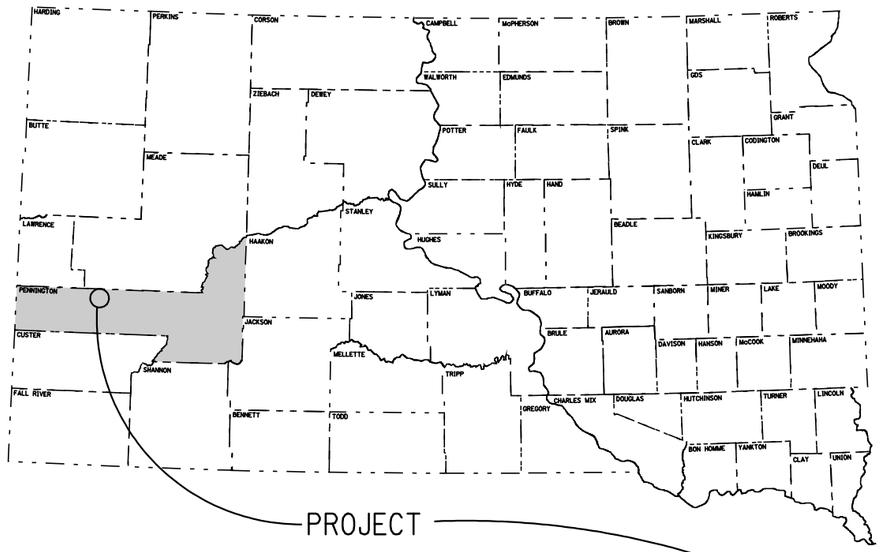



# STATE OF SOUTH DAKOTA
# DEPARTMENT OF TRANSPORTATION
## PLANS FOR PROPOSED

# PROJECT NO. 445–452
# SD HIGHWAY 445
# PENNINGTON COUNTY

MODIFY CURB AND GUTTER
PCN I24H

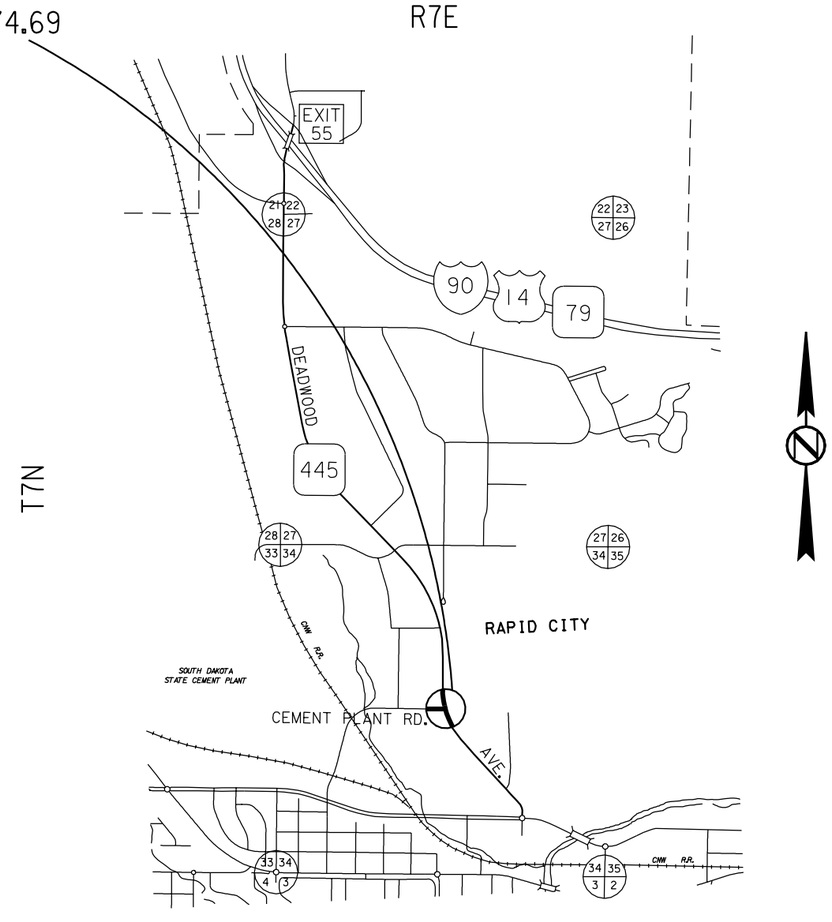
| STATE OF SOUTH DAKOTA | PROJECT | SHEET | TOTAL SHEETS |
|---|---|---|---|
| | 445–452 | 1 | 14 |

Plotting Date: 18-MAR-2011

INDEX OF SHEETS



MRM 74.69




STORM WATER PERMIT

No Storm Water Permit Required

DESIGN DESIGNATION

| | |
|---|---|
| ADT (2010) | 14370 |
| ADT (2030) | 18195 |
| DHV | 1950 |
| D | 50% |
| T DHV | 1.5% |
| T ADT | 3.4% |
| V | 45 mph |

## ESTIMATE OF QUANTITIES

| Bid Item Number | Item | Quantity | Unit |
|---|---|---|---|
| 009E0010 | Mobilization | Lump Sum | LS |
| 110E0300 | Remove Concrete Curb and Gutter | 144 | Ft |
| 110E1690 | Remove Sediment | 1.0 | CuYd |
| 110E1695 | Remove Sediment Filter Bag | 20 | Ft |
| 120E0010 | Unclassified Excavation | 33 | CuYd |
| 120E6300 | Water for Vegetation | 0.7 | MGal |
| 250E0010 | Incidental Work | Lump Sum | LS |
| 260E2010 | Gravel Cushion | 25.0 | Ton |
| 380E0090 | 10" Nonreinforced PCC Pavement | 50.0 | SqYd |
| 380E6000 | Dowel Bar | 11 | Each |
| 380E6110 | Insert Steel Bar in PCC Pavement | 67 | Each |
| 451E6080 | Adjust Water Valve Box | 1 | Each |
| 634E0010 | Flagging | 20 | Hour |
| 634E0100 | Traffic Control | 307 | Unit |
| 634E0120 | Traffic Control, Miscellaneous | Lump Sum | LS |
| 634E0420 | Type C Advance Warning Arrow Panel | 2 | Each |
| 650E1100 | Type F610 Concrete Curb and Gutter | 142 | Ft |
| 651E0040 | 4" Concrete Sidewalk | 85 | SqFt |
| 651E7010 | Type 2 Detectable Warnings | 10 | SqFt |
| 733E0100 | Sodding | 40 | SqYd |
| 734E0180 | Sediment Filter Bag | 20 | Ft |

## SPECIFICATIONS

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

## GENERAL MAINTENANCE OF TRAFFIC

All Contractors' vehicles or equipment entering or leaving a closed work area shall display a flashing amber light.

The Contractor shall provide documentation that all breakaway sign supports comply with FHWA NCHRP 350 or MASH crash-worthy requirements. The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.

Non-applicable signing will be covered or removed and reset during periods of inactivity. All costs to do this work shall be incidental to Traffic Control, Miscellaneous.

The bottom of all signs on portable or temporary supports shall not be less than seven feet above the pavement in urban areas and one foot above the pavement in rural areas. Portable sign supports may be used as long as the duration is less than 3 days. If the duration is more than 3 days, the signs shall be mounted on fixed supports during the time of initial installation, with the exception that portable sign supports will be allowed where surfacing prohibits fixed support installation.

Lane closures shall not be allowed on Deadwood Avenue for more than 10 working days. Lane closures shall be shouldered on the new curb and gutter as soon as the new concrete can support the weight of the channelizing devices. A buffer will be allowed to protect the new concrete in the turning radius.

## GENERAL MAINTENANCE OF TRAFFIC (CONTINUED)

The Contractor shall maintain westbound and eastbound Cement Plant Road traffic at all times.

The Contractor or designated traffic control subcontractor shall make night (after dark) inspections at the initial set up of traffic control and every week thereafter to ensure the adequacy, legibility and reflectivity of each sign and device. A written summary of each inspection shall be given to the Engineer within 24 hours after completion of the inspection. The cost for the nighttime inspection work shall be incidental to the related contract items.

The Contractor shall be required to have a person available 24 hour/day, 7 days/week to maintain traffic control devices. The name and cellular telephone number of this individual shall be given to the Engineer at the preconstruction meeting.

Work activities shall only be during daylight hours. Daylight hours are considered to be ½ hour before sunrise until ½ hour after sunset.

Traffic control shall be in accordance with MUTCD Standards, the Standard Specifications and the layouts contained in these plans.

The Contractor shall at all times, keep the portion of the project being used by public traffic in a condition that will adequately and safely accommodate traffic.

Storage of vehicles, materials, and equipment shall be not closer than 30' from the edge of the driving lane. Contractor's employees should mobilize at a location off the right-of-way and arrive at the work sites in a minimum number of vehicles necessary to perform the work. Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage to the vegetation, surfacing, embankment, delineators, and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.

## COORDINATION WITH THE CITY OF RAPID CITY

Traffic signal adjustments during the duration of this project shall be coordinated with the City of Rapid City.

## UTILITIES

Utilities to be adjusted during construction are a water valve and telephone pedestal. If additional utilities are identified near the improvement area through the SD One Call Process as required by South Dakota Codified Law 49-7A and Administrative Rule Article 20:25, the contractor shall contact the project engineer to determine modifications that will be necessary to avoid utility impacts.

## PERMIT FOR THE RAPID CITY AREA AIR QUALITY CONTROL ZONE

Administrative Rule of South Dakota (ARSD) 74:36:18:03 states that "no state facility or state contractor may engage in any construction activity or continuous operation activity within the Rapid City air quality control zone which may cause fugitive emissions of particulate to be released into the ambient air without first obtaining a permit issued by the board or the secretary."

In order to be considered eligible for authorization to conduct a construction activity under the terms and conditions of this permit, the owner operator must submit a Notice of Intent (NOI) form. The form must be submitted to the address below at least seven business days prior to the anticipated date of beginning the construction activity.

South Dakota Department of Environment and Natural Resources
Air Quality Program
523 East Capitol, Joe Foss Building
Pierre, South Dakota 57501-3181
605-773-3151

Construction activity is defined as any temporary activity at a state facility, which involves the removal or alteration of the natural or pre-existing cover of one acre or more of land. One acre of surface area is based on a cumulative area of disturbance to be completed for the entire project. Construction activity shall include, but not be limited to, stripping of topsoil, drilling, blasting, excavation, dredging, ditching, grading, street maintenance and repair, or earth moving. Construction activity is generally completed within one year. It also includes stockpiles, access roads, and disposal areas. An off-site disposal area of excess material will require an additional permit.

The permit requires the Contractor to use reasonably available technology to control fugitive dust emissions. The Contractor is required to use control measures for trackout, paved areas, unpaved roads, unpaved parking lots, disturbed areas, and for material handling and storage. The control measures that the Contractor is required to use are listed in the permit.

## HISTORICAL PRESERVATION OFFICE CLEARANCES

To obtain State Historical Preservation Office (SHPO) clearance, a cultural resources survey may need to be conducted by a qualified archaeologist. In lieu of a cultural resources survey, the Contractor could request a records search from Jim Donohue, State Archaeological Research Center (SARC). Provide SARC with the following: a topographical map or aerial view on which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that no artifacts have been found on the site. The Contractor shall arrange and pay for the cultural resource survey and/or records search.

If any earth disturbing activities occur within the current geographical or historic boundaries of any South Dakota reservation, the Contractor shall obtain Tribal Historical Preservation Office (THPO) clearance. If no THPO exists, the required SHPO clearance shall suffice, with documentation of Tribal contact efforts provided to SHPO.

To facilitate SHPO or THPO responses, the Contractor should submit a records search or cultural resources survey report to Tom Lehmkuhl, DOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3180). Allow 30 days from the date this information is submitted to the Environmental Engineer for SHPO/THPO approval. The Contractor is responsible for obtaining all required permits and clearances for staging areas, borrow sites, waste disposal sites, and all material processing sites. The Contractor shall provide the required permits and clearances to the Engineer at the preconstruction meeting.

## WASTE DISPOSAL SITE

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:

1. Construction/demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction/demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the State ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County

## WASTE DISPOSAL SITE (CONTINUED)

2. NRCS Office. The Contractor shall control the access to waste disposal sites not within the State ROW through the use of fences, gates, and placement of a sign or signs at the entrance to the site stating “No Dumping Allowed”.

3. 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.

4. 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.

5. 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.

6. 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.

## TABLE OF CONCRETE CURB AND GUTTER REMOVAL

| Station | to | Station | L/R | Quantity (Ft) |
|---|---|---|---|---|
| 1+96.39 | | 3+08.56 | L | 144 |
| | | | Total: | 144 |

## UNCLASSIFIED EXCAVATION

Excavation related to the installation of the new PCC Pavement and Curb & Gutter shall be paid for at the contract unit price per CuYd of Unclassified Excavation. Plans quantity shall be the basis of payment.

## SAWING

The existing surface will be sawed full depth to a true line with a vertical face where asphalt concrete is to be placed adjacent to existing asphalt or concrete.

All costs associated with this work shall be incidental to the contract lump sum price for Incidental Work.

## INCIDENTAL WORK

Included in this item are the following:

1. Sawing of PCC Pavement and Curb & Gutter.

## 10" NONREINFORCED PCC PAVEMENT

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

Fine aggregate shall conform to Section 800.2.D Alkali Silica Reactivity (ASR) Requirements of the Standard Specifications.

The concrete mix shall be Class A40 or concrete paving mix when slipform construction is used and Class A45 when formed construction is used. Class F Modified Fly Ash shall be substituted for 20 percent of the cement in accordance with Section 605 of the Standard Specifications.

In lieu of an automatic subgrader operating from a preset line, a motor grader or other suitable equipment may be used to bring the gravel cushion to final grade prior to placement of concrete.

There will be no direct payment for trimming of the gravel cushion for PCC pavement. The trimming will be considered incidental to the related items required for PCC Pavement. Trimming shall be performed as required by Section 380.3 C. of the Standard Specifications.

A self-propelled mechanical tiner will not be required.

Automatic dowel bar inserters will not be allowed on this project.

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

The transverse contraction joints shall be as directed by the Engineer. All nonconforming transverse 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.

In addition to traditional field inspection of reinforcement, a Ground Penetrating Radar (GPR) unit may be used to verify reinforcement locations in the hardened concrete. The GPR may be used anytime prior to the Acceptance of Field Work being issued. All costs related to corrective measures, including but not limited to concrete removal or cutting of reinforcement, price deducts, and delays to the project schedule shall be the responsibility of the Contractor.

## ALKALI SILICA REACTIVITY

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

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 | 0.314* |
| Concrete Materials | Corson, SD | 0.170 |
| Croell – Cheyenne River Pit | Hot Springs, SD | 0.089 |
| Emme Sand & Gravel | Oneil, NE | 0.217 |
| Fischer S&G | Rapid City, SD | 0.092 |
| Fischer S&G | Spearfish, SD | 0.053 |
| 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 | 0.153 |
| 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 | 0.158 |
| Northern Concrete Agg. | Rauville, SD | 0.104 |
| 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 | 0.226 |
| Thorpe Pit | Britton, SD | 0.098 |
| Wagner Building Supplies | Wagner, SD | 0.241 |
| Wasta Sand & Gravel | Wasta, SD | 0.159 |

* These sources will require Type V cement in the concrete mix design
and Class F (Modified) fly ash as specified.

The Department will use the running average of the last three known expansion test results or less for determining acceptability of source and the required Type of cement. These expansion results are reported in the preceding table. Additional testing, when requested by the Contractor, will be performed by the Department at the Contractor's expense.

The values listed in the table are intended for use in bidding. If a previously tested pit by SDDOT with acceptable test values (less than 0.250) is discovered after letting to require Type V cement (greater than 0.250) the Department will accept financial responsibility for the change from Type II to Type V cement.

Type II or Type V cement will not change the requirement for the fly ash. The cost for either type of cement shall be subsidiary to the contract item.

## STEEL BAR INSERTION

Locations and quantities of concrete repair are subject to change in the field at the discretion of the Engineer. The Contractor will be responsible for ordering the actual quantity of steel bars necessary to complete the work.

The Contractor shall insert the steel bars (No. 5 x 24” epoxy coated deformed tie bars for longitudinal joints) into drilled holes in the existing concrete pavement. An epoxy resin adhesive must be used to anchor the steel bar in the drilled hole.

Longitudinal bars shall be placed at 30” spacing as per Standard Plate 380.01.

Steel bars shall be cut to the specified length by sawing and shall be free from burring or other deformations. Shearing will not be permitted.

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.

A rigid frame or mechanical device will be required to guide the drill to ensure proper horizontal and vertical alignment of the steel bars in the drilled holes.

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 by the dipping method will not be allowed.

## STEEL BAR INSERTION (CONTINUED)

Cost for the epoxy resin adhesive, steel bars, drilling of holes, inserting the steel bars into the drilled holes and all other items incidental to the insertion of the steel bars shall be included in the contract unit price per each for Insert Steel Bar In PCC Pavement.

## TABLE OF STEEL BAR INSERTION

| LOCATION | QUANTITY OF BARS | |
|---|---|---|
| | No. 5 | Dowel Bar |
| | Each | Each |
| Sta. 2+62 Lt.to 3+59 Lt Lane Side. | 67 | |
| Sta. 2+46 Lt. | | 3 |
| Sta. 2+65 Lt. | | 4 |
| Sta. 2+84 Lt. | | 3 |
| Sta. 2+99 Lt. | | 1 |
| **Totals:** | 67 | 11 |

## ADJUST WATER VALVE BOX

A water valve at station 2+56.5 left shall be adjusted to match the new pavement height. All costs for this adjustment shall be incidental to the unit price per each for Adjust Water Valve Box.

## GUTTER SLOPE FOR TYPE F CONCRETE CURB AND GUTTER

Curb and Gutter shall be poured monolithically with the 10” Nonreinforced PCC Pavement.

The Contractor shall be aware of the new standard gutter slope required for this project. The new standard gutter slope shall be 5% as detailed on standard plates 650.01 (Type B Concrete Curb and Gutter), 650.20 (Type F Concrete Curb and Gutter), and 650.30 (Type P Concrete Gutter).

## TABLE OF TYPE F610 CONCRETE CURB AND GUTTER

All Type F610 Curb and gutter shall be poured monolithically with the 10” PCC Pavement. All other specifications tor Type F610 Curb and Gutter apply.

| Station | to | Station | L/R | Quantity (Ft) |
|---|---|---|---|---|
| 1+96.39 - 13.19’ | | 2+75.93 - 28.97' | L | 88 |
| 2+75.93 - 28.97' | | 2+98.02 - 46.00' | L | 28 |
| 2+98.02 - 46.00' | | 3+08.56 - 69.48' | L | 26 |
| | | | Totals: | 142 |

## TYPE 2 DETECTABLE WARNINGS

Detectable warnings shall be in compliance with the Americans with Disability Act regulations.

The detectable warnings shall be installed according to the manufacturer's installation instructions.

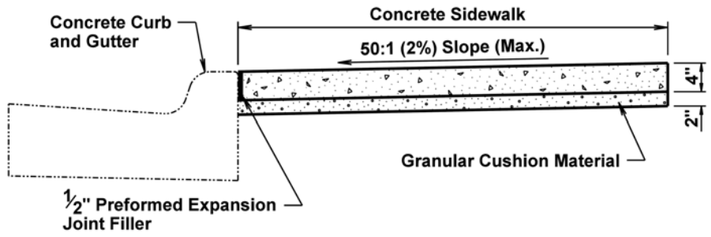
The detectable warnings shall be a brick red color for application in concrete curb ramps. Cast iron plates may be a natural patina (weathered steel).

10 SqFt of Type 2 Detectable Warning Panels will be required.

Type 2 Detectable Warnings

| Product | Manufacturer |
|---|---|
| Armor Tile<br>Surface Applied System | Engineered Plastics Inc.<br>300 International Drive, Suite 100<br>Williamsville, NY 14221<br>800-682-2525<br>http://www.armor-tile.com/ |
| Detectable Warning Tile<br>Surface Mount System | ADA Solutions, Inc.<br>North Billerica, MA 01862<br>888-407-4492<br>http://adatile.reachlocal.com/ |
| DWT<br>(Detectable Warning Tile)<br>Surface Mount System | 3D Traffic Works<br>4320 N. Varney St.<br>Burbank, CA 91502<br>877-843-9757<br>http://www.trafficwks.com/ |
| RediMat<br>Surface Applied System | Detectable Warning Systems, Inc<br>8081 Phillips Hwy, Suite 22<br>Jacksonville, FL 32256<br>866-999-7452<br>http://www.detectable-warning.com/ |
| Access Tile<br>Surface Applied System | Access Products Inc.<br>241 Main Street, Suite 100<br>Buffalo, NY 14203<br>888-679-4022<br>http://www.accesstile.com/surface-applied-the-most-innovative-retrofit-system |
| Ultra-ADA Pads<br>Surface Mount System | Ultra Tech International, Inc.<br>11542 Davis Creek Court<br>Jacksonville, FL 32256<br>800-764-9563<br>http://spillcontainment.com/products/facility_protection/warningpads.htm |

## 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; however, the sidewalk width and other special details are shown on the Curb and Gutter Layout sheets.

85 SqFt of 4" Concrete Sidewalk will be required to construct the pedestrian ramp.

## SODDING

Sod shall be placed behind curb and gutter sections in residential areas at locations specified in the plans and at locations determined by the Engineer during construction. Peat sod is not permitted.

An estimated 18 Gallons of water per square yard of sod was used to compute the quantity for the bid item "Water for Vegetation". All costs involved for watering the sod shall be incidental to the contract unit price per Mgal for "Water for Vegetation".

## SEDIMENT FILTER BAGS

In addition, the Contractor shall do the following for this installation:

- Sediment filter bags shall be placed in the undisturbed gutter section at the downslope end of the project prior to station 1+95. The sediment filter bags shall be placed in such a manner to trap sediment in the gutter. The sediment filter bags shall overlap 6" at the ends and be placed tightly together.

- The sediment filter bags shall be filled with clean aggregate 2" minus or smaller.

Sediment Filter Bag

| Product | Manufacturer |
|---|---|
| Snake Bag | Sacramento Bag Manufacturing Co.<br>Sacramento, CA<br>Phone: 1-800-287-2247<br>www.sacbag.com |

The sediment filter bag shall be the Snake Bag from Sacramento Bag Manufacturing Company or an approved equal.

All costs for furnishing and installing the sediment filter bags shall be incidental to the contract unit price per foot for "Sediment Filter Bag."

All costs for removing the sediment filter bags shall be incidental to the contract unit price per foot for "Remove Sediment Filter Bag".

All costs for removing and disposing of sediment collected by the sediment control device shall be incidental to the contract unit price per cubic yard for "Remove Sediment".

The removed sediment shall be placed at a location away from drop inlets where the sediment will not be washed back into the drop inlets or other storm sewer systems.

The Contractor and Engineer shall inspect and maintain the sediment control device once every week and within 24 hours after every rainfall event greater than 1/2".

## INVENTORY OF TRAFFIC CONTROL DEVICES

| SIGN CODE | SIGN SIZE | DESCRIPTION | NUMBER REQUIRED | UNITS PER SIGN | UNITS |
|---|---|---|---|---|---|
| G20-2 | 36" x 18" | END ROAD WORK | 3 | 17 | 51 |
| R4-7 | 24" x 30" | KEEP RIGHT (SYMBOL) | 1 | 18 | 18 |
| W4-2 | 48" x 48" | LEFT OR RIGHT LANE ENDS (SYMBOL) | 1 | 34 | 34 |
| W20-1 | 48" x 48" | ROAD WORK #### FT. OR AHEAD | 3 | 34 | 102 |
| W20-5 | 48" x 48" | LT. OR RT. LANE CLOSED #### FT. OR AHEAD | 1 | 34 | 34 |
| W20-7a | 48" x 48" | FLAGGER | 2 | 34 | 68 |
| | | | | **TOTAL UNITS** | **307** |

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Plotting Date: 18-MAR-2011

1+96.39 - 13.19'L to 3+08.56 - 69.48'L
Remove 144' of Concrete Curb & Gutter

1+96.39 - 13.19'L to 3+08.56 - 69.48'L
Install 445 SqFt of PCC Pavement
Between existing surface and new
Curb & Gutter. Match in-place lateral
and longitudinal joint spacing.

All Type F610 Curb and Gutter to be poured
monolithically with the 10" PCC Pavement.
Gutter line shown for reference prposes only.

1. 1+96.39 - 13.19'L
   Begin 200' Radius
   Type F610 Concrete
   Curb and Gutter
   T. C. Elev. Match Existing

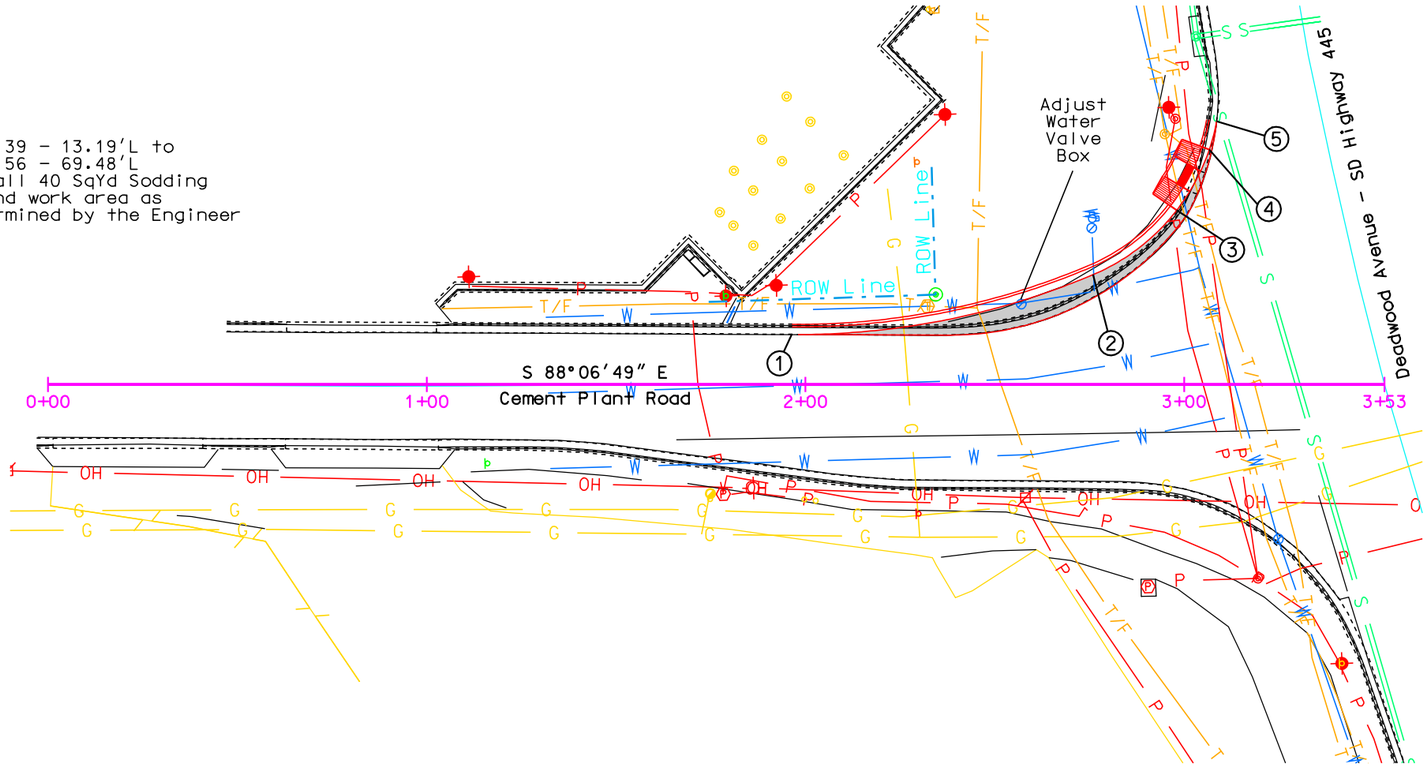
2. 2+75.93 - 28.97'L
   End 200' Radius
   Type F610 Concrete
   Curb and Gutter
   Begin 55' Radius
   Type F610 Concrete
   Curb and Gutter
   T. C. Elev. 3339.78

3. 2+98.02 - 46.00'L
   Begin Install Type 3 Curb ramp

4. 3+06.60 - 62.00'L
   End Install Type 3 Curb Ramp

5. 3+08.56 - 69.48'L
   End 55' Radius
   Type F610 Concrete
   Curb and Gutter
   T. C. Elev. Match Existing

1+96.39 - 13.19'L to
3+08.56 - 69.48'L
Install 40 SqYd Sodding
behind work area as
determined by the Engineer




Area of new 10" PCC Pavement

# TRAFFIC CONTROL

| STATE OF SOUTH DAKOTA | PROJECT | SHEET | TOTAL SHEETS |
|---|---|---|---|
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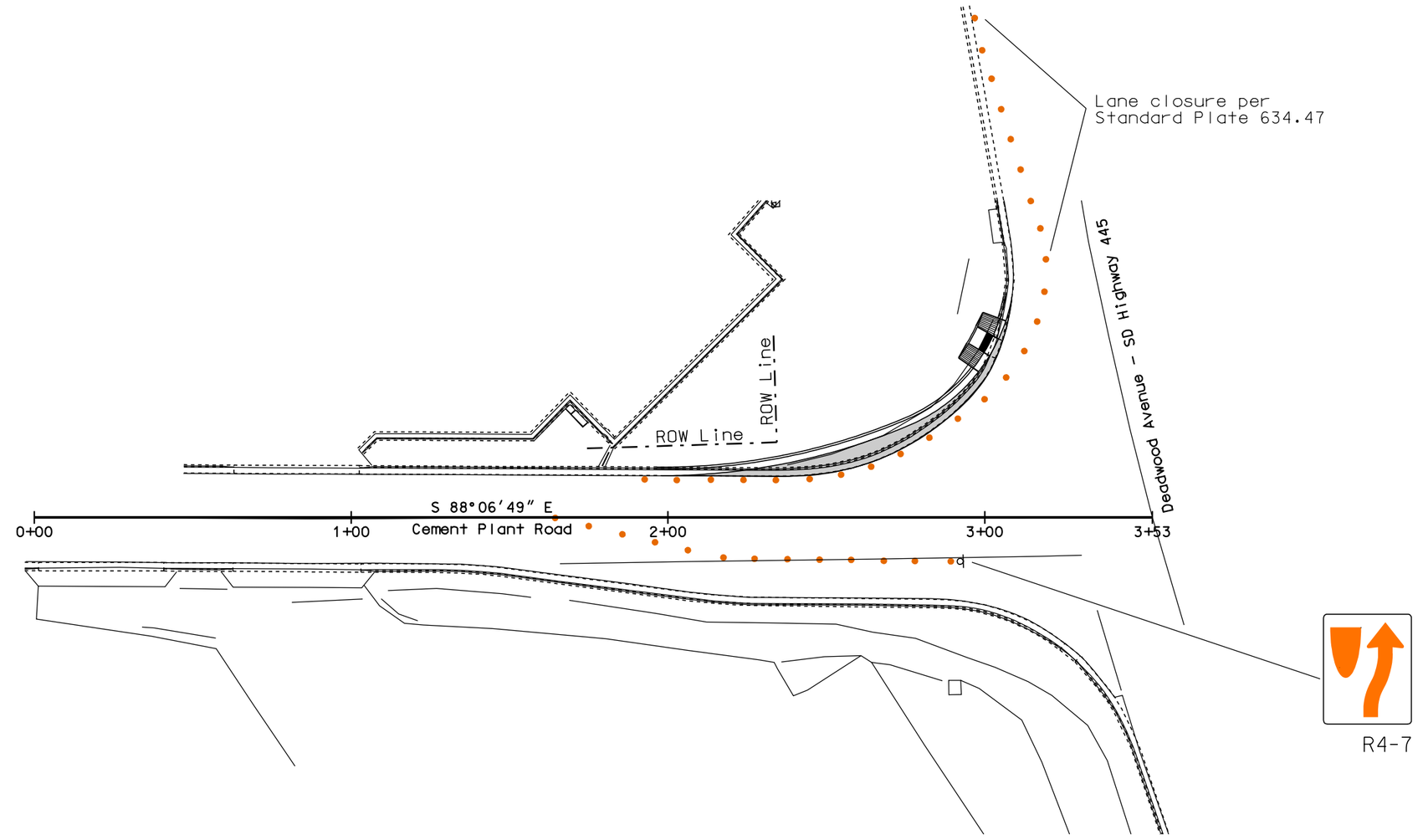



Traffic Channelizing Device

Area of new 10" PCC Pavement

PLOT SCALE - 40.0000000:1.0000000

PLOTTED FROM - TRRC12608

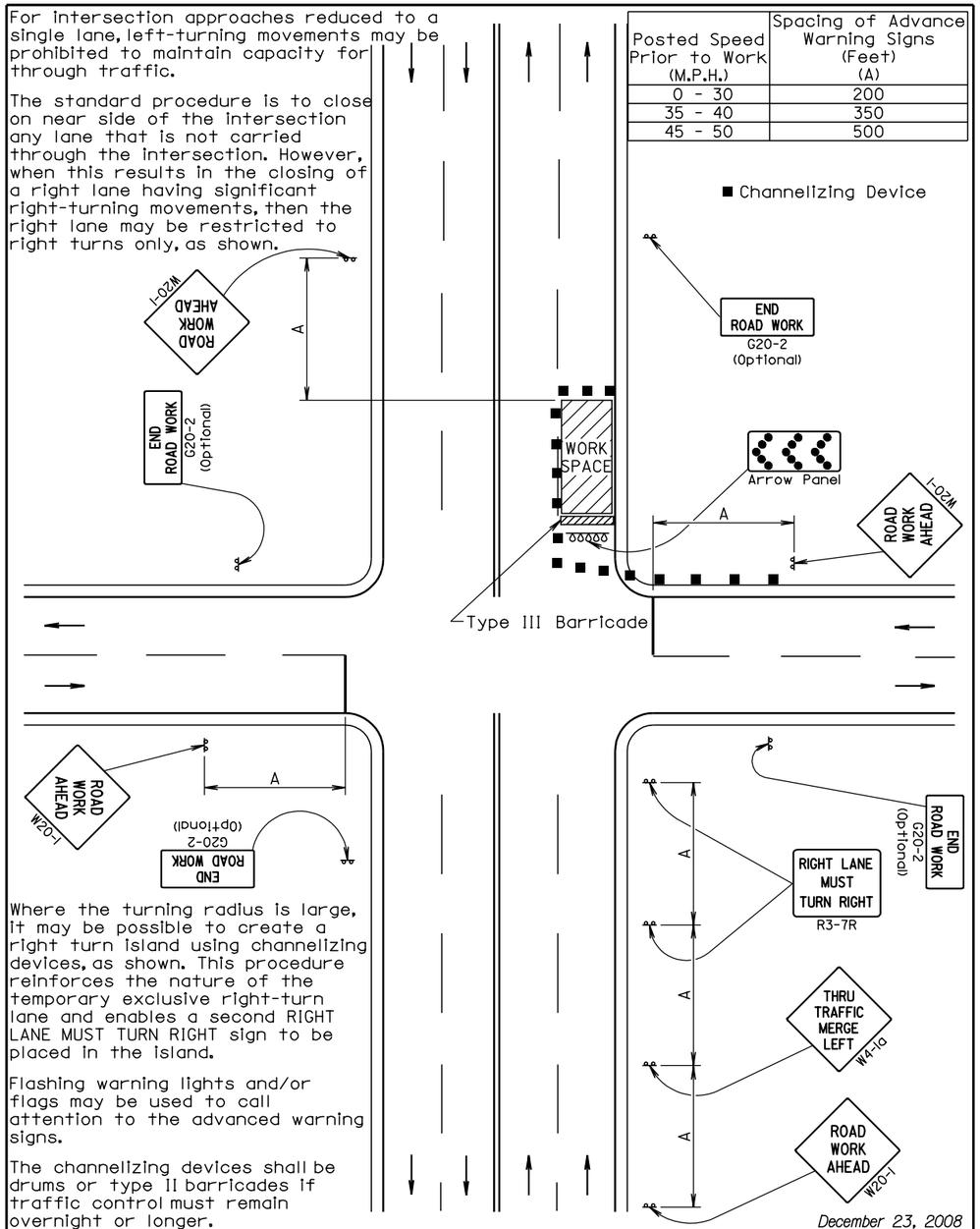
FILE - U:\REGIONRC\PRJ\2011RCREGMAINT\PLANS\445-452 CEMENTPLANTROAD\TC1.DGNLOT NAME - I24H_07

For intersection approaches reduced to a single lane, left-turning movements may be prohibited to maintain capacity for through traffic.

The standard procedure is to close on near side of the intersection any lane that is not carried through the intersection. However, when this results in the closing of a right lane having significant right-turning movements, then the right lane may be restricted to right turns only, as shown.

| Posted Speed Prior to Work (M.P.H.) | Spacing of Advance Warning Signs (Feet) (A) |
|---|---|
| 0 - 30 | 200 |
| 35 - 40 | 350 |
| 45 - 50 | 500 |

■ Channelizing Device




Where the turning radius is large, it may be possible to create a right turn island using channelizing devices, as shown. This procedure reinforces the nature of the temporary exclusive right-turn lane and enables a second RIGHT LANE MUST TURN RIGHT sign to be placed in the island.

Flashing warning lights and/or flags may be used to call attention to the advanced warning signs.

The channelizing devices shall be drums or type II barricades if traffic control must remain overnight or longer.

December 23, 2008

Published Date: 1st Qtr. 2011

SDDOT

GUIDES FOR TRAFFIC CONTROL DEVICES
RIGHT LANE CLOSURE FAR SIDE OF INTERSECTION

PLATE NUMBER 634.42

Sheet 1 of 1

| Posted Speed Prior to Work (M.P.H.) | Spacing of Advance Warning Signs (Feet) (A) (B) (C) | Taper Length (Feet) (L) | Spacing of Channelizing Devices (Feet) (G) |
|---|---|---|---|
| 0 - 30 | 200 | 180 | 25 |
| 35 - 40 | 350 | 320 | 25 |
| 45 - 50 | 500 | 600 | 50 |
| 55 | 750 | 660 | 50 |
| 60 - 65 | 1000 | 780 | 50 |

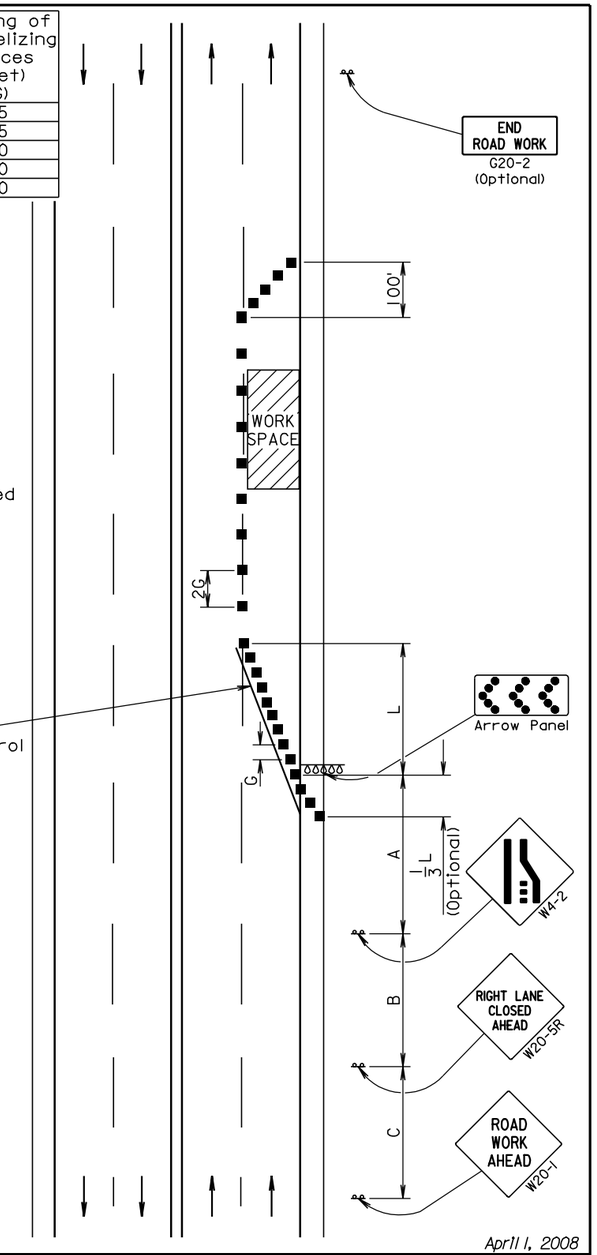
■ Channelizing Device

Drums or Type II Barricades shall be used if required overnight.

42" cones may be used along centerline

Longitudinal dimensions may be adjusted to fit project conditions such as horizontal curves, vertical curves, and other site restrictions.

Four inch white temporary pavement marking shall be used if traffic control must remain overnight or longer.




April 1, 2008

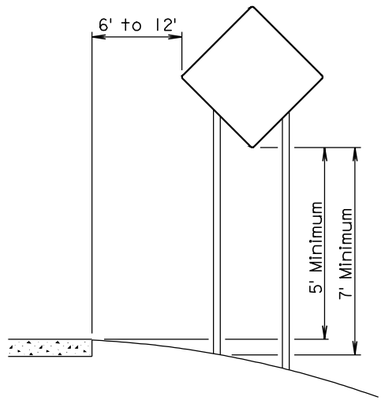
Published Date: 1st Qtr. 2011

SDDOT

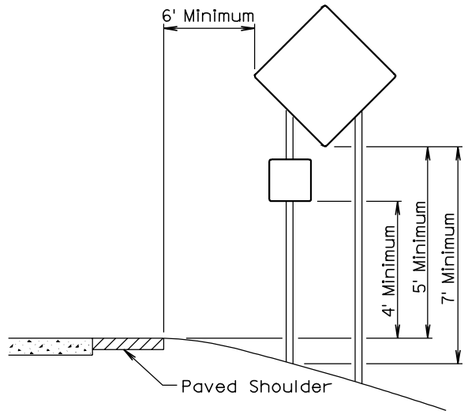
GUIDES FOR TRAFFIC CONTROL DEVICES
4-LANE UNDIVIDED, RIGHT LANE CLOSED

PLATE NUMBER 634.47

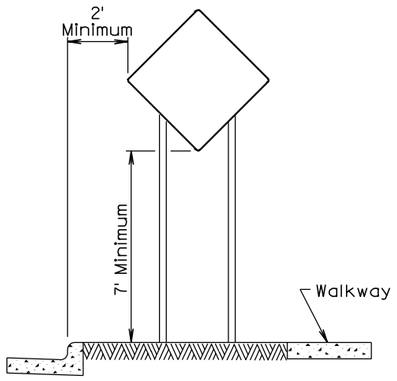
Sheet 1 of 1



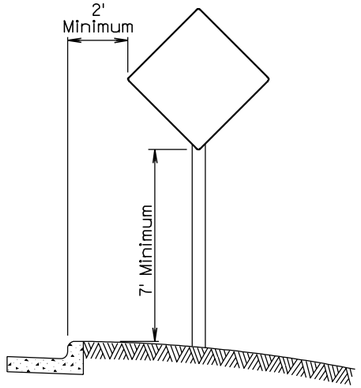

RURAL DISTRICT




RURAL DISTRICT WITH SUPPLEMENTAL PLATE




URBAN DISTRICT




URBAN DISTRICT

December 23, 2003

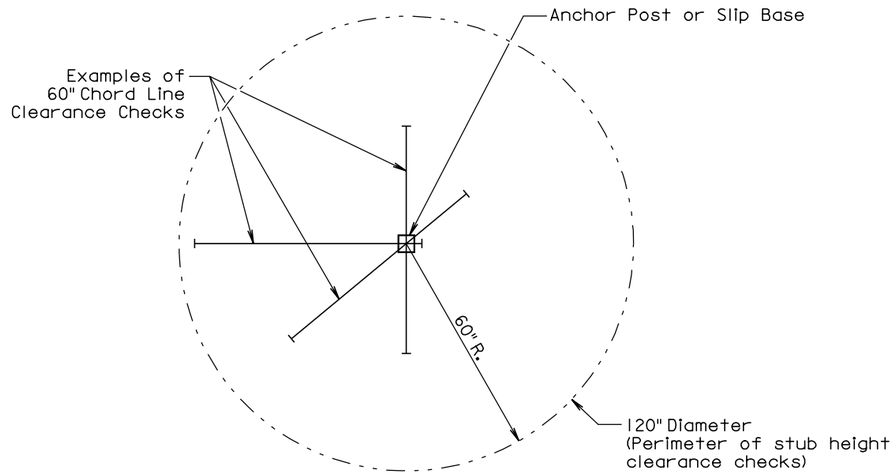
Published Date: 1st Qtr. 2011

SDDOT

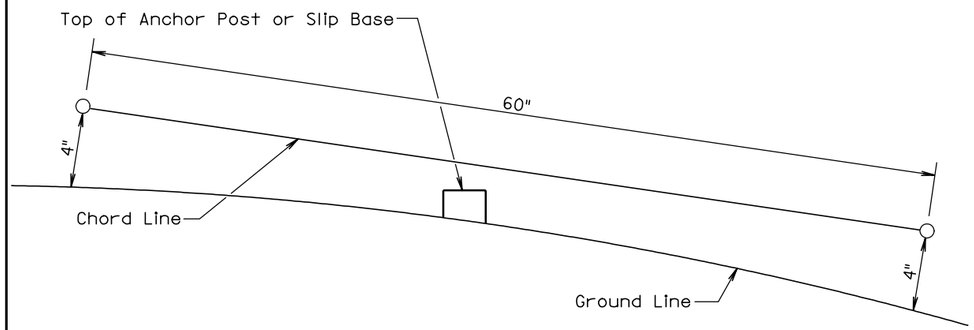
**BREAKAWAY SIGN SUPPORTS**
**(Typical Construction Signing)**

PLATE NUMBER 634.85

Sheet 1 of 1




PLAN VIEW
(Examples of stub height clearance checks)




ELEVATION VIEW

**GENERAL NOTES:**

The top of anchor posts and slip bases SHALL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height shall be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

July 1, 2005

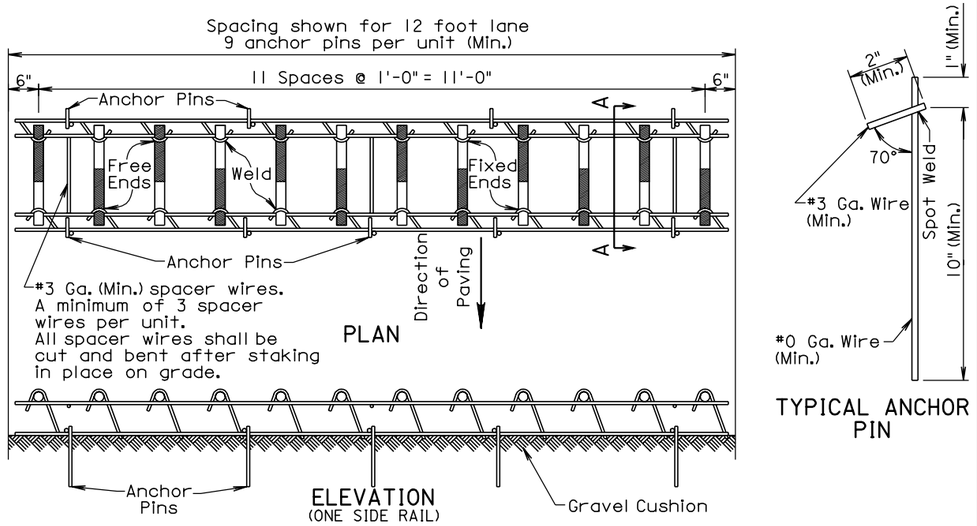
Published Date: 1st Qtr. 2011

SDDOT

**BREAKAWAY SUPPORT STUB CLEARANCE**

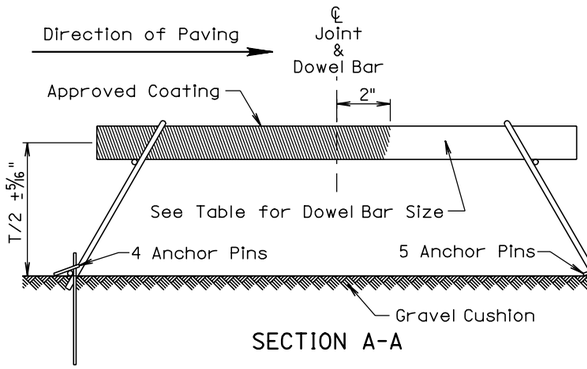
PLATE NUMBER 634.99

Sheet 1 of 1

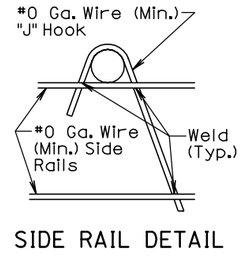









| Pavement Thickness | Epoxy Coated Dowel Bar Size |
|---|---|
| 8" to 10" | 1¼" x 18" |
| 10½" to 12" | 1½" x 18" |




**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.

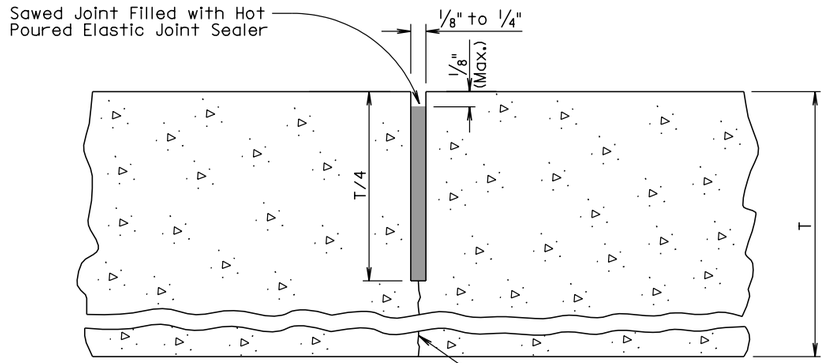
Centerline of individual dowel bars shall be parallel to the centerline of the roadway ±1/2 inch in 18 inches.

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: 1st Qtr. 2011* | SDDOT | **PCC PAVEMENT DOWEL BAR ASSEMBLY FOR TRANSVERSE CONTRACTION JOINTS** | PLATE NUMBER 380.01<br>Sheet 1 of 1 |




**GENERAL NOTES:**

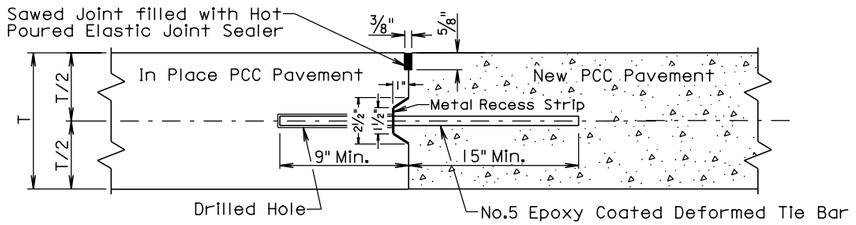
The saw cut to control cracking shall be a minimum of ¼ the thickness of the pavement.

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: 1st Qtr. 2011* | SDDOT | **PCC PAVEMENT TRANSVERSE CONTRACTION JOINT WITH OR WITHOUT DOWEL BAR ASSEMBLY** | PLATE NUMBER 380.03<br>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.

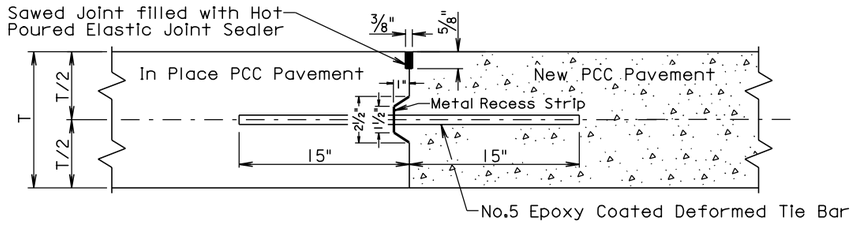
No.5 epoxy coated deformed tie bars shall be spaced 48" center to center for a female keyway or 30" center to center for a vertical face and male keyway. The keyway shown above is a female keyway.

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" center to center for a female keyway or 30" 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.

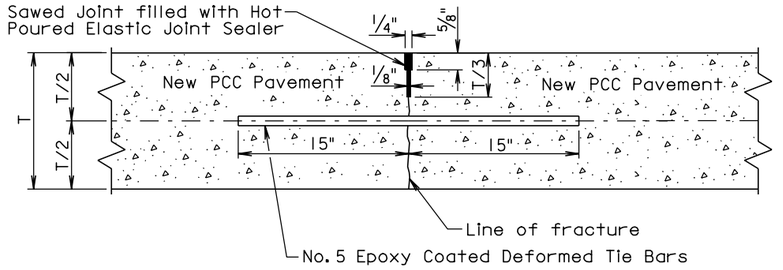
The keyway is optional and is not required. When concrete pavement is formed and a keyway is provided, a metal recess strip shall be used. When concrete pavement is slip formed, a metal recess strip is not required.

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: 1st Qtr. 2011 | SDDOT | PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS | PLATE NUMBER 380.10<br>Sheet 1 of 2 |

## SAWED LONGITUDINAL JOINT WITH TIE BARS
(POURED MONOLITHICALLY)




T = Pavement Thickness

**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.

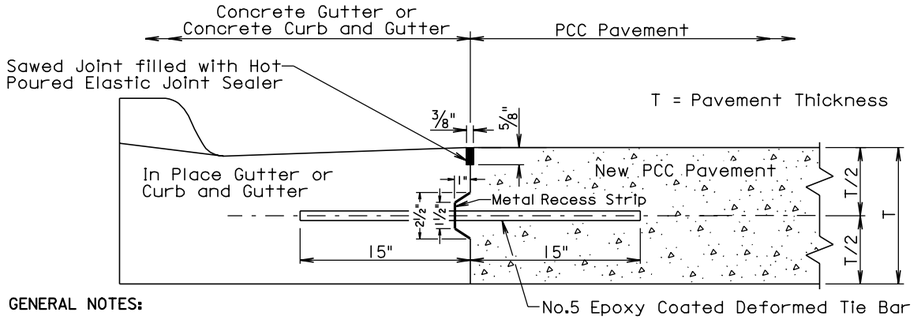
The first saw cut to control cracking shall be a minimum of 1/3 the thickness of the pavement. Additional sawing for widening the saw cut to provide the width for the installation of the hot poured elastic joint sealer will be necessary.

September 14, 2001

| | | | |
|---|---|---|---|
| Published Date: 1st Qtr. 2011 | SDDOT | PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS | PLATE NUMBER 380.10<br>Sheet 2 of 2 |

Username - trrcl2608

# 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.

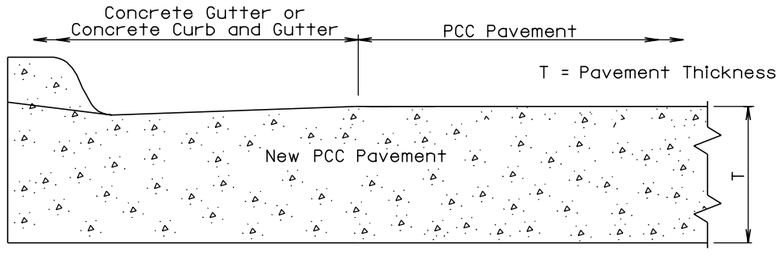
The tie bars shall be placed a minimum of 15 inches from existing transverse contraction joints.

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 1½" 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 ¼ 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:**

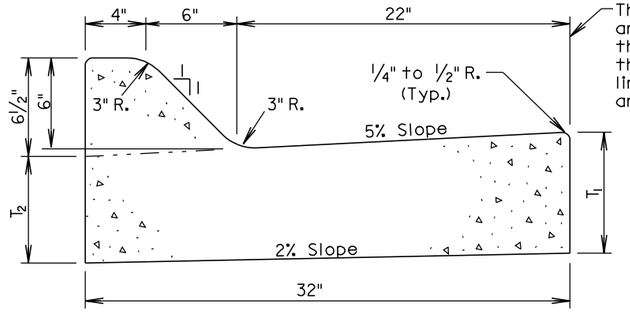
The mainline curb and gutter may be placed monolithically with the PCC pavement. If this method of construction is used, the tie bars and the sawed joint between the curb and gutter and the PCC pavement shall be eliminated.

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: 1st Qtr. 2011 | SDDOT | PCC PAVEMENT LONGITUDINAL CONSTRUCTION JOINTS WITH CONCRETE GUTTER OR CONCRETE CURB AND GUTTER | PLATE NUMBER 380.11<br>Sheet 1 of 1 |




The stated radii on the plans and cross sections refer to this line and it shall also be the basis for horizontal linear foot measurement and payment.

| Type | $T_1$ (Inches) | $T_2$ (Inches) | Cu. Yd. Per Lin. Ft. | Lin. Ft. Per Cu. Yd. |
|---|---|---|---|---|
| F66 | 6 | 5 1/16 | 0.057 | 17.6 |
| F67 | 7 | 6 1/16 | 0.065 | 15.4 |
| F68 | 8 | 7 1/16 | 0.073 | 13.6 |
| F68.5 | 8.5 | 7 9/16 | 0.077 | 12.9 |
| F69 | 9 | 8 1/16 | 0.082 | 12.3 |
| F69.5 | 9.5 | 8 9/16 | 0.086 | 11.7 |
| F610 | 10 | 9 1/16 | 0.090 | 11.1 |
| F610.5 | 10.5 | 9 9/16 | 0.094 | 10.7 |
| F611 | 11 | 10 1/16 | 0.098 | 10.2 |
| F611.5 | 11.5 | 10 9/16 | 0.102 | 9.8 |
| F612 | 12 | 11 1/16 | 0.106 | 9.4 |

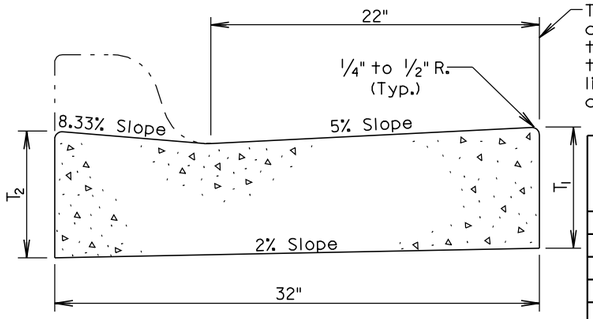
**GENERAL NOTES:**

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: 1st Qtr. 2011 | SDDOT | TYPE F CONCRETE CURB AND GUTTER | PLATE NUMBER 650.20<br>Sheet 1 of 1 |

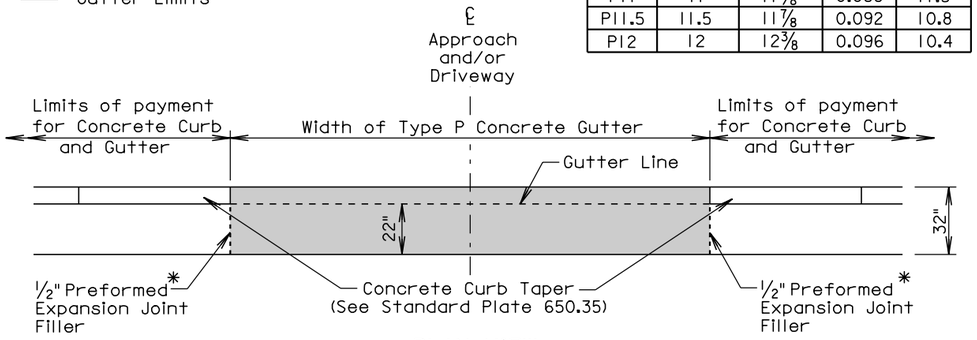



The stated radii on the plans and cross sections refer to this line and it shall also be the basis for horizontal linear foot measurement and payment.

| Type | $T_1$ (Inches) | $T_2$ (Inches) | Cu. Yd. Per Lin. Ft. | Lin. Ft. Per 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 |

TRANSVERSE SECTION

Type P Concrete Gutter Limits




PLAN VIEW

* 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.

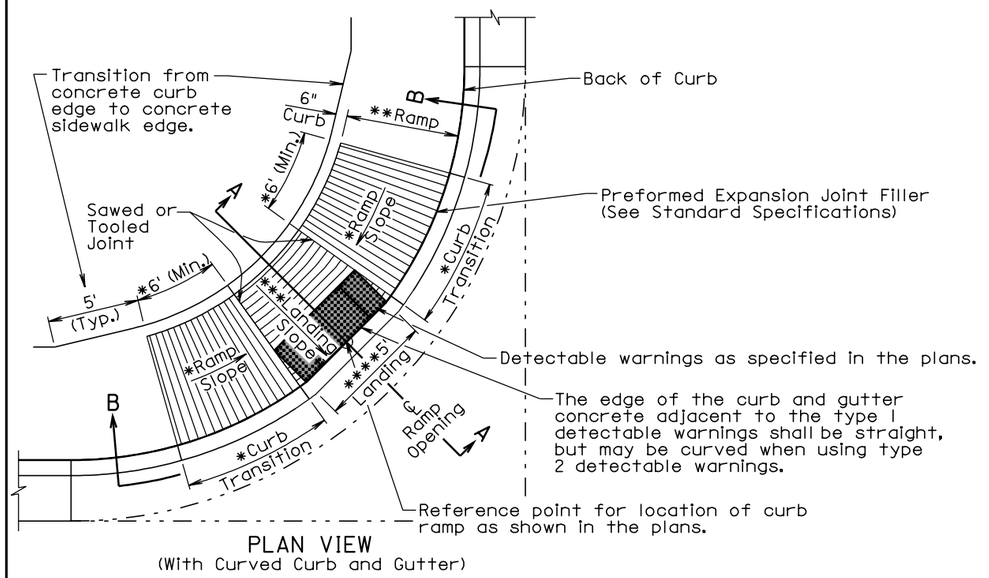
Transverse contraction joints shall be constructed at 10' intervals in the concrete gutter except when concrete gutter is constructed adjacent to mainline PCC pavement. When concrete gutter is constructed adjacent to mainline PCC pavement, a transverse contraction joint shall be constructed in the concrete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

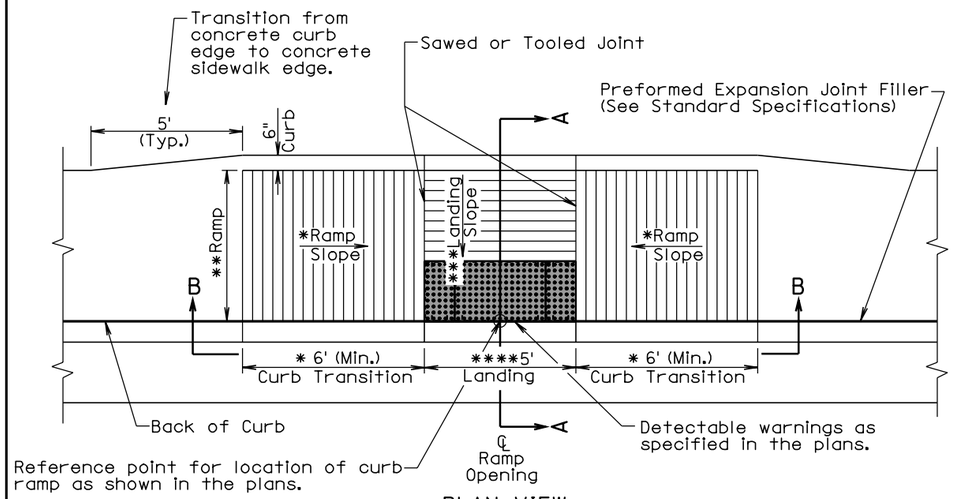
When concrete gutter is not placed monolithically with the mainline PCC pavement and when the adjacent mainline surfacing is not PCC concrete, the transverse contraction joints in the concrete gutter shall be 1 1/2 inches deep if formed in the fresh concrete using a suitable grooving tool. If a saw is 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: 1st Qtr. 2011 | SDDOT | TYPE P CONCRETE GUTTER | PLATE NUMBER 650.30<br>Sheet 1 of 1 |




PLAN VIEW
(With Curved Curb and Gutter)




PLAN VIEW
(With Straight Curb and Gutter)

*December 23, 2010*

| | | | |
|---|---|---|---|
| Published Date: 1st Qtr. 2011 | SDDOT | TYPE 3 CURB RAMP (PARALLEL CURB RAMP) | PLATE NUMBER 651.03<br>Sheet 1 of 3 |

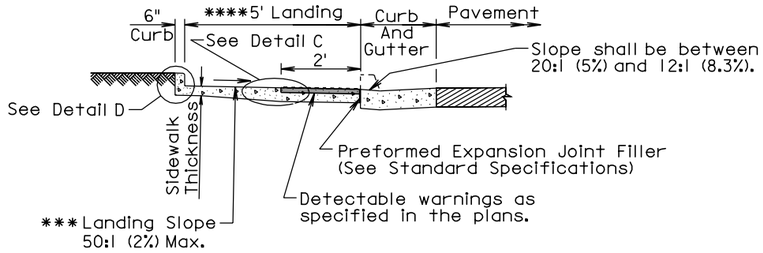
* The curb transition slope shall match the ramp slope. The ramp slope, at any location of the ramp, shall be 12:1 (8.3%) maximum. The ramp length shall not exceed 15' unless stated otherwise in the plans. Ramp slopes are designed at 12:1 (8.3%) unless stated otherwise in the plans. The minimum length of the curb transition shall be 6'.

** The ramp cross slope shall not be steeper than a 50:1 (2%) and the ramp width is 5' unless stated otherwise in the plans.

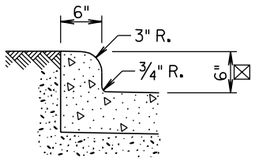
*** The landing slope shall not be steeper than a 50:1 (2%) in any direction of pedestrian travel.

**** The landing is 5' x 5' unless stated otherwise in the plans.

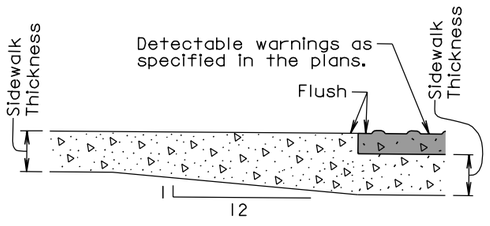
☒ The curb height shall be 6" unless stated otherwise in the plans.



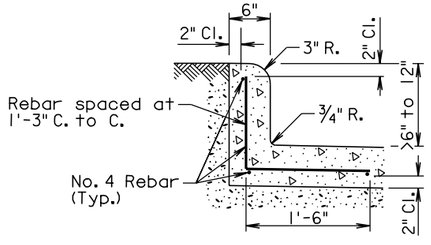

SECTION A-A



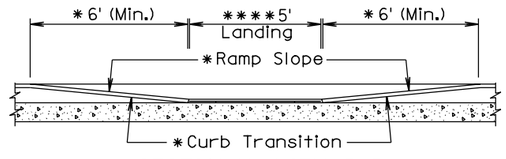

DETAIL D




DETAIL C




DETAIL D
(Use this detail when the curb height is greater than 6" and less than 12")




SECTIONAL VIEW B-B

December 23, 2010

| | | | |
|---|---|---|---|
| Published Date: 1st Qtr. 2011 | SDDOT | TYPE 3 CURB RAMP (PARALLEL CURB RAMP) | PLATE NUMBER 651.03 |
| | | | Sheet 2 of 3 |

GENERAL NOTES:

For illustrative purpose only, type I detectable warnings are shown in the drawings.

For illustrative purpose only, a PCC fillet section is shown in one of the drawings. The curb ramp depicted on this standard plate may be used with a PCC fillet section, with curved curb and gutter, or with straight curb and gutter.

The curb ramp shall be placed at the location stated in the plans.

Sidewalk adjacent to the curb ramp shall be as shown in the plans.

Care shall be taken to ensure a uniform grade on the ramp, free of sags and short grade changes.

Surface texture of the ramp shall be obtained by coarse brooming transverse to the slope of the ramp.

The normal gutter line profile shall be maintained through the area of the ramp.

Joints shall be sawed or tooled into the concrete adjacent to the detectable warnings to alleviate possible corner cracking (see plan view for joint location).

Care shall be taken to ensure that the surface of the detectable warnings are clean and maintains a uniform color.

When curb height is greater than 6" and less than 12", reinforcing steel is required in accordance with the detail on sheet 2 of 3. The reinforcing steel shall conform to ASTM A615, Grade 60. Cost for furnishing and installing the reinforcing steel shall be incidental to the contract unit price per square foot for the corresponding concrete sidewalk bid item.

There will be no separate payment for curb ramps. The curb ramp shall be measured and paid for at the contract unit price per square foot for the corresponding concrete sidewalk bid item. The square foot area of the detectable warnings and the curb along the short radius shall be included in the measured and paid for quantity of sidewalk.

The curb transitions and ramp opening shall be measured and paid for at the contract unit price per foot for the corresponding curb and gutter bid item when curb and gutter is used. The curb transitions and ramp opening shall be measured and paid for at the contract unit price per square yard for the corresponding PCC fillet section bid item when a PCC fillet section is used.

The type I detectable warnings shall be measured to the nearest square foot. All costs for furnishing and installing the type I detectable warnings including labor, equipment, materials, and incidentals shall be paid for at the contract unit price per square foot for "Type I Detectable Warnings".

The type 2 detectable warnings shall be measured to the nearest square foot. All costs for furnishing and installing the type 2 detectable warnings including labor, equipment, and materials, including adhesive, necessary sealant or grout, and necessary grinding shall be paid for at the contract unit price per square foot for "Type 2 Detectable Warnings".

December 23, 2010

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|---|---|---|---|
| Published Date: 1st Qtr. 2011 | SDDOT | TYPE 3 CURB RAMP (PARALLEL CURB RAMP) | PLATE NUMBER 651.03 |
| | | | Sheet 3 of 3 |

Username - trrcl2608