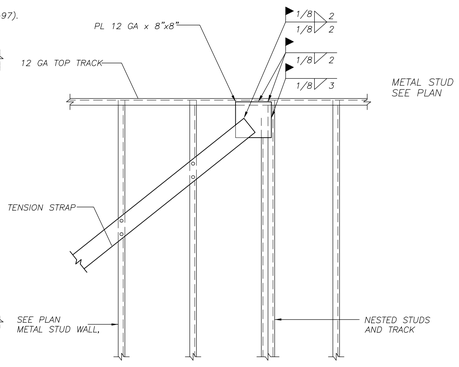


A1 S504 TENSION STRAP BRACE
N.T.S.



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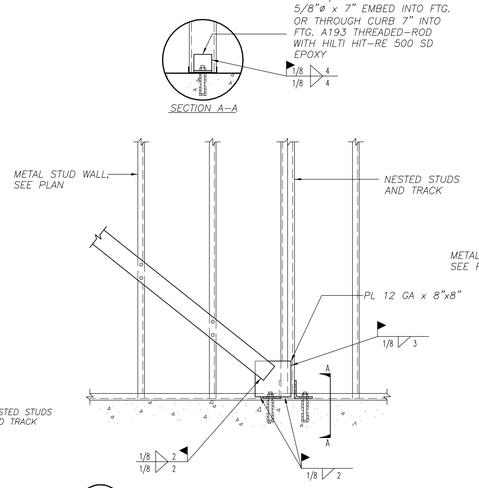

A3 S504 TENSION STRAP BRACE
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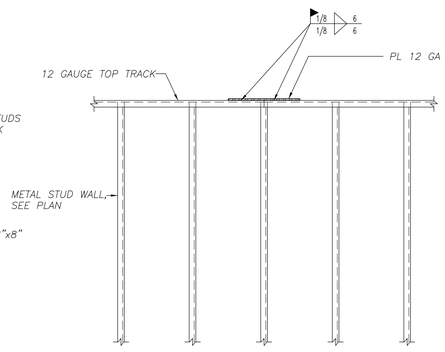

A4 S504 TOP TRACK SPLICE DETAIL
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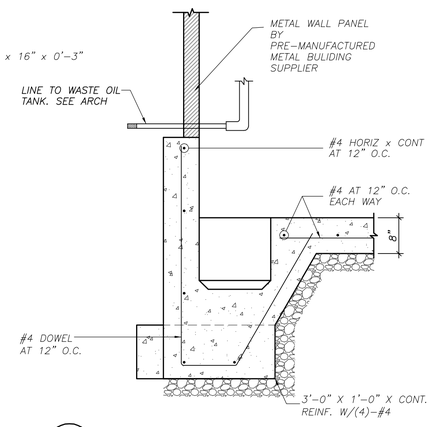

A5 S504 WASTE OIL SLAB DETAIL
N.T.S.

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Project:
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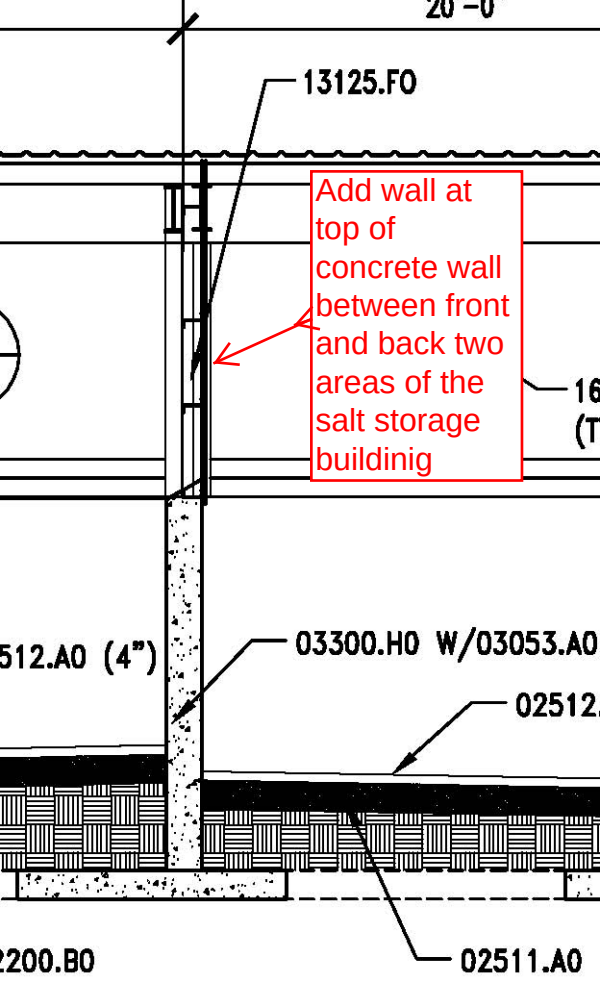
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13125.FO
Add wall at top of concrete wall between front and back two areas of the salt storage buildinig
16
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512.A0 (4")
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2200.B0
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