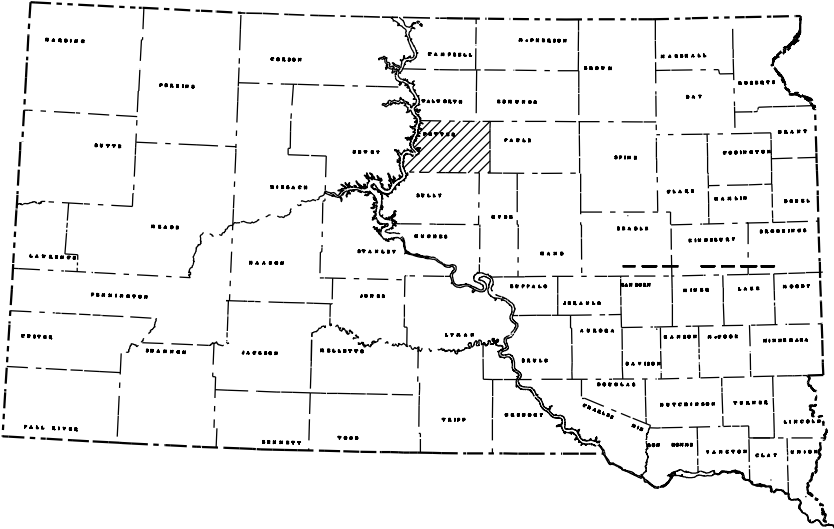


| STATE OF | PROJECT | SHEET NO. | TOTAL SHEETS |
|----------|---------|-----------|--------------|
| S.D.     | 410C267 | 1         | 23           |

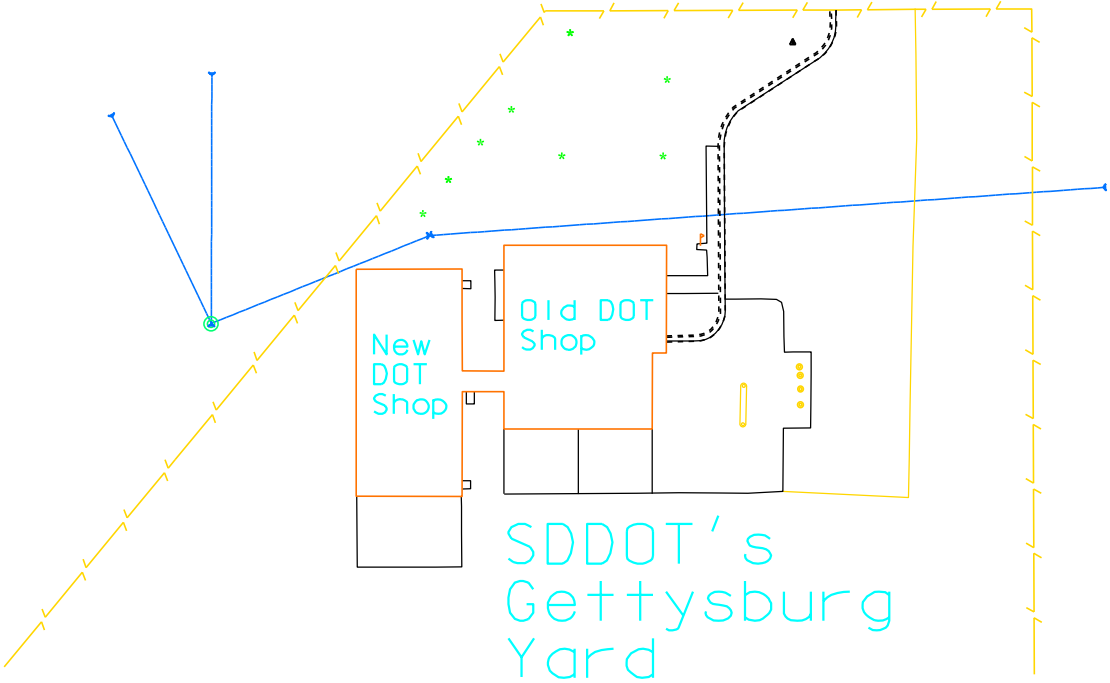
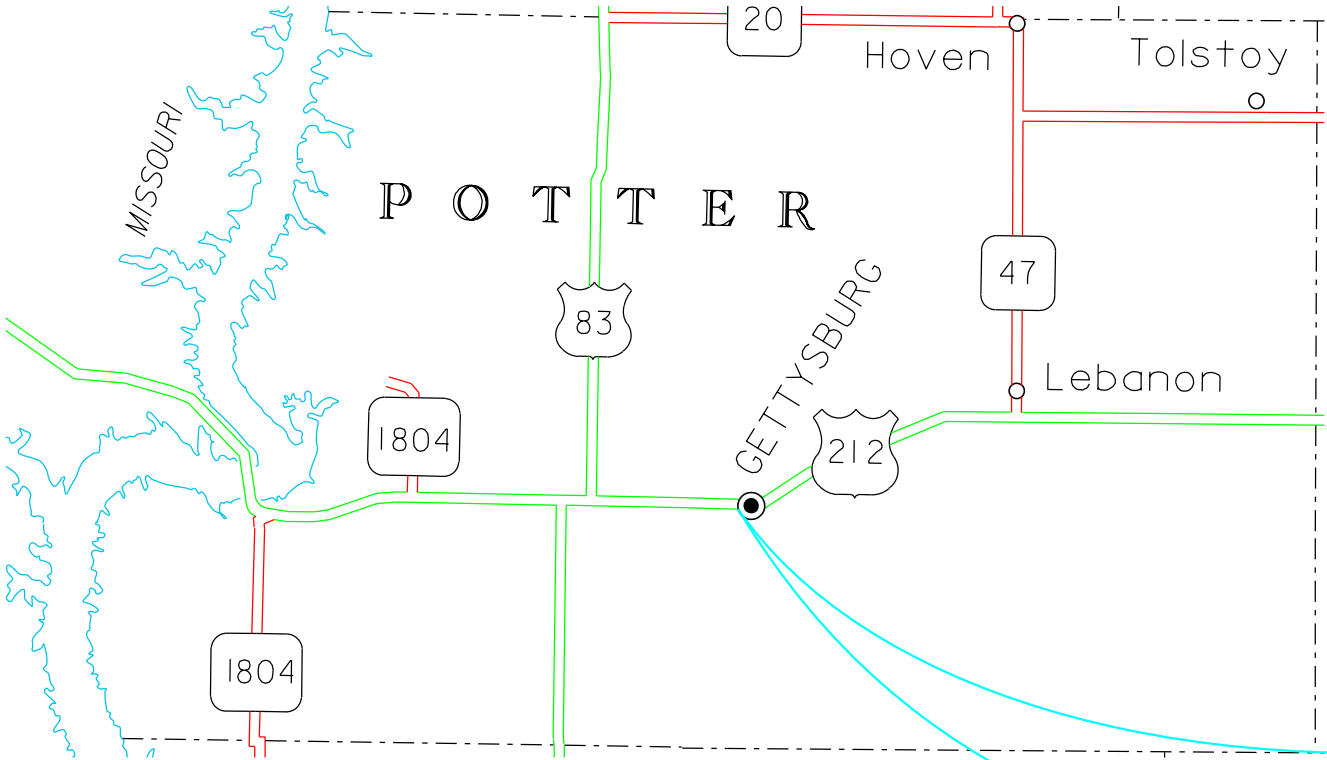
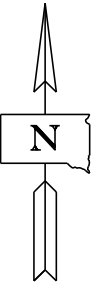


STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION  
PLANS FOR PROPOSED  
**PROJECT 410C267**  
**DOT's GETTYSBURG SHOP**  
**POTTER COUNTY**  
CONCRETE REMOVAL, ASPHALT REMOVAL, PCC  
PAVING AND ASPHALT CONCRETE SURFACING

PCN: I2U3

INDEX OF SHEETS

- 1: TITLE SHEET
- 2-4: ESTIMATE OF QUANTITIES AND PLAN NOTES
- 5: EASEMENTS
- 6-7: TYPICAL SECTIONS
- 8: CONCRETE AND ASPHALT REMOVAL
- 9: HDPE PIPE AND SANITARY SEWER WORK
- 10-11: DROP INLET AND PIPE DETAILS
- 12: FRAME AND GRATE DETAILS
- 13: ORIGINAL CONSTRUCTION PLANS
- 14: CONCRETE AND ASPHALT PLACEMENT
- 15: JOINT LAYOUT
- 16-23: STANDARD PLATES



STORM WATER PERMIT  
None Required

ESTIMATE OF QUANTITIES

Non-Section Method

| Bid Item Number | Item   | Quantity | Unit |
|-----------------|--|----------|------|
| 009E0010        | Mobilization                                 | Lump Sum | LS   |
| 110E1010        | Remove Asphalt Concrete Pavement             | 414.2    | SqYd |
| 110E1100        | Remove Concrete Pavement                     | 664.8    | SqYd |
| 110E1140        | Remove Concrete Sidewalk                     | 27.4     | SqYd |
| 120E2000        | Undercutting                                 | 89       | CuYd |
| 250E0010        | Incidental Work                              | Lump Sum | LS   |
| 320E1200        | Asphalt Concrete Composite                   | 106.8    | Ton  |
| 380E0050        | 8" Nonreinforced PCC Pavement                | 1,017.5  | SqYd |
| 380E6000        | Dowel Bar                                    | 48       | Each |
| 380E6110        | Insert Steel Bar in PCC Pavement             | 12       | Each |
| 450E7001        | 8" High Density Polyethylene Pipe, Furnish   | 160      | Ft   |
| 450E7002        | 8" High Density Polyethylene Pipe, Install   | 160      | Ft   |
| 450E7009        | 15" High Density Polyethylene Pipe, Furnish  | 138      | Ft   |
| 450E7010        | 15" High Density Polyethylene Pipe, Install  | 138      | Ft   |
| 450E7400        | High Density Polyethylene Pipe Bend, Furnish | 3        | Each |
| 450E7401        | High Density Polyethylene Pipe Bend, Install | 3        | Each |
| 450E7500        | High Density Polyethylene Pipe Tee, Furnish  | 1        | Each |
| 450E7501        | High Density Polyethylene Pipe Tee, Install  | 1        | Each |
| 451E1004        | 4" PVC Sewer Pipe                            | 82       | Ft   |
| 451E1504        | 4" Sanitary Sewer Service Cleanout           | 1        | Each |
| 650E0080        | Type B68 Concrete Curb and Gutter            | 49       | Ft   |
| 650E4680        | Type P8 Concrete Gutter                      | 8        | Ft   |
| 650E6080        | 8" Concrete Valley Gutter                    | 266      | Ft   |
| 651E0040        | 4" Concrete Sidewalk                         | 225      | SqFt |
| 670E1010        | 2' x 3' Type B Drop Inlet                    | 2        | Each |
| 670E3300        | Type E Frame and Grate                       | 2        | Each |
| 671E7010        | Adjust Manhole                               | 1        | Each |

SPECIFICATIONS

Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2004 Edition and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

SCOPE OF WORK

The work to be done in the Gettysburg DOT Maintenance Yard includes but is not limited to the following:

- Removal of PCC and Asphalt pavement to the limits shown on the plans.
- Installation of drop inlets with frames and grates, HDPE pipe for storm drainage, and PVC for sanitary sewer.
- Some excavation and grading of the subgrade after surfacing removal.
- Curb & Gutter, Sidewalk, Valley Gutter, PCC Paving, and Asphalt Paving.

COORDINATION OF WORK

The Contractor shall cooperate with other Contractors as per Section 5.7 of the Standard Specifications.

There is work scheduled for the reconstruction of the Gettysburg Maintenance Yard’s salt dome during the 2013 construction season. Some coordination may be required between contractors so that both can perform work at the site. Each contractor shall have access to their work area at all times.

The Contractor shall cooperate/coordinate with the SDDOT during construction operations to minimize conflicts and facilitate owner usage of the shop.

SEQUENCE OF OPERATIONS

Due to the existing conditions of the site at the time of plan preparation, the Contactor shall consider staging work so that all construction equipment is working off a surfaced area and not bare subgrade.

UTILITIES

The Contractor shall be aware that the existing utilities shown in the plans were surveyed prior to the design of this project and might have been relocated or replaced by a new utility facility prior to construction of this project or might not require adjustment and may remain in its current location. The Contractor shall contact the involved utility companies through South Dakota One Call (1-800-781-7474) prior to starting work. It shall be the responsibility of the Contractor to coordinate work with the utility owner to avoid damage to existing facilities.

WASTE DISPOSAL SITE

The Contractor will be required to furnish a site(s) for the disposal of construction/demolition debris generated by this project.

Construction/demolition debris may not be disposed of within the State ROW.

The waste disposal site(s) shall be managed and reclaimed in accordance with the following from the General Permit for Highway, Road, and Railway Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program issued by the Department of Environment and Natural Resources.

The waste disposal site(s) shall not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Engineer.

If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements shall apply:

Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste shall be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.

Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

All costs associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates, and signs), and reclamation of the waste disposal site(s) shall be incidental to the various contract items.

VALLEY GUTTER UNDERCUT

The valley gutter shown may or may not require undercutting. The depth of undercut is an estimate and the actual depth necessary shall be determined during construction. The Contractor shall only remove and backfill the valley gutter limits in maximum 25 foot increments. Any undercutting shall be in accordance with Section 421 of the Standard Specifications.

If determined necessary, the Valley Gutter Undercut shall be done for the full length of the gutter and as per the cross section as shown on the plan sheet for the “Valley Gutter Typical Section”. The undercutting of the valley gutter starting at the bottom of the base course and assuming 1 foot down and 9

feet wide for the entire length of the gutter will be measured by the cubic yard and paid for at the contract unit price per cubic yard. Payment will be full compensation for undercutting the valley gutter including equipment, labor, tools, and materials for furnishing, placing, watering, and compacting backfill in place of excavated material shall be paid at the contract unit price per Cubic Yard for “Undercutting”.

For information, two holes 36” deep were drilled to check for a water table. 1) Free water was found 19 inches below the surface 36’ south of the SE corner of the old building. 2) 40’ south of the SE corner of the new building, the materials were found to be very wet in the bottom of hole but no water table was found. These were measured on 5-15-2013.

REMOVAL OF EXISTING CONCRETE AND ASPHALT PAVEMENT

Existing PCC pavement, concrete curb and gutter, and asphalt concrete shall be removed to the limits shown on the “Concrete and Asphalt Removal” plan sheet. The quantities for each are shown on that same sheet. The Contractor shall dispose of the PCC pavement, concrete curb and gutter, and asphalt concrete at a site approved by the Engineer. Any additional pavement removals shall be added at the discretion of the Engineer.

The existing concrete is 6 inch P.C.C. Pavement and is likely reinforced with wire mesh. A Concrete Apron exists in front of the three doors of the old DOT Shop building. The apron is 49’ long by 4’ wide with the apron’s details being shown on the sheet entitled “Original Construction Plans”. The “Original Construction Plans” are for information only and should be used for purpose of bidding the removal of the 6” x 49’ x4’ apron surface.

The existing asphalt is approximately 3 inches thick.

Payment for the removal and disposal of the concrete (including the concrete apron) and asphalt shall be paid for based on the unit price per Square Yard for “Remove Concrete Pavement” and “Remove Asphalt Concrete Pavement”, respectively.

PAVEMENT STRUCTURES

The pavement structures to be placed are as follows:

- All PCC pavement shall be 8” of concrete with 5” of base course below.
- All asphalt pavement shall be 5” of AC with 8” of base course below.
- All PCC Sidewalk shall be 4” of concrete with 2” of base course below.

EXCAVATION

All excavation needed to accommodate the base course beneath the 8” concrete pavement, the 5” asphalt pavement, or the 8” Valley Gutter shall be incidental to the respective bid items. Care shall be taken so as NOT to cause too much disturbance below the bottom of the base course. When the excavation is complete, the surface shall be compacted as approved by the Engineer prior to the placement of base course.

BASE COURSE

The Department will provide and stockpile base course on site for use by the contractor. It shall be the contractor's responsibility to excavate to the desired elevation and then place and compact the base course such that the pavement structures are as per the note above.

8” NONREINFORCED PCC PAVEMENT

All 8” Concrete Pavement shall be constructed using M6 Concrete. The 8” Concrete Pavement unit price shall include M6 Concrete, excavation, placement and compaction of base course, apron reinforcing steel, tie bars, keyways, joint sawing, hot pour sealant, labor, equipment, and any other items needed to construct the 8” Concrete Pavement. The 8” Concrete Pavement shall be paid for at the contract unit price per Square Yard for “8” Nonreinforced PCC Pavement”.

5” ASPHALT CONCRETE PAVEMENT

All 5” Asphalt Pavement shall be constructed using M6 Concrete. The Asphalt Concrete Composite unit price shall include Asphalt Concrete, placement and compaction of base course, excavation, hot pour sealant along the PCC pavement/asphalt interface, labor, equipment, and any other items needed to construct the Asphalt Pavement. The 5” Asphalt Concrete Pavement shall be paid for at the contract unit price per Ton for “Asphalt Concrete Composite”.

8” CONCRETE VALLEY GUTTER

The Valley Gutter shall be constructed using M6 Concrete. The valley gutter's unit price shall include concrete, excavation, base course, all steel as shown on the plan sheet, keyway, joint sawing, hot pour, labor, equipment, dowels, and any other items needed to construct the valley gutter. The valley gutter shall be paid for at the contract unit price per Square Yard for “8” Concrete Valley Gutter”.

Note: For information only, it is estimated that 1,090 pounds of steel will be needed for the construction of the valley gutter. This does not include steel needed for tie bars along the joint which will tie the 8” Nonreinforced PCC Pavement to the 8” Concrete Valley Gutter.

DROP INLETS

The 2’x3’ Type B Drop Inlets shall be constructed using M6 Concrete. The 2’x3’ Type B Drop Inlet unit price shall include M6 Concrete, reinforcing steel, excavation, installation, base course, labor, equipment, and any other items needed to construct and install the drop inlets. The drop inlets shall be paid for at the contract unit price per Each for “2’x3’ Type B Drop Inlet”.

The Type E Frame and Grate unit price shall include furnishing, installing, and any other items needed to install the Type E Frame and Grate. The frame and grates shall be paid for at the contract unit price per Each for “Type E Frame and Grate”.

TABLE OF DROP INLETS AND QUANTITIES (for information only)

| Location                             | Drop Inlet Size | Drop Inlet Type | Height  | Class M6 Concrete (CuYd) | Reinf. Steel (Lb) | Frame and Grate/Lid Type |
|--------------------------------------|-----------------|-----------------|---------|--------------------------|-------------------|--------------------------|
| See Drop Inlet and Pipe Detail Sheet | 2’x3’           | B               | 1.67’   | 0.63                     | 70                | E                        |
| See Drop Inlet and Pipe Detail Sheet | 2’x3’           | B               | 4.25’   | 1.20                     | 122               | E                        |
|                                      |                 |                 | Totals: | 1.83                     | 192               | 2                        |

8” and 15” HDPE PIPE

All HDPE pipe shall be double walled with the interior wall being smooth and the exterior wall having annular corrugations. The 8” HDPE pipe shall meet the requirements set forth by AASHTO M252, Type S. The 15” HDPE pipe shall meet the requirements set forth by AASHTO M294, Type S or ASTM F2306.

All HDPE pipe joints shall be watertight according to the requirements of ASTM D3212.

The 8” and 15” HDPE pipe shall be paid for at the contract unit price per Foot for “8” High Density Polyethylene Pipe, Furnish” and “15” High Density Polyethylene Pipe, Furnish”, respectively.

The 8” and 15” HDPE pipe installation unit costs shall include excavation, foundation preparation, bedding material, backfill material, cover material, drop inlet wall breakout for pipe insertion, grout around the HDPE pipe/drop inlet, labor, equipment, and any other items needed to complete the installation of the each pipe. The HDPE pipe installation shall be paid for at the contract unit price per Foot for “8” High Density Polyethylene Pipe, Install” and “15” High Density Polyethylene Pipe, Install”, respectively.

The 8” HDPE Bends and Tee will be paid by the Each under their respective items.

NOTE: The top of the 8” HDPE roof drain pipes shall be placed flush with the top of the concrete. The Department will supply two roof drain downspout extensions to the contractor. It will then be the contractor's responsibility to extend the downspouts into the 8” roof drain pipe. The costs for labor and any other items needed to extend the 2 roof downspouts into the 8” roof drain pipe shall be incidental to the contract unit price per Foot for “8” High Density Polyethylene Pipe, Install”.

INCIDENTAL WORK

A cover plate shall be constructed as shown and described on the “Frame and Grate Details” sheet. The cover plate price shall include the stainless steel angle iron, stainless steel allthread, stainless steel nuts, steel plate, expansion board, labor, equipment, and any other items needed to fabricate the angle iron and steel plate as described on the “Frame and Grate Details” sheet. The cover plate shall be paid for at the contract lump sum price for “Incidental Work”.

4” PVC SEWER PIPE

The 4” PVC sewer unit price shall include the 4” PVC pipe, PVC bends, excavation, foundation preparation, bedding material, backfill material, cover material, insertion of pipe into the drop inlets, grout around the PVC pipe/drop inlet, labor, equipment, and any other items needed to complete the installation of the PVC pipe. The PVC pipe shall be paid for at the contract unit price per Foot for “4” PVC Sewer Pipe”.

ADJUSTMENT OF MANHOLES

The Contractor shall adjust the manhole where shown on the plan sheets to the extent necessary so that it is flush with the top of the new concrete. Adjusting the manhole may consist of removing the upper course of brick or removing the concrete walls, replacing the removed materials with brick or Class M6 concrete, placing adjusting rings if necessary, and resetting the manhole frame and lid. The elevation of the lid shall be set at the same elevation of the adjacent new pavement or surrounding ground. All manhole frames, lids, and rings that are cracked or broken due to carelessness of the Contractor shall be replaced with new manhole frames, lids, and rings that conform with the Standard Specifications at the Contractor's expense. Manholes shall be adjusted to the satisfaction of the Engineer. All costs involved in adjusting the manholes shall be incidental to the contract unit price per Each for “Adjust Manhole”.

The Engineer may direct adjustment of manholes that were not included in these plans. Payment for adjusting manholes that were not included in the plans will be at the contract unit price per Each for “Adjust Manhole”.

GUTTER SLOPE FOR TYPE B CONCRETE CURB AND GUTTER AND TYPE P CONCRETE GUTTER

The Type B Concrete Curb and Gutter, Type P Concrete Gutter, and Concrete Curb Tapers shall be constructed as per Standard Plates 650.01, 650.30, and 650.35, respectively.

TABLE OF TYPE B68 CONCRETE CURB AND GUTTER

| Station Shown on | to Station Plan Sheet | L/R | Quantity (Ft) |
|------------------|-----------------------|-----|---------------|
|                  |                       | L   | 49            |
| Total:           |                       |     | 49            |

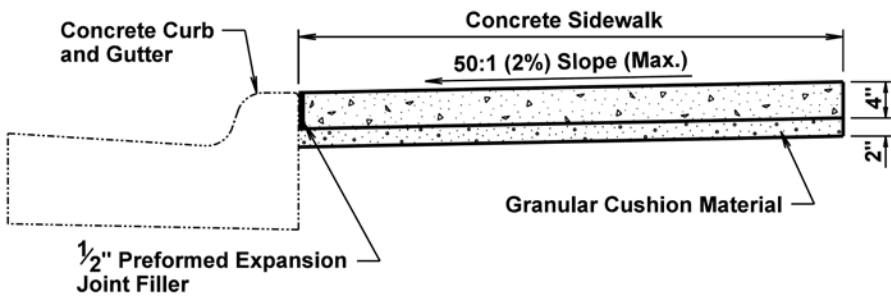
TABLE OF TYPE P8 CONCRETE GUTTER

| Station Shown on | to Station Plan Sheet | L/R | Quantity (Ft) |
|------------------|-----------------------|-----|---------------|
|                  |                       | L   | 8             |
| Total:           |                       |     | 8             |

| STATE OF SOUTH DAKOTA | PROJECT | SHEET | TOTAL SHEETS |
|-----------------------|---------|-------|--------------|
|                       | 410C267 | 3     | 23           |

4” CONCRETE SIDEWALK

The 4” Concrete Sidewalk shall be constructed using M6 Concrete. The 4” Concrete Sidewalk unit price shall include M6 Concrete, base course, excavation, tie bars, keyways, joint sawing, hot pour sealant, labor, equipment, and any other items needed to construct the 4” concrete sidewalk. The 4” sidewalk shall be paid for at the contract unit price per Square Foot for “4” Concrete Sidewalk”.



The concrete sidewalk shall be constructed in accordance with Section 651 of the Standard Specifications. The sidewalk details shown above are typical of this project. The plans sheets show where the new 4” concrete sidewalk is to be placed. The new P Gutter and 4” concrete sidewalk shall be placed such that the concrete to the building is ADA compliant.

TABLE OF 4” CONCRETE SIDEWALK

| Station  | to | Station    | L/R | Quantity<br>(SqFt) |
|----------|----|------------|-----|--------------------|
| Shown on |    | Plan Sheet | L   | 172                |
| Shown on |    | Plan Sheet | L   | 53                 |
| Total:   |    |            |     | 225                |

M6 CONCRETE

All M6 Concrete shall use ledge rock for the course aggregate and the fine aggregate shall conform to the ASR requirements set forth in Section 800.2.D.

The chances for ASR shall be minimized through the use of one of the following measures:

- Class F Modified Fly Ash shall be substituted for 20 percent of the cement in accordance with Section 605 of the Standard Specifications.
- The addition of ASR reducing admixtures (such as lithium) could be used.

The fine aggregate may require screening as determined by the Engineer.

All concrete surfaces shall receive a broomed finish that is transverse to the paving direction.

All of the other requirements as set forth in Section 462 for M6 shall apply.

ALKALI SILICA REACTIVITY

Fine aggregate shall conform to Section 800.2.D Alakali Silica Reactivity (ASR) Requirements.

Fine aggregate with a 14 day expansion value of 0.250 and greater shall not be used.

Below is a list of known fine aggregate sources and the average corresponding 14 day expansion values:

| Source                         | Location               | Expansion Value |
|--------------------------------|------------------------|-----------------|
| Bachman                        | Winner, SD             | 0.335*          |
| Birdsall S&G                   | Creston, SD            | 0.158           |
| Birdsall S&G                   | Oral, SD               | 0.131           |
| Birdsall S&G                   | Wasta, SD              | 0.170           |
| Bitterman                      | Delmont, SD            | 0.316*          |
| Concrete Materials             | Corson, SD             | 0.170           |
| Croell                         | Quinn, SD              | 0.089           |
| Emme Sand & Gravel             | Oneil, NE              | 0.217           |
| Fisher S&G                     | Rapid City, SD         | 0.092           |
| Fisher S&G                     | Spearfish, SD          | 0.053           |
| Fisher S&G                     | Wasta, SD              | 0.159           |
| Fuchs                          | Pickstown, SD          | 0.275*          |
| Higman                         | Akron, IA              | 0.198           |
| Higman                         | Hudson, SD             | 0.187           |
| Hilde                          | Madison, SD            | 0.116           |
| Jensen                         | Herried, SD            | 0.276*          |
| L.G. Everist                   | Brookings, SD          | 0.186           |
| L.G. Everist                   | Hawarden, IA           | 0.166           |
| L.G. Everist                   | Summit, SD             | 0.141           |
| Morris                         | Blunt, SD              | 0.192           |
| Morris – Richards Pit          | Onida, SD              | 0.188           |
| Myrl & Roys Paving- Nelson Pit | Sioux Falls, SD        | 0.156           |
| Northern Concrete Agg.         | Rauville, SD           | 0.113           |
| Northern Concrete Agg.         | Luverne, MN            | 0.124           |
| Opperman - Gunvordahl Pit      | Burke, SD              | 0.337*          |
| Opperman - Cahoy Pit           | Herrick, SD            | 0.307*          |
| Opperman - Jones Pit           | Burke, SD              | 0.321*          |
| Opperman – Randall Pit         | Pickstown, SD          | 0.239           |
| Thorpe Pit                     | Britton, SD            | 0.098           |
| Wagner Building Supplies       | Pickstown (Wagner), SD | 0.241           |
| Winter Brothers- Whitehead Pit | Brookings, SD          | 0.197           |

STEEL BAR INSERTION

The Contractor shall insert the Steel Bars (1” x 18” Epoxy Coated Smooth Bars with bar caps allowing 1½” of expansion movement) into drilled holes in the existing concrete pavement. An epoxy resin adhesive must be used to anchor the steel bar in the drilled hole.

NOTE: When drilling holes for the steel bars in the breezeway’s foundation wall, care shall be taken so as not to drill through the foundation wall. It is recommended that the hole depth be 2” less than the foundation wall thickness. For example, if the foundation wall is 8” thick, then drill the hole 6” deep. This would allow 6” of the bar to be epoxied into the foundation wall with 12” of the bar along with the cap to be cast into the new concrete.

The steel bars shall be cut to the specified length by sawing or shearing and shall be free from burring or other deformations.

Epoxy resin adhesive shall be of the type intended for horizontal applications, and shall conform to the requirements of ASTM C 881, Type IV, Grade 3 (equivalent to AASHTO M235, Type IV, Grade 3).

The diameter of the drilled holes in the existing concrete pavement for the steel bars shall not be less than 1/8 inch nor more than 3/8 inch greater than the overall diameter of the steel bar. Holes drilled into the existing concrete pavement shall be located at mid-depth of the slab and true and normal. The

drilled holes shall be blown out with compressed air using a device that will reach to the back of the hole to ensure that all debris or loose material has been removed prior to epoxy injection.

Mix the epoxy resin as recommended by the manufacturer and apply by an injection method approved by the Engineer. If an epoxy pump is utilized, it shall be capable of metering the components at the manufacturer’s designated rate and be equipped with an automatic shut-off. The pump shall shut off when any of the components are not being metered at the designated rate. Fill the drilled holes 1/3 to 1/2 full of epoxy, or as recommended by the manufacturer, prior to insertion of the steel bar. Care shall be taken to

prevent epoxy from running out of the horizontal holes prior to steel bar insertion. Rotate the steel bar during insertion to eliminate voids and ensure complete bonding of the bar. Insertion of the bars by the dipping method will not be allowed.

Cost for the epoxy resin adhesive, steel bars, bar caps, drilling of holes, applying the adhesive, inserting the steel bars into the drilled holes and all other items incidental to the insertion of the steel bars shall be incidental to the contract unit price per Each for “Insert Steel Bar In PCC Pavement”.

LOCATION OF CONCRETE PAVEMENT JOINTS

A construction joint will be sawed whenever new concrete pavement is placed adjacent to existing concrete pavement.

The contraction joints shall be located as shown on the “Joint Layout” sheet and detailed as per the appropriate standard plate. All joints shall be perpendicular unless they are shown otherwise on the “Joint Layout” sheet. In special situations the Engineer may pre-approve contraction joints that do not meet these requirements. All nonconforming contraction joints that are not pre-approved shall be removed at the Contractor’s expense. Any method of placement that cannot produce these requirements shall not be allowed to continue.

Although the location of the joints may change slightly, the “Joint Layout” sheet allows bidders a basis for estimating the construction cost of the joints.

ASPHALT CONCRETE COMPOSITE

Asphalt Concrete Composite shall be furnished by the Contractor.

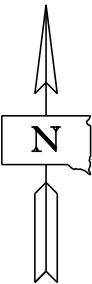
Mineral Aggregate for Asphalt Concrete shall conform to the requirements of the Standard Specifications for Class E, Type 1.

The asphalt binder used in the mixture shall be PG 64-22, PG 64-28, or PG 64-34 Asphalt Binder.



PERMANENT EASEMENTS FOR  
GETTYSBURG DOT YARD  
PCN: I2U3

| STATE OF<br>SOUTH<br>DAKOTA | PROJECT<br>410C267 | SHEET<br>NO.<br>5 | TOTAL<br>SHEETS<br>23 |
|-----------------------------|--------------------|-------------------|-----------------------|
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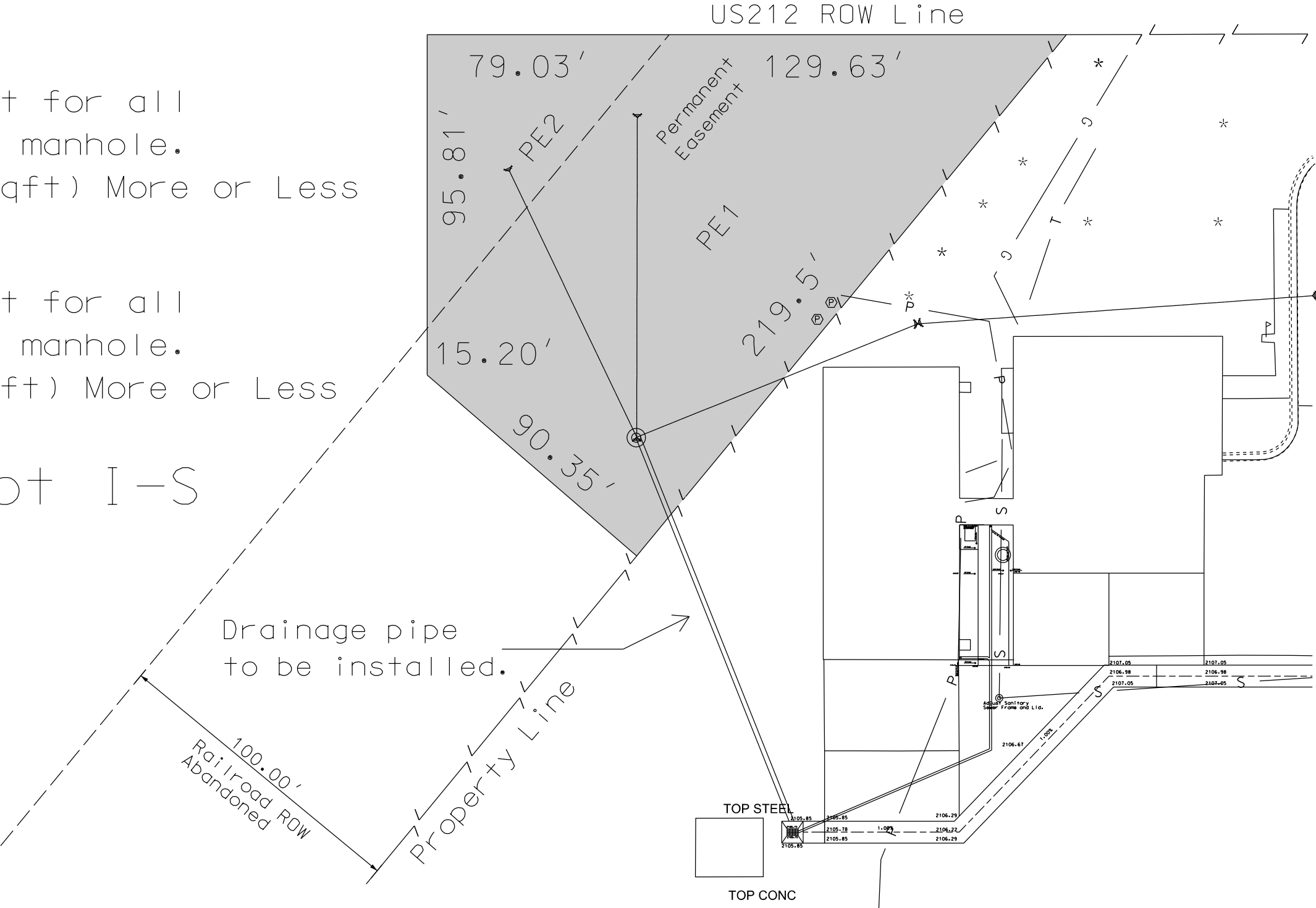


Parcel of Lot I-S in Larrington's Addition and that Parcel of Railroad ROW  
Abutting Lot "I-S" in Larrinton's Addition in the NW1/4 Sec. 26-T118N-R76W  
Potter County, South Dakota

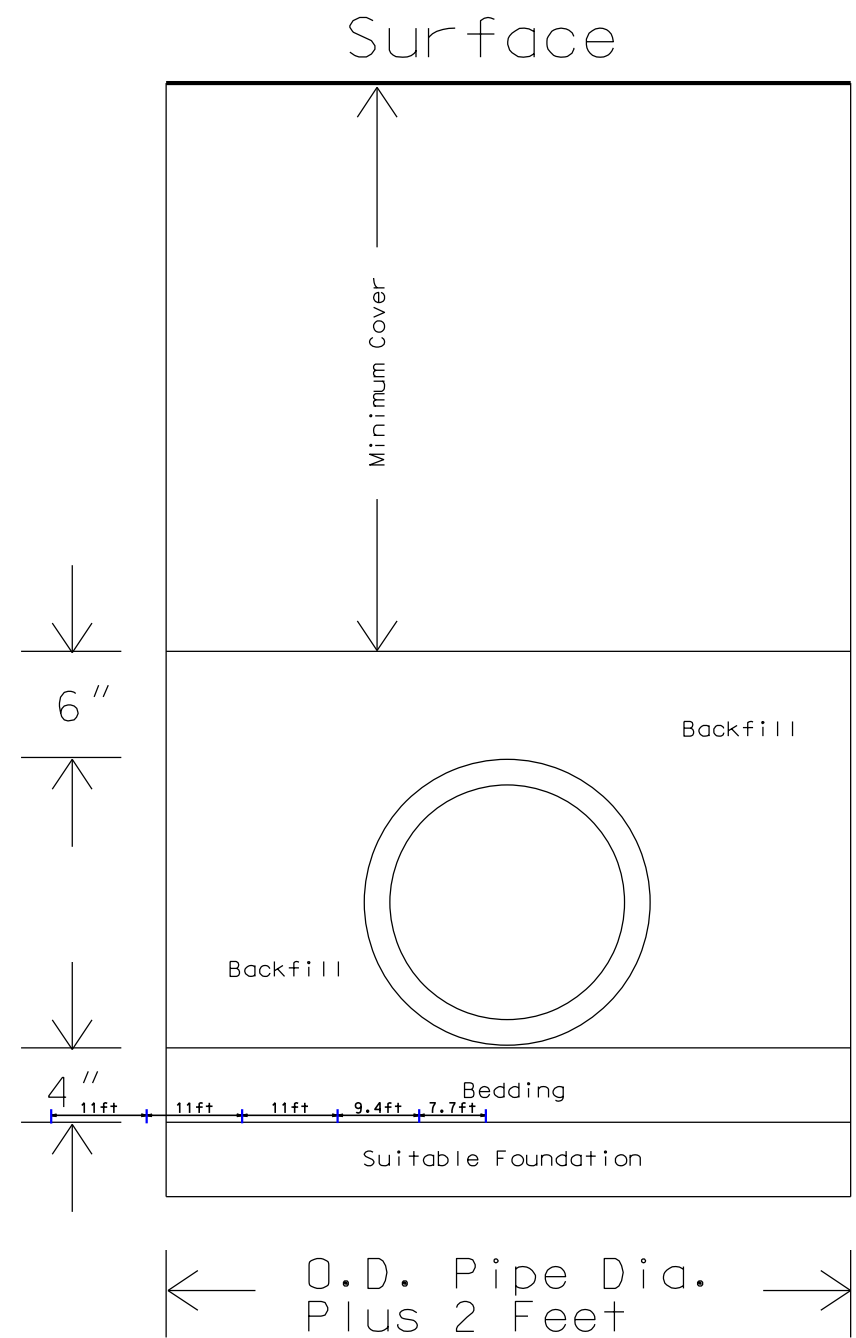
PE1 in RR - ROW  
Permanent Easement for all  
drainage pipe and manhole.  
0.41 AC (17,750 sqft) More or Less

PE2 in Lot I-S  
Permanent Easement for all  
drainage pipe and manhole.  
0.09 AC (3,786 sqft) More or Less

Lot I-S



# Typical Section HDPE Pipe Trenching And Backfilling



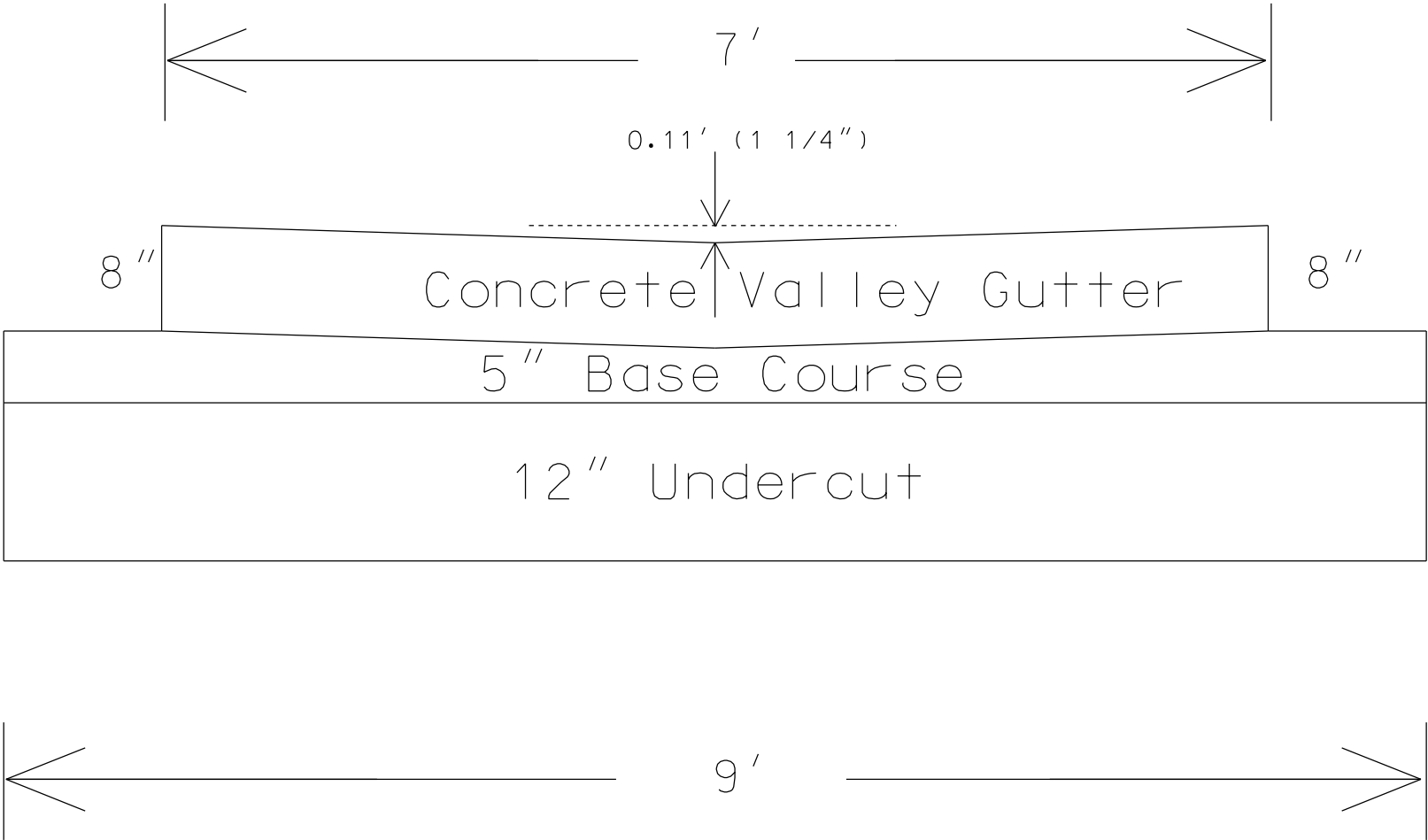
## HDPE Pipe Notes:

1. All pipe shall be installed in accordance with ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THE THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", latest addition.
2. Measures should be taken to prevent migration of native fines into backfill material, when required.
3. Foundation: Where the trench bottom is unstable, the contractor shall excavate to a depth required by the engineer and replace with suitable material as specified by the engineer.
4. Bedding: Suitable material shall conform to the following:

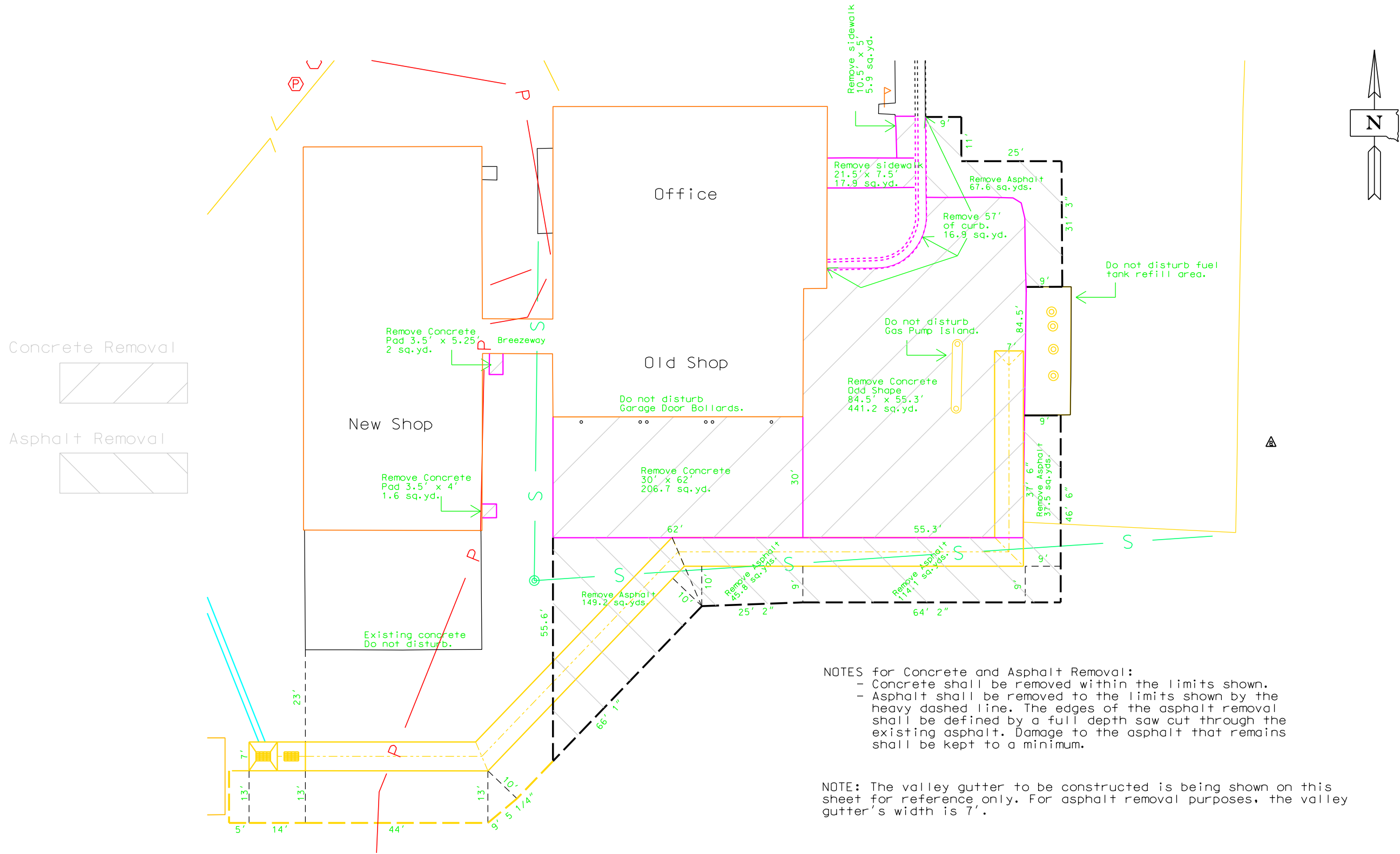
|               |          |
|---------------|----------|
| Sieve         | %Passing |
| 3/8" (9mm)    | 100      |
| No. 200 (75m) | 0-10.0   |
5. Backfill: Suitable material shall conform to the Aggregate Base Course requirements as specified in Standard Spec. 882. This material shall be placed in the pipe zone extending not less than 6" above the top of the pipe.
6. Minimum Cover: This will be achieved by installing each pipe's end at the plans elevations and maintaining a constant grade between the pipe's end points. The 15" HDPE pipe should be maintained at a 1.9% slope and the 8" HDPE pipe should be maintained at 1.6% slope.
7. Surface: Surfacing above each HDPE Pipe: 8" of concrete shall be placed above the 8" pipe. The surfacing above the 15" pipe shall match the existing surroundings.

|                             |         |              |                 |
|-----------------------------|---------|--------------|-----------------|
| STATE OF<br>SOUTH<br>DAKOTA | PROJECT | SHEET<br>NO. | TOTAL<br>SHEETS |
|                             | 410C267 | 7            | 23              |

# Typical Section Valley Gutter



# Concrete and Asphalt Removal

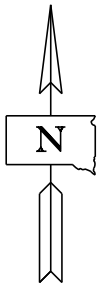




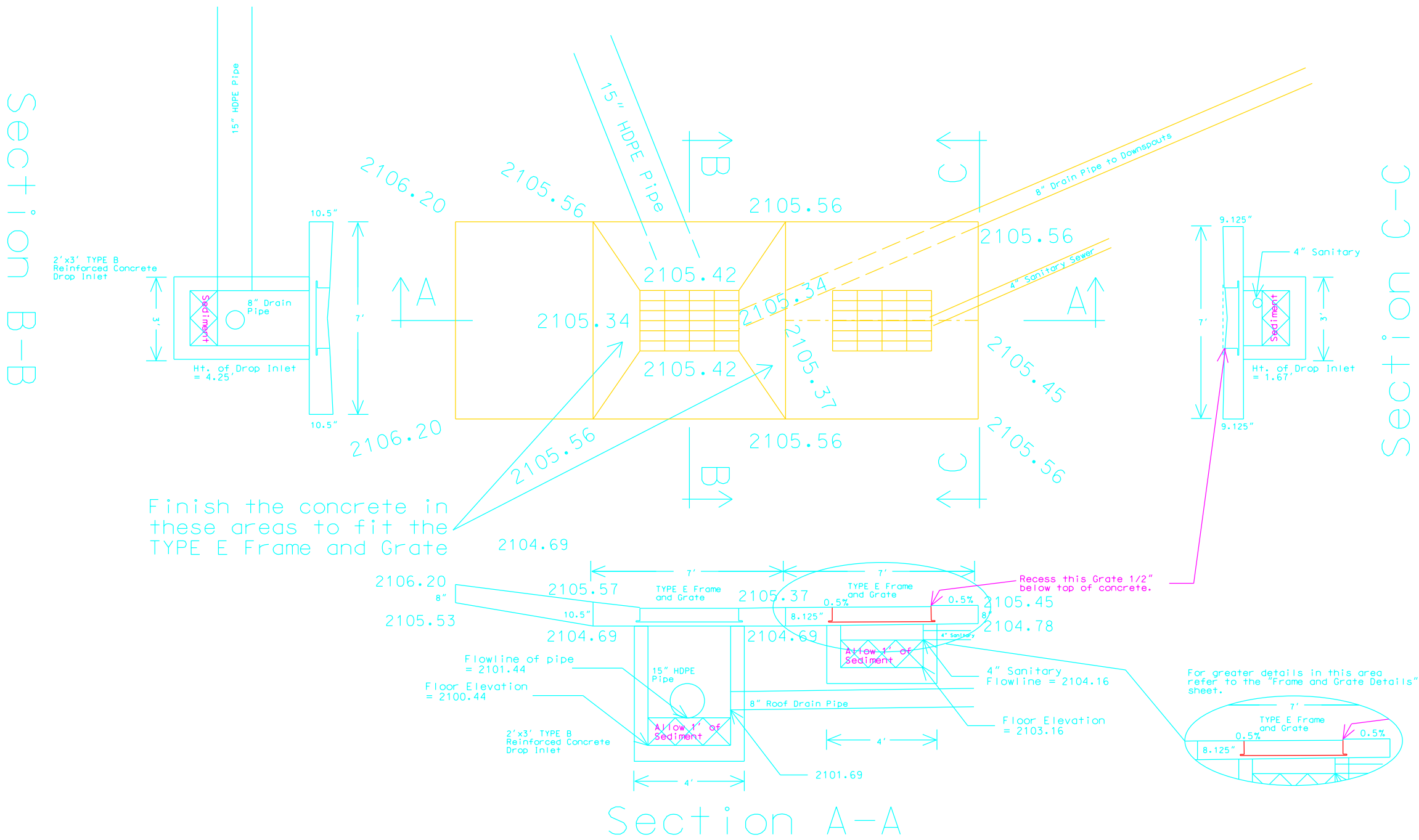


# Drop Inlet and Pipe Details

| STATE OF<br>SOUTH<br>DAKOTA | PROJECT | SHEET<br>NO. | TOTAL<br>SHEETS |
|-----------------------------|---------|--------------|-----------------|
|                             | 410C267 | 10           | 23              |



NOTE: The Base Course shall be graded level  
transverse to the length of the Valley  
Gutter from Section C-C west.



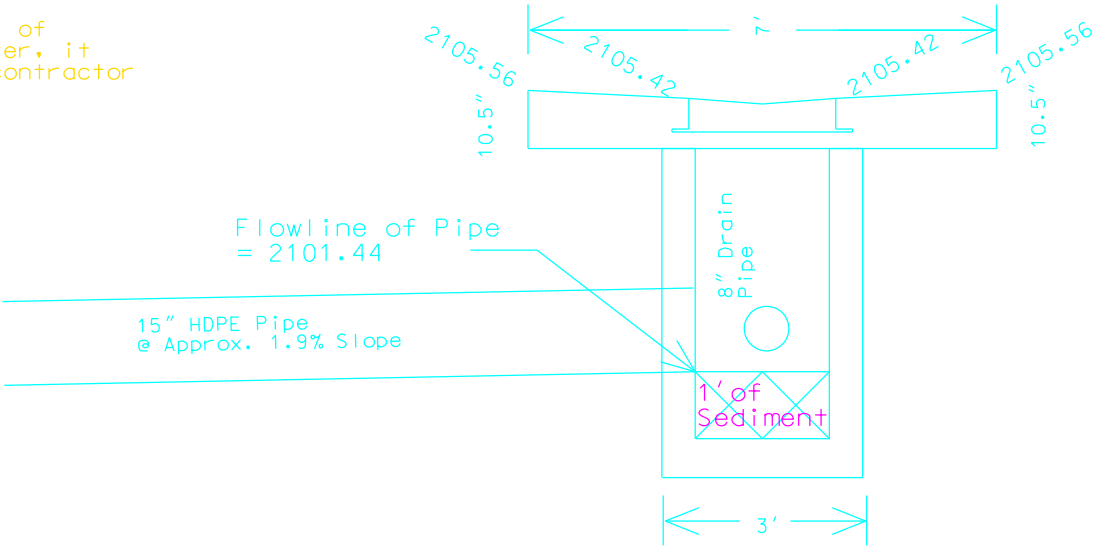
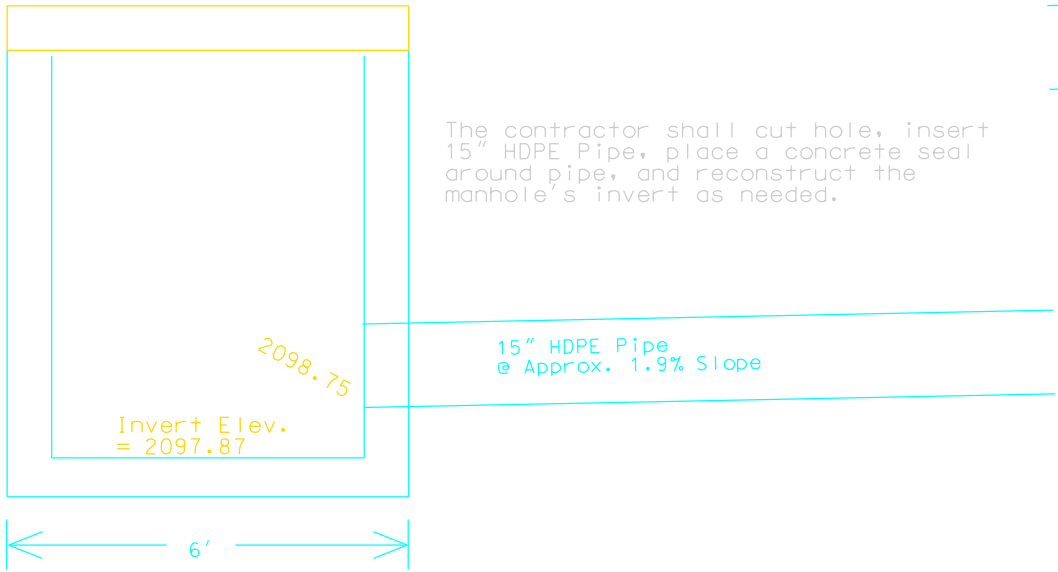
| STATE OF<br>SOUTH<br>DAKOTA | PROJECT | SHEET<br>NO. | TOTAL<br>SHEETS |
|-----------------------------|---------|--------------|-----------------|
|                             | 410C267 | 11           | 23              |

# Drop Inlet and Pipe Details (Continued)

2'x3' TYPE B  
Reinforced Concrete  
Drop Inlet

6' Dia.  
Manhole

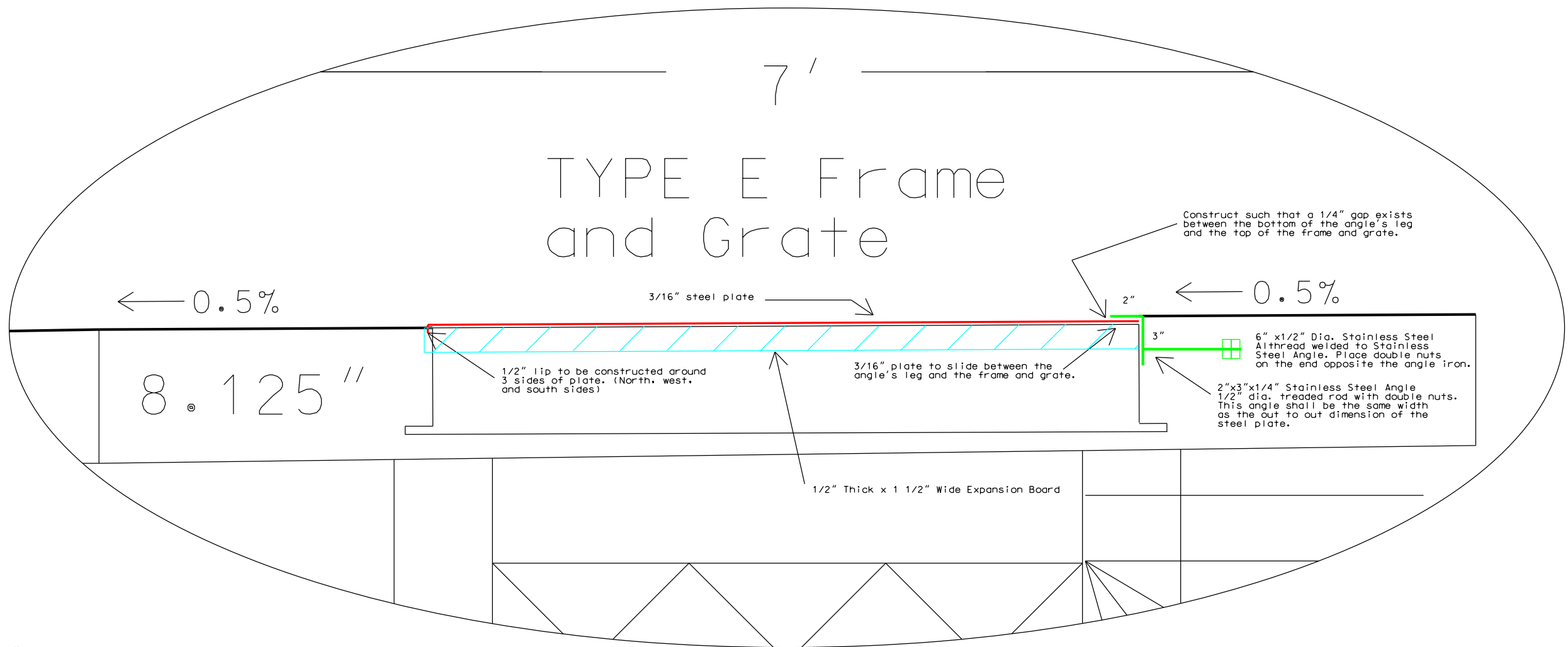
NOTE: It is estimate that 138' of 15" HDPE pipe is needed. However, it is the responsibility of the contractor to verify the quantity needed.



The contractor shall cut the holes in the drop inlet, insert the 8" and 15" HDPE Pipes, place the concrete collars around each pipe, and construct the drop inlet's invert.

# Frame and Grate Details

| STATE OF<br>SOUTH<br>DAKOTA | PROJECT | SHEET<br>NO. | TOTAL<br>SHEETS |
|-----------------------------|---------|--------------|-----------------|
|                             | 410C267 | 12           | 23              |



A 2"x3"x1/4" Stainless Steel Angle Iron shall be cast into the concrete. The angle iron shall be cut and welded to fit the contour of the east side of the frame and grate. The angle iron shall be anchored into the concrete with 4 - 1/2" diameter by 6" long stainless steel threaded rods that are welded to the angle iron. The threaded rods shall be evenly spaced across the width of the frame. Each rod shall have stainless steel double nuts tightened against themselves on the end opposite the angle iron. The angle iron shall be cast into the concrete such that a 1/4" gap exists between the top of the frame and the bottom of the 2" leg.

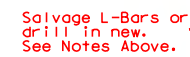
A 3/16" steel plate shall be constructed to fit tight to the contour of the Frame and Grate. The plate shall be cut and welded such that its shape closely matches that of the top of the frame and grate. Welds shall be ground smooth to ensure the plate fits tight to the frame and grate. A 1/2" lip shall be welded to the North, West, and South sides of the plate. The overall width and length of the plate shall be such that the east end of the plate fits under the 2" leg of the angle iron and the 1/2" lip fits over the frame and grate on the North, West, and South sides. The plates overall dimension shall be such that the plate can be easily removed and replaced (the 1/2" lip should not fit tight to the sides of the frame).

1/2" thick by 1 1/2" wide expansion board shall be placed around the North, West, and South sides of the Frame allowing the steel plate's 1/2" lip to easily be pressed into the expansion board. Some form of construction adhesive shall be used to temporarily hold the expansion board in place until the concrete is placed.

NOTE: The angle iron and plate shall be constructed with the Engineer's approval.



|                             |         |              |                 |
|-----------------------------|---------|--------------|-----------------|
| STATE OF<br>SOUTH<br>DAKOTA | PROJECT | SHEET<br>NO. | TOTAL<br>SHEETS |
|                             | 410C267 | 13           | 23              |



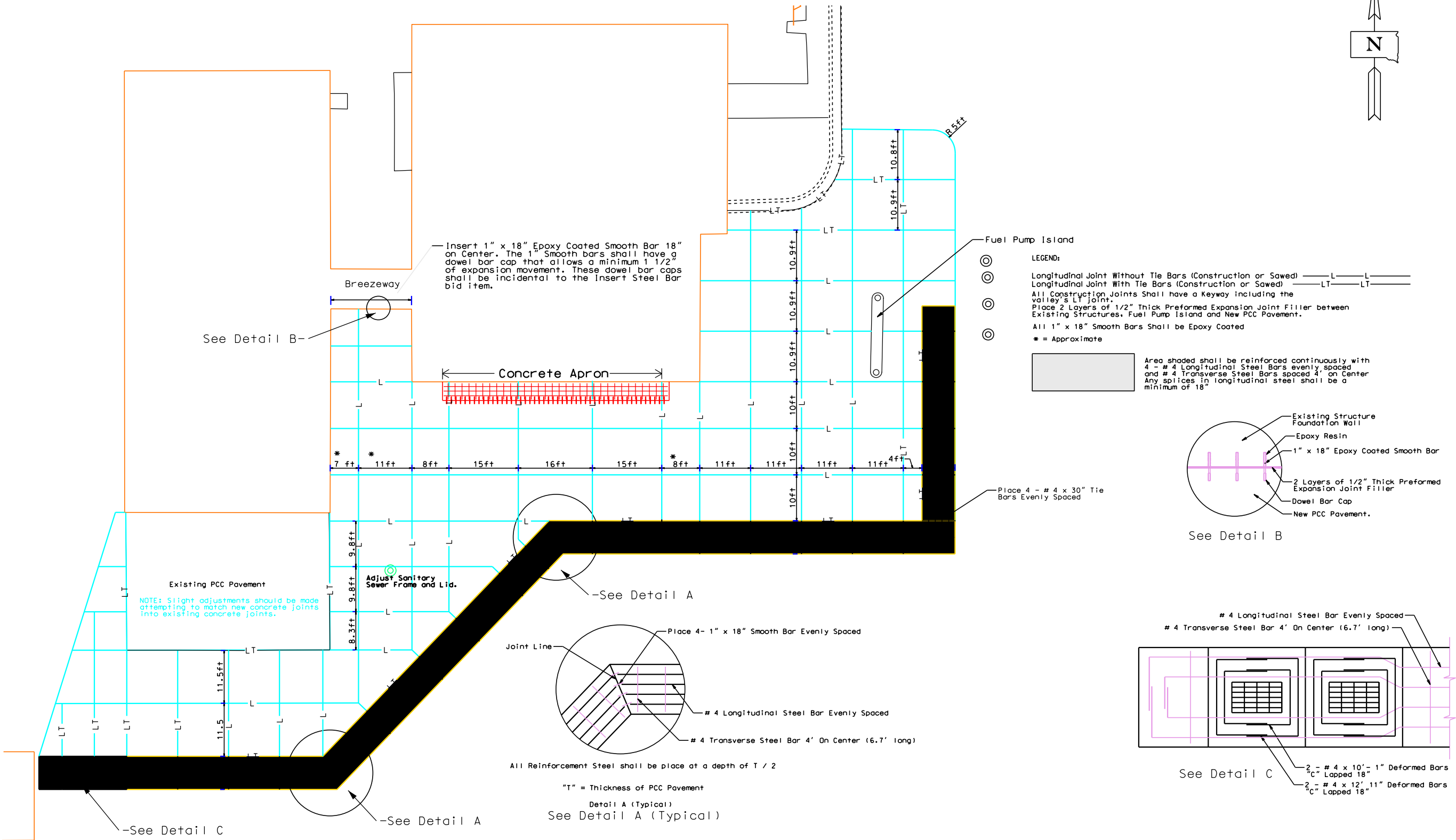
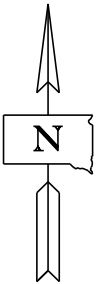






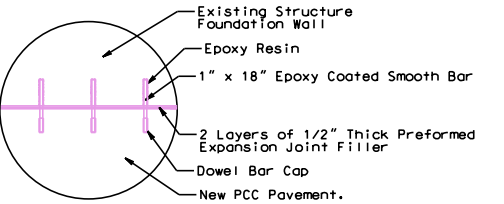
| STATE OF<br>SOUTH<br>DAKOTA | PROJECT<br>410C267 | SHEET<br>NO.<br>15 | TOTAL<br>SHEETS<br>23 |
|-----------------------------|--------------------|--------------------|-----------------------|
|-----------------------------|--------------------|--------------------|-----------------------|

# Joint Layout

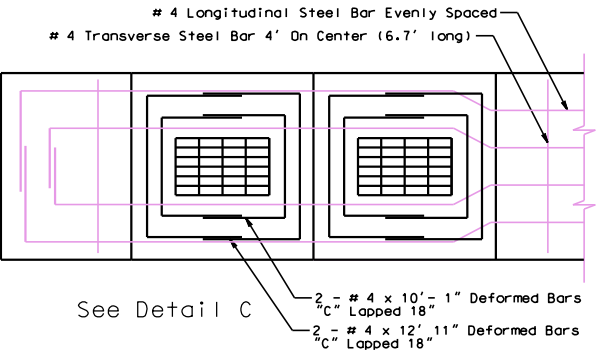


- LEGEND:
- Longitudinal Joint Without Tie Bars (Construction or Sawed) — L — L —
  - Longitudinal Joint With Tie Bars (Construction or Sawed) — LT — LT —
  - All Construction Joints Shall have a Keyway including the valley's LT joint.
  - Place 2 Layers of 1/2" Thick Prefomed Expansion Joint Filler between Existing Structures, Fuel Pump Island and New PCC Pavement.
  - All 1" x 18" Smooth Bars Shall be Epoxy Coated
  - \* = Approximate

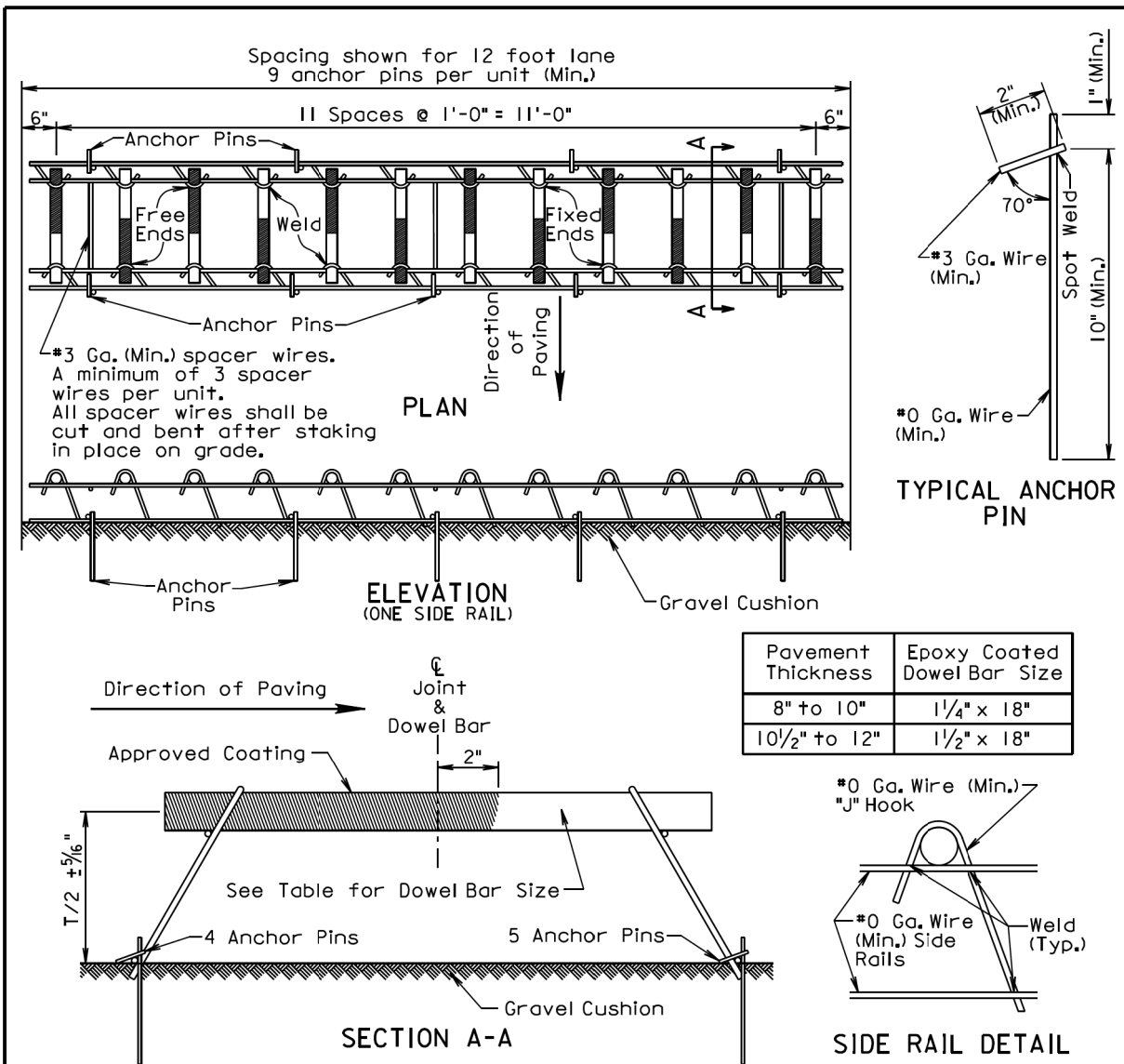
Area shaded shall be reinforced continuously with 4 - # 4 Longitudinal Steel Bars evenly spaced and # 4 Transverse Steel Bars spaced 4' on Center. Any splices in longitudinal steel shall be a minimum of 18"



See Detail B



See Detail C



**GENERAL NOTES:**

Longitudinal construction joint tie bars shall be placed a minimum of 15 inches from the transverse contraction joint.

Centerline of individual dowel bars shall be parallel to top of subgrade ±1/8 inch in 18 inches and to all other dowel bars in the assembly ±1/16 inch in 18 inches.

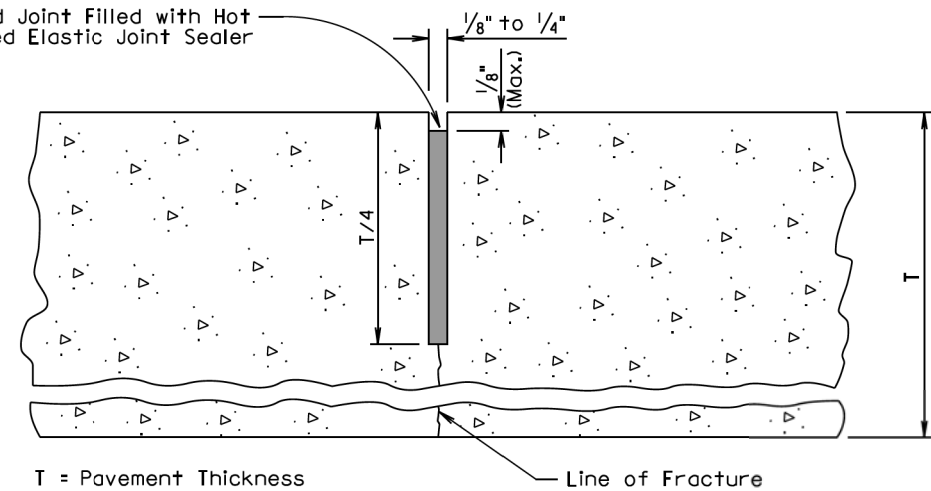
Centerline of individual dowel bars shall be parallel to the centerline of the roadway ±1/2 inch in 18 inches.

The transverse contraction joints shall be sawed perpendicular to the centerline of the roadway and the dowel bars shall be centered on the sawed joint ± 1 inch.

Supporting devices of the type shown on this sheet, or equivalent as approved by the Engineer, shall be used to maintain proper horizontal and vertical alignment of the dowel bars.

December 23, 2007

|                               |                       |  |              |
|-------------------------------|-----------------------|--|--------------|
| Published Date: 2nd Qtr. 2013 | S<br>D<br>D<br>O<br>T | PCC PAVEMENT DOWEL BAR ASSEMBLY<br>FOR TRANSVERSE CONTRACTION JOINTS | PLATE NUMBER |
|                               |                       |  | 380.01       |
|                               |                       |  | Sheet 1 of 1 |



**GENERAL NOTES:**

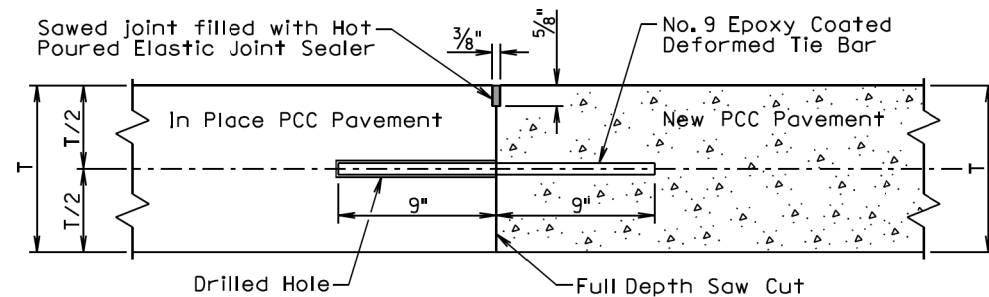
The saw cut to control cracking shall be a minimum of 1/4 the thickness of the pavement.

All hot poured elastic joint sealer material spilled on the surface of the concrete pavement shall be removed as soon as the material has cooled. The extent of removal of material shall be to the satisfaction of the Engineer. All costs for removal of the spilled joint sealer material shall be borne by the Contractor.

December 23, 2007

|                               |                       |   |              |
|-------------------------------|-----------------------|---|--------------|
| Published Date: 2nd Qtr. 2013 | S<br>D<br>D<br>O<br>T | PCC PAVEMENT TRANSVERSE CONTRACTION<br>JOINT WITH OR WITHOUT DOWEL BAR ASSEMBLY | PLATE NUMBER |
|                               |                       |   | 380.03       |
|                               |                       |   | Sheet 1 of 1 |

### TRANSVERSE CONSTRUCTION JOINT WITH TIE BARS



T = In Place PCC Pavement and New PCC Pavement Thickness

#### GENERAL NOTES:

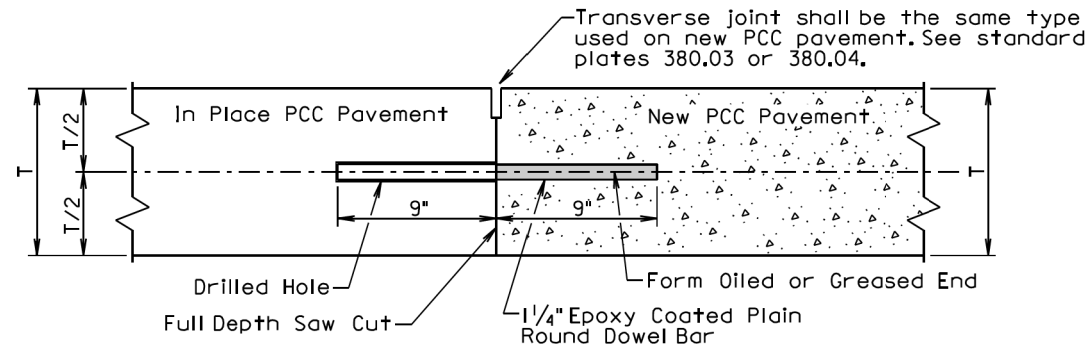
This detail shall be used when the transverse joint is less than 15 feet from the existing transverse contraction joint.

The tie bars shall be embedded a minimum depth of 9 inches into the in place PCC pavement and anchored with an epoxy resin adhesive.

No. 9 epoxy coated deformed tie bars shall be spaced 18 inches center to center and shall be a minimum of 3 inches and a maximum of 9 inches from the pavement edges.

The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project.

### TRANSVERSE CONSTRUCTION JOINT WITH DOWEL BARS



T = In Place PCC Pavement and New PCC Pavement Thickness

#### GENERAL NOTES:

This detail shall be used when the transverse joint is 15 feet or greater from the existing transverse contraction joint.

The plain round dowel bars shall be embedded a minimum depth of 9 inches into the in place PCC pavement and anchored with an epoxy resin adhesive.

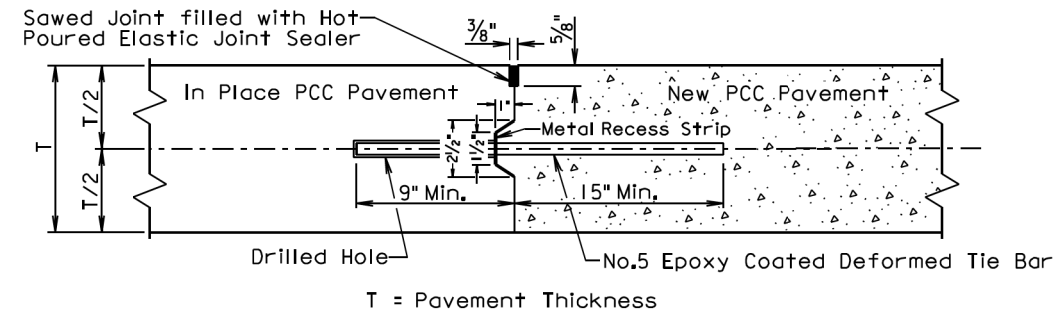
The 1 1/4 inch epoxy coated plain round dowel bars shall be spaced 12 inches center to center and shall be a minimum of 3 inches and a maximum of 6 inches from the pavement edges.

The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project or current project.

September 6, 2006

|                               |                       |   |              |
|-------------------------------|-----------------------|---|--------------|
| Published Date: 2nd Qtr. 2013 | S<br>D<br>D<br>O<br>T | PCC PAVEMENT TRANSVERSE CONSTRUCTION JOINTS WITH TIE BARS OR DOWEL BARS | PLATE NUMBER |
|                               |                       |   | 380.06       |
|                               |                       |   | Sheet 1 of 1 |

### LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS (DRILLED IN BARS)



T = Pavement Thickness

#### GENERAL NOTES:

The tie bars shall be embedded a minimum depth of 9 inches into the in place PCC pavement and anchored with an epoxy resin adhesive.

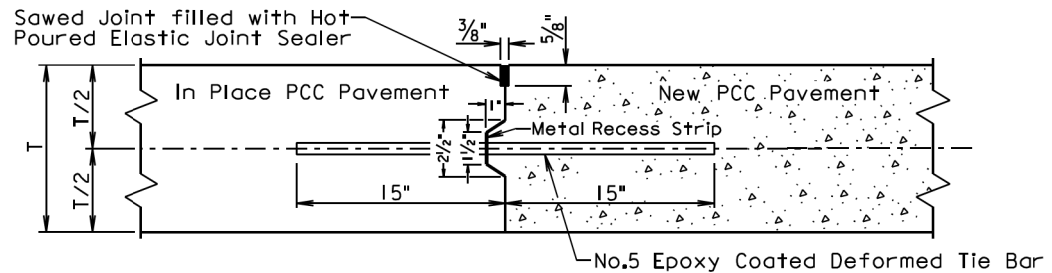
No. 5 epoxy coated deformed tie bars shall be spaced 48 inches center to center for a female keyway or 30 inches center to center for a vertical face and male keyway. The keyway shown above is a female keyway.

The tie bars shall be placed a minimum of 15 inches from existing transverse contraction joints.

The keyway is optional and is not required. When concrete pavement is formed and a keyway is provided, a metal recess strip shall be used. When concrete pavement is slip formed, a metal recess strip is not required.

The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project or current project.

### LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS (INSERTED OR FORMED IN BARS)



T = Pavement Thickness

#### GENERAL NOTES:

No. 5 epoxy coated deformed tie bars shall be spaced 48 inches center to center for a female keyway or 30 inches center to center for a vertical face and male keyway. The keyway shown above is a female keyway.

The tie bars shall be placed a minimum of 15 inches from existing transverse contraction joints.

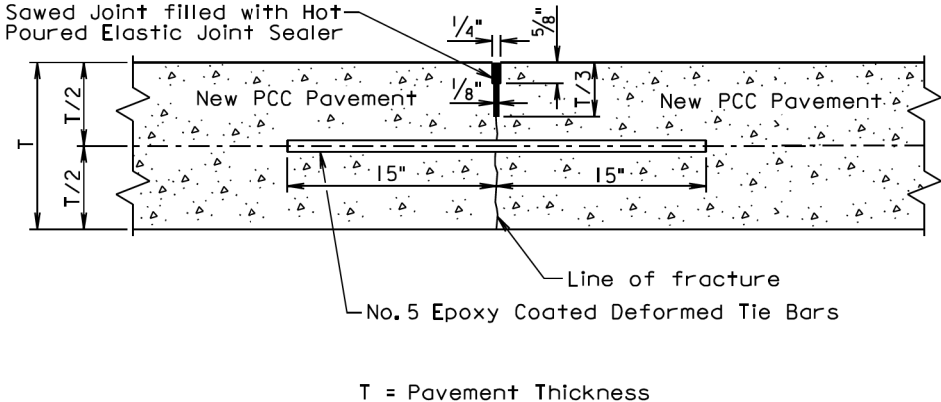
The keyway is optional and is not required. When concrete pavement is formed and a keyway is provided, a metal recess strip shall be used. When concrete pavement is slip formed, a metal recess strip is not required.

The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on the current project.

September 14, 2001

|                               |                       |  |              |
|-------------------------------|-----------------------|--|--------------|
| Published Date: 2nd Qtr. 2013 | S<br>D<br>D<br>O<br>T | PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS | PLATE NUMBER |
|                               |                       |  | 380.10       |
|                               |                       |  | Sheet 1 of 2 |

SAWED LONGITUDINAL JOINT WITH TIE BARS  
(POURED MONOLITHICALLY)



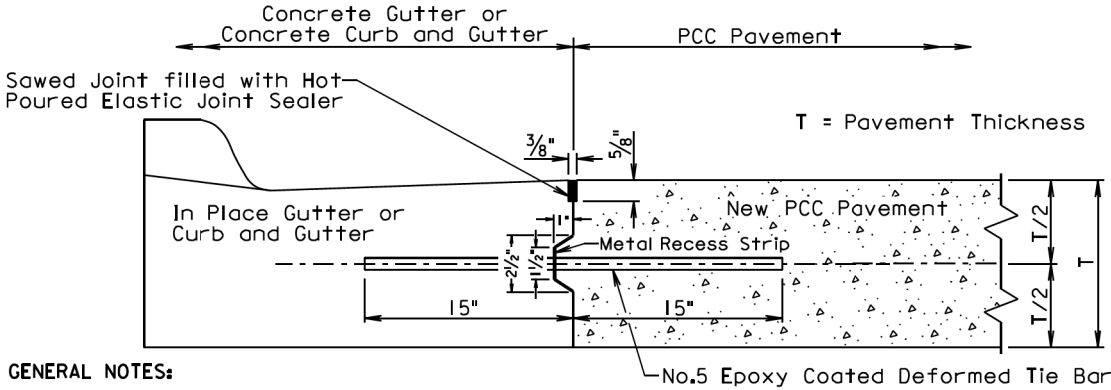
GENERAL NOTES:

- No.5 epoxy coated deformed tie bars shall be spaced 48 inches center to center.
- The tie bars shall be placed a minimum of 15 inches from the existing transverse contraction joints.
- The first saw cut to control cracking shall be a minimum of 1/3 the thickness of the pavement. Additional sawing for widening the saw cut to provide the width for the installation of the hot poured elastic joint sealer will be necessary.

September 14, 2001

|                               |                       |   |              |
|-------------------------------|-----------------------|---|--------------|
| Published Date: 2nd Qtr. 2013 | S<br>D<br>D<br>O<br>T | PCC PAVEMENT LONGITUDINAL<br>JOINTS WITH TIE BARS | PLATE NUMBER |
|                               |                       |   | 380.10       |
|                               |                       |   | Sheet 2 of 2 |

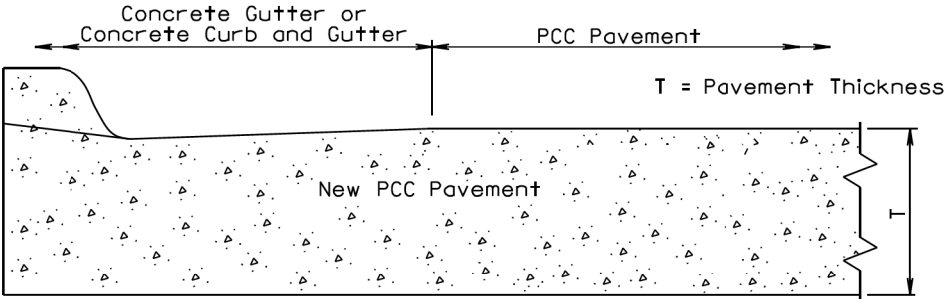
LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS  
(INDIVIDUALLY FORMED)



GENERAL NOTES:

- No.5 epoxy coated deformed tie bars shall be spaced 48" center to center. The keyway shown above is a female keyway.
- The tie bars shall be placed a minimum of 15 inches from existing transverse contraction joints.
- The keyway is optional and is not required. When concrete pavement is formed and a keyway is provided, a metal recess strip shall be used. When concrete pavement is slip formed, a metal recess strip is not required.
- The transverse contraction joints in the concrete gutter or concrete curb and gutter shall be placed at each mainline PCC pavement transverse contraction joint. The transverse contraction joints in the concrete gutter or the concrete curb and gutter shall be 1 1/2" deep if formed in fresh concrete using a suitable grooving tool. If a saw is used to cut the transverse contraction joints, then the depth of the joint shall be at least 1/4 the thickness of the concrete gutter or concrete curb and gutter.
- The term "In Place Gutter or Curb and Gutter" in the above drawing indicates that the in place concrete gutter and concrete curb and gutter was placed on the current project.

POURED MONOLITHICALLY



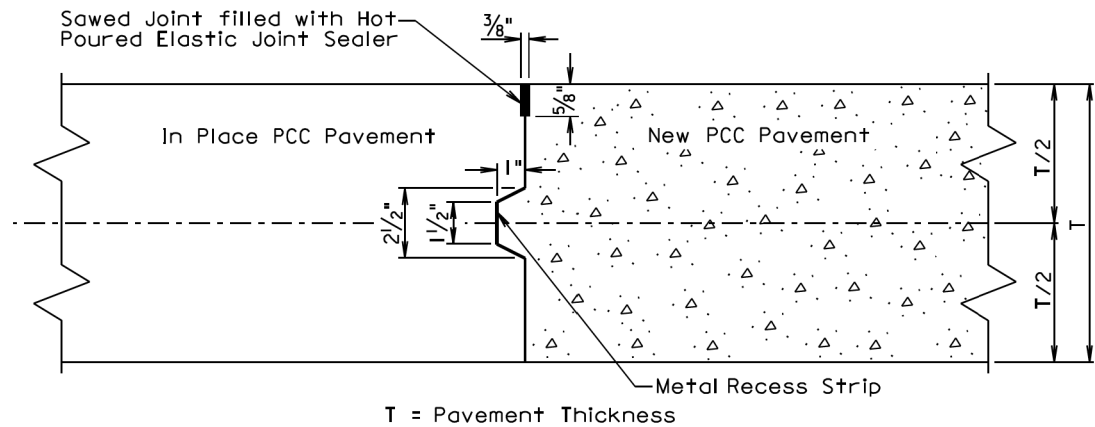
GENERAL NOTES:

- The mainline curb and gutter may be placed monolithically with the PCC pavement. If this method of construction is used, the tie bars and the sawed joint between the curb and gutter and the PCC pavement shall be eliminated.
- The gutter or curb and gutter shall be sawed transversely at each mainline transverse contraction joint. The transverse contraction joints in the gutter or curb and gutter shall be sawed and sealed same as the transverse contraction joints in the PCC pavement.
- The slope of the gutter shall be the slope designated for the type of gutter or curb and gutter to be constructed. The bottom slope of the gutter or curb and gutter shall be constructed at the same slope as the mainline concrete pavement.

September 14, 2005

|                               |                       |  |              |
|-------------------------------|-----------------------|--|--------------|
| Published Date: 2nd Qtr. 2013 | S<br>D<br>D<br>O<br>T | PCC PAVEMENT LONGITUDINAL CONSTRUCTION<br>JOINTS WITH CONCRETE GUTTER OR<br>CONCRETE CURB AND GUTTER | PLATE NUMBER |
|                               |                       |  | 380.11       |
|                               |                       |  | Sheet 1 of 1 |

LONGITUDINAL CONSTRUCTION JOINT WITHOUT TIE BARS

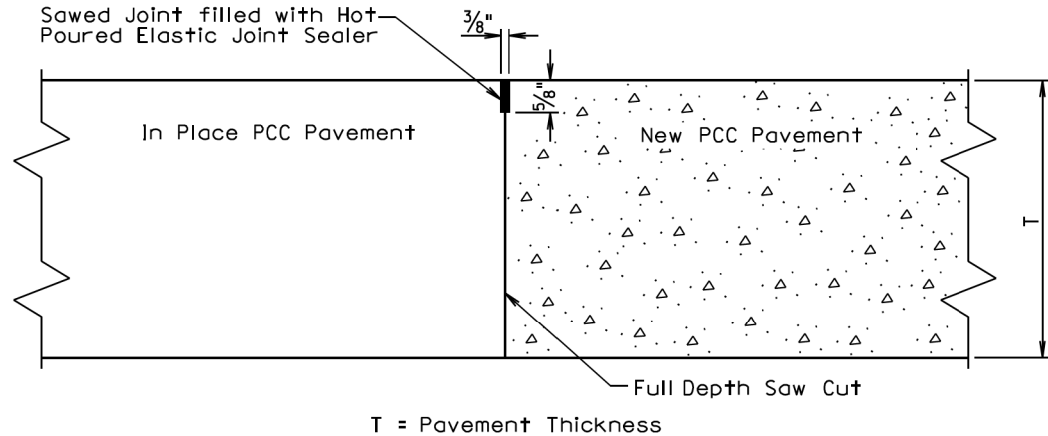


GENERAL NOTES:

When concrete pavement is formed and a keyway is provided, a metal recess strip shall be used. When concrete pavement is slip formed, a metal recess strip is not required.

The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on the current project.

LONGITUDINAL CONSTRUCTION JOINT WITHOUT TIE BARS



GENERAL NOTE:

The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project.

September 14, 2001

Published Date: 2nd Qtr. 2013

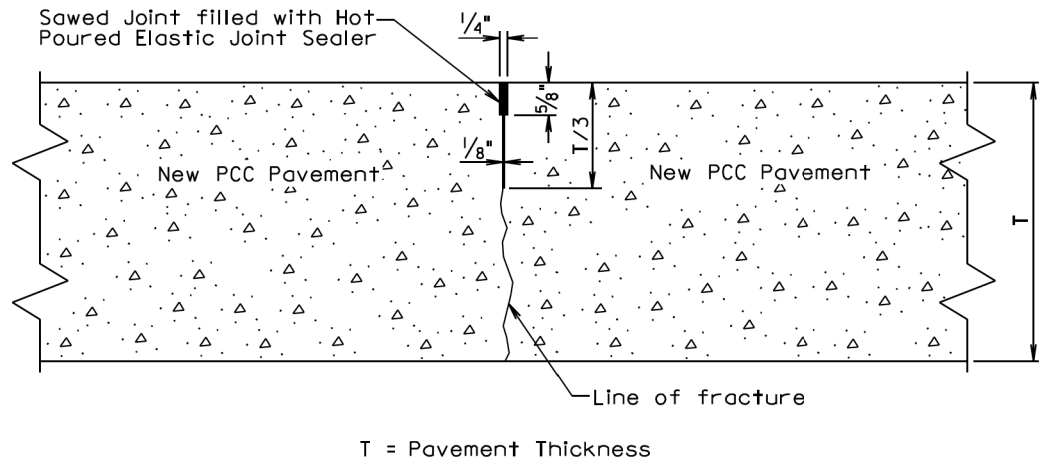
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PCC PAVEMENT LONGITUDINAL  
JOINTS WITHOUT TIE BARS

PLATE NUMBER  
380.12

Sheet 1 of 2

SAWED LONGITUDINAL JOINT WITHOUT TIE BARS



GENERAL NOTE:

The first saw cut to control cracking shall be a minimum of 1/3 the thickness of the pavement. Additional sawing for widening the saw cut to provide the width for the installation of the hot poured elastic joint sealer will be necessary.

September 14, 2001

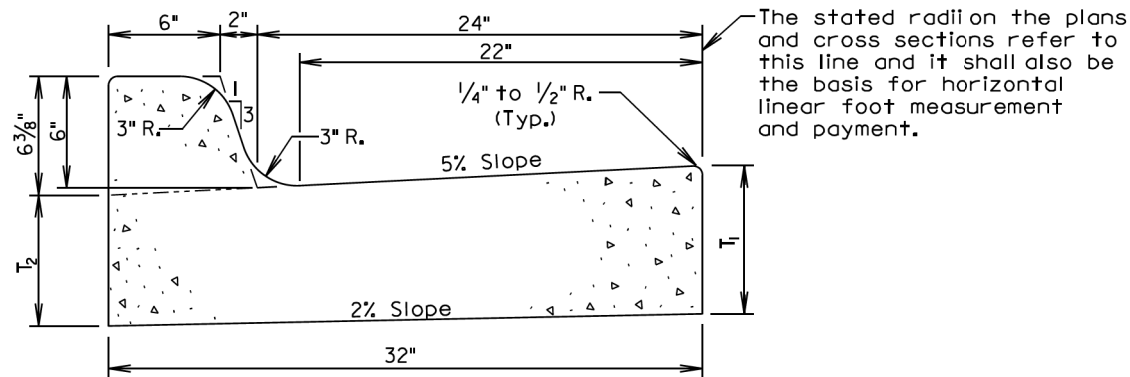
Published Date: 2nd Qtr. 2013

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PCC PAVEMENT LONGITUDINAL  
JOINTS WITHOUT TIE BARS

PLATE NUMBER  
380.12

Sheet 2 of 2



| Type   | T <sub>1</sub><br>(Inches) | T <sub>2</sub><br>(Inches) | Cu. Yd.<br>Per<br>Lin. Ft. | Lin. Ft.<br>Per<br>Cu. Yd. |
|--------|----------------------------|----------------------------|----------------------------|----------------------------|
| B66    | 6                          | 5 1/16                     | 0.057                      | 17.7                       |
| B67    | 7                          | 6 1/16                     | 0.065                      | 15.4                       |
| B68    | 8                          | 7 1/16                     | 0.073                      | 13.7                       |
| B68.5  | 8.5                        | 7 9/16                     | 0.077                      | 13.0                       |
| B69    | 9                          | 8 1/16                     | 0.081                      | 12.3                       |
| B69.5  | 9.5                        | 8 3/16                     | 0.085                      | 11.7                       |
| B610   | 10                         | 9 1/16                     | 0.090                      | 11.2                       |
| B610.5 | 10.5                       | 9 9/16                     | 0.094                      | 10.7                       |
| B611   | 11                         | 10 1/16                    | 0.098                      | 10.2                       |
| B611.5 | 11.5                       | 10 3/16                    | 0.102                      | 9.8                        |
| B612   | 12                         | 11 1/16                    | 0.106                      | 9.4                        |

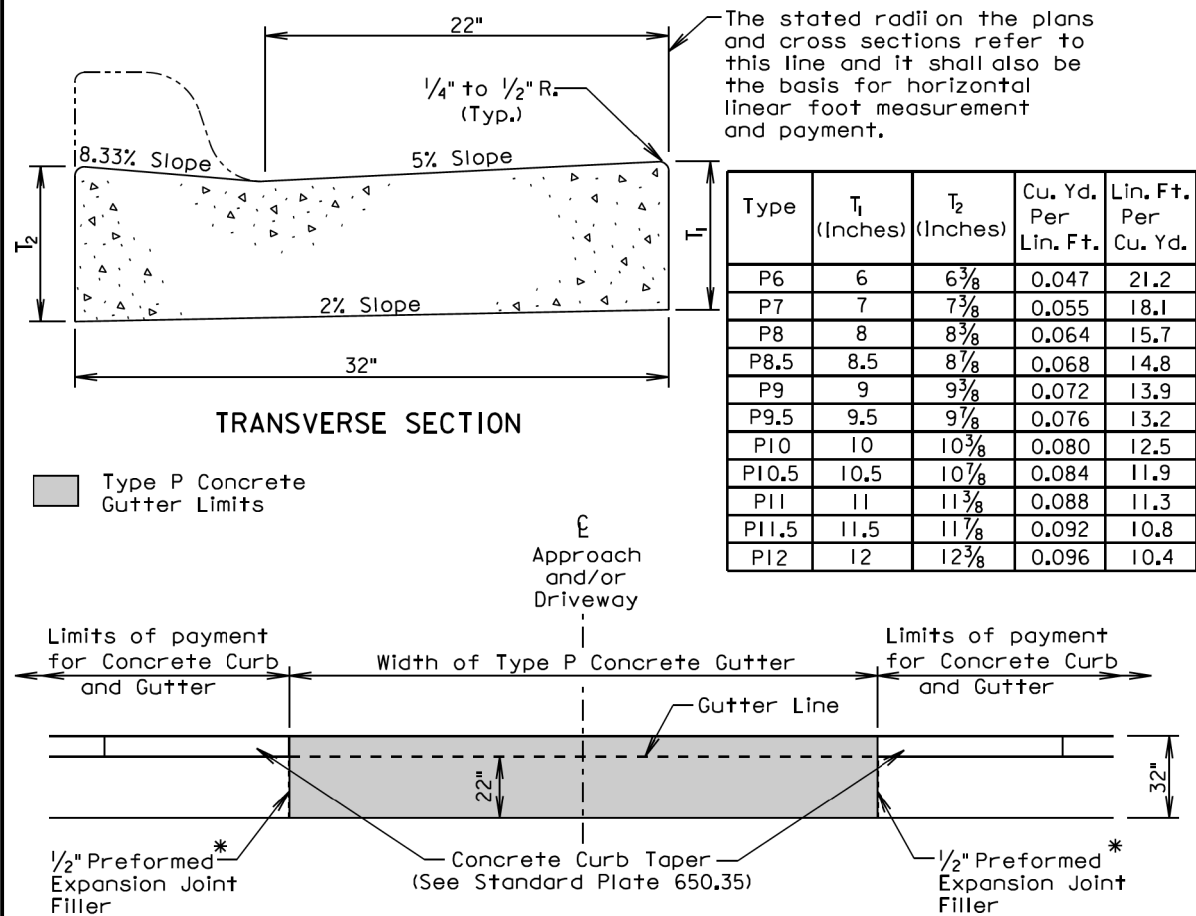
GENERAL NOTES:

When concrete curb and gutter longitudinally adjoins new concrete pavement, the method of attachment shall be by one of the methods shown on Standard Plate 380.11.

See Standard Plate 650.90 for expansion and contraction joints in the curb and gutter.

September 6, 2008

|                               |                       |                                 |                        |
|-------------------------------|-----------------------|---------------------------------|------------------------|
| Published Date: 2nd Qtr. 2013 | S<br>D<br>D<br>O<br>T | TYPE B CONCRETE CURB AND GUTTER | PLATE NUMBER<br>650.01 |
|                               |                       |                                 | Sheet 1 of 1           |



| Type  | T <sub>1</sub><br>(Inches) | T <sub>2</sub><br>(Inches) | Cu. Yd.<br>Per<br>Lin. Ft. | Lin. Ft.<br>Per<br>Cu. Yd. |
|-------|----------------------------|----------------------------|----------------------------|----------------------------|
| P6    | 6                          | 6 3/8                      | 0.047                      | 21.2                       |
| P7    | 7                          | 7 3/8                      | 0.055                      | 18.1                       |
| P8    | 8                          | 8 3/8                      | 0.064                      | 15.7                       |
| P8.5  | 8.5                        | 8 7/8                      | 0.068                      | 14.8                       |
| P9    | 9                          | 9 3/8                      | 0.072                      | 13.9                       |
| P9.5  | 9.5                        | 9 7/8                      | 0.076                      | 13.2                       |
| P10   | 10                         | 10 3/8                     | 0.080                      | 12.5                       |
| P10.5 | 10.5                       | 10 7/8                     | 0.084                      | 11.9                       |
| P11   | 11                         | 11 3/8                     | 0.088                      | 11.3                       |
| P11.5 | 11.5                       | 11 7/8                     | 0.092                      | 10.8                       |
| P12   | 12                         | 12 3/8                     | 0.096                      | 10.4                       |

\* Joint will not be needed if concrete curb & gutter and type P concrete gutter is placed at the same time.

GENERAL NOTES:

The concrete for the Type P Concrete Gutter shall comply with the requirements of the Standard Specifications for Class M6 Concrete.

When concrete gutter longitudinally adjoins new concrete pavement, the method of attachment shall be by one of the methods shown on Standard Plate 380.11.

Transverse contraction joints shall be constructed at 10' intervals in the concrete gutter except when concrete gutter is constructed adjacent to mainline PCC pavement. When concrete gutter is constructed adjacent to mainline PCC pavement, a transverse contraction joint shall be constructed in the concrete gutter at each mainline PCC pavement transverse contraction joint location.

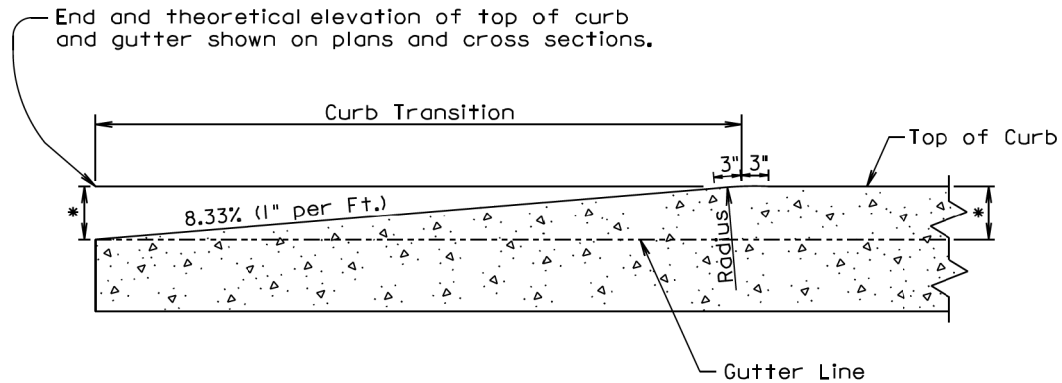
When concrete gutter is placed monolithically with mainline PCC pavement, the transverse contraction joints in the concrete gutter shall be sawed and sealed the same as the transverse contraction joints in the mainline PCC pavement.

When concrete gutter is not placed monolithically with the mainline PCC pavement and when the adjacent mainline surfacing is not PCC concrete, the transverse contraction joints in the concrete gutter shall be 1 1/2 inches deep if formed in the fresh concrete using a suitable grooving tool. If a saw is used to cut the contraction joints, then the depth of the joint shall be at least 1/4 the thickness of the concrete.

September 6, 2008

|                               |                       |                        |                        |
|-------------------------------|-----------------------|------------------------|------------------------|
| Published Date: 2nd Qtr. 2013 | S<br>D<br>D<br>O<br>T | TYPE P CONCRETE GUTTER | PLATE NUMBER<br>650.30 |
|                               |                       |                        | Sheet 1 of 1           |





LONGITUDINAL SECTION OF CONCRETE CURB TAPER

September 14, 2005

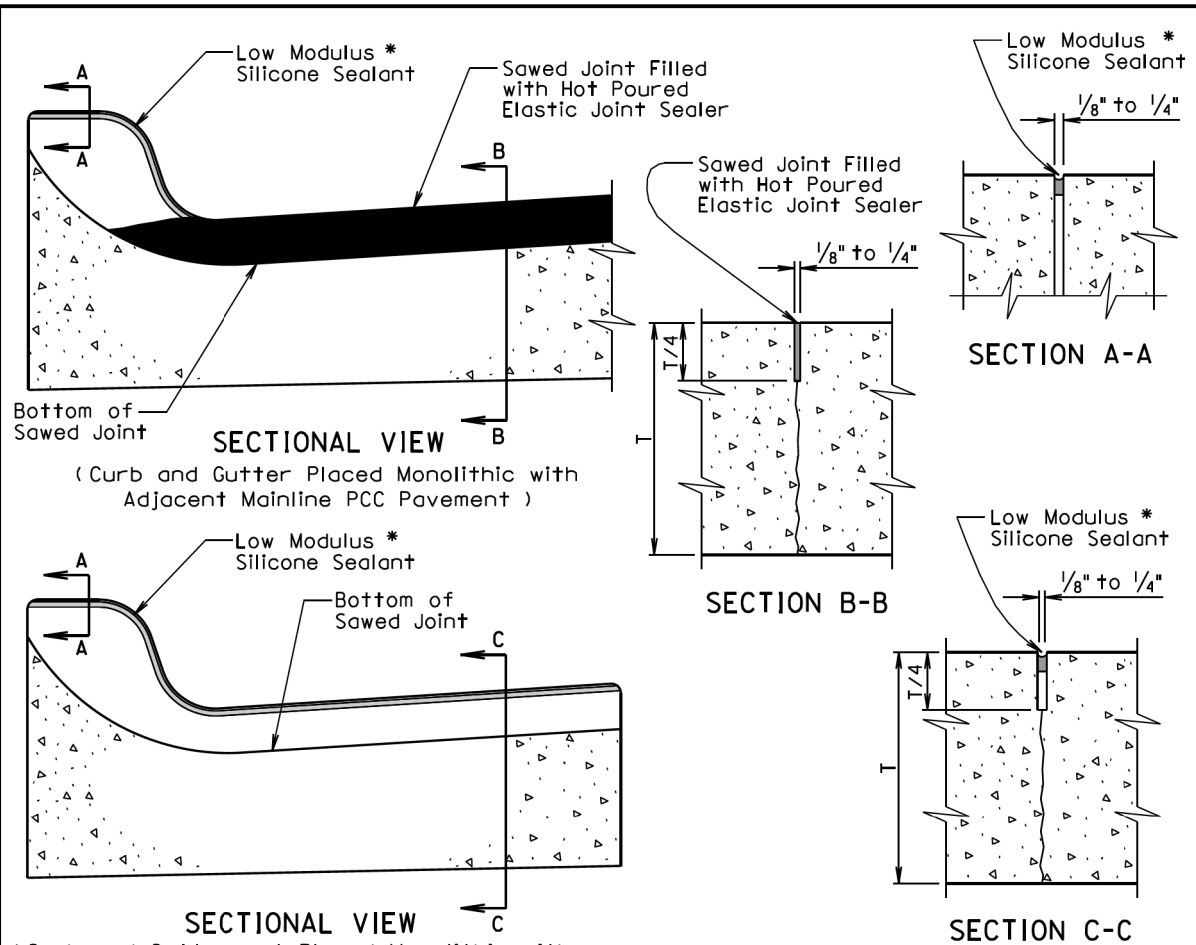
Published Date: 2nd Qtr. 2013

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CONCRETE CURB TAPER

PLATE NUMBER  
650.35

Sheet 1 of 1



GENERAL NOTES:

For illustrative reason, only the type B curb and gutter is shown.

A 1/2" preformed expansion joint filler shall be placed transversely in the curb and gutter at the following locations:

1. At each junction between the radius return of curb and gutter and curb and gutter which is parallel to the project centerline.
2. At each junction between new curb and gutter and existing curb and gutter.

Transverse contraction joints shall be constructed at 10' intervals in the concrete curb and gutter except when the concrete curb and gutter is constructed adjacent to mainline PCC pavement. When concrete curb and gutter is constructed adjacent to mainline PCC pavement, a transverse contraction joint shall be constructed in the concrete curb and gutter at each mainline PCC pavement transverse contraction joint location.

When concrete curb and gutter is not placed monolithically with the mainline PCC pavement or when the adjacent mainline surfacing is not PCC concrete, the transverse contraction joints in the concrete curb and gutter shall be 1 1/2 inches deep if formed in the fresh concrete using a suitable grooving tool. If a saw is used to cut the contraction joints, then the depth of the joint shall be at least 1/4 the thickness of the concrete and the joint shall be sealed in accordance with the details shown above.

September 6, 2006

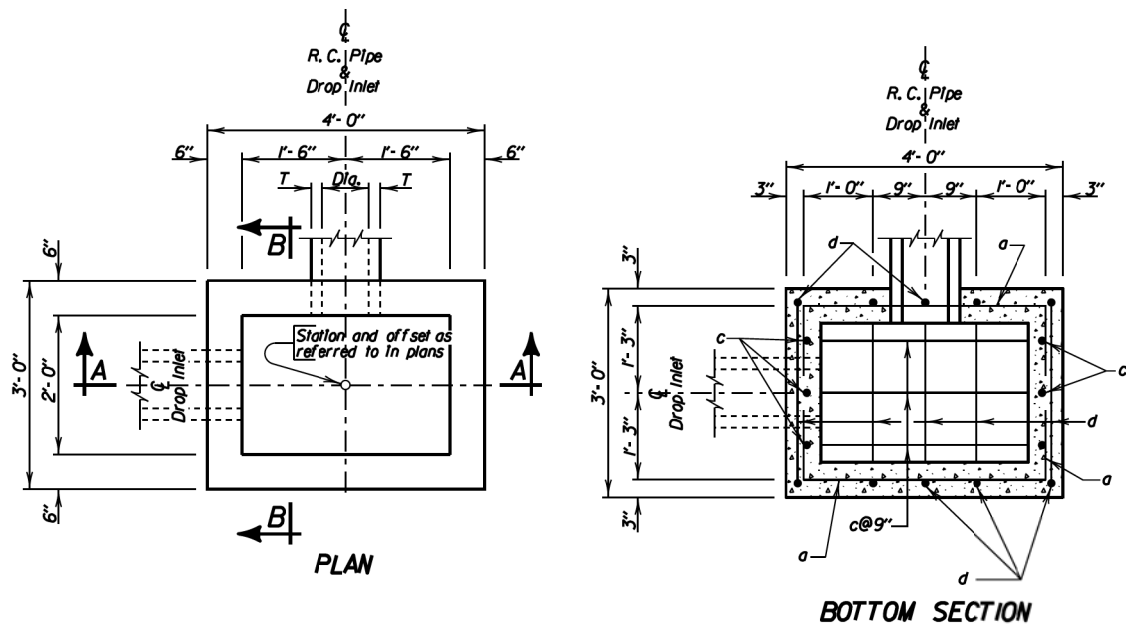
Published Date: 2nd Qtr. 2013

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JOINTS IN CONCRETE CURB AND GUTTER

PLATE NUMBER  
650.90

Sheet 1 of 1



| PIPE DISPLACEMENT REDUCTIONS |          |                        |
|------------------------------|----------|------------------------|
| R.C. Pipe Diameter Inches    | T Inches | Class M6 Concrete Cu'd |
| 12                           | 2        | 0.03                   |
| 15                           | 2 1/4    | 0.04                   |
| 18                           | 2 1/2    | 0.05                   |
| 24                           | 3        | 0.09                   |
| 27                           | 3 1/4    | 0.11                   |

| ESTIMATED QUANTITIES     |      |                   |                   |
|--------------------------|------|-------------------|-------------------|
| ITEM                     | UNIT | CONSTANT QUANTITY | VARIABLE QUANTITY |
| * Class M6 Concrete      | Cu'd | 0.26              | 0.22H             |
| Reinforcing Steel        | Lb   | 37                | 20.04H            |
| Frame and Grate Assembly | Each | 1                 |                   |

DROP INLETS FOR 12" TO 27" DIAMETER PIPE

GENERAL NOTES:

\* Reduce total quantities of concrete by the amount of concrete displaced by the pipe. The total quantity of concrete shall be computed to the nearest hundredth of a cubic yard. The total quantity of reinforcing steel shall be computed to the nearest pound.

Drop Inlets shown may be modified by the addition or omission of connecting pipes as shown on the layouts.

Reinforcing steel shall conform to ASTM A615 Grade 60. The b bars shall be lapped 12 inches. Cut and bend reinforcing steel as required to place pipe(s) through the drop inlet wall.

Pipe shall not enter through a corner of the drop inlet.

Use 2" clear cover on all reinforcing steel unless otherwise noted.

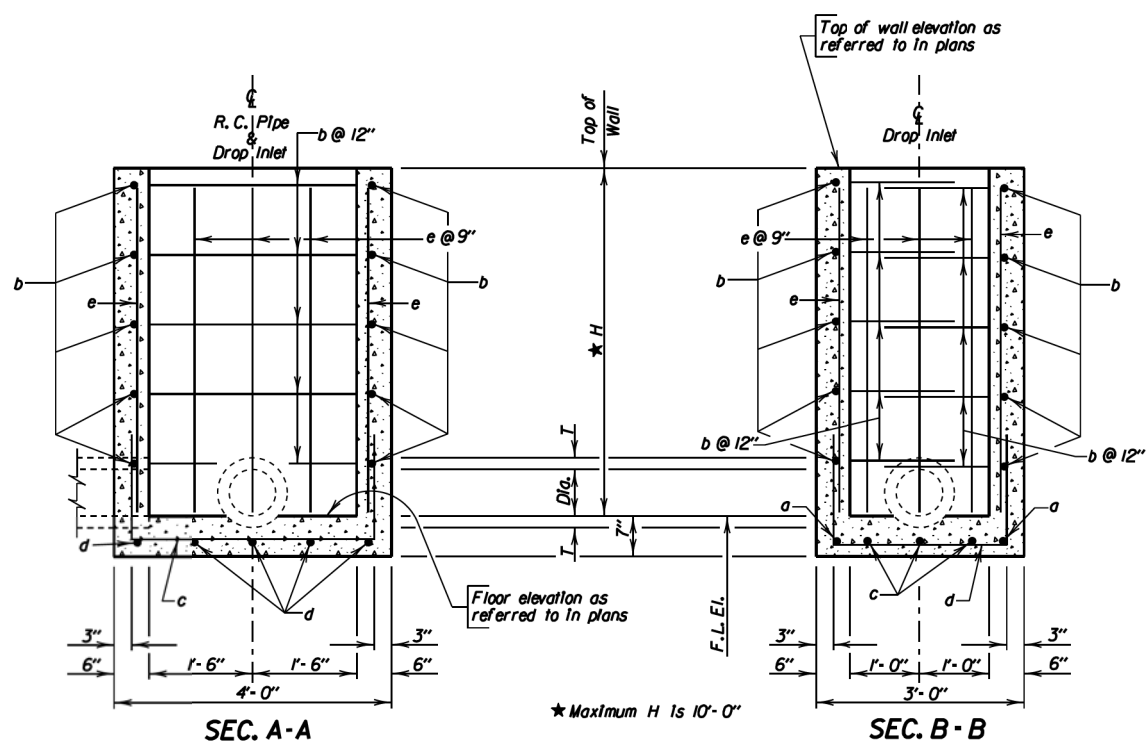
Precasting of reinforced drop inlets will be permissible. Prior to precasting, the Contractor shall submit details to the Engineer for approval.

Maximum pipe diameter shall not exceed 18 inches on the 3 foot wide side and shall not exceed 27 inches on the 4 foot wide side of the drop inlet.

The dimension of H is in feet.

December 23, 2009

|                               |                       |  |                        |
|-------------------------------|-----------------------|--|------------------------|
| Published Date: 2nd Qtr. 2013 | S<br>D<br>D<br>O<br>T | 2' X 3' TYPE B<br>REINFORCED CONCRETE DROP INLET | PLATE NUMBER<br>670.01 |
|                               |                       |  | Sheet 1 of 2           |



DROP INLETS FOR 12" TO 27" DIAMETER PIPE

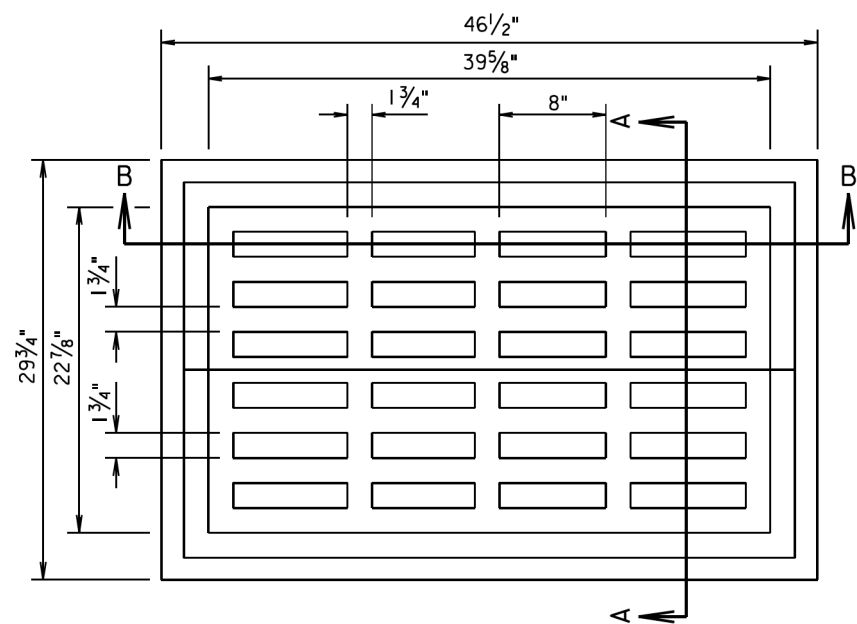
| REINFORCING SCHEDULE |     |      |        |      |
|----------------------|-----|------|--------|------|
| MK.                  | No. | Size | Length | Type |
| a                    | 2   | 4    | 5'-6"  | 17   |
| b                    | 2H  | 4    | 7'-0"  | 17   |
| c                    | 3   | 4    | 6'-6"  | 17   |
| d                    | 5   | 4    | 5'-6"  | 17   |
| e                    | 16  | 4    | H - 2" | Str. |

Bending Details

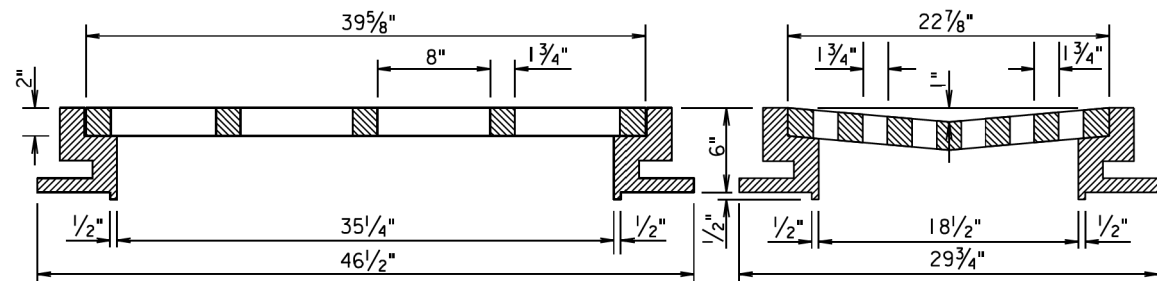
NOTE:  
All dimensions are out to out of bars.

December 23, 2009

|                               |                       |  |                        |
|-------------------------------|-----------------------|--|------------------------|
| Published Date: 2nd Qtr. 2013 | S<br>D<br>D<br>O<br>T | 2' X 3' TYPE B<br>REINFORCED CONCRETE DROP INLET | PLATE NUMBER<br>670.01 |
|                               |                       |  | Sheet 2 of 2           |

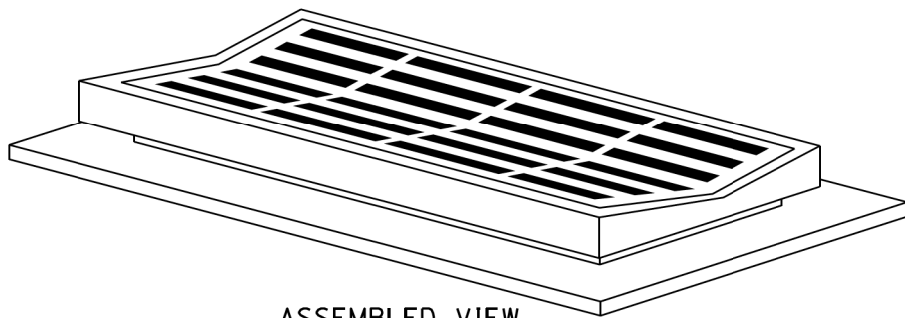


PLAN VIEW



SECTION B-B

SECTION A-A



ASSEMBLED VIEW

**GENERAL NOTES:**

The total weight of frame and grate shall be 810 pounds minimum.  
The Type E frame and grate is used typically with valley gutter.

April 19, 2006

Published Date: 2nd Qtr. 2013

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**TYPE E FRAME AND GRATE**

PLATE NUMBER  
670.86

Sheet 1 of 1