



**STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION**

ROADWAY DESIGN DIVISION
SUITE 1200 JAMES K. POLK BUILDING
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NASHVILLE, TENNESSEE 37243-3848
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CLAY BRIGHT
COMMISSIONER

BILL LEE
GOVERNOR

INSTRUCTIONAL BULLETIN NO. 20-10

Regarding Various Revised Standard Drawings.

Effective October 9, 2020 letting (July 29, 2020 Turn-in), the following Standard Drawings have been revised. The following standard drawings have been added to the Roadway Design Guidelines, Chapter 10, Index of Standard Drawings and are available online.

Revised Standard Drawings:

10-104.01 CONCRETE PAVEMENT

DRAWING NUMBER	REVISION DATE	DESCRIPTION
RP-CS-1	05-01-20	CONCRETE SHOULDER RUMBLE STRIP DETAIL (FOR 4 LANE DIVIDED HWY)
RP-CS-2	05-01-20	CONCRETE SHOULDER RUMBLE STRIP DETAIL (FOR 6-LANE OR WIDER DIVIDED HIGHWAY)
RP-J-1	05-01-20	PORTLAND CEMENT CONCRETES PAVEMENT JOINT TYPES AND SPACING
RP-J-3	05-01-20	PORTAND CEMENT CONCRETE PAVEMENT JOINT TYPES AND SPACING
RP-J-5	05-01-20	TYPICAL ACCELERATION AND DECELERATION LANE JOINT TYPES AND SPACING FOR CONCRETE RAMPS
RP-J-7	05-01-20	CONCRETE RAMP JOINT TYPES AND SPACING
RP-J-9	05-01-20	CONTRACTION AND CONSTRUCTION JOINTS FOR CONCRETE PAVEMENT
RP-J-11	05-01-20	3/4" AND 1 3/4" EXPANSION AND EDGE PAVEMENT JOINTS

RP-J-13	05-01-20	¾" AND 1 ¾" ELASTOMERIC COMPRESSION JOINT SEALS
RP-J-15	05-01-20	LONGITUDINAL CONTRACTION AND CONSTRUCTION JOINTS
RP-J-17	05-01-20	DOWEL ASSEMBLY DEVICES
RP-J-18	05-01-20	DOWEL ASSEMBLY DEVICES
RP-J-19	05-01-20	DOWEL ASSEMBLY DEVICES
RP-J-23	05-01-20	CONCRETE PAVEMENT REPAIR DETAILS
RP-J-24	05-01-20	CONCRETE PAVEMENT SPALL AND RANDOM CRACK REPAIR DETAILS
RP-J-25	05-01-20	CONCRETE PAVEMENT JOINT REPAIR DETAILS

10-104.02 INTERSECTIONS

RP-DHO-1	05-01-20	MEDIAN OPENINGS ON 4-LANE DIVIDED HIGHWAY
RP-I-5	05-01-20	EXAMPLES OF STREET & ALLEY INTERSECTIONS
RP-PMR-1	05-01-20	STANDARD DETAILS FOR PROPOSED PERMANENT MAINTENANCE RAMP

10-104.04 WALLS

W-CIP-1	05-01-20	ROADWAY FEATURES AT CAST IN PLACE RETAINING WALL
W-MSE-1	05-01-20	ROADWAY FEATURES FOR MSE SEGMENTAL PRECAST FACING RETAINING WALL
W-MSE-2	05-01-20	ROADWAY FEATURES FOR MSE MODULAR BLOCK FACING RETAINING WALL
W-SG-1	05-01-20	STANDARD GRAVITY-TYPE RETAINING WALLS
W-SP-1	05-01-20	ROADWAY FEATURES AT SOLDIER PILE AND SOIL ANCHORED RETAINING WALLS

These standard drawings are located on the web site and in Chapter 10 of the Design Guidelines and can be found in the following links.

Standard Drawings:

<https://www.tn.gov/content/tn/tdot/roadway-design/standard-drawings-library/standard-roadway-drawings.html>

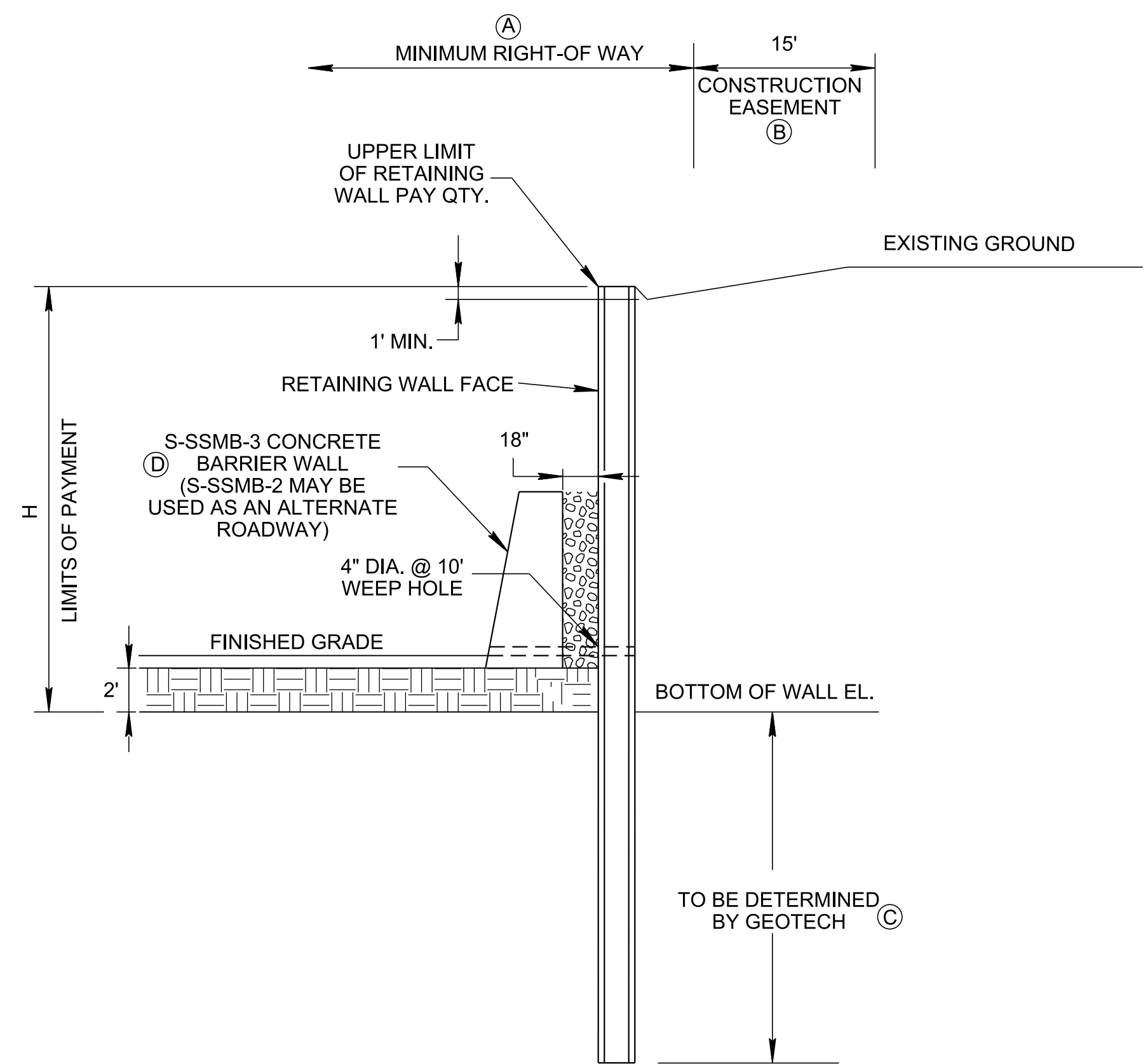
Chapter 10 - Index of Standard Drawings is available online at this location:

https://www.tn.gov/content/dam/tn/tdot/roadway-design/documents/design_guidelines/DG-C10.pdf

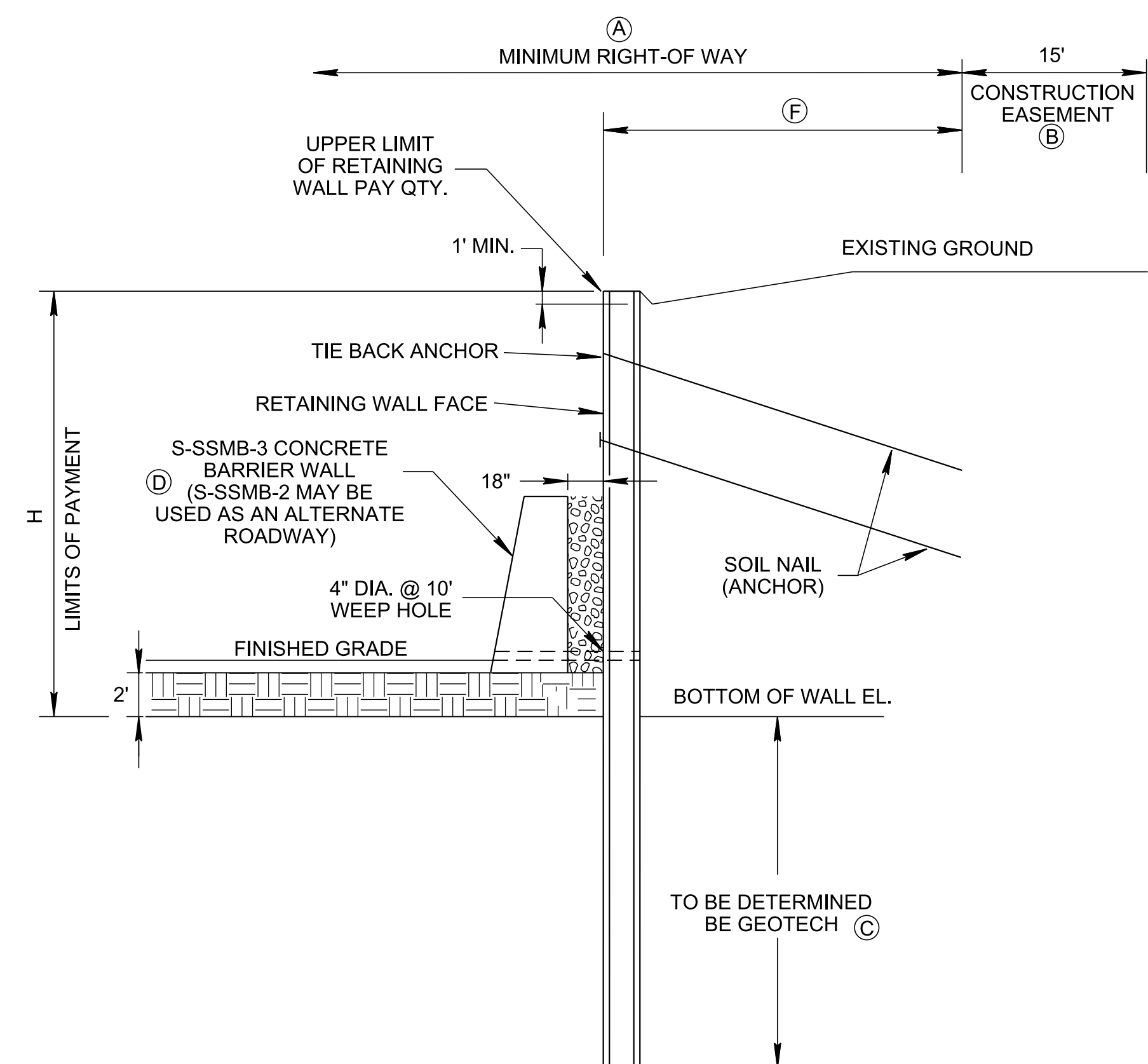
Jennifer Lloyd

Jennifer Lloyd, PE
Civil Engineering Director
Roadway Design Division

KJL:ARH:RBB:LLP
April 29, 2020



SOLDIER PILE WALL TYPICAL SECTION IN CUT
(NOT APPLICABLE FOR FILL SECTION)



SOIL ANCHORED WALL TYPICAL SECTION IN CUT
(NOT APPLICABLE FOR FILL SECTION)

WALL TYPES
STEEL PILES WITH WOOD LAGGING
STEEL PILES WITH CONCRETE LAGGING
CONCRETE WITH WOOD LAGGING
CONCRETE WITH CONCRETE LAGGING

GENERAL NOTES

THE PURPOSE OF THIS DRAWING IS TO BE A GUIDE AND TO ILLUSTRATE TO THE ROADWAY DESIGNER THE RIGHT-OF-WAY, SAFETY AND DRAINAGE REQUIREMENTS ASSOCIATED WITH RETAINING WALLS. THIS IS NOT A STRUCTURAL DESIGN DRAWING.

(A) THE ENTIRE WALL MUST BE BUILT WITHIN THE RIGHT-OF-WAY, INCLUDING SOIL ANCHORS AND/OR ROCK ANCHORS, IF USED.

(B) A MINIMUM OF 15' CONSTRUCTION EASEMENT REQUIRED BEHIND WALL AND ANCHORS, IF USED.

(C) DESIGNER TO CALCULATE S.F. OF WALL BASED ON TOP OF PILE DOWN TO 2' BELOW FINISHED GRADE. DISTANCE NEEDED BELOW FINISHED GRADE TO BE DETERMINED BY GEOTECH. COSTS FOR LENGTH BELOW 2' TO BE INCLUDED IN PRICE BID FOR RETAINING WALL.

(D) IF WALL IS WITHIN CLEAR ZONE OF ROADWAY, PLACE CONCRETE BARRIER WALL PER (S-SSMB-3).

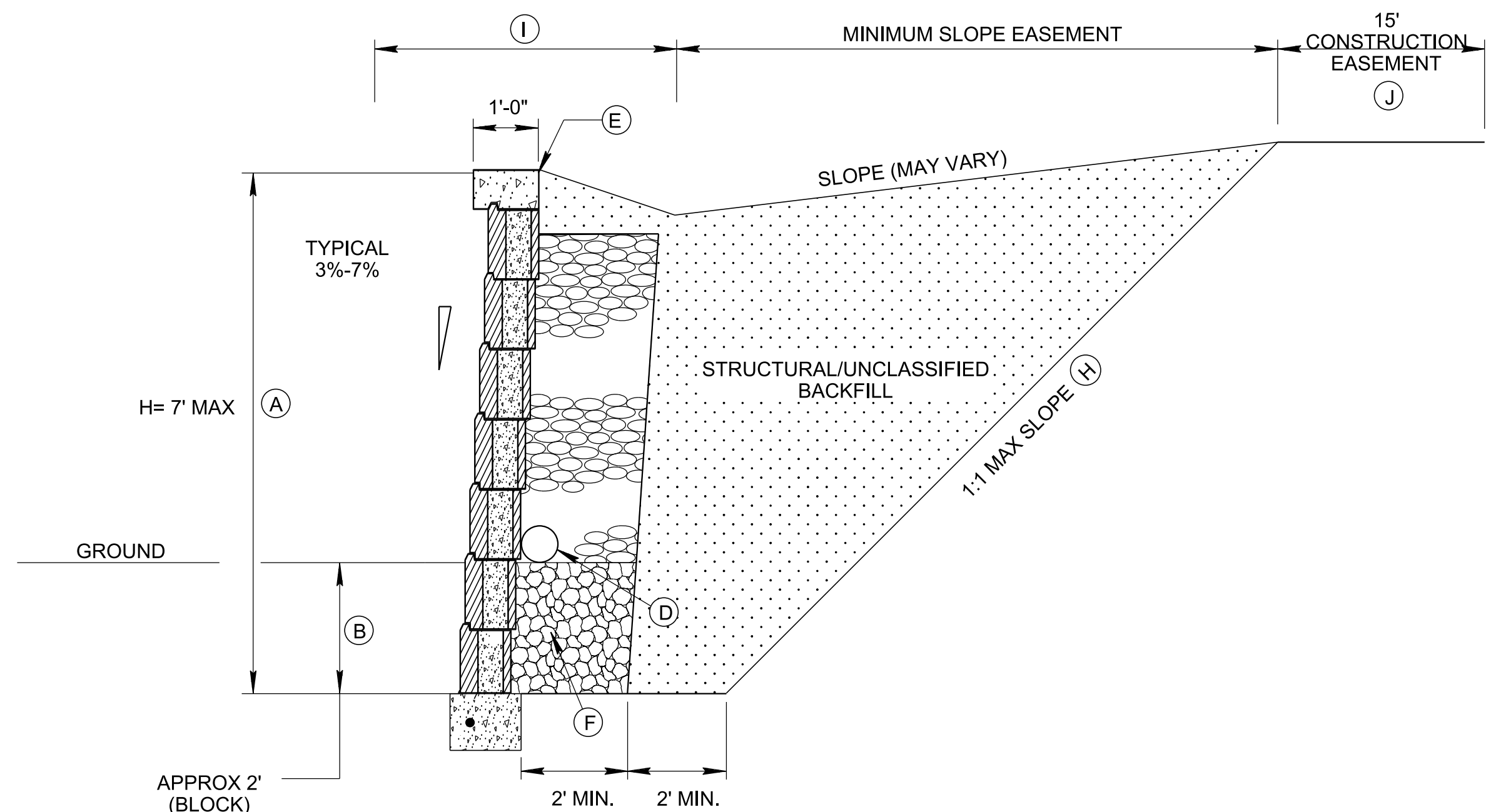
(E) BEGINNING AND END OF WALLS SHOULD BE PLACED OUTSIDE THE CLEAR ZONE. IF THIS OPTION IS NOT FEASIBLE, USE A TL-3 END TERMINAL OR CRASH CUSHION, ATTACHED TO CONCRETE BARRIER WALL. DO NOT ATTACH IT TO THE WALL ITSELF.

(F) AS THE LENGTH OF THE SOIL ANCHOR CAN VARY DRAMATICALLY, DEPENDING ON EXISTING SOIL CONDITIONS, THE GEOTECH ENGINEER SHALL DETERMINE AND SUPPLY THE REQUIRED LENGTH TO THE DESIGNER, IF THIS TYPE OF WALL IS TO BE USED.

STATE OF TENNESSEE
STANDARD DRAWING
DEPARTMENT OF TRANSPORTATION

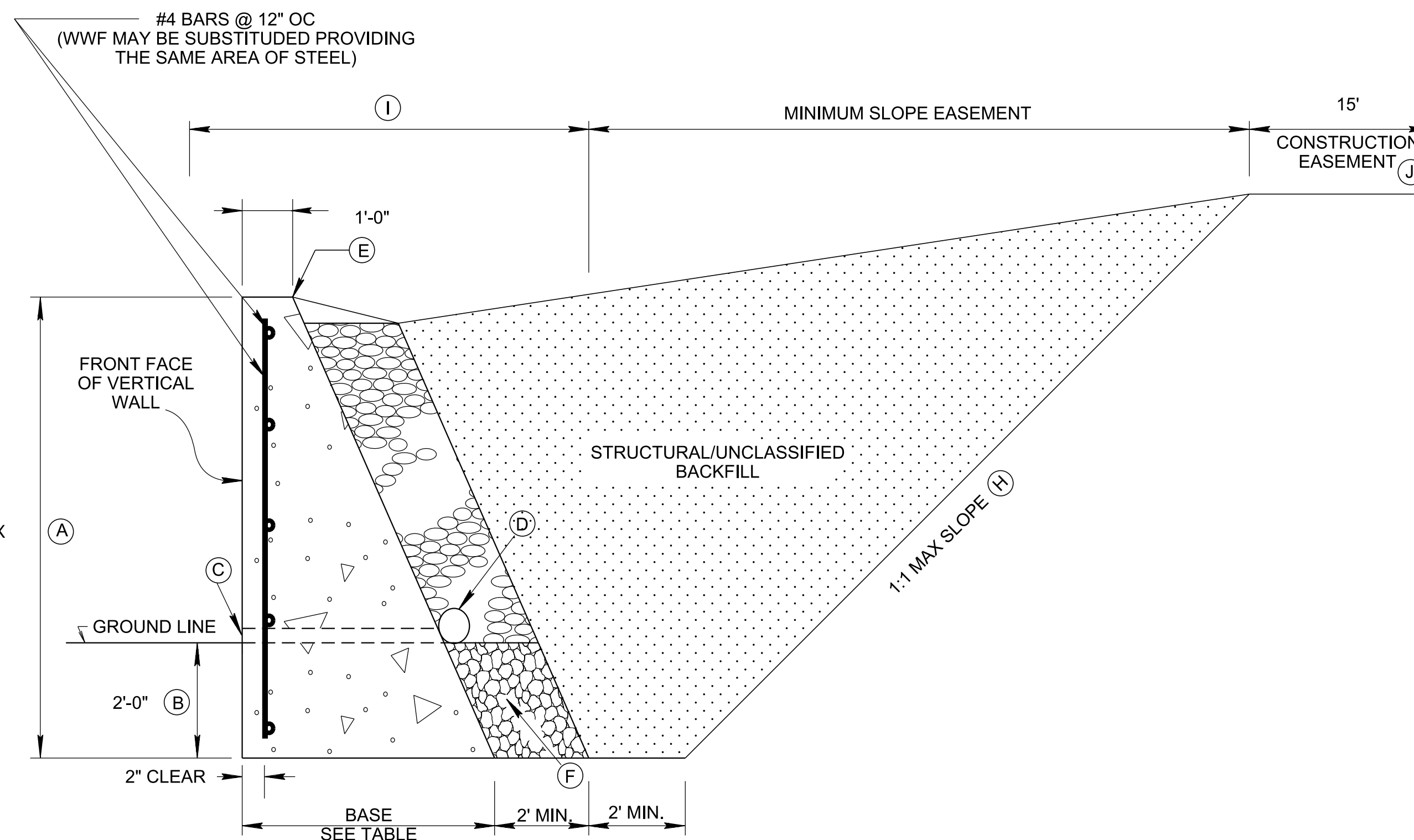
**ROADWAY FEATURES
AT SOLDIER PILE
AND SOIL ANCHORED
RETAINING
WALLS**

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MODULAR BLOCK GRAVITY RETAINING WALLS

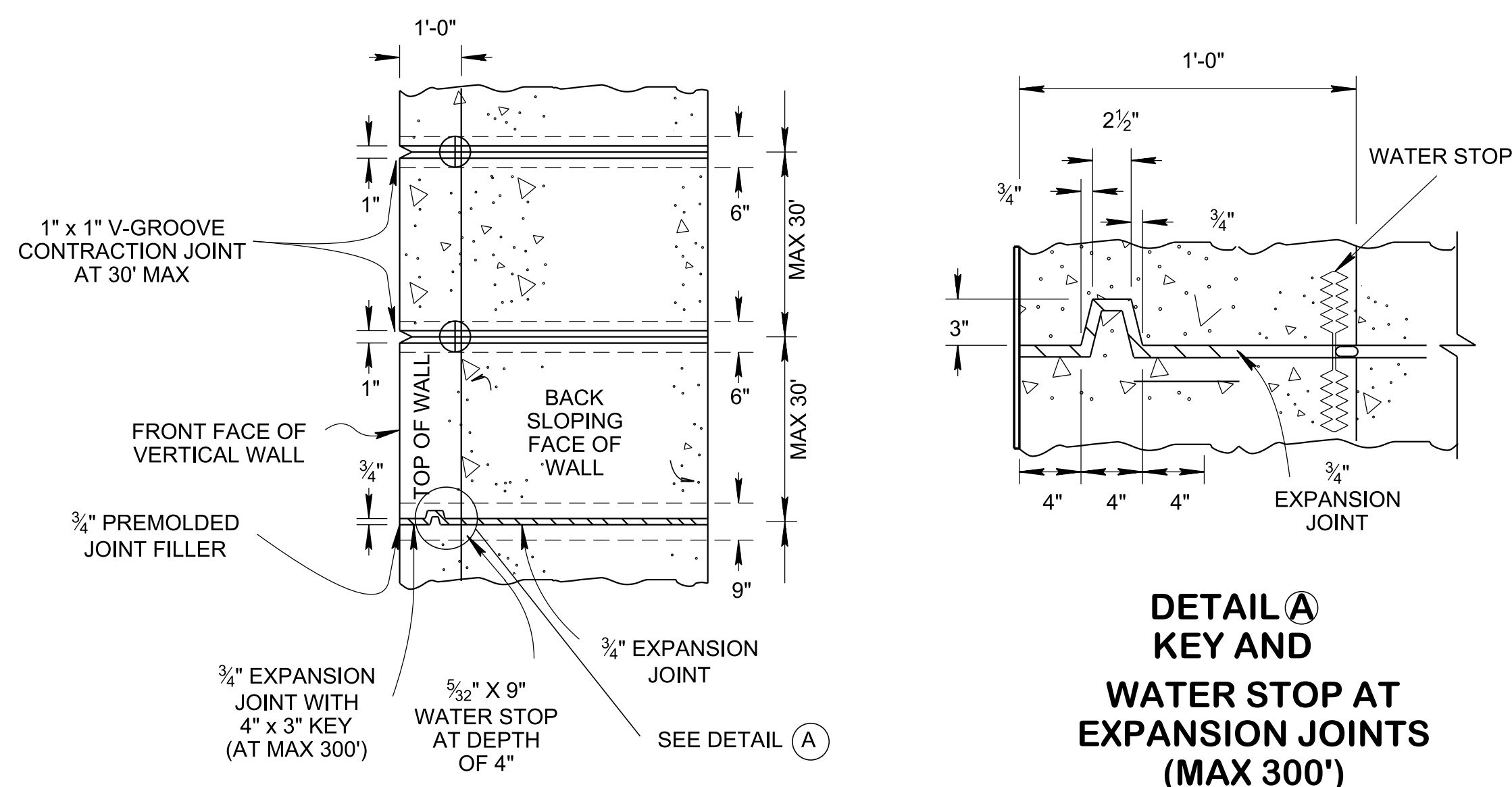
PAYMENT FOR PROPOSED MODULAR BLOCK WALL GRAVITY RETAINING WALLS WILL BE MADE UNDER ITEM NO. 604-07.01 THROUGH 604-07.27, RETAINING WALL (DESCRIPTION) PER SQUARE FOOT.



CONCRETE GRAVITY RETAINING WALLS

CONSTRUCTION SHALL MEET THE REQUIREMENTS OF TENN. STD. SPECIFICATION SECTION 604. THE WALL IS TO BE CLASS "A" CONCRETE.

PAYMENT FOR PROPOSED CONCRETE GRAVITY RETAINING WALLS WILL BE MADE UNDER ITEM NO. 604-07.01 THROUGH 604-07.27, RETAINING WALL (DESCRIPTION) PER SQUARE FOOT.



**DETAIL A
KEY AND
WATER STOP AT
EXPANSION JOINTS
(MAX 300')**

NOTE: CONTRACTION JOINTS ARE TO BE PLACED AT 30' INTERVALS. EXPANSION JOINTS ARE TO BE PLACED AT INTERVALS NOT EXCEEDING 300'. WATER STOPS ARE TO BE ELASTOMERIC OR OTHER APPROVED MATERIALS USED AT EXPANSION JOINTS ONLY DIMENSIONS SHOWN ARE ABSOLUTE MINIMUM.

**CONCRETE GRAVITY RETAINING WALL
EXPANSION AND CONTRACTION JOINT DETAIL
PLAN VIEW**

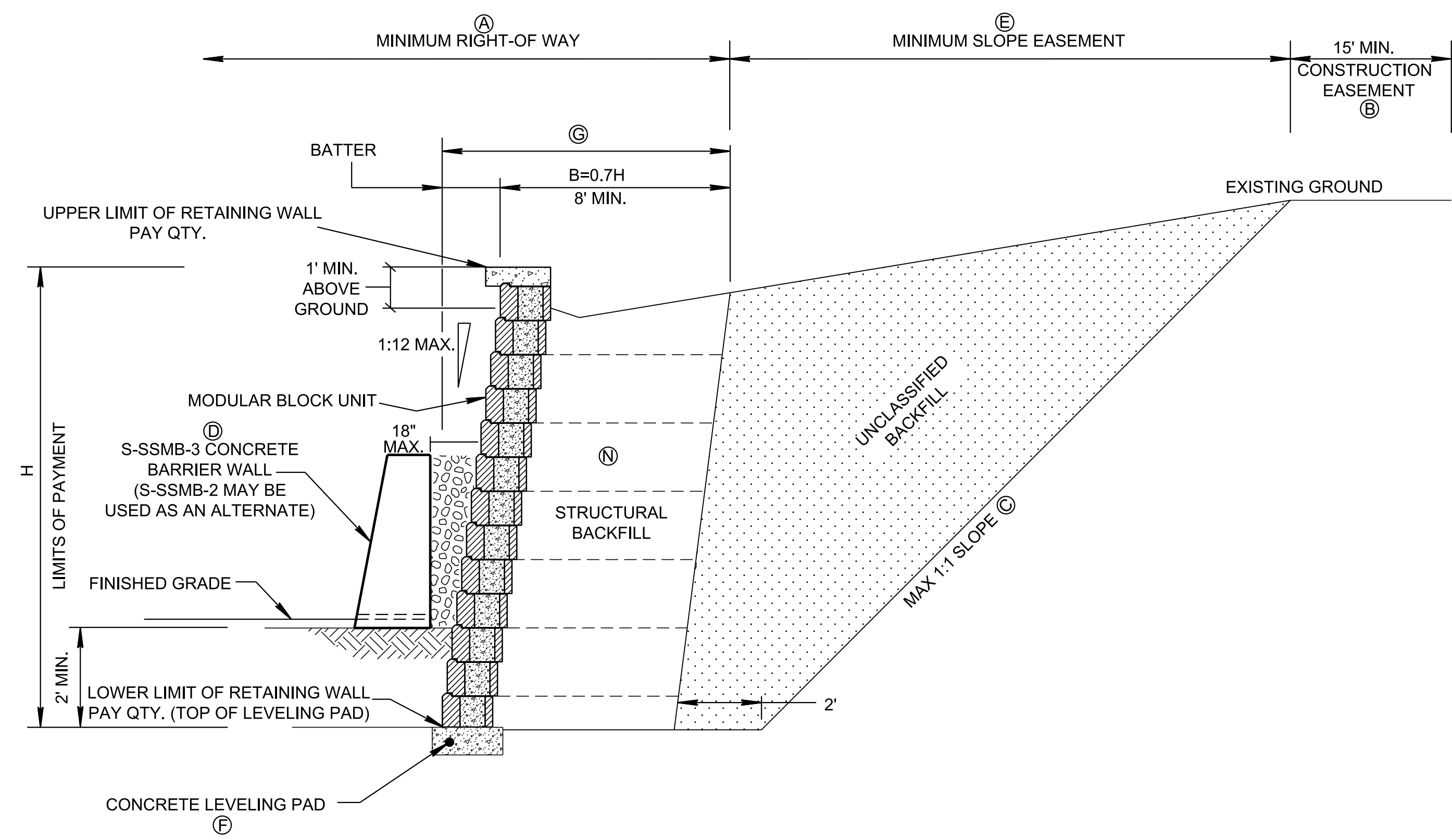
GRAVITY WALL DIMENSION AND QUANTITY TABLE				
H (ft)	B (ft)	F _T (psf)	V _W (cy/ft)	F _T (psf) *
2	1'-0"	600	0.074	600
3	1'-8"	850	0.148	850
4	2'-3"	1,100	0.241	1,100
5	2'-11"	1,350	0.363	1,350
6	3'-6"	1,600	0.500	1,600
7	4'-1"	1,850	0.659	1,850

* DESIGN IS BASED ON ALLOWABLE BEARING STRESS AT BASE OF WALL BEING EQUAL TO OR GREATER THAN FT.

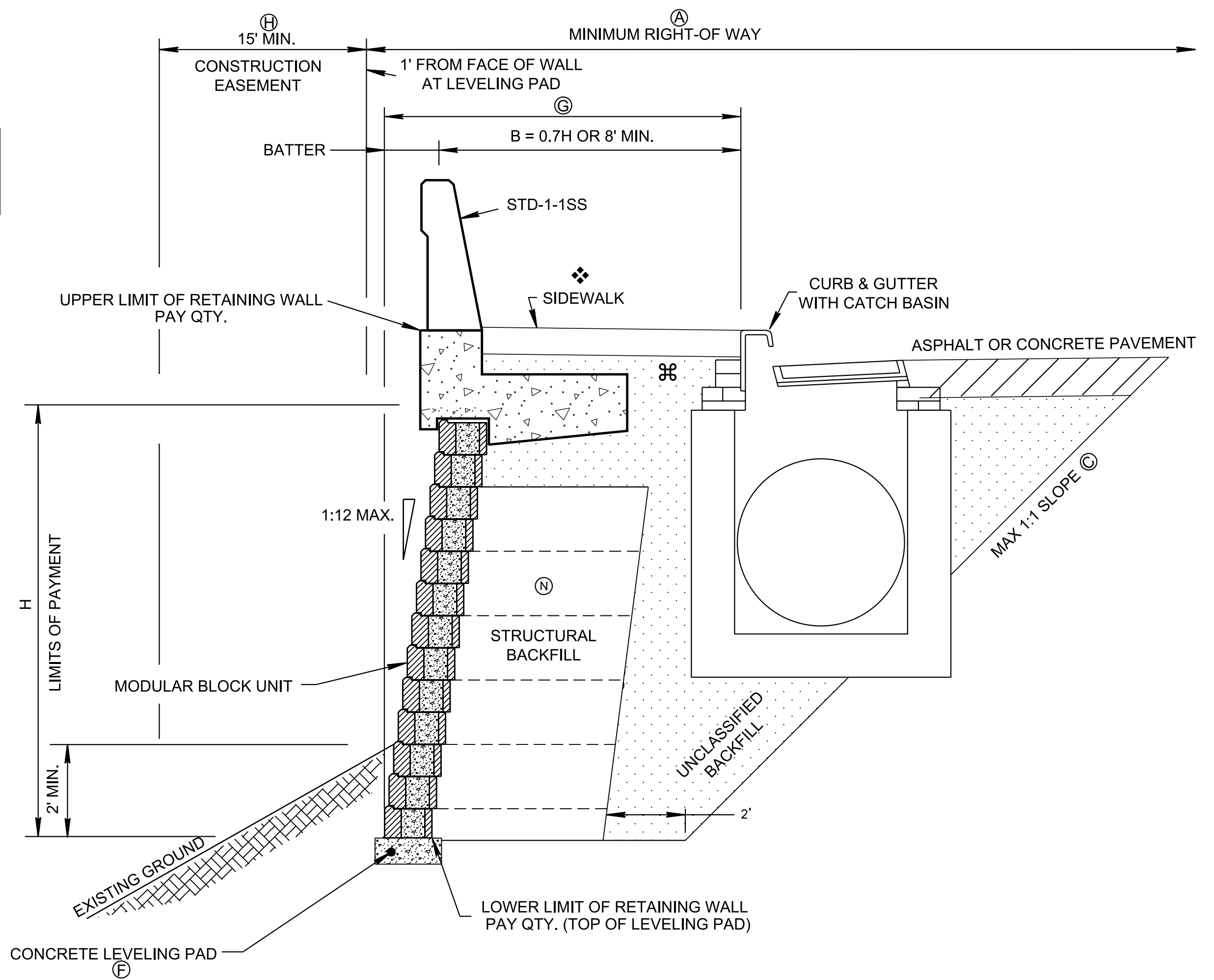
LEGEND	
B	= WIDTH AT BASE OF GRAVITY WALL
H	= HEIGHT OF WALL FROM BASE TO TOP INCLUDING ANY PORTION BELOW GROUND
F _T	= BEARING STRESS AT BASE OF GRAVITY WALL (STONE AND MORTAR OR CLASS "A" CONCRETE)
V _W	= VOLUME OF GRAVITY WALL (STONE AND MORTAR OR CLASS "A" CONCRETE)

GENERAL NOTES

- (A) GRAVITY WALL IS LIMITED TO 5 FEET IN HEIGHT ABOVE GROUND, WALLS GREATER THAN 5 FEET SHALL BE RETAINING WALLS DESIGNED IN CONSULTATION WITH THE SOILS AND GEOLOGY SECTION AND THE STRUCTURES DIVISION.
- (B) BASE OF WALL IS TO BE BELOW THE FROST LINE UNLESS WALL IS PLACED ON SOLID ROCK FOUNDATION. UNLESS OTHERWISE NOTED, PLACE BOTTOM TWO (2) FEET OF WALL BELOW THE GROUND LINE.
- (C) 4" DIAMETER WEEP HOLES AT MAXIMUM 10'-0" CENTER-TO-CENTER ARE TO BE PLACED AT THE LOWEST POINT PRACTICAL FOR PROPER DRAINAGE. THE ENGINEER WILL DETERMINE BOTH HORIZONTAL AND VERTICAL SPACING OF WEEP HOLES. PIPE IS TO BE PAID FOR UNDER THE PRICE BID FOR OTHER ITEMS OF CONSTRUCTION.
- (D) 6" DIAMETER PERFORATED PIPE IS TO BE CONNECTED TO AN OUTLET PIPE AT LOW POINTS AND AT A MAXIMUM SPACING OF 200'. PIPE IS TO BE PAID FOR UNDER THE PRICE BID FOR OTHER ITEMS OF CONSTRUCTION.
- (E) THE TREATMENT AT TOE OF FILL IS TO BE DETERMINED ACCORDING TO THE VOLUME AND VELOCITY OF THE RUNOFF (SEE ROADWAY PLANS).
- (F) GRANULAR BACKFILL BEHIND PROPOSED GRAVITY RETAINING WALL AND BELOW FLOW LINE OF OUTLET PIPES IS TO BE INCLUDED IN THE PRICE BID FOR THE WALL.
- (G) AT LOCATIONS WHERE A CONCRETE BARRIER PROTECTION IS ALSO NEEDED USE S-SSMB-2 IN PLACE OF GRAVITY WALL FOR UP TO 2' OF FILL AND S-SSMB-9 FOR UP TO 5' OF FILL.
- (H) ACTUAL UNDERCUT DEPTH AND BACKFILL SLOPE TO BE DETERMINED BY THE GEOTECHNICAL ENGINEER.
- (I) THE ENTIRE WALL, INCLUDING GRANULAR BACKFILL TO BE INCLUDED IN THE RIGHT-OF-WAY.
- (J) IF THE WALL IS A FILL WALL, THERE SHOULD BE A 15' MINIMUM CONSTRUCTION EASEMENT IN FRONT OF THE WALL.



**MECHANICALLY STABILIZED EARTH (MSE) WALL
MODULAR BLOCK TYPICAL SECTION IN CUT
(NOT RECOMMENDED IN CUT SECTIONS)**



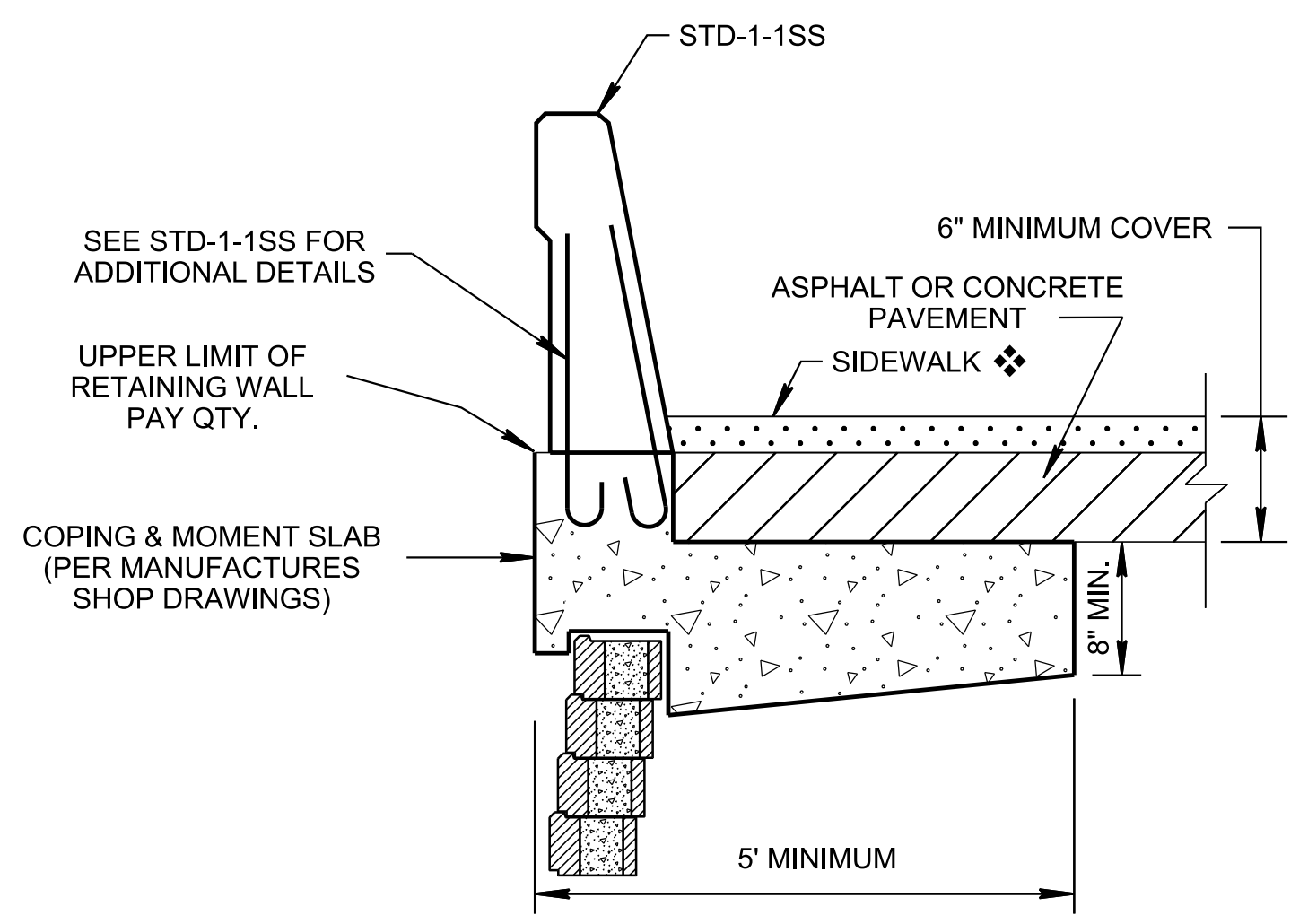
**MECHANICALLY STABILIZED EARTH (MSE) WALL
MODULAR BLOCK TYPICAL SECTION IN FILL**

LEGEND

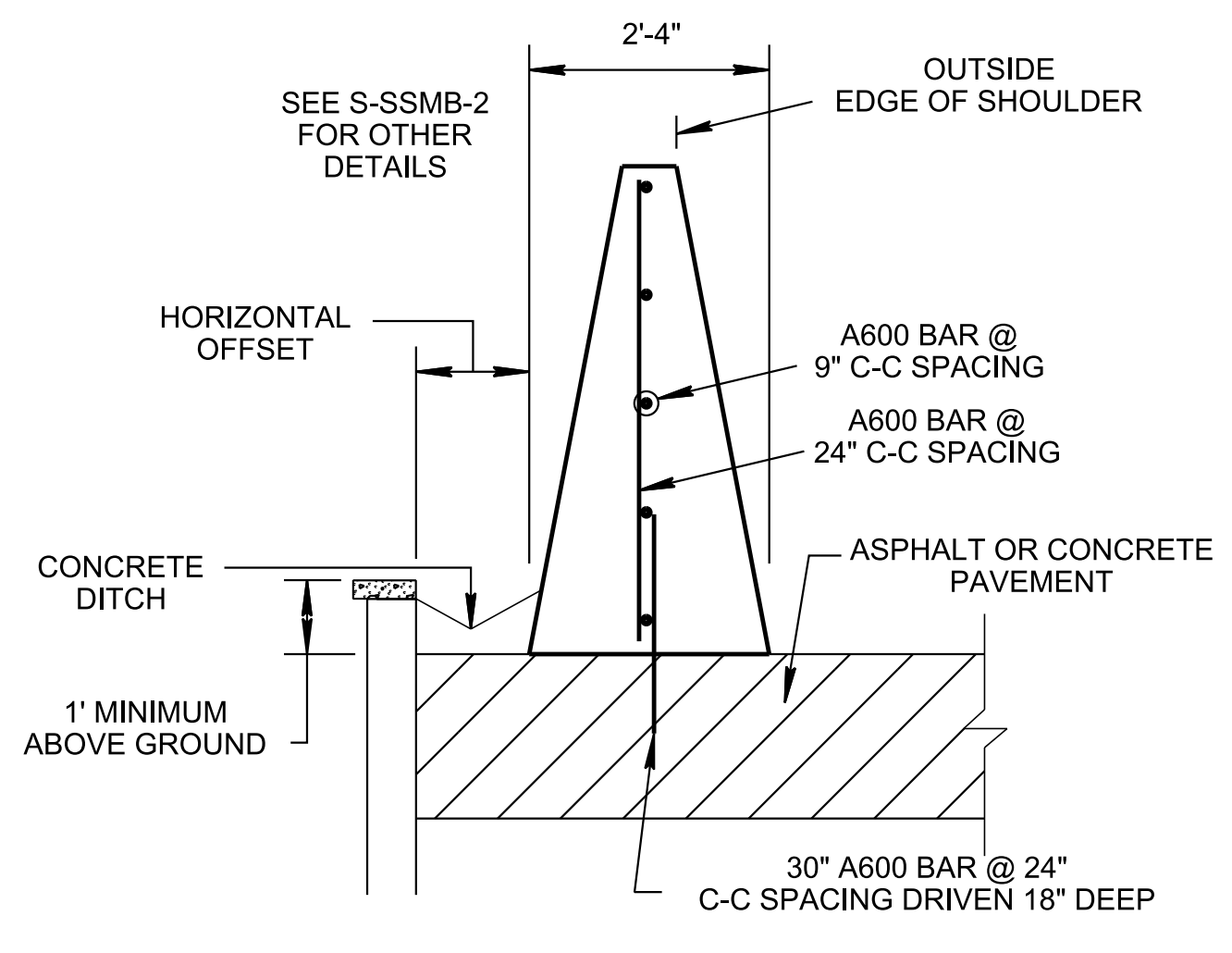
- ❖ WALL TYPE MAY ALSO BE USED WHEN ROAD SECTION HAS A SHOULDER, INSTEAD OF CURB, GUTTER, AND SIDEWALK.
- ⌘ WHEN LIGHT POLES ARE PROPOSED, WALL DESIGNER TO BE AWARE THAT THE FOUNDATION FOR THE POLES WILL LIKELY BE A MINIMUM OF 15' DEEP.

GENERAL NOTES

- THE PURPOSE OF THIS DRAWING IS TO BE A GUIDE AND TO ILLUSTRATE TO THE ROADWAY DESIGNER THE RIGHT-OF-WAY, SAFETY AND DRAINAGE REQUIREMENTS ASSOCIATED WITH RETAINING WALLS. THIS IS NOT A STRUCTURAL DESIGN DRAWING.**
- (A) THE ENTIRE WALL MUST BE BUILT WITHIN THE RIGHT-OF-WAY, PLUS 1' IN FRONT OF WALL PANELS (AT LEVELING PAD) WHEN IN A FILL.
 - (B) A MINIMUM OF 15' CONSTRUCTION EASEMENT REQUIRED BEHIND SLOPE TIE IN.
 - (C) ACTUAL UNDERCUT DEPTH AND BACKFILL SLOPE TO BE DETERMINED BY THE GEOTECHNICAL ENGINEER.
 - (D) IF WALL IS WITHIN CLEAR ZONE OF ROADWAY, OR MEETS ANY OF THE CRITERIA SPECIFIED IN SP 624, PLACE CONCRETE BARRIER WALL IN FRONT OF WALL. COST TO BE INCLUDED IN S.F. COST OF THE WALL.
 - (E) BACKFILL AREA TO BE PURCHASED AS SLOPE EASEMENT UNTIL TIED IN WITH EXISTING GROUND LINE, UNLESS GEOTECHNICAL ENGINEER DEEMS SELECT BACKFILL A NECESSITY. IN WHICH CASE THE BACKFILL AREA SHALL BE PURCHASED AS RIGHT-OF-WAY.
 - (F) COST OF LEVELING PAD, WILL BE PAID FOR IN THE COST OF THE RETAINING WALL.
 - (G) MEASURED AT TOP OF WALL, INCLUDES "B" (0.7 x WALL HEIGHT) AND BATTER (1:12 MAX.). MINIMUM 8' PLUS BATTER.
 - (H) AREA OUTSIDE OF WALL TO BE GRADED TO DRAIN AWAY FROM WALL. ALL GRADING TO BE INCLUDED IN CONSTRUCTION EASEMENT.
 - (I) ALL COSTS ASSOCIATED WITH MOMENT SLAB TO BE INCLUDED IN THE COST OF THE RETAINING WALL.
 - (J) BEGINNING AND END OF WALLS SHOULD BE PLACED OUTSIDE THE CLEAR ZONE. IF THIS OPTION IS NOT FEASIBLE, USE A TL-3 END TERMINAL OR CRASH CUSHION.
 - (K) IF DRAINAGE STRUCTURES ARE PRESENT WITHIN STRUCTURAL BACKFILL AREA, THE WALL MANUFACTURER SHALL DETERMINE THE EXTENT OF THIS INSTALLATION AND DESIGN THE WALL ACCORDINGLY.
 - (L) DEFER TO QPL. ONLY APPROVED WALL TYPES MAY BE USED.
 - (M) COST OF CONCRETE BARRIER SHALL BE PAID SEPARATELY.
 - (N) WALL DESIGNER TO BE AWARE OF ANY FEATURES THAT MAY INTERFERE WITH STRUCTURAL BACKFILL. ITEMS COULD INCLUDE, BUT ARE NOT LIMITED TO; DRAINAGE STRUCTURES, LIGHT POLES (FOUNDATIONS ARE TYPICALLY AT LEAST 15' DEEP), UTILITIES, ETC.



**CONCRETE BARRIER ATTACHMENT DETAIL
TO BE PROVIDED BY MANUFACTURER**



**ALTERNATE ATTACHMENT DETAIL FOR
51" SINGLE SLOPE CONCRETE BARRIER**

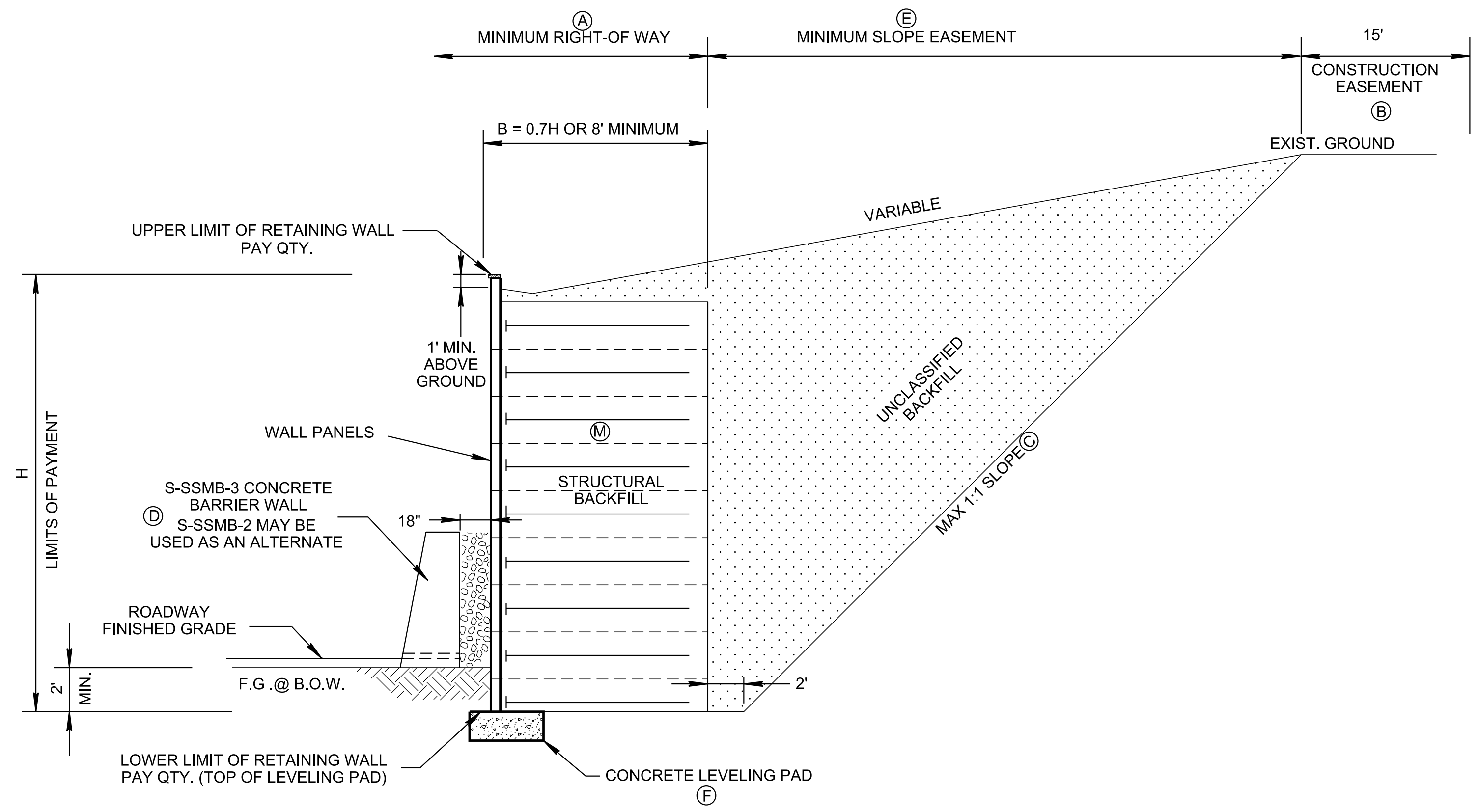
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NOT TO SCALE

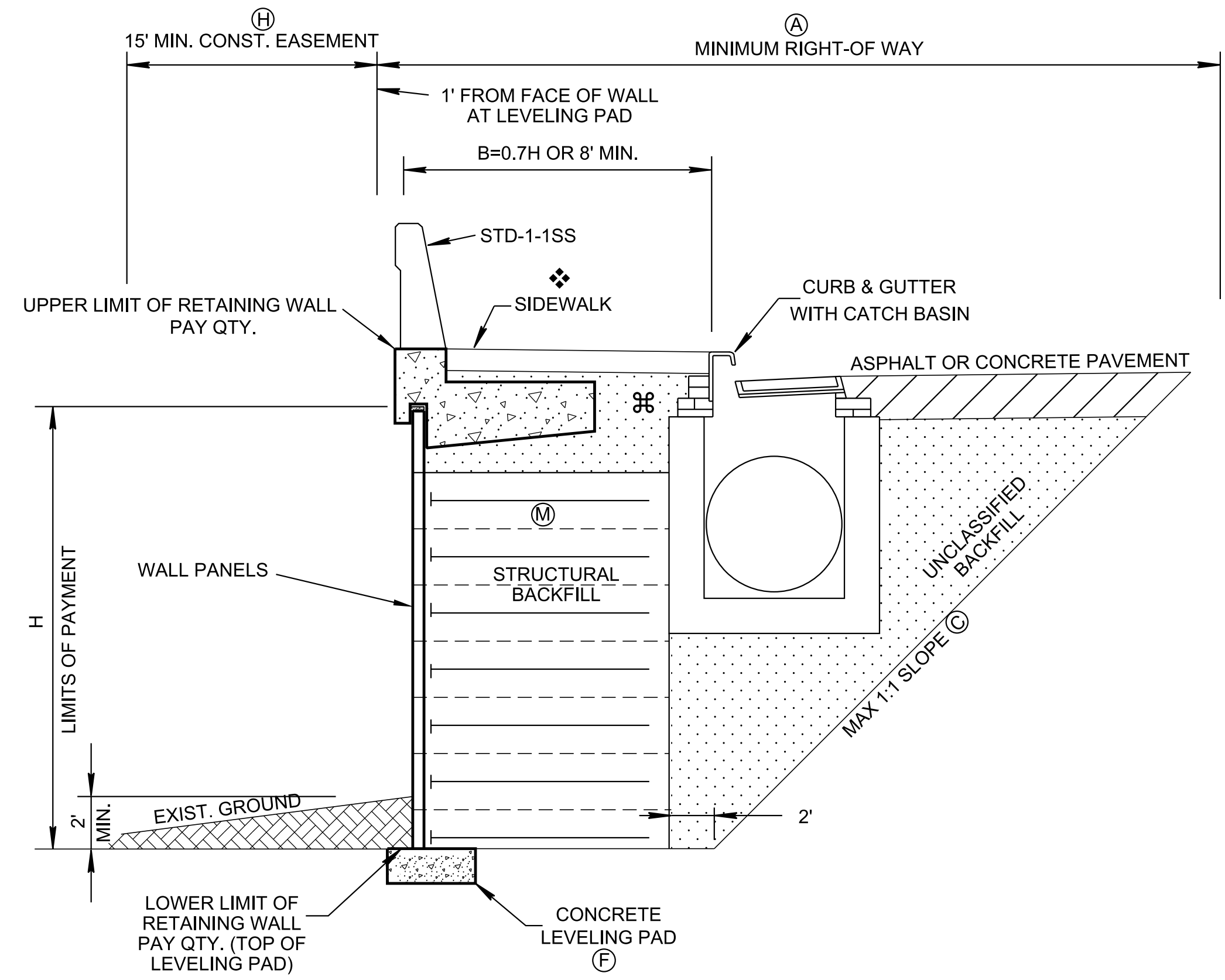
STATE OF TENNESSEE
STANDARD DRAWING
DEPARTMENT OF TRANSPORTATION

ROADWAY FEATURES
FOR MSE MODULAR
BLOCK FACING
RETAINING WALL

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**MECHANICALLY STABILIZED EARTH (MSE)
SEGMENTAL PRECAST WALL TYPICAL SECTION IN CUT**
(NOT RECOMMENDED IN CUT SECTIONS)



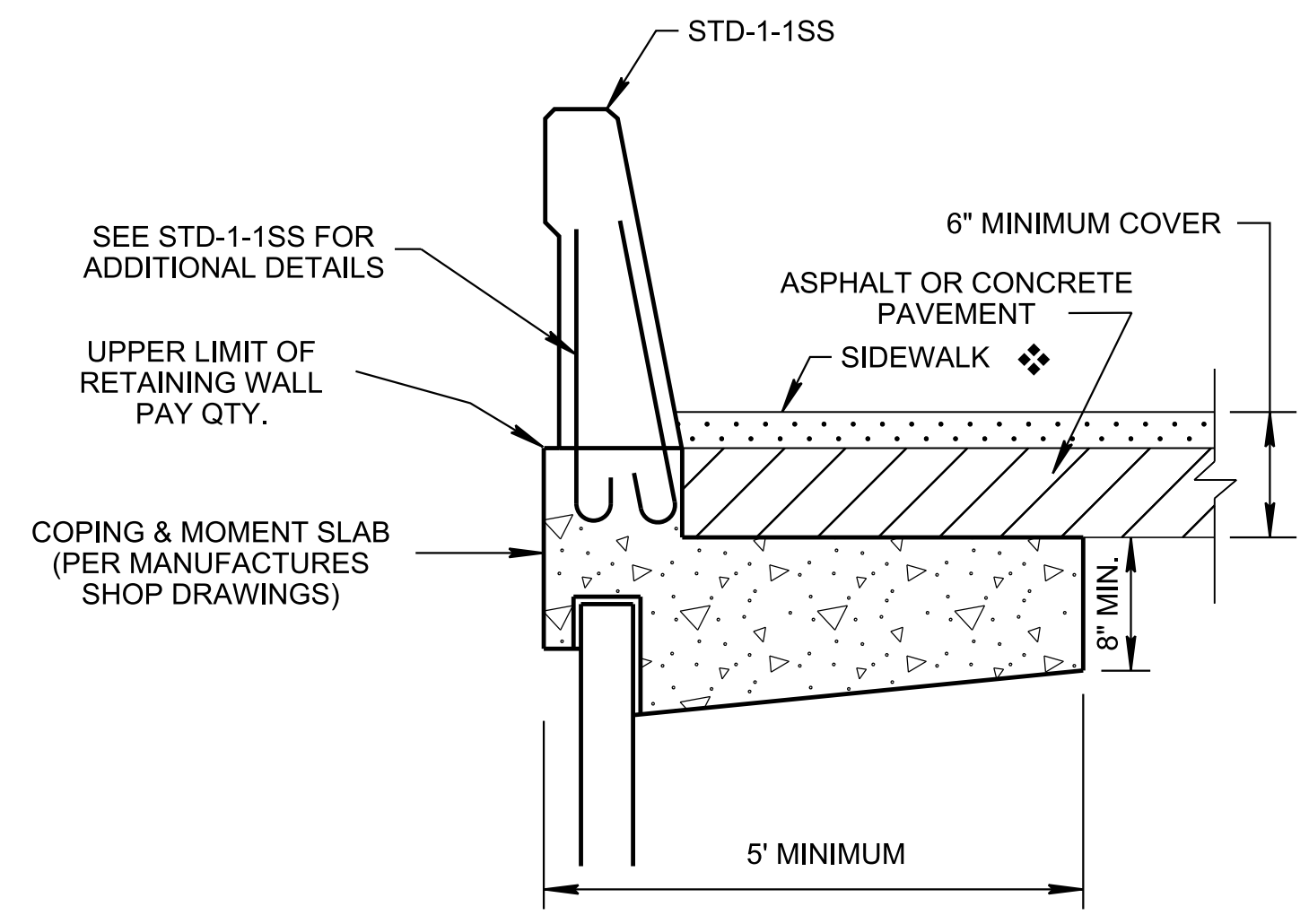
**MECHANICALLY STABILIZED EARTH (MSE)
SEGMENTAL PRECAST WALL TYPICAL SECTION IN FILL**

LEGEND

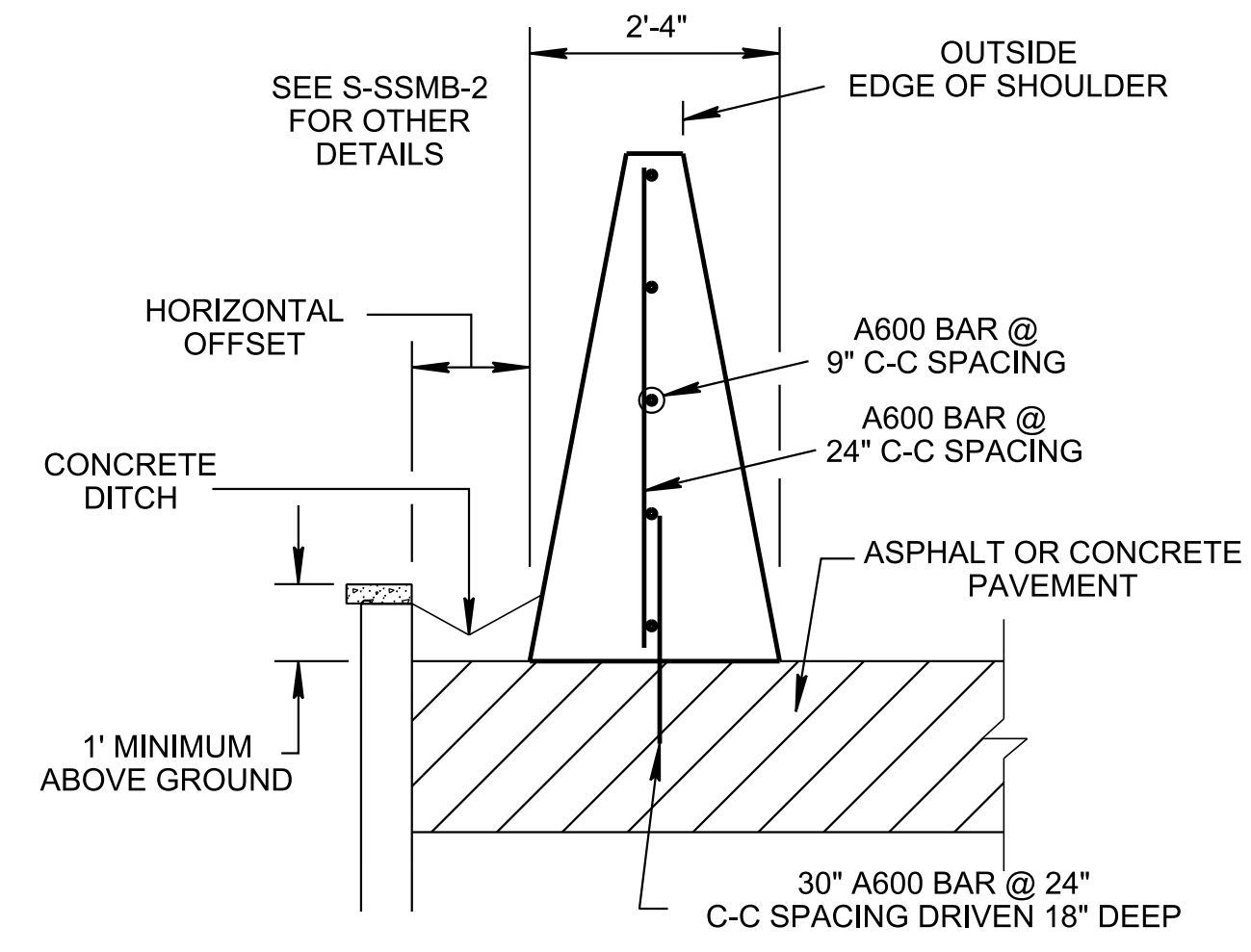
- ❖ WALL TYPE MAY ALSO BE USED WHEN ROAD SECTION HAS A SHOULDER, INSTEAD OF CURB, GUTTER, AND SIDEWALK.
- ⌘ WHEN LIGHT POLES ARE PROPOSED, WALL DESIGNER TO BE AWARE THAT THE FOUNDATION FOR THE POLES WILL LIKELY BE A MINIMUM OF 15' DEEP.

GENERAL NOTES

- THE PURPOSE OF THIS DRAWING IS TO BE A GUIDE AND TO ILLUSTRATE TO THE ROADWAY DESIGNER THE RIGHT-OF-WAY, SAFETY AND DRAINAGE REQUIREMENTS ASSOCIATED WITH RETAINING WALLS. THIS IS NOT A STRUCTURAL DESIGN DRAWING.**
- (A) THE ENTIRE WALL MUST BE BUILT WITHIN THE RIGHT-OF-WAY, PLUS 1' IN FRONT OF WALL PANELS (AT LEVELING PAD) WHEN IN A FILL.
 - (B) A MINIMUM OF 15' CONSTRUCTION EASEMENT REQUIRED BEHIND SLOPE TIE IN.
 - (C) ACTUAL UNDERCUT DEPTH AND BACKFILL SLOPE TO BE DETERMINED BY THE GEOTECHNICAL ENGINEER.
 - (D) IF WALL IS WITHIN CLEAR ZONE OF ROADWAY, OR MEETS ANY OF THE CRITERIA SPECIFIED IN SP 624, PLACE CONCRETE BARRIER WALL IN FRONT OF WALL. COST TO BE INCLUDED IN S.F. COST OF THE WALL.
 - (E) BACKFILL AREA TO BE PURCHASED AS SLOPE EASEMENT UNTIL TIED IN WITH EXISTING GROUND LINE, UNLESS GEOTECHNICAL ENGINEER DEEMS SELECT BACKFILL A NECESSITY. IN WHICH CASE THE BACKFILL AREA SHALL BE PURCHASED AS RIGHT-OF-WAY.
 - (F) COST OF LEVELING PAD, WILL BE PAID FOR IN THE COST OF THE RETAINING WALL.
 - (G) IF DRAINAGE STRUCTURES ARE PRESENT WITHIN STRUCTURAL BACKFILL AREA, THE WALL MANUFACTURER SHALL DETERMINE THE EXTENT OF THIS INSTALLATION AND DESIGN THE WALL ACCORDINGLY.
 - (H) AREA OUTSIDE OF WALL TO BE GRADED TO DRAIN AWAY FROM WALL. ALL GRADING TO BE INCLUDED IN CONSTRUCTION EASEMENT.
 - (I) ALL COSTS ASSOCIATED WITH MOMENT SLAB TO BE INCLUDED IN THE COST OF THE RETAINING WALL.
 - (J) BEGINNING AND END OF WALLS SHOULD BE PLACED OUTSIDE THE CLEAR ZONE. IF THIS OPTION IS NOT FEASIBLE, USE A TL-3 END TERMINAL OR CRASH CUSHION ATTACHED TO CONCRETE BARRIER WALL DO NOT ATTACH IT TO THE WALL ITSELF.
 - (K) DEFER TO QPL. ONLY APPROVED WALL TYPES MAY BE USED.
 - (L) COST OF CONCRETE BARRIER SHALL BE PAID SEPARATELY.
 - (M) WALL DESIGNER TO BE AWARE OF ANY FEATURES THAT MAY INTERFERE WITH STRUCTURAL BACKFILL. ITEMS COULD INCLUDE, BUT ARE NOT LIMITED TO; DRAINAGE STRUCTURES, LIGHT POLES (FOUNDATIONS ARE TYPICALLY AT LEAST 15' DEEP), UTILITIES, ETC.



**CONCRETE BARRIER ATTACHMENT DETAIL
TO BE PROVIDED BY MANUFACTURER**

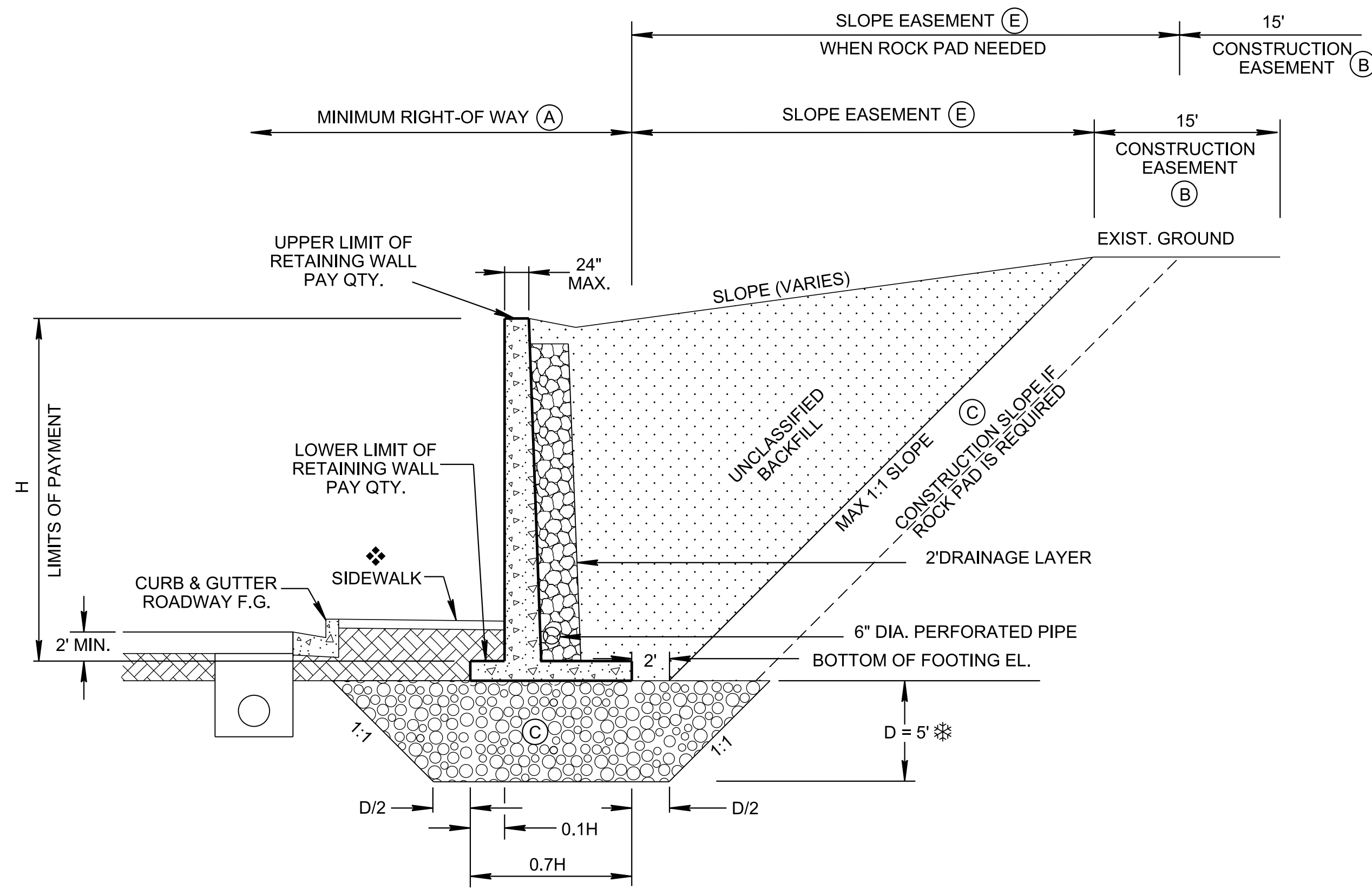


**ALTERNATE ATTACHMENT DETAIL FOR
51" SINGLE SLOPE CONCRETE BARRIER**

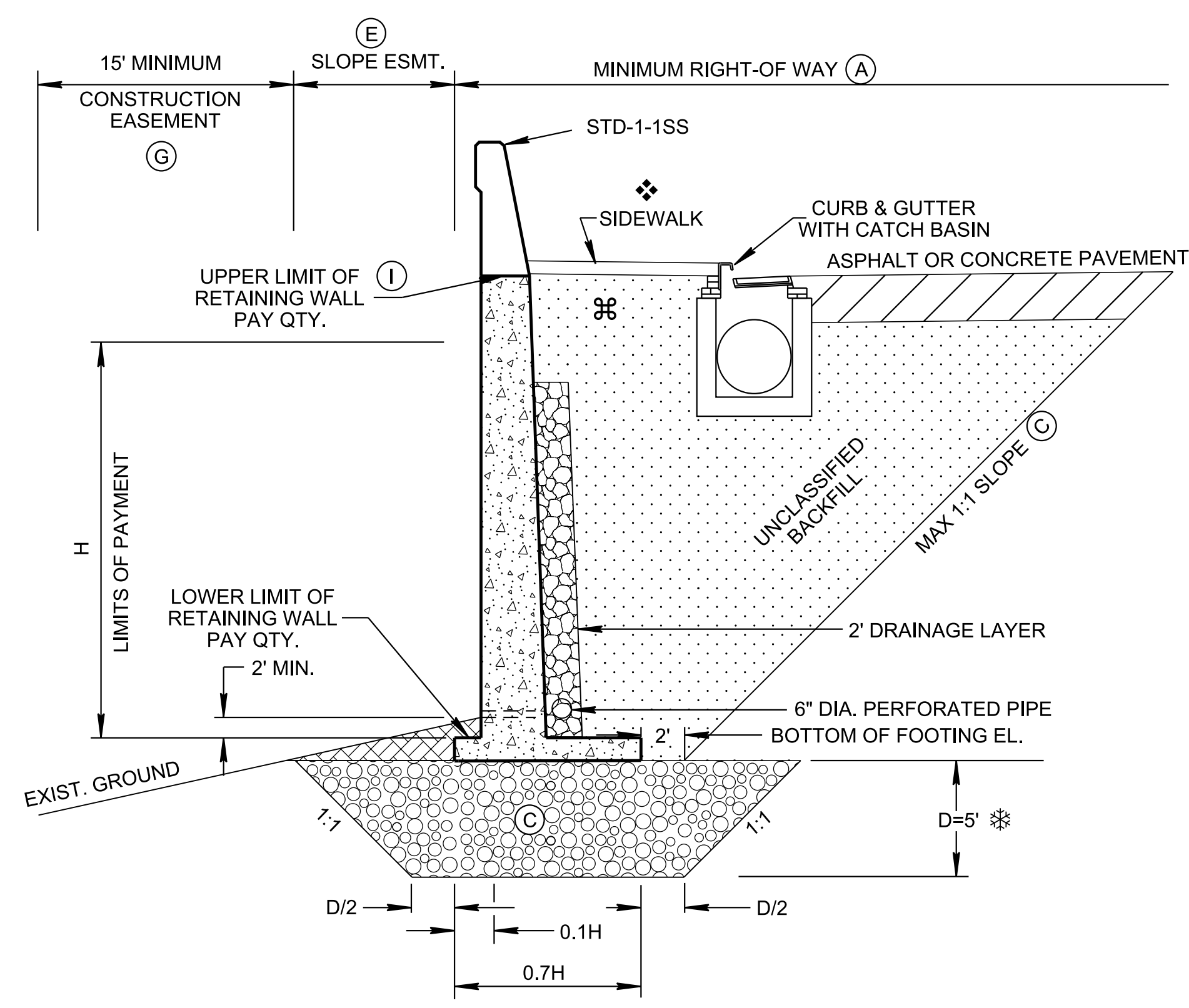
STATE OF TENNESSEE
STANDARD DRAWING
DEPARTMENT OF TRANSPORTATION

**ROADWAY
FEATURES
FOR MSE SEGMENTAL
PRECAST FACING
RETAINING WALL**

08-15-2015 W-MSE-1



**CAST IN PLACE (CIP) WALL
TYPICAL SECTION IN CUT**



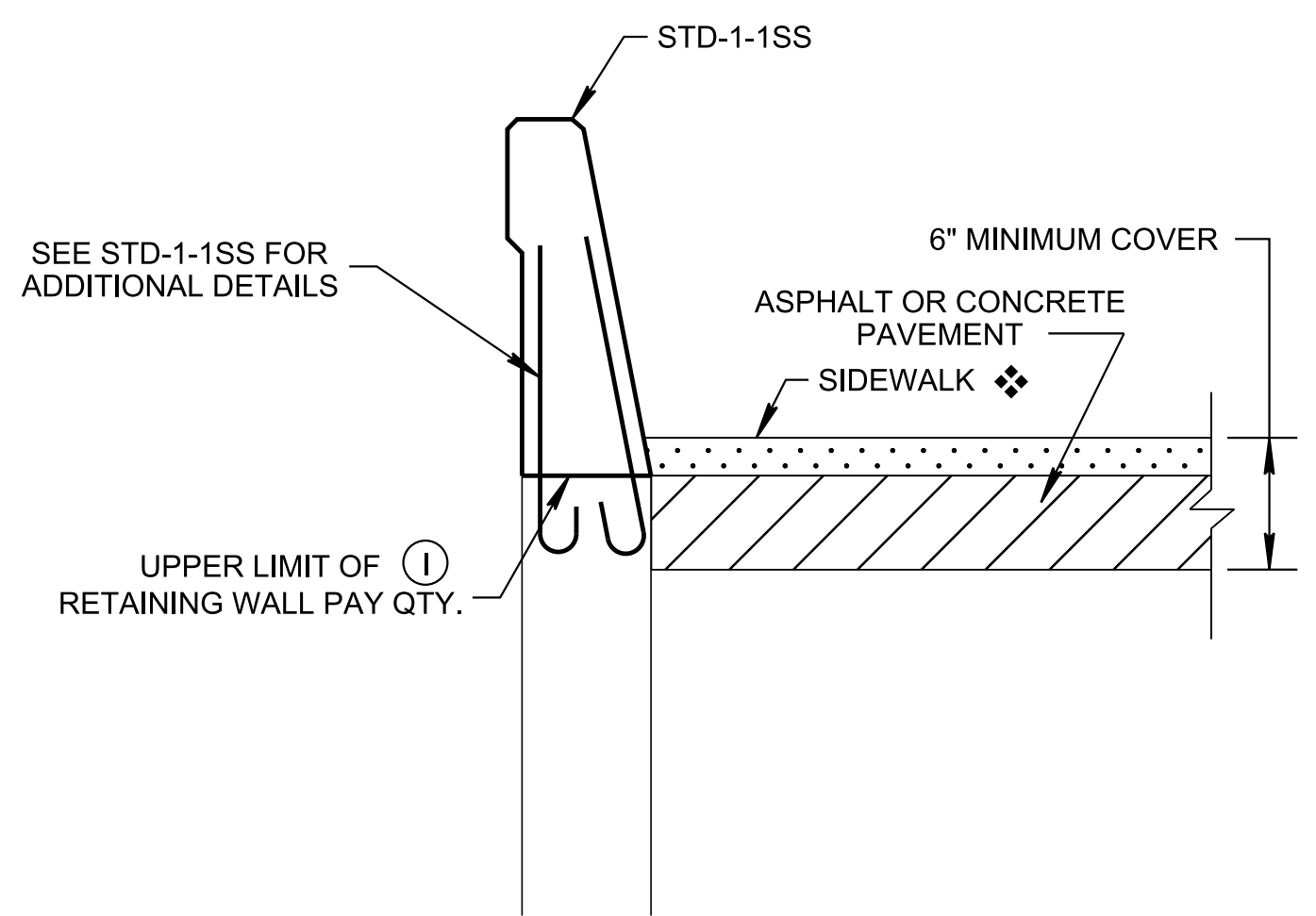
**CAST IN PLACE (CIP) WALL
TYPICAL SECTION IN FILL**

LEGEND

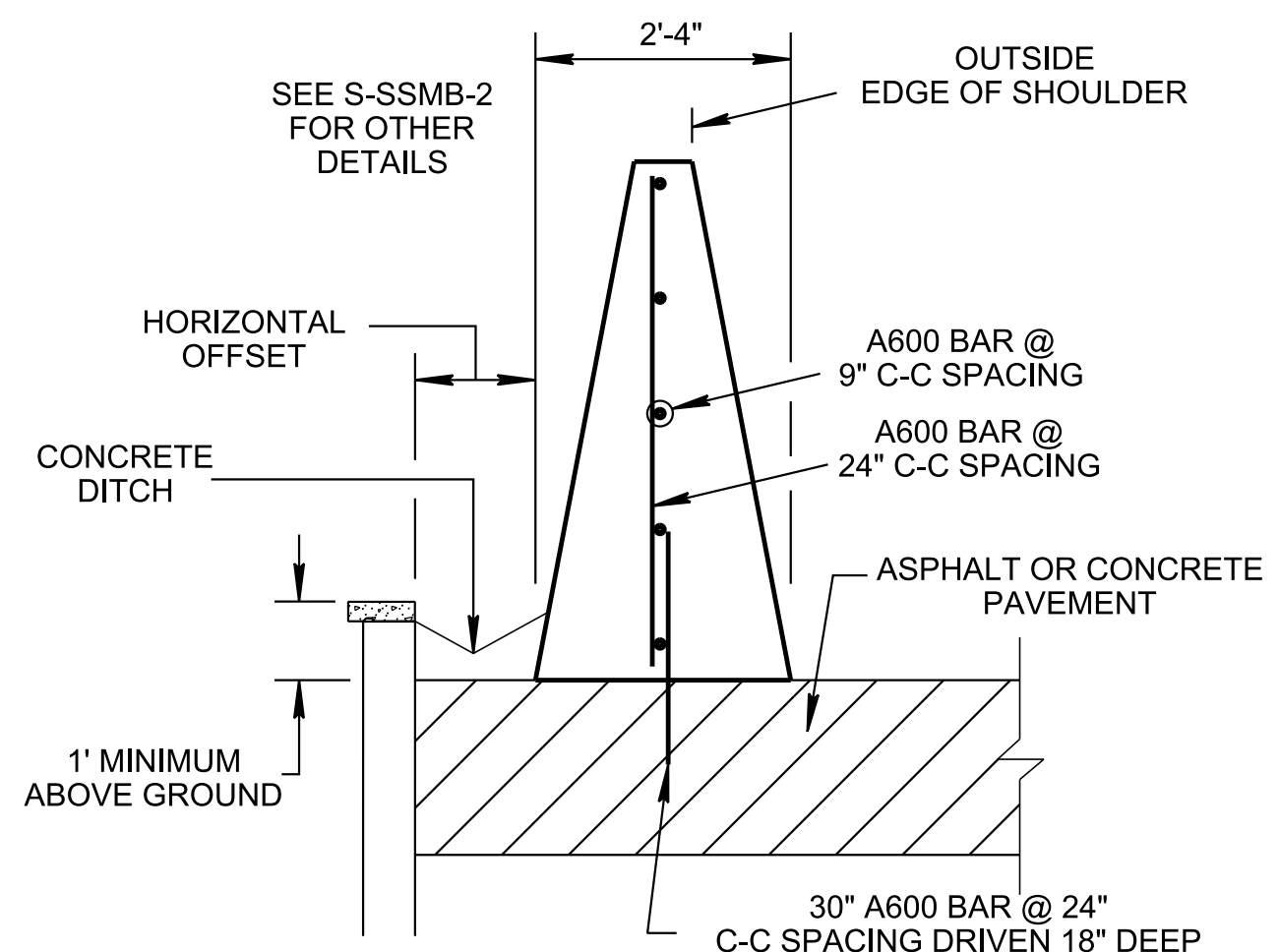
- ❖ WALL TYPE MAY ALSO BE USED WHEN ROAD SHOULDER, INSTEAD OF CURB, GUTTER, AND SIDEWALK.
- ⌘ WHEN LIGHT POLES ARE PROPOSED, WALL DESIGNER TO BE AWARE THAT THE FOUNDATION FOR THE POLES WILL LIKELY BE A MINIMUM OF 15' DEEP.
- ⊛ ONLY REQUIRED IN AREAS WITH UNSUITABLE FOUNDATION MATERIAL. 5' SHOWN ONLY FOR ESTIMATING SLOPE EASEMENT.

GENERAL NOTES

- THE PURPOSE OF THIS DRAWING IS TO BE A GUIDE AND TO ILLUSTRATE TO THE ROADWAY DESIGNER THE RIGHT-OF-WAY, SAFETY AND DRAINAGE REQUIREMENTS ASSOCIATED WITH RETAINING WALLS. THIS IS NOT A STRUCTURAL DESIGN DRAWING.**
- (A) THE ENTIRE WALL MUST BE BUILT WITHIN THE RIGHT-OF-WAY, INCLUDING FOUNDATION.
 - (B) A MINIMUM OF 15' CONSTRUCTION EASEMENT REQUIRED BEHIND SLOPE TIE IN.
 - (C) UNDERCUT DEPTH AND BACKFILL SLOPE TO BE DETERMINED BY THE GEOTECHNICAL ENGINEER.
 - (D) IF WALL IS WITHIN CLEAR ZONE OF ROADWAY, PLACE CONCRETE BARRIER WALL.
 - (E) BACKFILL AREA TO BE PURCHASED AS SLOPE EASEMENT UNTIL TIED IN WITH EXISTING GROUND LINE.
 - (F) BEGINNING AND END OF WALLS SHOULD BE PLACED OUTSIDE THE CLEAR ZONE. IF THIS OPTION IS NOT FEASIBLE, USE A TANGENTIAL GUARDRAIL END TERMINAL ATTACHED TO THE WALL ITSELF.
 - (G) AREA OUTSIDE OF WALL TO BE GRADED TO DRAIN AWAY FROM WALL. ALL GRADING TO BE INCLUDED IN CONSTRUCTION EASEMENT. WHERE AVAILABLE PURCHASING AS PERMANENT RIGHT-OF-WAY SHOULD BE CONSIDERED.
 - (H) LIMITS OF PAYMENT ARE FROM TOP OF WALL TO 2' BELOW FINISHED GRADE. ALL COSTS ASSOCIATED WITH THE FOOTING /FOUNDATION TO BE INCLUDED IN PRICE BID FOR THE WALL.
 - (I) ALTERNATIVELY, THE BARRIER WALL MAY BE DESIGNED AS PART OF THE CAST-IN-PLACE WALL. COST OF CONCRETE BARRIER INCORPORATED INTO THE RETAINING WALL SHALL BE INCLUDED IN THE COST OF THE RETAINING WALL. THE BARRIER SHALL BE DESIGNED AS TL-4 RAIL AS DEFINED BY SECTION 13 OF THE AASHTO BRIDGE DESIGN SPECIFICATIONS.

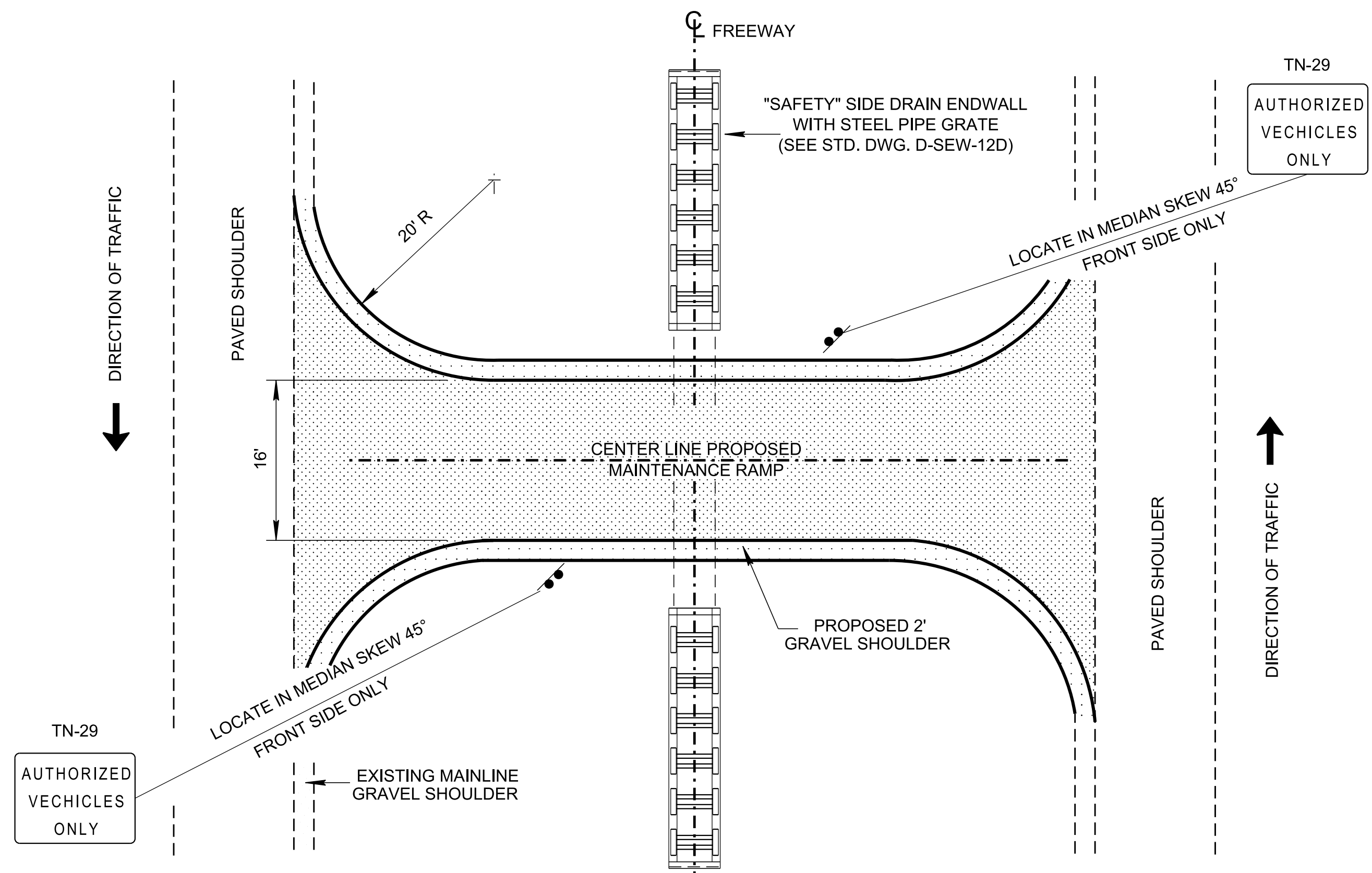


**CONCRETE BARRIER ATTACHMENT DETAIL
TO BE PROVIDED BY WALL DESIGNER**

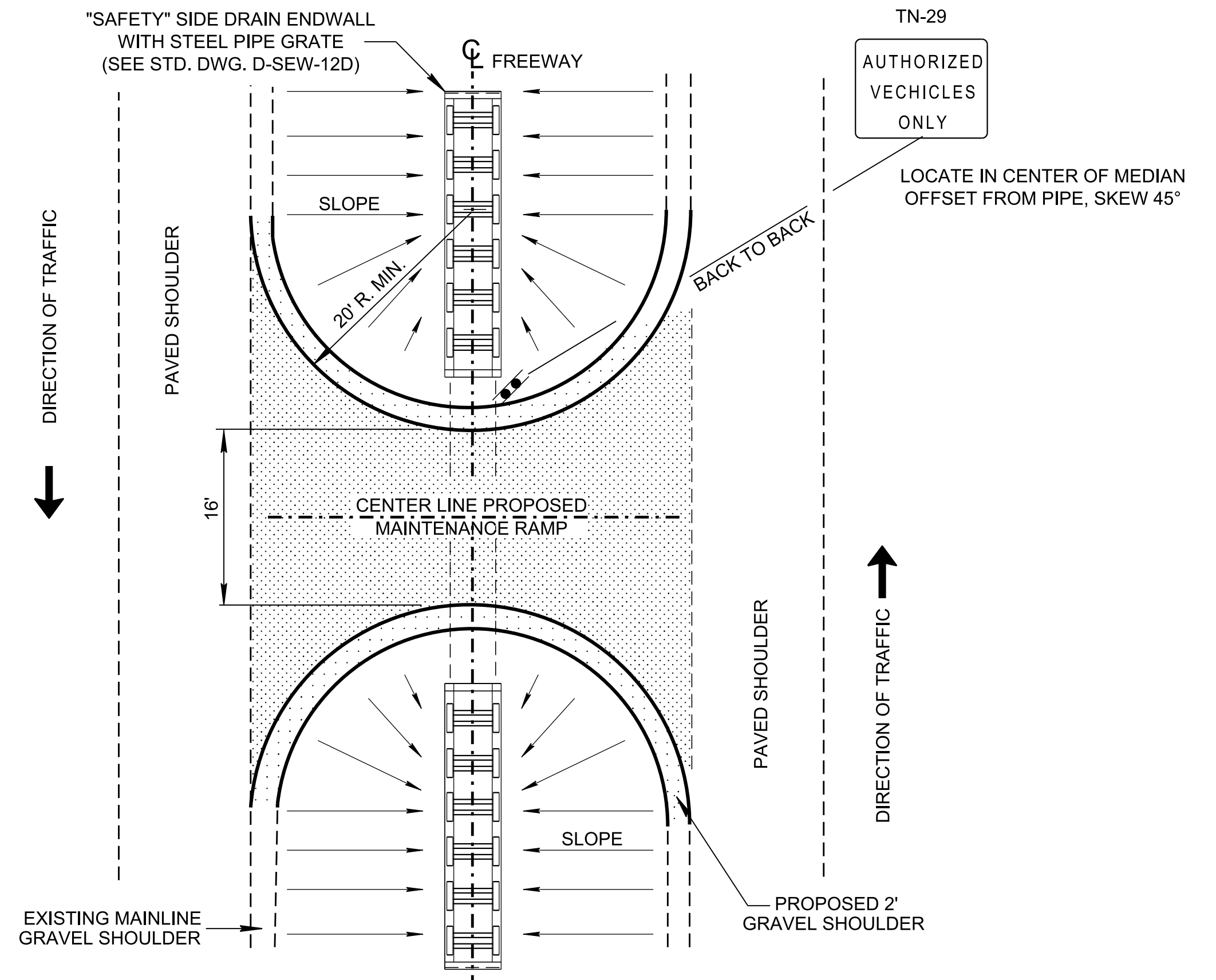


**ALTERNATE ATTACHMENT DETAIL FOR
51" SINGLE SLOPE CONCRETE BARRIER**

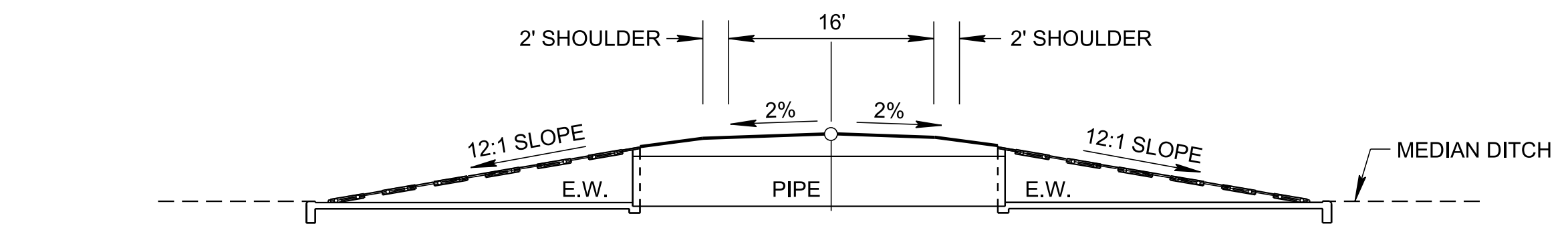
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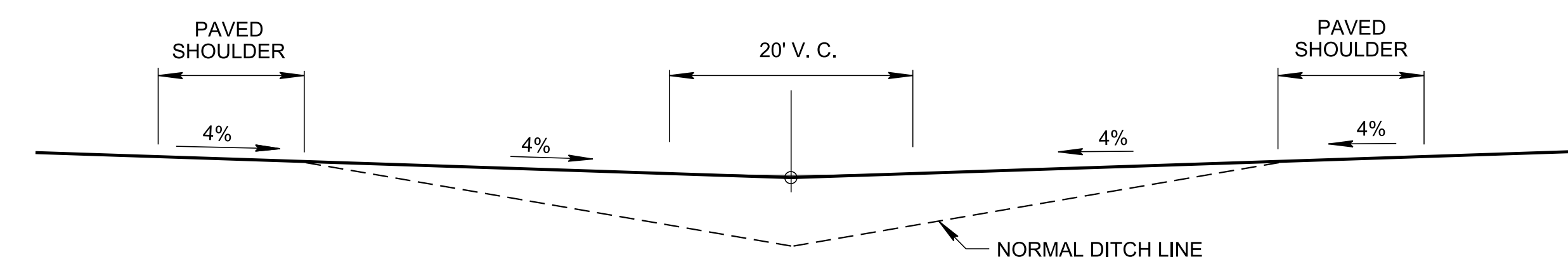
PLAN VIEW OF PROPOSED MAINTENANCE RAMP FOR MEDIAN WIDTH GREATER THAN 64'



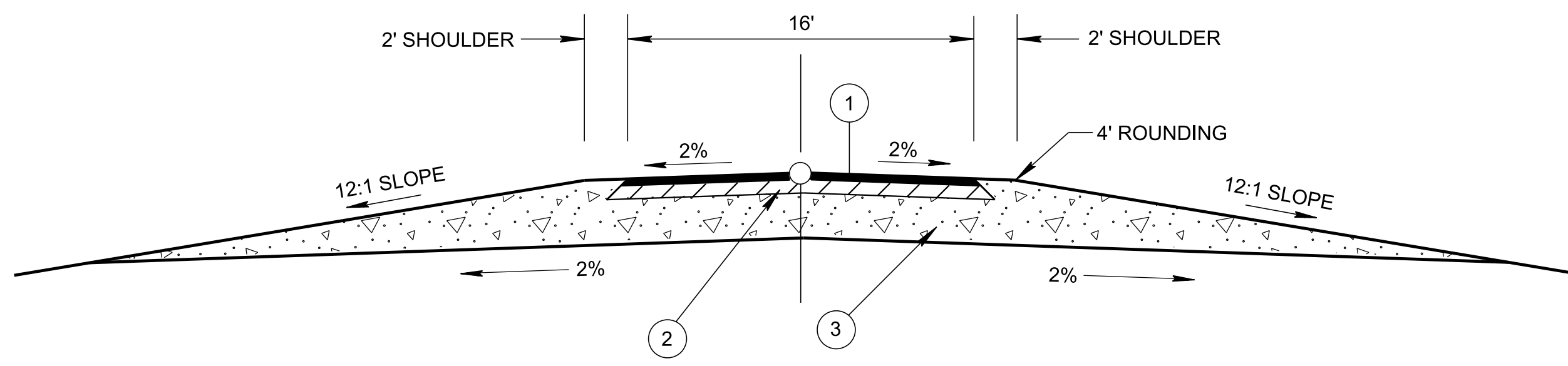
PLAN VIEW OF PROPOSED MAINTENANCE RAMP FOR MEDIAN WIDTH 64' OR LESS



CROSS - SECTION OF PROPOSED MAINTENANCE RAMP
(PIPE TO HAVE 14" MINIMUM COVER AT CENTERLINE)



PROFILE OF PROPOSED MAINTENANCE RAMP
(4% IS DESIRABLE SLOPE, 12% IS MAXIMUM SLOPE)



TYPICAL CROSS - SECTION OF PROPOSED MAINTENANCE RAMP

PROPOSED PAVEMENT SCHEDULE	
①	BITUMINOUS SURFACE 411-01.07 ACS MIX (PG64-22) GRADING E SHOULDER, 1.50" THICK (APPROX. 154.5 LBS./S.Y.) 403-01 BITUMINOUS MATERIAL FOR TACK COAT (TC) - 0.10 GAL./S.Y.
②	BITUMINOUS BLACK BASE 307-01.01 ASPHALT CONCRETE MIX (PG64-22) (BPMB-HM) GRADING A, 3.00" THICK (APPROX. 345 LBS./S.Y.) 402-01 BITUMINOUS MATERIAL FOR PRIME COAT (PC) - 0.35 GAL./S.Y.
③	MINERAL AGGREGATE BASE 303-01 MINERAL AGGREGATE, TYPE "A" BASE, GRADING "D", 10.00" THICK (APPROX. 2.03 TONS/C.Y.)

SIGNING NOTES	
(A)	FOR SPECIFICATIONS SEE "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION."
(B)	SEE STANDARD DRAWING NO. D-SEW-12D FOR DETAILS REGARDING CONCRETE ENDWALL TYPE "SD" WITH STEEL PIPE GRATE FOR 15" AND 18" PIPES ON 12:1 SLOPE.
(C)	SEE "TENNESSEE SUPPLEMENT TO 1979 STANDARD HIGHWAY SIGNS" FOR DETAILS AND SPECIFICATIONS FOR INTERSTATE CROSSOVER SIGN (TN-29).
(D)	FOR MEDIANS THAT ARE 64' OR NARROWER TWO SIGNS WILL BE REQUIRED FOR EACH MEDIAN CROSSOVER MOUNTED 7'-0" HIGH BACK TO BACK. WHERE NATURAL VEGETATION WOULD OBSCURE THE SIGN IN THE CENTER OF THE MEDIAN IT SHALL BE LOCATED TOWARD THE APPROACH ROADWAY, BUT NOT CLOSER THAN 30' CLEAR DISTANCE FROM THE TRAVELED WAY.
(E)	FOR MEDIANS WIDER THAN 64' ONE SIGN WILL BE REQUIRED FOR EACH SIDE OF THE MEDIAN CROSSOVER MOUNTED 7'-0" HIGH ON SEPARATE SIGN SUPPORTS. THEY WILL BE PLACED NOT CLOSER THAN 30' CLEAR DISTANCE FROM THE TRAVELED WAY.
(F)	PAYMENT FOR INTERSTATE CROSSOVER SIGN (TN-29) WILL BE MADE UNDER ITEM MO.:
	713-16.20, SIGNS (INTERSTATE CROSSOVER SIGN TN-29), EACH.

STATE OF TENNESSEE
STANDARD DRAWING
DEPARTMENT OF TRANSPORTATION

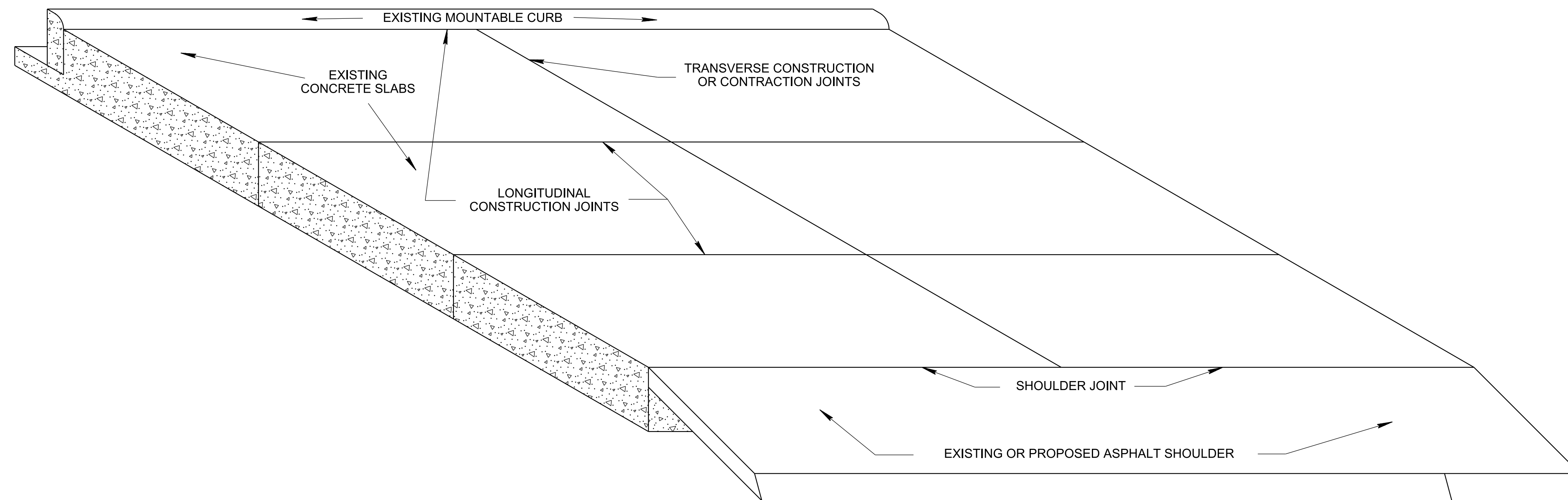
STANDARD DETAILS FOR PROPOSED PERMANENT MAINTENANCE RAMP

01-19-1997 RP-PMR-1

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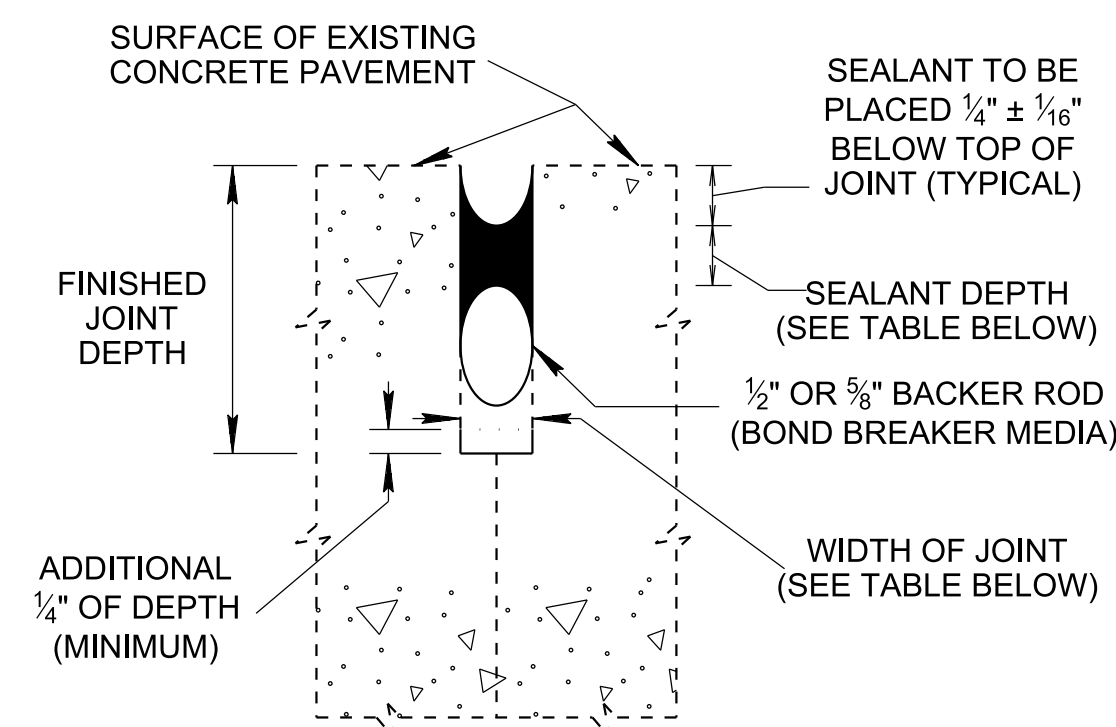


PLAN VIEW OF DETAILS FOR PAVEMENT JOINT REPAIR

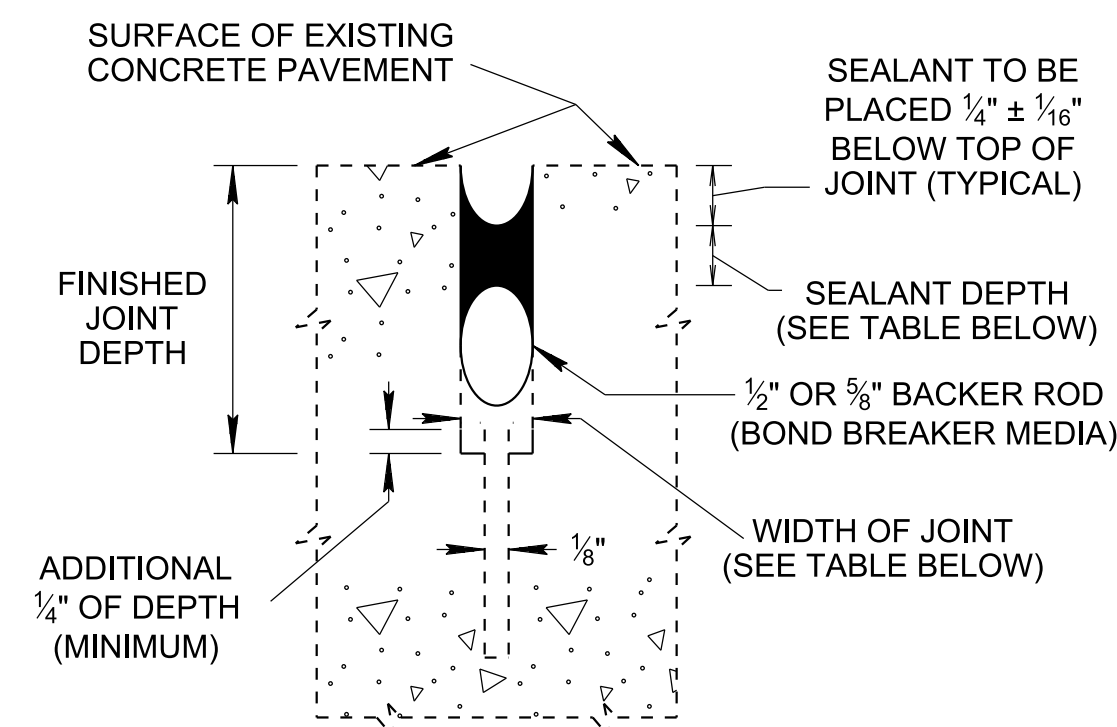
REV. 05-29-96: DREW NEW SHEET WHICH INCLUDES CONCRETE JOINT REPAIR DETAILS PREVIOUSLY SHOWN ON DRAWING NO. RP-J-24.

REV. 05-27-01: CHANGED ITEM NUMBERS IN GENERAL NOTES (P4), (P5), AND (T2).

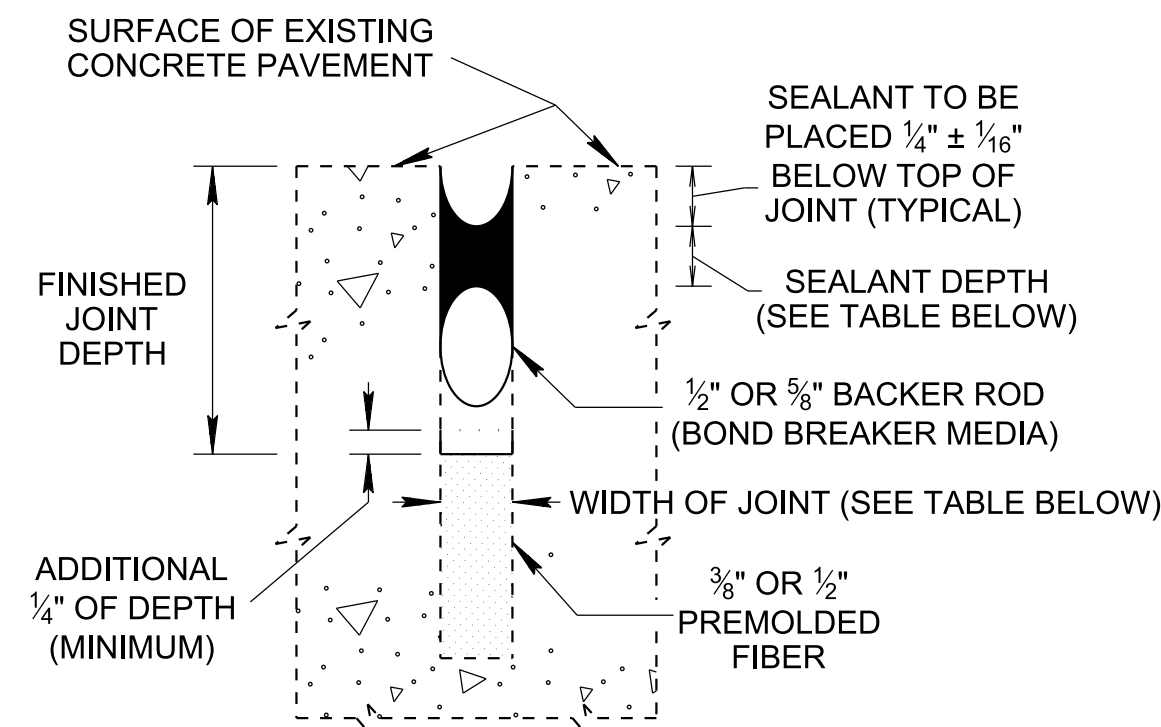
REV. 05-01-20: COMBINED GENERAL NOTES INTO ONE BLOCK AND RELETTERED NOTES. REDREW SHEET.



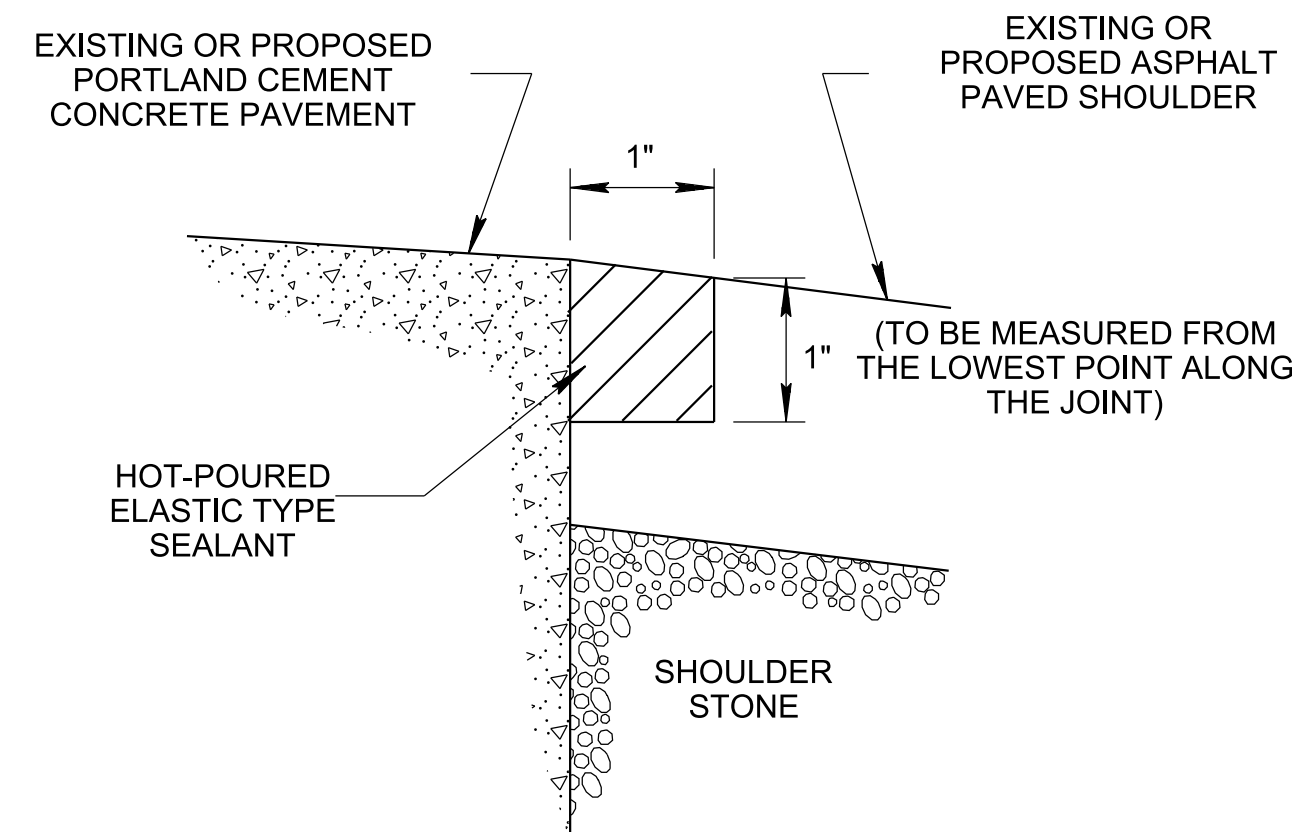
CONSTRUCTION JOINT



PLAIN SAWED GROOVE CONTRACTION JOINT



INSERT AND SAWED GROOVE CONTRACTION JOINT



SHOULDER JOINT DETAIL

LONGITUDINAL AND TRANSVERSE JOINT REPAIR DETAILS

LONGITUDINAL & TRANSVERSE JOINT REPAIR DIMENSION TABLE

HOT-POURED ELASTIC SEALANT					
JOINT SPACING (LINEAR FEET)	WIDTH OF JOINT (INCHES)	DIAMETER OF BACKER ROD (INCHES)	SEALANT DEPTH BELOW TOP OF JOINT (INCHES)	SEALANT DEPTH (INCHES)	FINISHED JOINT DEPTH (INCHES)
① 20 OR LESS	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{4} \pm \frac{1}{16}$	$\frac{1}{2} \pm \frac{1}{16}$	1 $\frac{1}{4}$
21 TO 30	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{1}{4} \pm \frac{1}{16}$	$\frac{1}{2} \pm \frac{1}{16}$	1 $\frac{1}{8}$
SILICONE SEALANT					
20 OR LESS	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{4} \pm \frac{1}{16}$	$\frac{1}{4} \pm \frac{1}{16}$	1 $\frac{1}{2}$
21 TO 30	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{1}{4} \pm \frac{1}{16}$	$\frac{1}{4} \pm \frac{1}{16}$	1 $\frac{5}{8}$

- ① FOR CONCRETE SLABS WITH RANDOM SPACING ALL JOINTS SHALL BE UNIFORM IN WIDTH. WIDTH OF PROPOSED JOINTS SHALL BE BASED ON AVERAGE JOINT SPACING.
- ② JOINT SHALL BE TO THE DEPTH SHOWN IN THIS TABLE. IT IS TO INCLUDE ADDITIONAL $\frac{1}{4}''$ OR MORE OF DEPTH BELOW BOTTOM OF EXISTING JOINT.

GENERAL NOTES

- CONCRETE PAVEMENT JOINT SEALANTS**
- (A) SEE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS FOR PAVEMENT JOINTS AND SEALANTS.
 - (B) PAVEMENT JOINTS SHALL BE SAWED TO THE DIMENSIONS SHOWN ON THIS SHEET. BOTH SIDES OF THE JOINT ARE TO BE THOROUGHLY CLEANED OF ALL OIL, GREASE, OLD SEALANT, AND ALL OTHER FOREIGN MATERIAL. THE FACES OF THE JOINT ARE TO BE SANDBLASTED. JUST PRIOR TO PLACEMENT OF SEALANT, ALL JOINTS ARE TO BE HIGH-PRESSURE AIR BLOWN TO REMOVE ANY WIND-BLOWN MATERIAL THAT MAY BE PRESENT.
 - (C) PAYMENT FOR RESEALING OF JOINTS SHALL BE FULL COMPENSATION FOR ALL CLEANING AND PREPARATION OF JOINTS PRIOR TO SEALANT APPLICATION.
 - (D) IF HOT-POURED ELASTIC TYPE CONCRETE JOINT SEALANT IS USED TO RESEAL PAVEMENT JOINTS, THEN PAYMENT SHALL BE MADE UNDER ITEM NO.:
502-08.01, RESEALING JOINTS (HOT POURED ELASTIC) L.F.
 - (E) IF SILICONE SEALANT IS USED TO RESEAL PAVEMENT JOINTS, THEN PAYMENT SHALL BE MADE UNDER ITEM NO.:
502-08.02, RESEALING JOINTS (SILICONE SEALANT) L.F.
- SHOULDER JOINT SEALANTS**
- (F) SEALANT SHALL BE USED AS SHOWN ON SHOULDER JOINT DETAIL BETWEEN PROPOSED PORTLAND CEMENT CONCRETE PAVEMENT (MAINLINE OR RAMPS) AND PROPOSED ASPHALT PAVED SHOULDERS; ALSO BETWEEN PROPOSED ASPHALT PAVEMENT (MAINLINE) AND PROPOSED PORTLAND CEMENT CONCRETE PAVEMENT (RAMPS). THIS SHALL APPLY TO ALL NEW CONSTRUCTION PROJECTS UNLESS OTHERWISE SPECIFIED IN THE PLANS.
 - (G) HOT-POURED ELASTIC TYPE CONCRETE JOINT SEALANT IS TO BE USED TO SEAL SHOULDER JOINTS AND TO BE PAID FOR UNDER ITEM NO.:
502-08.03, SEALING SHOULDER JOINTS L.F.

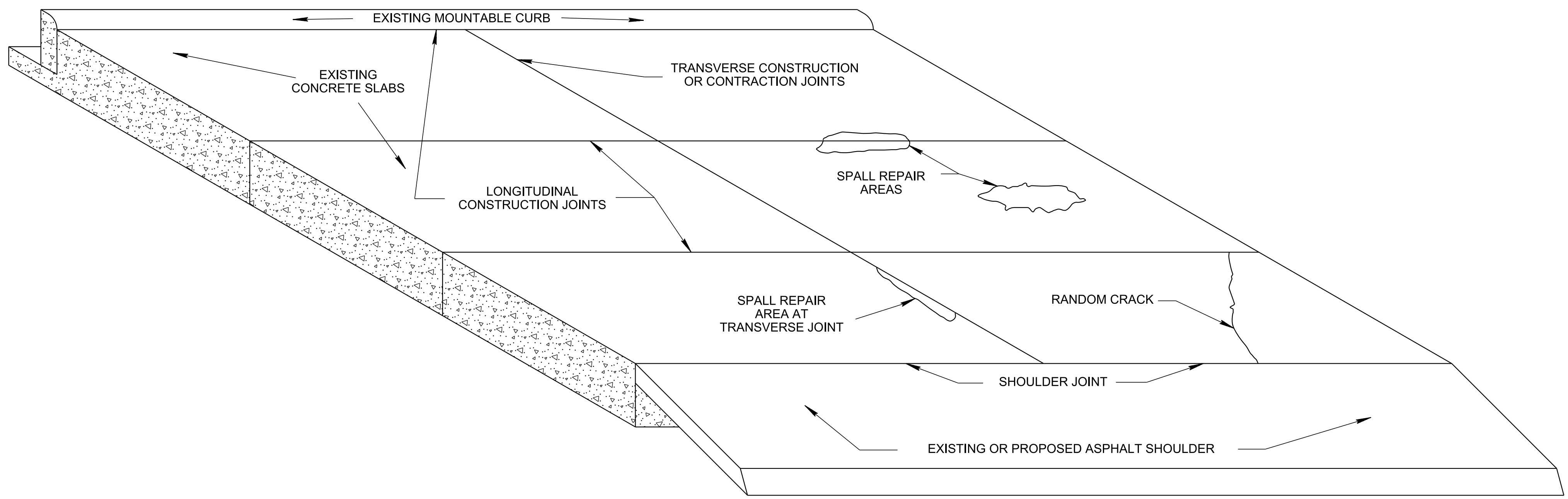
CROSS-REFERENCE DRAWINGS FOR THIS SHEET: RP-J-9, RP-J-23, AND RP-J-24.

APPROVED BY FHWA (ALL OTHERS APPROVED BY TDOT)

STATE OF TENNESSEE
STANDARD DRAWING
DEPARTMENT OF TRANSPORTATION

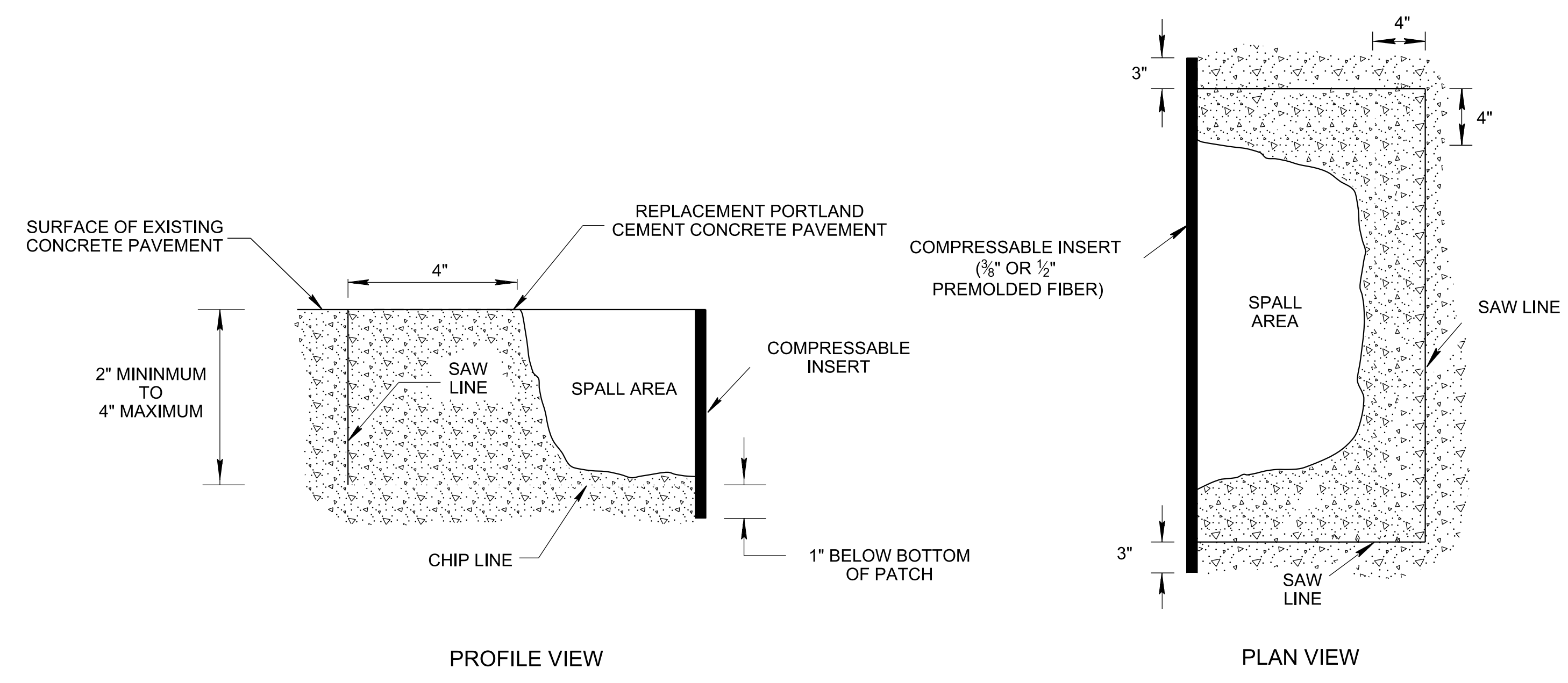
CONCRETE PAVEMENT JOINT REPAIR DETAILS

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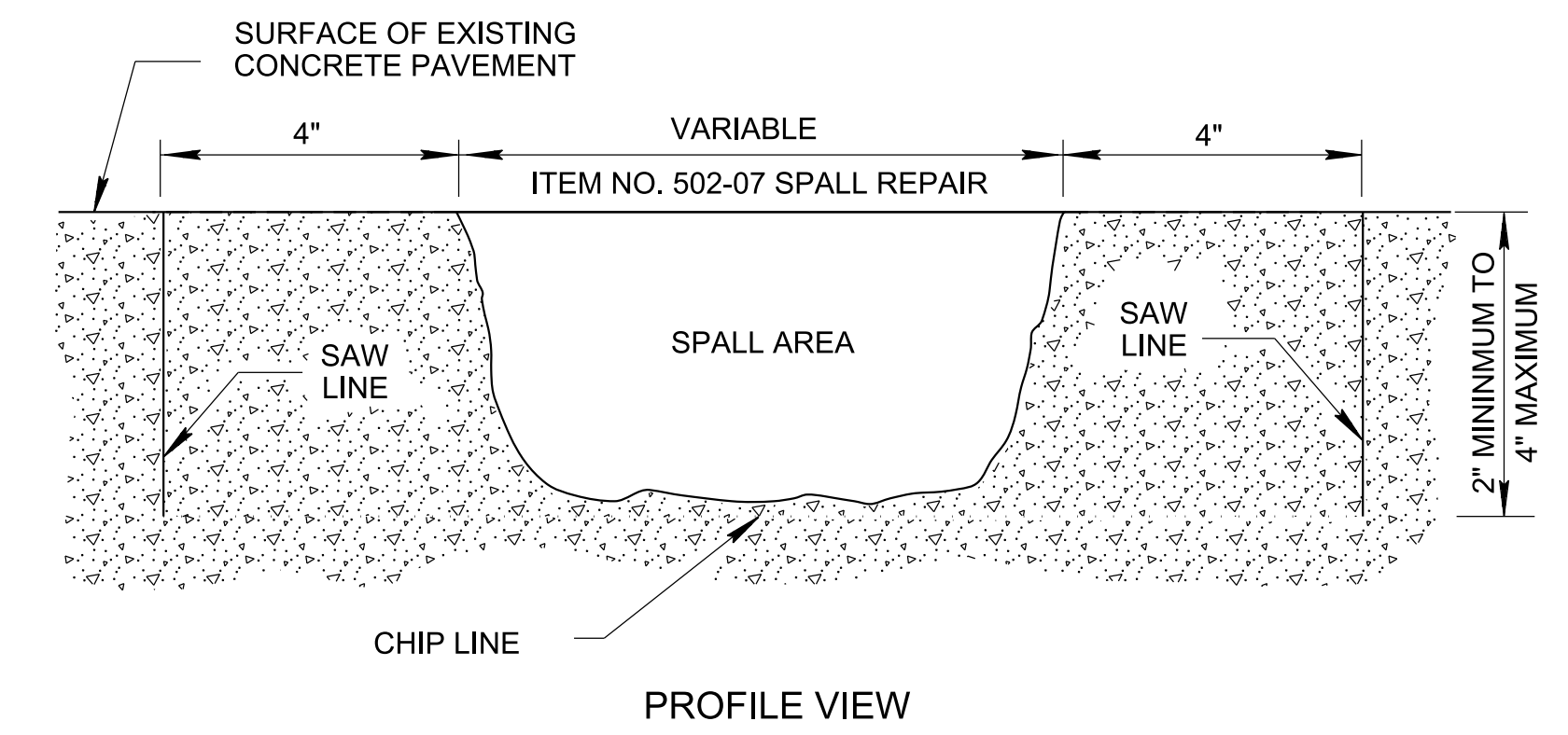


PLAN VIEW OF JOINTS, SPALL REPAIR, AND RANDOM CRACK REPAIR

- REV. 07-17-84: ADDED EXISTING AND PROPOSED LAYOUTS OF CONCRETE PAVEMENT REPLACEMENT. ADDED TIE BARS AND CHANGED NOTES.
- REV. 04-2-90: DREW NEW SHEET WHICH INCLUDED INFORMATION PREVIOUSLY ON DRAWING NO. RP-J-23 REGARDING SPALL REPAIR, RANDOM CRACK REPAIR, AND JOINT REPAIR DETAILS. ADDED NEW INFORMATION REGARDING JOINT REPAIR TO CONCUR WITH REVISED DRAWING NO. RP-J-9.
- REV. 12-18-94: MODIFIED SPALL REPAIR DETAIL AND GENERAL NOTES.
- REV. 07-29-98: TRANSFERRED DETAILS REGARDING CONCRETE JOINT REPAIR TO DRAWING NO. RP-J-25. ADDED DETAIL FOR PARTIAL DEPTH SPALL REPAIR AT TRANSVERSE JOINT.
- REV. 05-27-01: CHANGED PAY ITEM IN GENERAL NOTES R2 AND R3.
- REV. 05-01-20: COMBINED GENERAL NOTES INTO ONE BLOCK AND RELETTERED NOTES. REDREW SHEET.



DETAIL FOR PARTIAL DEPTH SPALL REPAIR AT TRANSVERSE JOINT



DETAIL FOR PARTIAL DEPTH SPALL REPAIR

GENERAL NOTES	
RANDOM CRACK REPAIR	
(A)	RANDOM CRACKS SHALL BE ROUTED OR CHIPPED TO A MINIMUM DIMENSION OF 1/4" WIDE AND 3/8" DEEP AND THEN SEALED.
(B)	IF HOT-POURED ELASTIC TYPE CONCRETE JOINT SEALANT IS USED TO SEAL RANDOM CRACKS, THEN ITEM NO. 502-08.04, SEALING RANDOM CRACKS (HOT POURED ELASTIC) PER LINEAR FOOT IS TO BE USED.
(C)	IF SILICONE SEALANT IS USED TO SEAL RANDOM CRACKS, THEN ITEM NO. 502-08.07, SEALING RANDOM CRACKS (SILICONE SEALANT) PER LINEAR FOOT IS TO BE USED.
(D)	ALL RANDOM CRACKS 1/8" OR GREATER ARE TO BE REPAIRED.
SPALL REPAIR	
(E)	PARTIAL DEPTH SPALL REPAIR SHALL BE DONE ON LOW SPEED FACILITIES ONLY. USE FULL DEPTH PAVEMENT REPLACEMENT FOR HIGH SPEED FACILITIES, SUCH AS FREEWAYS AND EXPRESSWAYS.
(F)	ALL PARTIAL DEPTH SPALL REPAIR AREAS SHALL BE SAWED AND CHIPPED TO THE APPROXIMATE LINES SHOWN IN THE ABOVE DETAIL. ALL COSTS OF THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR ITEM NO. 502-07, SPALL REPAIR, PER SQUARE YARD.
(G)	BEFORE BEGINNING REPAIR PROCESS, EACH SPALL AREA SHALL BE CLEAN, DRY, AND FREE OF ANY FOREIGN MATERIAL.
(H)	IF DEPTH OF SPALL EXCEEDS 4" THEN IT SHALL BE MEASURED BY THE SQUARE YARD AND PAID FOR UNDER ITEM NO. 501-01, PORTLAND CEMENT CONCRETE PAVEMENT (REPLACEMENT). SEE PARTIAL SLAB REPAIR DETAILS ON STANDARD DRAWING NO. RP-J-23.

CROSS-REFERENCE DRAWINGS FOR THIS SHEET: RP-J-9, RP-J-23, AND RP-J-25.

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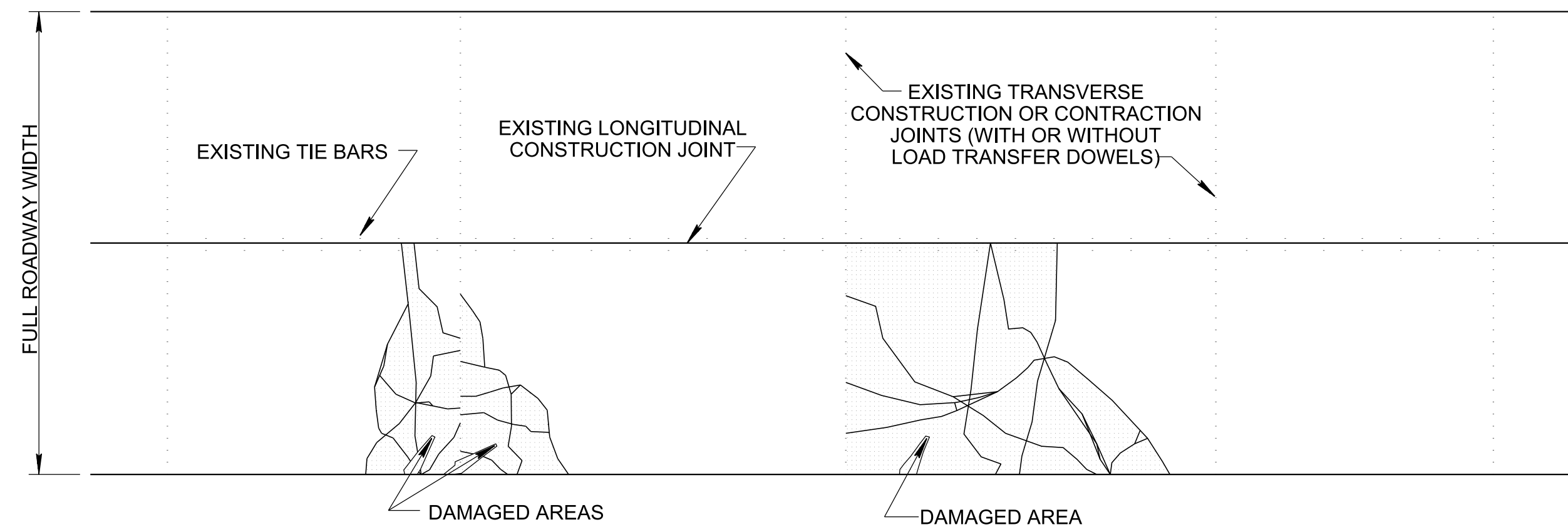
STATE OF TENNESSEE
STANDARD DRAWING
DEPARTMENT OF TRANSPORTATION

CONCRETE PAVEMENT
SPALL AND
RANDOM CRACK
REPAIR DETAILS

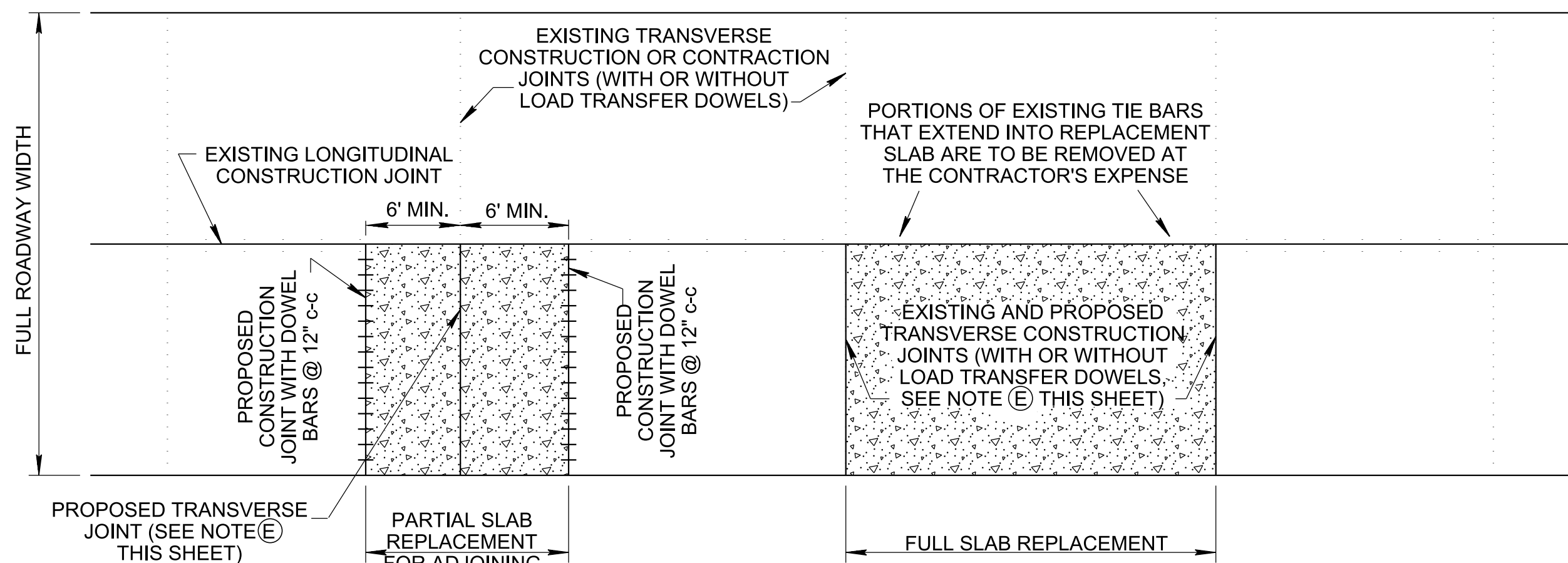
RP-J-24

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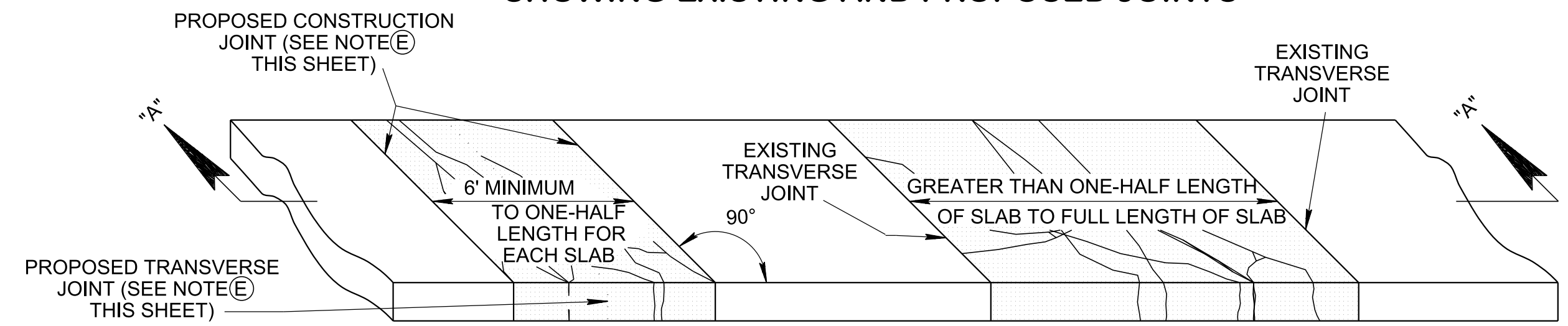
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PLAN VIEW OF EXISTING LAYOUT OF CONCRETE PAVEMENT REPLACEMENT SHOWING EXISTING JOINTS

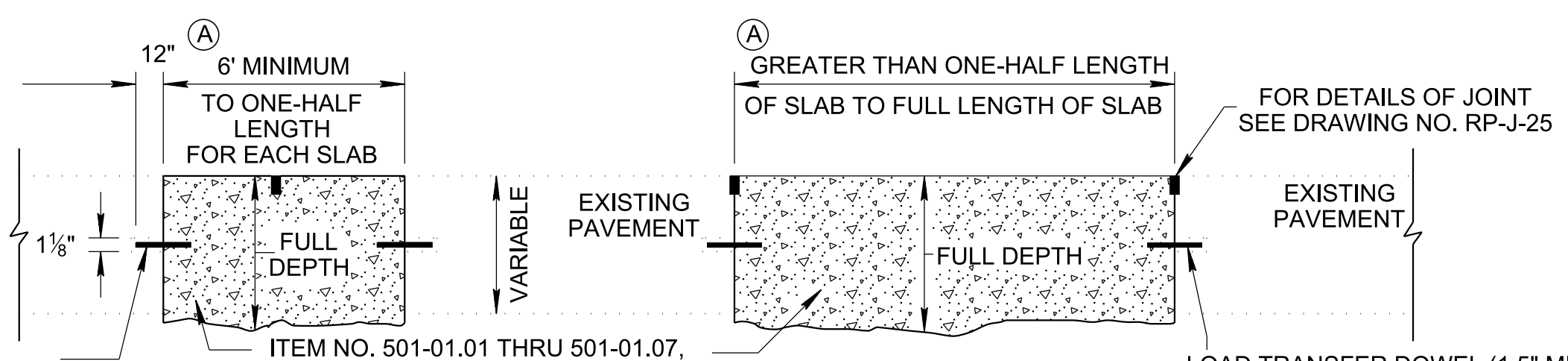


PLAN VIEW OF PROPOSED LAYOUT OF CONCRETE PAVEMENT REPLACEMENT SHOWING EXISTING AND PROPOSED JOINTS



PLAN VIEW OF CONCRETE PAVEMENT REPLACEMENT

TRANSVERSE DOWEL BARS SHALL BE NO.8 ROUND DEFORMED STEEL, 24" LONG SET 12" INTO EXISTING CONCRETE SLAB AT 12" CENTER-TO-CENTER SPACING BETWEEN DOWEL BARS. DOWEL BARS SHALL CONFORM TO ASTM A615-GRADE 40 SPECIFICATIONS.



PROFILE VIEW ALONG SECTION "A-A" OF CONCRETE PAVEMENT REPLACEMENT

NOTE

IF REPLACEMENT IS MID-SLAB, NO TRANSVERSE JOINT IS REQUIRED. IN THIS SITUATION A CONSTRUCTION JOINT WITH TIE BARS WILL BE USED.

GENERAL NOTES

- (A) SEE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS FOR CONCRETE PAVEMENT REPAIR.
- (B) IF THE LENGTH OF CONCRETE SLAB TO BE REPLACED IS GREATER THAN HALF THE ENTIRE LENGTH OF THE SLAB, THE ENTIRE SLAB SHALL BE REPLACED. IF THE LENGTH OF CONCRETE SLAB TO BE REPLACED IS LESS THAN HALF THE ENTIRE LENGTH OF THE SLAB (6' MAX.), THEN ONLY A PORTION OF THE SLAB WILL BE REPLACED.
- (C) THE EXISTING CONCRETE PAVEMENT SHALL BE SAWED FULL DEPTH AROUND THE AREA TO BE REMOVED. WITHIN THE LANE SAWING SHALL BE PERPENDICULAR TO THE CENTERLINE AND A MINIMUM OF 6" OUTSIDE THE DAMAGED AREAS.
- (D) NO ADDITIONAL BASE MATERIAL SHALL BE ADDED AND ALL LOOSE BASE MATERIAL NOT RECOMPACTABLE SHALL BE REMOVED PRIOR TO PLACEMENT OF THE NEW CONCRETE SLAB. THE CONCRETE SLAB SHALL BE PLACED TO THE FULL DEPTH OF THE MATERIAL REMOVED. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR ADDITIONAL CONCRETE REQUIRED TO BRING PROPOSED CONCRETE SLAB UP TO PROPOSED GRADE.
- (E) WHEN EXISTING TRANSVERSE JOINTS ARE REMOVED AND NOT TO FULL ROADWAY WIDTH, THEY SHALL BE RECONSTRUCTED IN KIND (WITH OR WITHOUT LOAD TRANSFER DOWELS) AND IN THE SAME LOCATION. WHEN A JOINT IS REPLACED FOR THE FULL ROADWAY WIDTH, LOAD TRANSFER DOWELS SHALL BE USED IN THE JOINT. SEE DRAWING NO. RP-J-9 FOR DOWEL PLACEMENT DETAILS. SPACING IS AT 12" CENTER-TO-CENTER BETWEEN DOWELS.
- (F) FOR DETAILS REGARDING INSTALLATION OF CONTRACTION AND CONSTRUCTION JOINTS, SEE DRAWING NO. RP-J-9.
- (G) LONGITUDINAL CONSTRUCTION JOINT TIE BARS AS SHOWN ON DRAWING NO. RP-J-15 SHALL BE OMITTED BETWEEN THE NEW REPLACEMENT SLAB AND THE EXISTING SLAB. THE CONTRACTOR IS TO REMOVE WHATEVER PORTION OF THE EXISTING TIE BARS THAT EXTENDS FROM EXISTING SLAB ALONG LONGITUDINAL JOINT INTO NEW SLAB. ALL COST WILL BE INCLUDED IN THE PRICE BID FOR ITEM NOS.:

501-01.01,	PORTLAND CEMENT CONCRETE PAVEMENT (PLAIN) 8",	S.Y.,
501-01.02,	PORTLAND CEMENT CONCRETE PAVEMENT (PLAIN) 9",	S.Y.,
501-01.03,	PORTLAND CEMENT CONCRETE PAVEMENT (PLAIN) 10",	S.Y.,
501-01.04,	PORTLAND CEMENT CONCRETE PAVEMENT (PLAIN) 11",	S.Y.,
501-01.05,	PORTLAND CEMENT CONCRETE PAVEMENT (PLAIN) 12",	S.Y.,
501-01.06,	PORTLAND CEMENT CONCRETE PAVEMENT (PLAIN) 13",	S.Y.,
501-01.07,	PORTLAND CEMENT CONCRETE PAVEMENT (PLAIN) 14",	S.Y.,
501-03.20,	FULL DEPTH PCC PAVEMENT REPAIR,	C.Y.,

- (H) REMOVAL OF THE DAMAGED CONCRETE PAVEMENT SHALL BE BY LIFTING. ANY GOOD CONCRETE PAVEMENT WHICH IS DAMAGED DURING REMOVAL OF DAMAGED AREAS SHALL BE REMOVED AND REPLACED BY THE CONTRACTOR, AT HIS EXPENSE.
- (I) IF THE ROADWAY CONTRACT INCLUDES EITHER GRINDING OR UNDERSEALING, THEN THE SLAB REPAIR SHALL BE PERFORMED FIRST.
- (J) THE COSTS OF REMOVAL AND DISPOSAL OF EXISTING CONCRETE PAVEMENT, PLACEMENT OF NEW CONCRETE PAVEMENT, AND SAWING NEW JOINTS SHALL BE INCLUDED IN THE PRICE BID FOR EACH OF THE 501-01.XX SERIES ITEM NUMBERS LISTED ON THIS STANDARD DRAWING.
- (K) ONCE THE CONTRACTOR BEGINS REMOVING AN EXISTING FULL OR PARTIAL DEPTH CONCRETE SLAB, THEY SHALL CONTINUE THE WORK UNTIL IT IS COMPLETE INCLUDING JOINT SEALING. JOINTS SHALL NOT BE LEFT UNSEALED DURING WINTER MONTHS.
- (L) THE COST OF ALL RELATED WORK (DRILLING HOLES, GROUTING, ETC.) SHALL BE INCLUDED IN THE PRICE BID FOR THE FOLLOWING ITEMS AS APPROPRIATE ITEM NO.:

502-04.01,	SAWING CONCRETE PAVEMENT (FULL DEPTH),	L.F.,
502-04.02,	LOAD TRANSFER DOWELS,	EACH,
502-04.03,	TRANSVERSE TIE - BARS,	EACH,

- (M) WHEN SPECIFIED BY AN ENGINEER, FAST TRACK CONCRETE OR EQUIVALENT MAY BE USED TO REPAIR CONCRETE PAVEMENT, ITEM NOS.:

501-01.10,	PORTLAND CEMENT CONCRETE PAVEMENT (PLAIN) 7" FAST TRACK	S. Y.,
501-01.11,	PORTLAND CEMENT CONCRETE PAVEMENT (PLAIN) 8" FAST TRACK	S. Y.,
501-01.12,	PORTLAND CEMENT CONCRETE PAVEMENT (PLAIN) 9" FAST TRACK	S. Y.,
501-01.13,	PORTLAND CEMENT CONCRETE PAVEMENT (PLAIN) 10" FAST TRACK	S. Y.,
501-01.14,	PORTLAND CEMENT CONCRETE PAVEMENT (PLAIN) 11" FAST TRACK	S. Y.,
501-01.15,	PORTLAND CEMENT CONCRETE PAVEMENT (PLAIN) 12" FAST TRACK	S. Y.,
501-01.16,	PORTLAND CEMENT CONCRETE PAVEMENT (PLAIN) 13" FAST TRACK	S. Y.,

- (N) FOR FULL SLAB REPLACEMENTS ON SLABS WITH JOINT SPACING LONGER THAN 15', THE SLAB SHALL BE REPLACED WITH TWO SLABS OF EQUAL LENGTH.

- REV. 7-17-84: ADDED EXISTING AND PROPOSED LAYOUTS OF CONCRETE PAVEMENT REPLACEMENT. ADDED TIE BARS AND CHANGED NOTES.
- REV. 4-2-90: REDREW AND RENAMED SHEET. PLACED SPALL REPAIR, RANDOM CRACK REPAIR, AND JOINT REPAIR, AND JOINT REPAIRS DETAILS ON NEW SHEET NO. RP-J-24.
- REV. 12-18-94: ELIMINATED USE OF TIE BARS BETWEEN REPLACEMENT AND EXISTING SLAB.
- REV. 5-27-96: CHANGED MINIMUM SIZE OF LOAD TRANSFER DOWEL TO 1.5".
- REV. 7-29-96: CHANGED GENERAL NOTES (3) AND (8).
- REV. 5-27-01: CHANGED ITEM NO. 501-04.03.
- REV. 1-19-02: IN GENERAL NOTE 9 REMOVED REFERENCE TO UNDERSEALING OF SLAB.
- REV. 10-26-04: CHANGED PAY ITEMS IN GENERAL NOTE (2).
- REV. 1-24-12: ADDED GENERAL NOTE (13).
- REV. 7-25-12: ADDED GENERAL NOTE (14).
- REV. 05-01-20: CONVERTED GENERAL NOTE NOS. TO LETTERS AND REVISED NOTE (C) AND (M). REDREW SHEET.

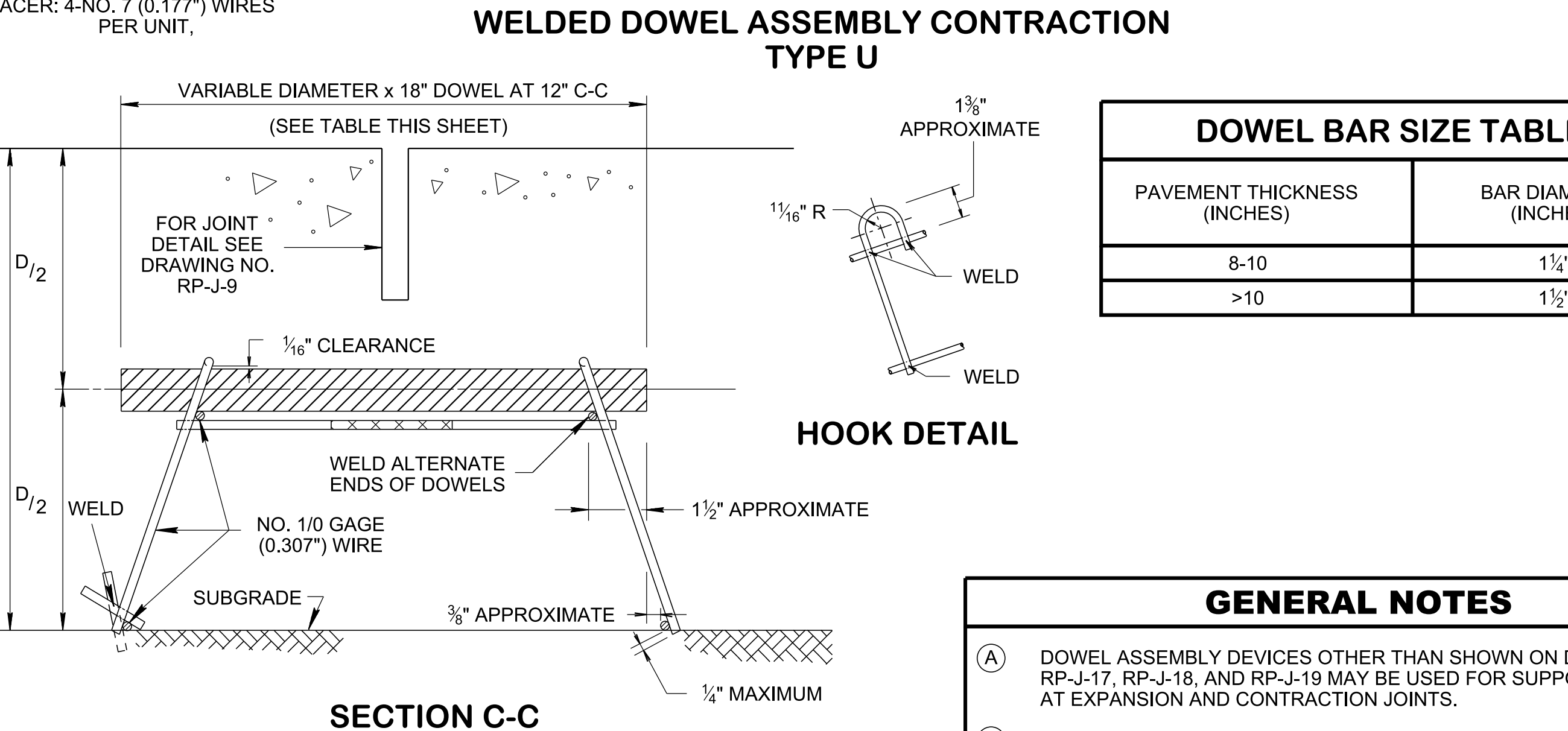
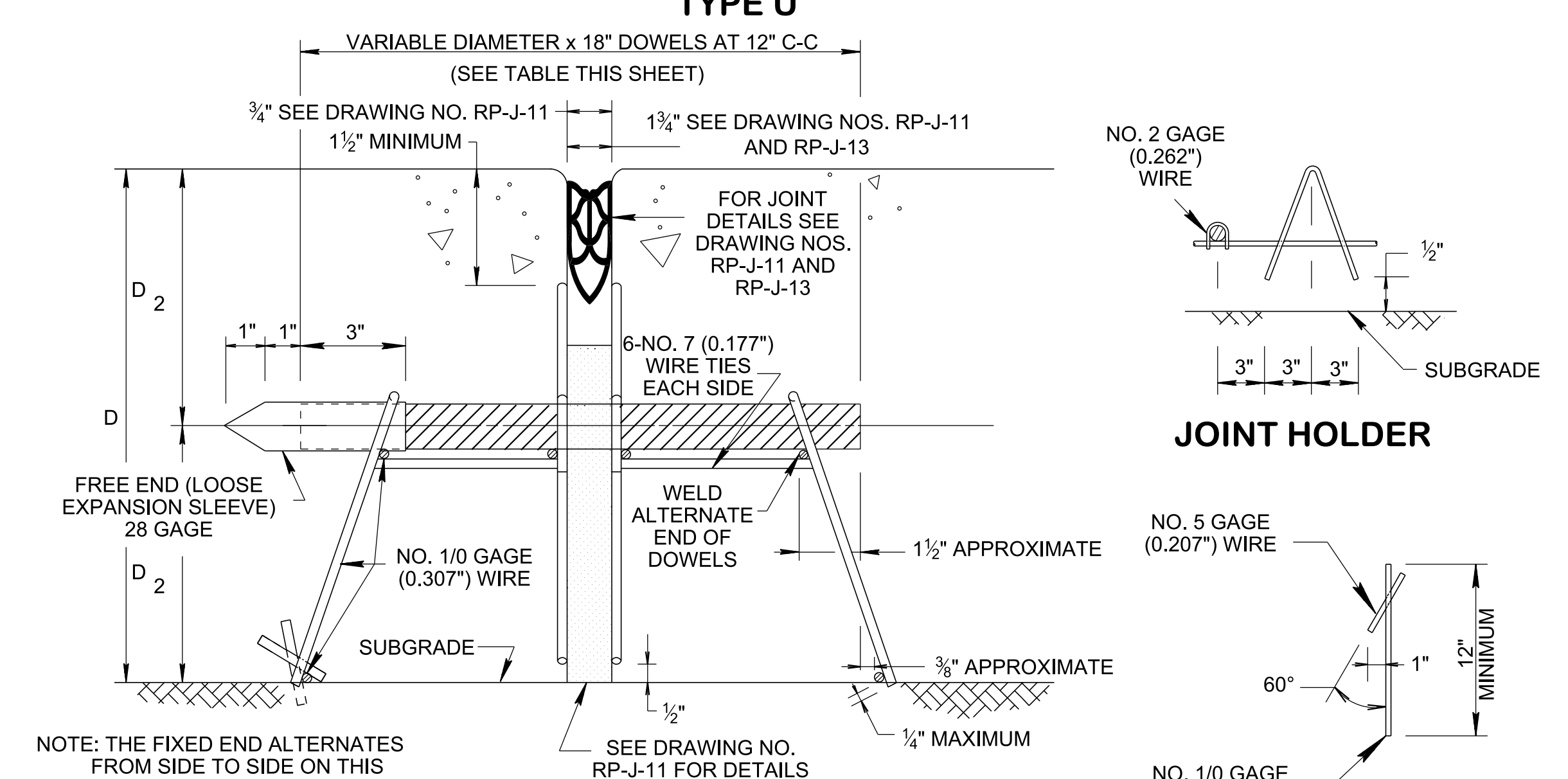
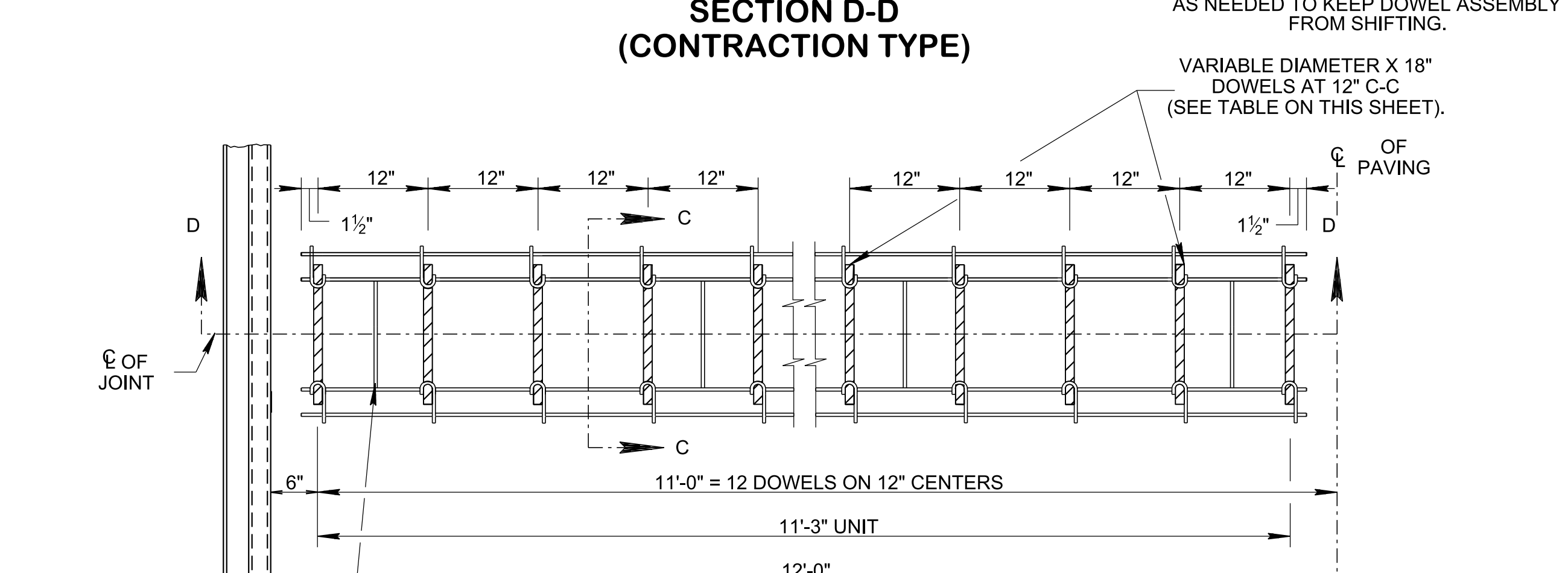
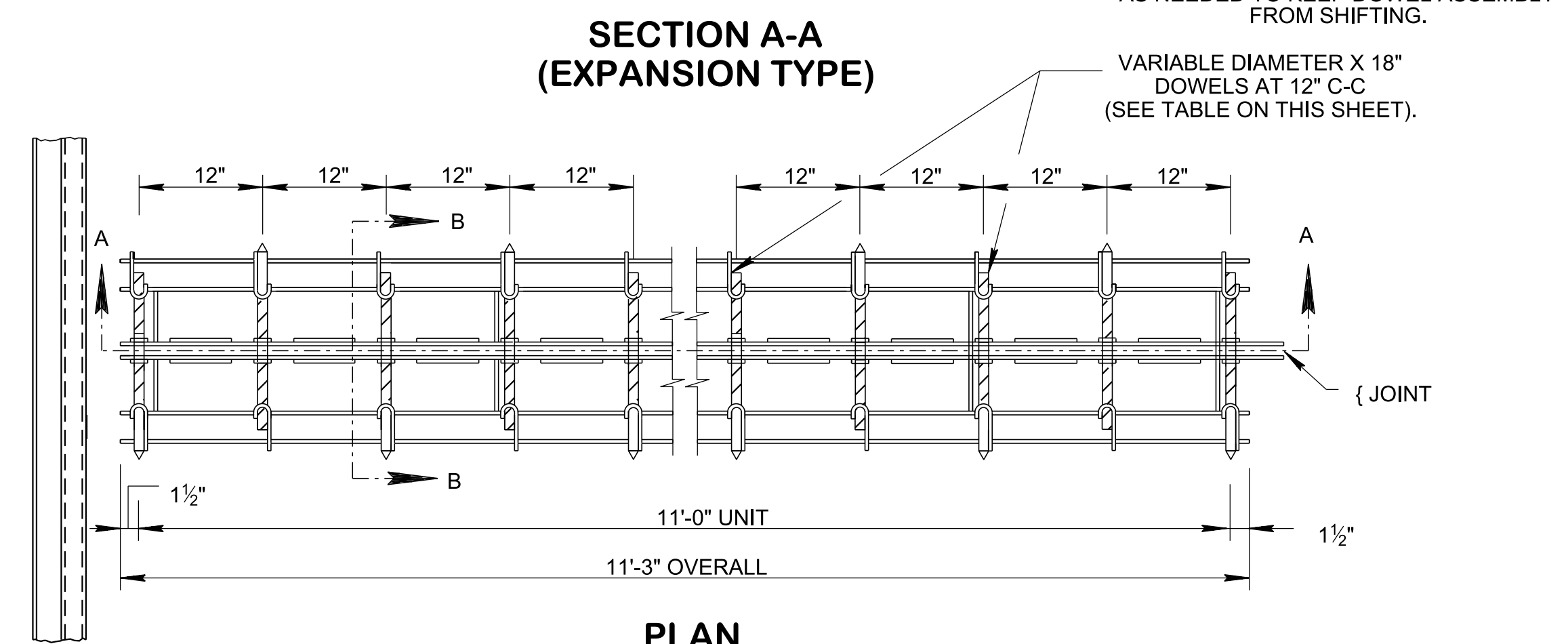
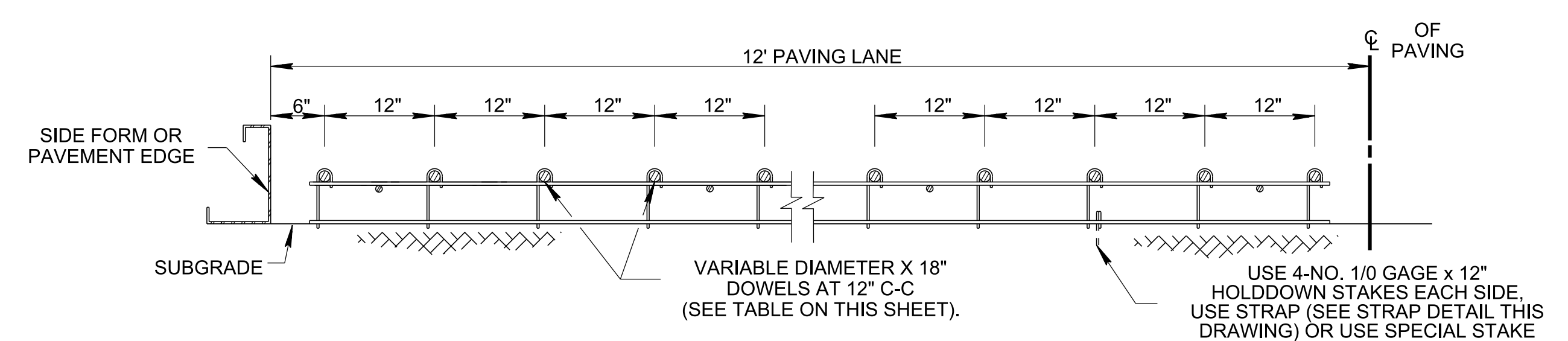
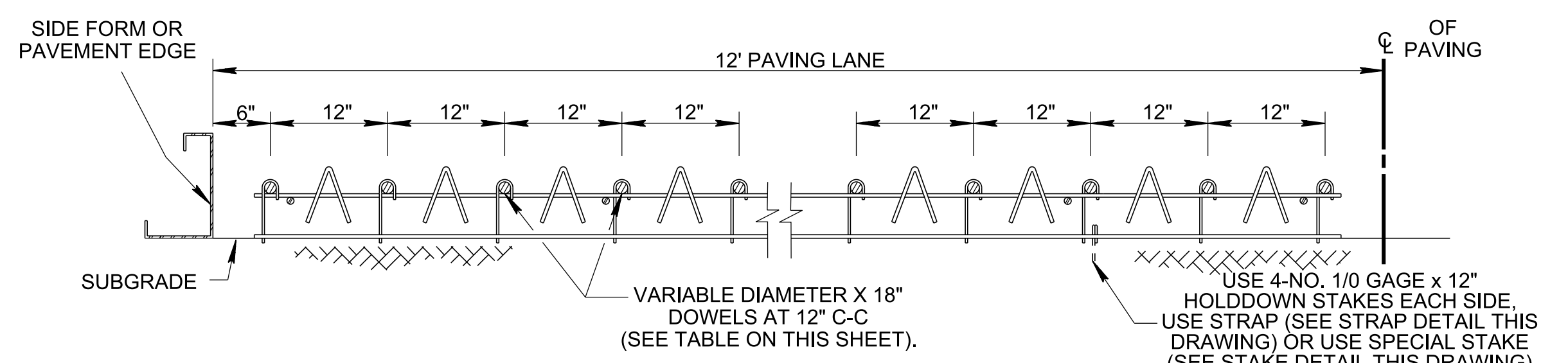
CROSS-REFERENCE DRAWINGS FOR THIS SHEET: RP-J-9, RP-J-24, AND RP-J-25.

APPROVED BY FHWA (ALL OTHERS APPROVED BY TDOT)

STATE OF TENNESSEE
STANDARD DRAWING
DEPARTMENT OF TRANSPORTATION

CONCRETE PAVEMENT REPAIR DETAILS

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DOWEL BAR SIZE TABLE	
PAVEMENT THICKNESS (INCHES)	BAR DIAMETER (INCHES)
8-10	1 1/4"
>10	1 1/2"

- GENERAL NOTES**
- (A) DOWEL ASSEMBLY DEVICES OTHER THAN SHOWN ON DRAWING NOS. RP-J-17, RP-J-18, AND RP-J-19 MAY BE USED FOR SUPPORTING DOWELS AT EXPANSION AND CONTRACTION JOINTS.
 - (B) DOWEL ASSEMBLY DEVICES SHALL BE SO CONSTRUCTED AS TO HOLD THE DOWEL BARS FIRMLY IN POSITION PARALLEL TO THE SURFACE AND CENTERLINE OF THE PAVEMENT SLAB DURING THE PLACING OF CONCRETE.
 - (C) DOWEL ASSEMBLY DEVICES SHALL BE OF SUCH DESIGN AS TO PERMIT UNRESTRICTED MOVEMENT OF THE PAVEMENT SLAB.
 - (D) DOWEL ASSEMBLY DEVICES TO BE USED MUST BE APPROVED BY THE ENGINEER PRIOR TO THEIR USE.
 - (E) SEE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, SECTION 501-PORTLAND CEMENT CONCRETE PAVEMENT FOR DOWEL ASSEMBLY DEVICES. ALSO SEE APPLICABLE SPECIAL PROVISIONS.
 - (F) DOWEL ASSEMBLY DEVICES ARE TO BE FURNISHED IN SECTIONS WITH SUITABLE LENGTHS FOR VARIOUS WIDTHS OF PAVEMENT.
 - (G) ONE OF THE ALTERNATE DOWEL ASSEMBLY DEVICES WILL BE REQUIRED AT EACH EXPANSION JOINT WITH LOAD TRANSFERS, UNLESS A BULKHEAD IS USED. SEE DRAWING NOS. RP-J-17, RP-J-18, AND RP-J-19 FOR ALTERNATE DOWEL BAR AND DOWEL ASSEMBLY DETAILS AND SPECIFICATIONS.
 - (H) SEE DRAWING NOS. RP-J-9 AND RP-J-11 FOR ADDITIONAL INFORMATION NOT SHOWN ON THIS SHEET.

- REV. 4-18-90: CHANGE DOWEL BAR LENGTH FROM 15" TO 18". ELIMINATED DOWEL BAR ASSEMBLY DETAILS FOR SKEWED INSTALLATIONS.
- REV. 3-20-91: REDREW AND REORGANIZED SHEET. ADDED DOWEL BAR SIZE TABLE. CHANGED REFERENCE FOR DOWEL BAR SIZE FROM 11#4 TO VARIABLE DIAMETER.
- REV. 7-29-93: REMOVED REFERENCE TO THE ORIGINAL MANUFACTURER'S NAME AND CROSS-REFERENCE TO DRAWING NO. RP-J-19. ADDED CUTTING OF TIE WIRE NOTE ON CONTRACTION PLAN VIEW AND SECTION C-C VIEW.
- REV. 12-18-94: CHANGED DRAWING NO. FROM RP-J-21 TO RP-J-19. CHANGED GENERAL NOTE (A).
- REV. 10-26-00: CHANGED WIDTH AND DEPTH OF SAWED GROOVED CONTRACTION JOINT.
- REV. 10-21-05: DELETED NOTES ABOUT CUTTING OF TIE WIRE AFTER STAKING.
- REV. 2-2-12: CHANGED DOWEL BAR TABLE.
- REV. 05-01-20: REDREW SHEET.

CROSS-REFERENCE DRAWINGS FOR THIS SHEET: RP-J-9, RP-J-11, RP-J-13, RP-J-17, AND RP-J-18.

APPROVED BY FHWA (ALL OTHERS APPROVED BY TDOT)

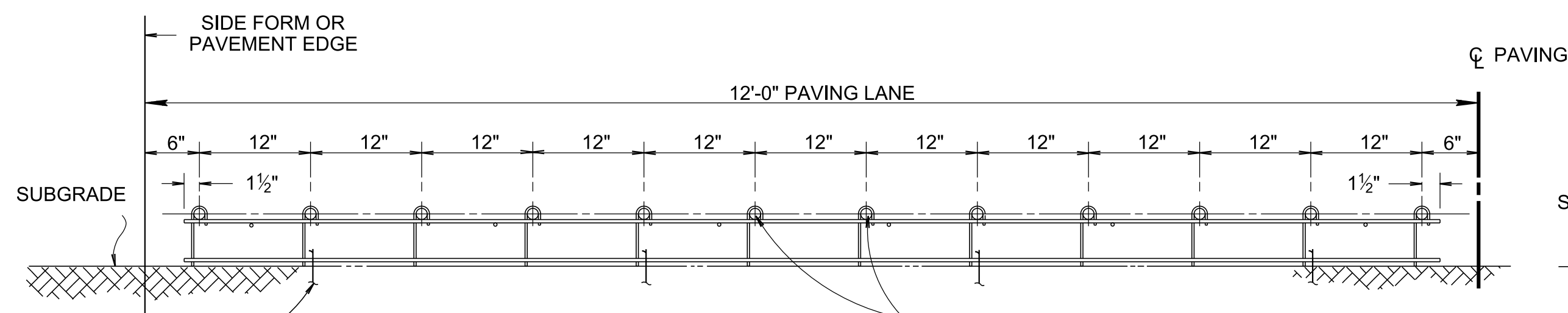
STATE OF TENNESSEE
STANDARD DRAWING
DEPARTMENT OF TRANSPORTATION

DOWEL ASSEMBLY DEVICES

RP-J-19

NOT TO SCALE

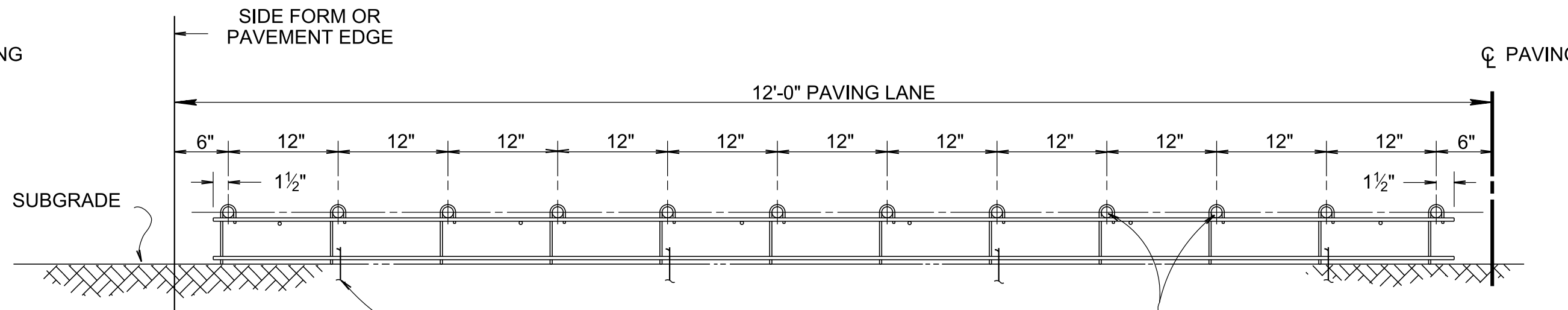
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USE 4-NO. 1/0 GAGE x 12" HOLDDOWN STAKES EACH SIDE. USE STRAP (SEE STRAP DETAIL THIS DRAWING) OR USE SPECIAL STAKE (SEE STAKE DETAIL ON DRAWING NO. RP-J-19) AS NEEDED TO KEEP DOWEL ASSEMBLY FROM SHIFTING.

**SECTION A-A
(EXPANSION TYPE)**

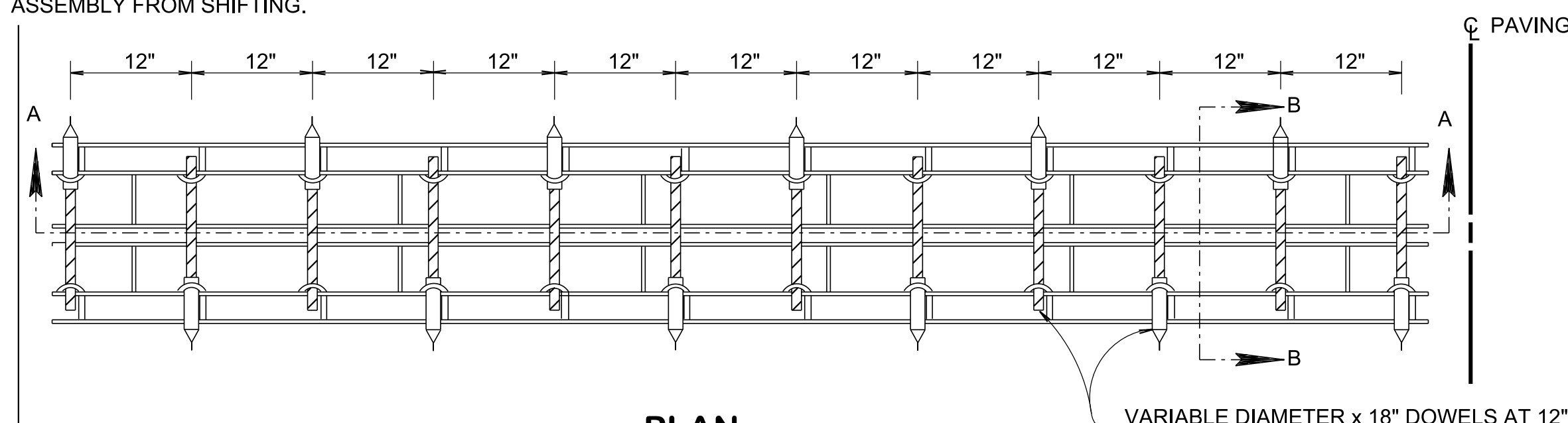
VARIABLE DIAMETER x 18" DOWELS AT 12" C-C (SEE TABLE ON THIS SHEET).



USE 4-NO. 1/0 GAGE x 12" HOLDDOWN STAKES EACH SIDE. USE STRAP (SEE STRAP DETAIL THIS DRAWING) OR USE SPECIAL STAKE (SEE STAKE DETAIL ON DRAWING NO. RP-J-19) AS NEEDED TO KEEP DOWEL ASSEMBLY FROM SHIFTING.

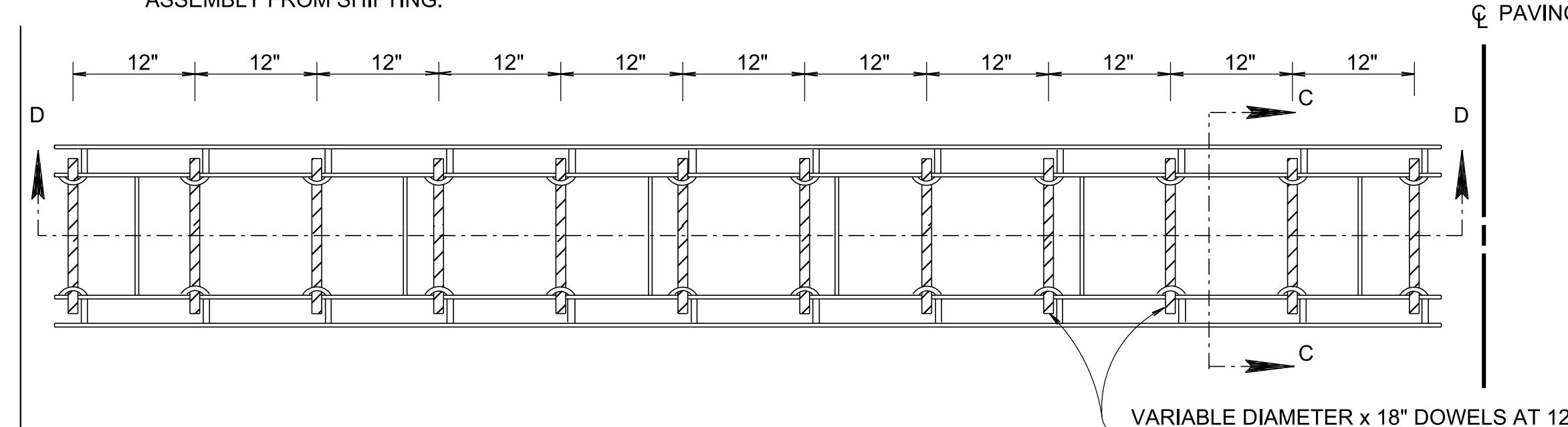
**SECTION D-D
(CONTRACTION TYPE)**

VARIABLE DIAMETER x 18" DOWELS AT 12" C-C (SEE TABLE ON THIS SHEET).



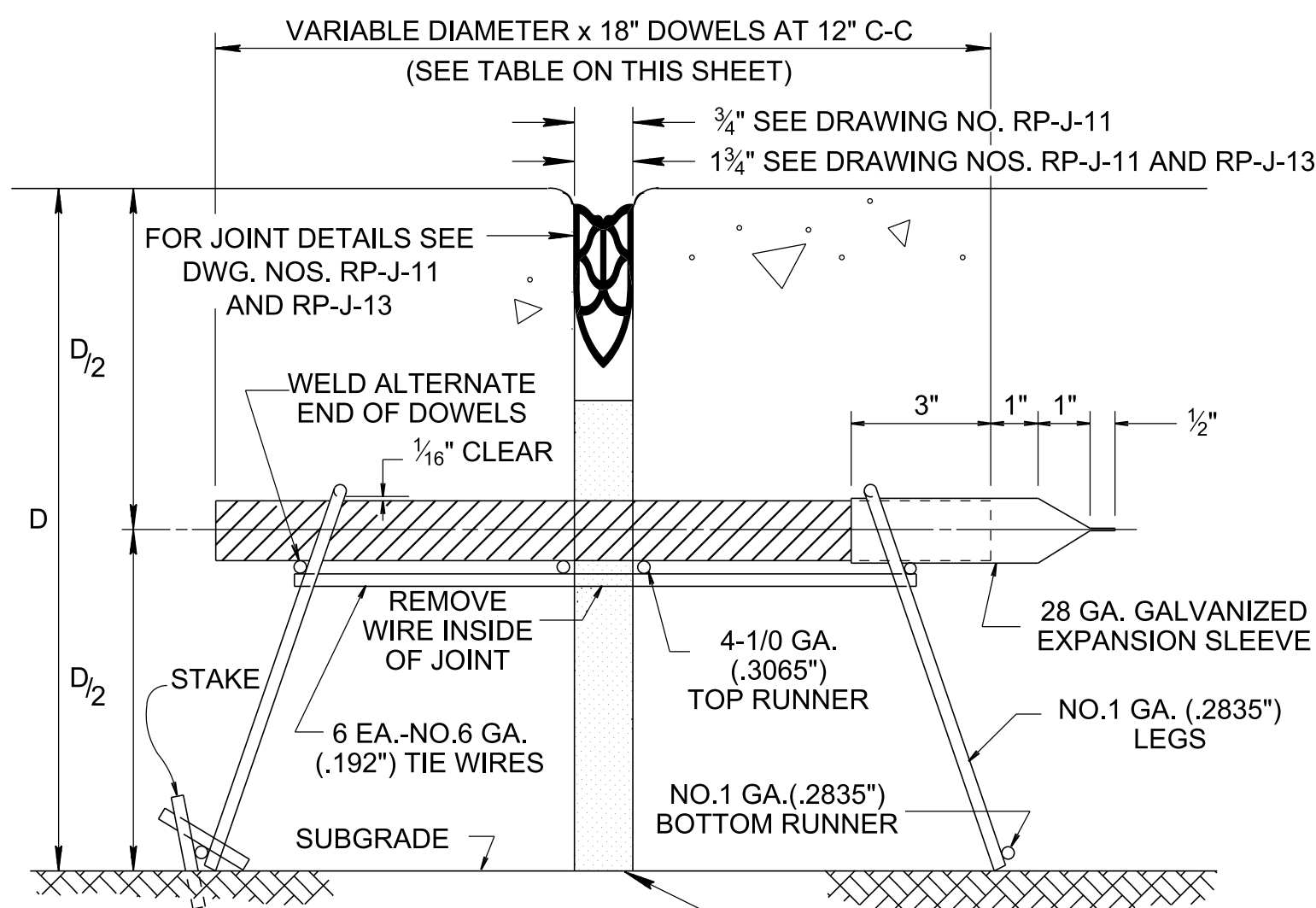
PLAN

VARIABLE DIAMETER x 18" DOWELS AT 12" C-C (SEE TABLE ON THIS SHEET).



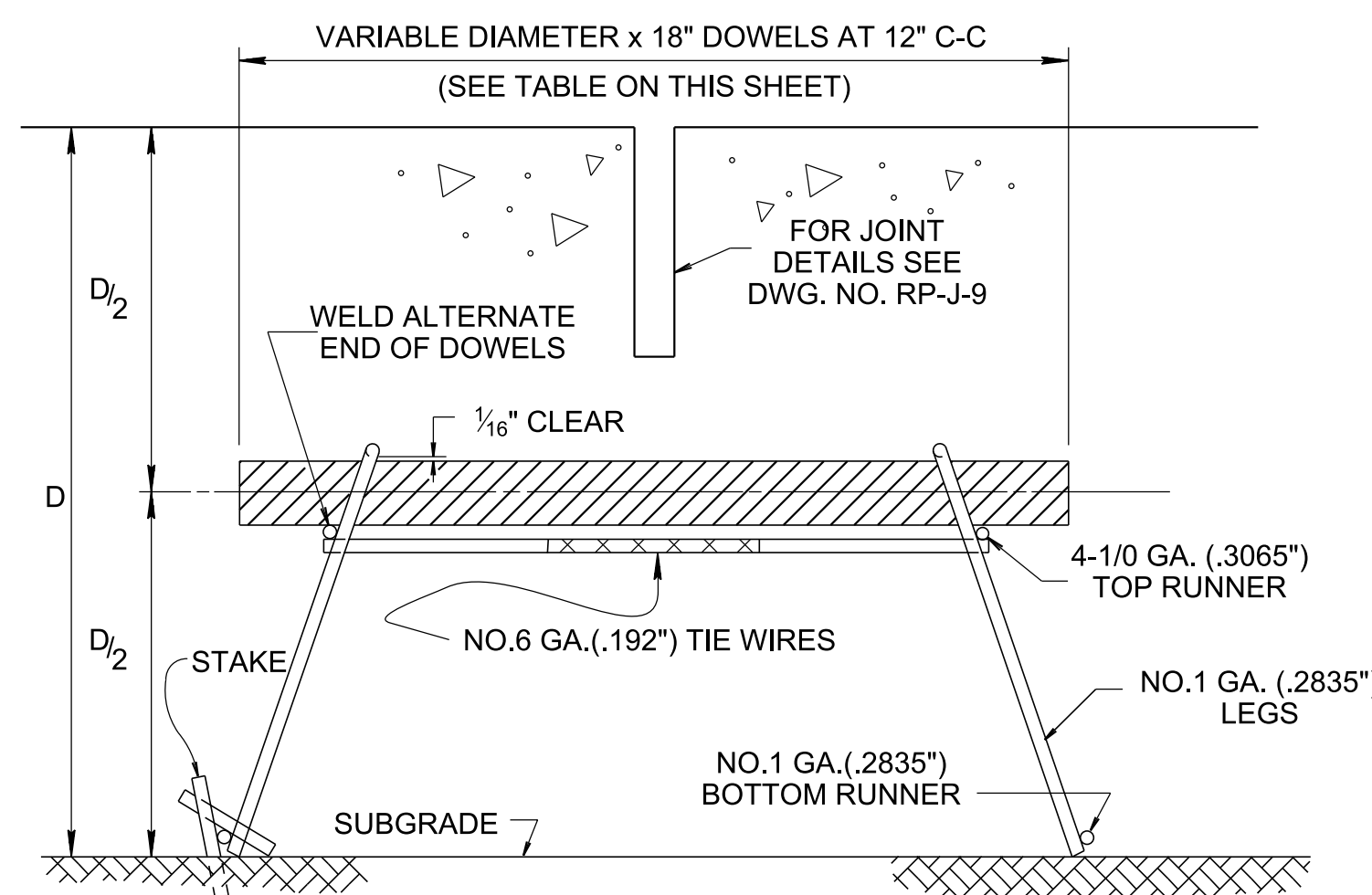
PLAN

VARIABLE DIAMETER x 18" DOWELS AT 12" C-C (SEE TABLE ON THIS SHEET).



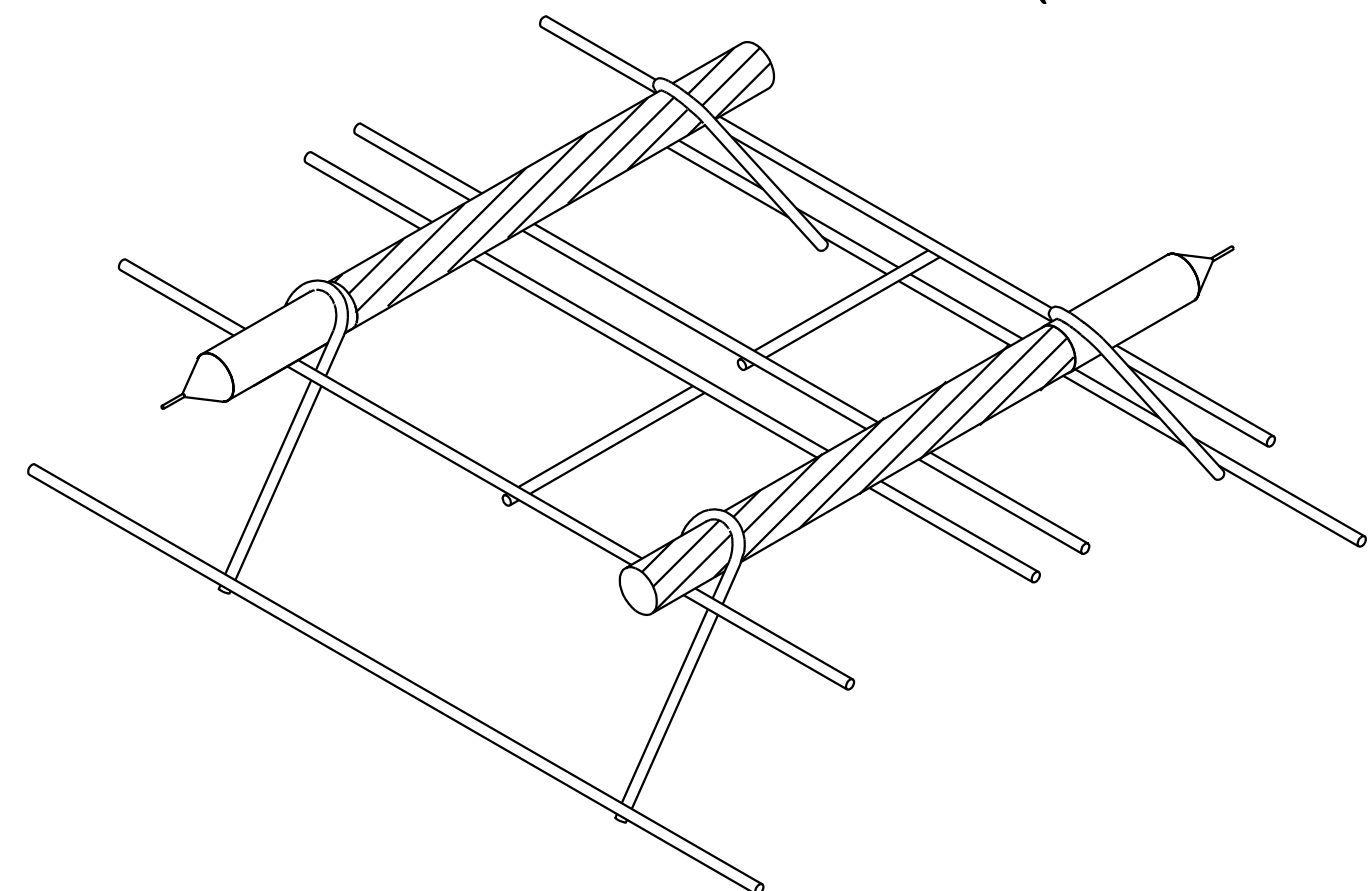
**SECTION B-B
(EXPANSION TYPE)**

SEE DRAWING NO. RP-J-11 FOR DETAILS

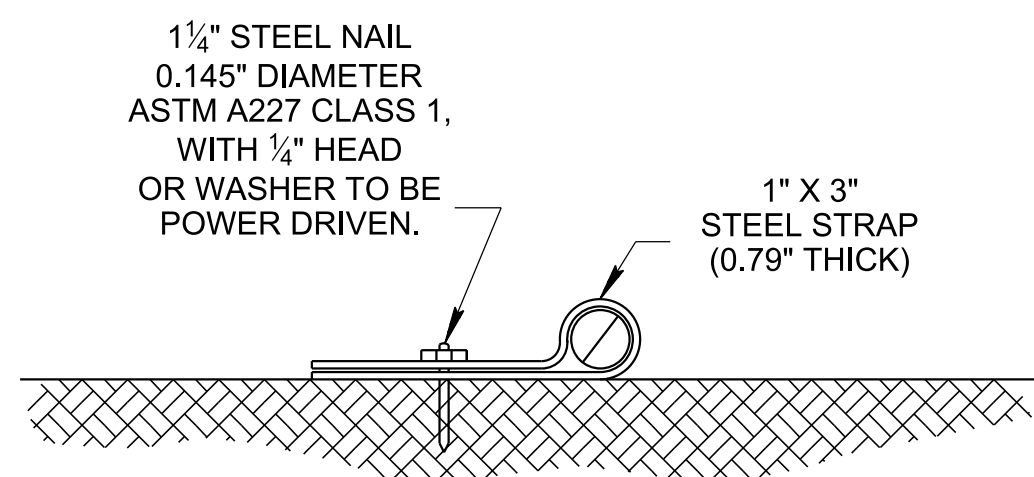


**SECTION C-C
(CONTRACTION TYPE)**

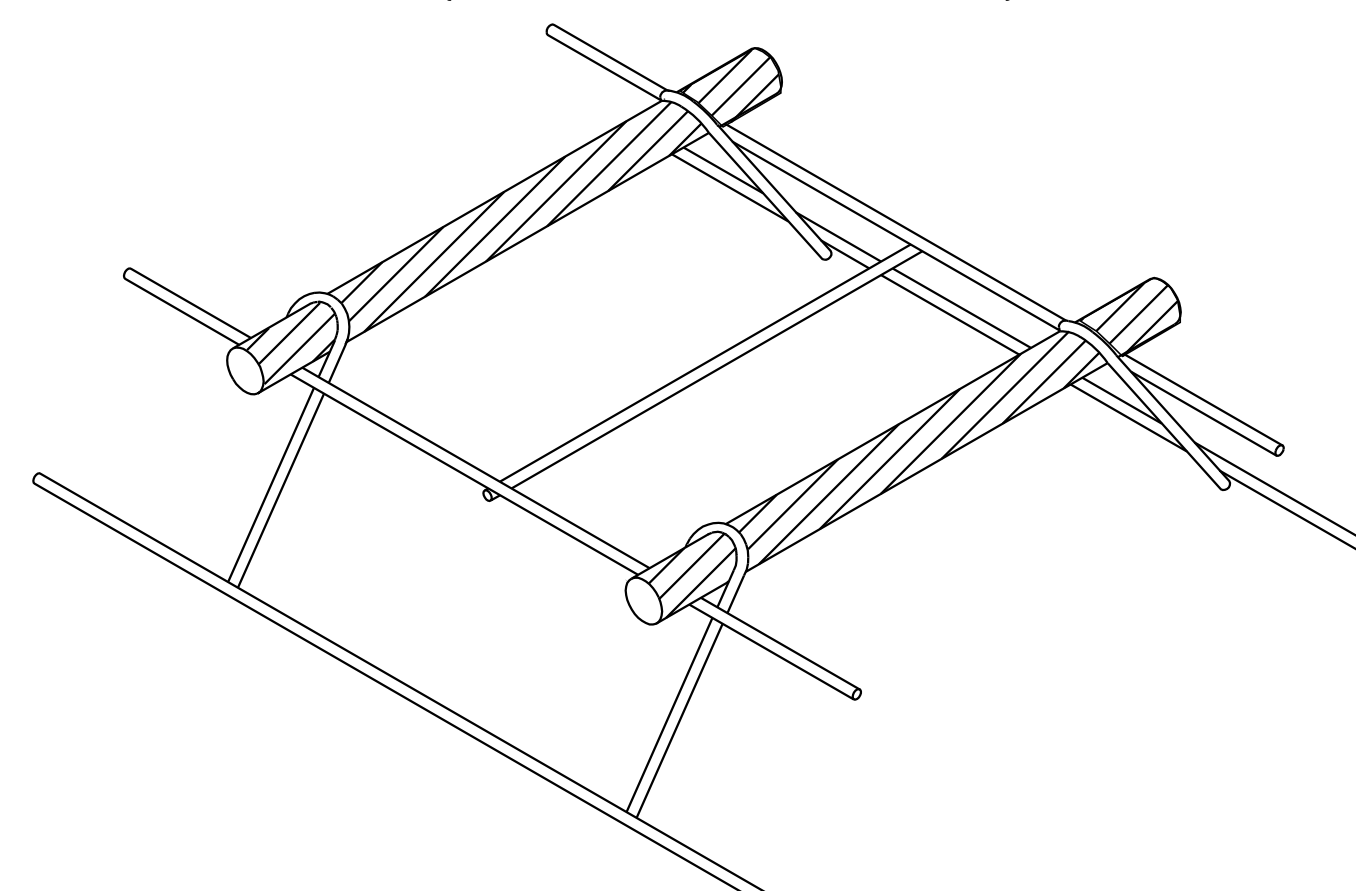
DOWEL BAR SIZE TABLE	
PAVEMENT THICKNESS (INCHES)	BAR DIAMETER (INCHES)
8-10	1 1/4"
>10	1 1/2"



EXPANSION JOINT



STRAP DETAIL



CONTRACTION JOINT

- GENERAL NOTES**
- (A) DOWEL ASSEMBLY DEVICES OTHER THAN SHOWN ON DRAWING NOS. RP-J-17, RP-J-18, AND RP-J-19 MAY BE USED FOR SUPPORTING DOWELS AT EXPANSION AND CONTRACTION JOINTS.
 - (B) DOWEL ASSEMBLY DEVICES SHALL BE SO CONSTRUCTED AS TO HOLD THE DOWEL BARS FIRMLY IN POSITION PARALLEL TO THE SURFACE AND CENTERLINE OF THE PAVEMENT SLAB DURING THE PLACING OF CONCRETE.
 - (C) DOWEL ASSEMBLY DEVICES SHALL BE OF SUCH DESIGN AS TO PERMIT UNRESTRICTED MOVEMENT OF THE PAVEMENT SLAB.
 - (D) DOWEL ASSEMBLY DEVICES TO BE USED MUST BE APPROVED BY THE ENGINEER PRIOR TO THEIR USE.
 - (E) SEE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, SECTION 501-PORTLAND CEMENT CONCRETE PAVEMENT FOR DOWEL ASSEMBLY DEVICES. ALSO SEE APPLICABLE SPECIAL PROVISIONS.
 - (F) DOWEL ASSEMBLY DEVICES ARE TO BE FURNISHED IN SECTIONS WITH SUITABLE LENGTHS FOR VARIOUS WIDTHS OF PAVEMENT.
 - (G) ONE OF THE ALTERNATE DOWEL ASSEMBLY DEVICES WILL BE REQUIRED AT EACH EXPANSION JOINT WITH LOAD TRANSFERS, UNLESS A BULKHEAD IS USED. SEE DRAWING NOS. RP-J-17, RP-J-18, AND RP-J-19 FOR ALTERNATE DOWEL BAR AND DOWEL ASSEMBLY DETAILS AND SPECIFICATIONS.
 - (H) SEE DRAWING NOS. RP-J-9 AND RP-J-11 FOR ADDITIONAL INFORMATION NOT SHOWN ON THIS SHEET.

- REV. 4-18-90: CHANGE DOWEL BAR LENGTH FROM 15" TO 18". ELIMINATED DOWEL BAR ASSEMBLY DETAILS FOR SKEWED INSTALLATIONS.
- REV. 3-20-91: REDREW AND REORGANIZED SHEET. ADDED DOWEL BAR SIZE TABLE. CHANGED REFERENCE FOR DOWEL BAR SIZE FROM 1 1/4" TO VARIABLE DIAMETER.
- REV. 7-29-93: REMOVED REFERENCE TO THE ORIGINAL MANUFACTURE'S NAME AND CROSS-REFERENCE TO DRAWING NO. RP-J-19. CHANGED GAGE OF BOTTOM WIRE AND VERTICAL SUPPORT WIRE FROM NO. 2 TO NO. 1. CHANGED CUTTING OF TIE WIRE NOTE ON CONTRACTION PLAN VIEW AND SECTION C-C VIEW.
- REV. 12-18-94: CHANGED CROSS-REFERENCE BLOCK AND GENERAL NOTE (A).
- REV. 10-26-00: CHANGED WIDTH AND DEPTH OF SAWED GROOVED CONTRACTION JOINT.
- REV. 10-21-05: DELETED NOTES ABOUT CUTTING OF TIE WIRE AFTER STAKING.
- REV. 2-2-12: CHANGED DOWEL BAR TABLE.
- REV. 05-01-20: REDREW SHEET.

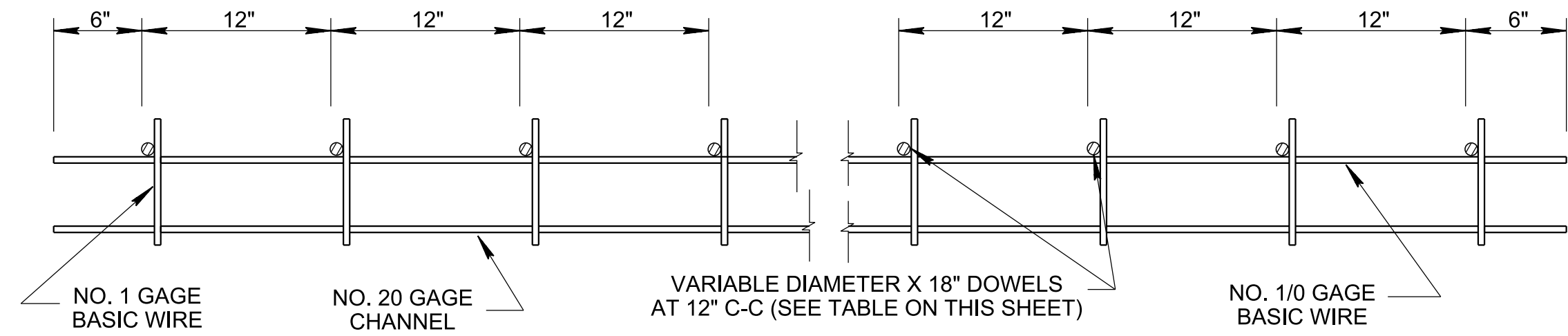
CROSS-REFERENCE DRAWINGS FOR THIS SHEET: RP-J-9, RP-J-11, RP-J-13, RP-J-17, AND RP-J-19.

APPROVED BY FHWA (ALL OTHERS APPROVED BY TDOT)

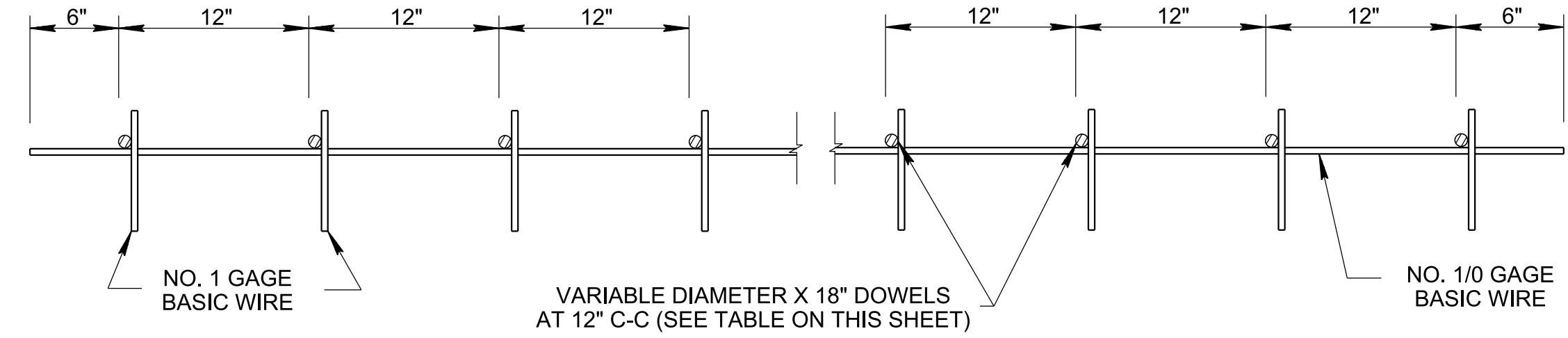
STATE OF TENNESSEE
STANDARD DRAWING
DEPARTMENT OF TRANSPORTATION

DOWEL ASSEMBLY DEVICES

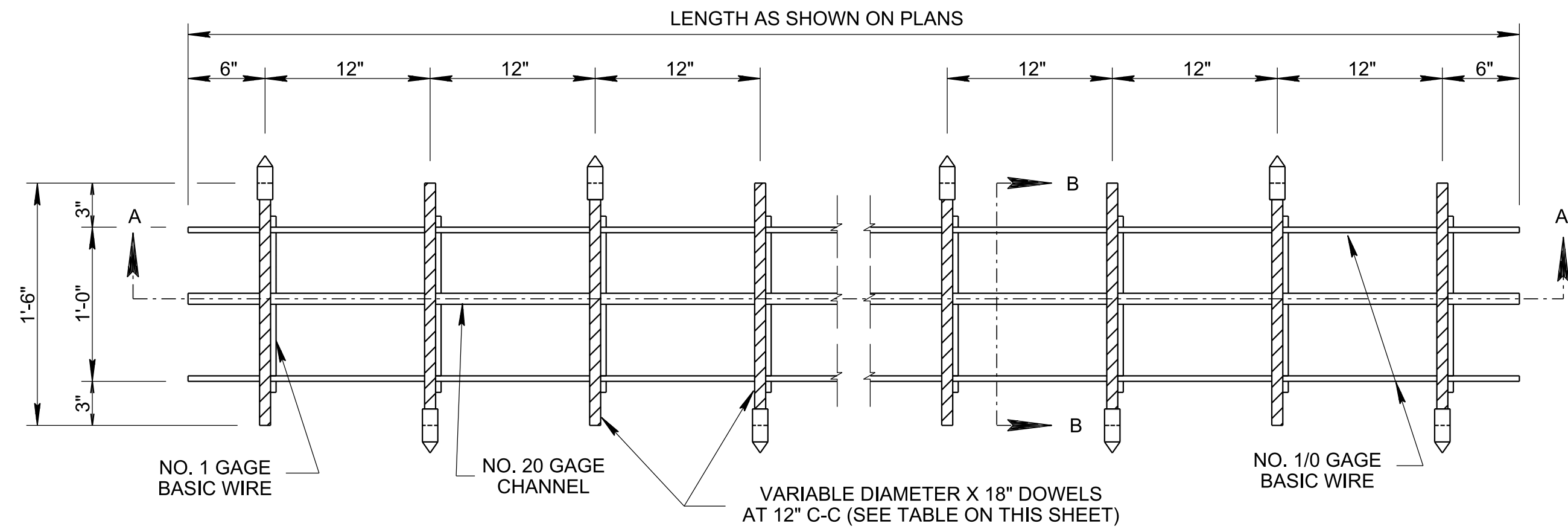
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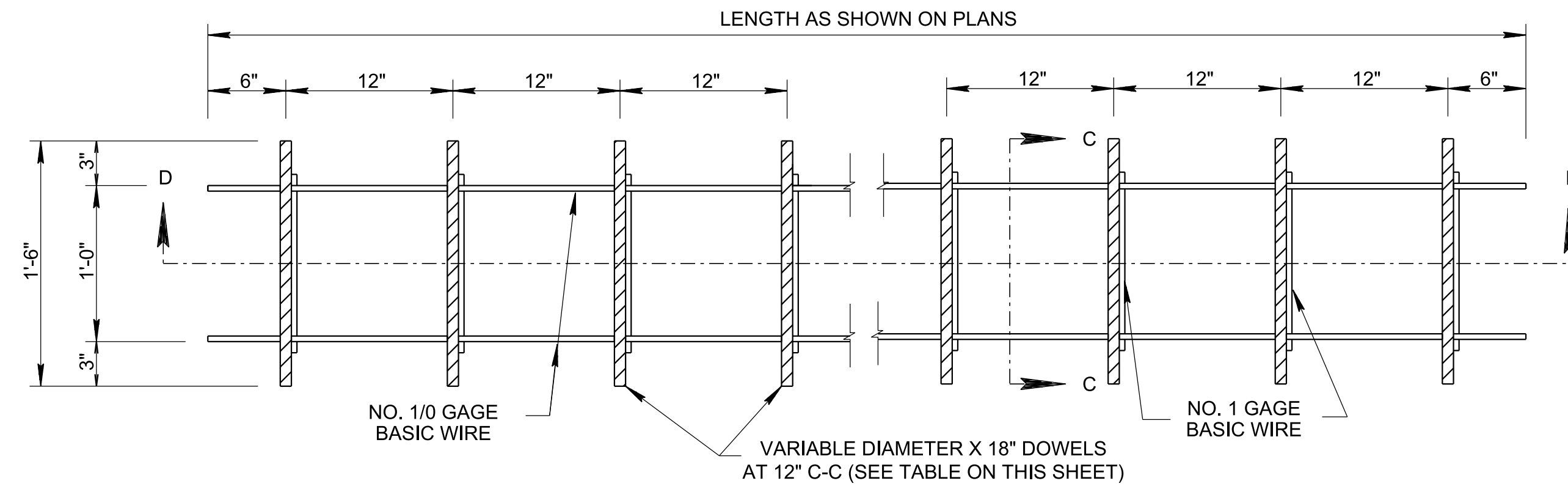
**SECTION A-A
(EXPANSION TYPE)**



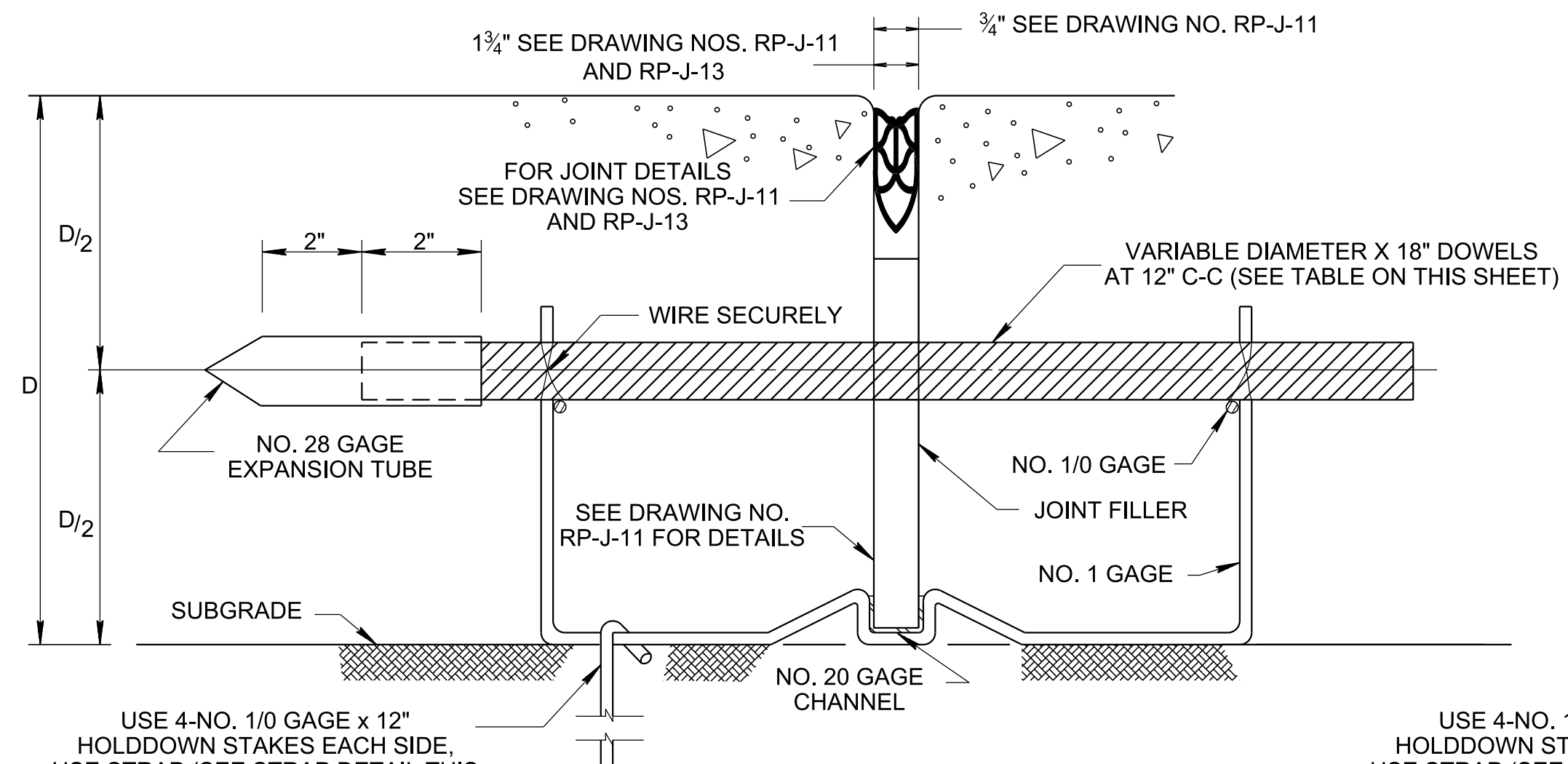
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(CONTRACTION TYPE)**



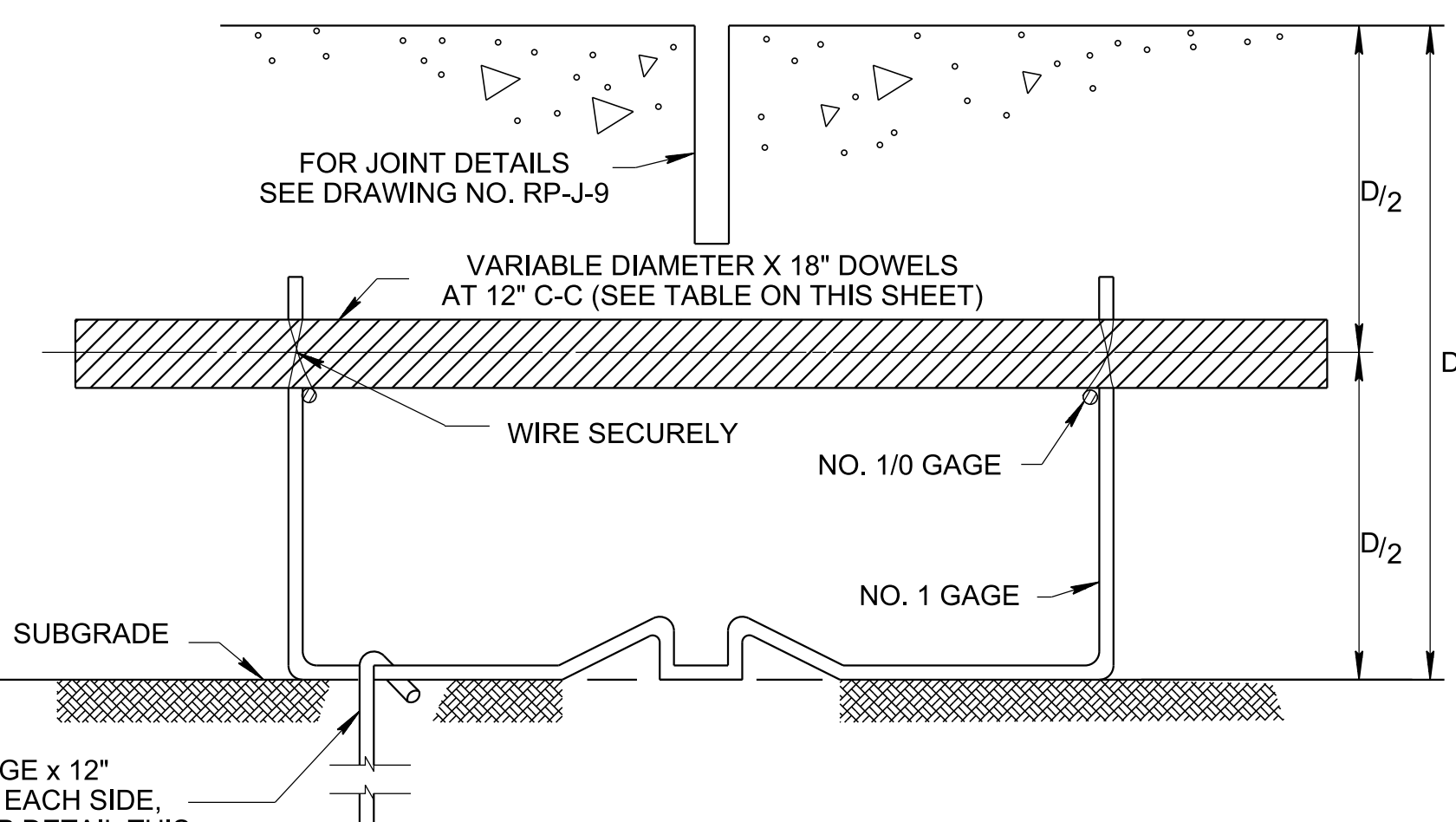
PLAN



PLAN

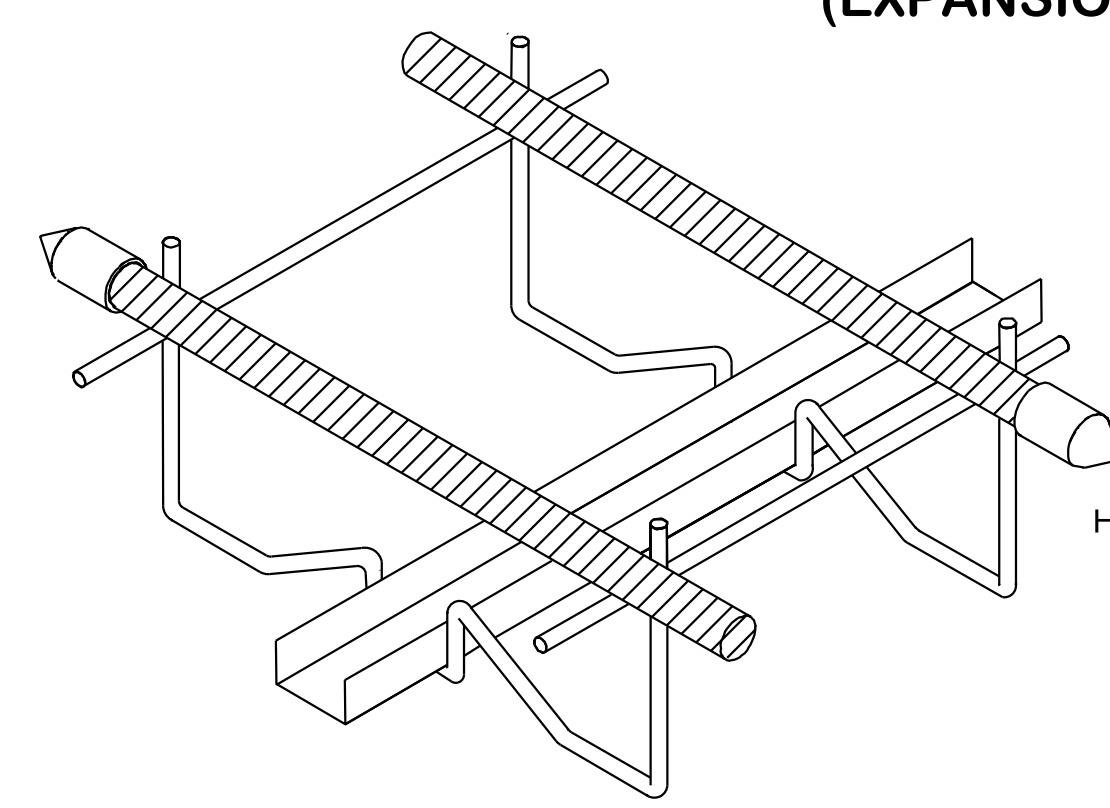


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(EXPANSION TYPE)**

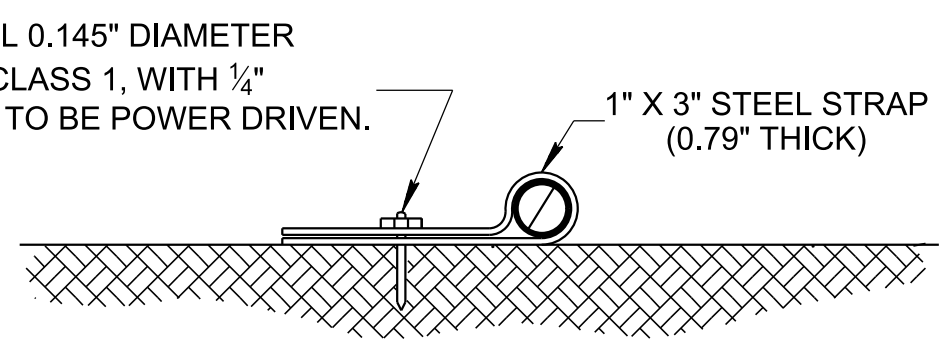


**SECTION C-C
(CONTRACTION TYPE)**

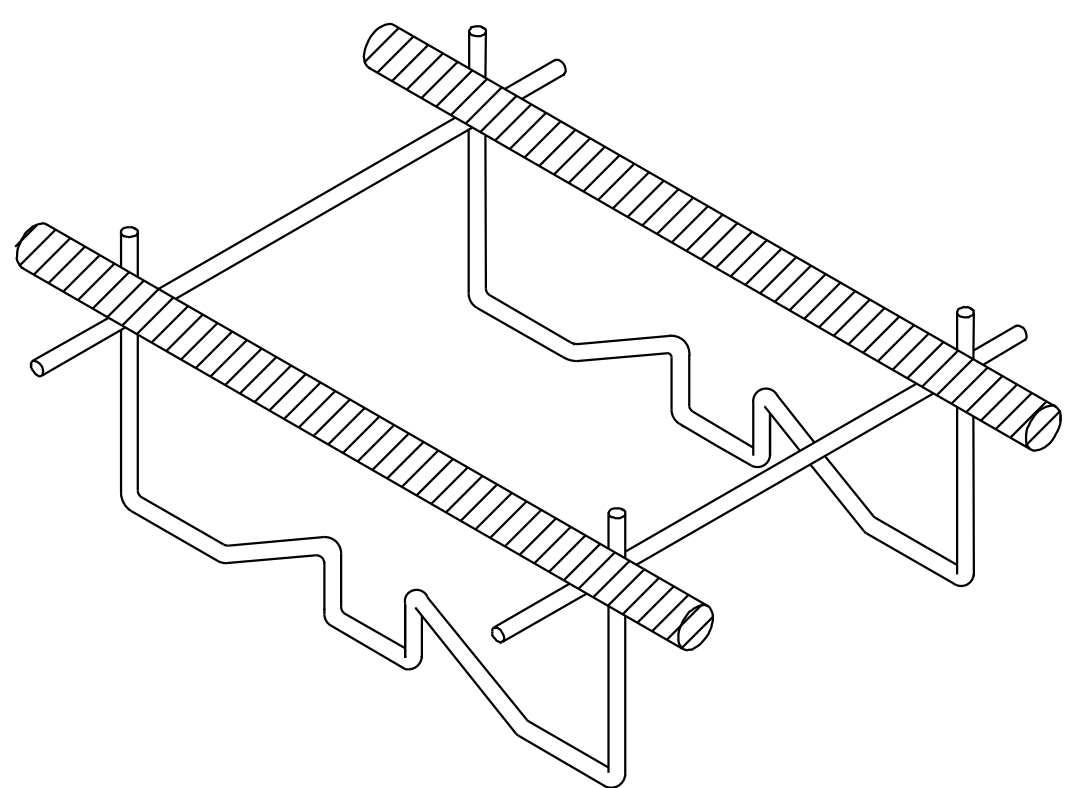
DOWEL BAR SIZE TABLE	
PAVEMENT THICKNESS (INCHES)	BAR DIAMETER (INCHES)
8-10	1 1/4"
>10	1 1/2"



EXPANSION JOINT



STRAP DETAIL



CONTRACTION JOINT

- GENERAL NOTES**
- (A) DOWEL ASSEMBLY DEVICES OTHER THAN SHOWN ON DRAWING NOS. RP-J-17, RP-J-18, AND RP-J-19 MAY BE USED FOR SUPPORTING DOWELS AT EXPANSION AND CONTRACTION JOINTS.
 - (B) DOWEL ASSEMBLY DEVICES SHALL BE SO CONSTRUCTED AS TO HOLD THE DOWEL BARS FIRMLY IN POSITION PARALLEL TO THE SURFACE AND CENTERLINE OF THE PAVEMENT SLAB DURING THE PLACING OF CONCRETE.
 - (C) DOWEL ASSEMBLY DEVICES SHALL BE OF SUCH DESIGN AS TO PERMIT UNRESTRICTED MOVEMENT OF THE PAVEMENT SLAB.
 - (D) DOWEL ASSEMBLY DEVICES TO BE USED MUST BE APPROVED BY THE ENGINEER PRIOR TO THEIR USE.
 - (E) SEE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, SECTION 501-PORTLAND CEMENT CONCRETE PAVEMENT FOR DOWEL ASSEMBLY DEVICES. ALSO SEE APPLICABLE SPECIAL PROVISIONS.
 - (F) DOWEL ASSEMBLY DEVICES ARE TO BE FURNISHED IN WITH SUITABLE LENGTHS FOR VARIOUS WIDTHS OF PAVEMENT.
 - (G) ONE OF THE ALTERNATE DOWEL ASSEMBLY DEVICES WILL BE REQUIRED AT EACH EXPANSION JOINT WITH LOAD TRANSFERS UNLESS A BULKHEAD IS USED. SEE DRAWING NOS. RP-J-17, RP-J-18, AND RP-J-19 FOR ALTERNATE DOWEL BAR AND DOWEL ASSEMBLY DETAILS AND SPECIFICATIONS.
 - (H) SEE DRAWING NOS. RP-J-9 AND RP-J-11 FOR ADDITIONAL INFORMATION NOT SHOWN ON THIS SHEET.

- REV. 4-18-90: CHANGE DOWEL BAR LENGTH FROM 15" TO 18". DOWEL BAR ASSEMBLY DETAILS FOR SKEWED INSTALLATIONS. MODIFIED GENERAL NOTES TO REFLECT THESE CHANGES.
- REV. 3-20-91: REDREW AND REORGANIZED SHEET. ADDED DOWEL BAR SIZE TABLE. CHANGED REFERENCE FOR DOWEL BAR SIZE FROM 1 1/4" TO VARIABLE DIAMETER.
- REV. 7-29-93: REMOVED REFERENCE TO THE ORIGINAL MANUFACTURE'S NAME AND CROSS-REFERENCE TO DRAWING NO. RP-J-19. CHANGED GAGE OF BOTTOM WIRE AND VERTICAL SUPPORT WIRE FROM NO. 3 TO NO. 1.
- REV. 12-18-94: CHANGED CROSS-REFERENCE BLOCK AND GENERAL NOTE (A).
- REV. 10-26-00: CHANGED WIDTH AND DEPTH OF SAWED GROOVED CONTRACTION JOINT.
- REV. 2-2-12: CHANGED DOWEL BAR TABLE.
- REV. 05-01-20: REDREW SHEET.

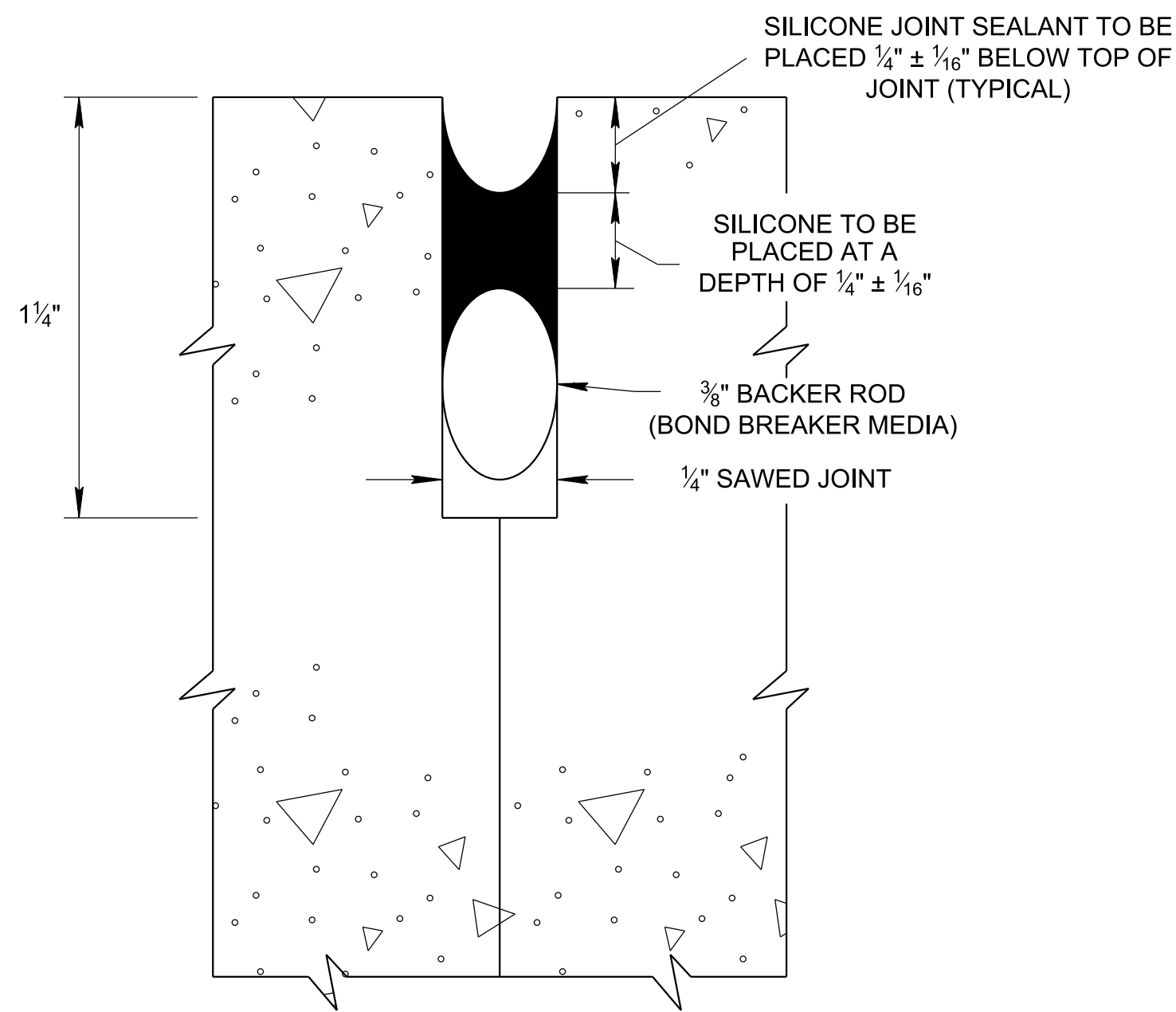
CROSS-REFERENCE DRAWINGS FOR THIS SHEET: RP-J-9, RP-J-11, RP-J-13, RP-J-18, AND RP-J-19.

APPROVED BY FHWA (ALL OTHERS APPROVED BY TDOT)

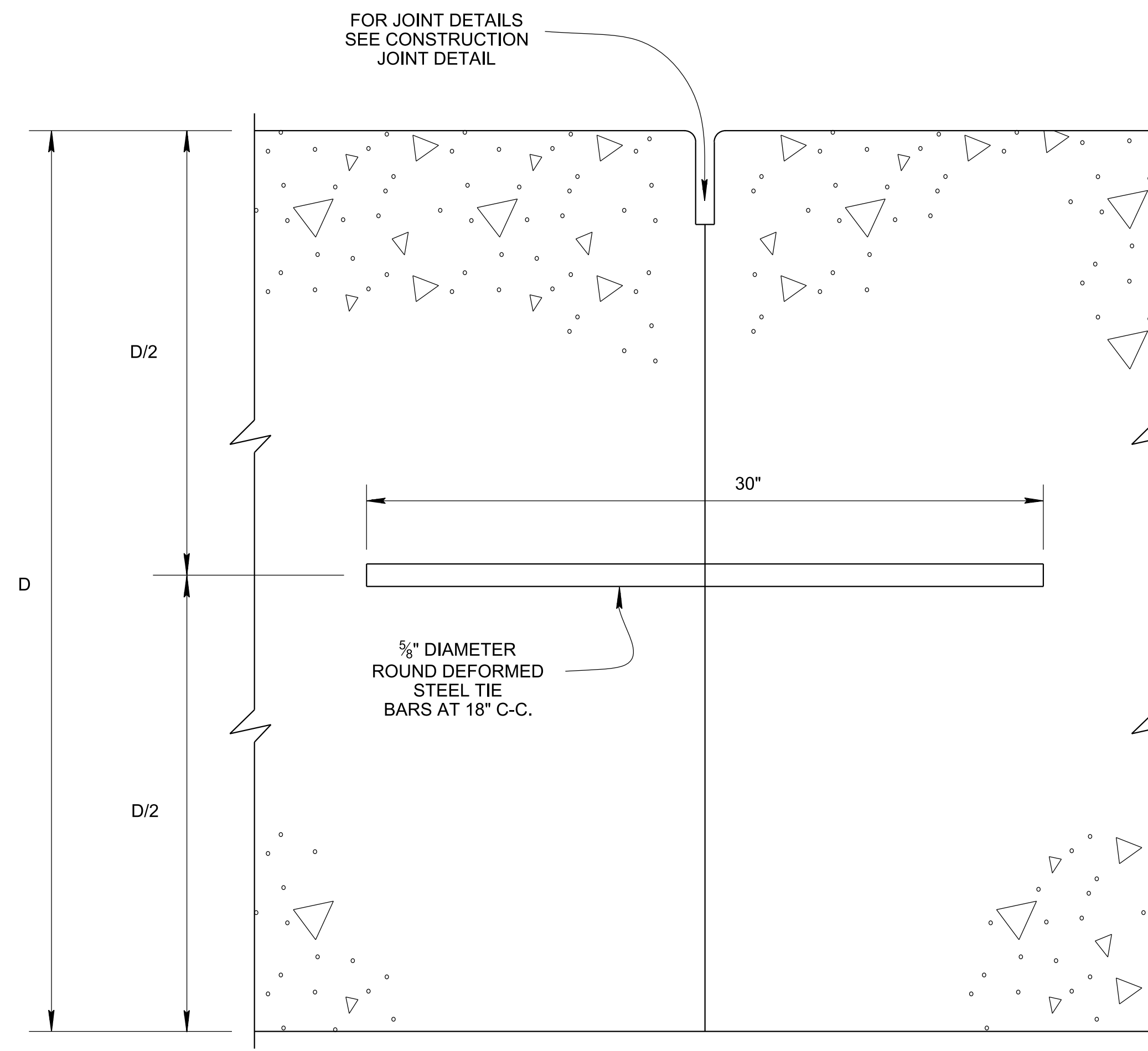
STATE OF TENNESSEE
 STANDARD DRAWING
 DEPARTMENT OF TRANSPORTATION

DOWEL ASSEMBLY DEVICES

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LONGITUDINAL CONSTRUCTION JOINTS



TIE BAR DETAIL FOR LONGITUDINAL CONSTRUCTION JOINTS

FOR JOINT LOCATIONS SEE DRAWINGS RP-J-1, RP-J-3, RP-J-5 AND RP-J-7.

REV. 10-26-00: REDREW AND RENAMED SHEET. ELIMINATED USE OF CHANNEL KEYS AND ALL RELATED DETAILS. ELIMINATED DETAILS FOR HOOK BOLT JOINT.

REV. 1-19-02: ADDED NEW GENERAL NOTE (B). REDESIGNATED ALL SUBSEQUENT GENERAL NOTES.

REV. 05-01-20: REDREW SHEET.

CROSS-REFERENCE DRAWINGS FOR THIS SHEET: RP-J-1, RP-J-3, RP-J-5, RP-J-7, AND RP-J-9.

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STATE OF TENNESSEE
 STANDARD DRAWING
 DEPARTMENT OF TRANSPORTATION

LONGITUDINAL CONTRACTION AND CONSTRUCTION JOINTS

07-29-1998

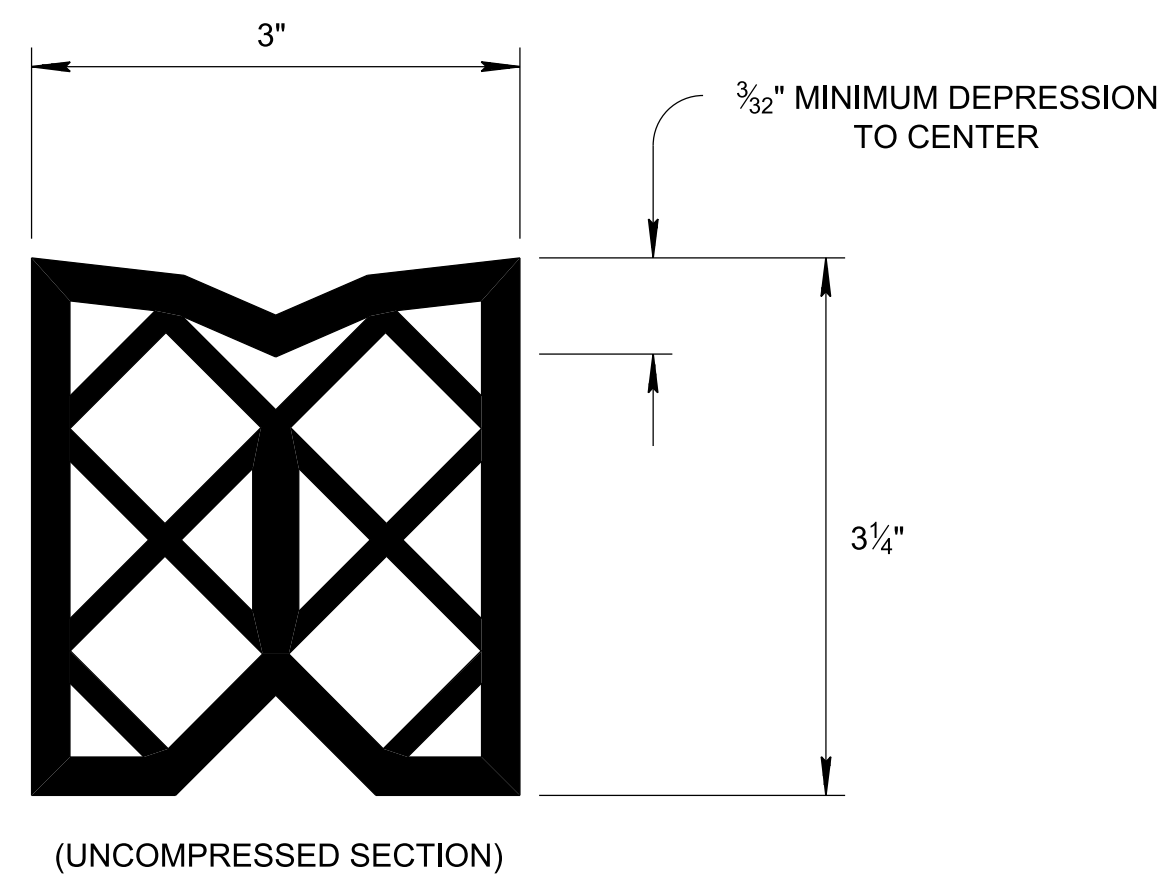
RP-J-15

GENERAL NOTES

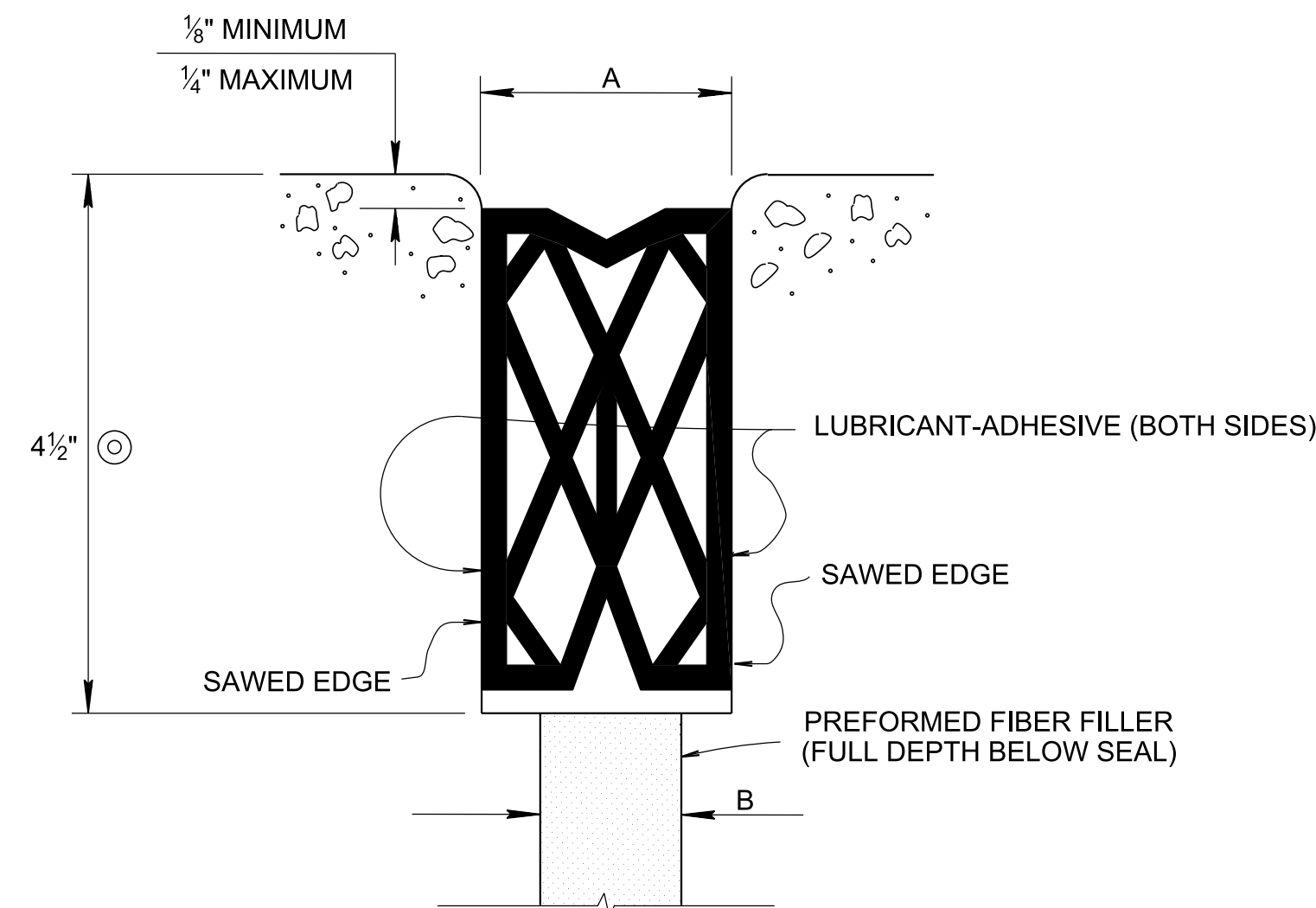
- (A) LONGITUDINAL CONTRACTION AND/OR CONSTRUCTION JOINTS WITH TIE BARS SHALL BE REQUIRED.
- (B) LONGITUDINAL CONTRACTION AND/OR CONSTRUCTION JOINTS IN THE PORTLAND CEMENT CONCRETE SHOULDERS SHALL BE OF THE SAME TYPE, MATERIAL AND SPACING AS THE CORRESPONDING JOINTS IN THE PORTLAND CEMENT CONCRETE TRAFFIC LANES. (SEE SUBSECTION 501.23 (b) OF THE STANDARD SPECIFICATIONS.) SEE STANDARD DRAWINGS RP-CS-1 AND RP-CS-2 FOR FURTHER DETAILS.
- (C) TIE BARS SHALL BE 2'-6" LONG AND SPACED AT 1'-6" CENTER-TO-CENTER.
- (D) TIE BARS SHALL BE FIVE EIGHTS-INCH DIAMETER ROUND DEFORMED STEEL BARS AND CONFORM TO ASTM A615-GRADE 40 SPECIFICATIONS.
- (E) TIE BARS SHALL NOT BE PLACED WITHIN 15" OF TRANSVERSE CONTRACTION OR CONSTRUCTION JOINTS AND EXPANSION JOINTS.

NOT TO SCALE

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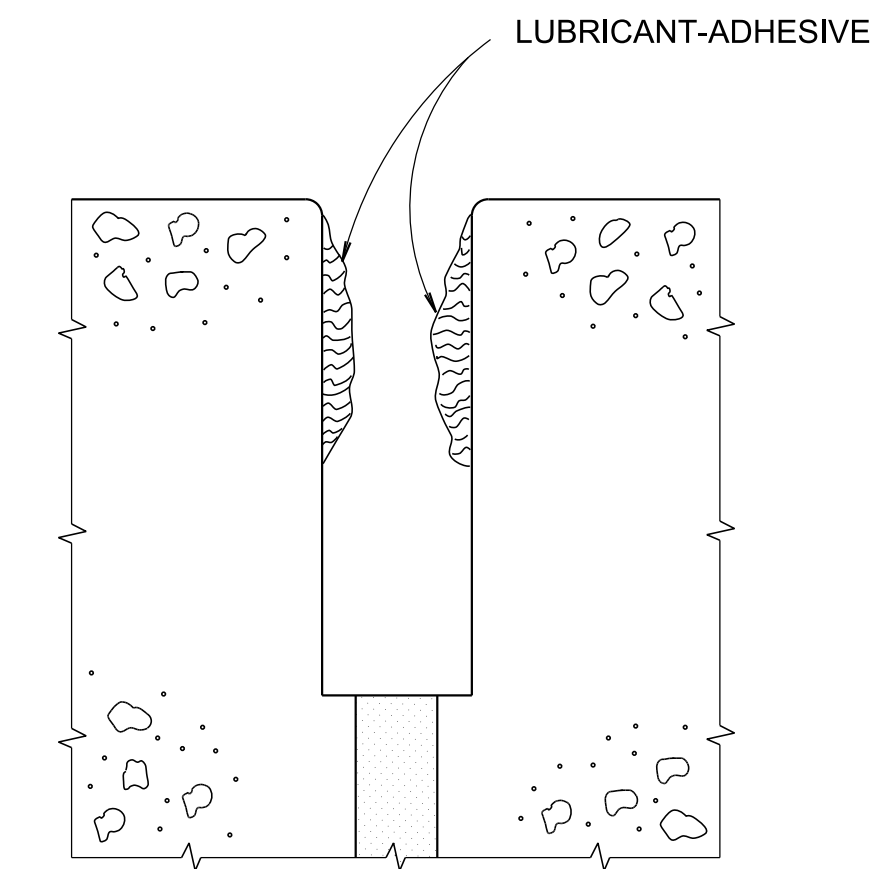


TYPE I PREFORMED ELASTOMERIC COMPRESSION
JOINT SEAL FOR 1 3/4" EXPANSION JOINTS



DETAIL SHOWING EXPANSION CHARACTERISTICS FOR TYPE I PREFORMED ELASTOMERIC COMPRESSION JOINT SEAL AS APPLIED TO 1 3/4" EXPANSION JOINTS

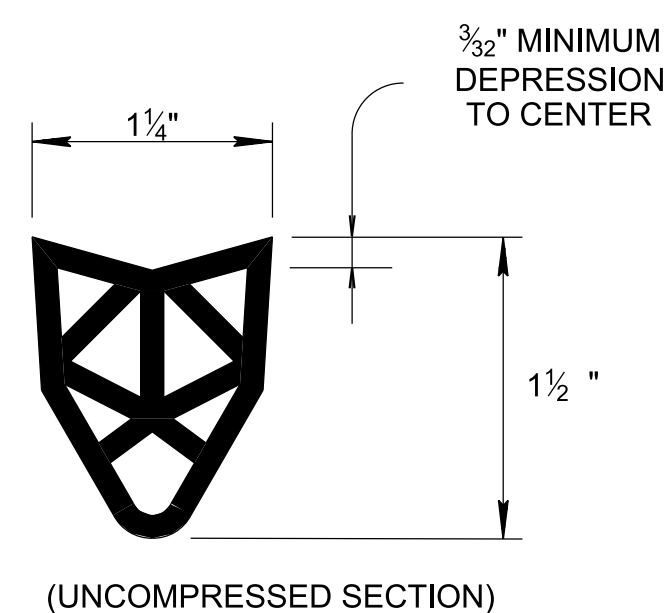
⊙ IF THERE IS A VERTICAL SPACE PROBLEM USING THIS JOINT SEAL DUE TO PAVEMENT DEPTH, THE CONTRACTOR WILL REDUCE THIS DEPTH AND SELECT A LOWER PROFILE JOINT SEAL THAT WILL BE CLEAR OF THE DOWEL BARS.



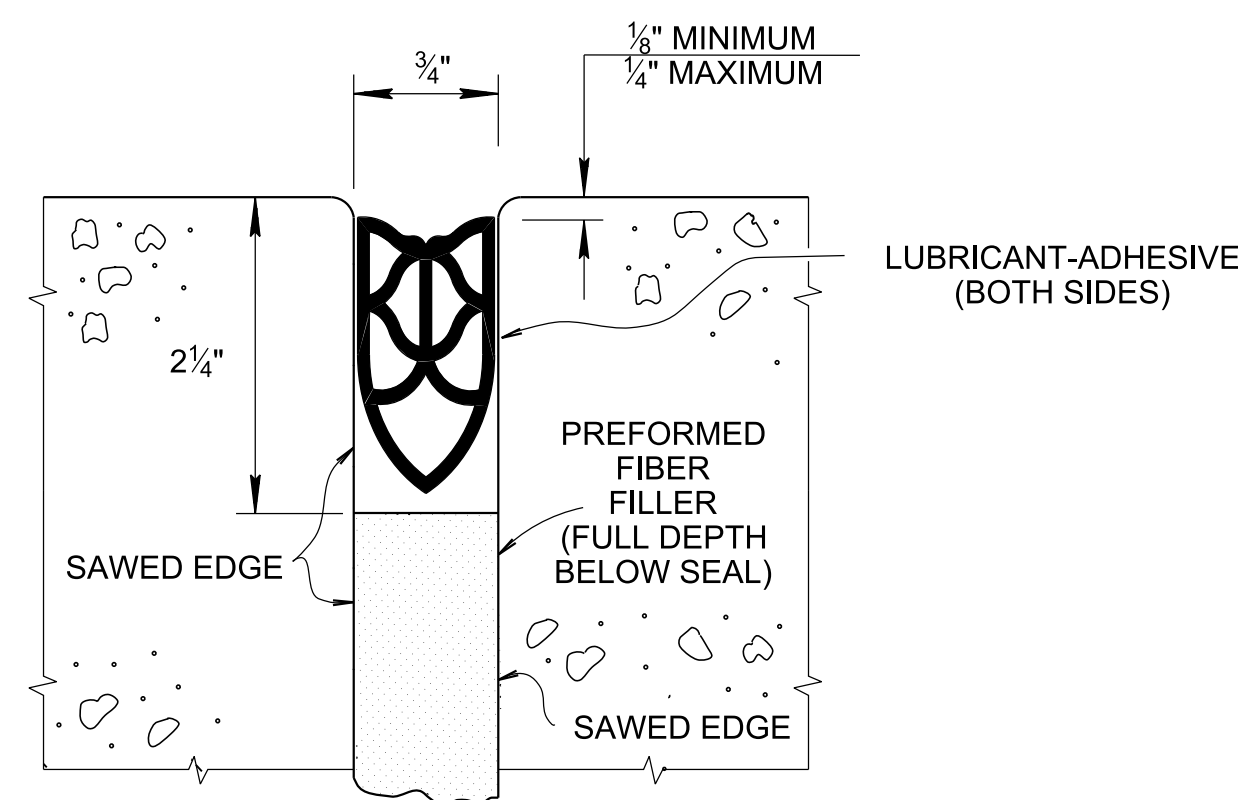
DETAIL SHOWING LUBRICANT-ADHESIVE
(APPLIED TO JOINT PRIOR TO PLACING SEAL)

TABLE OF VARIABLE DIMENSIONS FOR TYPE I PREFORMED ELASTOMERIC 1 3/4" EXPANSION JOINTS IN INCHES		CONCRETE PAVEMENT TEMPERATURE (F°)				
TYPE	DIMENSION	25°	42°	60°	78°	95°
I	A	2 1/2"	2 1/8"	1 3/4"	1 3/8"	1"
	B	1 3/4"	1 3/8"	1"	5/8"	1/4"

SEE STANDARD DRAWINGS RP-J-1, RP-J-5, RP-J-7, AND RP-J-11



TYPE I PREFORMED ELASTOMERIC COMPRESSION
JOINT SEAL FOR 3/4" EXPANSION JOINTS



3/4" EXPANSION JOINT WITH TYPE I PREFORMED ELASTOMERIC COMPRESSION JOINT SEAL

SEE DRAWING RP-J-11 FOR JOINT DETAIL
SEE DRAWING RP-I-5 FOR JOINT LOCATIONS

GENERAL NOTES

- (A) THE ELASTOMERIC JOINT SEALS SHALL BE THE OPEN-CELL COMPRESSION TYPE INTENDED FOR USE IN SEALING JOINTS IN CONCRETE PAVEMENT.
- (B) THE CONTRACTOR WILL BE REQUIRED TO FURNISH THE ENGINEER A CERTIFIED COPY OF THE TEST RESULTS INDICATING THAT THE MATERIAL TO BE USED COMPLIES WITH THE SPECIFICATION REQUIREMENTS.
- (C) THE CONTRACTOR SHALL ALSO FURNISH A CERTIFICATION FROM THE MANUFACTURER STATING THE LUBRICATING ADHESIVE MATERIAL MEETS THE SPECIFICATION REQUIREMENTS.
- (D) THE SEAL CONFIGURATION SHOWN IS GENERAL AND MAY VARY WITH JOINT TYPE AND MANUFACTURER.
- (E) THE ELASTOMERIC COMPRESSION SEALS AND LUBRICANT-ADHESIVE SHALL CONFORM TO AASHTO M220 SPECIFICATIONS.
- (F) THE CONTRACTOR SHALL SUBMIT DETAILS OF ELASTOMERIC COMPRESSION JOINT SEALS FOR 1 3/4" EXPANSION JOINT TO MATERIALS AND TEST DIVISION FOR APPROVAL.
- (G) THE JOINTS SHOULD BE FORMED AND CONSTRUCTED TO A TRUE LINE AND HAVE VERTICAL FACES THAT ARE PLUMB.

REV. 6-6-86: CHANGED GENERAL NOTE (C). ADDED GENERAL NOTE (F). DELETED HEIGHT REQUIREMENTS FOR 3/4" JOINT.
REV. 3-20-91: REDREW AND RENAMED SHEET. ELIMINATED DETAIL FOR ELASTOMERIC SEALER FOR 3/4" CONTRACTION AND CONSTRUCTION JOINTS.
REV. 05-01-20: REDREW SHEET.

CROSS-REFERENCE DRAWINGS FOR THIS DRAWING: RP-I-5, RP-J-1, RP-J-5, RP-J-7, RP-J-9, AND RP-J-11.

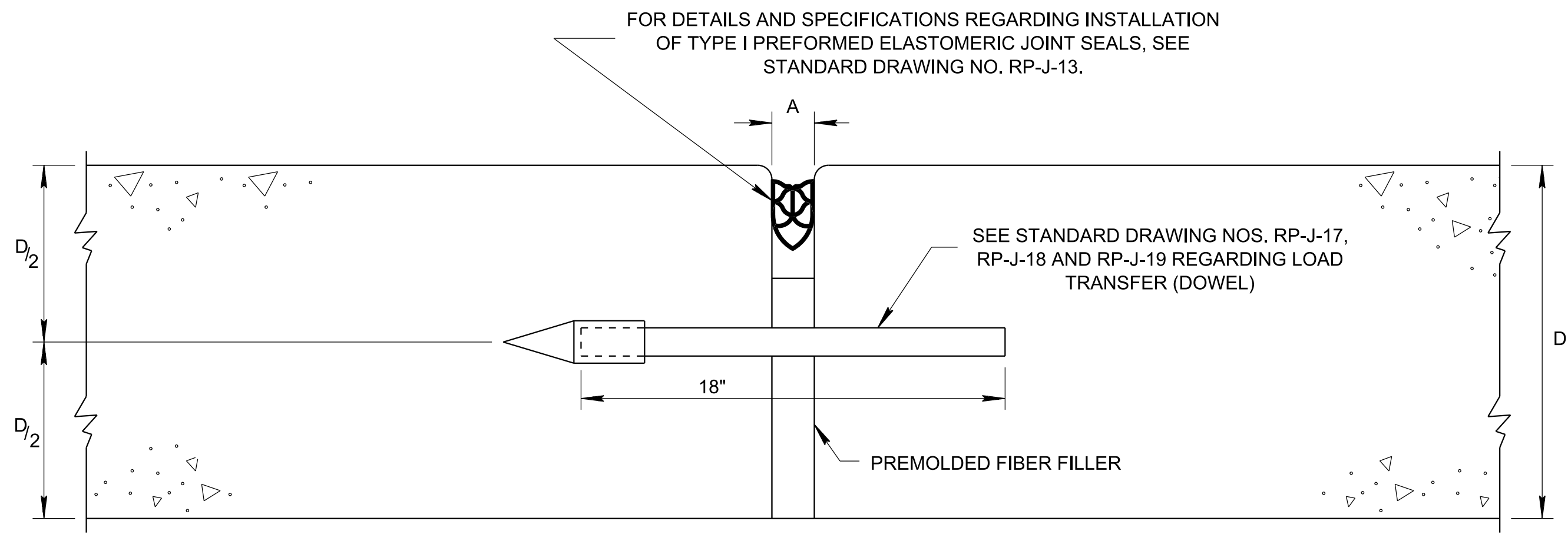
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DEPARTMENT OF TRANSPORTATION

3/4" AND 1 3/4" ELASTOMERIC COMPRESSION JOINT SEALS

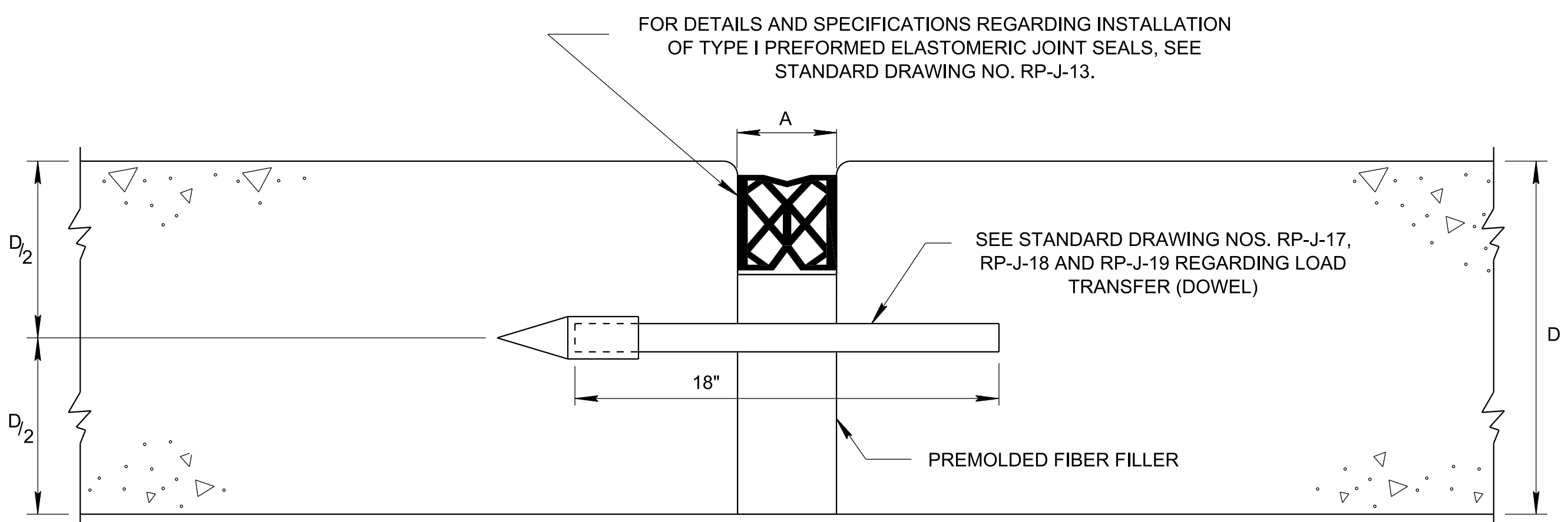
RP-J-13

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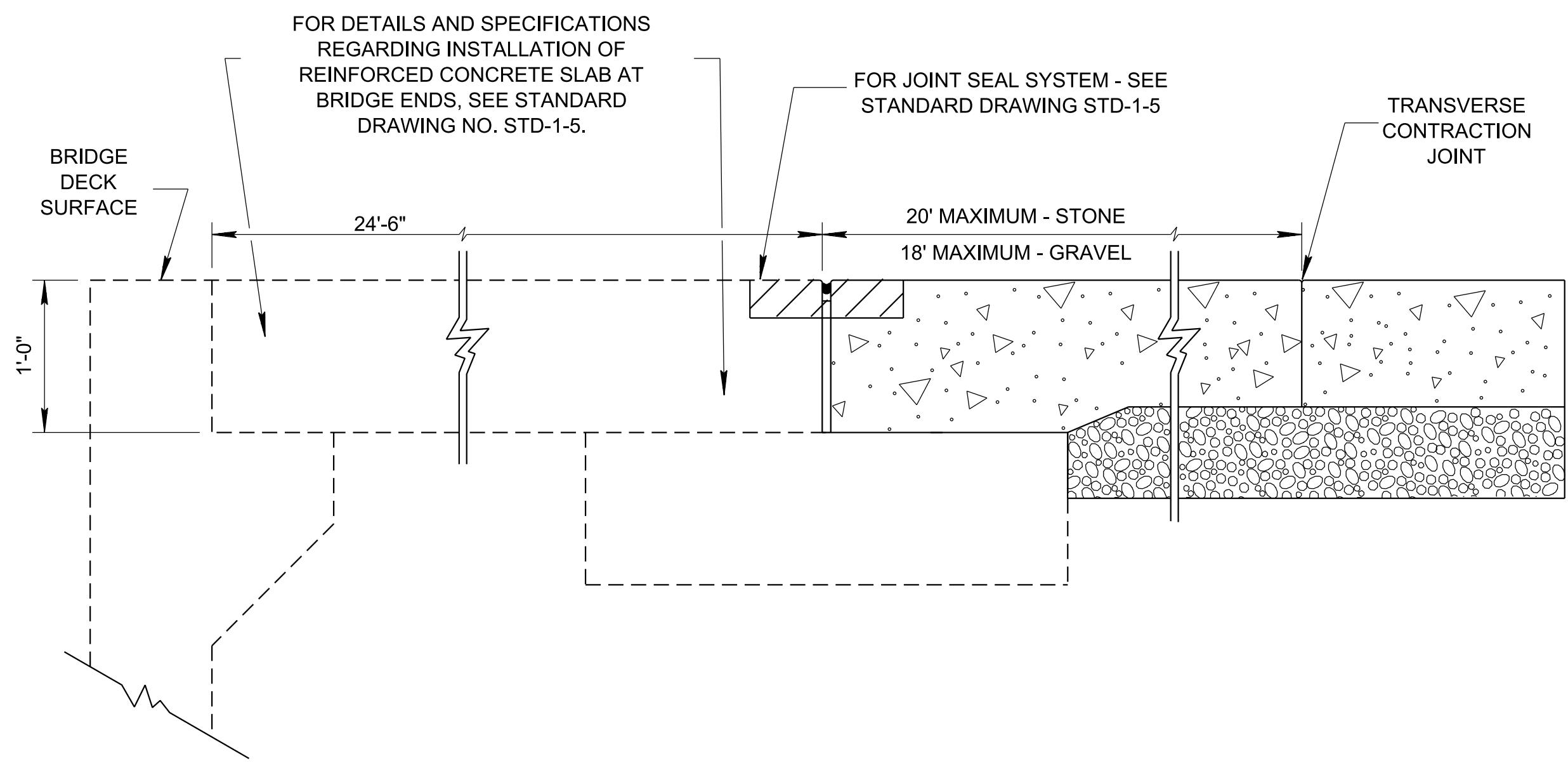


3/4" TRANSVERSE AND LONGITUDINAL EXPANSION JOINTS WITH LOAD TRANSFER DOWELS WILL BE REQUIRED ONLY AT STREET INTERSECTIONS, AS INDICATED ON STANDARD DRAWING NO. RP-I-5, AND AS SHOWN ELSEWHERE ON THE PLANS.

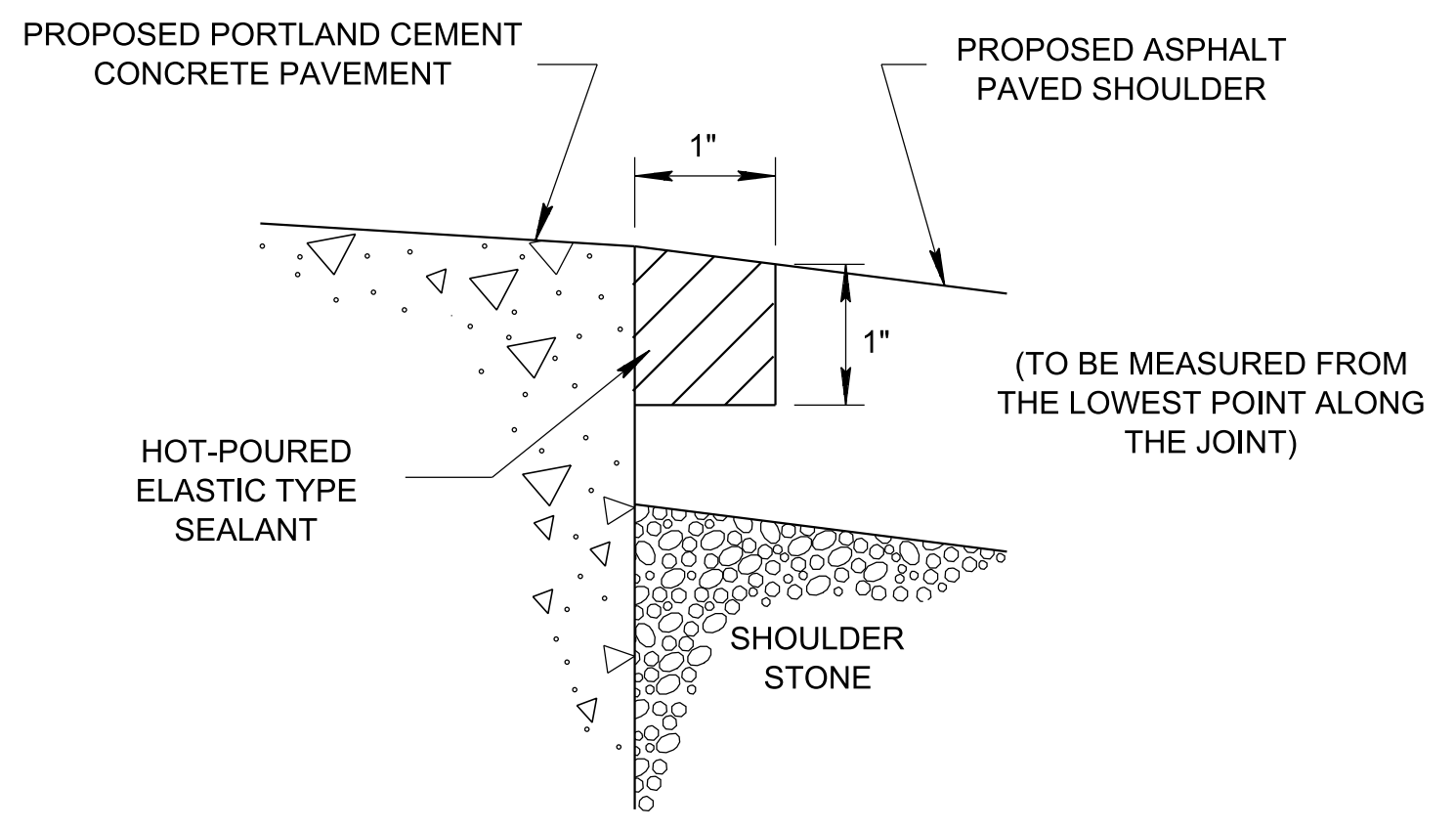
PREMOLDED 3/4" EXPANSION JOINT WITH LOAD TRANSFERS



PREMOLDED 1 3/4" EXPANSION JOINT WITH LOAD TRANSFERS



SKETCH SHOWING EXPANSION JOINT AT BRIDGE END



SHOULDER JOINT DETAIL

SEALANT SHALL BE USED AS SHOWN ON THIS DETAIL BETWEEN PROPOSED PORTLAND CEMENT CONCRETE PAVEMENT (MAINLINE OR RAMPS) AND PROPOSED ASPHALT PAVED SHOULDERS; ALSO BETWEEN PROPOSED ASPHALT PAVEMENT (MAINLINE) AND PROPOSED PORTLAND CEMENT CONCRETE PAVEMENT (RAMPS). THIS SHALL APPLY TO ALL NEW CONSTRUCTION PROJECTS UNLESS OTHERWISE SPECIFIED IN THE PLANS.

- REV. 7-17-81: CHANGED ITEM NUMBER TO AGREE WITH NEW SPECIFICATION BOOK.
- REV. 4-25-90: REDREW SHEET AND MODIFIED ALL DRAWINGS. ADDED GENERAL NOTES AND NOTE UNDER SHOULDER JOINT DETAIL. CHANGED DOWEL BAR LENGTH FROM 15" TO 18".
- REV. 3-20-91: MODIFIED DETAIL SHOWING PLACEMENT OF 1 3/4" EXPANSION JOINT.
- REV. 7-11-91: CHANGED STANDARD DRAWING NUMBER FOR REINFORCED CONCRETE SLAB FROM K-86-144 TO STD-1-3.
- REV. 12-18-94: UPDATED STANDARD DRAWING REFERENCE DRAWING NUMBERS TO MATCH CURRENT NUMBERS.
- REV. 7-29-96: CHANGED EXPANSION JOINT SYSTEM AT BRIDGE ENDS. ADDED 1 3/4" EXPANSION JOINT DETAIL.
- REV. 05-01-20: REDREW SHEET.

CROSS-REFERENCE DRAWINGS FOR THIS DRAWING: RP-I-5, RP-J-1, RP-J-5, RP-J-7, RP-J-13, RP-J-17, RP-J-18, RP-J-19 AND STD-1-5.

APPROVED BY FHWA (ALL OTHERS APPROVED BY TDOT)

GENERAL NOTES

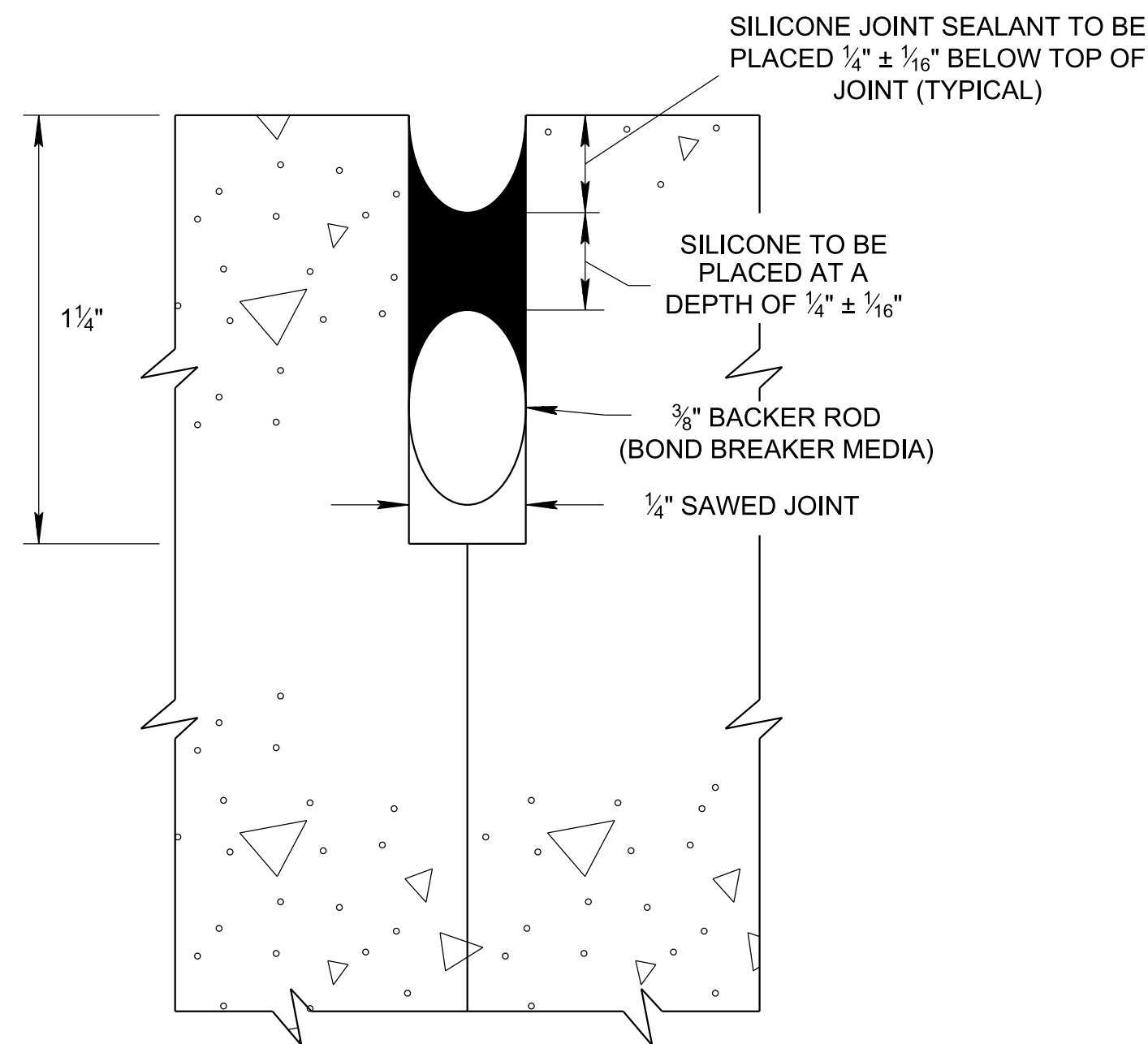
- (A) SEE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS FOR PAVEMENT JOINTS AND SEALANTS.
- (B) SEE STANDARD DRAWING NOS. RP-J-1, RP-J-5, AND RP-J-7 FOR 1 3/4" EXPANSION JOINT LOCATIONS.
- (C) SEE STANDARD DRAWING NO. RP-J-13 FOR DETAILS REGARDING 3/4" AND 1 3/4" ELASTIC JOINT SEALS.
- (D) SEE STANDARD DRAWING NOS. RP-J-17, RP-J-18 AND RP-J-19 REGARDING PLACEMENT OF LOAD TRANSFER DOWELS IN EXPANSION JOINTS.

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DEPARTMENT OF TRANSPORTATION

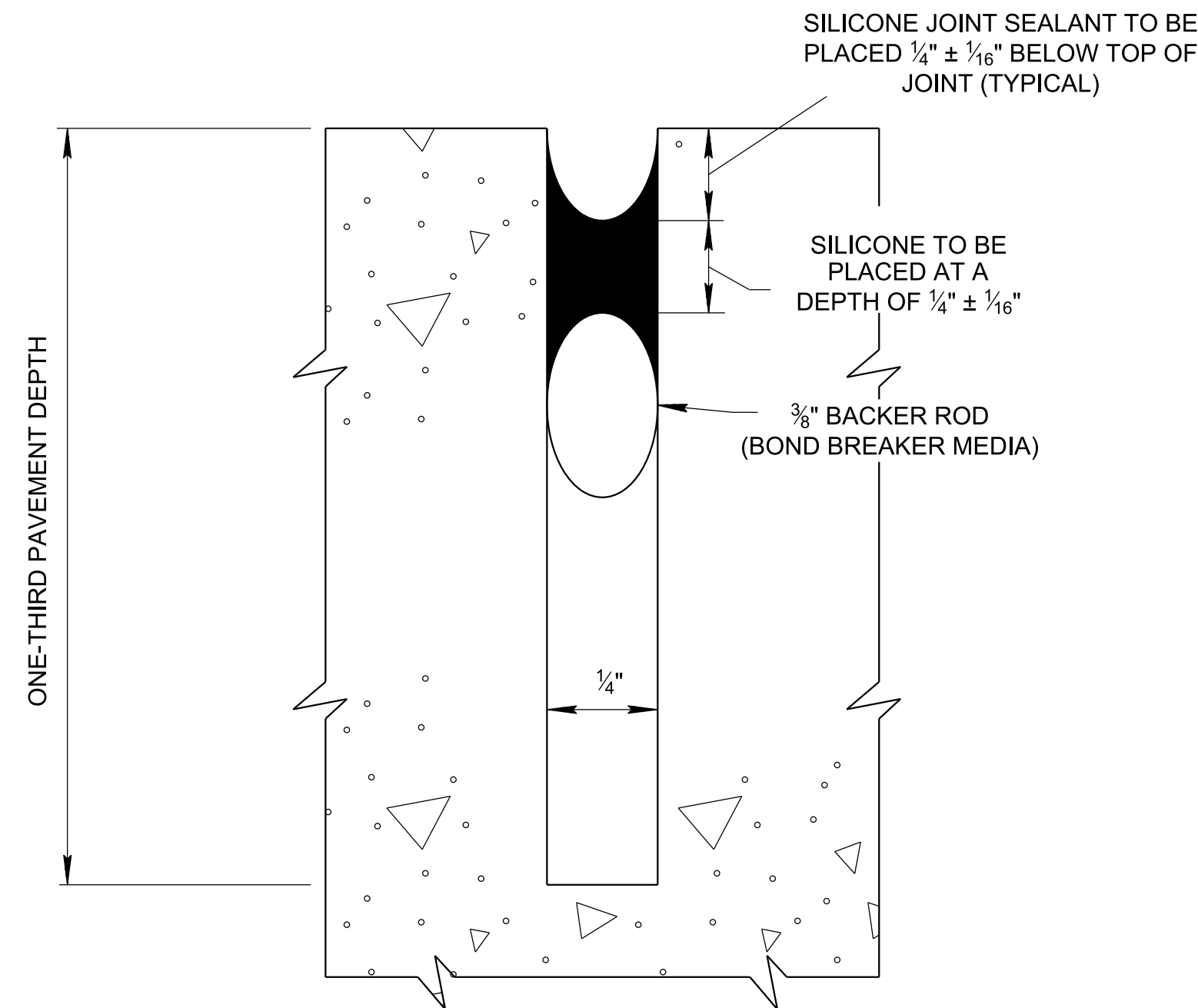
3/4" AND 1 3/4" EXPANSION AND EDGE PAVEMENT JOINTS

RP-J-11

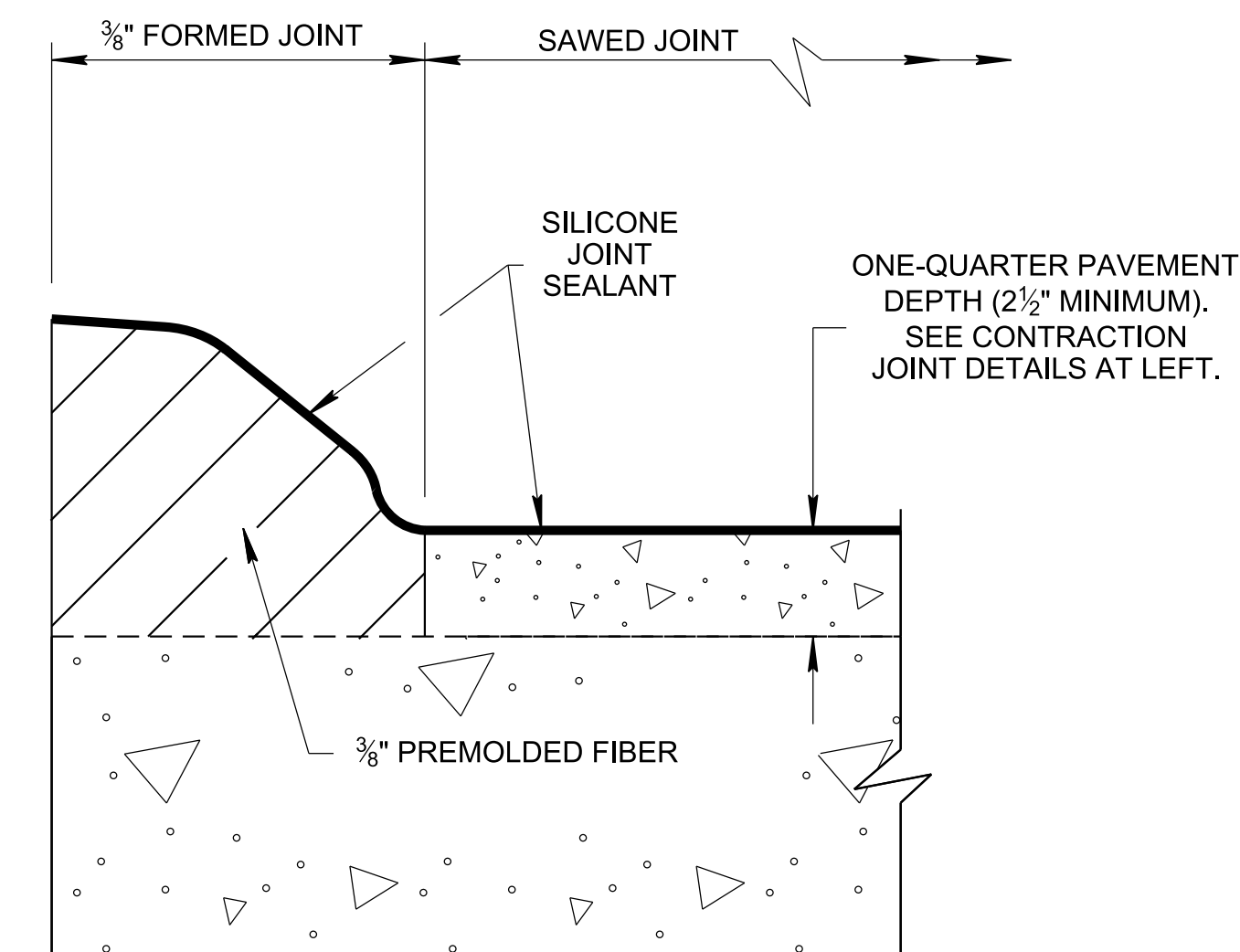
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CONSTRUCTION JOINT



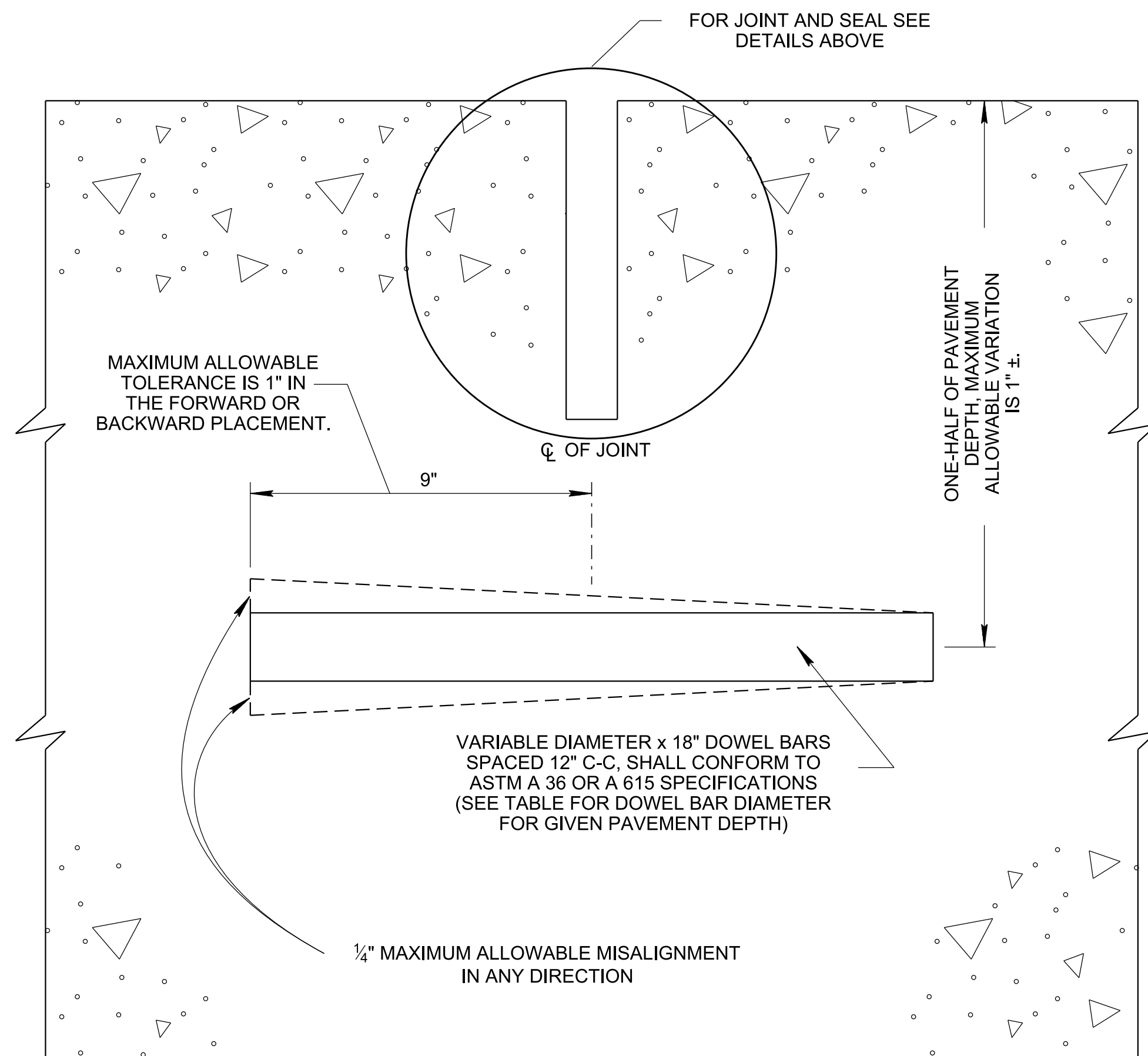
PLAIN SAWED GROOVE CONTRACTION JOINT



CONTRACTION DETAILS THROUGH INTEGRAL CONCRETE CURB

SEE STANDARD DRAWING RP-SC-1 FOR ADDITIONAL DETAILS AND NOTES NOT SHOWN ON THIS SHEET.

- REV. 3-32-82: UPDATED DETAIL OF DOWEL BAR FOR TRANSVERSE JOINTS.
- REV. 1-4-83: CHANGED DEPTH REQUIREMENT ON ALTERNATE TO SAWING LONGITUDINAL CONTRACTION JOINT.
- REV. 1-9-85: CHANGED DOWEL BAR TO ASTM A 36.
- REV. 11-19-85: DELETED TOLERANCE IN NOTE (6).
- REV. 5-25-88: ELIMINATED POLYETHYLENE SHEETING ALTERNATE AND REPLACED ELASTOMERIC WITH SILICONE.
- REV. 2-14-90: REDREW SHEET; UPDATED "PLAIN SAWED GROOVE CONTRACTION JOINT" AND "CONSTRUCTION JOINT" DETAILS. ELIMINATED "INSERT AND SAWED GROOVE CONTRACTION JOINT" DETAIL. CHANGED DOWEL BAR LENGTH TO 18", AND MODIFIED GENERAL NOTES.
- REV. 2-14-91: ADDED DOWEL BAR SIZE TABLE. CHANGED REFERENCE FOR DOWEL BAR SIZE FROM 1 1/4" TO VARIABLE DIAMETER.
- REV. 10-26-91: MODIFIED INTEGRAL CONCRETE CURB DETAIL.
- REV. 12-18-94: CHANGED DRAWING REFERENCE NUMBER IN GENERAL NOTE (C) AND IN CROSS-REFERENCE BLOCK.
- REV. 5-27-96: CHANGED MAXIMUM ALLOWABLE MISALIGNMENT TOLERANCE FOR DOWEL BARS FROM 1/2" TO 1/4".
- REV. 10-26-00: CHANGED WIDTH AND DEPTH OF SAWED GROOVE CONTRACTION JOINT. CHANGED WIDTH OF CONSTRUCTION JOINT. CHANGED GENERAL NOTE (1).
- REV. 1-19-02: ADDED NEW GENERAL NOTE (C). REDESIGNATED ALL SUBSEQUENT GENERAL NOTES.
- REV. 9-24-10: ADDED 8" PAVEMENT THICKNESS.
- REV. 2-2-12: CHANGED DOWEL BAR TABLE.
- REV. 05-01-20: UPDATED CONTRACTION DETAILS THROUGH INTEGRAL CONCRETE CURB. REDREW SHEET.



DETAIL OF DOWEL BAR FOR ALL TRANSVERSE CONTRACTION JOINTS

DOWEL BAR SIZE TABLE	
PAVEMENT THICKNESS (INCHES)	BAR DIAMETER (INCHES)
8-10	1 1/4"
>10	1 1/2"

GENERAL NOTES

- (A) SEE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS FOR PAVEMENT JOINTS AND SEALANTS.
- (B) TRANSVERSE CONTRACTION AND CONSTRUCTION JOINTS WITH DOWELS SHALL BE REQUIRED. CONTRACTION JOINTS SHALL HAVE 15 FEET CONSTANT SPACING (SEE STANDARD DRAWING RP-J-1).
- (C) TRANSVERSE CONTRACTION AND/OR CONSTRUCTION JOINTS IN THE PORTLAND CEMENT CONCRETE SHOULDERS SHALL BE OF THE SAME TYPE, MATERIAL AND SPACING AS THE CORRESPONDING JOINTS IN THE PORTLAND CEMENT CONCRETE TRAFFIC LANES. (SEE SUBSECTION 501.23 (b) OF THE STANDARD SPECIFICATIONS.) SEE STANDARD DRAWINGS RP-CS-1 AND RP-CS-2 FOR FURTHER DETAILS.
- (D) SEE STANDARD DRAWINGS RP-I-5 AND RP-J-11 FOR 3/4" EXPANSION JOINTS AT STREET AND ALLEY INTERSECTIONS.
- (E) SEE STANDARD DRAWINGS RP-J-1 FOR 1 1/4" EXPANSION JOINTS AT BRIDGE ENDS.
- (F) SEE STANDARD DRAWINGS RP-J-5 AND RP-J-7 FOR 1 3/4" EXPANSION JOINTS ON RAMPS.
- (G) SEE STANDARD DRAWING RP-J-15 FOR LONGITUDINAL CONSTRUCTION JOINTS WITH TIE BARS.
- (H) SEE STANDARD DRAWINGS RP-J-17, RP-J-18, AND RP-J-19 FOR DOWEL BAR AND DOWEL BAR ASSEMBLY DEVICE PLACEMENT DETAILS.
- (I) DOWELS MAY BE PRESET IN BASKETS OR VIBRATED INTO PLACE WITH A DOWEL IMPLANTER, SO LONG AS THE TOLERANCES SHOWN IN DETAIL ON THIS SHEET ARE MET.
- (J) LONGITUDINAL CONTRACTION AND/OR CONSTRUCTION JOINTS WITH TIE BARS SHALL BE REQUIRED. TIE BARS SHALL BE 2'-6" LONG AND SPACED 1'-6" CENTER-TO-CENTER. TIE BARS SHALL BE 5/8" DIAMETER ROUND DEFORMED STEEL BARS AND CONFORM TO ASTM A 615 - GRADE 40 SPECIFICATIONS.

CROSS-REFERENCE DRAWINGS FOR THIS DRAWING: RP-I-5, RP-J-1, RP-J-3, RP-J-5, RP-J-7, RP-J-11, RP-J-13, RP-J-15, RP-J-17, RP-J-18, RP-J-19 AND RP-SC-1.

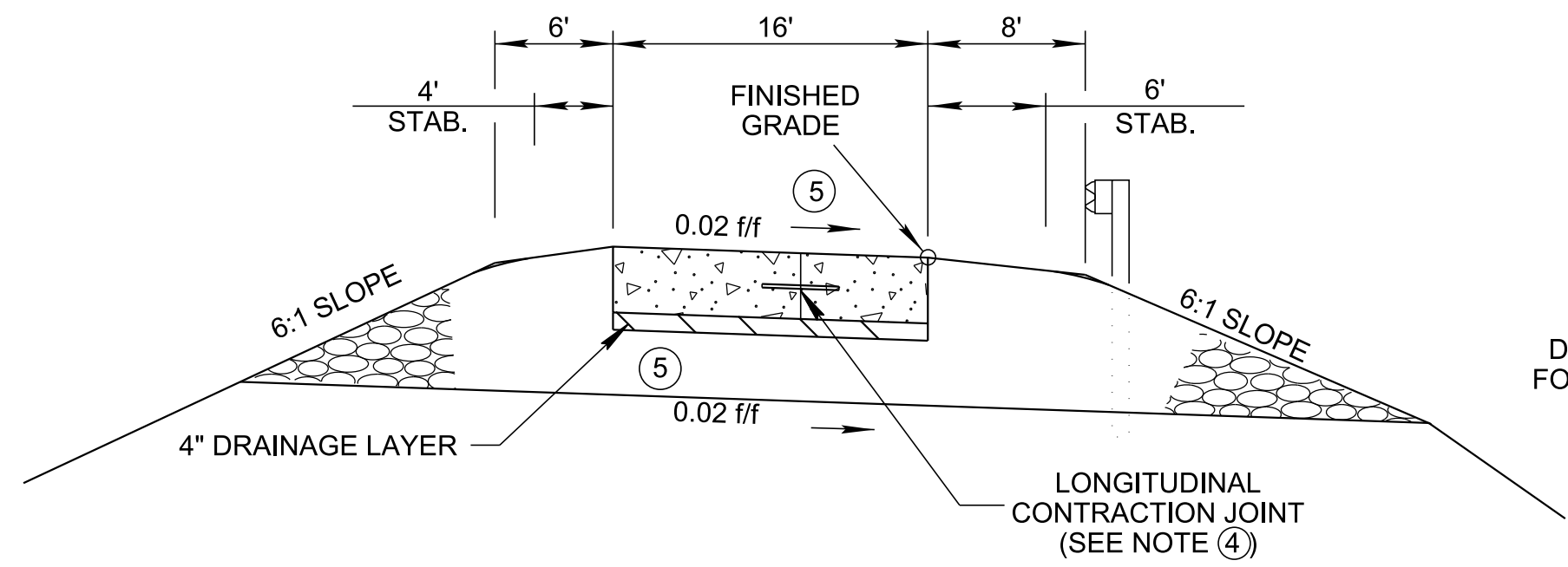
APPROVED BY FHWA (ALL OTHERS APPROVED BY TDOT)

STATE OF TENNESSEE
STANDARD DRAWING
DEPARTMENT OF TRANSPORTATION

CONTRACTION AND CONSTRUCTION JOINTS FOR CONCRETE PAVEMENT

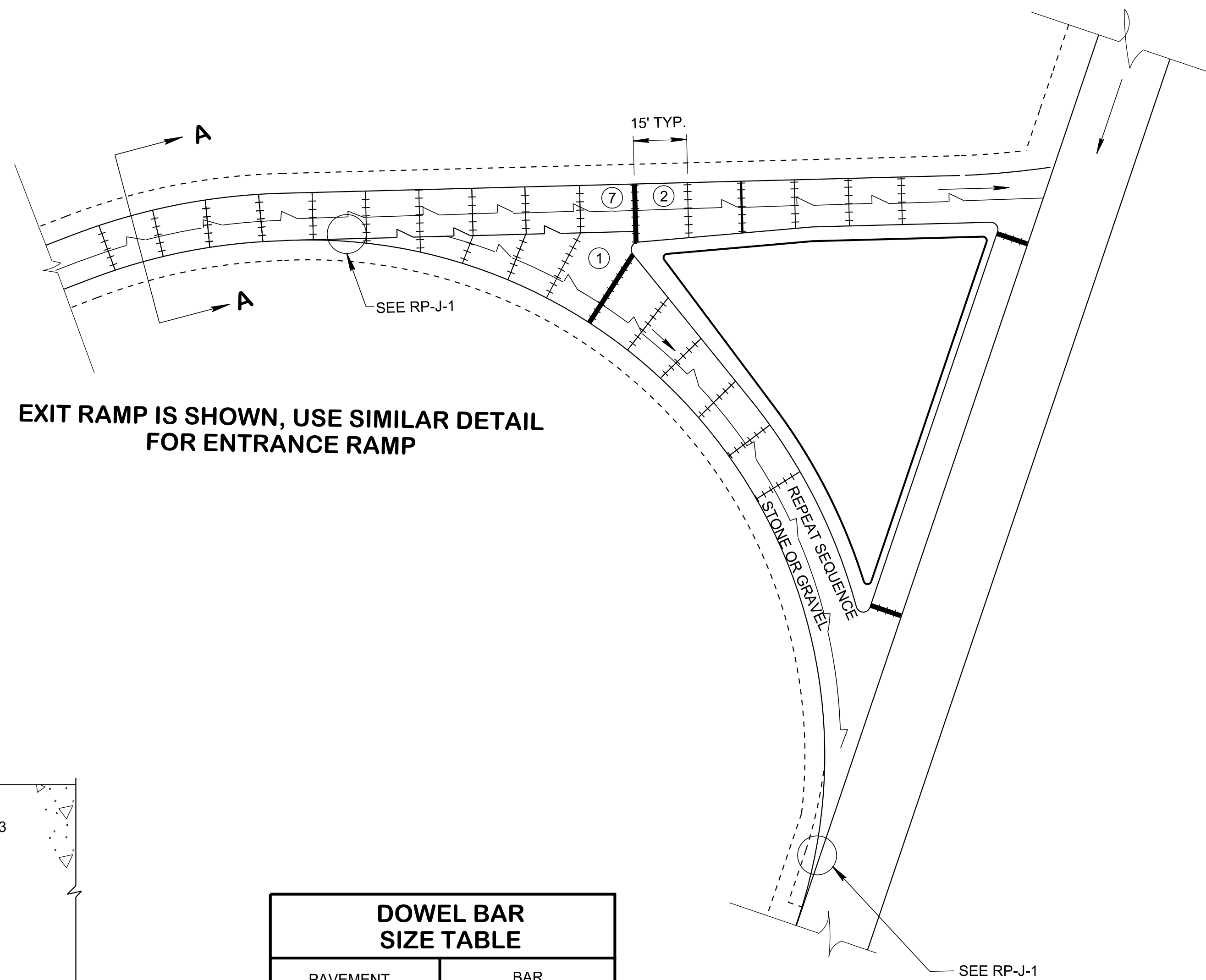
RP-J-9

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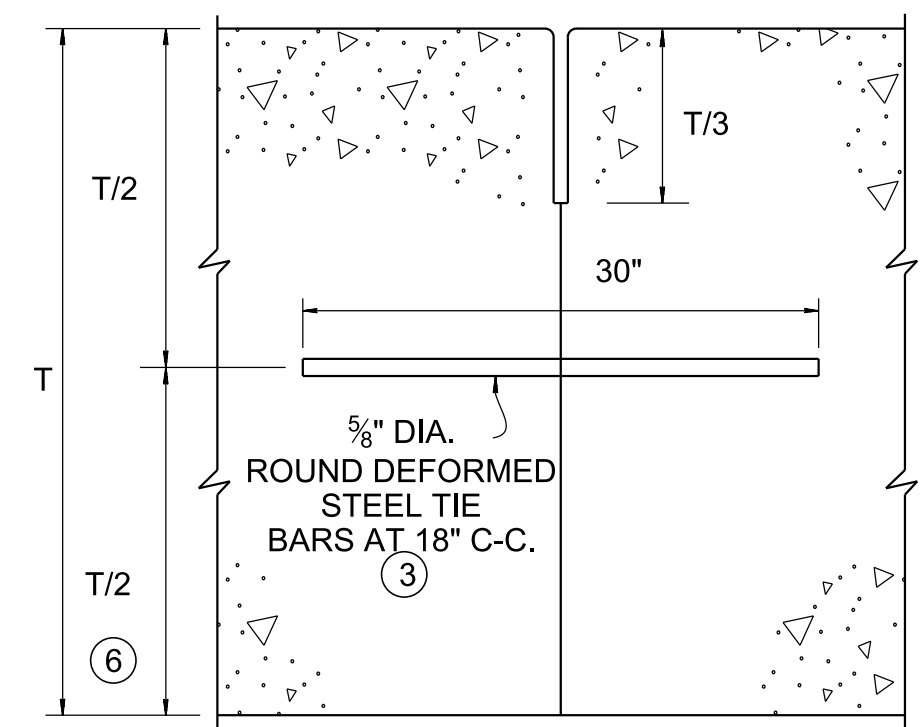
SECTION A-A

SEE STANDARD DRAWING NO. RP-J-5 FOR DETAILS AT NOSE.



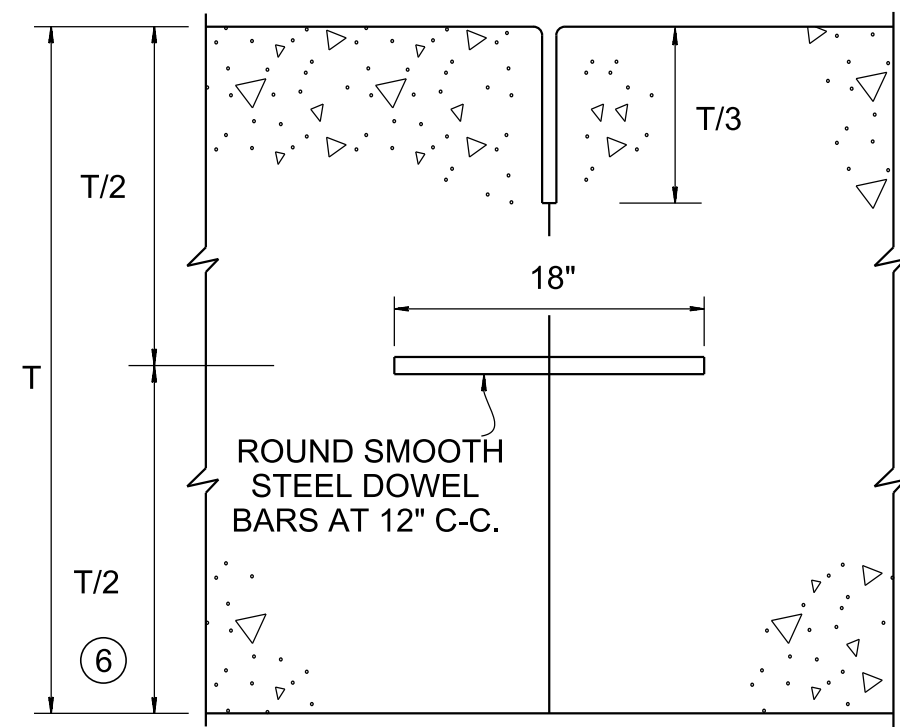
EXIT RAMP IS SHOWN, USE SIMILAR DETAIL FOR ENTRANCE RAMP

- REV. 1-31-83: ADDED JOINT SKEW NOTE.
- REV. 6-23-88: DELETED JOINT SKEW.
- REV. 3-20-91: REDREW SHEET AND CHANGED JOINT SPACING FOR CONCRETE PAVEMENT USING STONE. ADDED FOOTNOTE NO. (3).
- REV. 12-18-94: CHANGED DRAWING REFERENCE NUMBER IN CROSS-REFERENCE BLOCK.
- REV. 10-26-00: CHANGED VARIABLE JOINT SPACING TO 15' CONSTANT.
- REV. 1-30-12: ADDED LONGITUDINAL CONTRACTION JOINT DETAILS.
- REV. 7-14-14: UPDATED DOWEL BAR DETAIL.
- REV. 05-01-20: REVISED SECTION A-A. REDREW SHEET.



TIE BAR DETAIL FOR LONGITUDINAL CONTRACTION JOINTS

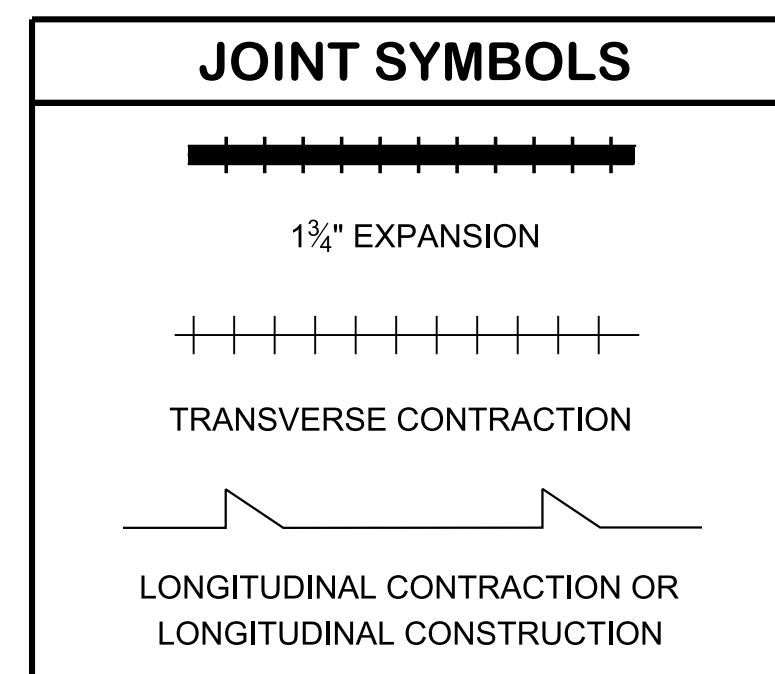
FOR JOINT SEAL DETAILS SEE DRAWING RP-J-15



DOWEL BAR DETAIL FOR TRANSVERSE CONTRACTION JOINTS

FOR JOINT SEAL DETAILS SEE DRAWING RP-J-9

DOWEL BAR SIZE TABLE	
PAVEMENT THICKNESS (T)	BAR DIAMETER (IN)
8" TO 10"	1 1/4"
> 10"	1 1/2"



- FOOTNOTES**
- (1) SKEW JOINTS WITH TURNING RADII WHEN LENGTH OF JOINT IS GREATER THAN 8'.
 - (2) UNLESS OTHERWISE NOTED IN THE PLANS, THE TRANSVERSE CONTRACTION AND EXPANSION JOINTS SHALL BE SKEWED AT 90° TO THE ROADWAY CENTERLINE OR BASELINE.
 - (3) NO TIE BARS SHALL BE PLACED WITHIN 18" OF TRANSVERSE JOINT.
 - (4) LONGITUDINAL CONTRACTION JOINT MAY BE USED INSTEAD OF THE LONGITUDINAL CONTRACTION JOINT (RP-J-15).
 - (5) CONSTANT ROADWAY SLOPE SHOULD BE USED, INCLUDING ON SHOULDERS, REFER TO RD11-TS-4 FOR INFORMATION PERTAINING TO RAMP DESIGN.
 - (6) MAX. HORIZONTAL AND VERTICAL TOLERANCE FOR DOWEL AND TIE BARS IS 1".
 - (7) UNLESS OTHERWISE NOTED IN THE PLANS, THE LONGITUDINAL CONTRACTION JOINT IS TO END WHEN IT REACHES THE EXPANSION JOINT.

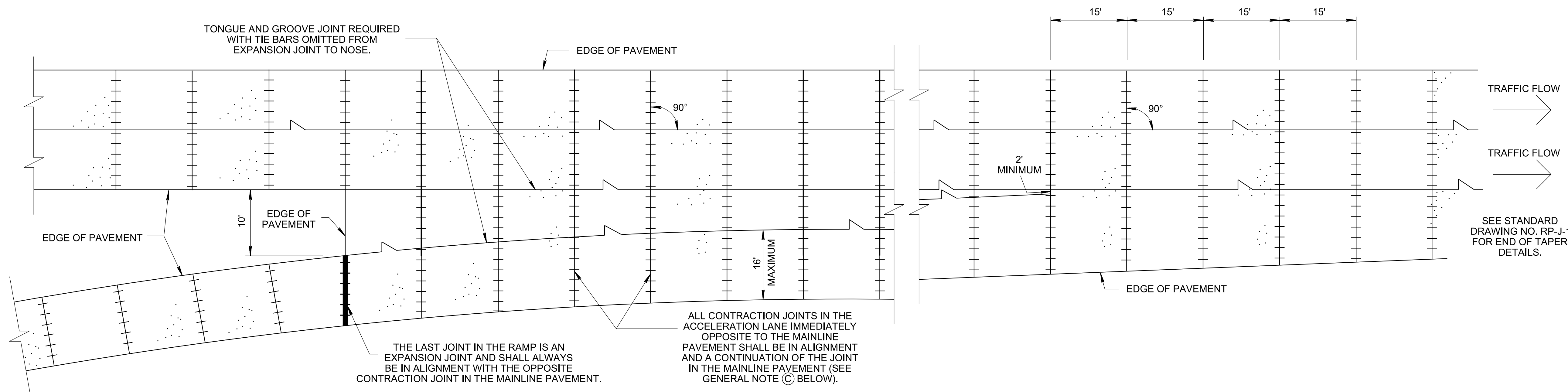
CROSS-REFERENCE DRAWINGS FOR THIS DRAWING: RP-J-1, RP-J-5, RP-J-9, RP-J-11, RP-J-13, RP-J-15, RP-J-17, RP-J-18, AND RP-J-19.

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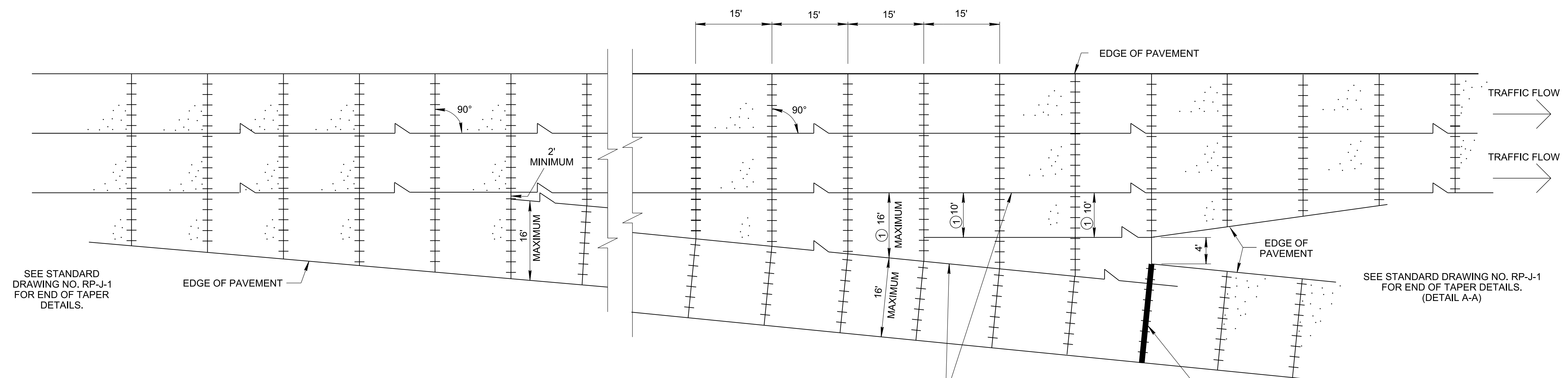
STATE OF TENNESSEE
STANDARD DRAWING
DEPARTMENT OF TRANSPORTATION

CONCRETE RAMP JOINT TYPES AND SPACING

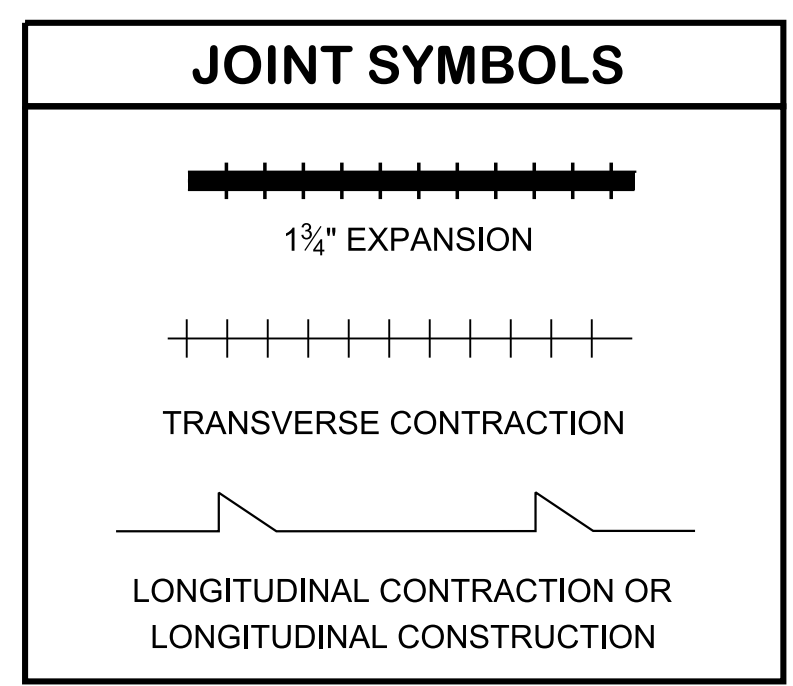
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SINGLE LANE ACCELERATION RAMP



SINGLE LANE DECELERATION RAMP



① WHEN THE EXIT GORE WIDTH REACHES 16'-0", ANOTHER LONGITUDINAL JOINT SHALL BE PLACED AS SHOWN, BEGINNING AT THE NEAREST TRANSVERSE JOINT AND EXTENDING PARALLEL TO THE MAINLINE TO THE "NOSE" OF THE GORE AREA.

- GENERAL NOTES**
- (A) UNLESS OTHERWISE NOTED IN THE PLANS, THE TRANSVERSE CONTRACTION AND EXPANSION JOINTS SHALL BE SKEWED AT 90° TO THE ROADWAY CENTERLINE OR BASELINE.
 - (B) NORMAL SPACING OF THE TRANSVERSE CONTRACTION JOINTS INDICATED ON THIS DRAWING ARE TO BE IN ACCORDANCE WITH SPACING INDICATED ON STANDARD DRAWING NO. RP-J-1.
 - (C) WHEN PROPOSED ASPHALT PAVEMENT (MAINLINE) AND PROPOSED PORTLAND CEMENT CONCRETE PAVEMENT (RAMPS) ARE USED, THE NORMAL SPACING OF THE TRANSVERSE CONTRACTION JOINTS INDICATED ON THE "RP-J" STANDARD SERIES OF DRAWINGS IS TO BE USED.

- REV. 1-31-83: ADDED JOINT SKEW NOTE AND NOTE ①. REQUIRED EXIT GORE JOINT.
- REV 6-23-88: DELETED JOINT SKEW.
- REV. 3-20-91: REDREW SHEET AND CHANGED JOINT SPACING FOR CONCRETE PAVEMENT USING STONE. ELIMINATED PARTIAL USE OF EXPANSION JOINTS.
- REV. 12-18-94: CHANGED DRAWING REFERENCE NUMBER IN CROSS-REFERENCE BLOCK.
- REV. 10-26-00: CHANGED VARIABLE JOINT SPACING TO 15' CONSTANT.
- REV. 7-1-01: CHANGED DRAWING NAME.
- REV. 05-01-20: REDREW SHEET.

CROSS-REFERENCE DRAWINGS FOR THIS DRAWING: RP-J-1, RP-J-7, RP-J-9, RP-J-11, RP-J-13 AND RP-J-15.

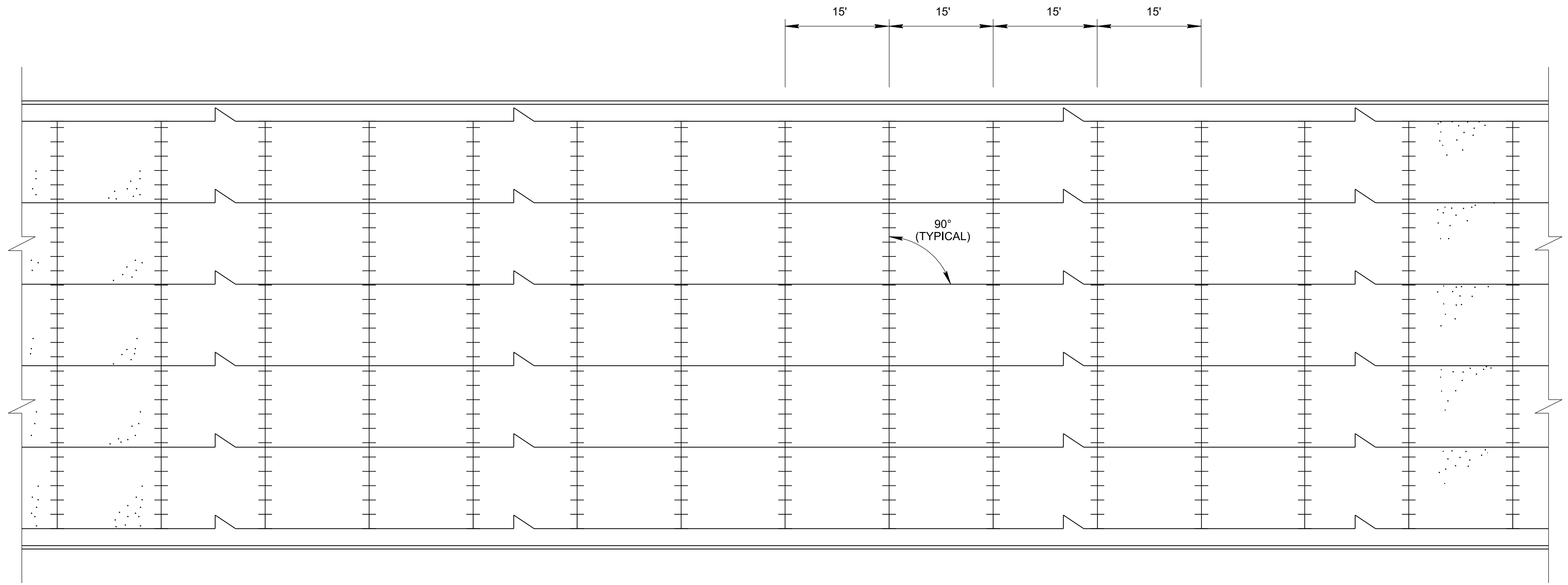
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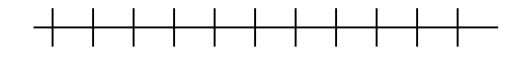

TYPICAL ACCELERATION AND DECELERATION LANE JOINT TYPES AND SPACING FOR CONCRETE RAMPS

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REV. 3-20-91: REDREW SHEET AND CHANGED JOINT SPACING FOR CONCRETE PAVEMENT USING STONE. ELIMINATED USE OF EXPANSION JOINTS EVERY 0.5 MILES.
REV. 12-18-94: CHANGED DRAWING REFERENCE NUMBER IN CROSS-REFERENCE BLOCK.
REV. 10-26-00: CHANGED VARIABLE JOINT SPACING TO 15' CONSTANT.
REV. 05-01-20: REDREW SHEET.



TYPICAL MULTIPLE-LANE HIGHWAY

JOINT SYMBOLS

TRANSVERSE CONTRACTION

LONGITUDINAL CONTRACTION OR LONGITUDINAL CONSTRUCTION

CROSS-REFERENCE DRAWINGS FOR THIS DRAWING: RP-J-9, RP-J-11, RP-J-13, RP-J-15, RP-J-17, RP-J-18 AND RP-J-19.

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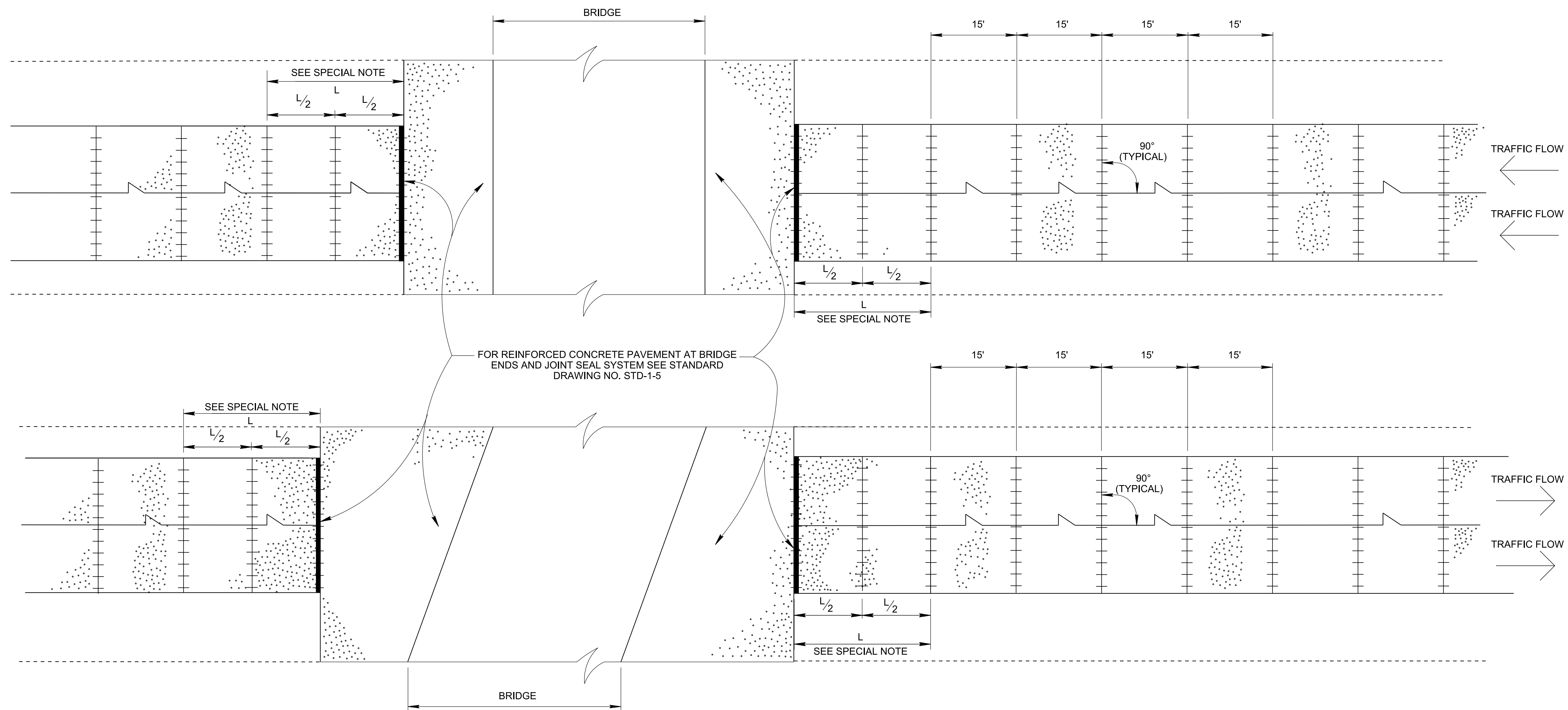
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PORTLAND CEMENT CONCRETE PAVEMENT JOINT TYPES AND SPACING

RP-J-3

NOT TO SCALE

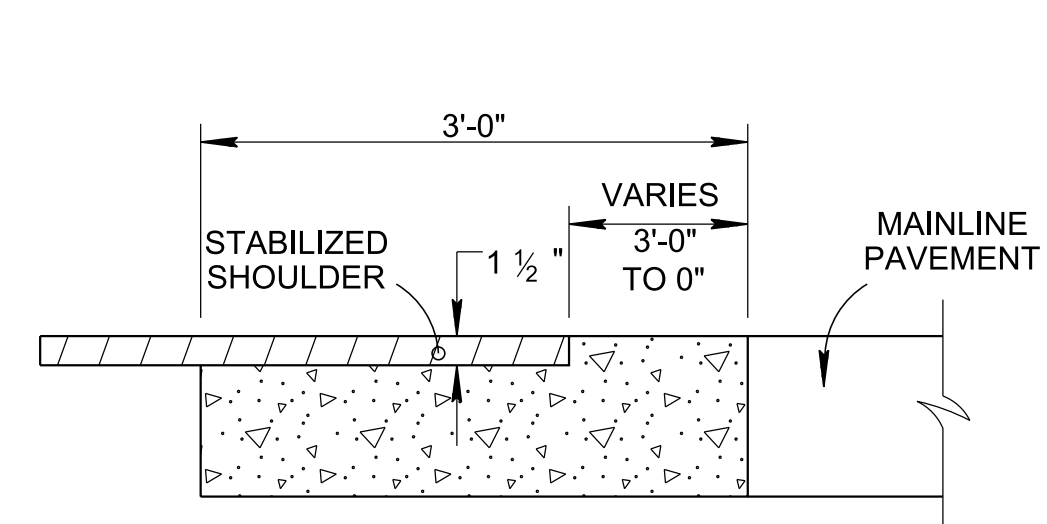
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TYPICAL FOUR LANE HIGHWAY

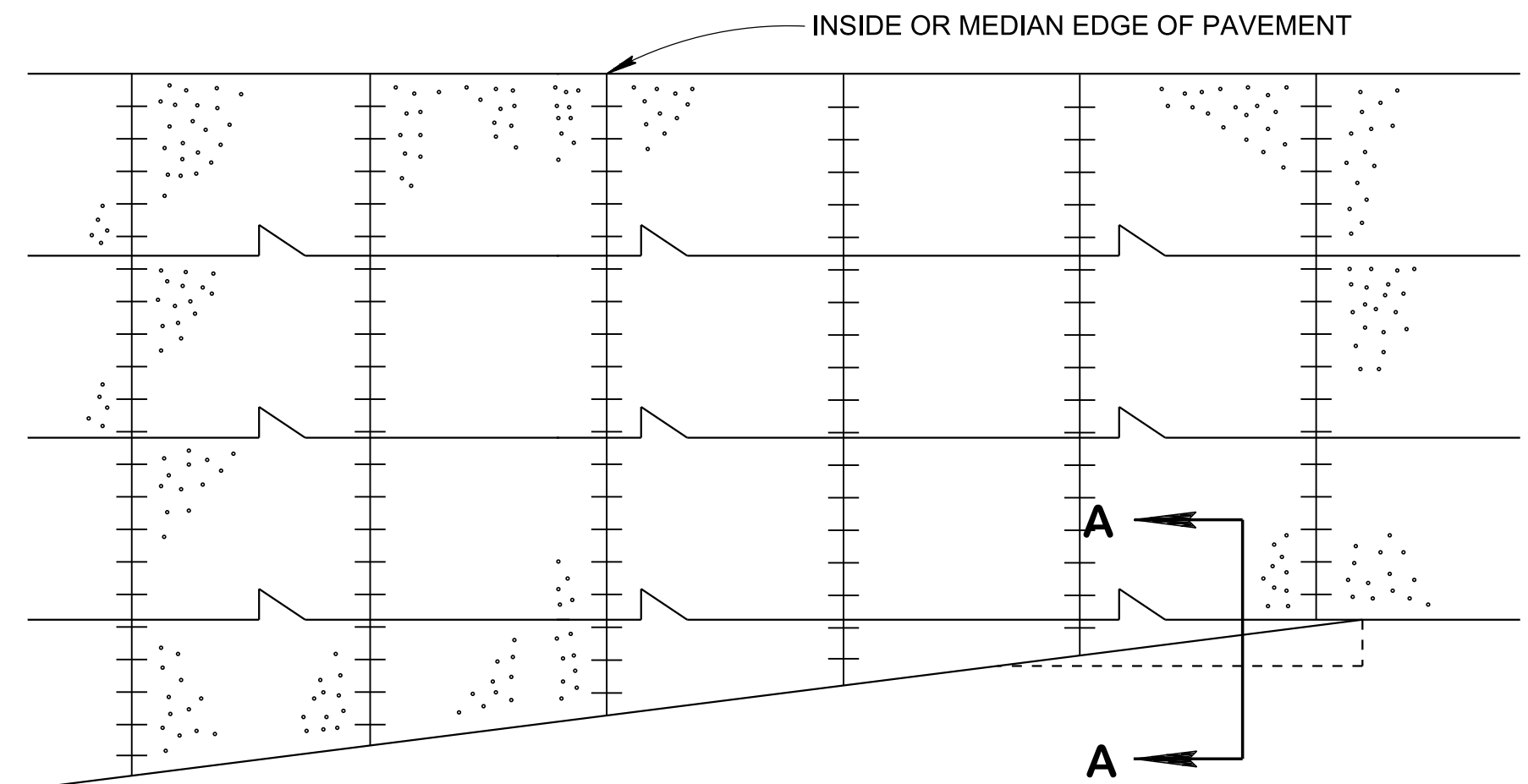
SPECIAL NOTE

THE STANDARD 15 FEET JOINT SPACING MAY BE ADJUSTED TO ACCOMMODATE BRIDGE APPROACH SLABS, AS REQUIRED. THE MINIMUM SLAB LENGTH SHALL BE 8 FEET. THE MAXIMUM SLAB LENGTH SHALL BE 15 FEET.

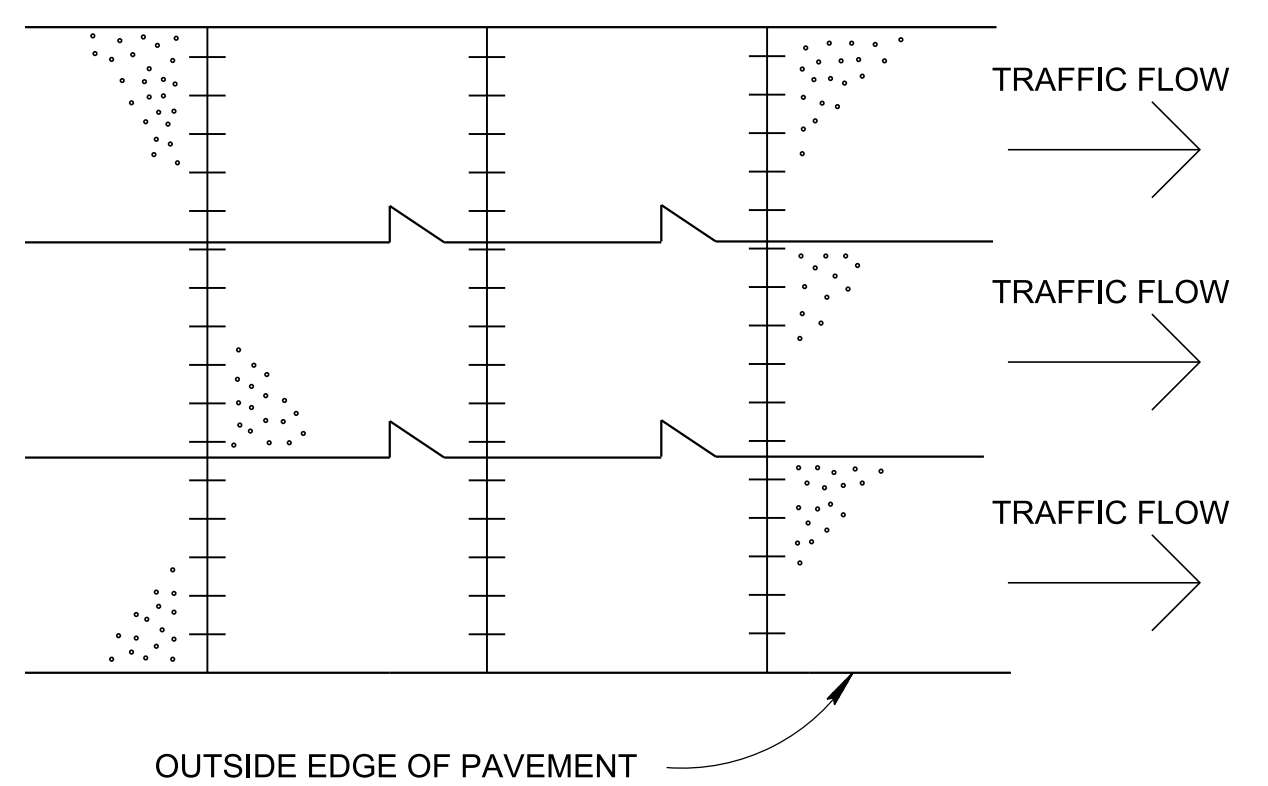


DETAIL A-A

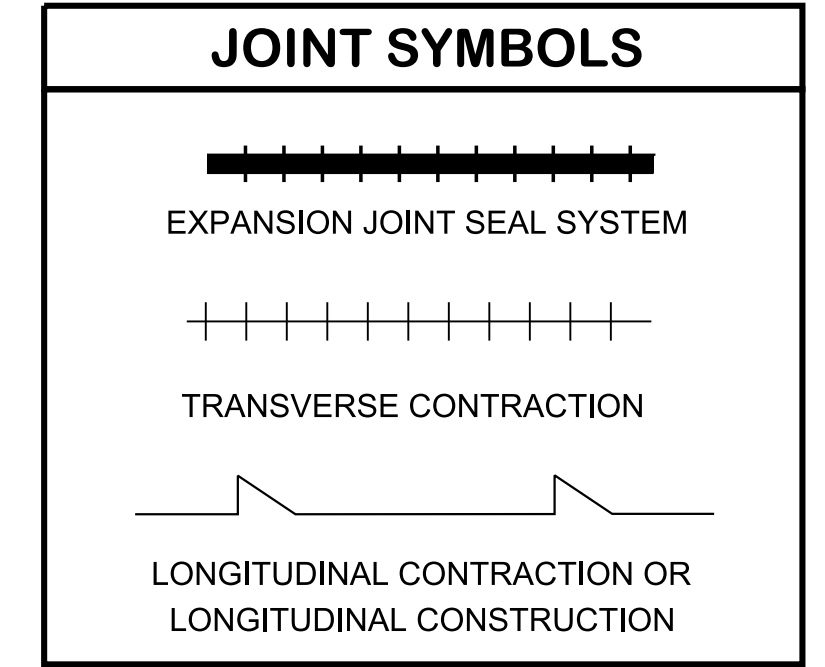
THIS DETAIL IS TO BE USED FOR BOTH ASPHALT AND CONCRETE MAINLINE PAVEMENT.



ACCELERATION OR DECELERATION TAPER



NORMAL THREE LANE PAVEMENT



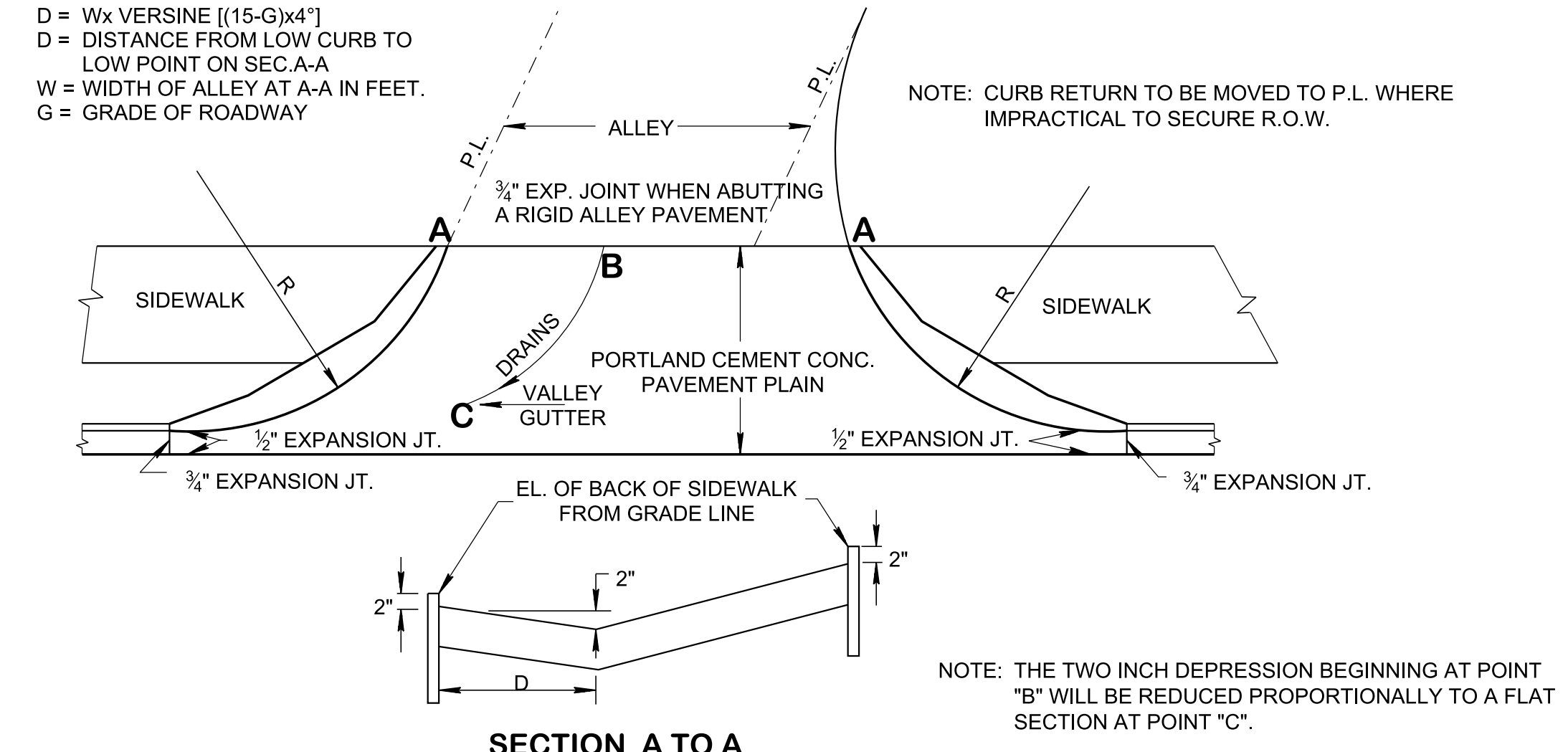
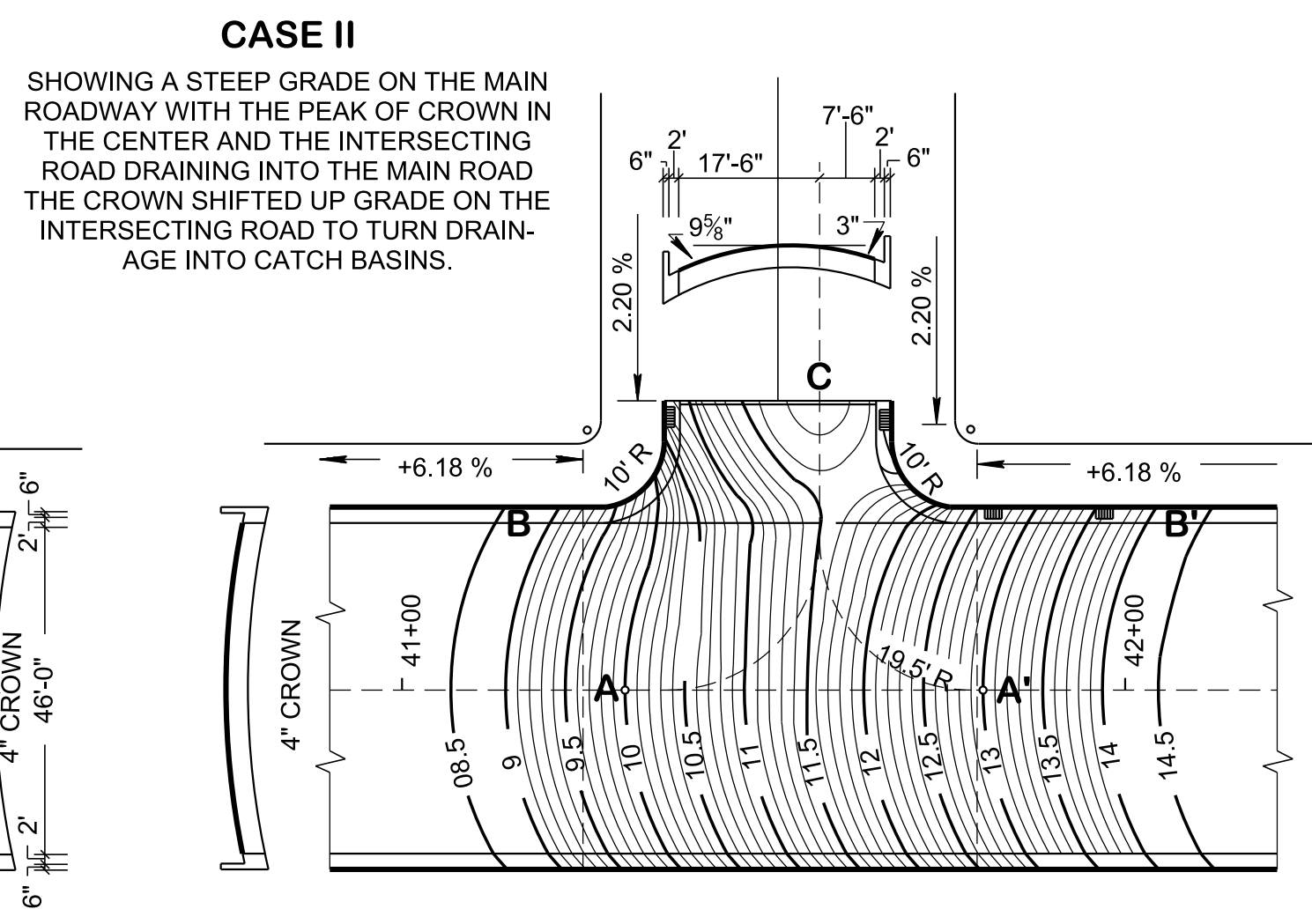
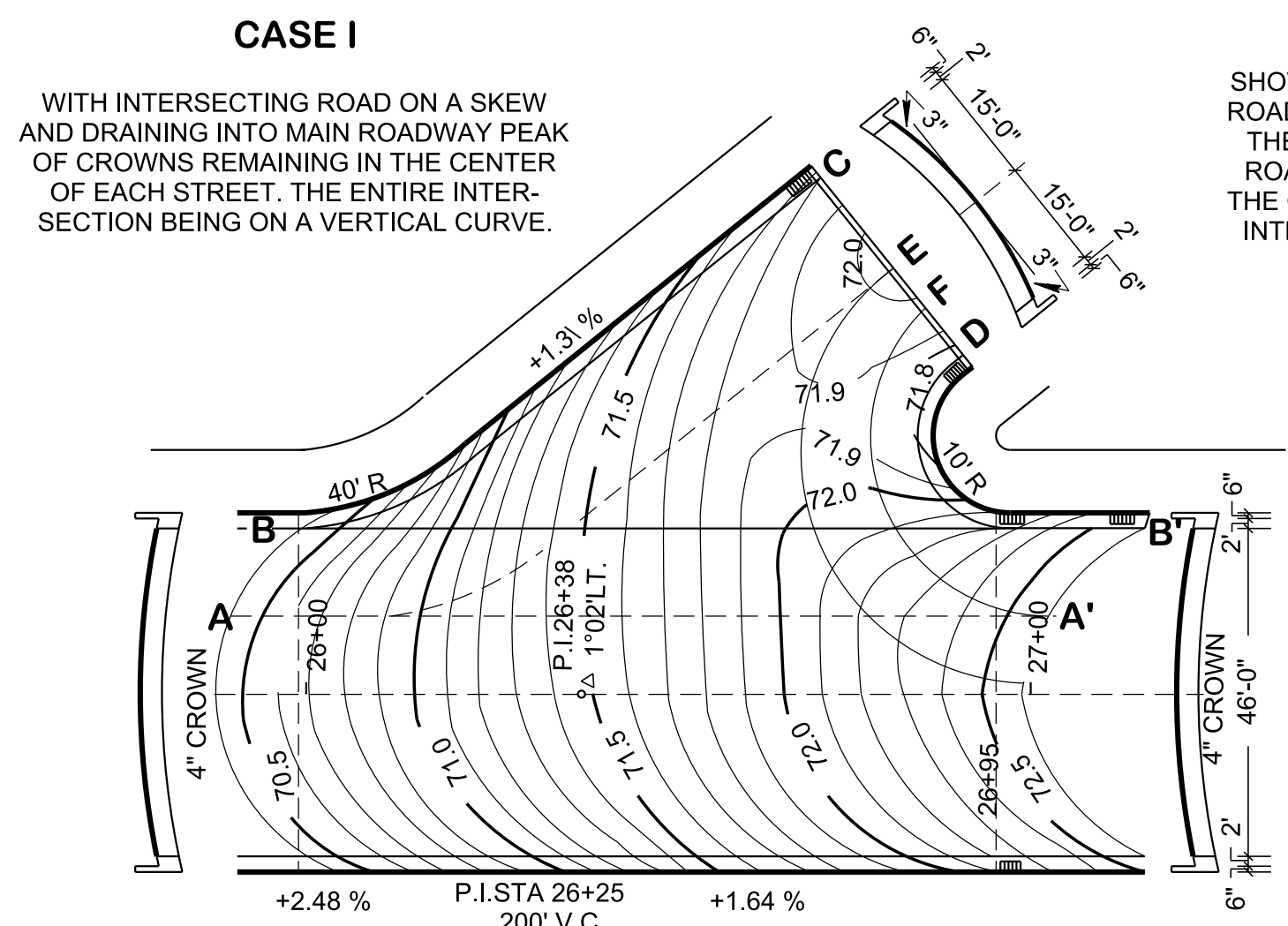
CROSS-REFERENCE DRAWINGS FOR THIS DRAWING: RP-J-9, RP-J-11, RP-J-13, RP-J-15, RP-J-17, RP-J-18, RP-J-19 AND STD-1-5.

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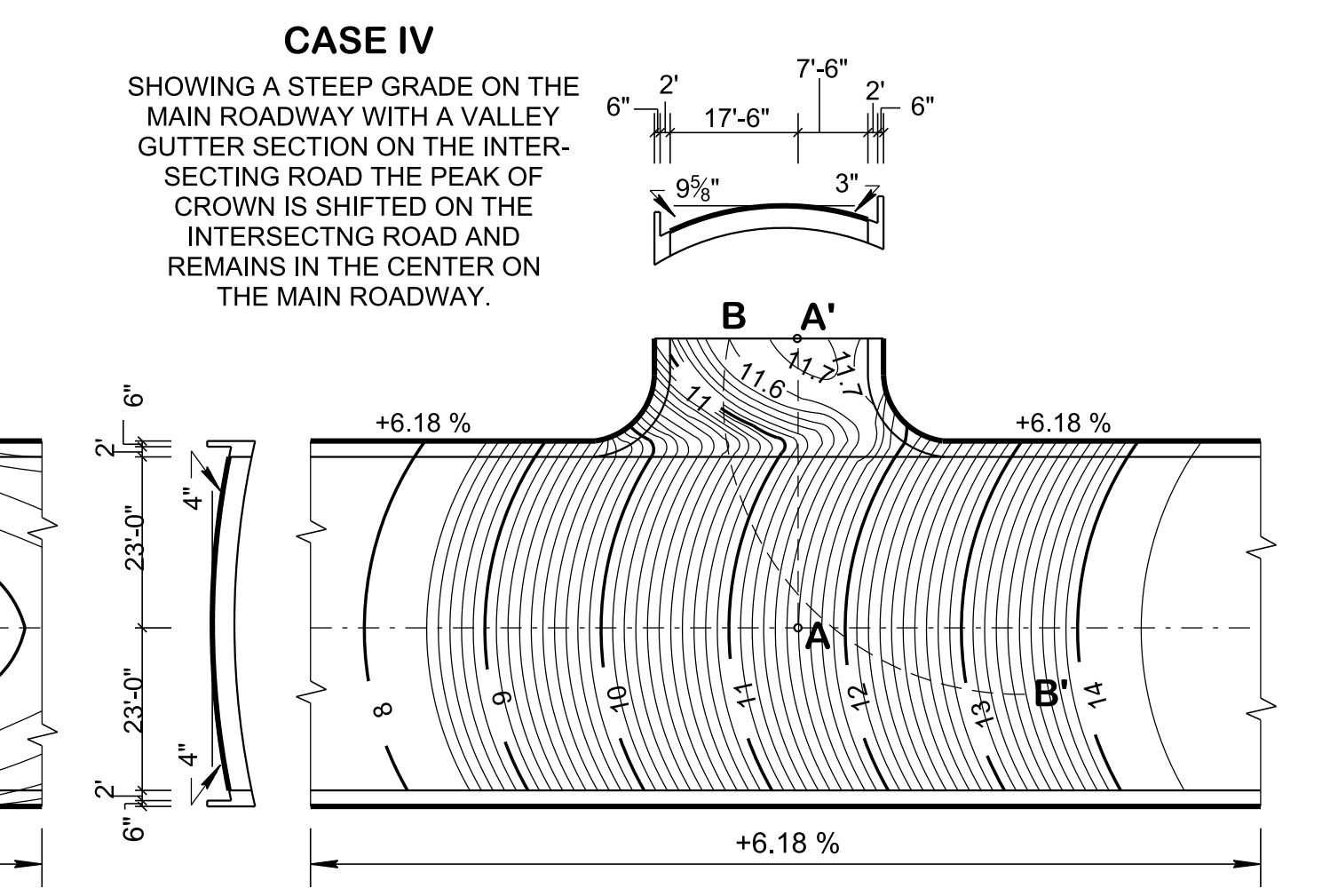
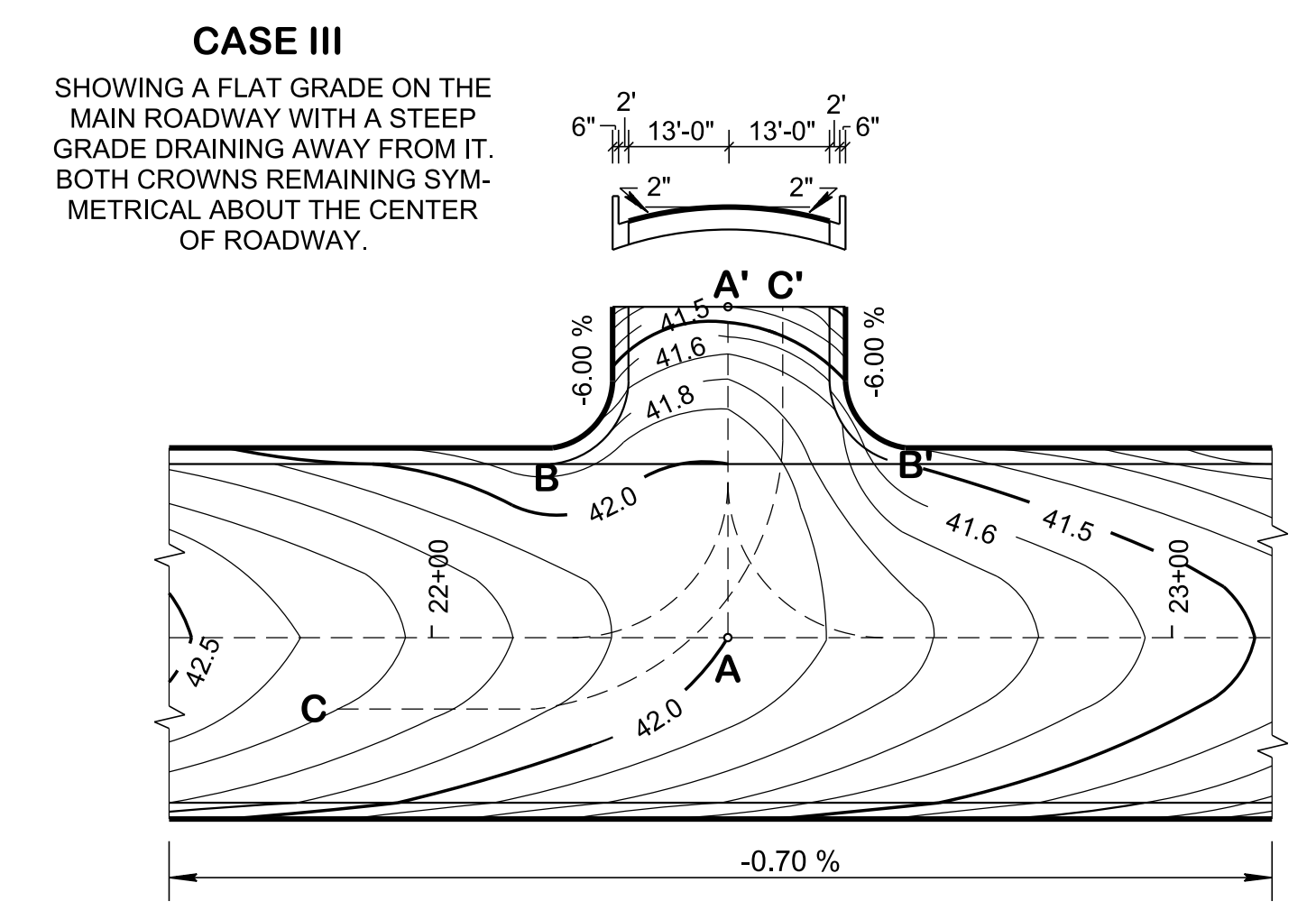
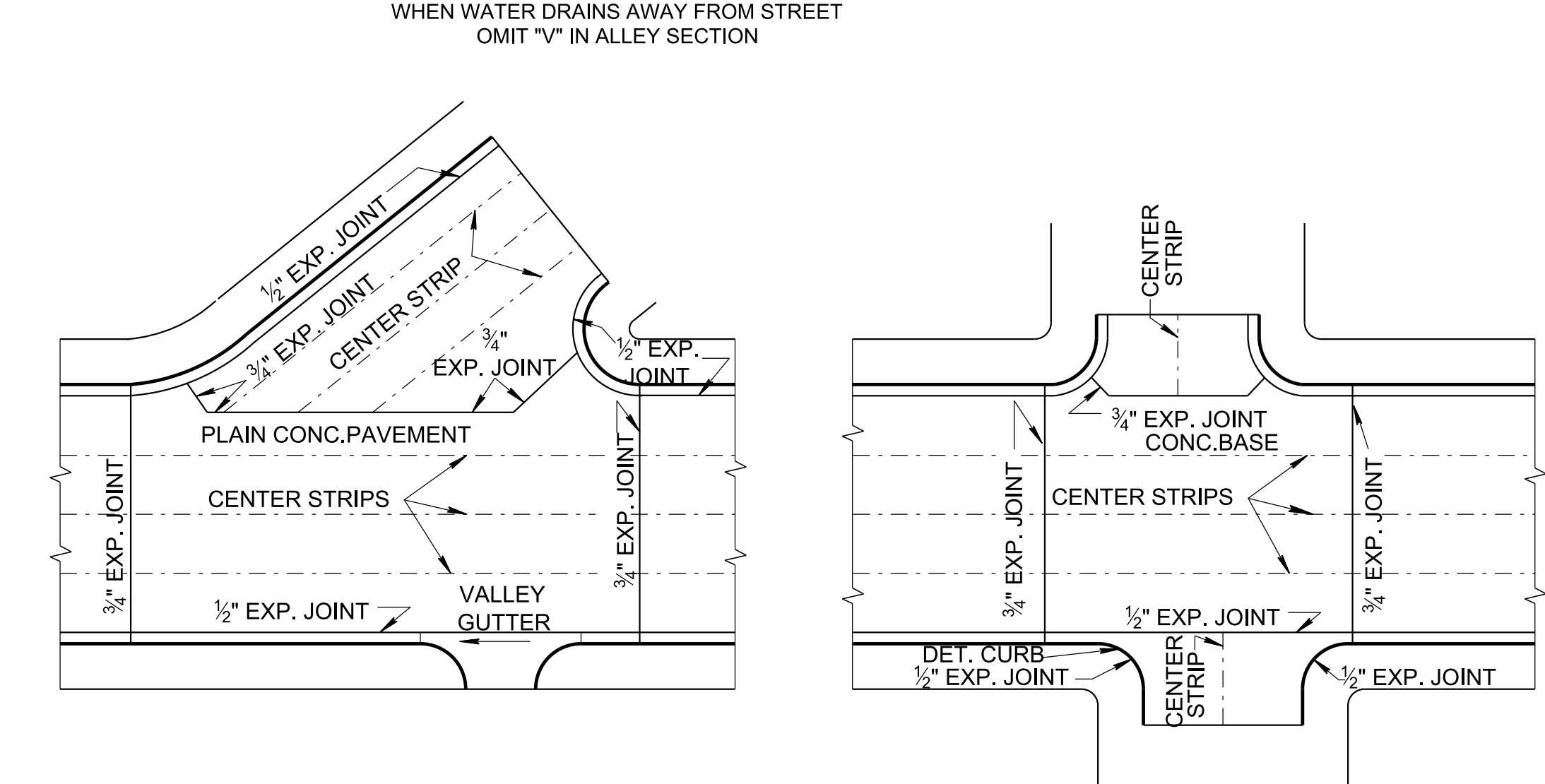
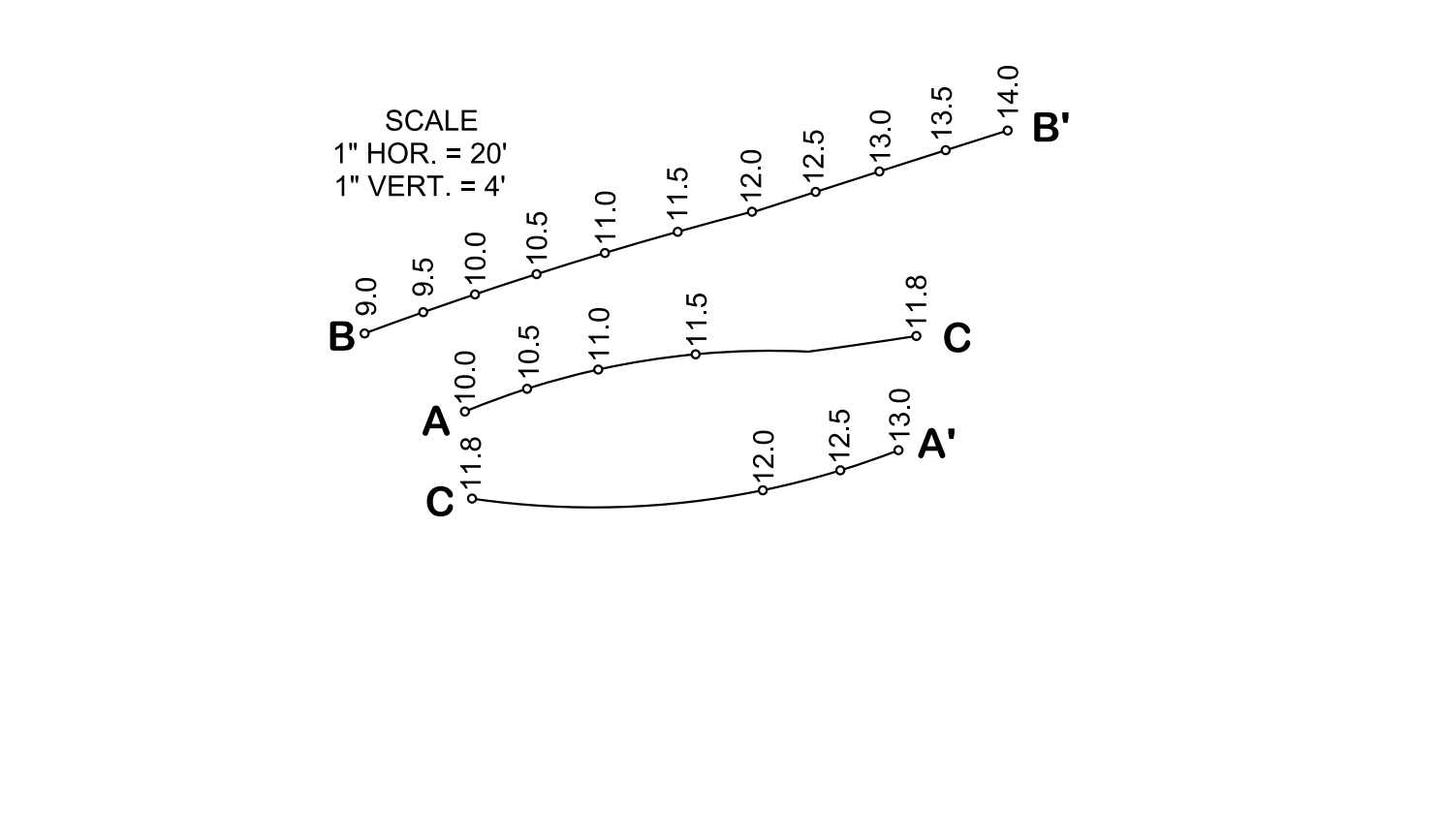
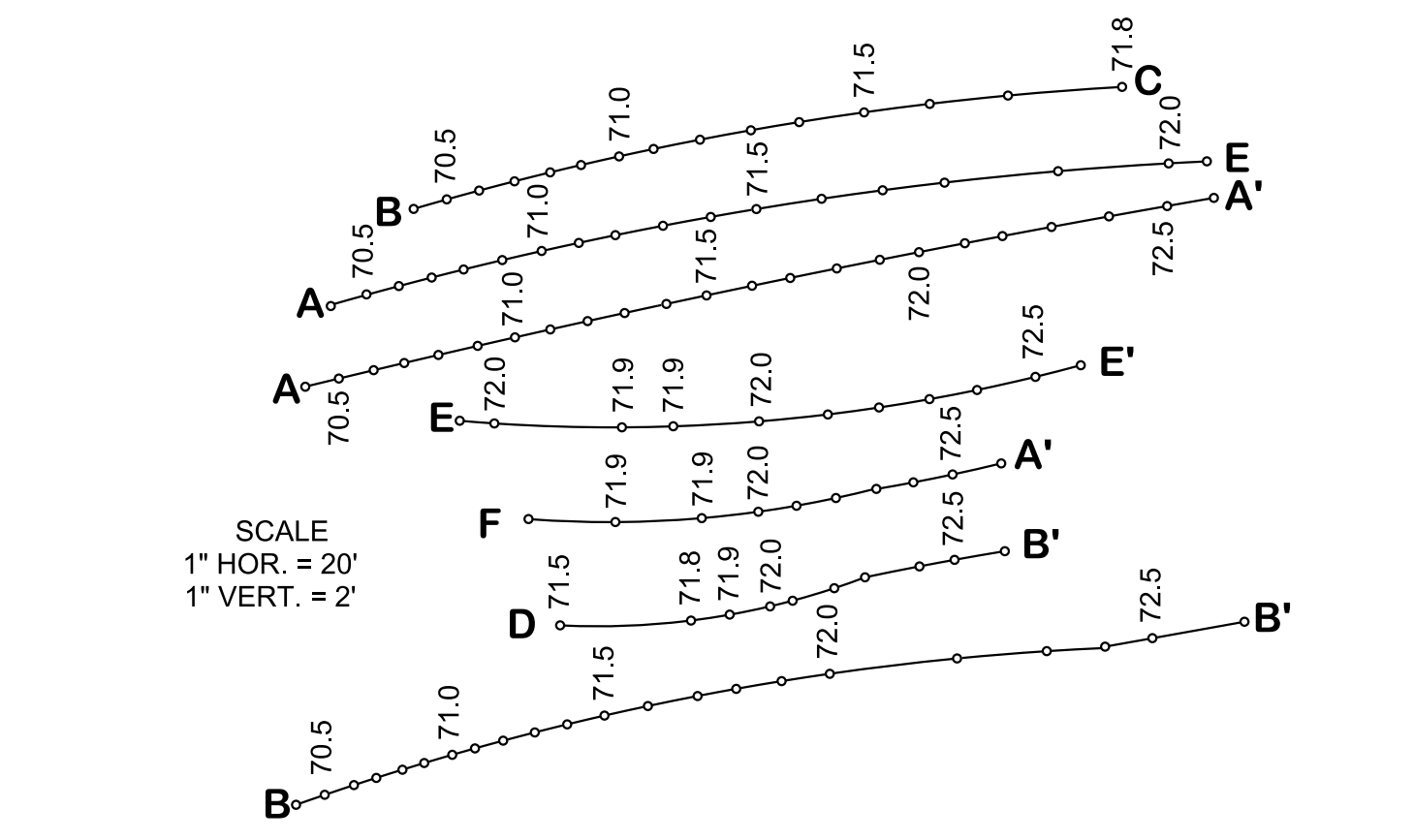
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STANDARD DRAWING
DEPARTMENT OF TRANSPORTATION

PORTLAND CEMENT CONCRETE PAVEMENT JOINT TYPES AND SPACING

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- REV. 9-1-69: RETRACED DRAWING.
- REV. 7-1-72: CHANGED DEPARTMENT NAME.
- REV. 1-1-76: CHANGED DWG. NO. FROM P-I-5a(68) TO RP-I-5.
- REV. 5-27-96: REDREW DRAWING. MADE MINOR REVISIONS AS NEEDED.
- REV. 12-18-96: MODIFIED SIZE OF EXPANSION JOINTS TO CONCRETE PAVEMENT DETAILS TO CONCUR WITH CURRENT SPECIFICATIONS.
- REV. 05-01-20: REDREW SHEET.

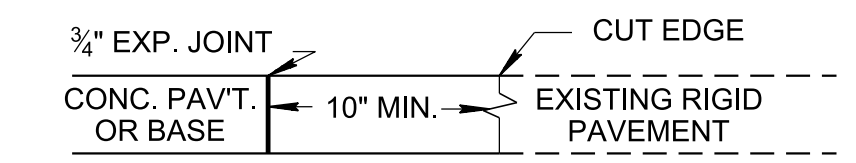


CENTER STRIPS, EXPANSION JOINTS AND MONOLITHIC SECTIONS

CENTER STRIPS WILL BE CARRIED THROUGH INTERSECTIONS AS INDICATED ON SECOND SHEET.

EXPANSION JOINTS TO BE PLACED AS INDICATED, UNLESS OTHERWISE SPECIFIED IN THE PLANS.

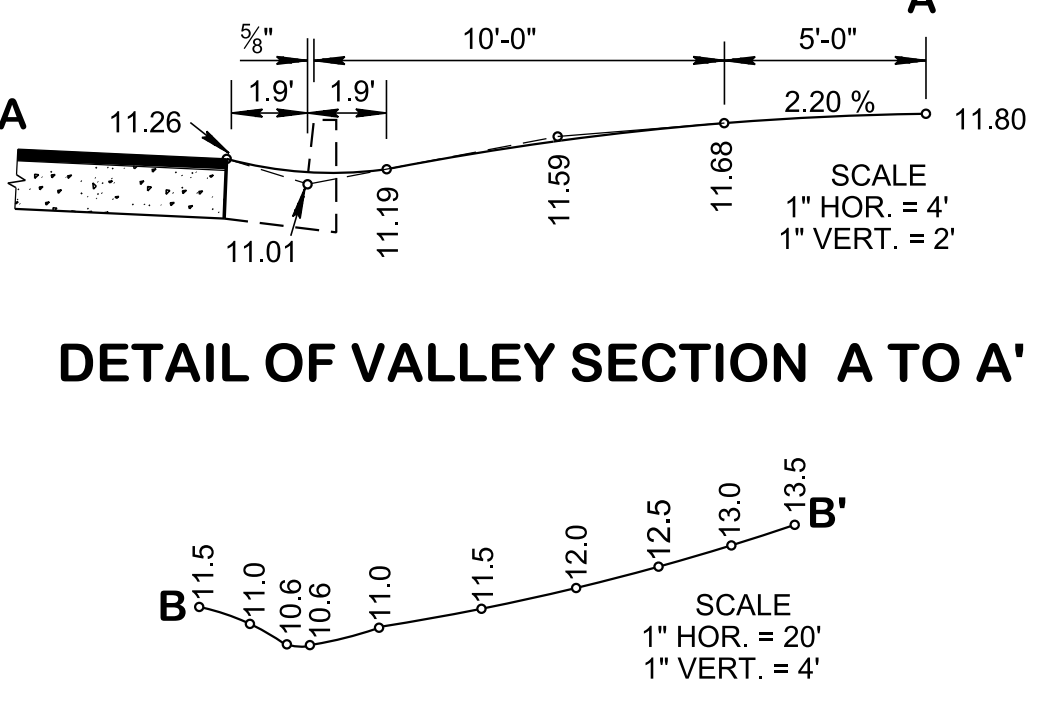
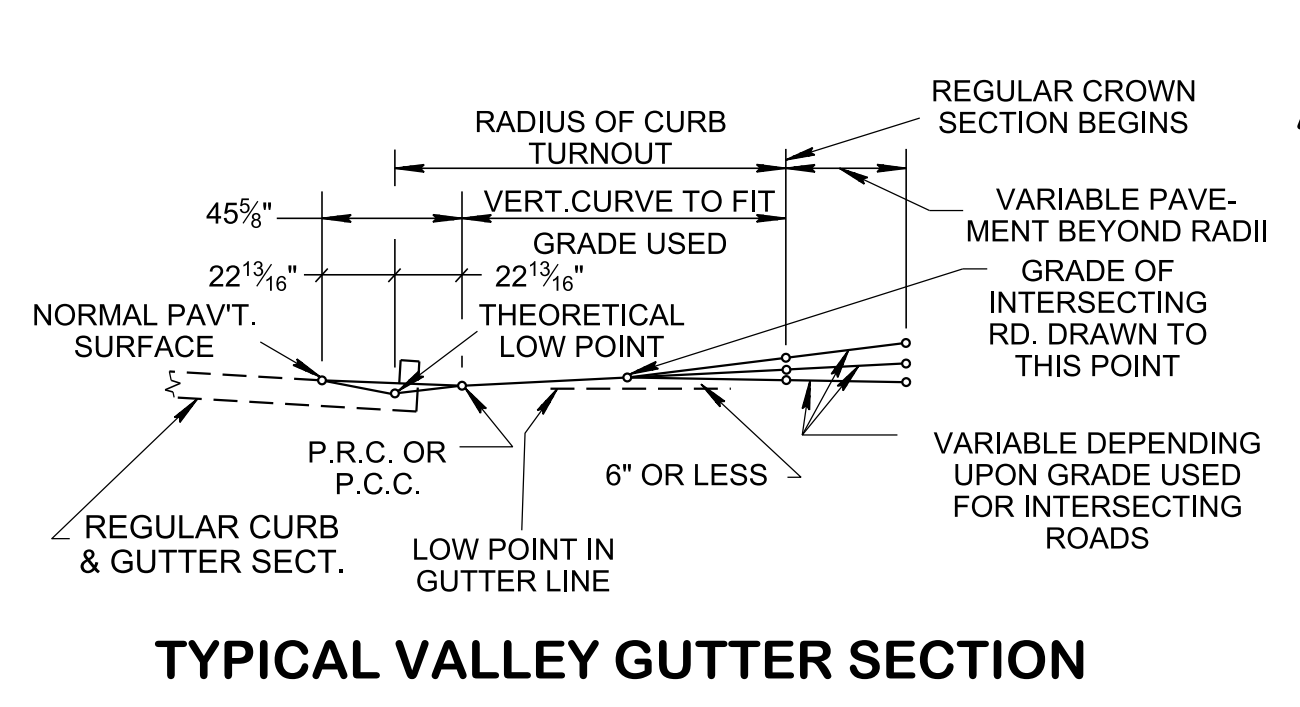
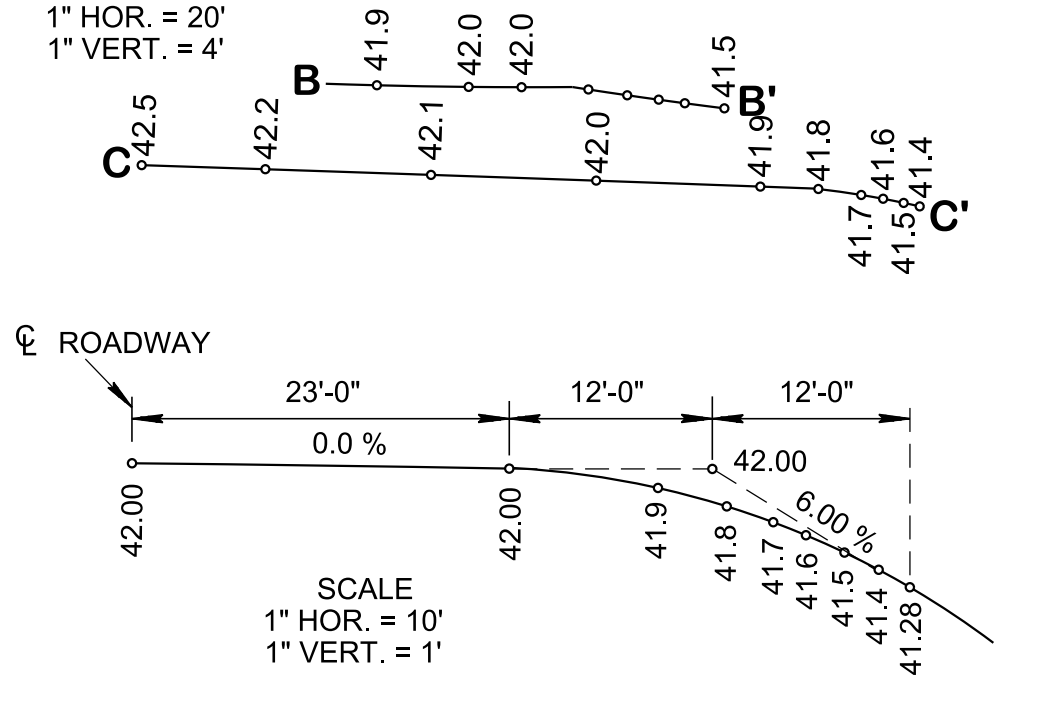
WHEN CONCRETE BASE OR PAVEMENT CONNECTS WITH A RIGID BASE OR PAVEMENT A 3/4" EXPANSION JOINT WILL BE GRAVEL, CHERT, STONE OR UNPAVED STREET A CONCRETE HEADER WILL BE REQUIRED. WHEN CONNECTING WITH A NON-RIGID SURFACED BASE IN GOOD CONDITION HEADER OR EXPANSION JOINT NOT REQUIRED.



METHOD OF PLACING EXPANSION

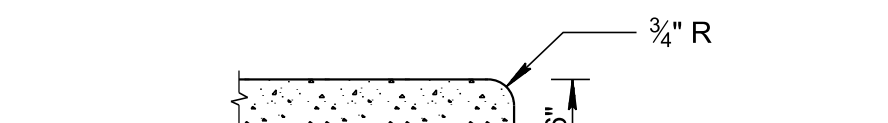
JOINT WHEN CONNECTING WITH IRREGULAR SECTION OF EXISTING RIGID TYPE PAVEMENT.

EXAMPLES OF INTERSECTION SHAPES SHOWING CONTOURS & SECTIONS



DETAIL OF CONCRETE HEADER

FOR CONCRETE BASE OR CONCRETE BASE & EDGING. COST TO BE INCLUDED IN UNIT PRICE BID FOR BASE AND EDGING.



DETAIL OF CONCRETE HEADER

FOR CONCRETE PAVEMENT. COST TO BE INCLUDED IN UNIT PRICE BID FOR PAVEMENT.

GENERAL NOTES

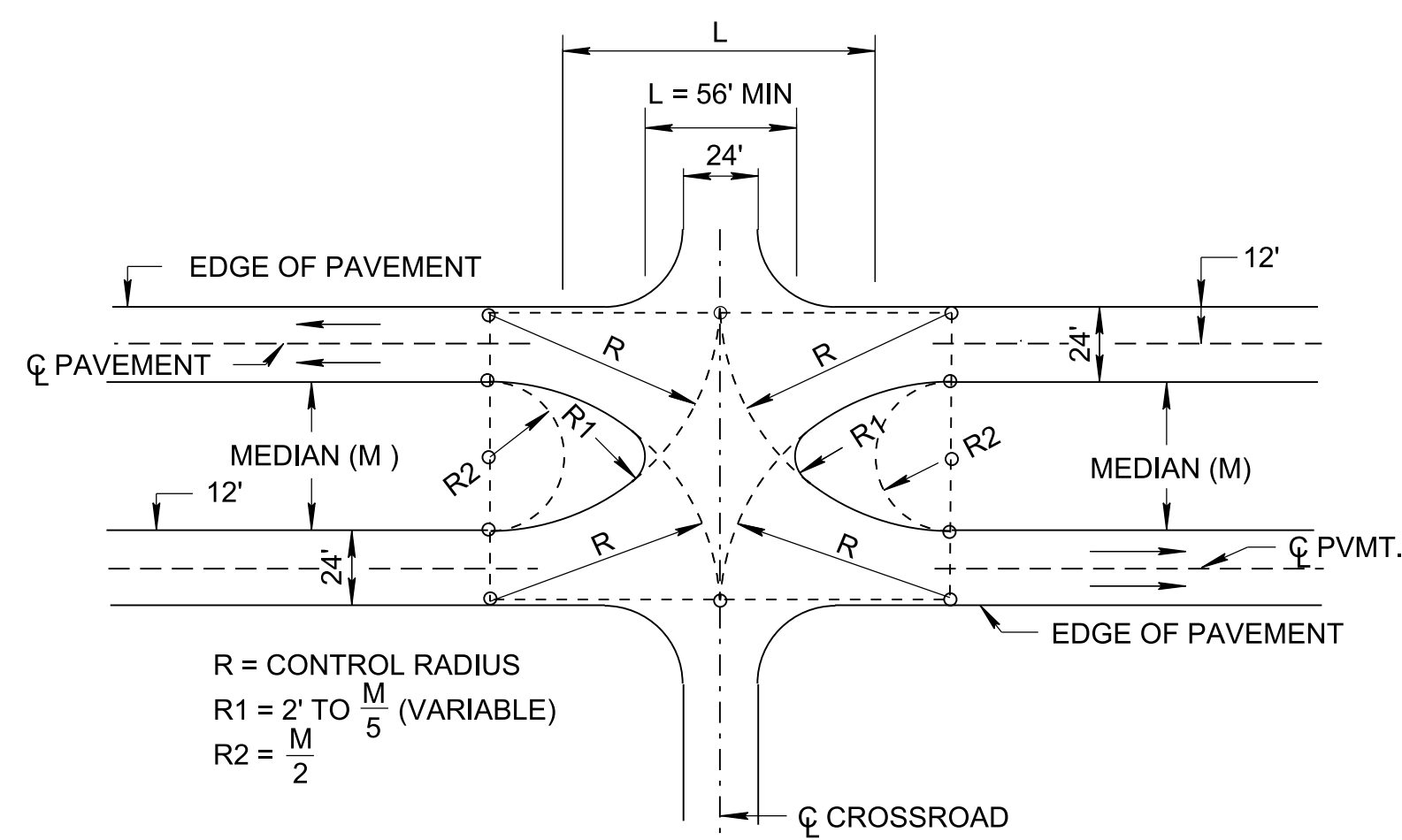
- (A) THE RIDING SURFACE OF THE MAIN ARTERY OF INTERSECTING STREETS WILL BE GIVEN PRIMARY CONSIDERATION WITH DUE REGARD FOR DRAINAGE AND THE GENERAL SHAPE OF THE INTERSECTION.
- (B) IN STAKING OUT THE CURB AND GUTTER LINES, A CAREFUL INSPECTION OF THE CONTOURS MUST BE MADE AT ALL STREET TURNOUTS, DUE TO THE FACT THAT THE GUTTER IS USUALLY WARPED TO FIT THE ROADWAY. THIS IS ESPECIALLY TRUE IN A VALLEY GUTTER SECTION WHERE THE GUTTER BECOMES PART OF THE VALLEY TO PROVIDE THRU DRAINAGE.
- (C) THESE EXAMPLES ARE NOT TO BE SUBSTITUTED FOR THE DETAILED PLANS. EACH INTERSECTION IS A SPECIAL CASE AND EXAMPLES INDICATED ARE ONLY GUIDES FOR SHAPING CONTOURS.

APPROVED BY FHWA
 (ALL OTHERS APPROVED BY TDOT)

STATE OF TENNESSEE
 STANDARD DRAWING
 DEPARTMENT OF TRANSPORTATION

EXAMPLES OF STREET & ALLEY INTERSECTIONS

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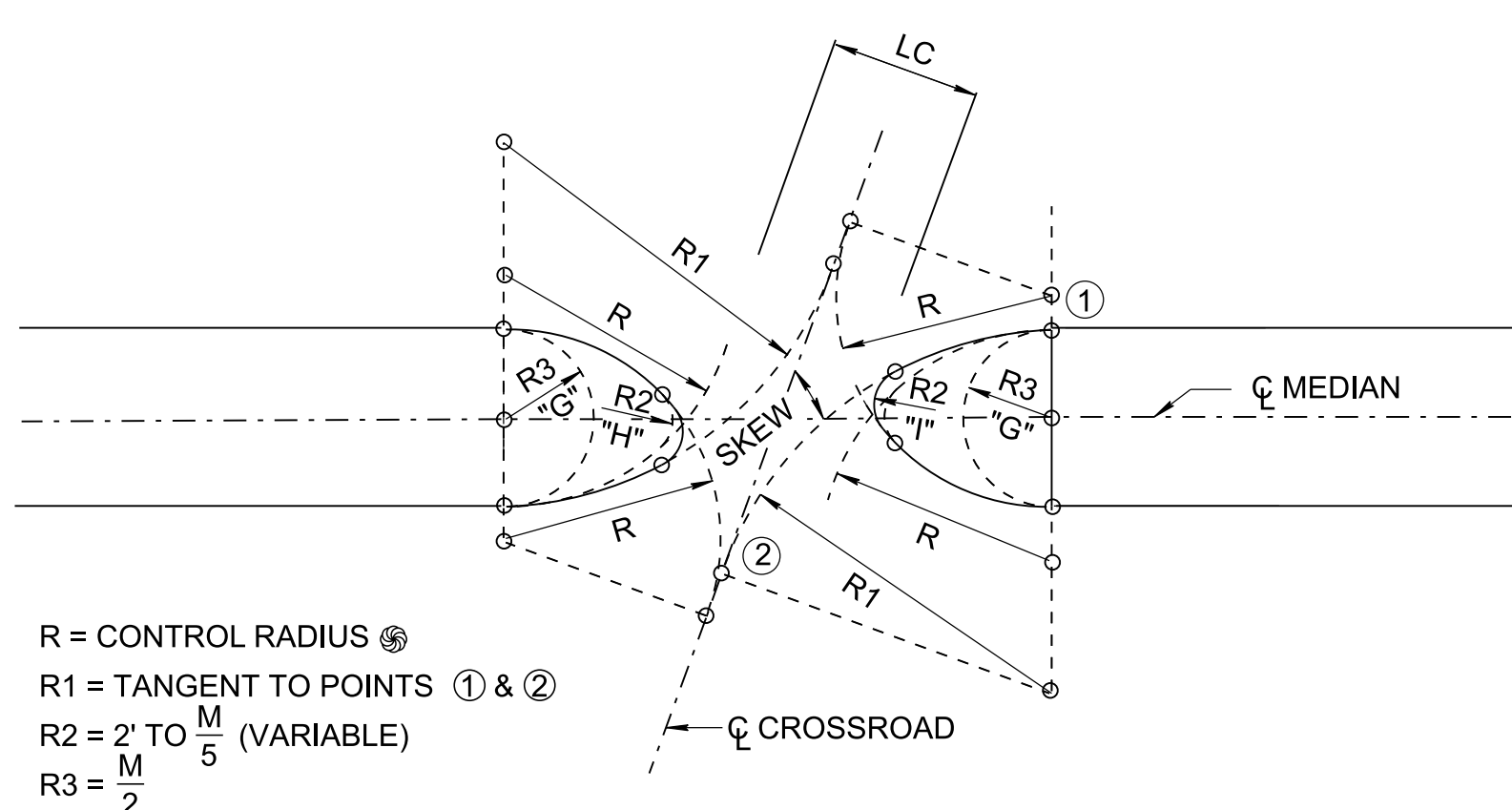


MINIMUM DESIGN OF MEDIAN FOR PERPENDICULAR CROSSROADS

NOTE: SEMICIRCULAR ENDS ARE NOT DESIRABLE FOR MEDIANS GREATER THAN 10' IN WIDTH.

MEDIAN WIDTH M IN FEET	L = MINIMUM LENGTH OF MEDIAN OPENING (IN FEET)					
	P DESIGN VEHICLE CONTROL RADIUS = 40'		SU DESIGN VEHICLE CONTROL RADIUS = 50'		WB-40 DESIGN VEHICLE CONTROL RADIUS = 75'	
	SEMICIRCULAR TYPE "A"	BULLET NOSE TYPE "B"	SEMICIRCULAR TYPE "C"	BULLET NOSE TYPE "D"	SEMICIRCULAR TYPE "E"	BULLET NOSE TYPE "F"
4	76	76	96	96	146	122
6	74	60	94	76	144	121
8	72	56	92	68	142	112
10	70	56	90	62	140	104
12	68	56	88	58	138	98
14	66	56	86	56	136	92
16	64	56	84	56	134	88
20	60	56	80	56	130	78
24	56	56	76	56	126	72
28	56 MIN	56 MIN	72	56	122	65
32	56 MIN	56 MIN	68	56	118	60
36	56 MIN	56 MIN	64	56	114	54
40	56 MIN	56 MIN	60	56	100	49
50	56 MIN	56 MIN	60 MIN	56 MIN	-	-
60	56 MIN	56 MIN	60 MIN	56 MIN	90	44
70	56 MIN	56 MIN	60 MIN	56 MIN	80	44 MIN
80	56 MIN	56 MIN	60 MIN	56 MIN	70	44 MIN
100	56 MIN	56 MIN	60 MIN	56 MIN	50	44 MIN
110	56 MIN	56 MIN	60 MIN	56 MIN	50 MIN	44 MIN

TABLE IS TAKEN FROM TABLE 9-25 (PAGE 9-145), TABLE 9-26 (PAGE 9-146) AND TABLE 9-27 (PAGE 9-147).



MINIMUM DESIGN OF MEDIAN OPENINGS FOR SKEWED CROSSROADS BASED ON CONTROL RADIUS

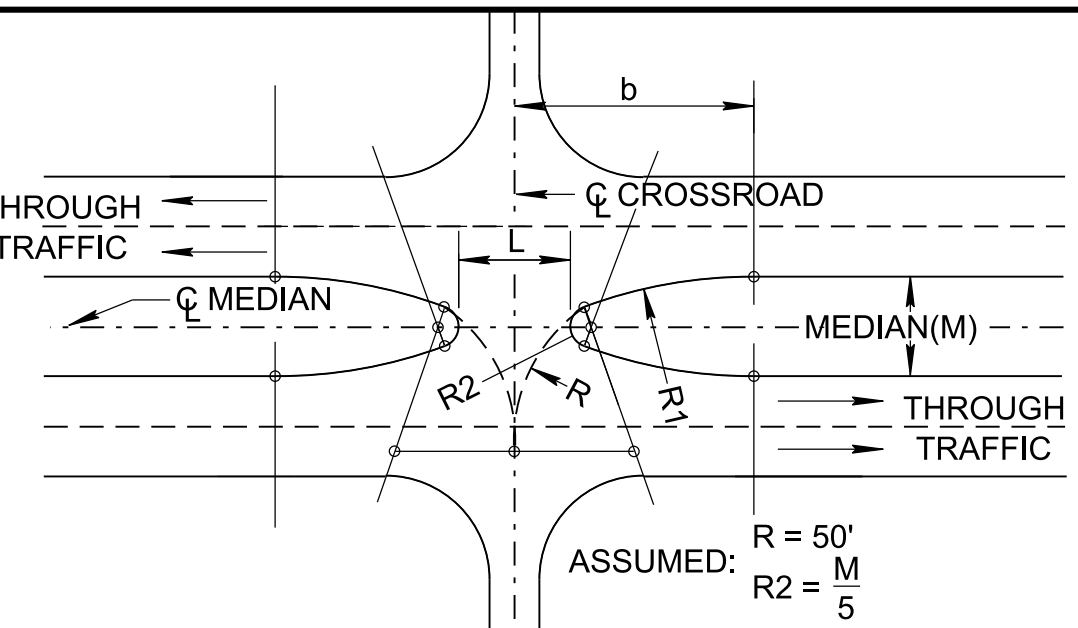
NOTE: ASYMMETRIC BULLET NOSE DESIGN IS PREFERABLE FOR ALL SKEWED CROSSROADS.

SKEW ANGLE DEGREES	MEDIAN WIDTH IN FEET	LC = MINIMUM LENGTH OF MEDIAN OPENING (IN FEET) BASED ON CONTROL RADIUS OF 50 FEET			R1 FOR TYPE C IN FEET
		LC = LENGTH OF MEDIAN OPENING, IN FEET MEASURED NORMAL TO THE CROSSROAD			
		SEMICIRCULAR	BULLET NOSE		
			SYMMETRICAL	ASYMMETRICAL	
90	10	90	62	-	-
	20	80	44	-	-
	30	70	56 MIN	-	-
	40	60	56 MIN	-	-
80	10	106	80	77	70
	20	94	58	56 MIN	68
	30	82	56 MIN	56 MIN	65
	40	71	56 MIN	56 MIN	63
70	10	128	100	96	97
	20	115	78	75	92
	30	102	62	52 MIN	86
	40	86	56 MIN	52 MIN	82
60	10	158	130	121	140
	20	142	105	90	130
	30	126	86	33	120
	40	110	72	50	110
50	10	196	170	150	210
	20	180	140	120	193
	30	160	120	90	174
	40	140	100	68	156
50	50	120	86	50	139
	60	105	74	32	121

TABLE IS TAKEN FROM TABLE 9-28 (PAGE 9-153).

NOTE: IN GENERAL MEDIAN OPENINGS LONGER THAN 80 FEET SHOULD BE AVOIDED, REGARDLESS OF SKEW. THIS MAY CALL FOR SPECIAL CHANNELIZATION, LEFT TURN LANES, OR ADJUSTMENT TO REDUCE THE CROSSROAD SKEW, ALL OF WHICH RESULT IN ABOVE MINIMUM DESIGNS.

LEGEND
 R = 50', UNLESS OTHERWISE SHOWN ON PLANS.
 ① & ② = THE RADIUS IS TANGENT TO THE CENTER LINE OF THE CROSS ROAD AND TO THE TANGENT INSIDE EDGE OF PAVEMENT ON THE MAINLINE NEXT TO MEDIAN.



MINIMUM DESIGN OF MEDIAN OPENINGS, TYPICAL BULLET NOSE END TYPES "L", "M" & "N"

NOTE: RADIUS R1 MAY VARY FROM 80' TO 400' OR MORE, DEPENDING ON THE TURNING SPEED DESIRED. THE TABULATED VALUES FOR TYPES "L", "M" & "N" OPENINGS ARE FOR SAFE TURNING SPEEDS OF 20, 25 AND 30 MPH, RESPECTIVELY.

NOTE: AT SKEWED INTERSECTIONS, THE ABOVE DESIGN CAN BE APPLIED TO EACH INTERSECTION INDIVIDUALLY. ADJUSTMENTS IN R1 & R2 FROM THE VALUES SHOWN ARE REQUIRED IN THE TABLE ABOVE.

MEDIAN WIDTH IN FEET	DIMENSIONS (IN FEET)					
	R1=90'		R1=170'		R1=230'	
	L	b	L	b	L	b
20	58	65	66	78	71	90
30	48	68	57	85	63	101
40	40	71	50	90	57	109
50	-	-	44	95	51	115
60	-	-	-	46	46	122
70	-	-	-	41	41	128

THIS TABLE IS TAKEN FROM FIGURE 9-59 (PAGE 9-155).

DESIGN CONTROLS FOR MINIMUM MEDIAN OPENINGS

DESIGN VEHICLES ACCOMMODATED		CONTROL RADIUS (FT.)
PREDOMINANT	OCCASIONAL	
P	SU-30	40
SU-30	SU-40	50
WB-40	-	75
WB-62	WB-67	130

TABLE IS TAKEN FROM TABLE 9-29 (PAGE 9-154).

DESIGN VEHICLE DIMENSIONS (IN FEET)											
DESIGN VEHICLE	SYMBOL	OVERALL			OVERHANG		WHEELBASES			S	T
		H	W	L	F	R	WB1	WB2	WB3		
PASSENGER CAR	P	4.3	7	19	3	5	11	-	-	-	-
SINGLE UNIT TRUCK	SU	11-13.5	8	30	4	6	20	-	-	-	-
LARGE SCHOOL BUS	A-BUS	10.5	8	40	7	13	20	-	-	-	-
INTERMEDIATE SEMITRAILER	WB-40	13.5	8	45.5	3	4.5 a	12.5	25.5	-	-	-
DOUBLE-BOTTOM SEMITRAILER	WB-67D	13.5	8.5	72.3	2	3	11	23	22.5	3	7
INTERSTATE SEMITRAILER	WB-62	13.5	8.5	69	4	4.5	19.5	41	-	-	-
INTERSTATE SEMITRAILER	WB-67	13.5	8.5	73.5	4	4.5	19.5	45	-	-	-

FOR ADDITIONAL DESIGN VEHICLES, SEE TABLE II-1B (PAGE 2-4).

NOTE: S IS THE DISTANCE FROM THE REAR EFFECTIVE AXLE TO THE HITCH POINT OR POINT OF ARTICULATION. T IS THE DISTANCE FROM THE HITCH POINT OR POINT OF ARTICULATION MEASURED BACK TO THE CENTER OF THE NEXT AXLE OR THE CENTER OF THE TANDEM AXLE ASSEMBLY. H = HEIGHT, W = WIDTH, L = LENGTH, F = FRONT & R = REAR

MINIMUM DESIGNS FOR U-TURNS - TYPE "J"

TYPE OF MANEUVER	M - MINIMUM WIDTH OF MEDIAN (IN FEET) FOR DESIGN VEHICLE	LENGTH OF DESIGN VEHICLE					
		P	WB-40	SU-30	BUS	WB-62	WB-67
		19'	50'	30'	40'	63'	68'
INNER LANE TO INNER LANE	12'	30	61	63	63	69	69
INNER LANE TO OUTER LANE	24'	18	49	51	51	57	57
INNER LANE TO SHOULDER	24'	8	39	41	41	47	47

TABLE IS TAKEN FROM TABLE 9-30 (PAGE 9-166).

NOTE: WHERE OCCASIONAL U-TURNS ARE MADE IN EITHER DIRECTION, A SYMMETRICAL OPENING SHOULD BE USED AND THE LENGTH OF THE OPENING SHOULD BE FOR THE DESIGN VEHICLE USED. WHEN FREQUENT U-TURNS IN BOTH DIRECTIONS ARE ANTICIPATED, INCREASE THE LENGTH OF THE OPENING OR PROVIDE SEPARATE ONE WAY OPENINGS.

SEPARATE U-TURN MEDIAN OPENINGS MAY FIT AT THE FOLLOWING LOCATIONS

- BEYOND INTERSECTIONS TO ACCOMMODATE MINOR TURNING MOVEMENTS NOT OTHERWISE PROVIDED IN THE INTERSECTION OR INTERCHANGE AREA.
- JUST AHEAD OF AN INTERSECTION TO ACCOMMODATE U-TURN MOVEMENTS THAT WOULD INTERFERE WITH THROUGH AND OTHER TURNING MOVEMENTS AT THE INTERSECTION.
- OCCURRING IN CONJUNCTION WITH MINOR CROSSROADS WHERE TRAFFIC IS NOT PERMITTED TO CROSS THE MAJOR HIGHWAY BUT INSTEAD IS REQUIRED TO TURN RIGHT, ENTER THE THROUGH TRAFFIC STREAM, WEAVE TO THE LEFT, U-TURN, THEN RETURN.
- OCCURRING WHERE REGULARLY SPACED OPENINGS FACILITATE MAINTENANCE OPERATIONS, POLICING, REPAIR SERVICE OF STALLED VEHICLES, OR OTHER HIGHWAY-RELATED ACTIVITIES.
- OCCURRING ON HIGHWAYS WITHOUT ACCESS CONTROL WHERE MEDIAN OPENINGS AT OPTIMUM SPACING ARE PROVIDED TO SERVE EXISTING FRONTAGE DEVELOPMENTS AND AT THE SAME TIME MINIMIZE PRESSURE FOR FUTURE MEDIAN OPENINGS.

GENERAL NOTES

- FOR SPECIFIC CONDITIONS NOT COVERED ON THIS SHEET, REFERENCE SHOULD BE MADE TO "AASHTO A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS" (GREEN BOOK, 2011 EDITION).
- PAGE NUMBERS REFERRED TO ON THIS DRAWING ARE FROM THE ABOVE REFERENCE.

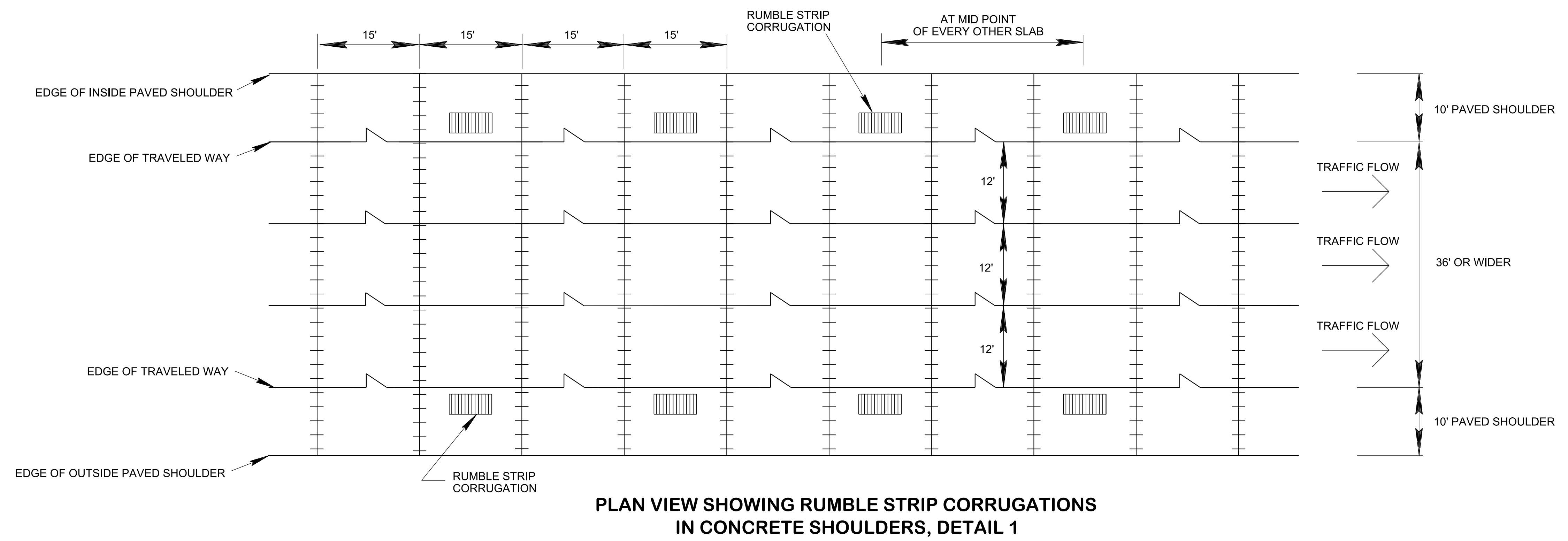
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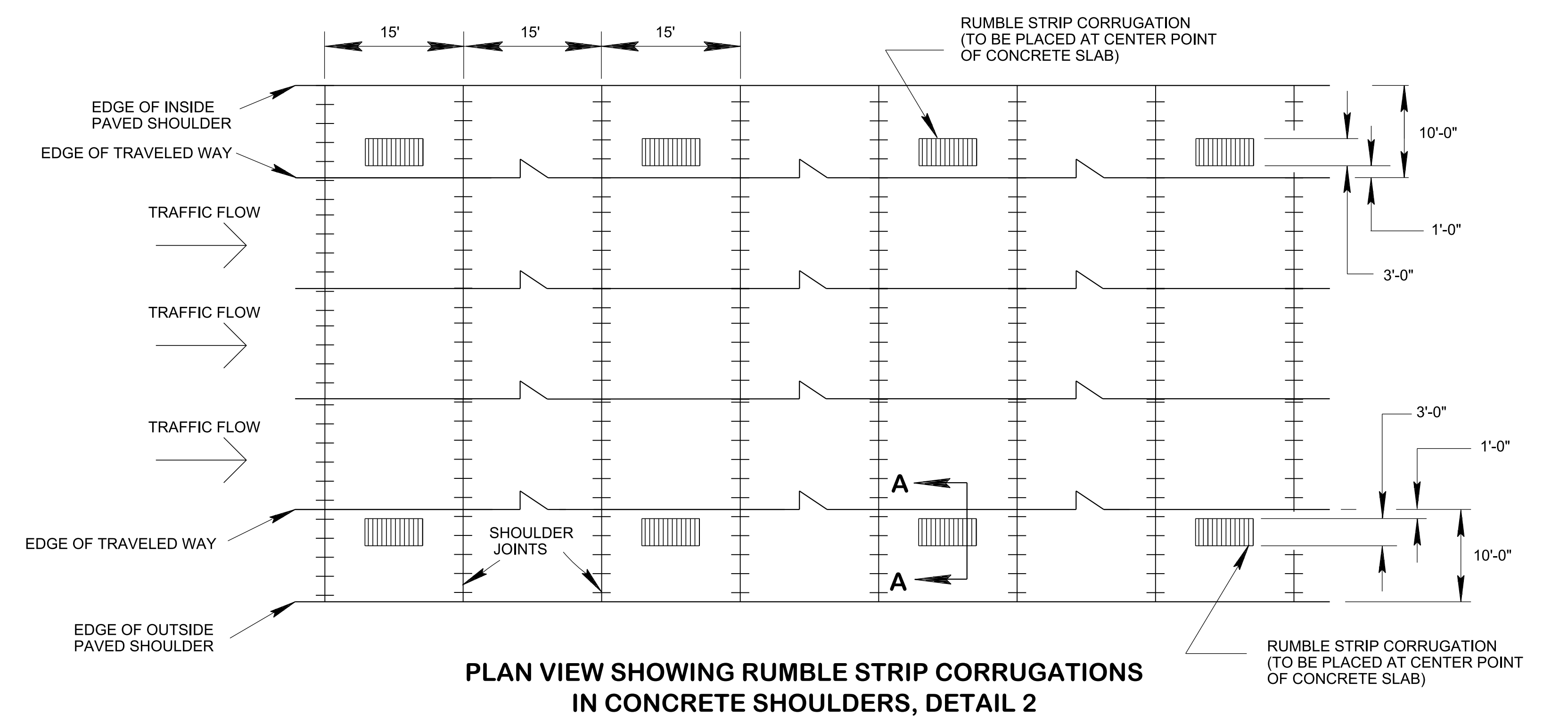
MEDIAN OPENINGS ON 4-LANE DIVIDED HIGHWAY

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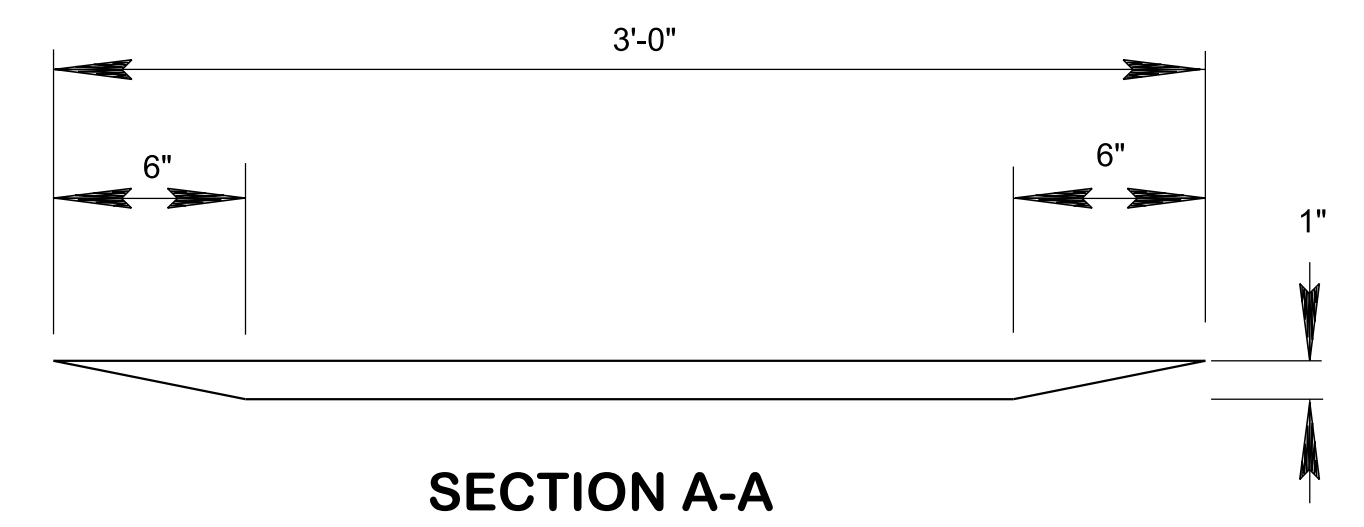
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 REV. 9-29-10: CHANGED ITEM NUMBER.
 REV. 05-01-20: REVISED AND RENAMED DETAILS. REDREW SHEET.



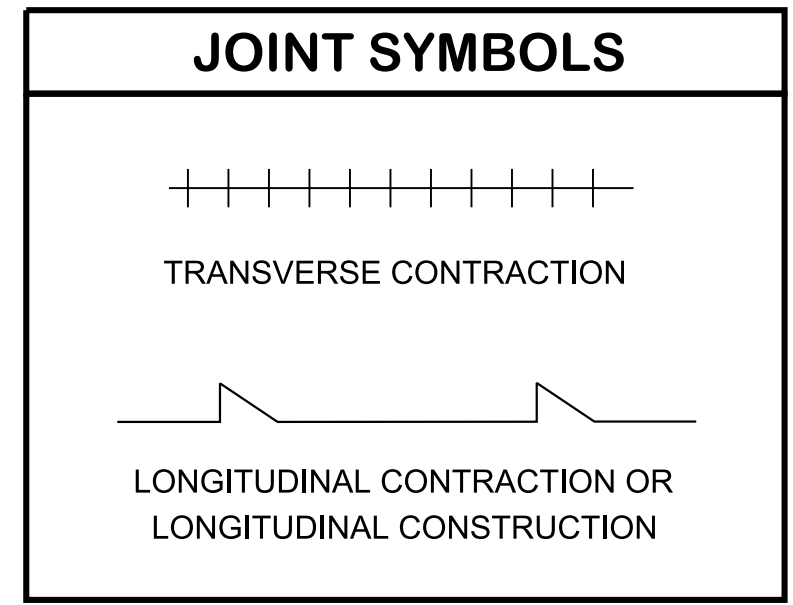
PLAN VIEW SHOWING RUMBLE STRIP CORRUGATIONS IN CONCRETE SHOULDERS, DETAIL 1



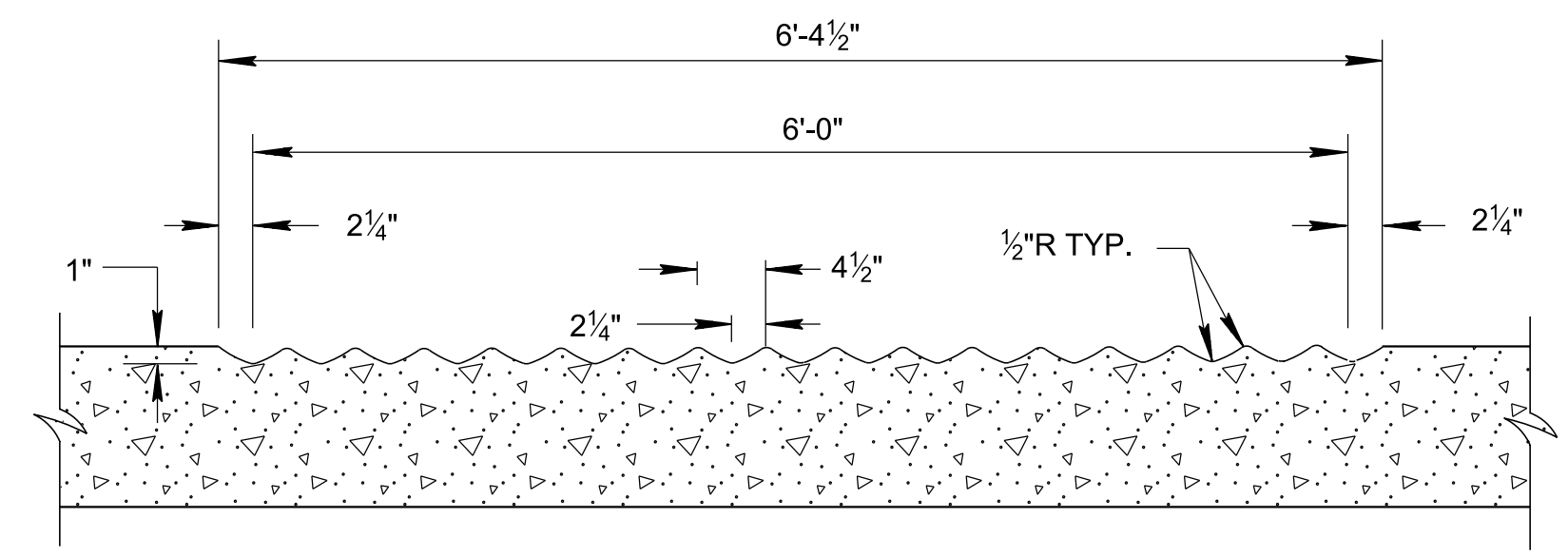
PLAN VIEW SHOWING RUMBLE STRIP CORRUGATIONS IN CONCRETE SHOULDERS, DETAIL 2



SECTION A-A



NOTE: RUMBLE STRIPS TO BE FORMED AND PAID FOR UNDER ITEM NO. 501-03.10, CONCRETE SHOULDER RUMBLE STRIP LINEAR FEET.



DETAIL OF CORRUGATIONS IN CONCRETE SHOULDER RUMBLE STRIP

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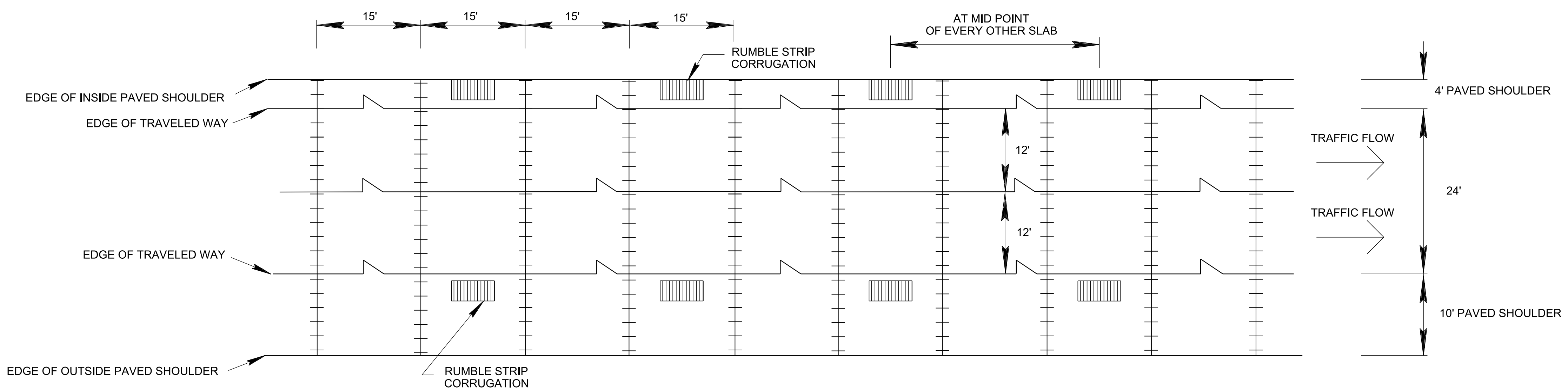
CONCRETE SHOULDER RUMBLE STRIP DETAIL
 (FOR 6-LANE OR WIDER DIVIDED HIGHWAY)

10-26-1996 RP-CS-2

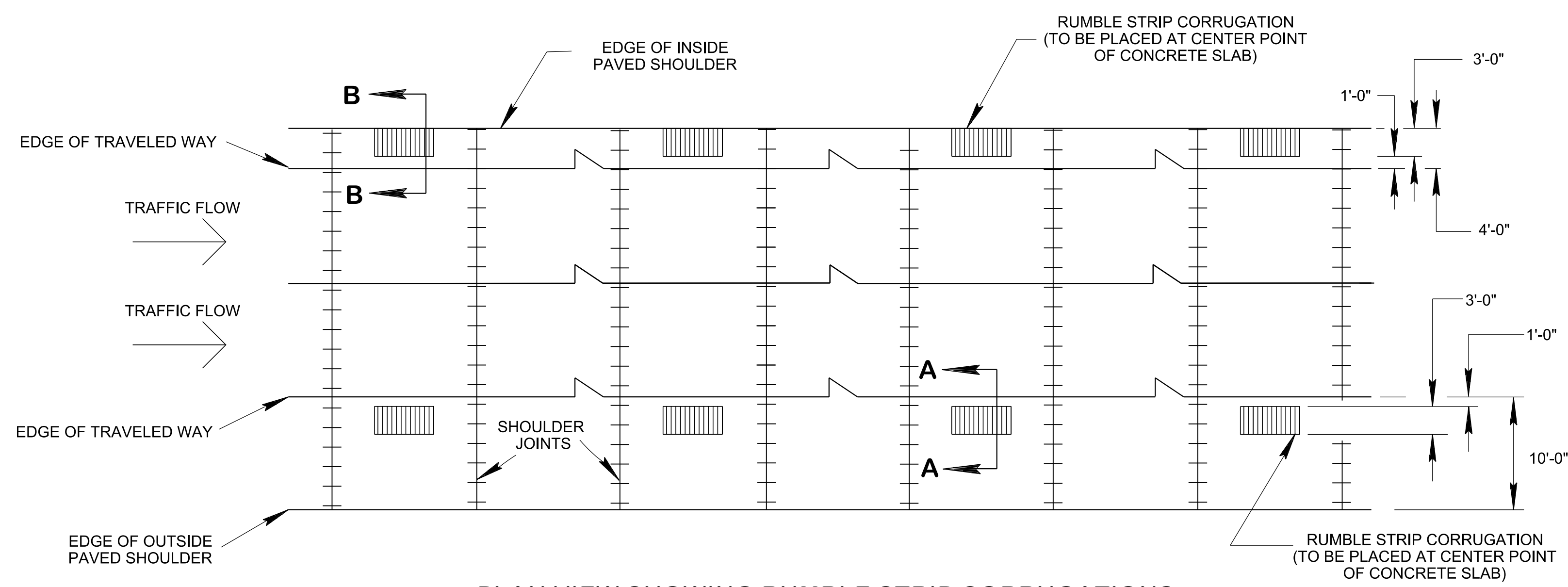
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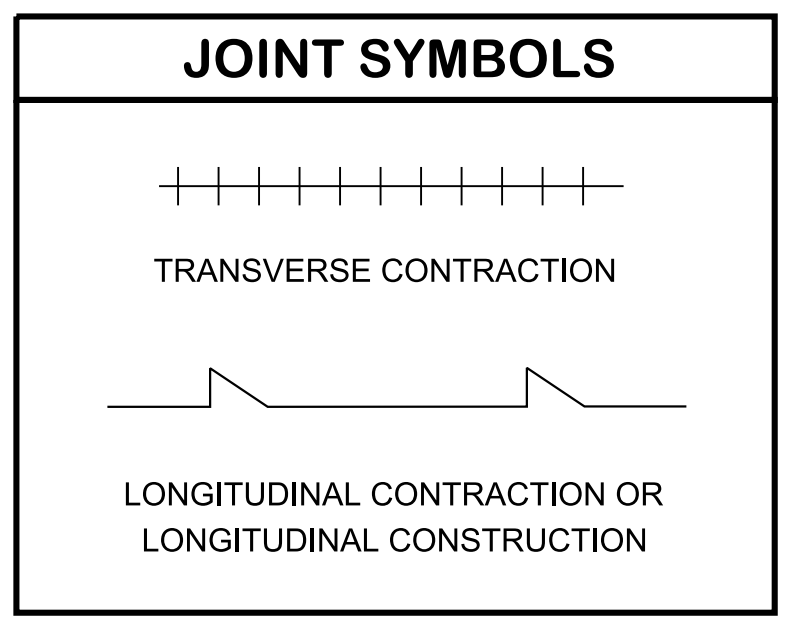
REV. 5-27-01: CHANGED VARIABLE JOINT SPACING TO 15' CONSTANT IN ALL VIEWS TO MATCH STD. DG. NO. RP-J-1.
 REV. 9-29-10: CHANGED ITEM NUMBER.
 REV. 05-01-20: REVISED AND RENAMED DETAILS. REDREW SHEET.



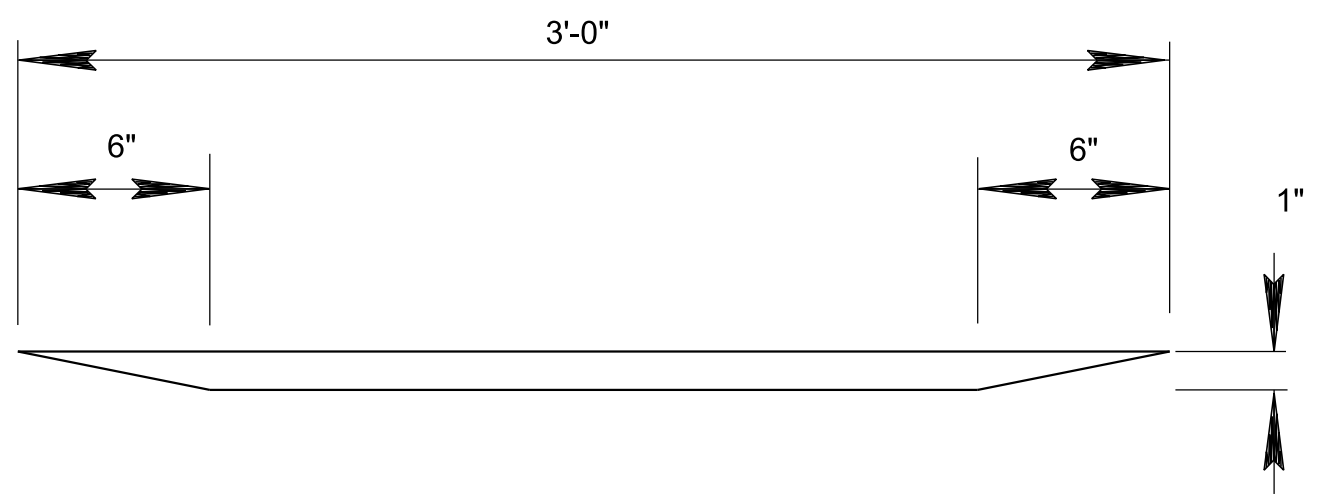
PLAN VIEW SHOWING RUMBLE STRIP CORRUGATIONS IN CONCRETE SHOULDERS, DETAIL 1



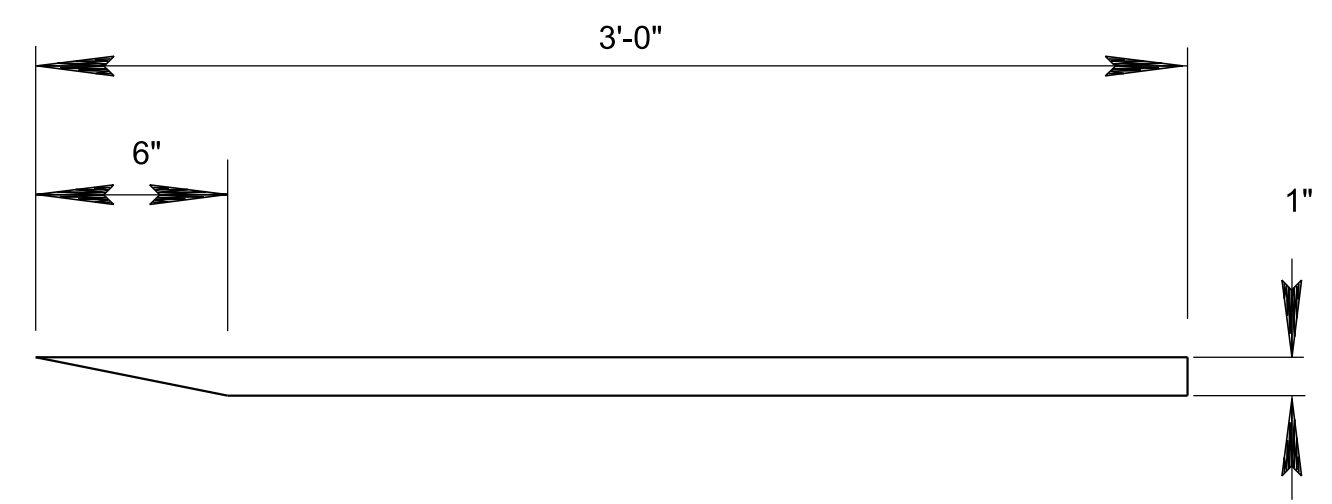
PLAN VIEW SHOWING RUMBLE STRIP CORRUGATIONS IN CONCRETE SHOULDERS, DETAIL 2



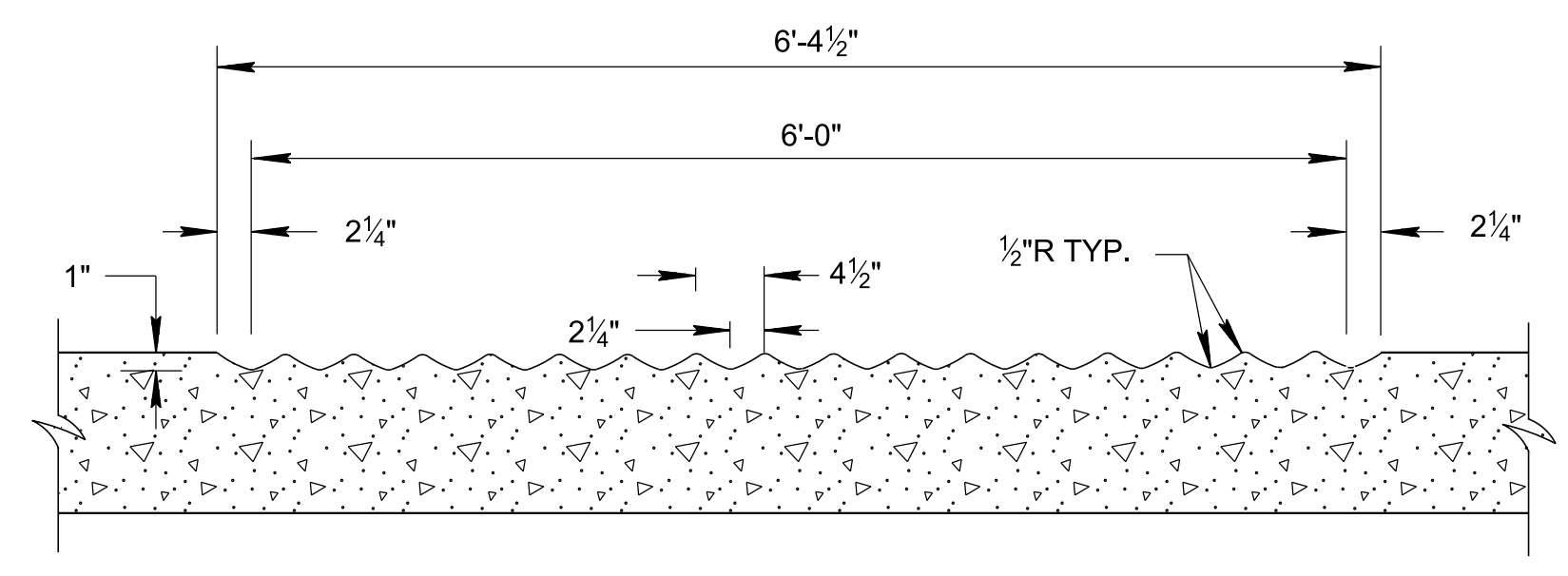
NOTE: RUMBLE STRIPS TO BE FORMED AND PAID FOR UNDER ITEM NO. 501-03.10, CONCRETE SHOULDER RUMBLE STRIP LINEAR FEET.



SECTION A-A



SECTION B-B



DETAIL OF CORRUGATIONS IN CONCRETE SHOULDER RUMBLE STRIP

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CONCRETE SHOULDER RUMBLE STRIP DETAIL
 (FOR 4 LANE DIVIDED HWY)

10-26-1996 RP-CS-1

NOT TO SCALE