

FOR BIDDING PURPOSES ONLY

SECTION F: SURFACING PLANS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0085(72)23	F1	F23
FILE: F001 Title.dgn PLOTTING DATE: 11/18/2013		REV DATE: INITIAL:	

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- F2 to F7 Surfacing Notes
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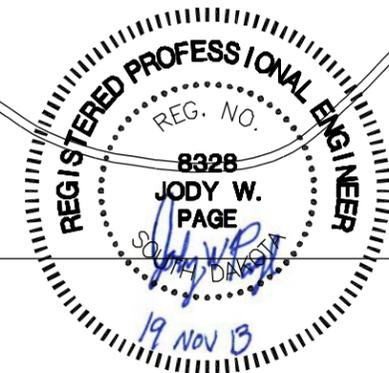
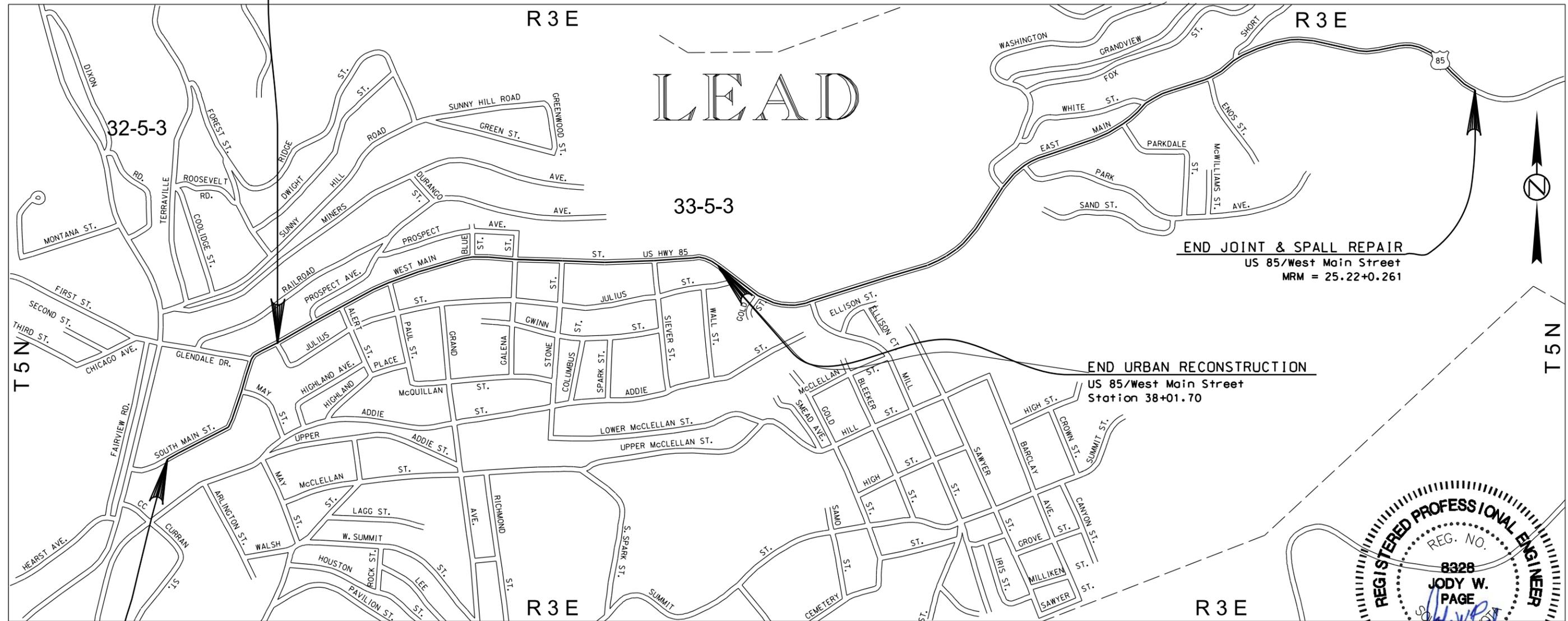
BEGIN URBAN RECONSTRUCTION
 US 85/West Main Street
 Station 12+26.68

END JOINT & SPALL REPAIR
 US 85/West Main Street
 MRM = 25.22+0.261

END URBAN RECONSTRUCTION
 US 85/West Main Street
 Station 38+01.70

START JOINT & SPALL REPAIR
 US 85/West Main Street
 MRM = 23.93+0.037

LEAD



PLANS BY: **HDR**
 RAPID CITY, SD

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
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SECTION F - ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
120E6200	Water for Granular Material	132.1	MGal
260E2060	Gravel Cushion, Modified	3691.4	Ton
260E0010	Subbase	8440.0	Ton
320E1200	Asphalt Concrete Composite	49.2	Ton
380E0050	8" Nonreinforced PCC Pavement	8723.9	SqYd
380E5010	Fast Track Concrete	300.0	SqYd
380E5030	Nonreinforced PCC Pavement Repair	138.0	SqYd
380E6000	Dowel Bar	3645	Each
380E6110	Insert Steel Bar in PCC Pavement	224	Each
380E6302	Reseal PCC Pavement Joint - Hot Pour	2416	Ft
390E0200	Repair Type A Spall	41.0	SqFt

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.

The surface of the mainline paving shall be transversely tined. All other areas shall be tined as directed by the Engineer.

The PCC Pavement within the grading limits shall meet the requirements of the special provision for PCCP Smoothness. The pavement repair areas will not be required to meet the special provision but will be checked with a 10' straight edge.

SURFACING NOTES

8" 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 used shall conform to Section 380 and shall contain a minimum of 600 lbs of cement and fly ash at 20%. The concrete shall contain at least 55% coarse aggregate. The use of a water reducer at manufacturer's recommendations will be required. The concrete must obtain a minimum of 4,000 psi at 28 days. The contractor is responsible for the mix design used. The contractor shall submit a mix design for approval at least two weeks before use.

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, Modified to final grade prior to placement of concrete.

A minimum of 5 pavement blockouts may be required at various locations on this project to facilitate traffic during the paving activity.

The surface of the mainline paving shall be tined to within 2 or 3 feet of the face of the curb. 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 perpendicular to the centerline as detailed in the standard plates 380.01 and 380.08. In multilane areas the transverse contraction joints shall be perpendicular to the centerline and be in a straight line across the width of the pavement. In special situations the Engineer may pre-approve transverse contraction joints that do not meet these requirements. 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.

TABLE FOR 8" NONREINFORCED PCC PAVEMENT

Station to	Station	L/R	Quantity (SqYd)	Gravel Cushion, Modified (Ton)
12+27	14+65	L/R	677.2	190.5
14+65	16+05	L/R	472.6	132.9
16+05	19+05	L/R	1115.3	313.7
19+05	23+65	L/R	1702.5	478.8
23+65	26+05	L/R	747	210.1
26+05	28+40	L/R	757.9	213.2
28+40	33+35	L/R	1708.3	480.4
33+35	38+02	L/R	1543.1	434.0
Totals:			8723.9	2453.6



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ALKALI SILICA REACTIVITY -

Fine aggregate shall conform to Section 800.2.D Alkali 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	0.316*
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

* 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.

TIE BARS AND LONGITUDINAL JOINTS

The use of automatic tie bar inserters will only be allowed on the vertical edge of longitudinal construction joints. The use of automatic tie bar inserters will not be allowed on sawed longitudinal joints.

Tie bars shall be held in the specified position parallel to the slab surface and perpendicular to the centerline by a supporting device. Tie bars or tie bar baskets shall be securely staked to the roadbed and shall hold the bar at the correct spacing, alignment, and elevation.

Tie bars will not require supports if inserted into the side of the pavement during slip form paving of the longitudinal construction joint operation. Failure to acquire the correct tie bar locations or position in the construction joint shall require the bars to be corrected and a change made to the operation which may include drilling and epoxy bars or other methods as approved by the engineer.

The final position of each tie bar shall be within the following tolerances:

- Vertical Placement: $\pm T/6$ for any part of the tie bar (T = slab thickness)
- Transverse Placement (side shift): ± 3 inches when measured perpendicular to the longitudinal joint line

If the tie bar does not meet the requirements and tolerances specified, corrective action shall be performed at the Contractor's expense to the satisfaction of the engineer.

Water for Granular Material shall be applied at the rate of 12 gallons of water per ton of Gravel Cushion, Modified and Subbase.

FAST TRACK CONCRETE

At specific locations (intersecting roads, driveways, & blockouts) designated by the Engineer, Fast Track Concrete may be used. The intent of the Fast Track Concrete is to insure the new pavement can be opened to traffic within 48 hours after placement. Payment for Fast Track or 8" PCC Pavement will be made accordingly. If Fast Track Concrete does not meet the 3,500 psi requirement in 48 hours, that Fast Track Concrete will be paid for as 8" PCC Pavement. All costs for Fast Track Concrete shall be incidental to the contract unit price per square yard for "FAST TRACK CONCRETE".

Fast Track Concrete shall be constructed according to plan details and Standard Specifications for the 8" Nonreinforced PCC Pavement and 8" Nonreinforced PCC Pavement Repair except as follows:

The Fast Track Concrete shall be designed to achieve a minimum compressive strength of 3500 psi in 48 hours and 4000 psi at 28 days. Use of a water reducer, accelerator, or a high range water reducer may be required to achieve the desired early strength. If any of these additives are used, they shall be compatible with all other ingredients of the mix. The minimum pounds of cement shall be 600 pounds per cubic yard of Type I, II, III, or V cement. In addition to the cement a minimum of 105 pounds per cubic yard of Fly Ash will be used in the mix. The coarse aggregate shall be a minimum of 53% of total aggregate weight per cubic yard. Coarse aggregate shall be crushed ledge rock, Size No. 1 or 15. The water cement ratio shall be as low as practical to achieve the desired results. The slump requirement will be limited to 7 inches maximum and the entrained air content shall be 4.5% to 7.0% after all admixtures are added and the concrete. The Contractor is responsible for the mix design used. The Contractor shall submit a mix design and supporting documentation to the Engineer for approval at least 2 weeks prior to use. The Department of Transportation's Office of Materials & Surfacing shall review and comment on the proposed mix design prior to its use.

Fast Track Concrete shall be cured with Linseed Oil Base Emulsion Curing Compound. In addition, the concrete may be immediately covered with a suitable insulation blanket to facilitate rapid curing. If the insulation blanket is used it may be left in place except to allow for initial joint sawing operations. The initial contraction joint sawing shall be performed as soon as practical after placement to avoid random cracking.

The pavement may be opened to traffic, at 48 hours, provided the compressive strength of 3500 psi has been attained. The final contraction joint sawing and sealing are not required at this time to open up pavement to traffic.

A quantity of 300 square yards of fast track concrete is included in the Estimate of Quantities. Additional quantity may be added as deemed necessary by the Engineer.

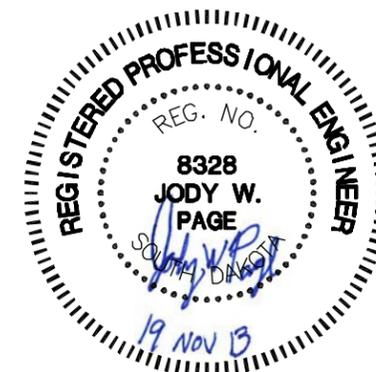
SURFACING THICKNESS DIMENSIONS

Plans quantity will be applied even though the thickness may vary from that shown on the plans.

At those locations where material must be placed to achieve a required elevation, plans quantity may be varied to achieve the required elevation.

CURING OF CONCRETE

Portland Cement Concrete Pavement, concrete curb and gutter, concrete fillets, approach pavement, driveway pavement, and inlets shall be cured with a linseed oil base emulsion compound.



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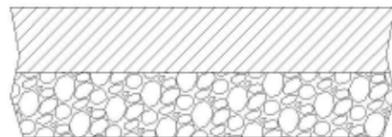
ASPHALT CONCRETE COMPOSITE

Placement of the asphalt concrete shall be performed with self-propelled rollers. Compaction of the asphalt concrete shall be by methods and equipment satisfactory to the Engineer.

Asphalt concrete composite shall conform to the SDDOT Class E-1, Asphalt Concrete unless otherwise noted or by direction of the Engineer. The asphalt cement used in the mixture shall be Performance Graded AASHTO Designation: PG64-22 or PG64-28 and shall conform to the 2004 SDDOT Standard Specifications.

TABLE FOR ASPHALT CONCRETE COMPOSITE

Station to	Station	L/R	Quantity (Ton)	Gravel Cushion, Modified (Ton)
13+31 - 41.4'	13+92 - 31.0'	R	24.8	28
14+54 - 25.0'	14+80 - 45.5'	L	16.6	18.7
23+59 - 28.3'	23+75 - 38.2'	L	7.8	8.8
Totals:			49.2	55.5



6" ASPHALT CONCRETE PATCHING
(2-3" LIFTS E-1 ASPHALT)

7" GRAVEL CUSHION

GRAVEL CUSHION, MODIFIED

Gravel Cushion, Modified shall be furnished by the Contractor.

Gravel Cushion, Modified shall conform to the following gradation requirements.

Passing 1 inch sieve	100%
Passing 3/4" inch sieve	80-100%
Passing 1/2 inch sieve	68-91%
Passing No. 4 sieve	46-70%
Passing No. 8 sieve	34-58%
Passing No. 40 sieve	13-35%
Passing No. 200 sieve	3.0-12.0%

All remaining requirements of the Standard Specifications for Gravel Cushion shall apply.

If the Contractor chooses to not use the salvaged concrete material for Gravel Cushion, Modified they shall supply Gravel Cushion meeting the gradation requirements for Limestone Ledge Rock Gravel Cushion as listed in the SDDOT Standard Specifications for Roads and Bridges.



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NONREINFORCED PCC PAVEMENT REPAIR - GENERAL

Locations and size (length or width) of concrete repair areas are subject to change in the field, at the discretion of the Engineer, at no additional cost to the state. Payment will be based on actual area replaced.

Existing concrete pavement shall be sawed full depth at the beginning and end of the PCCP repair areas. When either the beginning or end of a PCCP repair area falls close to an existing joint or crack, the PCCP repair area shall be extended to eliminate the existing joint or crack. Where possible, new working joints shall be adjacent to existing working joints.

Saw cuts that extend beyond the repair area shall be minimized and filled with a non-shrinkage mortar mix at the Contractor's expense.

Existing concrete pavement in the replacement areas shall be removed by the lift out method or by means that minimize damage to the base and sides of remaining in place concrete. All removed material shall be removed from within the right-of-way by the end of the workday. Damage to adjacent concrete caused by the Contractor's operations shall be removed and replaced at the Contractor's expense.

If the pavement replacement area is entirely on either side of the existing contraction joint, the location of one of the working joints will be at the original location. Any existing dowel bar assemblies/steel bars shall be sawed off and removed.

At full roadway width repairs and when specified, a working joint will be reconstructed at both ends of each pavement replacement area as shown in these plans.

At repair locations where the new working joint is not opposite the existing working joint, the Contractor shall place a 1/4" preformed asphalt expansion joint material along the longitudinal joint from the existing working joint to the new working joint. The expansion joint material shall meet the requirements of AASHTO M33. Cost for this material shall be incidental to the contract unit price per square yard for Nonreinforced PCC Pavement Repair.

All joints (longitudinal and transverse) through and around the repair areas will be sawed and sealed in accordance with the details shown in these plans. Refer to Reseal Joints notes.

NONREINFORCED PCC PAVEMENT REPAIR

For existing pavement thickness less than 8.5" (T < 8.5"):

New pavement thickness shall equal existing pavement thickness + 1" (T_N = T+1").

Concrete shall meet the requirements of the Standard Specifications Section 380, except as modified by the following notes:

The fine aggregate shall be screened over a one-inch square-opening screen just prior to introduction into the concrete paving mix if required by the Engineer. that again.

The slump requirement will be limited to 3" maximum after water reducer is added and the concrete shall contain 4.5% to 7.0% entrained air. The concrete shall contain a minimum of 50% coarse aggregate by weight. Coarse aggregate shall be crushed ledge rock, Size

No. 1 unless an alternative gradation is approved by the Concrete Engineer as part of the mix design submittal. The mix design shall contain at least 650 lbs of Type I or II cement or 600 lbs of Type III cement per cubic yard. The minimum 28 day compressive strength shall be 4,000 psi. The Contractor is responsible for the mix design used. The Contractor shall submit a mix design and supporting documentation for approval at least 2 weeks prior to use.

The use of a water reducer at manufacturer's recommended dosage will be required.

Concrete shall be cured with white pigmented curing compound (AASHTO M148, Type 2) applied as soon as practical at a rate of 125 square feet per gallon. Concrete shall be cured for a minimum of 48 hours before opening to traffic. The 48 hours is based upon a concrete surface temperature of 60° F or higher throughout the cure period. If the concrete temperature falls below 60° F, the cure time shall be extended or other measures shall be taken, at no additional cost to the State. In addition to the curing requirements, a strength of 3,500 psi must be attained prior to opening to traffic.

Upon placement of the concrete, repair areas shall be straight edged to ensure a smooth riding surface and shall be textured longitudinally with the pavement by finishing with a stiff broom. Repair areas shall then be checked with a 10' foot straight edge. The permissible longitudinal and transverse surface deviation shall be 1/8" in 10'.

Concrete shall be covered with suitable insulation blanket consisting of a layer of closed cell polystyrene foam protected by at least one layer of plastic. Insulation blanket shall have an R-value of at least 0.5, as rated by the manufacturer. Insulation blanket shall be left in place, except for joint sawing operations, until the 3500 psi is attained. Insulation blanket shall be overlapped on to the existing concrete by 4'. The initial contraction joint sawing shall be performed as soon as practical after placement to avoid random cracking.

Cost for performing the aforementioned work including sawing and removing concrete, furnishing and placing concrete, sawing and sealing joints, labor, tools and equipment shall be included in the contract unit price per square yard for Nonreinforced PCC Pavement Repair.

TABLE FOR PCC PAVEMENT REPAIR

Station	Width (Ft)	Length (Ft)	Nonreinforced PCC Pavement Repair (SqYd)		1 1/4" Bar		Insert Steel Bar in PCC Pavement (Each)	
			#9 Bar (Each)	#5 Bar (Each)	#9 Bar (Each)	#5 Bar (Each)	#9 Bar (Each)	#5 Bar (Each)
65+50	12	40	53.3		80		48	128
44+41	12	6	8.0			24	8	32
40+59	12	20	26.7		40		24	64
Detour*			50.0					
Totals			138.0		120	24	80	224

*Pavement Repair along detour routes to be performed as necessary. Locations and quantities of concrete repair will be determined in the field at the discretion of the Engineer.

INSERT STEEL BAR IN PCC PAVEMENT

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.

For existing pavement thickness less than 8.5" (T < 8.5"):

The Contractor shall insert the steel bars (1" x 18" epoxy coated plain round dowel bars and No. 8 x 18" epoxy coated deformed tie bars for transverse joints and 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.

Plain round dowel 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).

Steel bars shall be inserted in the transverse joint on 18" centers. The first steel bar in the transverse joint shall be placed 9" from the edge of the slab closest to centerline. Steel bars shall be inserted in the longitudinal joint on 30" centers and shall be a minimum of 15" from either transverse joint. A typical one-lane patch 12' wide and 6' long will require 18 steel bars (8 in each transverse joint and 2 in the longitudinal joint). It will be necessary to laterally adjust the location of some of the inserted steel bars when the dimensions above interfere with existing steel bar locations.

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.

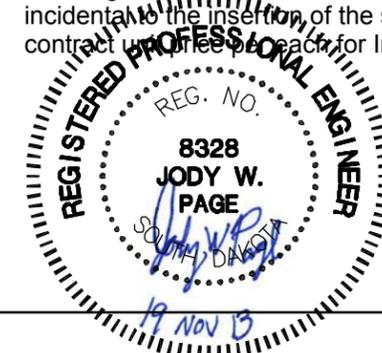
The drilled holes shall be blown out with compressed air using a device that will reach to the back of the hole to ensure that all debris or loose material has been removed prior to epoxy injection.

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. The epoxy shall start to gel before placing fresh concrete or as per manufacturer's recommendations if given.

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.



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RESEAL PCC PAVEMENT JOINT

Select PCC Pavement transverse and longitudinal joints outside of the grading limits shall be resealed. The existing transverse joints are sealed with silicone sealant. The existing longitudinal joints are sealed with hot-poured elastic joint sealer.

The existing transverse and longitudinal joints shall be cleaned of incompressible material, spalled concrete and joint sealant to the satisfaction of the Engineer. It is not essential that all of the sealant be removed. Remaining sealant adhering to the sides may remain in place if the Engineer determines that it is not detrimental to the joint. The Contractor shall collect and dispose of all sealant material removed.

Just prior to sealing, the joints shall be sandblasted and cleaned with compressed air.

Transverse and longitudinal joints shall be sealed with Hot Poured Elastic Joint Sealer. The width of the joint is approximately 3/8" to 1/2" wide. It is the Contractor's responsibility to inspect and verify the actual field conditions of the joint dimensions for the satisfactory completion of the work.

All costs associated with removing, cleaning, and resealing the transverse and longitudinal joints shall be incidental to the contract unit price per foot for "Reseal PCC Pavement Joint-Hot Pour".

TABLE FOR RESEAL PCC PAVEMENT JOINT

Station	Direction of Travel(N/S)	Quantity (Ft)	Longitudinal			
36+04	NPL	32			52+62	NPL 32
36+54	W RD	32			52+81-52+94	S 32
36+74	N	32			52+96	W RD 32
36+96	S	32			53+12	N&PL 32
37+40	N	32			53+49	SPL 32
37+63	N	32			53+51	W RD 32
38+85	S	32			53+26-53+51	SPL 32
39+38	N&S	32			53+72	S 32
41+13	S	32			53+61-53+72	S&PL 32
42+40-42+77	C	32			53+95-54+04	N 32
43+00	SPL	32			54+62	N 32
43+21	SPL	32			54+92	N 32
43+37	W RD	32			55+00-55+20	N 32 L
43+99	N	32			55+40	N&PL 32
44+40	N	32			55+43	N&PL 32
43+99-44+40	N	32	L		56+25	S&PL 32
45+06	NPL	32			53+81-56+92	N 32
44+95-45+11	N	32	L		58+27	N&PL 32
45+24	S	32			58+43	N&PL 32
45+46	S	32			60+77	N 32
45+50	NPL	32			61+00	N 24
46+06	N	32			61+09-61+25	N 24 L
47+18-47+56	N	32			62+44	N 24
47+86	SPL	32			65+63	S 24
48+28	W RD	32			68+94	N 24
48+65	NPL	32			69+39	S 24
48+83	N	32			71+30-71+85	N 24
49+06	NPL	32			72+24	S 24
49+18	NPL	32			75+59	N 24
49+13-49+22	NPL	32			79+03	N&S 24
49+95	S	32			79+62	N 24
49+99	SPL	32			79+83	S 24
50+77	N	32			80+02	N&S 24
50+95	W RD	32			81+49	N&S 24
50+90-50+95	S	32	L			
50+73-51+12	S	32	L			
51+13	NPL	32				
51+57	N	32				
52+12	N	32				
					Total:	2224



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TABLE FOR RESEAL PCC PAVEMENT JOINT CONT'D

Station	Direction of Travel(N/S) (West to East)	Quantity (Ft)
1+20-1+31	N	24
1+70	W RD	24
2+75	S	24
3+37	N	24
3+53	W RD	24
4+28	W RD	24
5+44	N	24
6+59	S	24
Total		192

a manufacturer's technical data sheet to the Engineer prior to performing the work. The concrete patching material shall be maintained at or above 45°F (7°C) for at least 72 hours after placement.

Patched areas shall be wet cured for a minimum of 8 hours then sprayed with curing compound as per Section 390.

Repair areas can be opened to traffic once the repair material meets 3,800 psi as long as the above requirement for temperature can be met.

An initial cylinder shall be made and the Engineer shall calibrate a Swiss Hammer to it. All subsequent strength tests shall be by Swiss Hammer. Cylinders will be made according to Materials Manual requirements and the Swiss Hammer calibration regularly updated according to the early break cylinders.

The Engineer will test the repair areas after an initial 8 hour cure period by Swiss Hammer. If the area does not meet strength after the 8 hour cure period, the area will be tested every 2 hours until nightfall, then not again until 7:00am. No section is to be opened to traffic without the permission of the Engineer.

If the concrete does not achieve 3,800 psi by 7 a.m. the day after placement, the Contractor shall provide required traffic control (at no cost to the State) until the Engineer determines the 3,800 psi has been obtained. No additional work zones will be set up until strength requirement is met. If strength requirement has not been met by 36 hours after placement, the patches shall be removed and replaced at no cost to the State.

Material used to form the joint shall be a foam core board or other stiff material capable of standing without deflection. The Contractor shall fill the area (with the foam core board or other approved material in place) with an approved patching material. The patching material shall be vibrated with a small hand held vibrator capable of thoroughly consolidating the patching compound into the area. The top surface of the filled area shall be trowel finished and cured.

After screeding and finishing, the same bonding grout shall be used to paint the edges of the repair. Any saw cuts that extend beyond the patch perimeter shall be filled with patching material and must also have the surface painted with bonding grout.

After removal of the form material, the repaired length of the joint(s) shall be sealed. Cost for removing the form material and sealing the joint(s) shall be incidental to contract unit price for Repair Type A Spalls.

Spalls which are repaired according to plans and specifications and exhibit partial respalling or cracking, shall be repaired to the satisfaction of the Engineer at no additional cost to the Department of Transportation.

REPAIR TYPE A SPALLS

The Contractor shall saw an area a minimum of 12" x 12" and remove the material to a minimum depth of 2" until sound concrete is found. After sawing the Contractor shall remove the vertical edge by chipping with a jackhammer not to exceed 15 lbs.

Spall repair locations will be marked in the field by the Engineer. Spall locations not large enough to be repaired will be marked for resealing.

Type A Spalls shall conform to Section 390 with the following exceptions:

The Contractor shall be advised that the Supplemental Specification to Standard Specifications for Roads and Bridges require that the concrete patching material shall be packaged, dry, rapid-hardening cementitious mortar or concrete material conforming to the requirements of ASTM C928, Type R-3 and shall contain no chloride ions. If extender aggregate is used, it shall be crushed ledge rock conforming to Section 820. It will not be an option to use the concrete patch mixture as provided in Section 390 of the Standard Specifications.

Grout for bonding the concrete patching material to the existing concrete shall consist of equal parts by weight of Portland Cement and sand, mixed with sufficient water to form a thick slurry. A grout admixture shall be added to the grout mixture in accordance with the manufacturer's recommendations.

Grout admixture shall be a one component acrylic bonding additive. The additive shall be one of the grout admixtures from the Approved Products List, or an approved equal as determined by the Office of Bridge Design. The bonding additive shall be compatible with the patching material as recommended by the manufacturer.

Grout shall be applied on all of the existing concrete surfaces within the removal area immediately prior to placement of the concrete patching material. The grout shall be scrubbed into the surface with a stiff bristle brush in a thin and uniform coat. Care shall be taken to ensure that excess grout does not collect in low areas, that the grout is confined only to the immediate area in which concrete patching material is to be placed, and that the rate of application is limited to an amount such that the grout will be covered with concrete patching material before the grout dries.

The concrete patching material shall be mixed and placed in accordance with the manufacturer's technical data sheet. The Contractor shall provide

TABLE FOR SPALL REPAIR

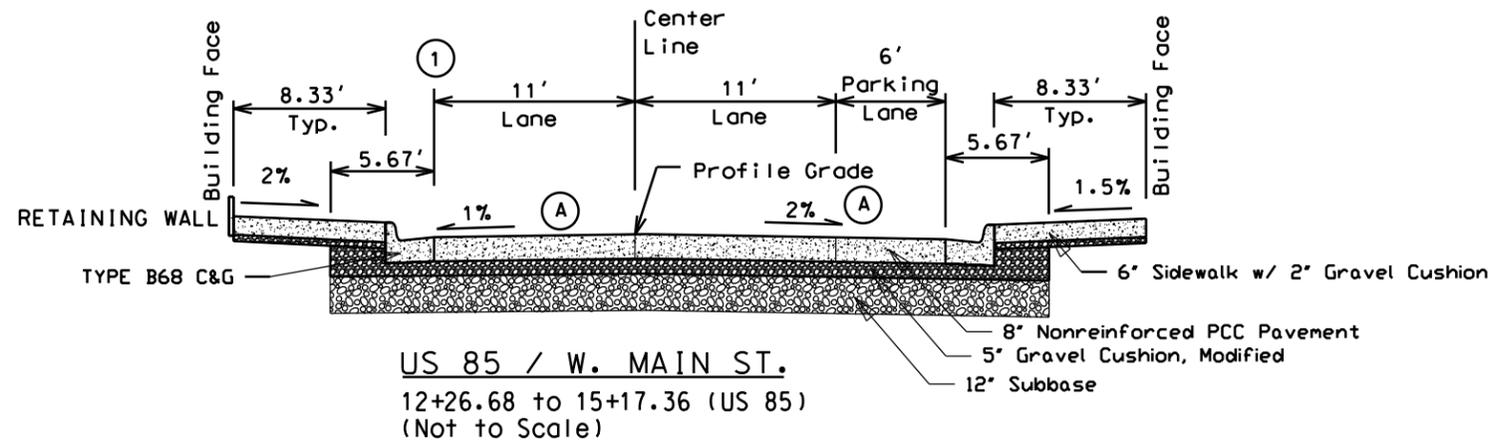
Location	#	Width (Ft)	Length (Ft)	Repair Type A Spall (SqFt)
Enos St to Julius (East)	2	2.0	3.0	12.0
Enos St to Julius (East)	2	1.0	3.0	6.0
Enos St to Julius (East)	1	1.0	8.0	8.0
Baltimore to Julius (West)	15	1.0	1.0	15.0
Total				41.0



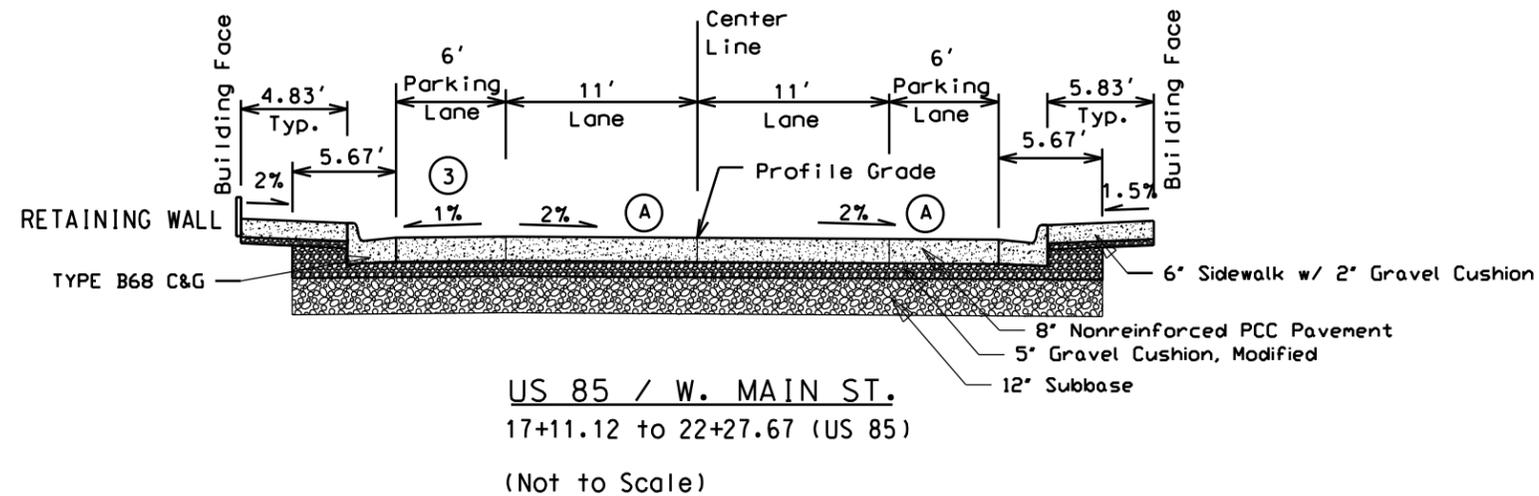
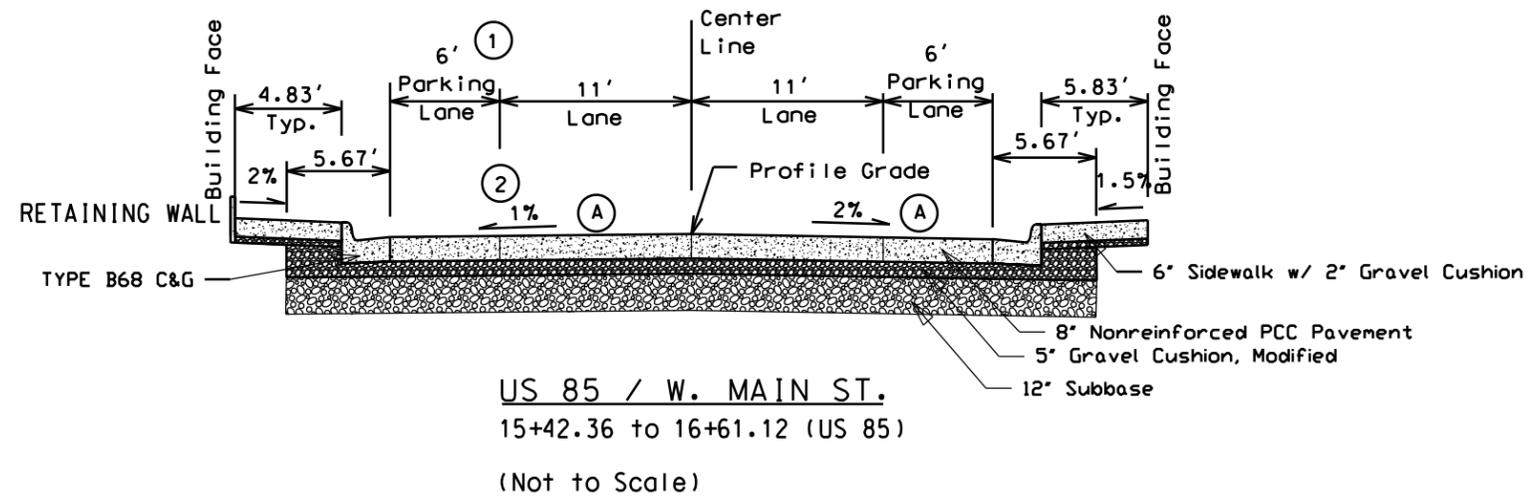
FOR BIDDING PURPOSES ONLY

TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0085(72)23	F8	F23
FILE: F002 Typicals.dgn PLOTTING DATE: 11/18/2013		REV DATE: INITIAL:	



- (A) See Curb and Gutter Sheets for Slopes Near Intersection
- (1) Parking Lane Tapers from 0' at 15+17.36 to 6' at 15+42.36
- (2) Crown Tapers from Centerline at 16+61.12 to Edge of North Parking Lane at 17+11.12
- (3) Crown Tapers from Edge of North Parking Lane at 22+27.67 to North Lip of Gutter at 22+77.67

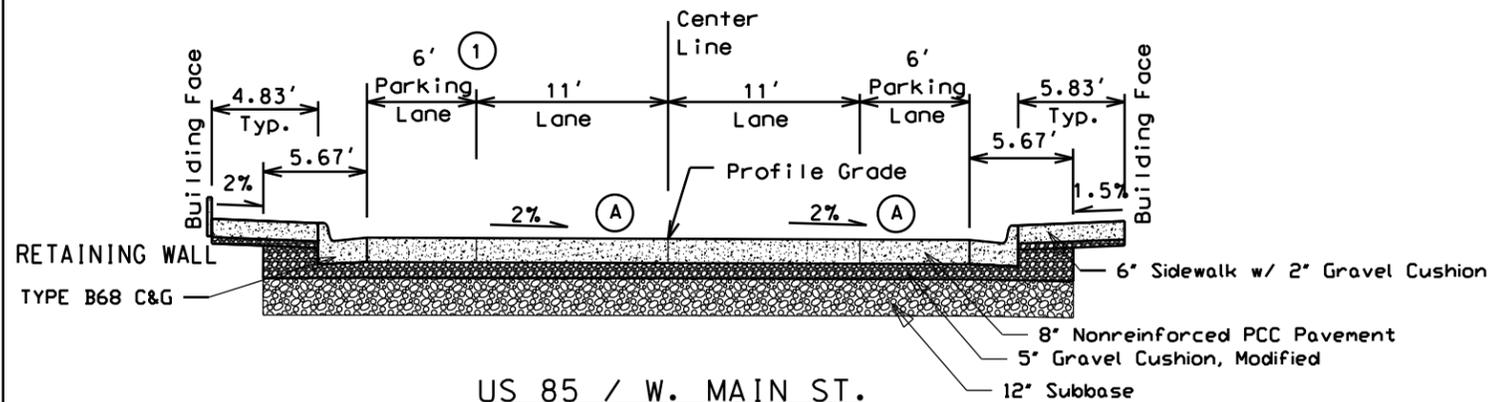


PLANS BY: **HR**
RAPID CITY, SD

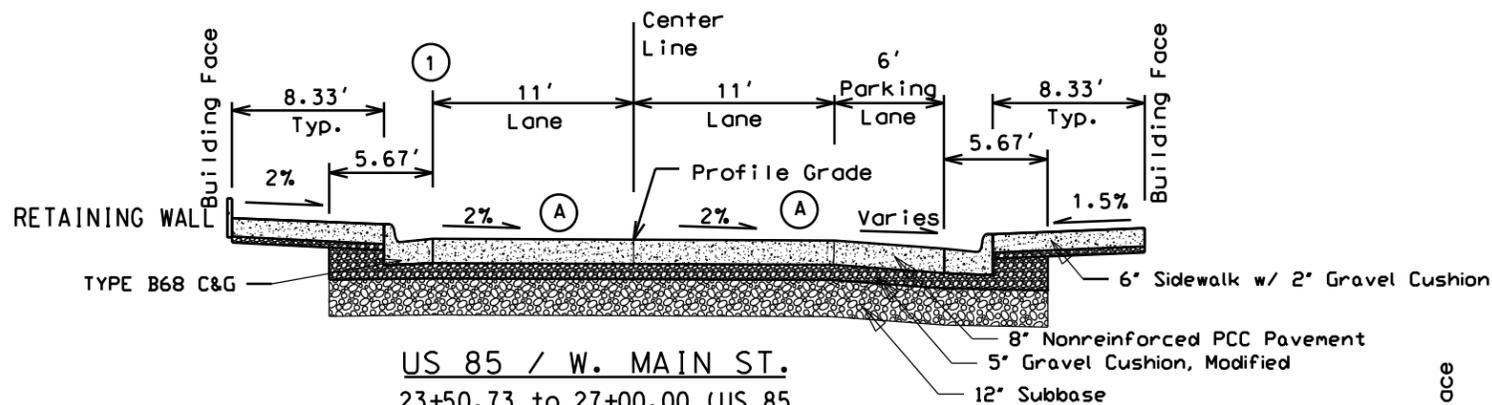
FOR BIDDING PURPOSES ONLY

TYPICAL SURFACING SECTIONS

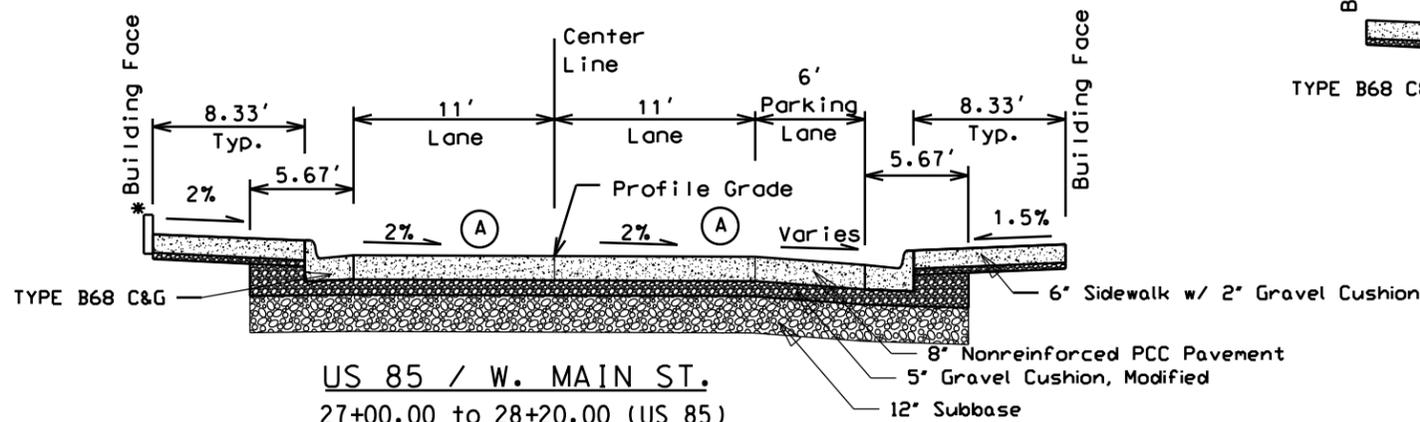
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO. F9	TOTAL SHEETS F23
	P 0085(72)23		
FILE: F002 Typicals.dgn PLOT DATE: 11/18/2013		REV DATE: INITIAL:	



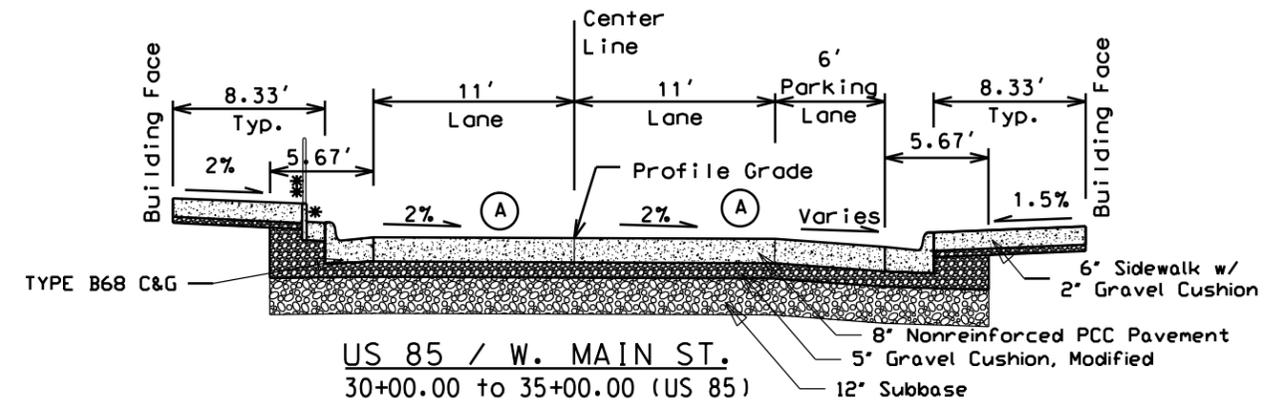
US 85 / W. MAIN ST.
22+77.67 to 23+32.70 (US 85)
(Not to Scale)



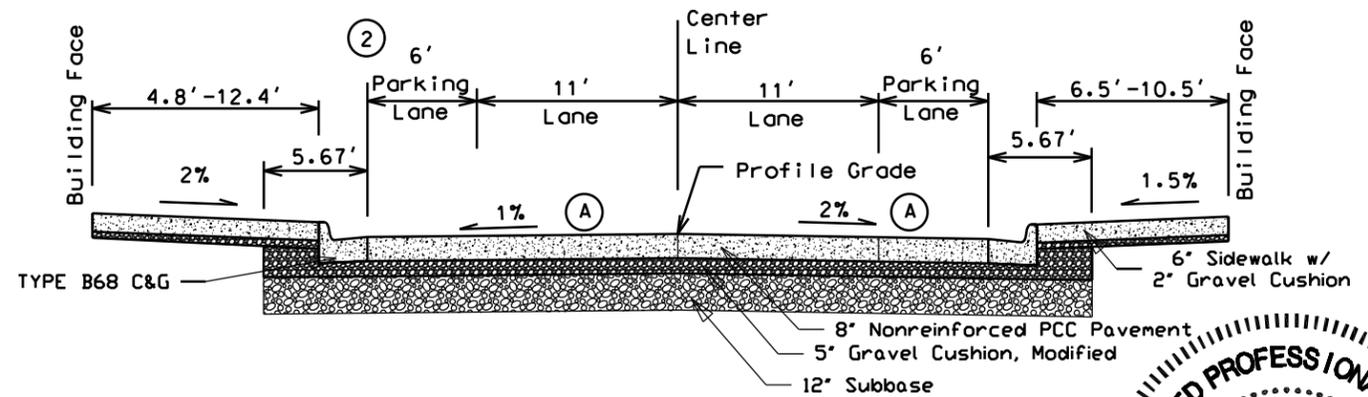
US 85 / W. MAIN ST.
23+50.73 to 27+00.00 (US 85)
28+20.00 to 30+00.00
(Not to Scale)



US 85 / W. MAIN ST.
27+00.00 to 28+20.00 (US 85)
* Curb against the building ranges
from 0" to 12" high
(Not to Scale)

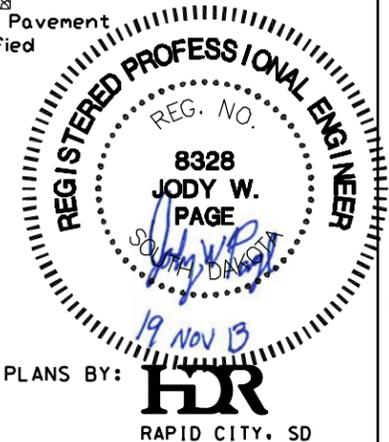


US 85 / W. MAIN ST.
30+00.00 to 35+00.00 (US 85)
* Double Curb ranges in height
from 0" to 15"
** See Standard plate 470.01 in
Section E for Handrail
(Not to Scale)



US 85 / W. MAIN ST.
35+54.45 to 37+11.24 (US 85)
(Not to Scale)

- (A) See Curb and Gutter Sheets for Slopes Near Intersection
- (1) Parking Lane Tapers from 6' at 23+32.70 to 0' at 23+50.73
- (2) Parking Lane Tapers from 0' at 35+00.00 to 6' at 35+54.45

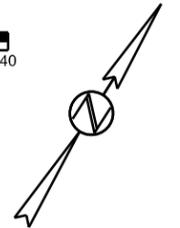


PLANS BY: **HR**
RAPID CITY, SD

FOR BIDDING PURPOSES ONLY

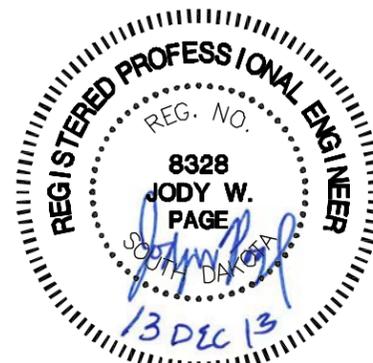
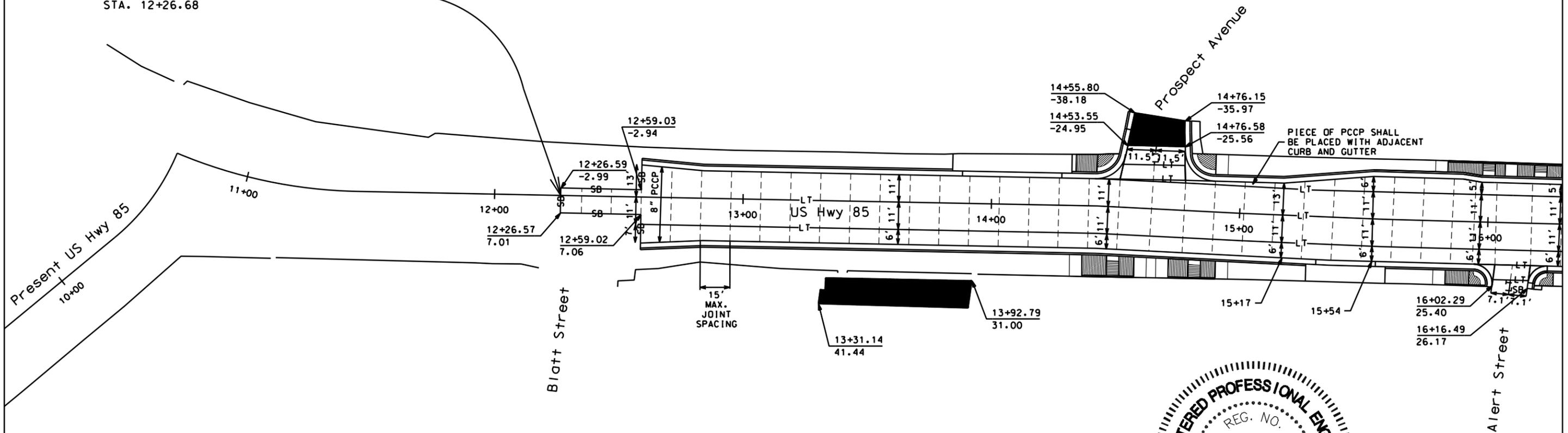
SURFACING PLAN U.S. HWY 85 / MAIN STREET

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0085(72)23	F10	F23
FILE: F02 (std 010).dgn PLOTTING DATE: 12/13/2013		REV DATE: 12/13/13 INITIAL: RL	



- LEGEND**
- EXISTING ROADWAY
 - PROPOSED ROADWAY
 - WORK LIMIT
 - LT- LONGITUDINAL JOINT WITH TIE BARS (CONSTRUCTION OR SAWED)
 - SB- STEEL BAR INSTALLATION IN LONGITUDINAL OR TRANSVERSE JOINT
 - - - TRANSVERSE CONTRACTION JOINT
 - ASPHALT CONCRETE COMPOSITE

BEGIN URBAN RECONSTRUCTION
STA. 12+26.68

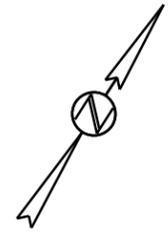


PLANS BY: **HR**
RAPID CITY, SD

FOR BIDDING PURPOSES ONLY

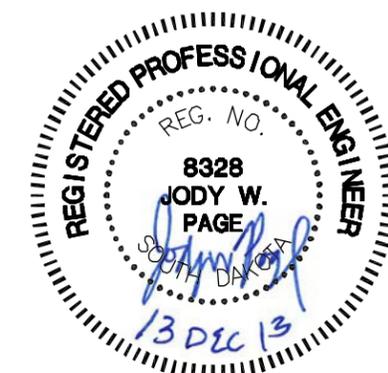
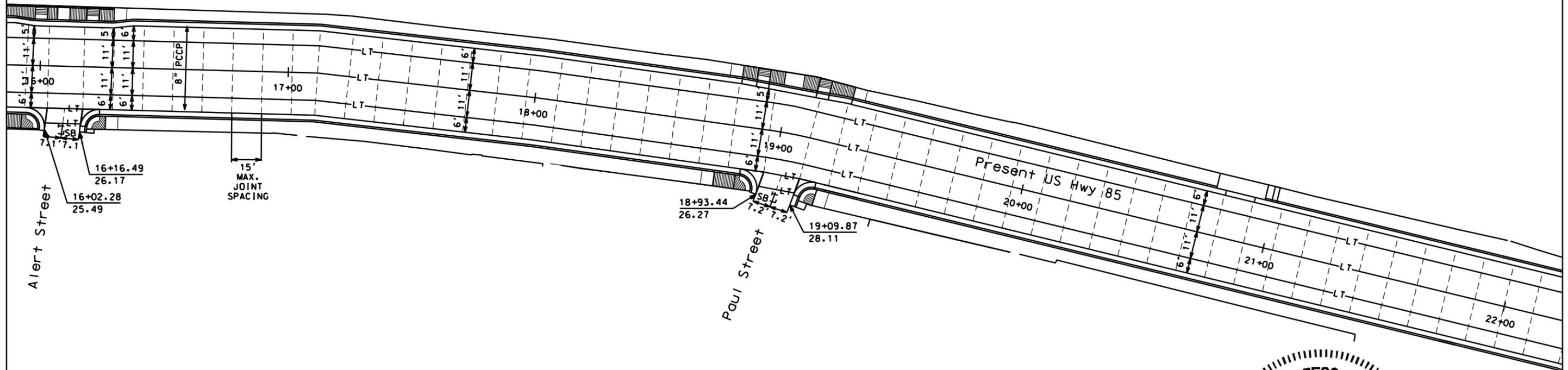
SURFACING PLAN U.S. HWY 85 / MAIN STREET

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0085(72)23	F11	F23
FILE: F03 (std 016).dgn PLOTTING DATE: 12/13/2013		REV DATE: INITIAL:	12/13/13 RL



LEGEND

- EXISTING ROADWAY
- PROPOSED ROADWAY
- WORK LIMIT
- LT— LONGITUDINAL JOINT WITH TIE BARS (CONSTRUCTION OR SAWED)
- SB— STEEL BAR INSTALLATION IN LONGITUDINAL OR TRANSVERSE JOINT
- - - TRANSVERSE CONTRACTION JOINT
- ASPHALT CONCRETE COMPOSITE



PLANS BY: **HR**
RAPID CITY, SD

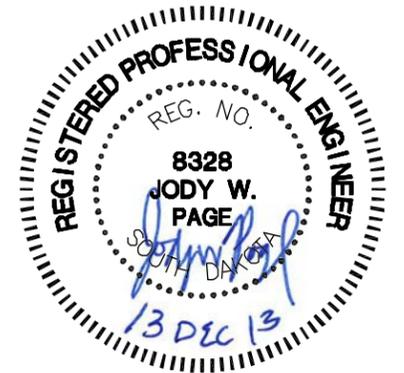
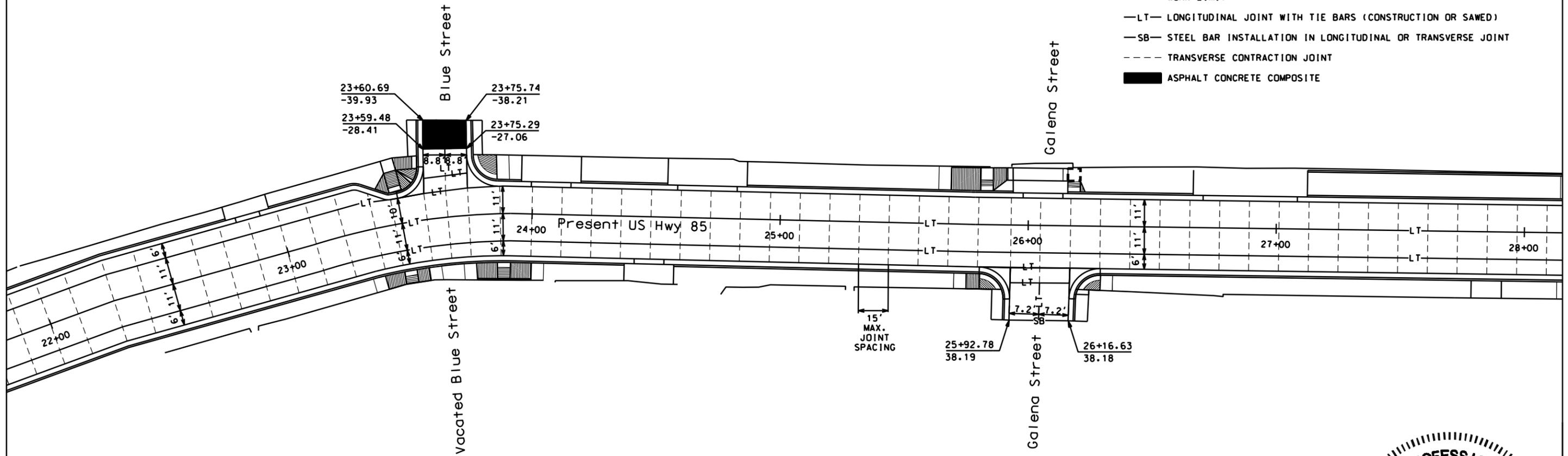
FOR BIDDING PURPOSES ONLY

SURFACING PLAN U.S. HWY 85 / MAIN STREET

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0085(72)23	F12	F23
FILE: F04 (std 022).dgn PLOTTING DATE: 12/13/2013		REV DATE: INITIAL:	12/13/13 RL



- LEGEND**
- EXISTING ROADWAY
 - PROPOSED ROADWAY
 - WORK LIMIT
 - LT— LONGITUDINAL JOINT WITH TIE BARS (CONSTRUCTION OR SAWED)
 - SB— STEEL BAR INSTALLATION IN LONGITUDINAL OR TRANSVERSE JOINT
 - - - TRANSVERSE CONTRACTION JOINT
 - ASPHALT CONCRETE COMPOSITE



PLANS BY: **HR**
RAPID CITY, SD

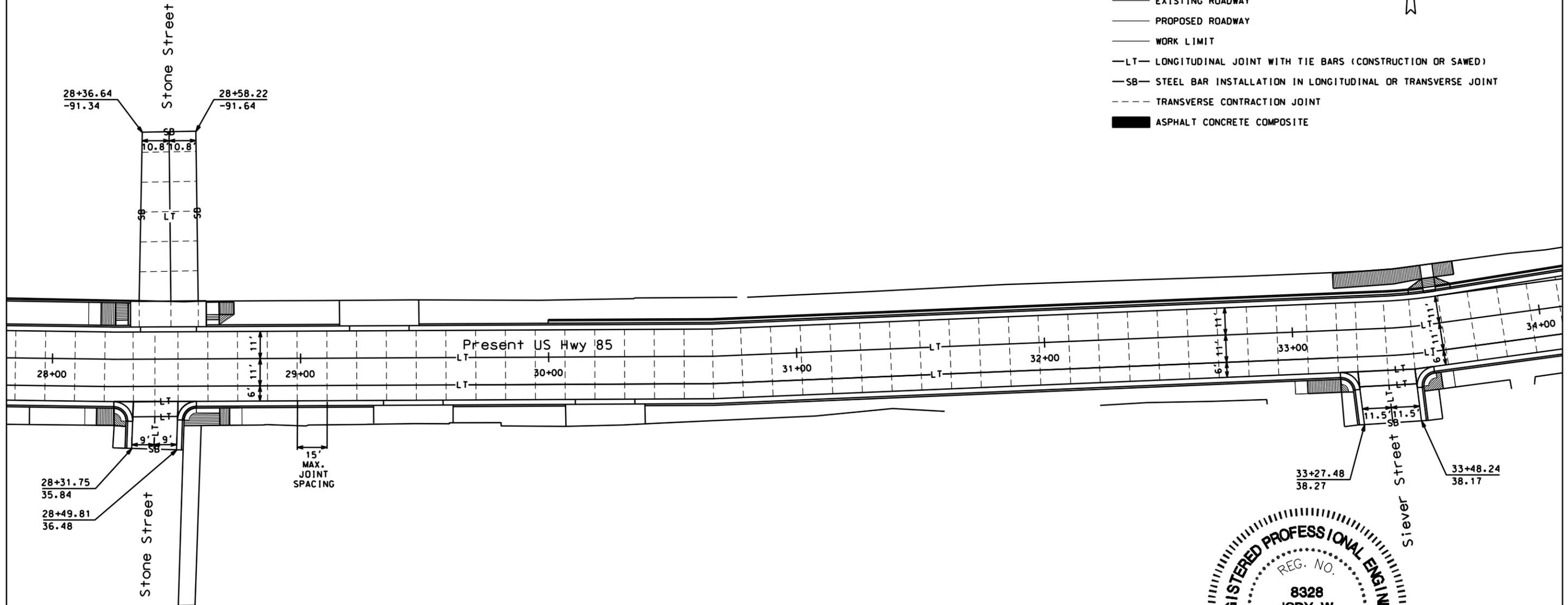
FOR BIDDING PURPOSES ONLY

SURFACING PLAN U.S. HWY 85 / MAIN STREET

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0085(72)23	F13	F23
FILE: F05 (sta 028).dgn PLOTTING DATE: 12/13/2013		REV DATE:	12/13/13
		INITIAL:	RL



- LEGEND**
- EXISTING ROADWAY
 - PROPOSED ROADWAY
 - WORK LIMIT
 - LT— LONGITUDINAL JOINT WITH TIE BARS (CONSTRUCTION OR SAWED)
 - SB— STEEL BAR INSTALLATION IN LONGITUDINAL OR TRANSVERSE JOINT
 - - - TRANSVERSE CONTRACTION JOINT
 - ASPHALT CONCRETE COMPOSITE



PLANS BY: **HR**
RAPID CITY, SD

FOR BIDDING PURPOSES ONLY

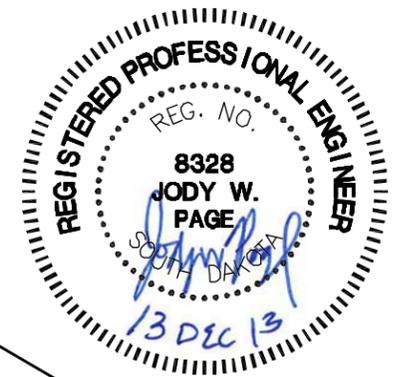
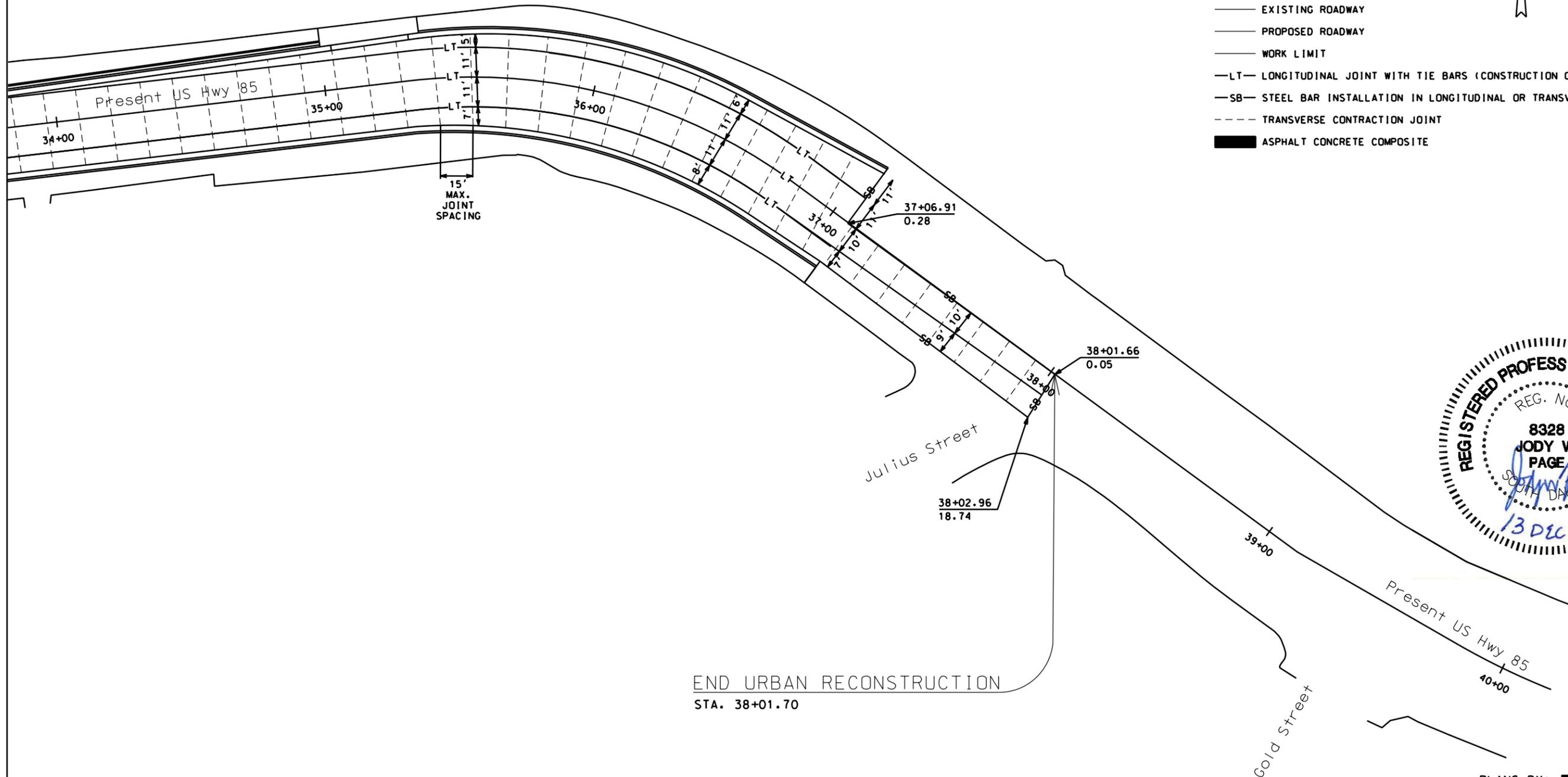
SURFACING PLAN U.S. HWY 85 / MAIN STREET

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0085(72)23	F14	F23
FILE: F06 (std 034).dgn PLOT DATE: 12/13/2013		REV DATE: 12/13/13 INITIAL: RL	



LEGEND

- EXISTING ROADWAY
- PROPOSED ROADWAY
- WORK LIMIT
- LT— LONGITUDINAL JOINT WITH TIE BARS (CONSTRUCTION OR SAWED)
- SB— STEEL BAR INSTALLATION IN LONGITUDINAL OR TRANSVERSE JOINT
- - - TRANSVERSE CONTRACTION JOINT
- ASPHALT CONCRETE COMPOSITE



PLANS BY: **HDR**
RAPID CITY, SD

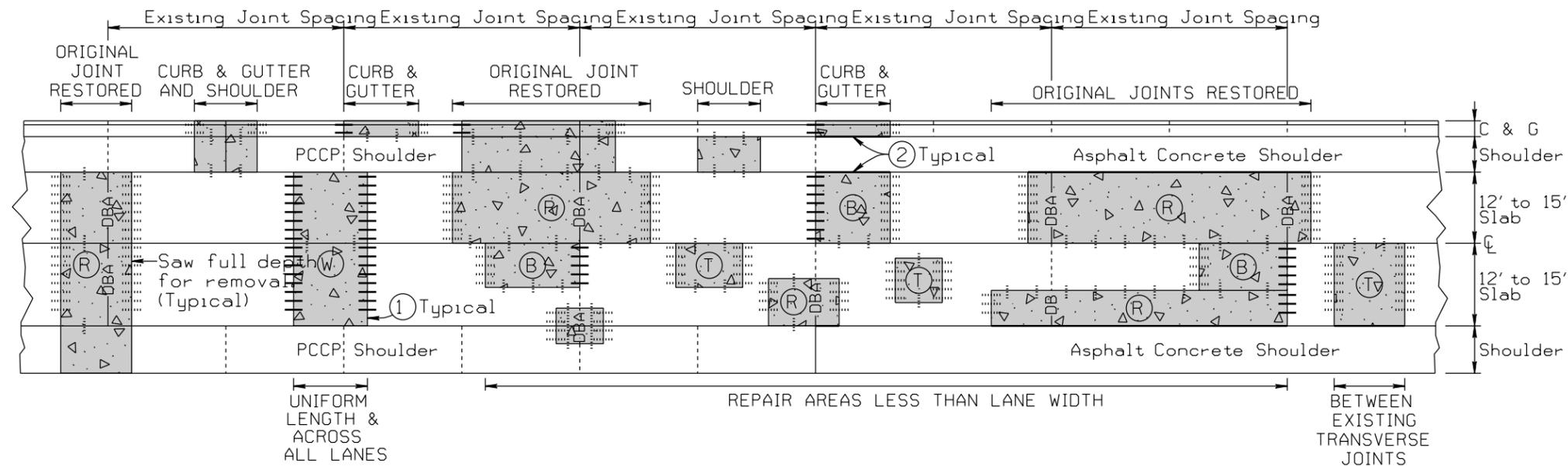
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0085(72)23	F15	F23
FILE: PCCPavementRepair detail.dgn PLOTTING DATE: 11/18/2013		REV DATE: INITIAL:	

NONREINFORCED PCC PAVEMENT REPAIR

UP TO TWO LANE ROADWAY OR UP TO FOUR LANE DIVIDED ROADWAY

TYPICAL REPAIR AREAS



KEY:

PCC Pavement Repair Area

PCC PAVEMENT REPAIR AREA TYPES:

- (W) Two Working Joints (Use only if repair is full roadway width and uniform length (across all lanes))
- (T) Two Tied Joints
- (B) One Working & One Tied Joint
- (R) Two Tied Joints with Original Joint Restored with Dowel Bar Assembly

Steel Bars for Transverse Joints

- Pavement Thickness $\geq 10.5"$**
 - Drilled in $1\frac{5}{64}" \times 18"$ epoxy coated plain round dowel bars spaced 18" center to center.
 - - - - - Drilled in No. 11 $\times 18"$ epoxy coated deformed tie bars spaced 18" center to center.
- Pavement Thickness $\geq 8.5"$ and $< 10.5"$**
 - Drilled in $1\frac{5}{64}" \times 18"$ epoxy coated plain round dowel bars spaced 18" center to center.
 - - - - - Drilled in No. 9 $\times 18"$ epoxy coated deformed tie bars spaced 18" center to center.
- Pavement Thickness $< 8.5"$**
 - Drilled in $1" \times 18"$ epoxy coated plain round dowel bars spaced 18" center to center.
 - - - - - Drilled in No. 8 $\times 18"$ epoxy coated deformed tie bars spaced 18" center to center.

DBA Dowel Bar Assembly

Steel Bars for Longitudinal Joints

- - - - - No. 5 $\times 30"$ epoxy coated deformed tie bars. Sawed Joint - spaced 48" center to center. Construction Joint - spaced 48" center to center.
- - - - - No. 5 $\times 24"$ epoxy coated deformed tie bars. Drilled In - spaced 30" center to center.

NOTES: Saw around repair areas full depth for removal.

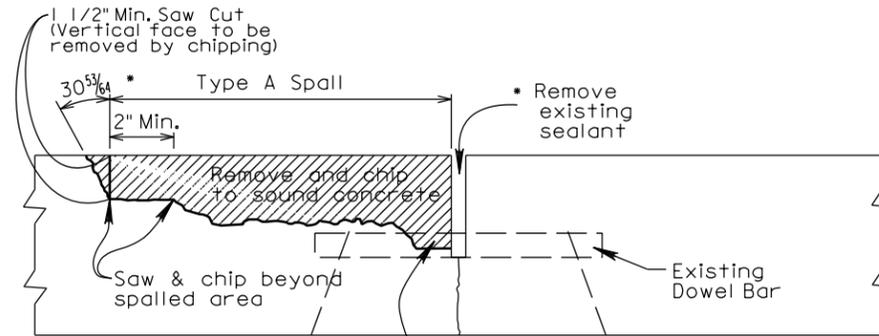
- (1) Where possible, transverse joints shall be constructed/maintained full roadway width.
- (2) Edges of repair areas shall be formed to match the width of the existing concrete pavement.
- (3) Need for bars in small repair areas on/near the shoulder to be determined on a case-by-case basis, on construction by the Engineer.

PLANS BY: **HR**
RAPID CITY, SD

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0085(72)23	F16	F23
FILE: Spall detail.dgn PLOTTING DATE: 11/18/2013		REV DATE: INITIAL:	

REPAIR OF TYPE A SPALLS

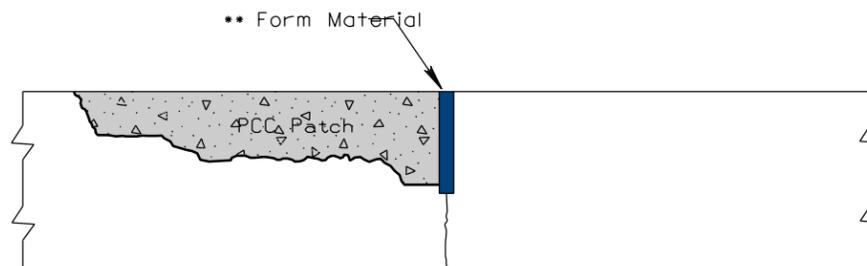
SPALL REMOVAL



If Dowel Bar is exposed
coat the bar with duct tape
as a bond breaker

- Existing Sealant to be removed is low modulus silicone sealant with backer rod or hot poured elastic joint sealer.

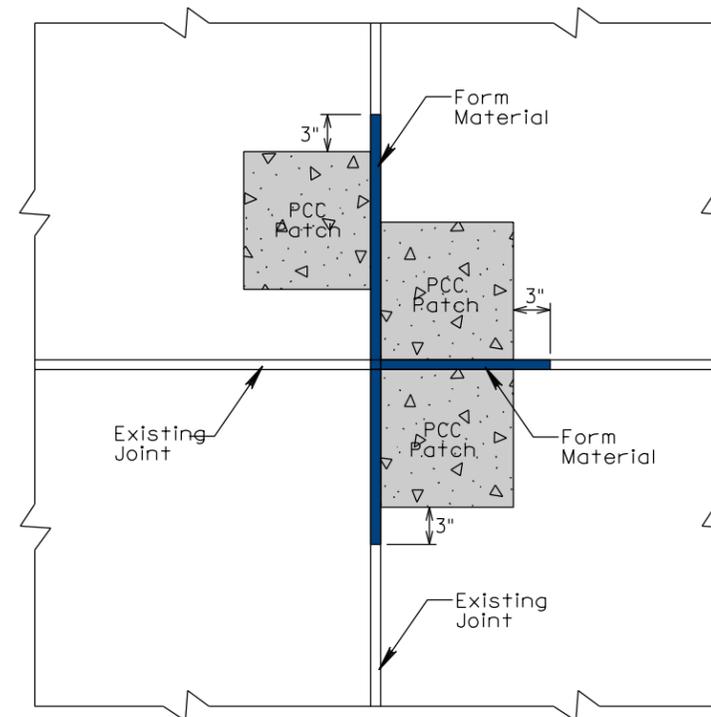
SPALL PATCH



- ** Form Material shall be removed by sawing or other means approved by the Engineer.
- Spall repaired joints shall then be sealed with:
Hot Poured Elastic Joint Sealer in urban sections.

REPAIR OF TYPE A SPALLS

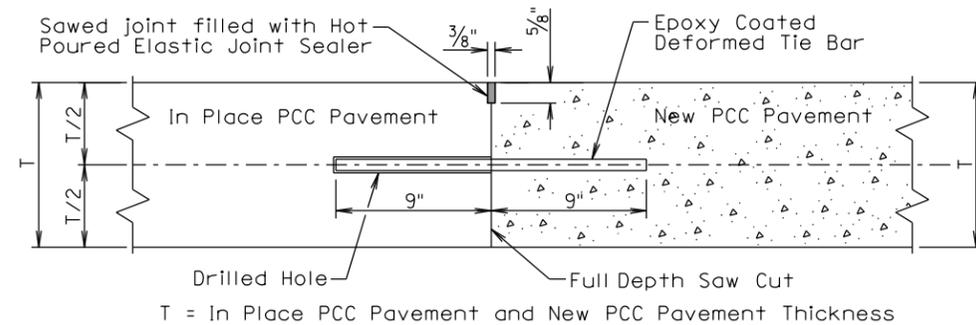
SPALL PATCHES (PLAN VIEW)



STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0085(72)23	F17	F23
FILE: Special Details S1.dgn PLOTTING DATE: 11/18/2013		REV DATE: INITIAL:	

PCC PAVEMENT TRANSVERSE CONSTRUCTION JOINTS WITH TIE BARS OR DOWEL BARS

TRANSVERSE CONSTRUCTION JOINT WITH TIE BARS



GENERAL NOTES:

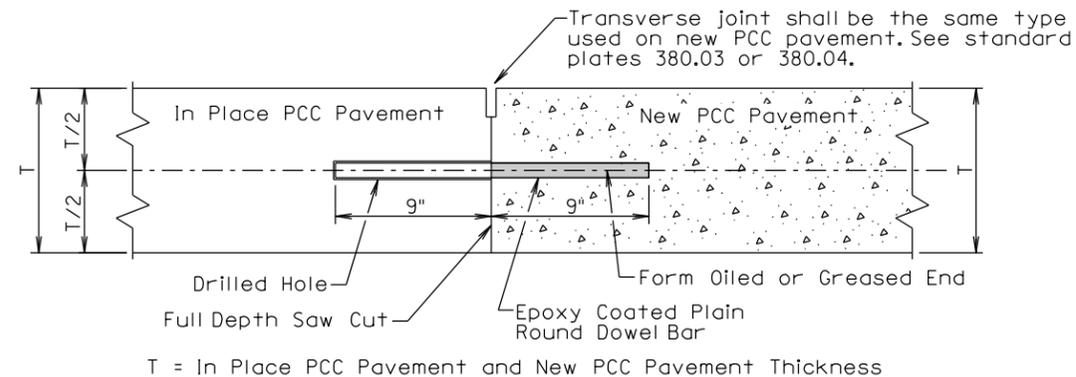
This detail shall be used when the transverse joint is less than 14' on 20' joint spacing and less than 9' on 15' joint spacing from the existing transverse contraction joint.

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 used on 10 inch and less PCC Pavement and No. 11 epoxy coated deformed tie bars shall be used on 10.5 inch and greater PCC Pavement. The tie bar spacing shall be 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



GENERAL NOTES:

This detail shall be used when the transverse joint is 15 feet or greater on 20' joint spacing and 10' or greater on 15' joint spacing from the existing transverse contraction joint.

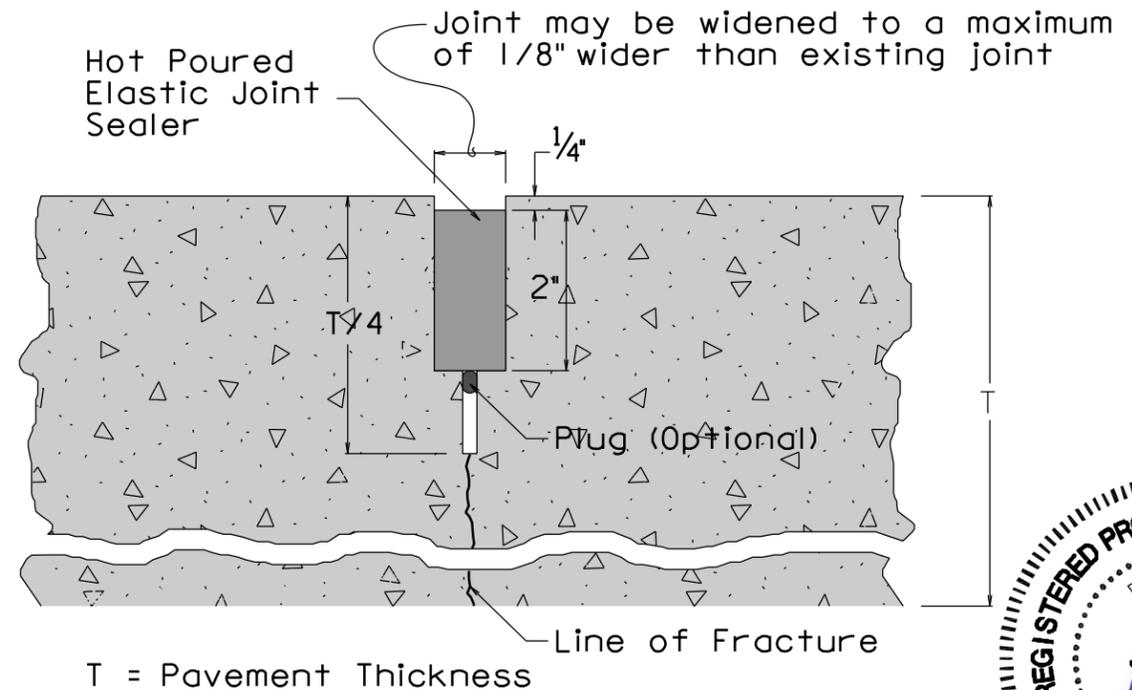
The epoxy coated plain round dowel bars shall be embedded a minimum depth of 9 inches into the in place PCC pavement and anchored with an epoxy resin adhesive.

1 1/4" epoxy coated plain round dowel bars shall be used on 10 inch and less PCC Pavement and 1 1/2" epoxy coated plain round dowel bars shall be used on 10.5 inch and greater PCC Pavement. The number and spacing of the epoxy coated plain round dowel bars shall be as detailed on the standard plate for dowel bars. The epoxy coated plain round dowel bars 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.

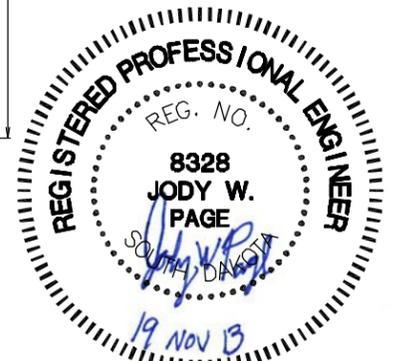
HOT POURED ELASTIC JOINT SEALER

RESEAL PCC PAVEMENT TRANSVERSE JOINT WITH HOT POURED ELASTIC JOINT SEALER



NOTES:

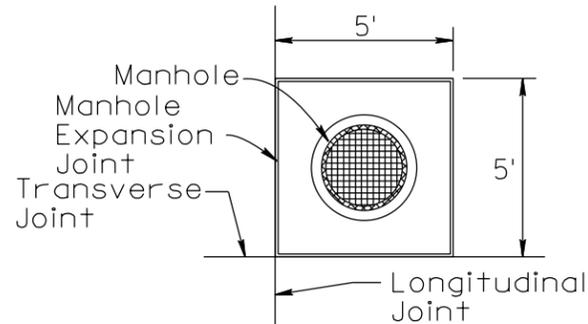
The first saw cut to control cracking shall be a minimum of 1/4 the depth of the pavement. Additional sawing for widening the saw cut to provide the width for the installation of the Hot Poured Elastic Joint Sealer will be necessary.



STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0085(72)23	F18	F23
FILE: 380 09.dgn PLOTTING DATE: 11/18/2013		REV DATE: INITIAL:	

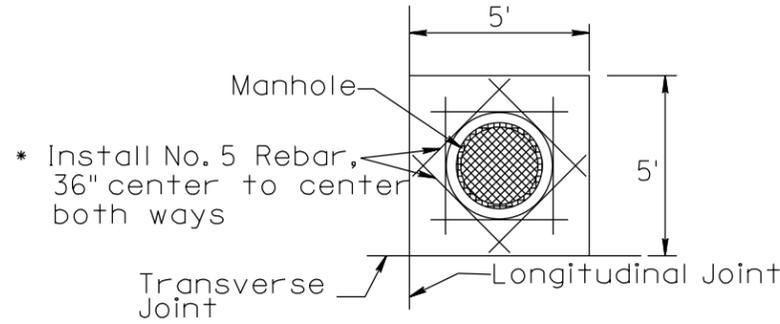
TYPICAL PCC PAVEMENT PLACEMENT AROUND MANHOLES

BOX-OUT DETAIL
IN PCC PAVEMENT



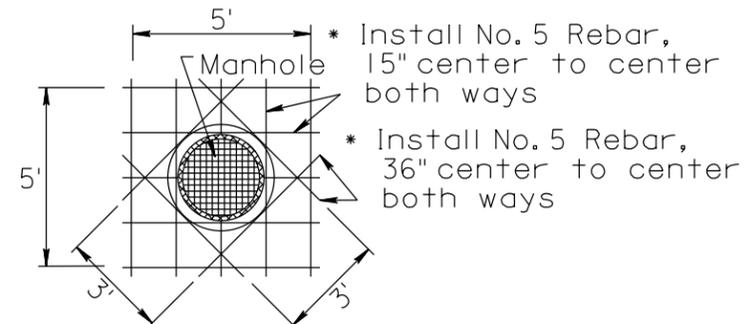
Where the utility access is offset from the longitudinal and transverse joints

REBAR LAYOUTS
IN PCC PAVEMENT WITH BOX-OUT

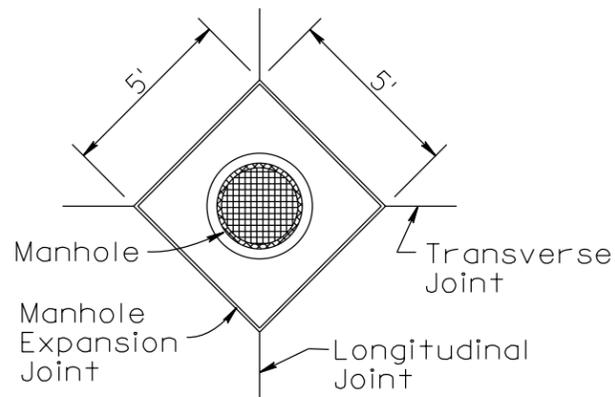


Where the utility access is offset from the longitudinal and transverse joints

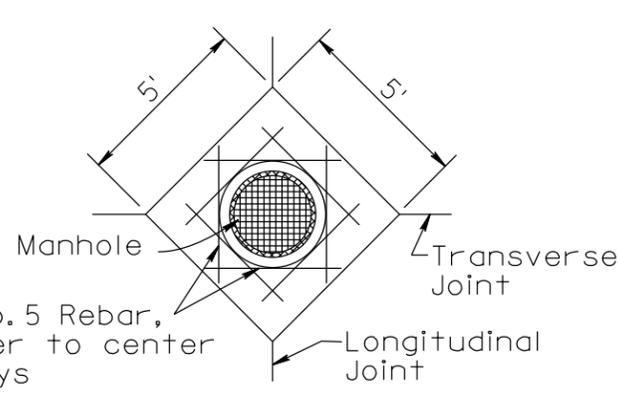
REBAR LAYOUT
IN PCC PAVEMENT WITHOUT BOX-OUT



The rebar shall not cross any joint in the concrete pavement. If manhole is next to a joint in the concrete pavement the Engineer shall approve a revised layout of the rebar.

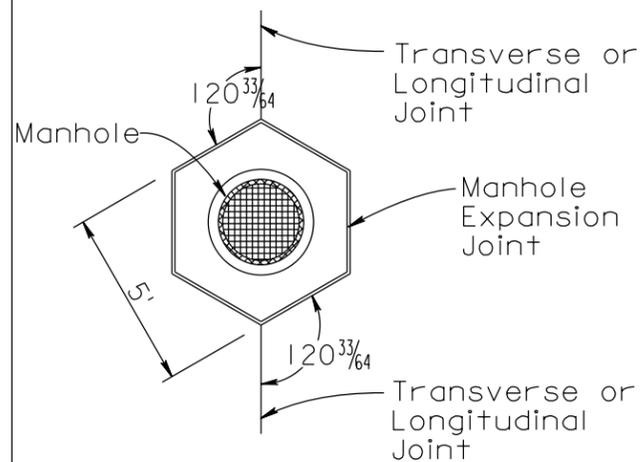
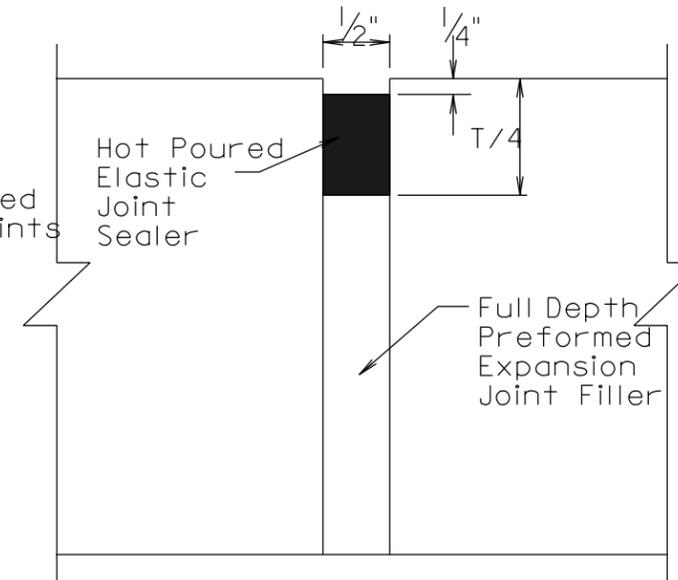


Where the utility access is intersected by the longitudinal and transverse joints

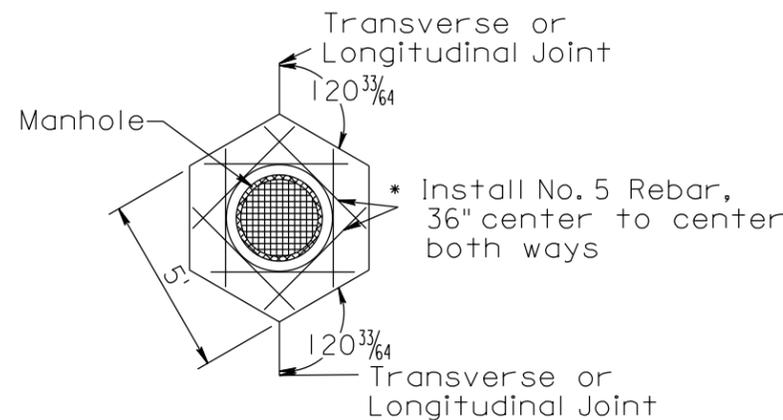


Where the utility access is intersected by the longitudinal and transverse joints

MANHOLE EXPANSION
JOINT DETAIL



Where no Longitudinal or Transverse joints are present or at Longitudinal or Transverse joints



Where no Longitudinal or Transverse joints are present or at Longitudinal or Transverse joints

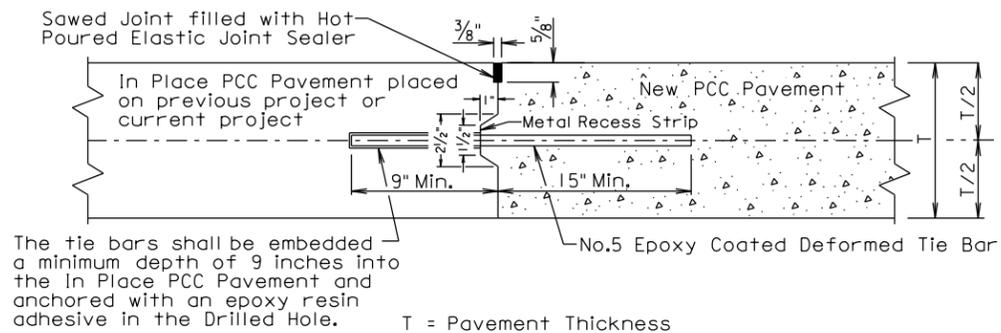
* Rebar will be placed at the midpoint depth of the PCC Pavement. Cost for furnishing & installing rebar and constructing box-outs shall be incidental to the contract unit price per square yard for Nonreinforced PCC Pavement Repair and/or Fast Track Concrete for PCC Pavement Repair.



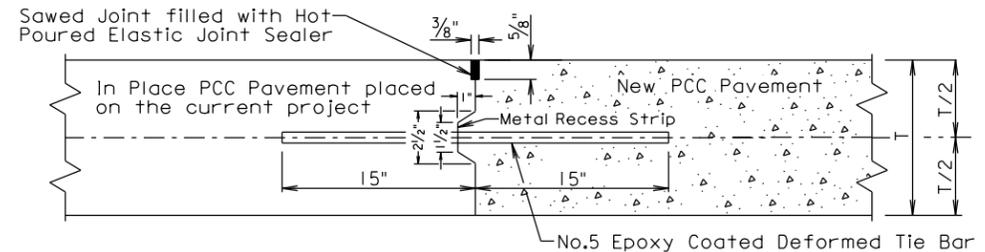
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0085(72)23	F19	F23
FILE: 380 09.dgn PLOTTING DATE: 11/18/2013		REV DATE: INITIAL:	

PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS

LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS
(DRILLED IN BARS)



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



The epoxy coated deformed tie bars shall be spaced according to the following table.

Tie Bar Spacing 30"		Tie Bar Spacing 48"	
Joint Spacing	# of Bars	Joint Spacing	# of Bars
5' to 7'	2	6.5' to 10'	2
7.5' to 9.5'	3	10.5' to 14'	3
10' to 12'	4	14.5' to 18'	4
12.5 to 14.5	5	18.5' to 22'	5
15' to 17'	6		
17.5' to 19.5'	7		
20' to 22'	8		
22.5' to 24.5'	9		

GENERAL NOTES FOR SHEET 1:

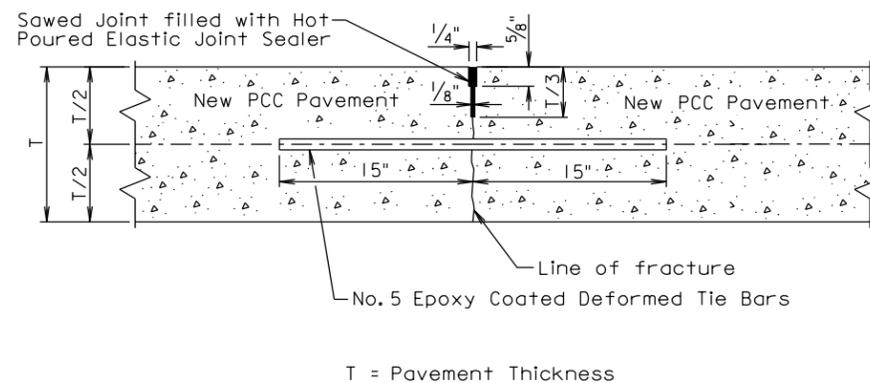
The tie bars shall be placed a minimum of 15 inches from any transverse contraction joints.

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 required number of No.5 epoxy coated deformed tie bars shall be uniformly spaced within each panel. The tie bars shall be evenly spaced a maximum of 48" center to center for a female keyway or a maximum of 30" center to center for a vertical face and male keyway. The keyway shown is a female keyway. The maximum spacing shall apply to tie bars within each panel.

PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS

SAWED LONGITUDINAL JOINT WITH TIE BARS
(POURED MONOLITHICALLY)



The epoxy coated deformed tie bars shall be spaced according to the following table.

Tie Bar Spacing 48"	
Joint Spacing	# of Bars
6.5' to 10'	2
10.5' to 14'	3
14.5' to 18'	4
18.5' to 22'	5

GENERAL NOTES FOR SHEET 2:

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

The required number of No.5 epoxy coated deformed tie bars shall be uniformly spaced within each panel. The tie bars shall be evenly spaced a maximum of 48" center to center. The maximum spacing shall apply to tie bars within each panel.

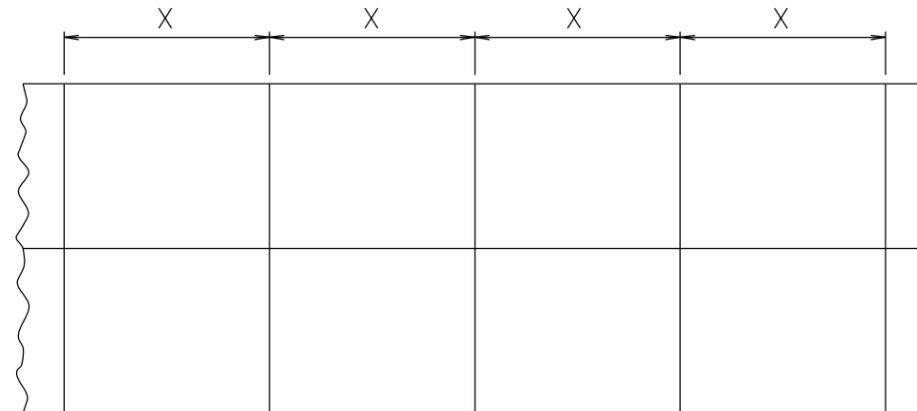
The first saw cut to control cracking shall be a minimum depth of 1/3 the thickness of the pavement. Additional sawing for widening the saw cut to provide the width for the installation of the hot poured elastic joint sealer will be necessary.



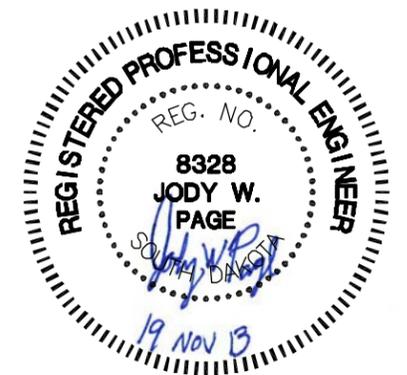
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0085(72)23	F20	F23
FILE: 380 09.dgn PLOTING DATE: 11/18/2013		REV DATE: INITIAL:	

PCC PAVEMENT TRANSVERSE CONTRACTION JOINT SPACING

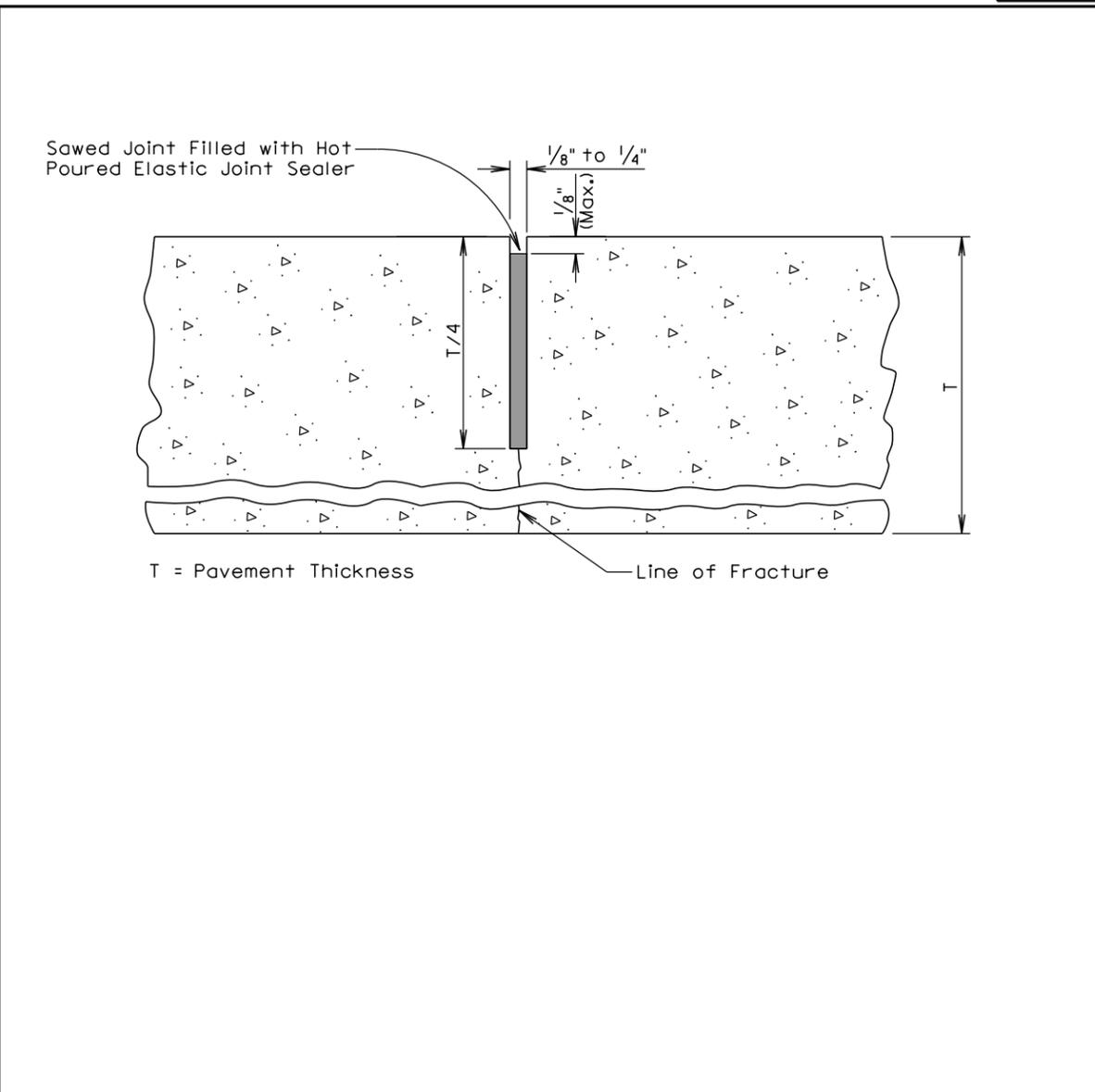
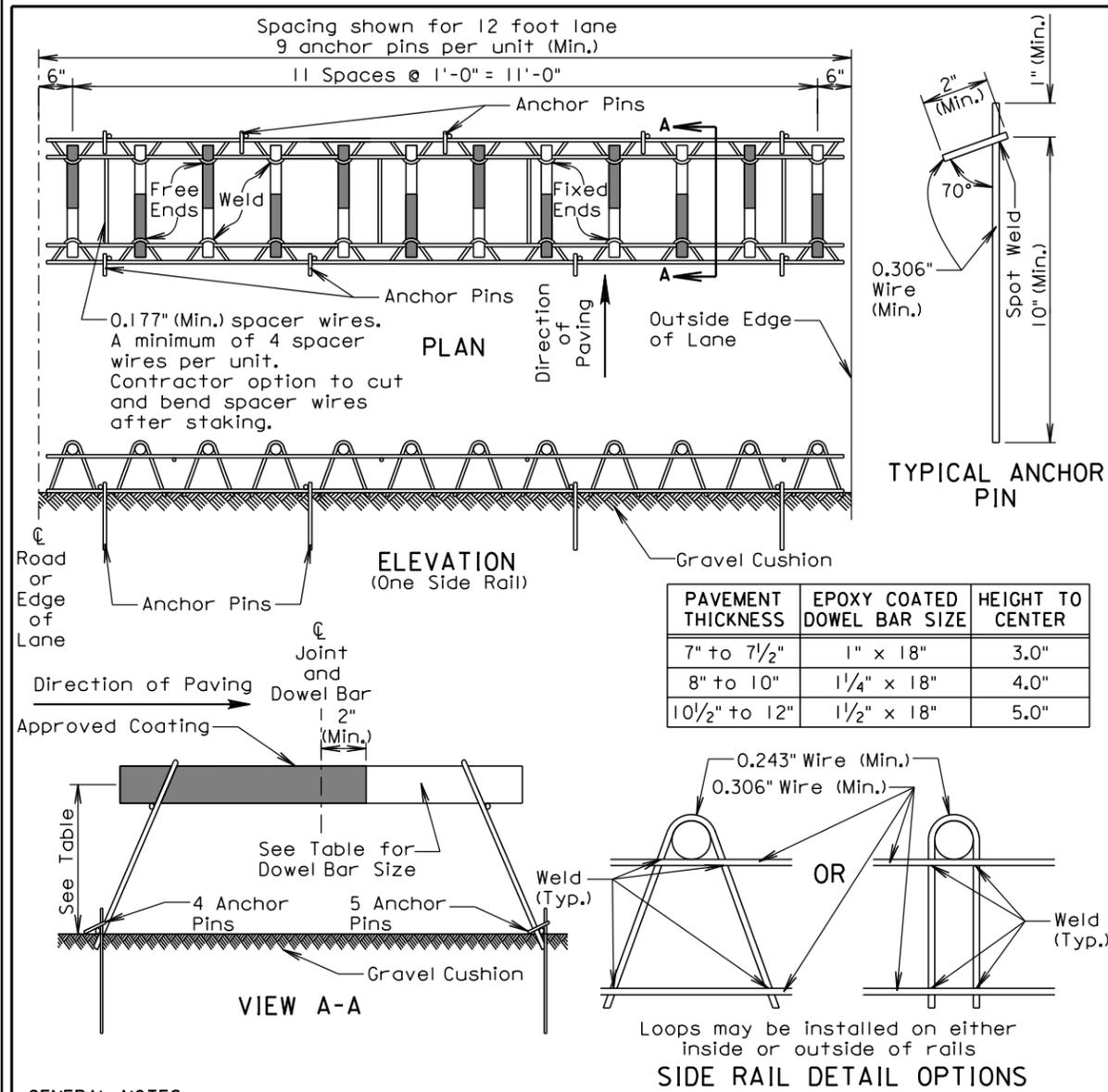


PCCP Thickness	Joint Spacing (X)
8" to 9.5"	15'
10" and thicker	20'



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STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0085(72)23	F21	F23
FILE: Standard Plates.dgn PLOTTING DATE: 10/23/2013		REV DATE: INITIAL:	



GENERAL NOTES:

Longitudinal 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 $\pm 1/8$ inch in 18 inches and to all other dowel bars in the assembly $\pm 1/16$ inch in 18 inches.

Centerline of individual dowel bars shall be parallel to the centerline of the roadway $\pm 1/2$ 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 as 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.

August 30, 2013

GENERAL NOTES:

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

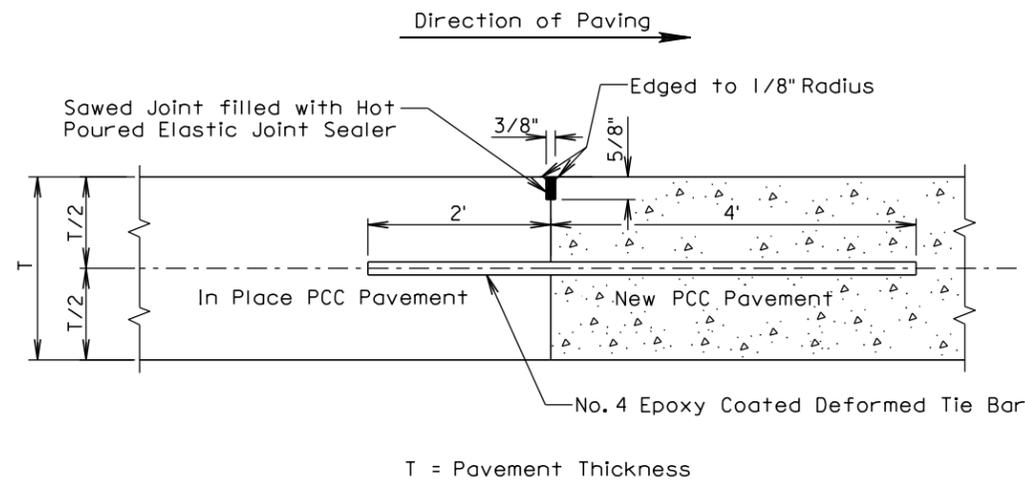
All hot poured elastic joint sealer material spilled on the surface of the concrete pavement shall be removed as soon as the material has cooled. The extent of removal of material shall be to the satisfaction of the Engineer. All costs for removal of the spilled joint sealer material shall be borne by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

June 26, 2013

Published Date: 4th Qtr. 2013	S D D O T	PCC PAVEMENT DOWEL BAR ASSEMBLY FOR TRANSVERSE CONTRACTION JOINTS 12 Bar Assembly on Granular Base Material	PLATE NUMBER 380.01
			Sheet 1 of 1

Published Date: 4th Qtr. 2013	S D D O T	PCC PAVEMENT TRANSVERSE CONTRACTION JOINT WITH OR WITHOUT DOWEL BAR ASSEMBLY	PLATE NUMBER 380.05
			Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0085(72)23	F22	F23
FILE: Standard Plates.dgn PLOTTING DATE: 10/23/2013		REV DATE: INITIAL:	



GENERAL NOTES:

No. 4 epoxy coated deformed tie 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.

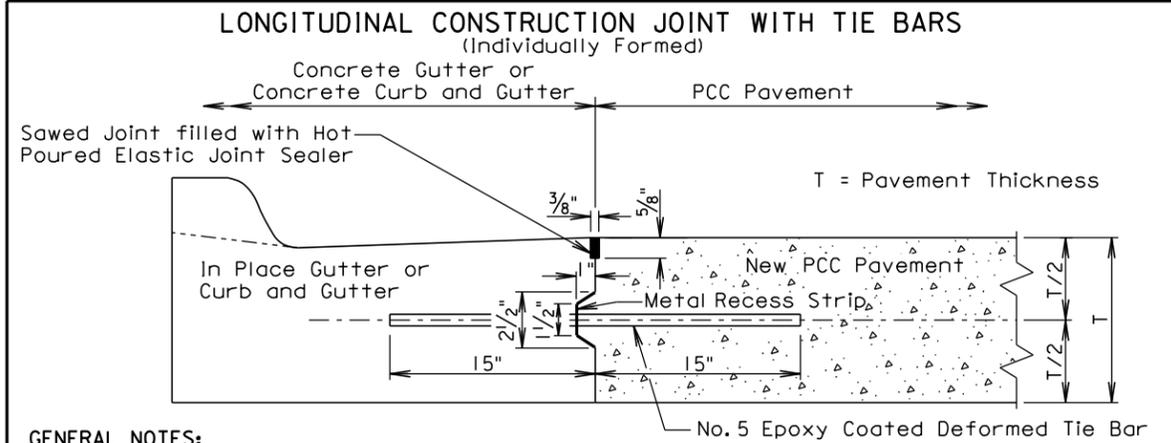
The minimum distance between a transverse construction joint with tie bars and an adjacent transverse contraction joint shall be 5 feet.

When a transverse construction joint is made, paving will not be allowed in this area for 12 hours.

A transverse construction joint may be placed in lieu of the transverse contraction joint when shown in the plans.

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

June 26, 2013



GENERAL NOTES:

No. 5 epoxy coated deformed tie bars shall be spaced 48 inches center to center. The keyway shown above is a female keyway.

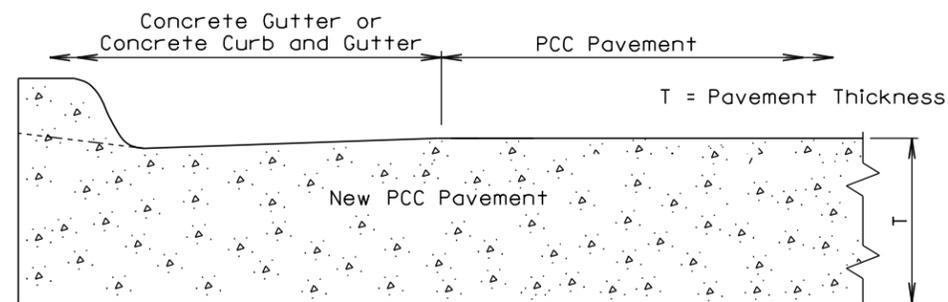
The tie bars shall be placed a minimum of 15 inches from existing transverse contraction joints.

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 inches 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 the mainline lane width is less than or equal to 12 feet. 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.

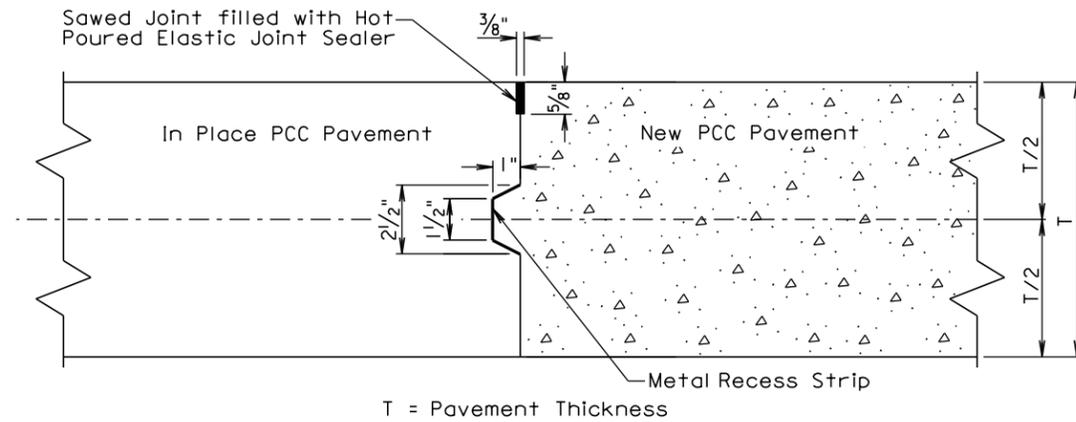
June 26, 2013

Published Date: 4th Qtr. 2013	S D D O T	PCC PAVEMENT MID PANEL TRANSVERSE CONSTRUCTION JOINT	PLATE NUMBER 380.07
			Sheet 1 of 1

Published Date: 4th Qtr. 2013	S D D O T	PCC PAVEMENT LONGITUDINAL CONSTRUCTION JOINTS WITH CONCRETE GUTTER OR CONCRETE CURB AND GUTTER	PLATE NUMBER 380.11
			Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0085(72)23	F23	F23
FILE: Standard Plates.dgn PLOTTING DATE: 10/23/2013		REV DATE: INITIAL:	

LONGITUDINAL CONSTRUCTION JOINT WITHOUT TIE BARS

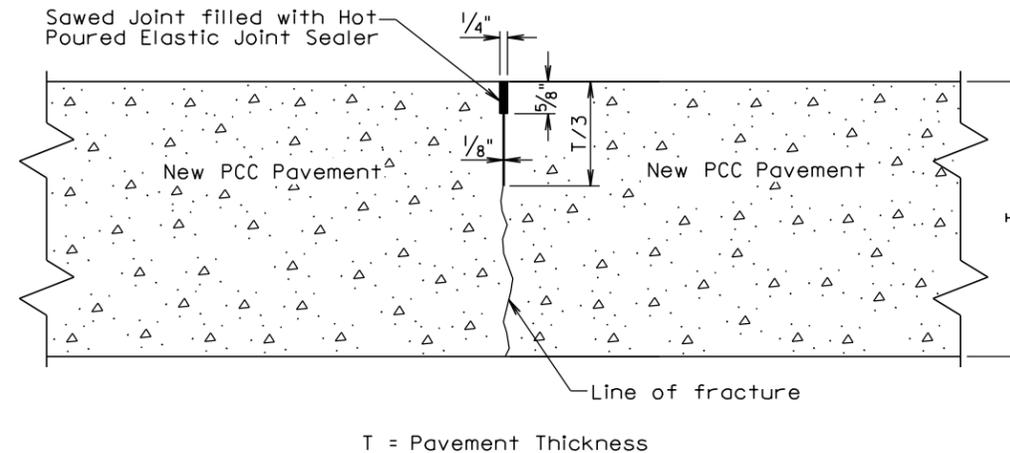


GENERAL NOTES:

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.

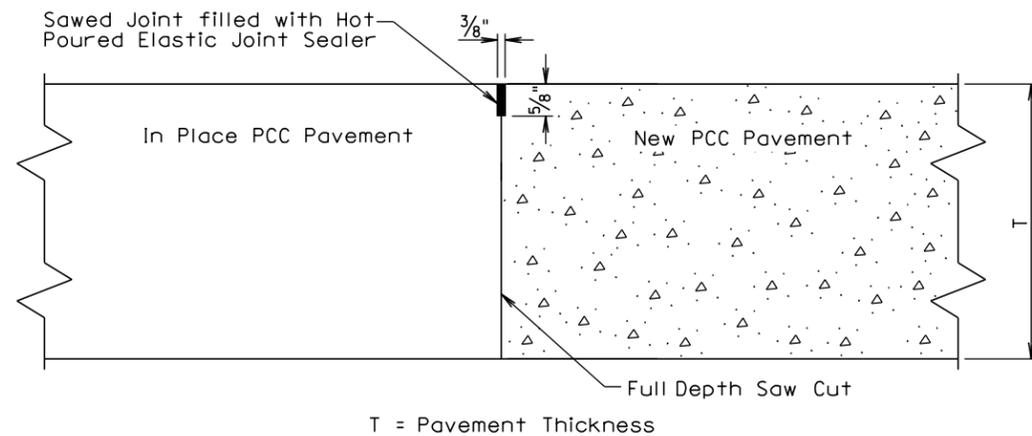
SAWED LONGITUDINAL JOINT WITHOUT TIE BARS



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.

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

September 14, 2001

Published Date: 4th Qtr. 2013	S D D O T	PCC PAVEMENT LONGITUDINAL JOINTS WITHOUT TIE BARS	PLATE NUMBER 380.12
			Sheet 1 of 2

Published Date: 4th Qtr. 2013	S D D O T	PCC PAVEMENT LONGITUDINAL JOINTS WITHOUT TIE BARS	PLATE NUMBER 380.12
			Sheet 2 of 2

PLANS BY: **HDR**
RAPID CITY, SD