

December 2003

### Inlet Protection

**MAINTENANCE REQUIREMENTS**  
Inlet protection should be inspected regularly (at least as often as required by the TPOES Construction General Permit, Appendix A). When the filter is used and the fabric becomes clogged, it should be cleaned or, if necessary, replaced. Also, sediment should be removed when it reaches approximately one-half the height of the inlet protection device. If a sump is used, sediment should be removed when the volume of the basin is reduced by 50%.

For systems using filter stone, when the filter stone becomes clogged with sediment, the stones must be pulled away from the inlet and cleaned or replaced. Since cleaning of stone at a construction site may be difficult, an alternative approach would be to use the clogged stone as fill material and put new stone around the inlet.

**SPECIFICATION**  
Specifications for construction of this item may be found in the Standard Specifications for Public Works Construction - North Central Texas Council of Governments, Section 201.15 Inlet Protection.

ISWH Design Manual for Construction

4-15

December 2003

### Silt Fence

Stone overflow structures or other outlet control devices shall be installed at all low points along the fence or spaced at approximately 200 feet if there is no apparent low point.

Filter stone for overflow structure shall be 1-1/2" washed stone containing no fines. Angular shaped stone is preferable to rounded shapes.

Silt fence fabric must meet the following minimum criteria:

- Tensile Strength, ASTM D4832 Test Method for Grab Breaking Load and Elongation of Geotextiles, 80-lb.
- Puncture Rating, ASTM D4833 Test Method for Index Puncture Resistance of Geotextiles, Geotextiles, and Related Products, 20-lb.
- Matrix Burst Rating, ASTM D2765 Standard Test Method for Hydraulic Bursting Strength of Textile Fabrics-Claypans Bursting Strength Tester Method, 200 psi.
- Apparent Opening Size, ASTM D4753 Test Method for Determining Apparent Opening Size of a Geotextile, U.S. Stone No. 70 (max) to No. 100 (min).
- Ultraviolet Resistance, ASTM D2486, Minimum 70 percent.

Fence posts shall be galvanized steel and may be T-section or L-section, 1.3 pounds per linear foot minimum, and 4 feet in length minimum. Wood posts may be used depending on anticipated length of service and provided they are 4 feet in length minimum and have a nominal cross section of 2 inches by 4 inches for posts 2 inches by 2 inches for standards.

Silt fence shall be supported by galvanized steel wire fence fabric as follows:

- 1/4" x 4" mesh wire, 1/4" x 4" minimum 12 gauge wire fence fabric.
- Hog wire, 12 gauge wire, small openings installed at bottom of silt fence.
- Standard 2" x 2" chain link fence fabric.
- Other welded or woven steel fabric consisting of equal or smaller spacing as that listed herein and appropriate gauge wire to provide support.

A 6 inch wide trench to be 24 inches deep at the toe of the fence to allow the fabric to be laid below the surface and backfilled with compacted earth or gravel to prevent bypass of runoff under the fence. Silt fence shall consist of geotextile fabric supported by wire mesh netting or other backing stretched between either wooden or metal posts with the lower edge of the fabric securely embedded in the soil. The fabric is typically located downstream of disturbed areas to intercept runoff in the form of sheet flow. A silt fence provides both filtration and time for sediment settling by reducing the velocity of the runoff.

**PRIMARY USE**  
Silt fence is normally used as perimeter control downstream of disturbed areas. It is only feasible for non-concentrated, sheet flow conditions. If it becomes necessary to place a silt fence where concentrated flow may be experienced (e.g. where two silt fences join at an angle, or across minor channels or gullies), it will be necessary to reinforce the silt fence at that area by a rock berm or sand bag berm, or other structural measures that will support the silt fence.

**APPLICATIONS**  
Silt fence is an economical means to treat overland, non-concentrated flows for all types of projects. Silt fences are used as perimeter control devices for both site developers and linear (roadway) type projects. They are most effective with coarse to silty soil types. Due to the potential of clogging and limited effectiveness, silt fences should be used with caution in areas that have predominantly clay soil types. In this latter instance a soils engineer or soil scientist should confirm the suitability of silt fence for that application.

**DESIGN CRITERIA**

- Fence are to be constructed along a line of constant elevation (along a contour line) where possible.
- Maximum drainage area shall be 0.25 acres per 100 linear feet of all fence.
- Maximum flow to any 20 foot section of all fence shall be 1 CFS.
- Maximum distance of flow to silt fence shall be 200 feet or less. If the slope exceeds 10 percent the flow distance shall be less than 50 feet.
- Maximum slope adjacent to the fence shall be 2:1.
- If 50% or less soil, by weight, passes the U.S. Standard sieve No. 200; if not, the apparent opening size (A.O.S.) is to remain 85% of the soil.
- If 65% or more of soil, by weight, passes the U.S. Standard sieve No. 200, all fences shall not be used unless the soil mass is evaluated and deemed suitable by a soil scientist or geotechnical engineer concerning the erodibility of the soil mass, dispersive characteristics, and the potential grain size characteristics of the material that is likely to be eroded.

ISWH Design Manual for Construction

4-16

December 2003

### Inlet Protection

**DESIGN CRITERIA**

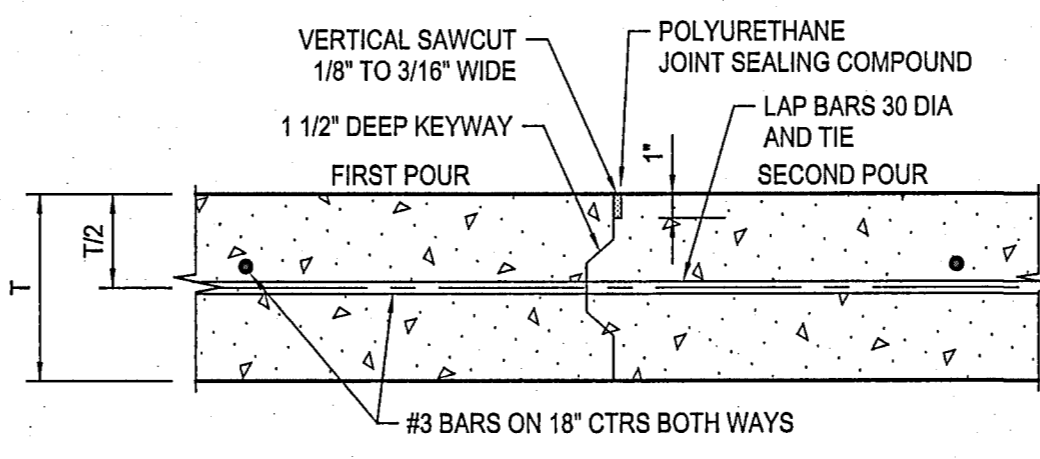
- Special caution must be exercised when installing inlet protection on publicly traveled streets or in developed areas. Ensure that inlet protection is properly designed, installed and maintained to avoid flooding of the roadway or adjacent properties and structures.
- Filter fabric protection shall be designed and maintained in a manner similar to all fence.
- Where applicable, filter fabric, posts, and wire backing shall meet the material requirements specified in BMP Fact Sheet S-1, Silt Fence.
- Filter gravel shall be 1/2 inch (Block and Gravel Protection) or 1-1/2 to 2 inch (Elevated Inlet Protection) washed stone containing no fines. Angular shaped stone is preferable to rounded shapes.
- Concrete blocks shall be standard 8" x 8" x 16" concrete masonry units.
- Maximum depth of flow shall be eight (8) inches or less.
- Positive drainage is critical in the design of inlet protection. If overflow is not provided for the inlet, excess flows shall be routed through established swales, ditches, or other watercourses to minimize damage due to flooding.
- Filter Barrier Protection  
Silt fence shall consist of nylon geotextile supported by wire mesh, 1/4" x 1/4" and galvanized steel posts set a minimum of 1 foot depth and spaced not more than 6 feet on center. A 6 inch wide trench to be cut 6 inches deep at the toe of the fence to allow the fabric to be laid below the surface and backfilled with compacted earth or gravel. This entrenchment prevents any bypass of runoff under the fence.
- Block and Gravel Protection (Curb and Drop Inlets)  
Concrete blocks shall be placed on their sides in a single row around the perimeter of the inlet, with ends abutting. Openings in the blocks should face outward, not upward. 1/2" x 1/2" wire mesh shall be placed over the outside face of the blocks covering the holes. Filter stone shall then be placed against the wire mesh to the top of the blocks with the base of the stone being a minimum of 18 inches from the blocks. Alternatively, when the stone is in a concrete (gravel, etc.) the filter stone may be placed in appropriately sized geotextile fabric bags. Periodically, when the stone filter becomes clogged, the stone must be removed and cleaned in a proper manner or replaced with new stone and placed back against the wire mesh.
- Elevated Inlet Protection  
An elevated inlet protection shall be sized to provide a storage volume of between 1800 and 3000 cubic feet per acre of disturbed area. The top shall have a minimum depth of one foot and a maximum depth of 2 feet as measured from the top of the inlet and shall have side slopes of 2:1 or better. Heavy holes are to be installed in the top to allow for the complete emptying of the trap. When the storage capacity of the inlet protection has been reduced by one-half, the inlet shall be removed and replaced as a proper manner.
- Inlet Inserts are commercially available to remove sediment, constituents (pollutants) adsorbed to sediment, oil and grease. Maintenance is required to remove sediment and debris that could clog the filters. Inlet inserts must have a bypass function to prevent flooding from clogging or high flow conditions.

**LIMITATIONS**  
Special caution must be exercised when installing inlet protection on publicly traveled streets or in developed areas. Ensure that inlet protection is properly designed, installed and maintained to avoid flooding of the roadway or adjacent properties and structures.

Inlet protection is only viable at low point inlets. Inlets that are on a slope and are elevated protected because storm water will bypass the inlet and continue downstream, causing an overflow condition at inlet downstream.

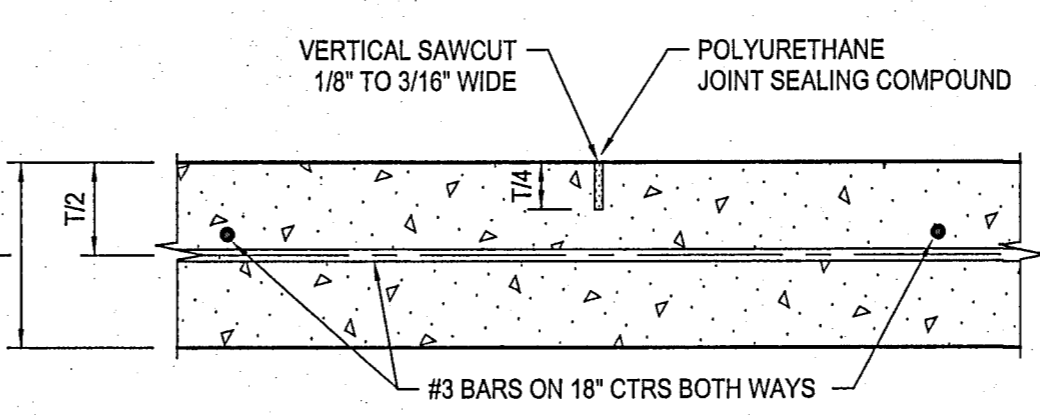
ISWH Design Manual for Construction

4-17



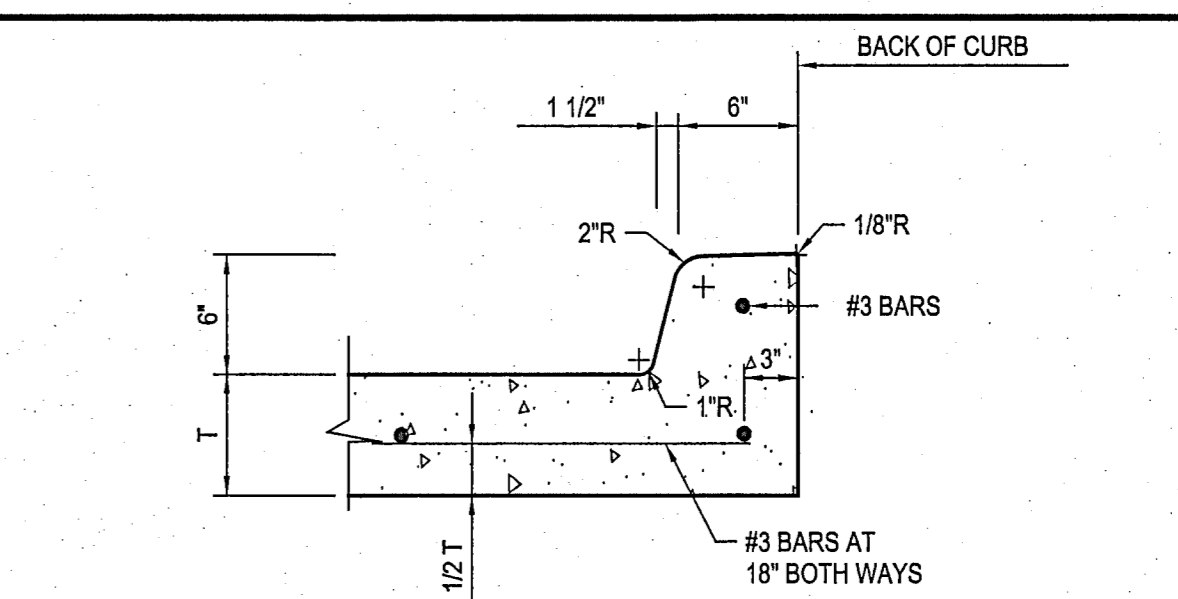
#### CONSTRUCTION JOINT DETAIL (L)

NTS



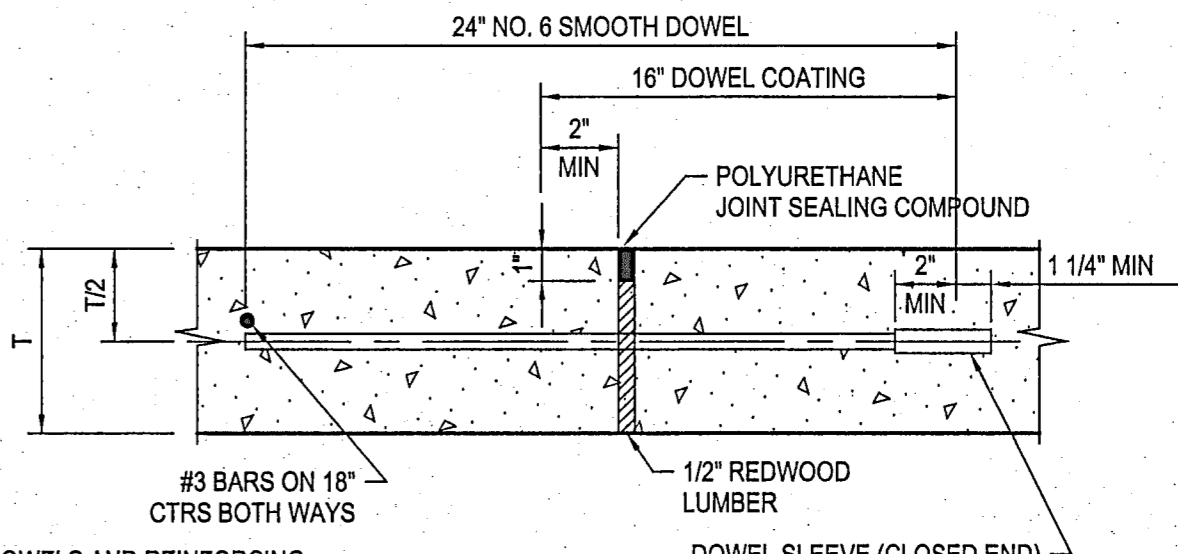
#### SAWED DUMMY JOINT DETAIL (T)

NTS MAXIMUM SPACING = 15 FEET



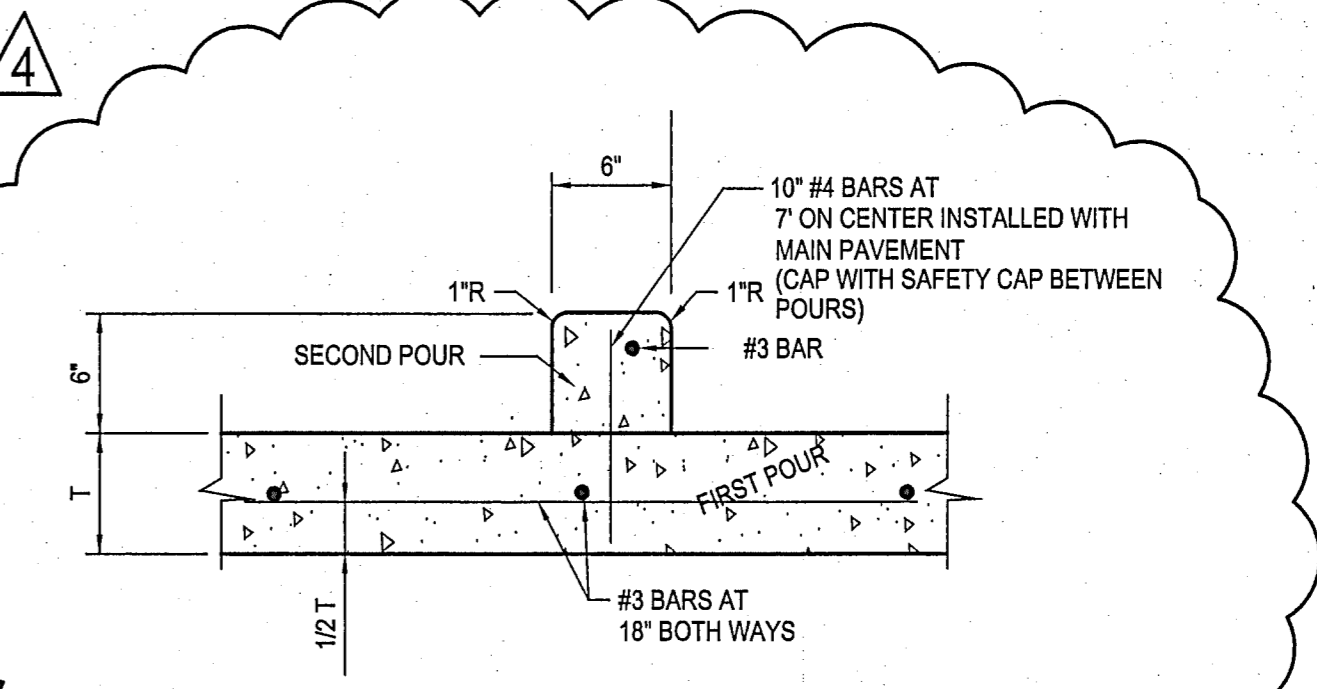
#### INTEGRAL CURB & GUTTER

NTS



#### EXPANSION JOINT DETAIL

NTS MAXIMUM SPACING = 60 FEET



#### SEPARATE CURB

NTS

December 2003

### Silt Fence

**DESCRIPTION**  
A silt fence consists of geotextile fabric supported by wire mesh netting or other backing stretched between either wooden or metal posts with the lower edge of the fabric securely embedded in the soil. The fabric is typically located downstream of disturbed areas to intercept runoff in the form of sheet flow. A silt fence provides both filtration and time for sediment settling by reducing the velocity of the runoff.

**PRIMARY USE**  
Silt fence is normally used as perimeter control downstream of disturbed areas. It is only feasible for non-concentrated, sheet flow conditions. If it becomes necessary to place a silt fence where concentrated flow may be experienced (e.g. where two silt fences join at an angle, or across minor channels or gullies), it will be necessary to reinforce the silt fence at that area by a rock berm or sand bag berm, or other structural measures that will support the silt fence.

**APPLICATIONS**  
Silt fence is an economical means to treat overland, non-concentrated flows for all types of projects. Silt fences are used as perimeter control devices for both site developers and linear (roadway) type projects. They are most effective with coarse to silty soil types. Due to the potential of clogging and limited effectiveness, silt fences should be used with caution in areas that have predominantly clay soil types. In this latter instance a soils engineer or soil scientist should confirm the suitability of silt fence for that application.

**DESIGN CRITERIA**

- Fence are to be constructed along a line of constant elevation (along a contour line) where possible.
- Maximum drainage area shall be 0.25 acres per 100 linear feet of all fence.
- Maximum flow to any 20 foot section of all fence shall be 1 CFS.
- Maximum distance of flow to silt fence shall be 200 feet or less. If the slope exceeds 10 percent the flow distance shall be less than 50 feet.
- Maximum slope adjacent to the fence shall be 2:1.
- If 50% or less soil, by weight, passes the U.S. Standard sieve No. 200; if not, the apparent opening size (A.O.S.) is to remain 85% of the soil.
- If 65% or more of soil, by weight, passes the U.S. Standard sieve No. 200, all fences shall not be used unless the soil mass is evaluated and deemed suitable by a soil scientist or geotechnical engineer concerning the erodibility of the soil mass, dispersive characteristics, and the potential grain size characteristics of the material that is likely to be eroded.

Perimeter Control	Targeted Constituents
Erosion Protection	• Sediment
Sediment Trapping	• Infiltrate Toxic Materials
Channel Protection	• Oil & Grease
Temporary Stabilization	• Flocculable Materials
Permanent Stabilization	• Other Construction Wastes
Waste Management	• Implementation Requirements
Housekeeping Practices	• Capital Costs
	• Maintenance
	• Training
	• Substitutability for Slopes > 5%

Legend

- Significant Impact
- Medium Impact
- Low Impact
- Unknown or Unassessable Impact

F=0.75  
S-1

North Central Texas Council of Governments

ISWH Design Manual for Construction

4-18

December 2003

### Inlet Protection - Curb

**DESCRIPTION**  
An inlet protection curb is a structure that is installed at the edge of a disturbed area to intercept runoff in the form of sheet flow. It consists of a concrete curb, concrete block, and silt wood block. The curb is typically located downstream of disturbed areas to intercept runoff in the form of sheet flow. A silt fence provides both filtration and time for sediment settling by reducing the velocity of the runoff.

**PRIMARY USE**  
An inlet protection curb is normally used as perimeter control downstream of disturbed areas. It is only feasible for non-concentrated, sheet flow conditions. If it becomes necessary to place a silt fence where concentrated flow may be experienced (e.g. where two silt fences join at an angle, or across minor channels or gullies), it will be necessary to reinforce the silt fence at that area by a rock berm or sand bag berm, or other structural measures that will support the silt fence.

**APPLICATIONS**  
An inlet protection curb is an economical means to treat overland, non-concentrated flows for all types of projects. Silt fences are used as perimeter control devices for both site developers and linear (roadway) type projects. They are most effective with coarse to silty soil types. Due to the potential of clogging and limited effectiveness, silt fences should be used with caution in areas that have predominantly clay soil types. In this latter instance a soils engineer or soil scientist should confirm the suitability of silt fence for that application.

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ISWH Design Manual for Construction

4-19

3

**MANHOLE RIM TO BE SET FLUSH WITH PAVEMENT OR 1" TO 4" ABOVE GRADE IN NON-PAVED AREAS. SEE CAST IRON MANHOLE FRAME & COVER DETAIL.**

**EXIST. P.W.M.T.**

**EXIST. GRADE**

**1/2" NON SHRINK GROUT COATING**

**NEOPRENE "O-RING" GASKET AND MASTIC**

**COUPLING WITH O-RING RUBBER GASKET KOR-N-SEAL, OR APPROVED EQUAL**

**EMBEDMENT AS SPECIFIED BY STANDARD DETAILS.**

**ROCK FOUNDATION**

**GEOTEXTILE MATERIAL**

**REFER TO NCTCOG SPECIFICATION (LATEST EDITION) FOR:**

1. CONCRETE CLASS.
2. CONCRETE PIPE MATERIAL.
3. MANHOLE MATERIAL.
4. RUBBER GASKET JOINT.

**NOTES:**

1. IF FALSE MANHOLE BOTTOMS ARE REQUIRED, THEY SHALL BE CONSTRUCTED, INSTALLED, AND REMOVED PER WASTEWATER MANHOLE FALSE BOTTOM STD. DETAIL.
2. WHERE MANHOLES ARE OUTSIDE OF PAVEMENT, FRAME & COVER SHALL BE CENTERED IN 5"± CONCRETE PAD CLASS "A" CONCRETE, 4" THICK
3. ALL MANHOLES SHALL PASS VACUUM TEST AS PER NCTCOG SPECIFICATIONS

**PRECAST CONCRETE PIPE MANHOLE ALTERNATE "B"**

**STANDARD CONSTRUCTION DETAILS WASTEWATER**

**DATE: AUGUST, 2010 REV. DATE: SHEET: 3D-WW07**

**PUBLIC WORKS DEPARTMENT**

CAP PIPE BEHIND

SIGN "A" AT EA SPACE

SIGN "B" AT VAN ACCESSIBLE SPACES ONLY

2 3/8" OD GALV STL POST

PAVING OR GRADE

3000 PSI CONC

RESERVED PARKING

PER CITY REQUIREMENTS

VAN ACCESSIBLE

PER CITY REQUIREMENTS

SCALE: NTS

**ACCESSIBLE PARKING SIGN DETAILS**

**COLORS:**  
LEGEND AND BORDER: GREEN  
BACKGROUND: WHITE  
SYMBOL: WHITE ON BLUE BACKGROUND

**COLORS:**  
LEGEND AND BORDER: GREEN  
BACKGROUND: WHITE

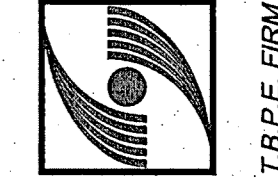
**NOTE:**  
MINIMUM 12" OF BARE #6 SDCU WIRE TO BE PLACED IN BOTTOM OF HOLE AND COVERED WITH 2" OF DIRT

#### LIGHT POLE FOUNDATION

SCALE: NTS

**GLENN ENGINEERING**

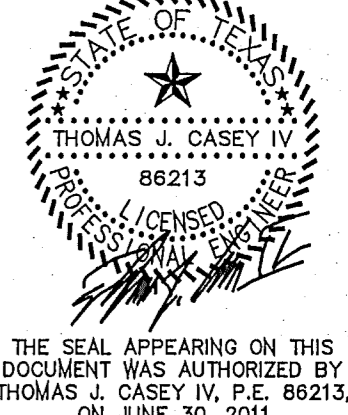
PHONE 972-717-5151  
105 DECKER COURT SUITE 910  
IRVING, TEXAS 75062



**TRINITY CHRISTIAN ACADEMY**

**PARKING ADDITIONS**

**DETAIL SHEET**



**Issue Dates:**

1. Review: Bid March 7, 2011
2. Revised Grading & HC Parking: May 2, 2011
3. Re-Bid: May 11, 2011
4. Town Comments, June 7, 2011
5. Town Comments #2, Removed Loop Road: June 30, 2011

**Construction:**

**Scale:** AS NOTED

**Drawn By:** TJC

**Checked By:** CMA

**Project No.:** 10-599-150

**Sheet 11**

**of 13**