

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION

CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	1	55
PROJECT FILE NO.		612106	

TITLE SHEET & INDEX

PLAN OF INTERSTATE 91 AND INTERSTATE 391

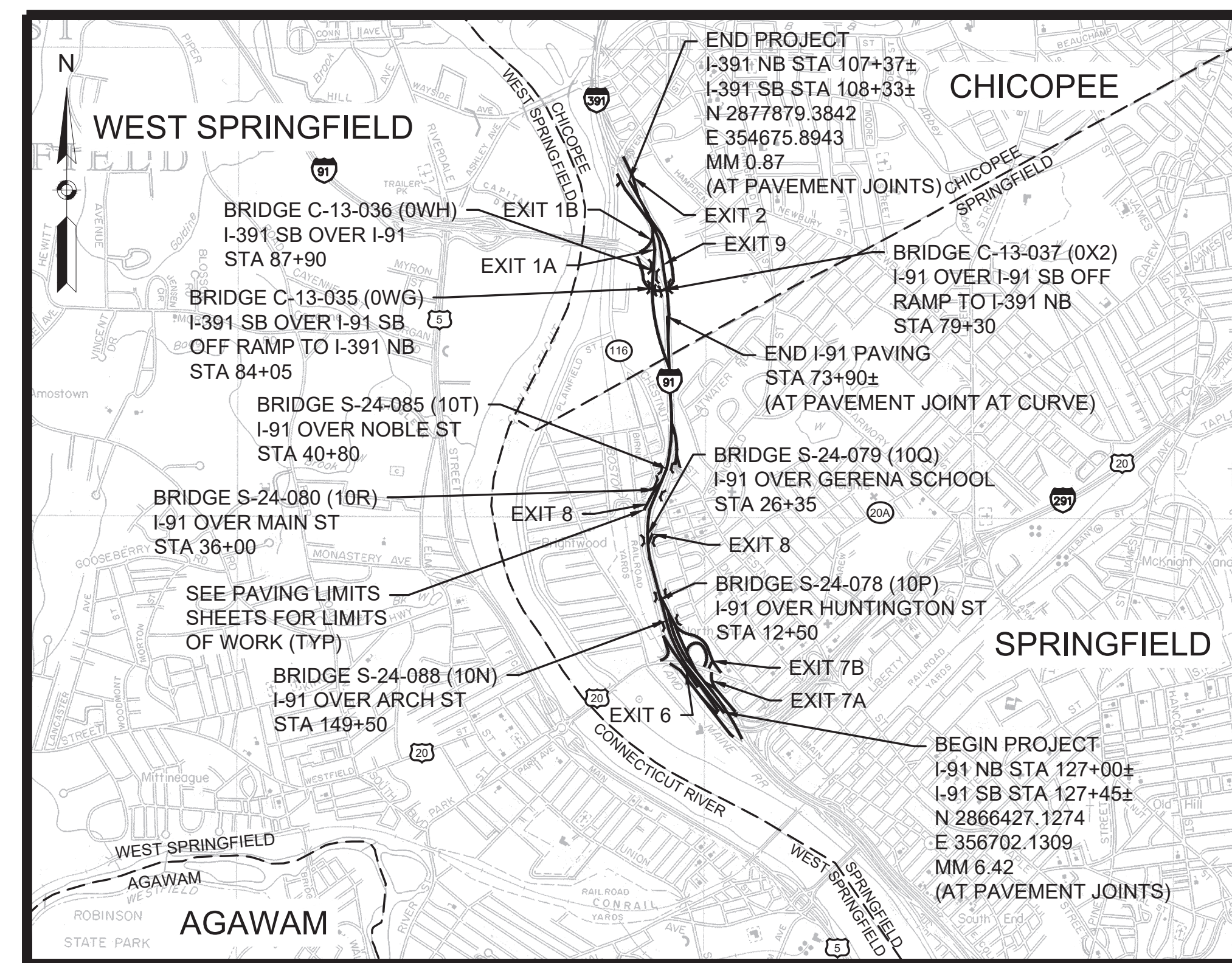
IN THE CITIES OF CHICOPEE-SPRINGFIELD HAMPDEN COUNTY

FEDERAL AID PROJECT NO. NHP(IM)-091S(309)X

THESE PLANS ARE SUPPLEMENTED BY THE OCTOBER 2017 CONSTRUCTION STANDARD DETAILS, THE 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK.

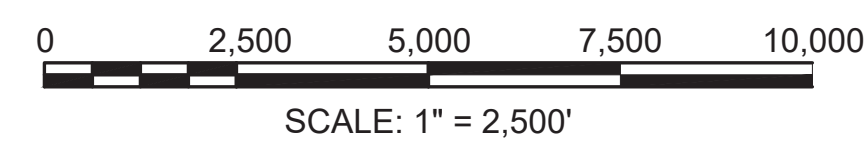
INDEX

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DESIGN DESIGNATION (INTERSTATE 91 AND INTERSTATE 391)

DESIGN SPEED	55 MPH
ADT (2019)	114,068
ADT (2039)	115,000
K	9%
D	58%
T (PEAK HOUR)	4.77%
T (AVERAGE DAY)	3.63%
DHV	10.820
DDHV	5.954
FUNCTIONAL CLASSIFICATION	INTERSTATE



LENGTH OF PROJECT = 11,945 FEET = 2.262 MILES

DATE	DESCRIPTION	REV #



APPROVED
Carrie Lavallee, P.E. Digitally signed by Carrie Lavallee, P.E. Date: 2023.11.08 14:42:27 -0500 11/08/2023
CHIEF ENGINEER DATE

GENERAL SYMBOLS

Table with columns: EXISTING, PROPOSED, DESCRIPTION. Lists symbols for items like JB (Jersey Barrier), CB (Catch Basin), FP (Flag Pole), GP (Gas Pump), MB (Mail Box), WELL, EHH (Electric Handhole), GG (Gas Gate), BHL (Boring Hole), MW (Monitoring Well), TP (Test Pit), hydrant, light pole, CO.BD. (County Bound), GPS point, manholes, monuments, TPL (Trolley Pole), UFB (Utility Pole w/ Firebox), UPDL (Utility Pole with Double Light), ULT (Utility Pole w/ 1 Light), UPL (Utility Pole), bushes, trees, swamps, water gates, parking meters, and various boundary lines.

TRAFFIC SYMBOLS

Table with columns: EXISTING, PROPOSED, DESCRIPTION. Lists symbols for traffic control elements like CONTROLLER PHASE ACTUATED, TRAFFIC SIGNAL HEAD, WIRE LOOP DETECTOR, VIDEO DETECTION CAMERA, MICROWAVE DETECTOR, PEDESTRIAN PUSH BUTTON, EMERGENCY PREEMPTION CONFIRMATION STROBE LIGHT, VEHICULAR SIGNAL HEAD, FLASHING BEACON, PEDESTRIAN SIGNAL HEAD, RAILROAD SIGNAL, SIGNAL POST AND BASE, MAST ARM, SIGN AND POST, MAST ARM WITH LUMINAIRE, OPTICAL PRE-EMPTION DETECTOR, CONTROL CABINET, FLASHING BEACON CONTROL AND METER PEDESTAL, LOAD CENTER ASSEMBLY, PULL BOX, and ELECTRIC HANDHOLE.

PAVEMENT MARKINGS SYMBOLS

Table with columns: EXISTING, PROPOSED, DESCRIPTION. Lists symbols for pavement markings such as PAVEMENT ARROW - WHITE, LEGEND "ONLY" - WHITE, STOP LINE, CROSSWALK, SOLID WHITE LINE, SOLID YELLOW LINE, BROKEN WHITE LINE, BROKEN YELLOW LINE, DOTTED WHITE LINE, DOTTED YELLOW LINE, DOTTED WHITE LINE EXTENSION, DOTTED YELLOW LINE EXTENSION, DOUBLE WHITE LINE, and DOUBLE YELLOW LINE.

ABBREVIATIONS

Table with columns: GENERAL, DESCRIPTION. Lists abbreviations for traffic and construction terms: AADT (Annual Average Daily Traffic), ABAN (Abandon), ADJ (Adjust), APPROX. (Approximate), A.C. (Asphalt Concrete), ACCM PIPE (Asphalt Coated Corrugated Metal Pipe), BIT. (Bituminous), BC (Bottom of Curb), BD. (Bound), BL (Baseline), BLDG (Building), BM (Benchmark), BO (By Others), BOS (Bottom of Slope), BR. (Bridge), CB (Catch Basin), CBCI (Catch Basin with Curb Inlet), CC (Cement Concrete), CCM (Cement Concrete Masonry), CEM (Cement), CI (Curb Inlet), CIP (Cast Iron Pipe), CLF (Chain Link Fence), CL (Centerline), CMP (Corrugated Metal Pipe), CSP (Corrugated Steel Pipe), CO. (County), CONC (Concrete), CONT (Continuous), CONST (Construction), CR GR (Crown Grade), DHV (Design Hourly Volume), DI (Drop Inlet), DIA (Diameter), DIP (Ductile Iron Pipe), DW (Steady Don't Walk - Portland Orange), DWY (Driveway), ELEV (or EL.) (Elevation), EMB (Embankment), EOP (Edge of Pavement), EXIST (or EX) (Existing), EXC (Excavation), F&C (Frame and Cover), F&G (Frame and Grate), FDN. (Foundation), FLDSTN (Fieldstone), GAR (Garage), GD (Ground), GG (Gas Gate), GI (Gutter Inlet), GIP (Galvanized Iron Pipe), GRAN (Granite), GRAV (Gravel), GRD (Guard), HDW (Headwall), HMA (Hot Mix Asphalt), HOR (Horizontal), HYD (Hydrant), INV (Invert), JCT (Junction), L (Length of Curve), LB (Leach Basin), LP (Light Pole), LT (Left), MAX (Maximum), MB (Mailbox), MH (Manhole), MHB (Massachusetts Highway Bound), MIN (Minimum), NIC (Not in Contract), NO. (Number), PC (Point of Curvature), PCC (Point of Compound Curvature), PCR (Pedestrian Curb Ramp), P.G.L. (Profile Grade Line), PI (Point of Intersection), POC (Point on Curve), POT (Point on Tangent), PRC (Point of Reverse Curvature), PROJ (Project), PROP (Proposed), PSB (Plantable Soil Borrow), PT (Point of Tangency), PVC (Point of Vertical Curvature), PVI (Point of Vertical Intersection), PVT (Point of Vertical Tangency), PVMT (Pavement).

CHICOPEE-SPRINGFIELD INTERSTATE 91 AND INTERSTATE 391

Table with columns: STATE, FED. AID PROJ. NO., SHEET NO., TOTAL SHEETS. Values: MA, NHP(IM)-091S(309)X, 2, 55.

LEGEND & ABBREVIATIONS

ABBREVIATIONS (cont.)

Table with columns: GENERAL, DESCRIPTION. Lists abbreviations: PWW (Paved Water Way), R (Radius of Curvature), R&D (Remove and Dispose), RCP (Reinforced Concrete Pipe), RD (Road), RDWY (Roadway), REM (Remove), RET (Retain), RET WALL (Retaining Wall), ROW (Right of Way), RR (Railroad), R&R (Remove and Reset), R&S (Remove and Stack), RT (Right), SB (Stone Bound), SHLD (Shoulder), SMH (Sewer Manhole), ST (Street), STA (Station), SSD (Stopping Sight Distance), SHLO (State Highway Layout Line), SW (Sidewalk), T (Tangent Distance of Curve/Truck %), TAN (Tangent), TEMP (Temporary), TC (Top of Curb), TOS (Top of Slope), TYP (Typical), UP (Utility Pole), VAR (Varies), VERT (Vertical), VC (Vertical Curve), WG (Water Gate), WIP (Wrought Iron Pipe), WM (Water Meter/Water Main), X-SECT (Cross Section).

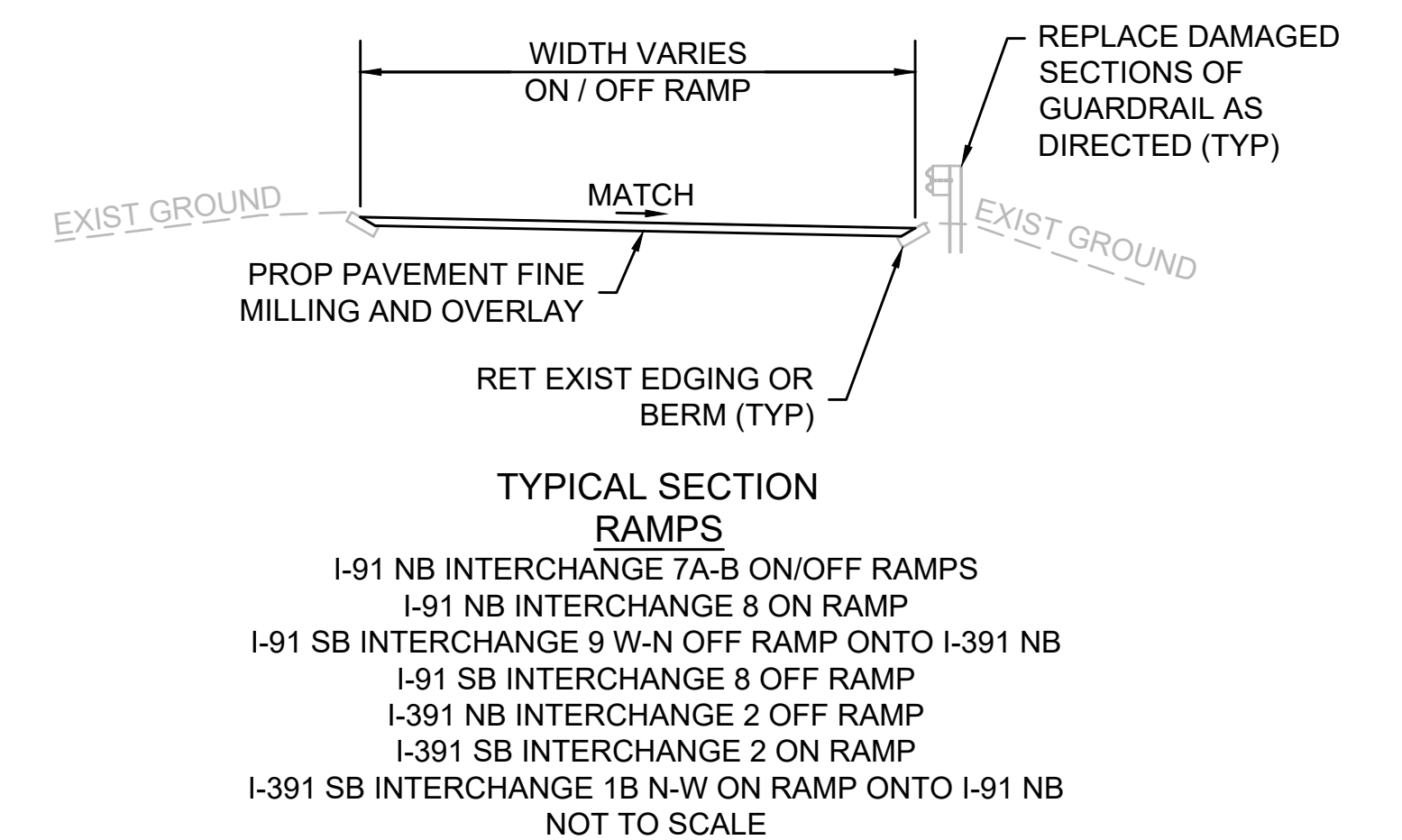
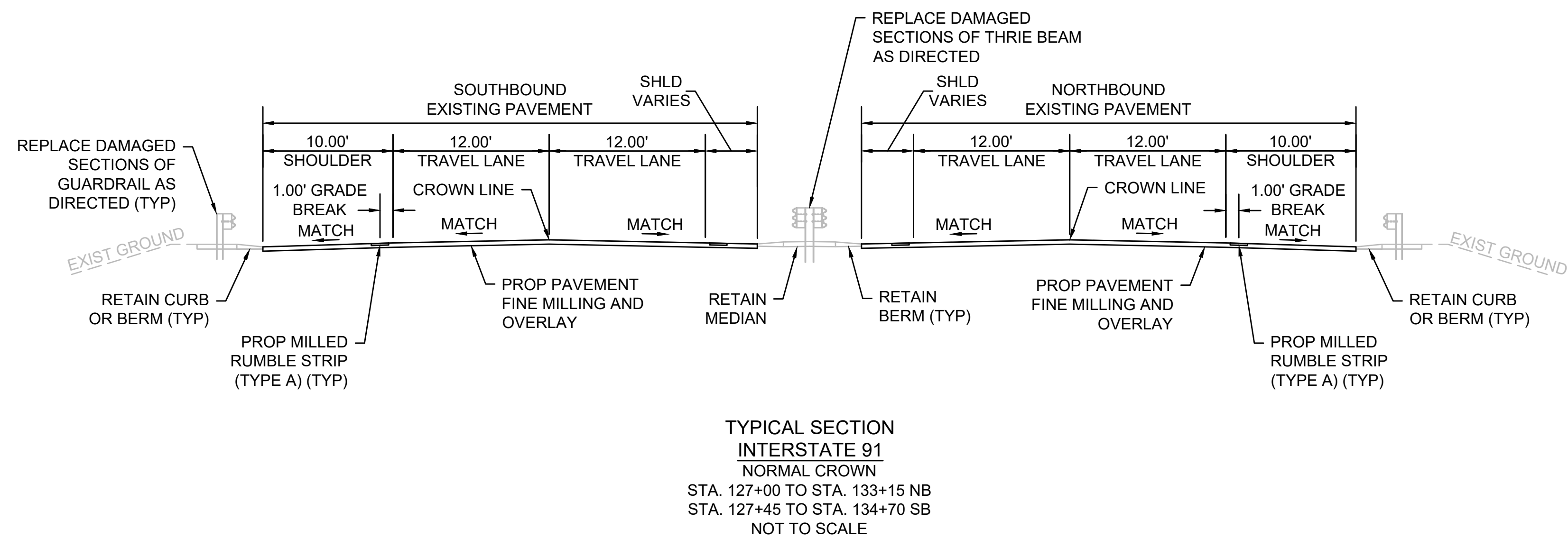
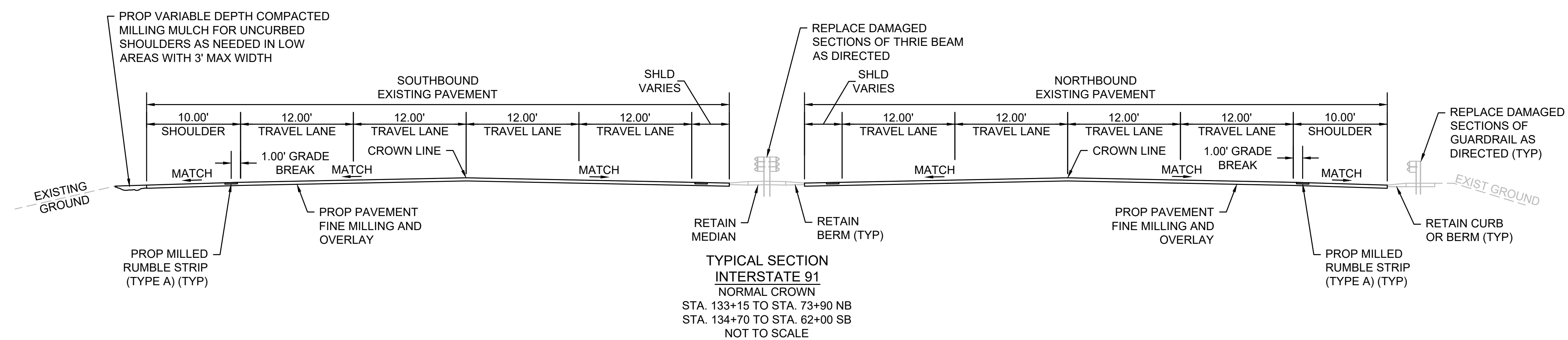
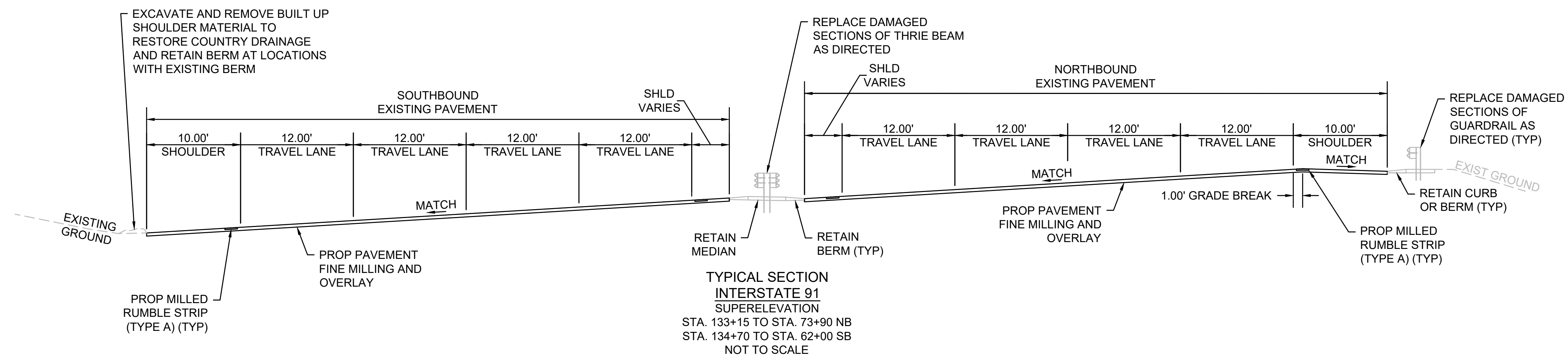
TRAFFIC SIGNAL ABBREVIATIONS

Table with columns: CAB (Cabinet), CCVE (Closed Circuit Video Equipment), DW (Steady Upraised Hand), FDW (Flashing Upraised Hand), FR (Flashing Circular Red), FRL (Flashing Red Left Arrow), FRR (Flashing Red Right Arrow), FY (Flashing Circular Yellow), FYL (Flashing Yellow Left Arrow), FYR (Flashing Yellow Right Arrow), G (Steady Circular Green), GL (Steady Green Left Arrow), GR (Steady Green Right Arrow), GSL (Steady Green Slash Left Arrow), GSR (Steady Green Slash Right Arrow), GV (Steady Green Vertical Arrow), OL (Overlap), PED (Pedestrian), PTZ (Pan, Tilt, Zoom), R (Steady Circular Red), RL (Steady Red Left Arrow), RR (Steady Red Right Arrow), TR SIG (Traffic Signal), TSC (Traffic Signal Conduit), W (Steady Walking Person), Y (Steady Circular Yellow), YL (Steady Yellow Left Arrow).

**CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	3	55
PROJECT FILE NO.		612106	

TYPICAL SECTIONS



PAVEMENT NOTES:

PROPOSED PAVEMENT FINE MILLING AND PAVEMENT OVERLAY (MAINLINE/RAMPS)

SURFACE: 2.00 INCHES ASPHALT RUBBER GAP GRADED - 12.5 (ARGG -12.5)

FINE MILLING: 2.00 INCHES PAVEMENT FINE MILLING

ASPHALT EMULSION FOR TACK COAT SHALL BE APPLIED AT 0.07 TO 0.09 GAL/SY OVER FINE MILLED SURFACE.

PROPOSED BRIDGE PAVEMENT EXCAVATION AND SURFACE COURSE RESURFACING (INCLUDING PAVEMENT TRANSITION AT BRIDGE DECKS)

BRIDGE NUMBERS:

S-24-088, S-24-078, S-24-079, S-24-080, S-24-085, C-13-037, C-13-035, AND C-13-036

SURFACE: 2.50 INCHES SUPERPAVE WATERPROOFING SURFACE COURSE - 12.5 (SSC-W-12.5) PLACED IN ONE COURSE

BRIDGE PAVEMENT EXCAVATION: ALL HMA (APPROXIMATE 2.50 INCHES) AND ALL EXISTING BRIDGE MEMBRANE REMOVAL (AT BRIDGE DECKS)

FINE MILLING: 2.50 INCHES PAVEMENT FINE MILLING (AT PAVEMENT TRANSITION AREAS)

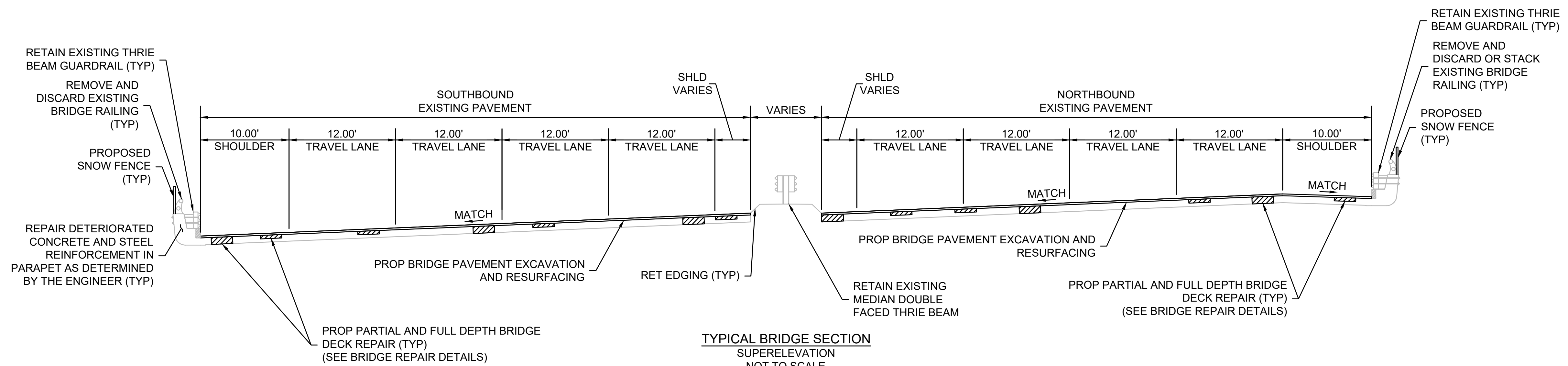
ASPHALT EMULSION FOR TACK COAT SHALL BE APPLIED AT 0.06 TO 0.08 GAL/SY OVER BRIDGE DECK.

NOTE: MEMBRANE WATERPROOFING FOR BRIDGE DECKS WILL NOT BE USED ON THIS PROJECT.

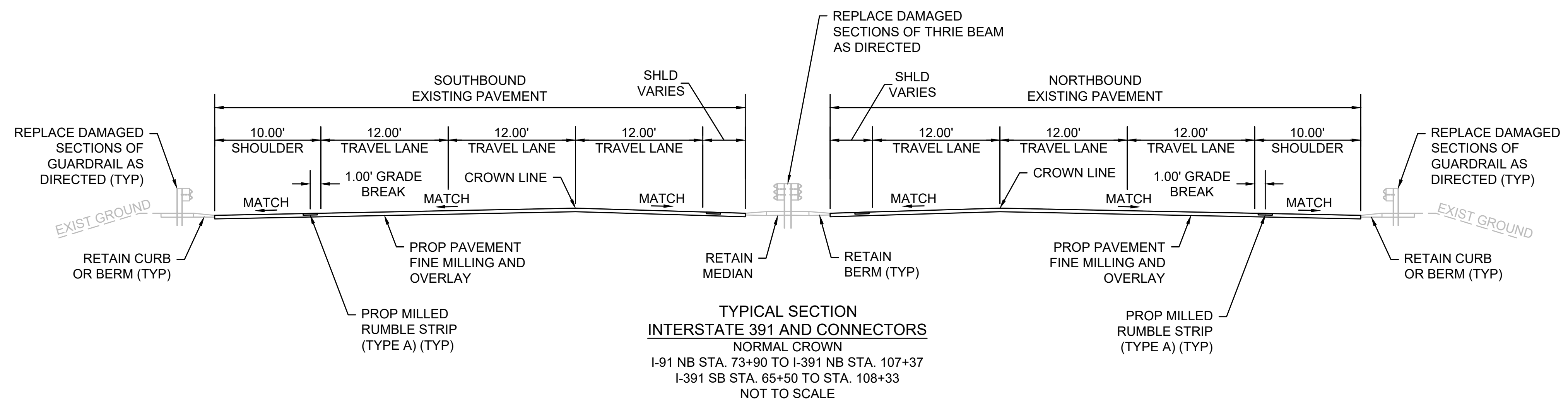
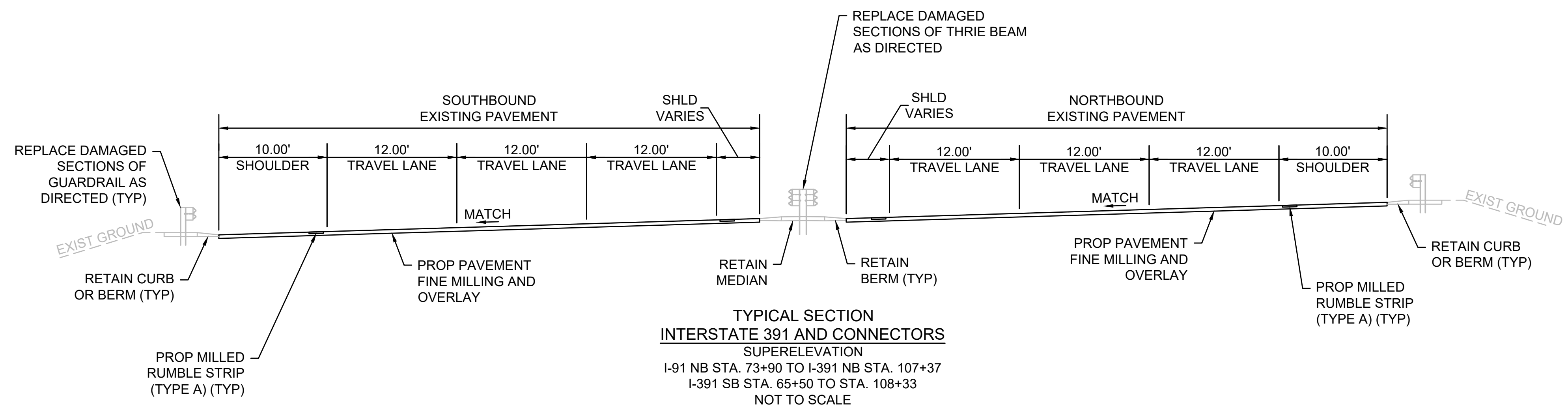
CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	4	55
PROJECT FILE NO.		612106	

TYPICAL SECTIONS



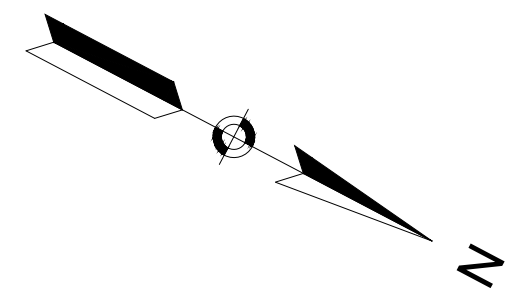
- C-13-035 (SUPERELEVATION) C-13-036 (SUPERELEVATION)
 C-13-037 (SUPERELEVATION) S-24-078 (NORMAL CROWN)
 S-24-079 (SUPERELEVATION) S-24-080 (NORMAL CROWN)
 S-24-085 (SUPERELEVATION) S-24-088 (NORMAL CROWN)



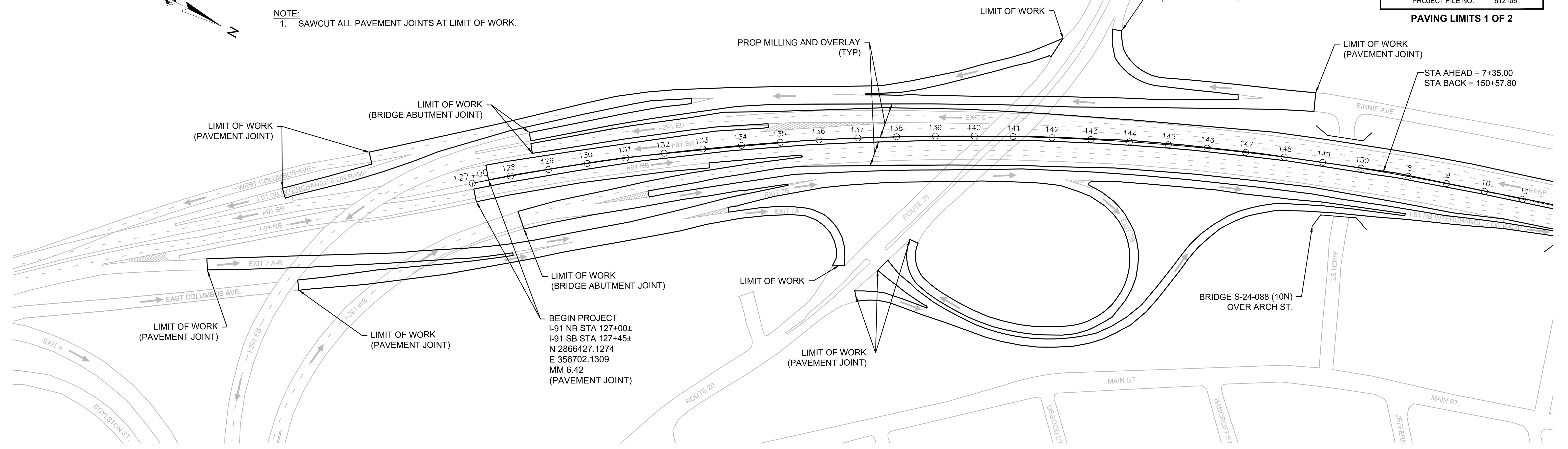
**CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	5	55
PROJECT FILE NO.		612106	

PAVING LIMITS 1 OF 2

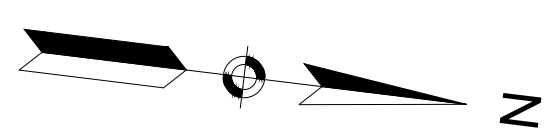


NOTE:
1. SAWCUT ALL PAVEMENT JOINTS AT LIMIT OF WORK.

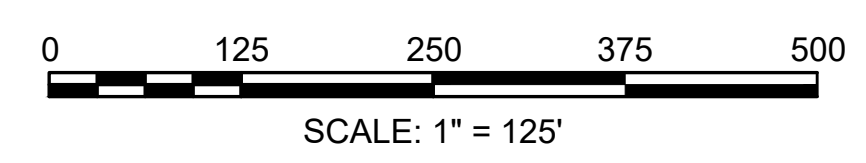
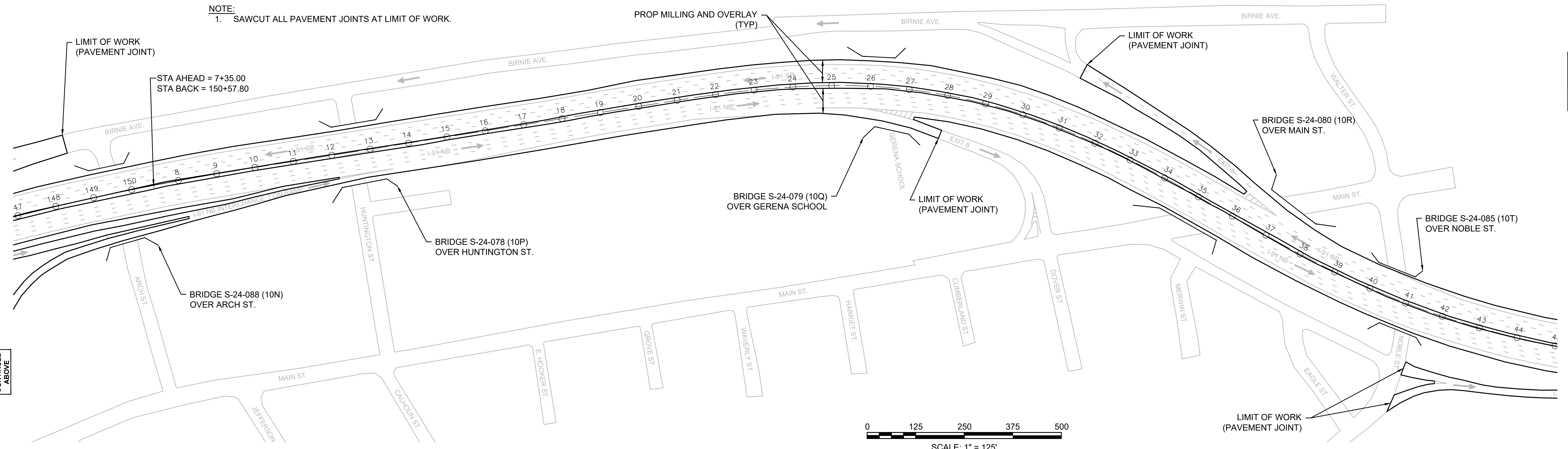


BEGIN PROJECT
I-91 NB STA 127+00±
I-91 SB STA 127+45±
N 2866427.1274
E 356702.1309
MM 6.42
(PAVEMENT JOINT)

STA AHEAD = 7+35.00
STA BACK = 150+57.80



NOTE:
1. SAWCUT ALL PAVEMENT JOINTS AT LIMIT OF WORK.



CONTINUED ABOVE

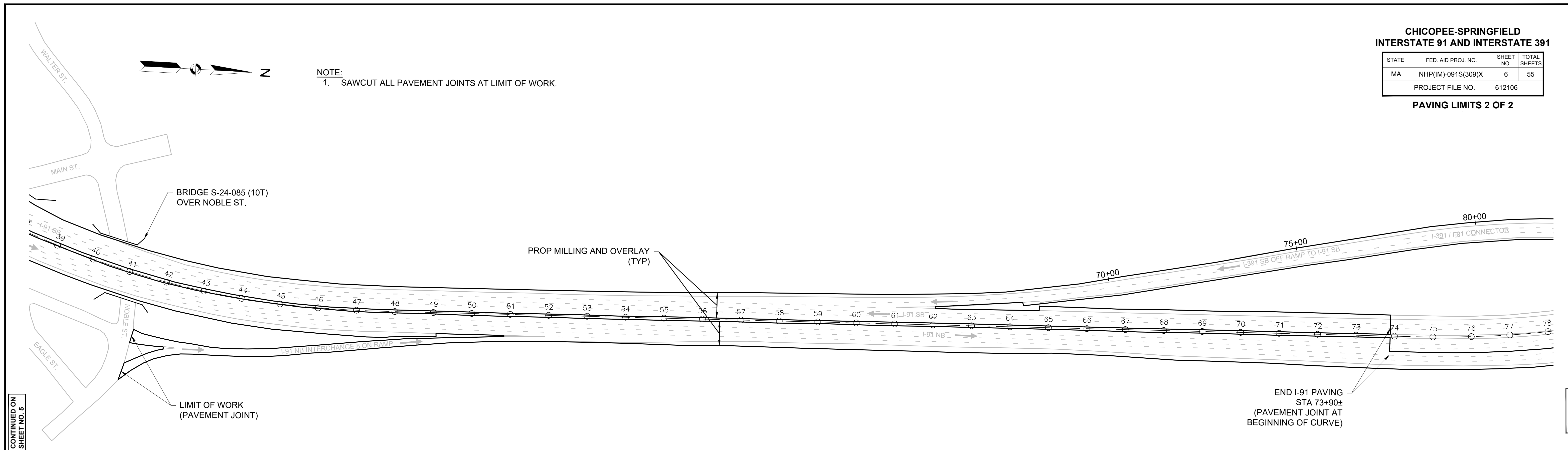
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CONTINUED ON SHEET NO. 6

CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391

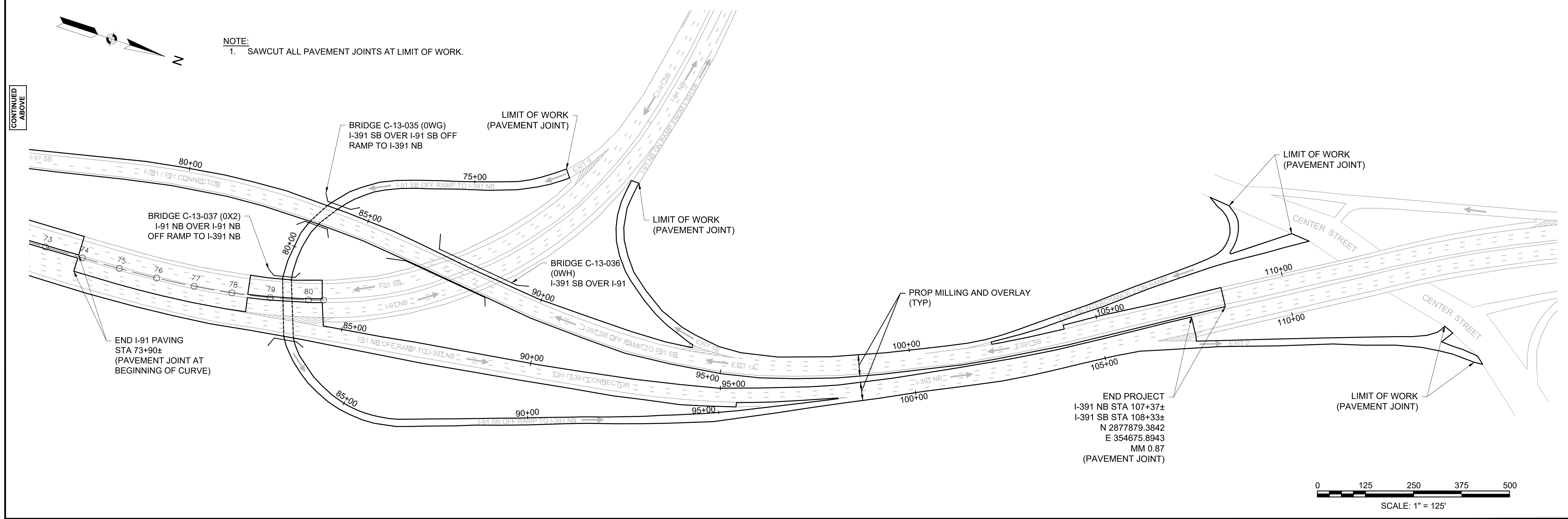
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	6	55
PROJECT FILE NO.		612106	

PAVING LIMITS 2 OF 2



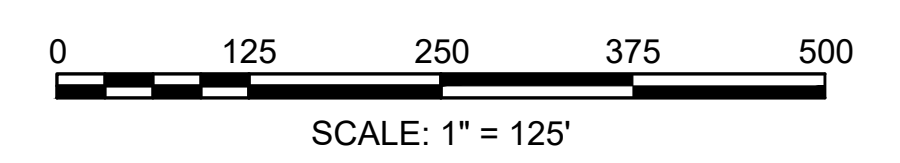
CONTINUED ON
SHEET NO. 5

CONTINUED
BELOW



CONTINUED
ABOVE

END PROJECT
I-391 NB STA 107+37±
I-391 SB STA 108+33±
N 2877879.3842
E 354675.8943
MM 0.87
(PAVEMENT JOINT)



NOTE:
1. SAWCUT ALL PAVEMENT JOINTS AT LIMIT OF WORK.

NOTE:
1. SAWCUT ALL PAVEMENT JOINTS AT LIMIT OF WORK.

NOTES:

- ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS, UNLESS SUPERCEDED BY THESE PLANS.
- ALL SIGN LEGENDS, BORDERS, AND MOUNTING SHALL BE IN ACCORDANCE WITH THE MUTCD.
- TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
- TEMPORARY CONSTRUCTION SIGNING, BARRICADES, AND ALL OTHER NECESSARY WORK ZONE TRAFFIC CONTROL DEVICES SHALL BE REMOVED FROM THE HIGHWAY OR COVERED WHEN THEY ARE NOT REQUIRED FOR CONTROL OF TRAFFIC.
- SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY, CHANNELIZING DEVICES, BARRIERS, AND CRASH ATTENUATORS MUST PASS THE CRITERIA SET FORTH IN NCHRP REPORT 350, "RECOMMENDED PROCEDURES FOR THE SAFETY PERFORMANCE EVALUATION OF HIGHWAY FEATURES" AND/OR "MANUAL FOR ASSESSING SAFETY HARDWARE" (MASH).
- CONTRACTORS SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS CONDUIT INSTALLATION, EXISTING PAVEMENT EXCAVATION, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT, AND SIMILAR OPERATIONS.
- THE FIRST TEN PLASTIC DRUMS OF A TAPER SHALL BE MOUNTED WITH SEQUENTIAL FLASHING LIGHTS.
- THE ADVISORY SPEED LIMIT, IF REQUIRED, SHALL BE DETERMINED BY THE ENGINEER.
- DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
- MAXIMUM SPACING OF TRAFFIC DEVICES IN A TAPER (DRUMS OR CONES) IS EQUAL IN FEET TO THE SPEED LIMIT IN MPH.
- MINIMUM LANE WIDTH IS TO BE 11 FEET (3.3m) UNLESS OTHERWISE SHOWN. MINIMUM LANE WIDTH TO BE MEASURED FROM THE EDGE OF DRUMS OR MEDIAN BARRIER.
- ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.

LEGEND:

- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- ▨ WORK ZONE
- 🚚 WORK VEHICLE
- ➔ DIRECTION OF TRAFFIC
- 🚚 TRUCK MOUNTED ATTENUATOR
- P/F POLICE/FLAGGER DETAIL
- 🚧 IMPACT ATTENUATOR
- ➔ TRAFFIC OR PEDESTRIAN SIGNAL
- ▨ TYPE III BARRICADE
- ▭ MEDIAN BARRIER
- ⬇️ SIGN
- 📄 CHANGEABLE MESSAGE SIGN
- ▭ MEDIAN BARRIER WITH WARNING LIGHTS
- ➔ ARROW BOARD

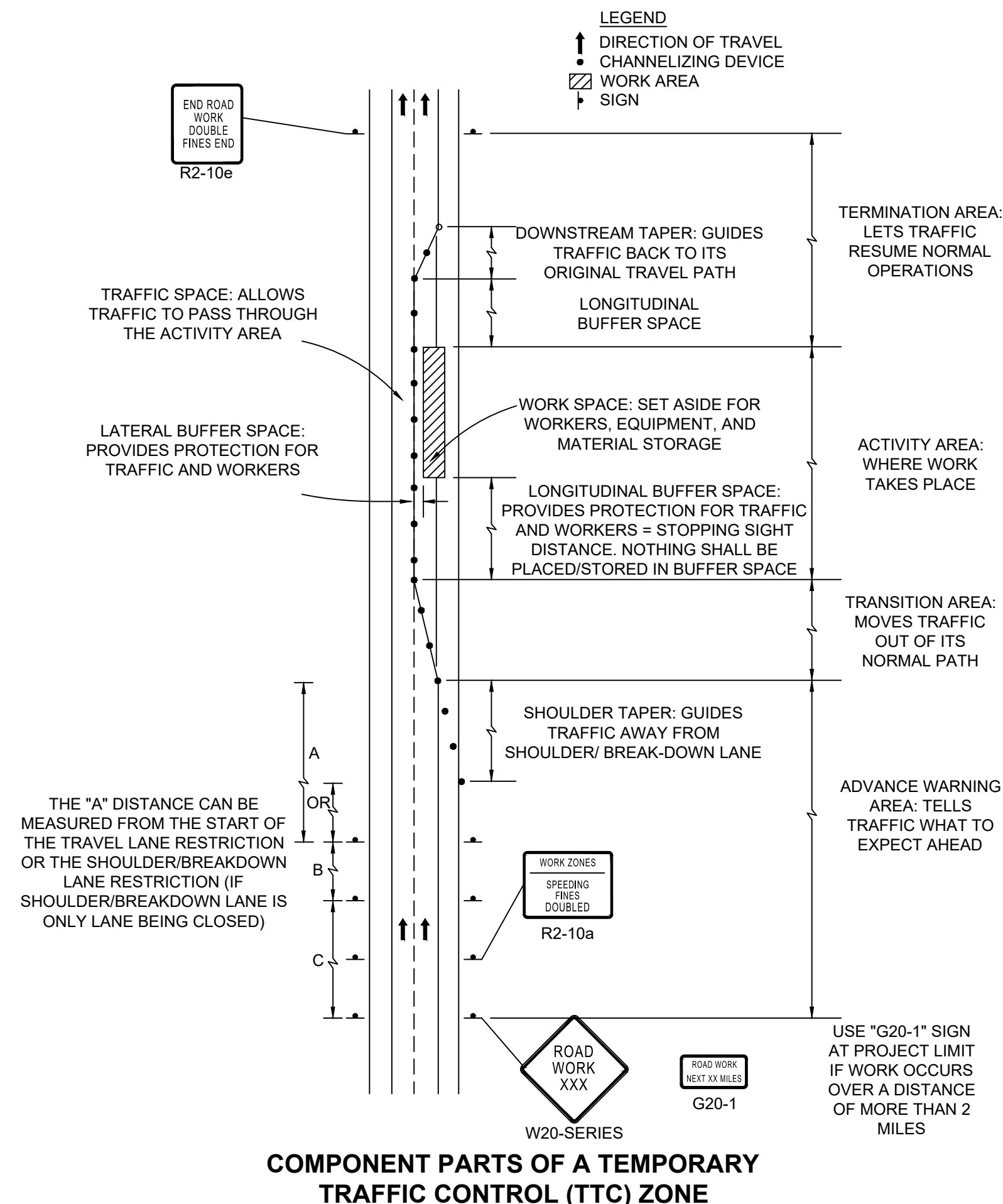
THE IDEAL CAPACITY OF A MAJOR HIGHWAY IS GENERALLY CONSIDERED TO BE 1900 PASSENGER CARS PER HOUR PER LANE (PCPHPL). IN WORK ZONES ON A MULTI-LANE DIVIDED HIGHWAY, THE FOLLOWING VOLUME GUIDELINES HAVE BEEN SUGGESTED:

MEASURED AVERAGE WORK ZONE CAPACITIES

NUMBER OF LANES		NUMBER OF STUDIES	AVERAGE CAPACITY	
NORMAL (EXISTING)	OPEN (TO TRAFFIC)		VPH	VPHPL
3	1	7	1,170	1,170
2	1	8	1,340	1,340
2	2	8	2,740	1,370
4	2	4	2,960	1,480
3	2	9	2,980	1,490
4	3	4	4,560	1,520

Source: Dudek, C., Notes on Work Zone Capacity and Level of Service, Texas Transportation Institute, Texas A&M University, College Station, Texas (1984)

BY OBTAINING HOURLY TRAFFIC COUNTS FOR A PARTICULAR ROADWAY (WITH A MINIMUM OF A 48-HOUR AUTOMATIC TRAFFIC RECORDER (ATR) COUNT), THIS WILL HELP TO DETERMINE AT WHAT TIMES OF THE DAY OR NIGHT A CERTAIN NUMBER OF LANES MAY BE CLOSED.



COMPONENT PARTS OF A TEMPORARY TRAFFIC CONTROL (TTC) ZONE

SUGGESTED WORK ZONE WARNING SIGN SPACING

ROAD TYPE	DISTANCE BETWEEN SIGNS **		
	A	B	C
LOCAL OR LOW VOLUME ROADWAYS*	350	350	350
MOST OTHER ROADWAYS*	500	500	500
FREEWAYS AND EXPRESSWAYS*	1,000	1,500	2,640

- * ROAD TYPE TO BE DETERMINED BY MASSDOT OFFICE OF TRANSPORTATION PLANNING.
- ** DISTANCES ARE SHOWN IN FEET. THE COLUMN HEADINGS A, B, AND C ARE THE DIMENSIONS SHOWN IN THE DETAIL/ TYPICAL SETUP FIGURES. THE A DIMENSION IS THE DISTANCE FROM THE TRANSITION OR POINT OF RESTRICTION TO THE FIRST SIGN. THE B DIMENSION IS THE DISTANCE BETWEEN THE FIRST AND SECOND SIGNS. THE C DIMENSION IS THE DISTANCE BETWEEN THE SECOND AND THIRD SIGNS. (THE "THIRD" SIGN IS THE FIRST ONE TYPICALLY ENCOUNTERED BY A DRIVER APPROACHING A TEMPORARY TRAFFIC CONTROL (TTC) ZONE.)

THE "THIRD" SIGN ABOVE IS TYPICALLY REFERRED TO AS AN "ADVANCE WARNING" SIGN ON THE TTCP SETUPS. THESE ADVANCE WARNING SIGNS ARE LOCATED PRIOR TO THE PROJECT LIMITS ON ALL APPROACHES (I.E. THE W20-1 SERIES (ROAD WORK "XX FT") SIGNS), AND USUALLY REMAIN FOR THE DURATION OF THE PROJECT. ADDITIONAL SIGNS (I.E. "RIGHT LANE CLOSED 1 MILE" AND "LEFT LANE CLOSED 1 MILE") HAVE BEEN SHOWN IN SOME FIGURES AS EXAMPLES OF REINFORCEMENT SIGN PLACEMENT BUT ARE USED IN RARE OCCASIONS.

THE FIRST AND SECOND WARNING SIGNS ABOVE ARE REFERRED TO AS THE OPERATIONAL (DAY-TO-DAY) WORK ZONE SIGNS AND MAY BE MOVED DEPENDING ON WHERE THE SPECIFIC ROADWAY WORK FOR THAT DAY IS LOCATED.

R2-10a SIGNS SHALL BE PLACED BETWEEN THE SECOND AND THIRD SIGNS AS DESCRIBED ABOVE.
R2-10a, R2-10e, AND W20-1 SERIES SIGNS ARE TO BE INCLUDED ON ALL DETAILS/TYPICAL SETUPS.

Based on: Table 6C-1 MUTCD LATEST EDITION

STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED

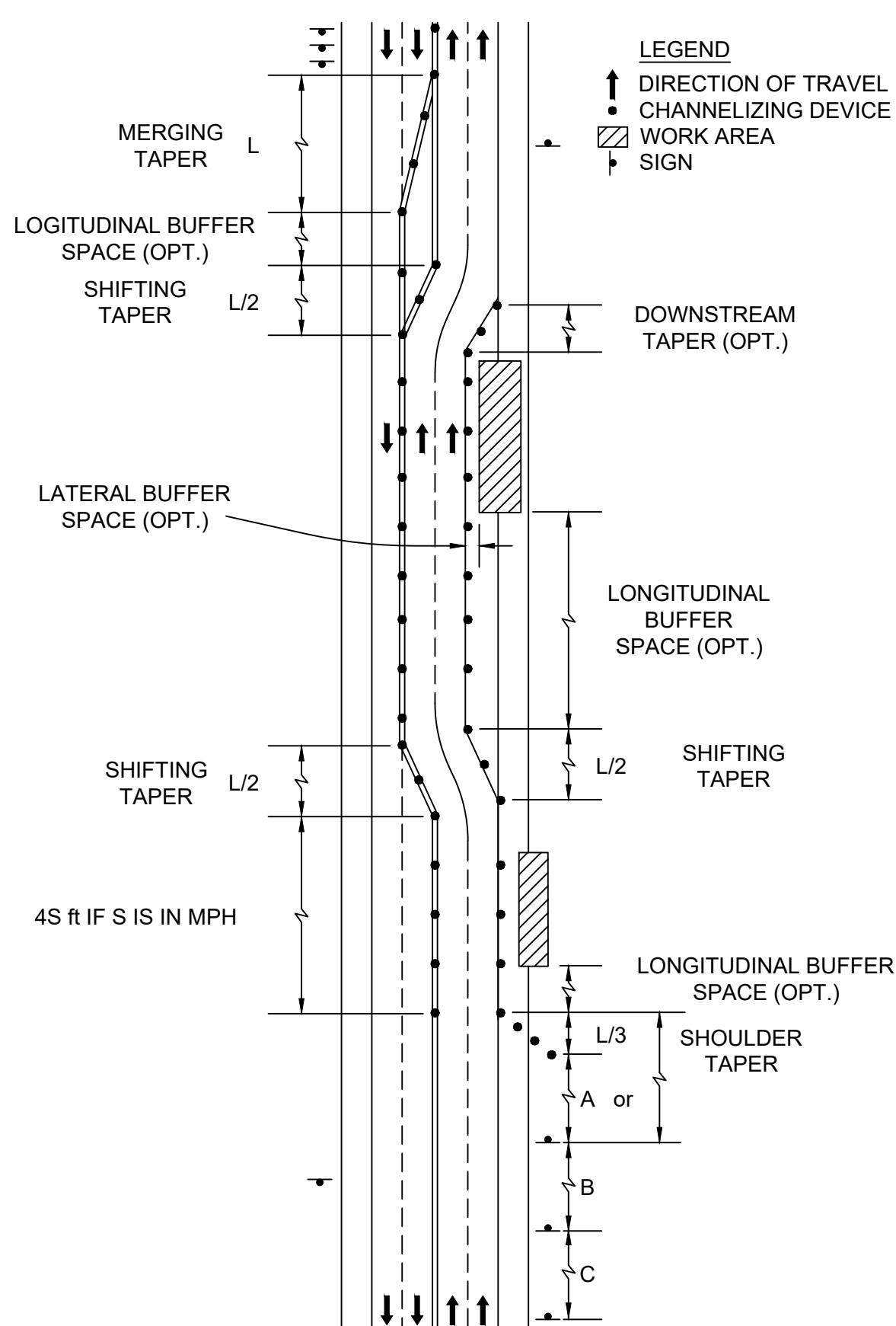
SPEED* (km/h)	DISTANCE (m)	SPEED* (mph)	DISTANCE (ft)
30	35	20	115
40	50	25	155
50	65	30	200
60	85	35	250
70	105	40	305
80	130	45	360
90	160	50	425
100	185	55	495
110	220	60	570
120	250	65	645
		70	730
		75	820

*POSTED SPEED, OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED

THESE VALUES MAY BE USED TO DETERMINE THE LENGTH OF LONGITUDINAL BUFFER SPACES.

THE DISTANCES IN THE ABOVE CHART REPRESENT THE MINIMAL VALUES FOR BUFFER SPACING.

Source: Table 6C-2 MUTCD LATEST EDITION



TYPES OF TAPERS AND BUFFER SPACES

CONVENTIONAL ROADWAY— A STREET OR HIGHWAY OTHER THAN A LOW-VOLUME ROAD, EXPRESSWAY, OR FREEWAY.

EXPRESSWAY— A DIVIDED HIGHWAY WITH PARTIAL CONTROL OF ACCESS.

FREEWAY— A DIVIDED HIGHWAY WITH FULL CONTROL OF ACCESS.

LOW-VOLUME ROAD— A FACILITY LYING OUTSIDE OF BUILT-UP AREAS OF CITIES, TOWNS, AND COMMUNITIES, AND IT SHALL HAVE A TRAFFIC VOLUME OF LESS THAN 400 AADT. IT SHALL NOT BE A FREEWAY, EXPRESSWAY, INTERCHANGE RAMP, FREEWAY SERVICE ROAD OR A ROAD ON A DESIGNATED STATE HIGHWAY SYSTEM.

Source: MUTCD LATEST EDITION

TAPER LENGTH CRITERIA FOR TEMPORARY TRAFFIC CONTROL ZONES

TYPE OF TAPER	TAPER LENGTH (L)*
MERGING TAPER	AT LEAST L
SHIFTING TAPER	AT LEAST 0.5L
SHOULDER TAPER	AT LEAST 0.33L
ONE-LANE, TWO-WAY TRAFFIC TAPER	50 FT MIN. 100 FT MAX.
DOWNSTREAM TAPER	50 FT MIN. 100 FT MAX. PER LANE

Source: Table 6C-3 MUTCD LATEST EDITION

FORMULAS FOR DETERMINING TAPER LENGTHS

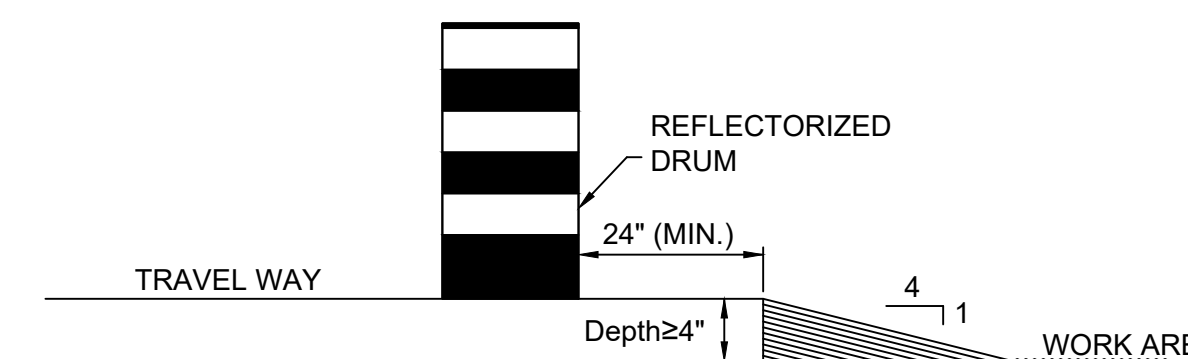
SPEED LIMIT (S)	TAPER LENGTH (L) FEET
40 MPH OR LESS	L = WS ² / 60
45 MPH OR MORE	L = WS

WHERE: L = TAPER LENGTH IN FEET

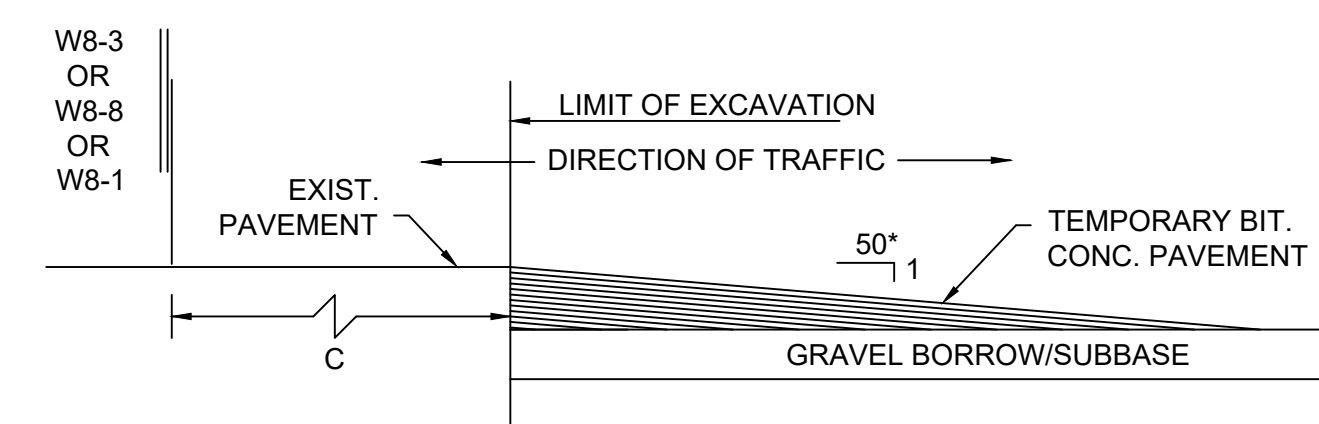
W = WIDTH OF OFFSET IN FEET

S = POSTED SPEED LIMIT, OR OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED IN MPH

Source: Table 6C-4 MUTCD LATEST EDITION



LATERAL DROP-OFF DETAIL NOT TO SCALE



LONGITUDINAL DROP-OFF DETAIL NOT TO SCALE

* - INCREASE SLOPE RATIO FOR HIGHER SPEEDS

LATERAL AND LONGITUDINAL DROP-OFF DETAILS

CHICOPEE-SPRINGFIELD INTERSTATE 91 AND INTERSTATE 391

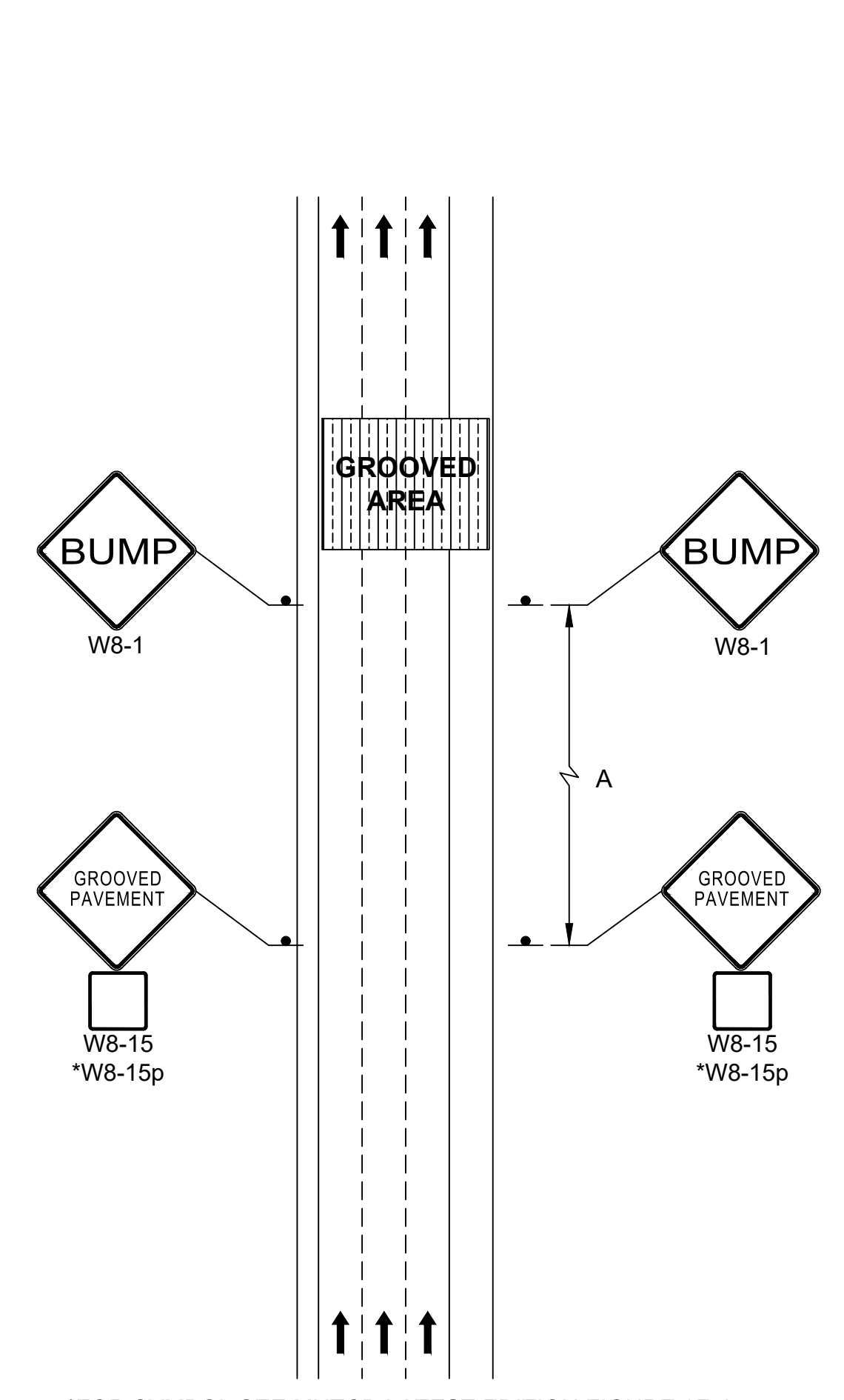
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MA	NHP(IM)-091S(309)X	7	55
PROJECT FILE NO.		612106	

TEMPORARY TRAFFIC CONTROL PLANS

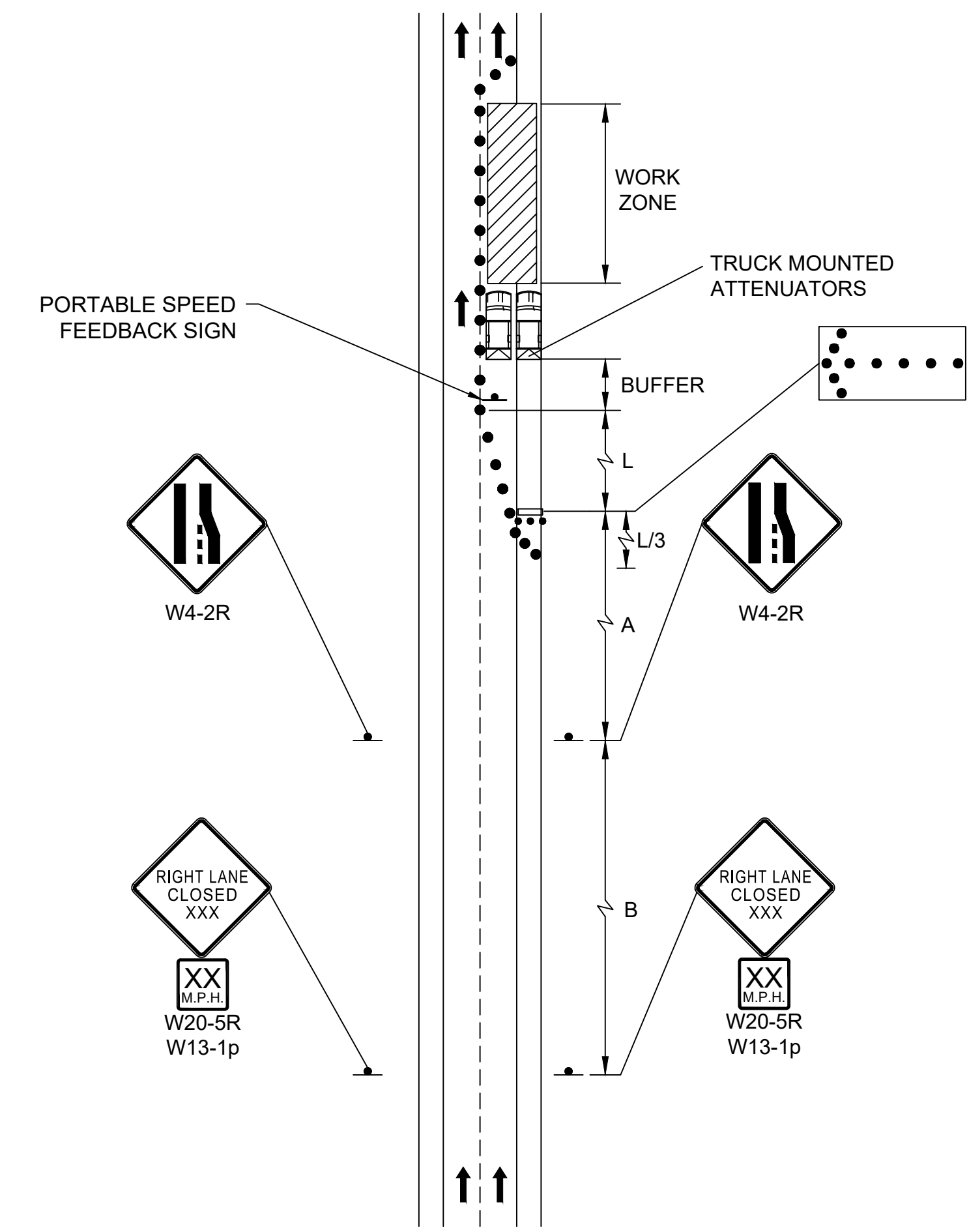
CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	8	55
PROJECT FILE NO.		612106	

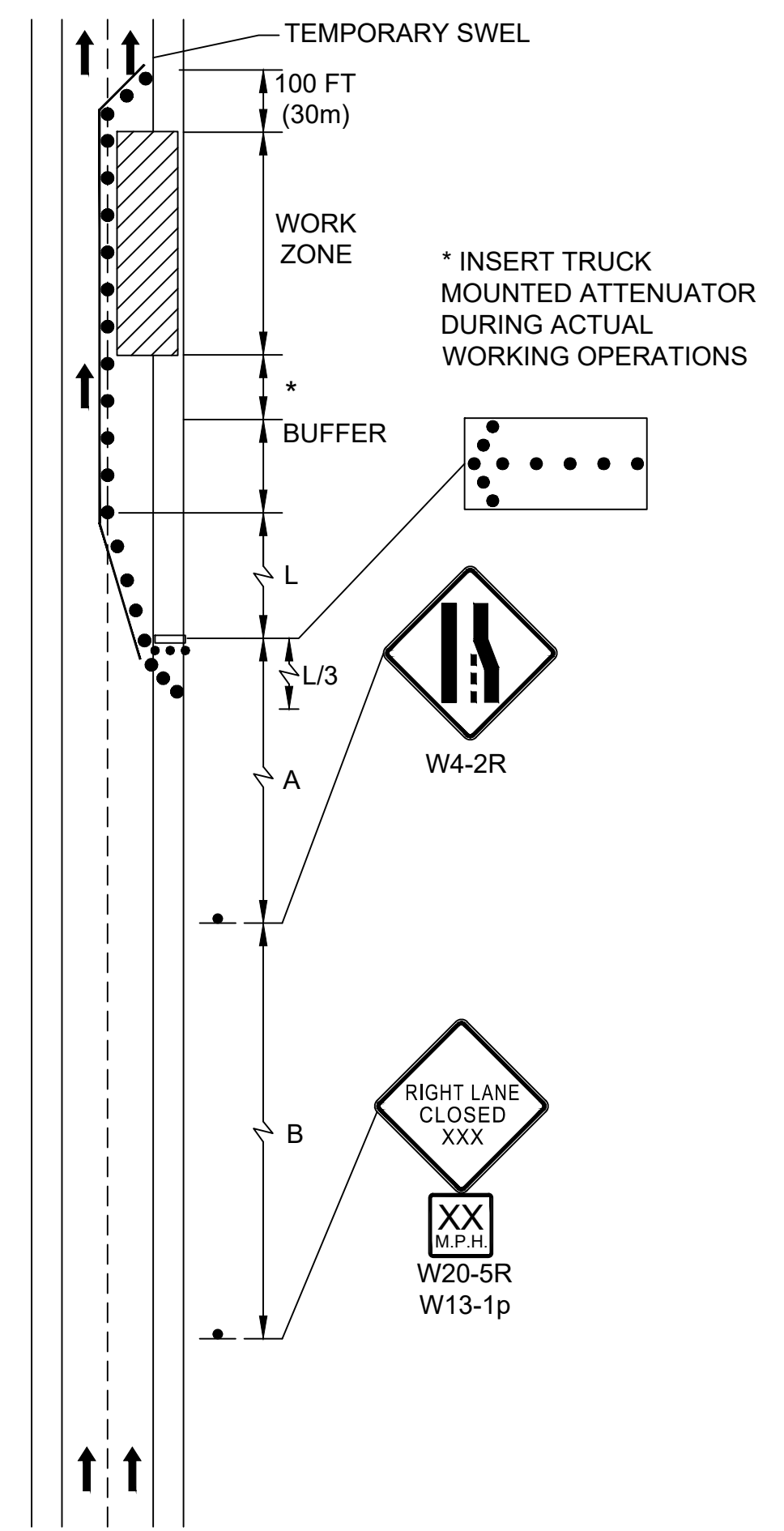
TEMPORARY TRAFFIC CONTROL PLANS



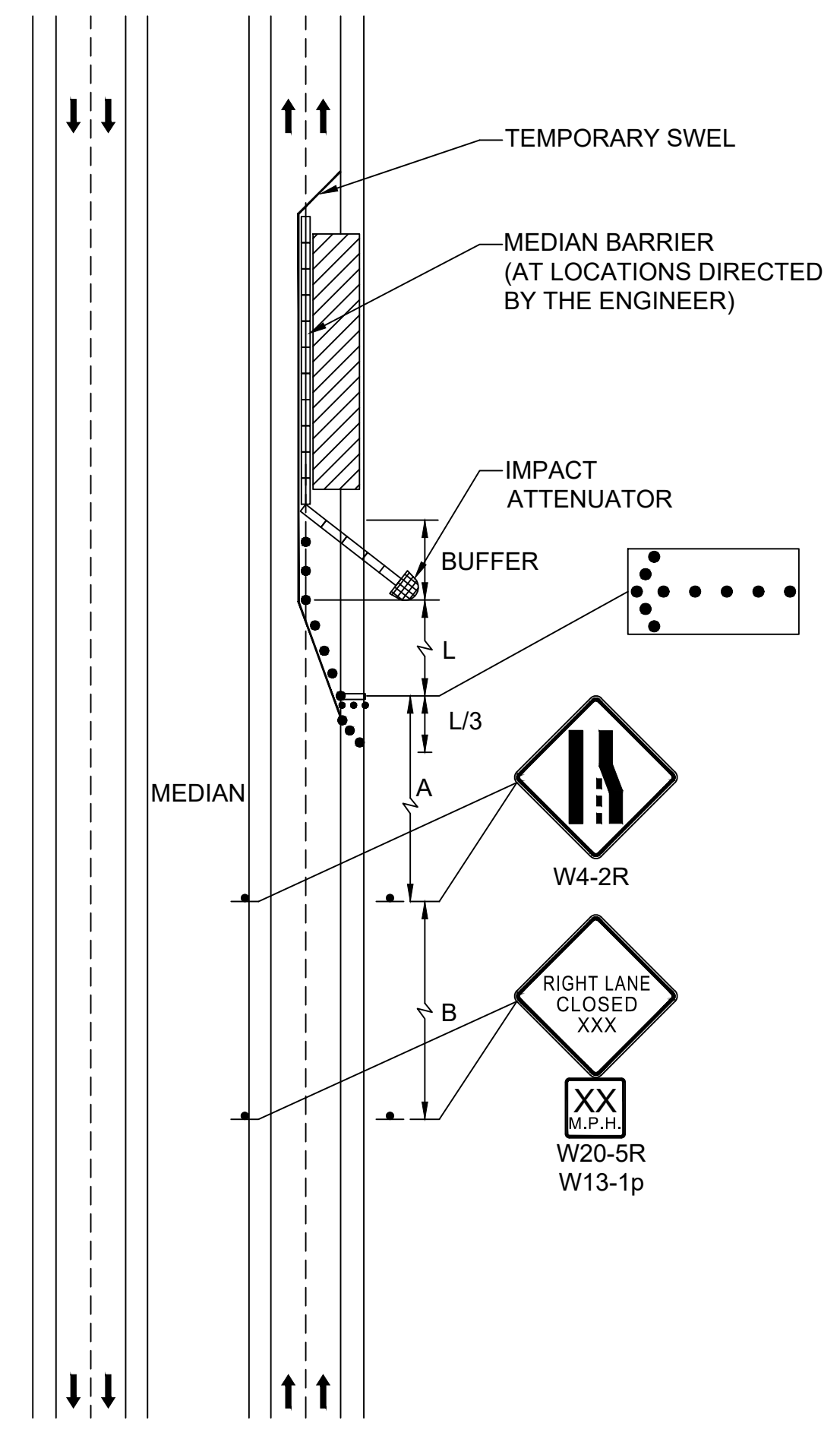
*FOR SYMBOL SEE MUTCD LATEST EDITION FIGURE 6F-4
DIVIDED HIGHWAY SCARIFIED PAVEMENT



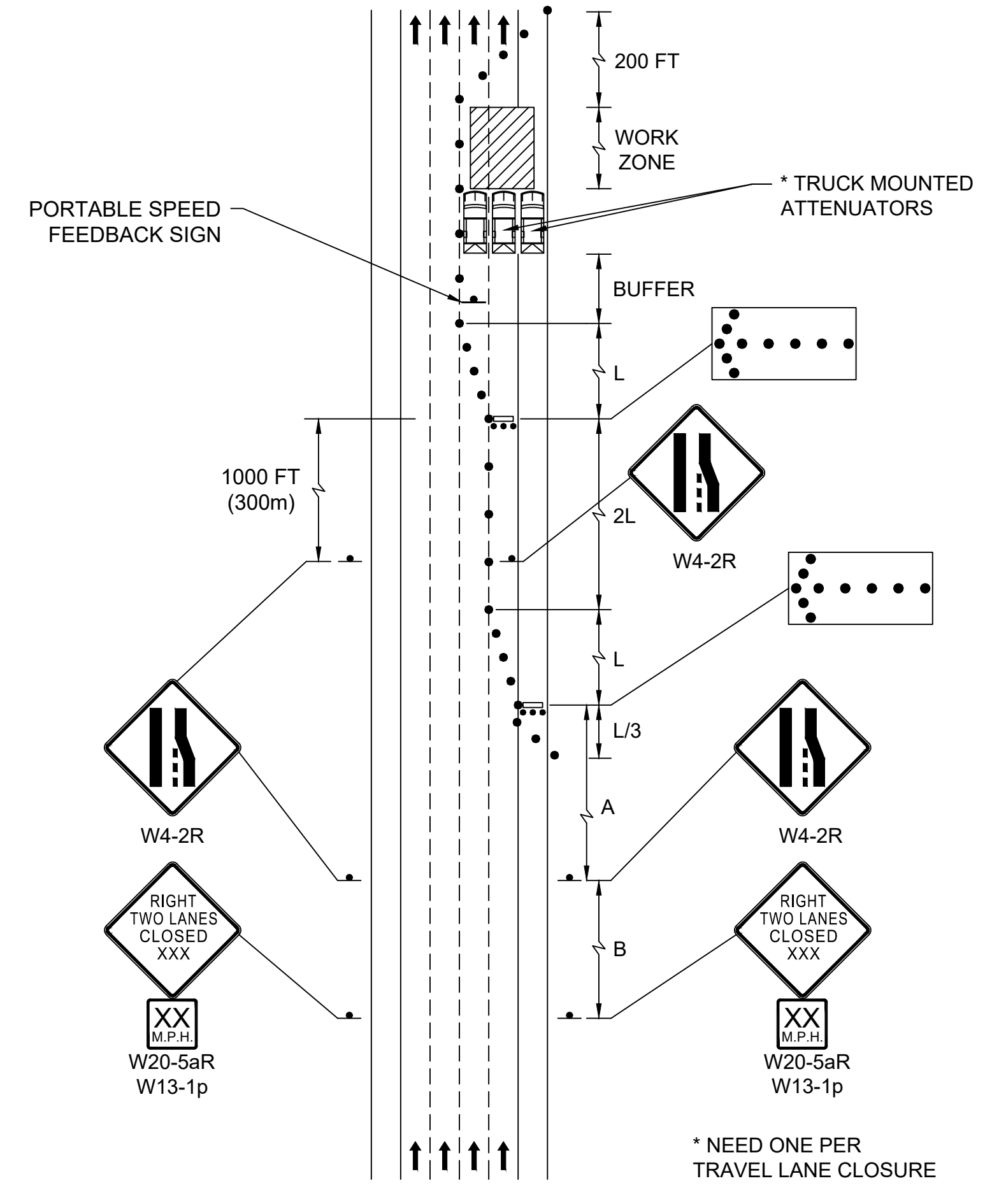
DIVIDED HIGHWAY/LANE CLOSURE (SHORT TERM)



DIVIDED HIGHWAY STATIONARY LANE CLOSURE (LONG TERM AND INTERMEDIATE)



DIVIDED HIGHWAY ONE LANE CLOSED WITH BARRIER



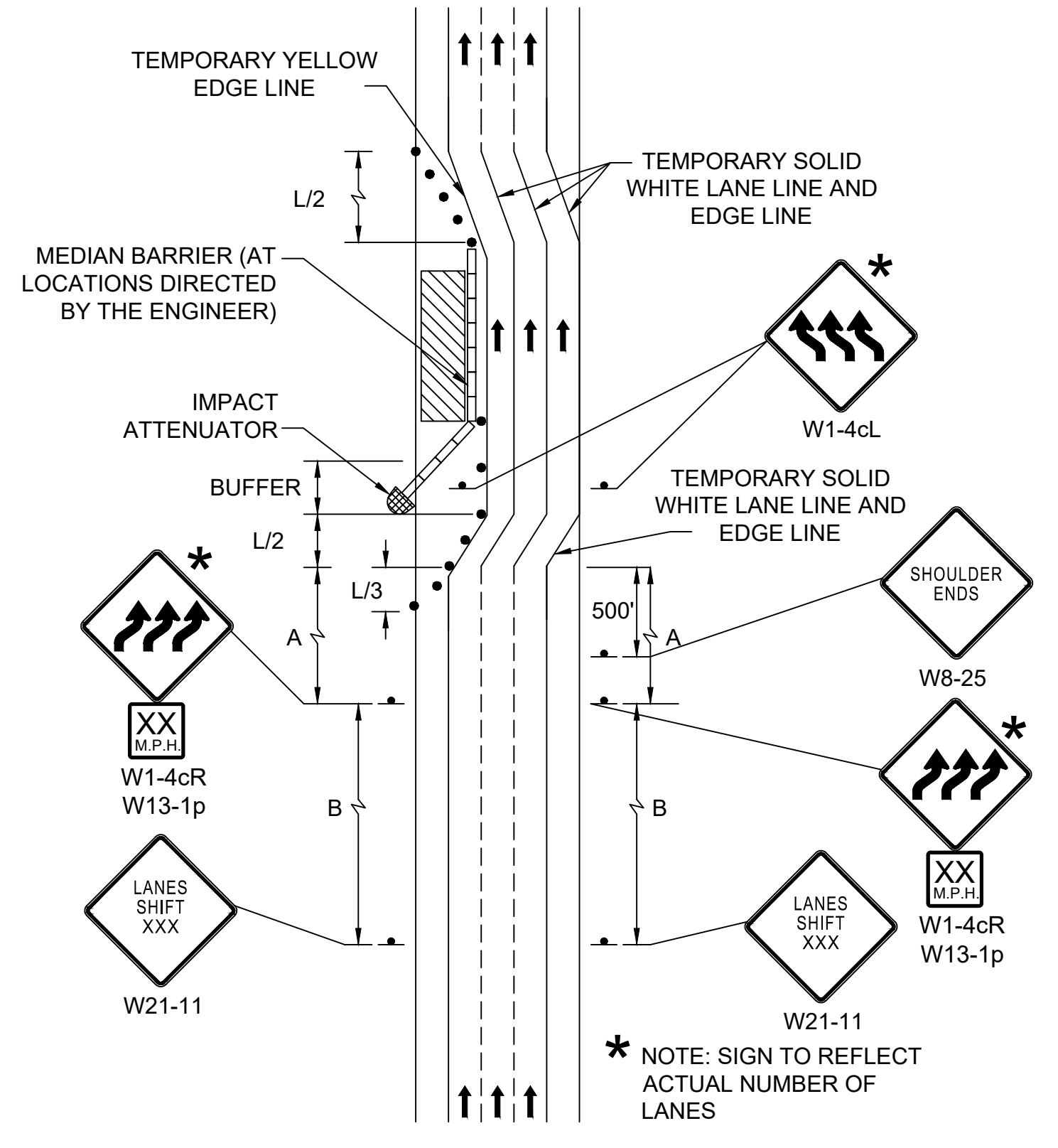
DIVIDED HIGHWAY MULTIPLE LANE CLOSURE

* NEED ONE PER TRAVEL LANE CLOSURE

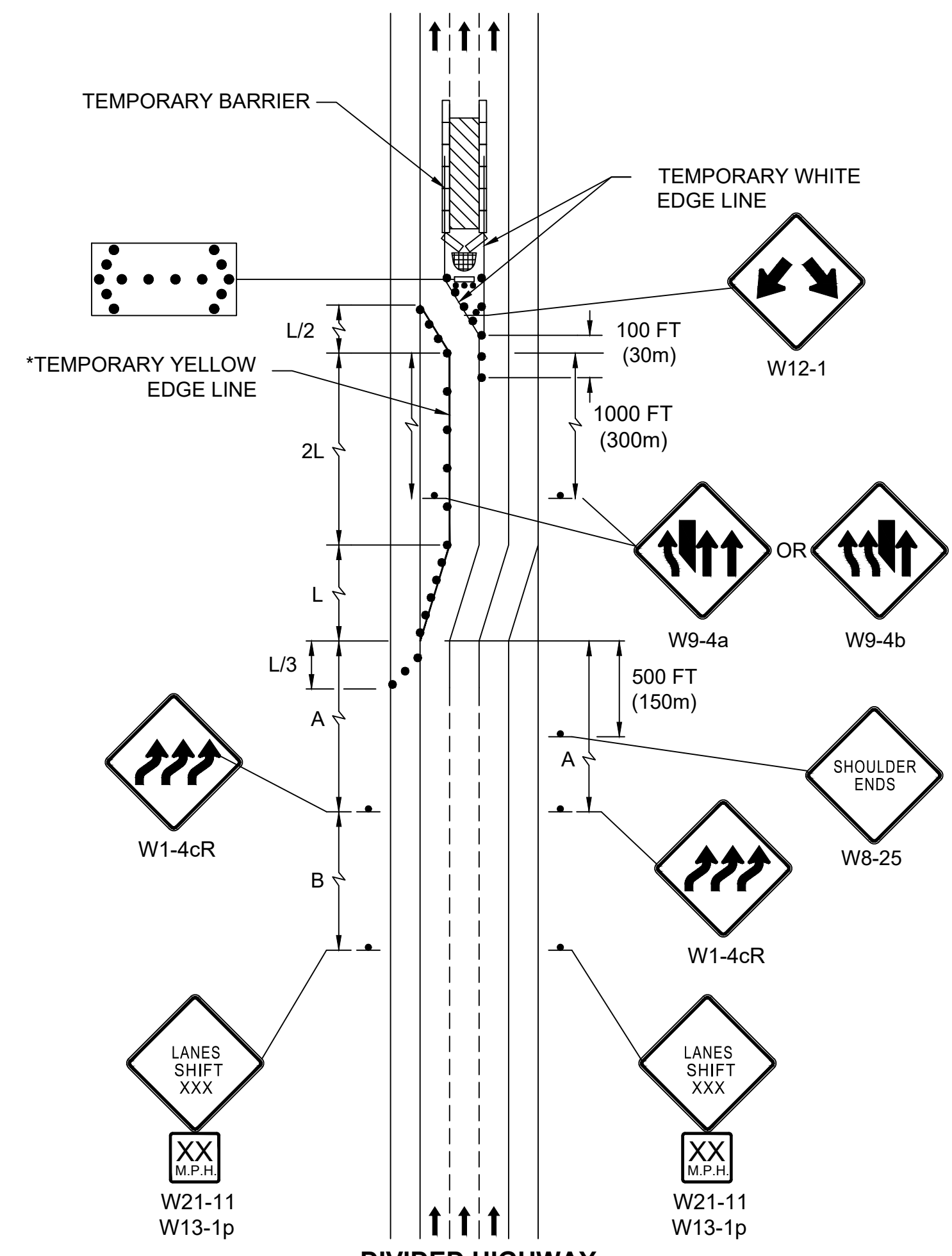
CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	9	55
PROJECT FILE NO.		612106	

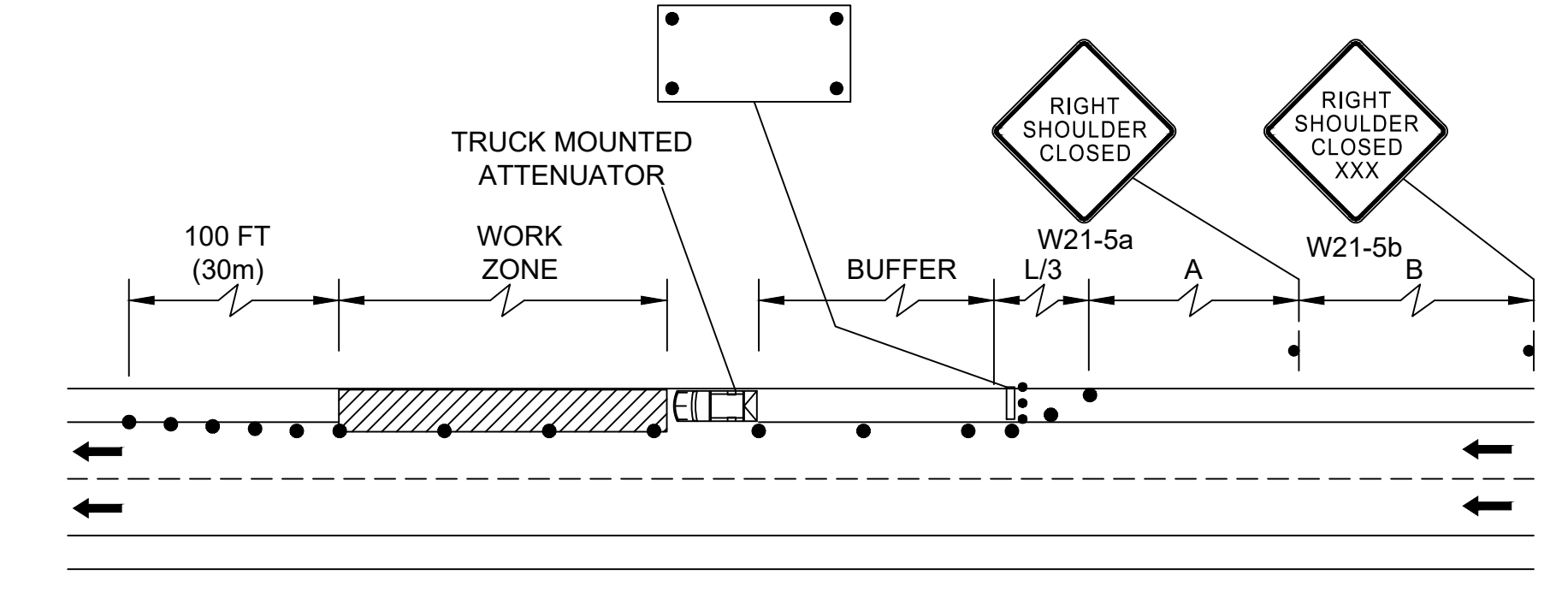
TEMPORARY TRAFFIC CONTROL PLANS



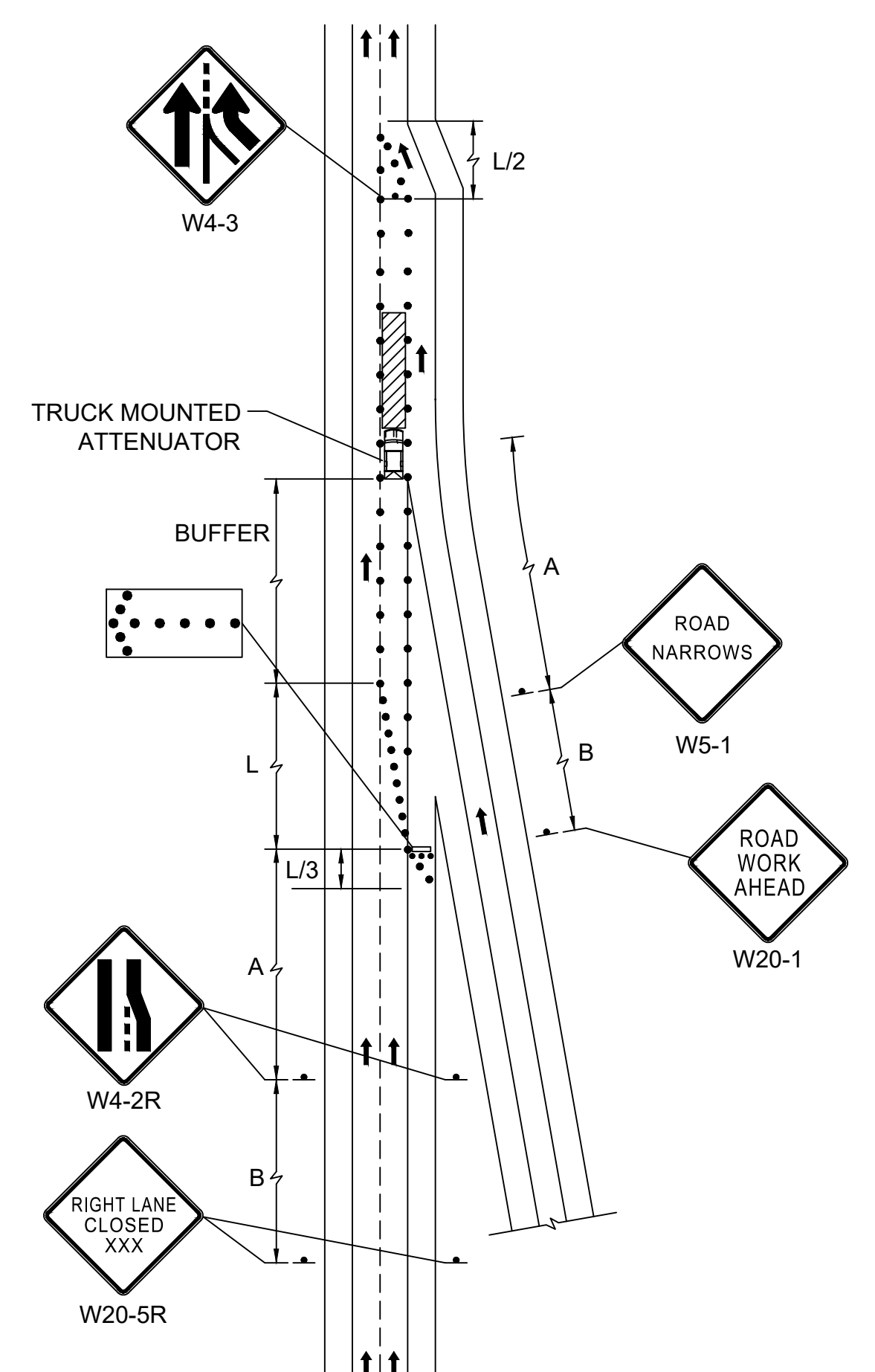
DIVIDED HIGHWAY MULTIPLE
LANE SHIFT WITH BARRIER



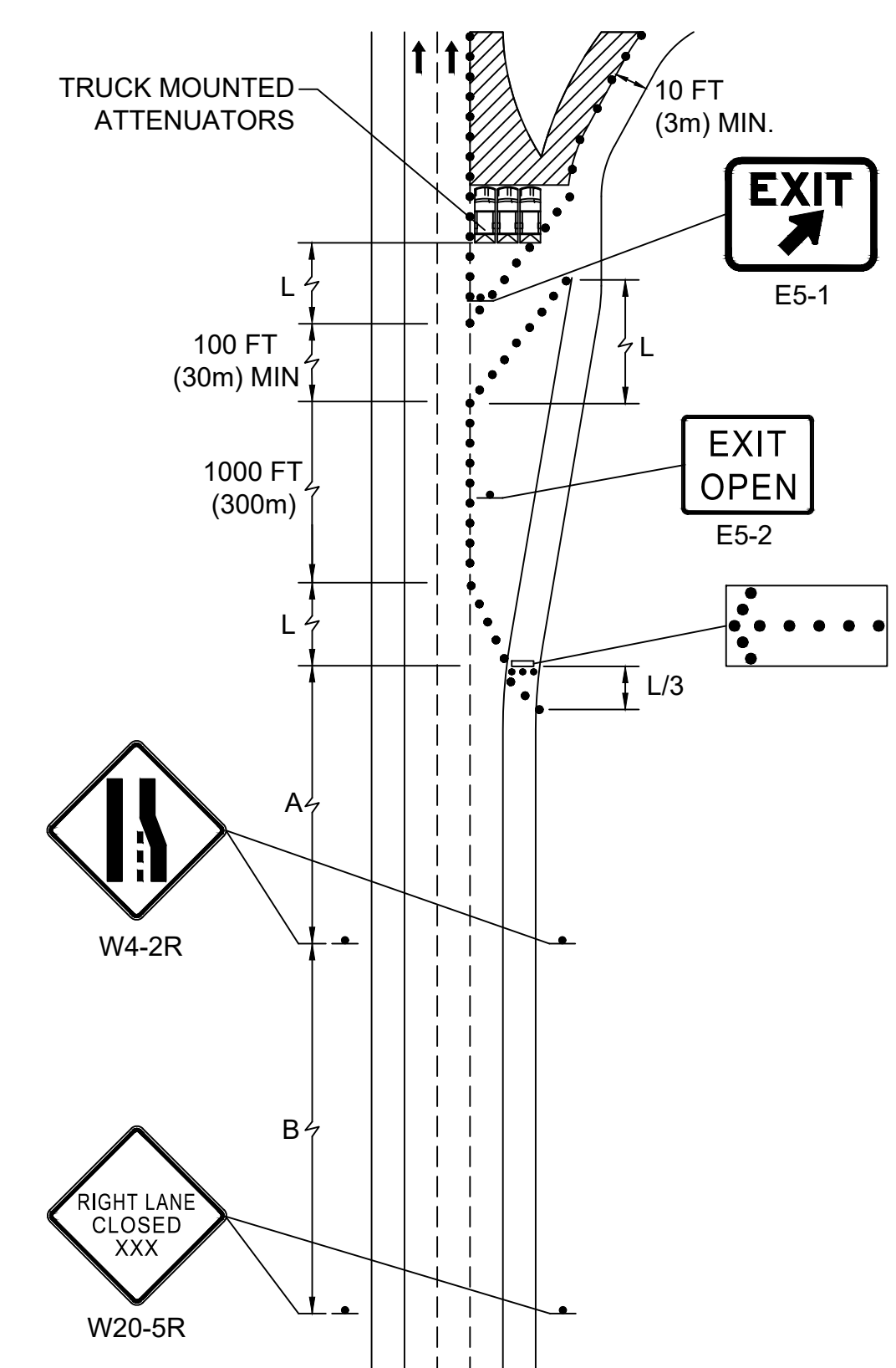
DIVIDED HIGHWAY
CENTER LANE CLOSURE



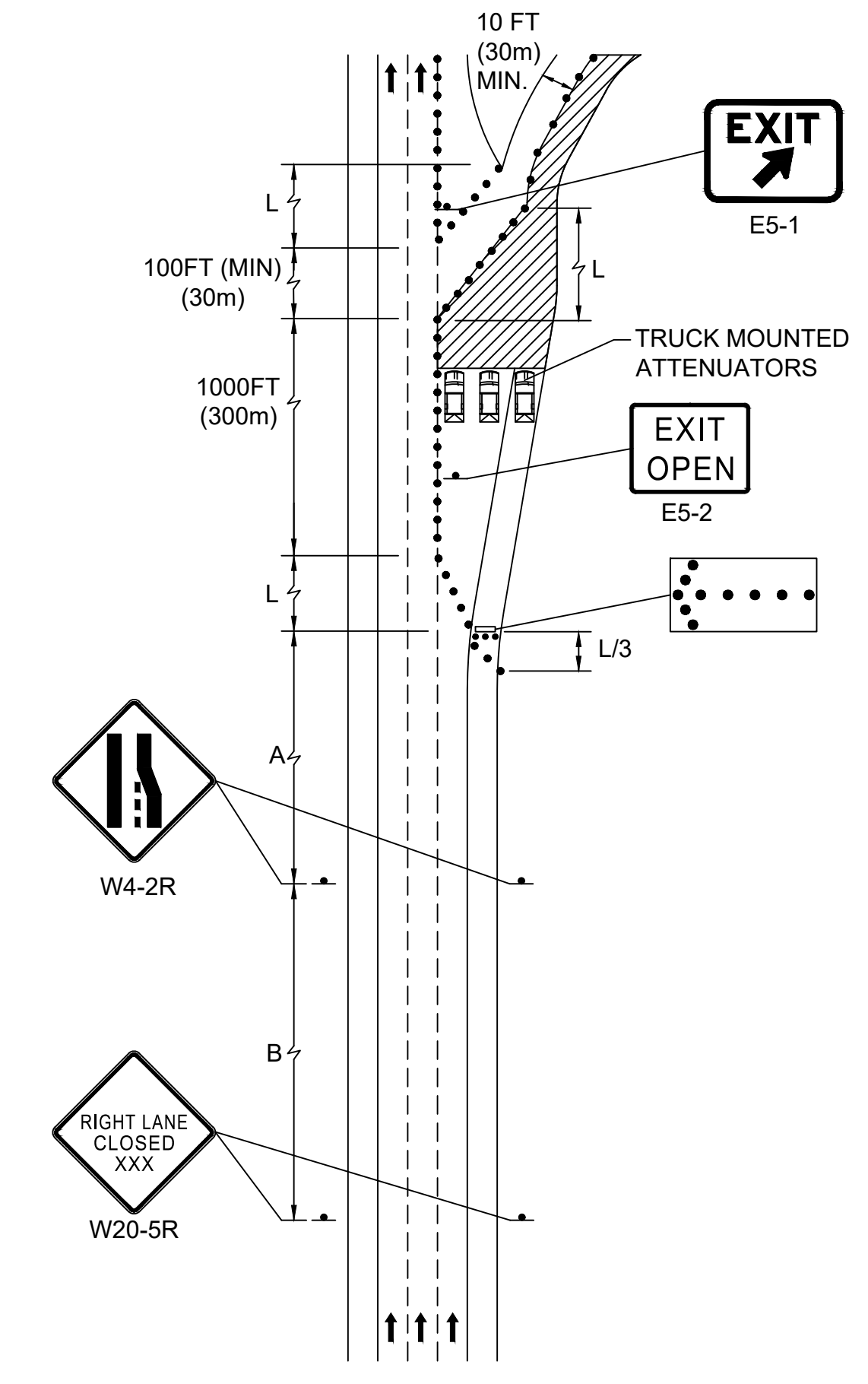
DIVIDED HIGHWAY
SHOULDER CLOSED



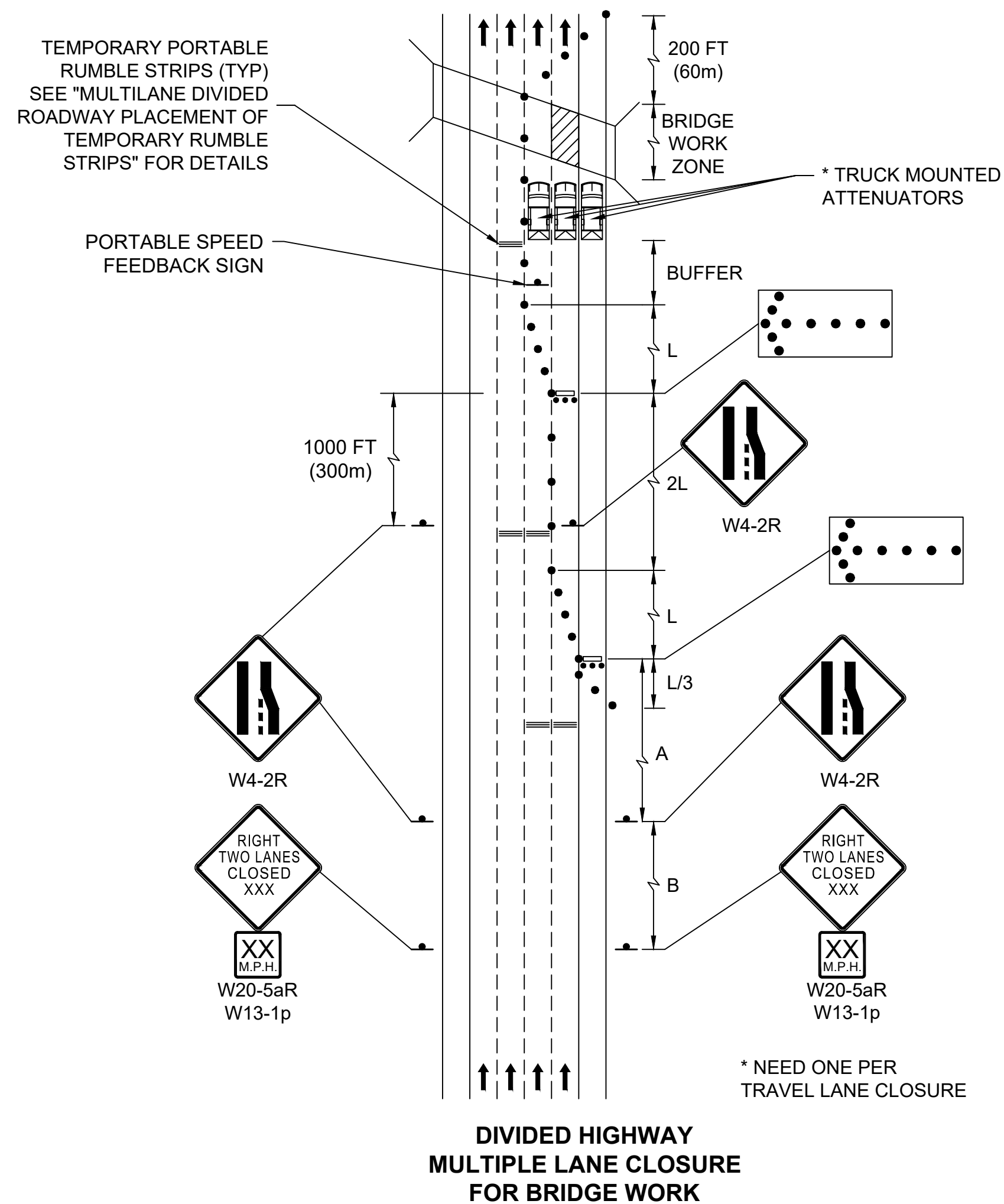
WORK AT
ENTRANCE RAMP



WORK IN VICINITY
OF EXIT RAMP



WORK IN VICINITY OF
EXIT RAMP



POSTED REGULATORY OR WORK ZONE SPEED	SEPARATION BETWEEN RUMBLE STRIPS	POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	TANGENT LENGTH BETWEEN TAPERS (T) (FT)
Above 55-mph	20-feet	25-40	500 / 500 / 500	640
36-mph to 55-mph	15-feet	45-55	500 / 1000 / 1000	1320
35-mph and under	10-feet	60-65	1000 / 1600 / 2600	1560

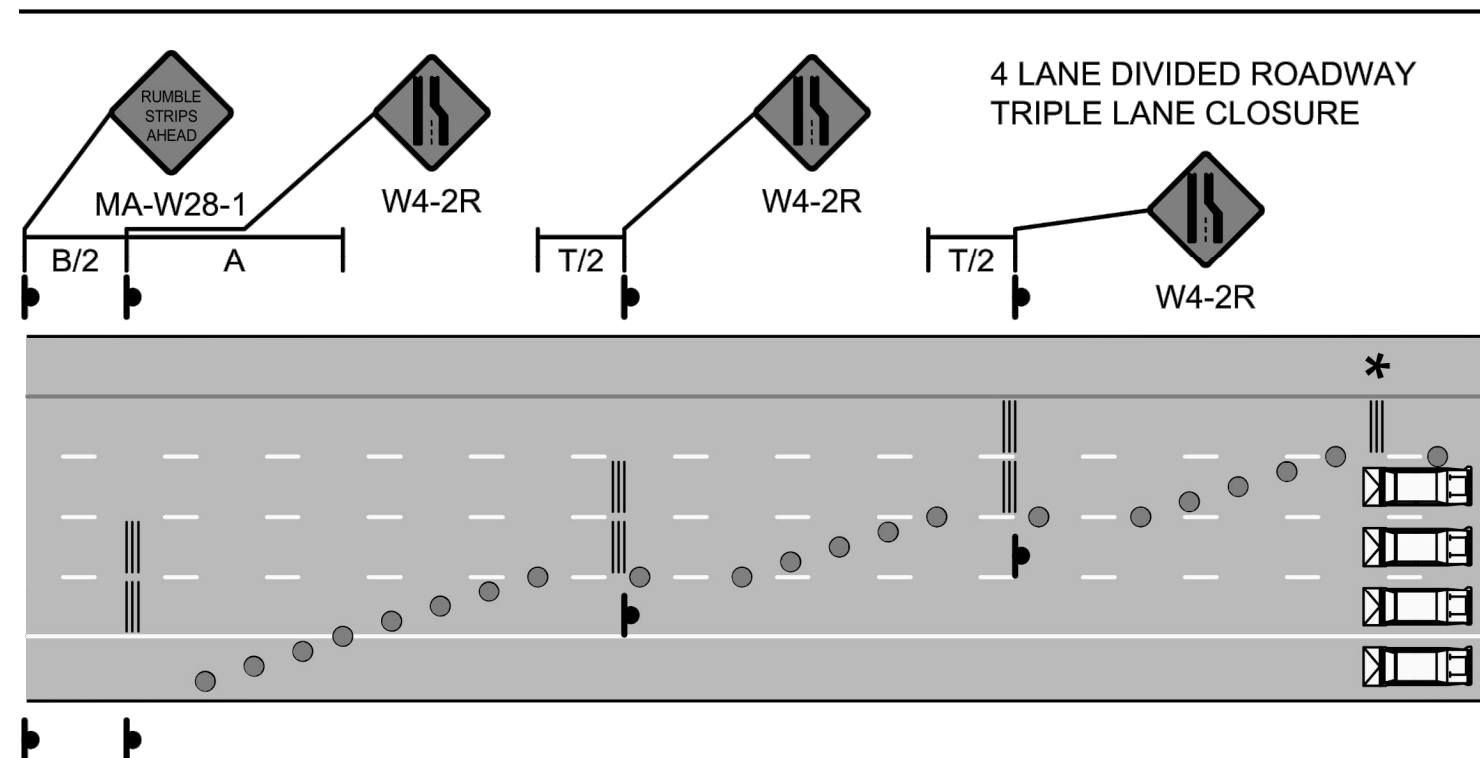
NOTES

1. THE INTENTION OF THESE DETAILS IS ONLY TO DEPICT THE PLACEMENT OF TEMPORARY PORTABLE RUMBLE STRIPS (TPRS) IN RELATIONSHIP TO THE TAPER AND THE BUFFER OF A SINGLE- OR MULTI-LANE CLOSURE. THE DEPICTION OF THE NUMBER AND SPACING OF ALL OTHER TRAFFIC CONTROL DEVICES IS NOT TO SCALE. REFER TO OTHER DETAILS FOR LANE CLOSURES FOR THE PLACEMENT AND NUMBER OF ALL OTHER TRAFFIC CONTROL DEVICES.
2. THESE DETAILS ONLY DEPICT RIGHT LANE CLOSURES. LEFT LANE CLOSURES SHOULD UTILIZE A MIRROR IMAGE OF THESE SETUPS, STARTING WITH CLOSURE OF THE LEFTMOST LANE.
3. * THIS TPRS ARRAY IS OPTIONAL AT THE ENGINEER'S DISCRETION. IF USED, IT SHOULD BE PLACED ADJACENT TO THE BUFFER.
4. DETAILS SHOW THE MINIMUM NUMBER OF TPRS REQUIRED. ADDITIONAL MAY BE USED IF CONDITIONS WARRANT.

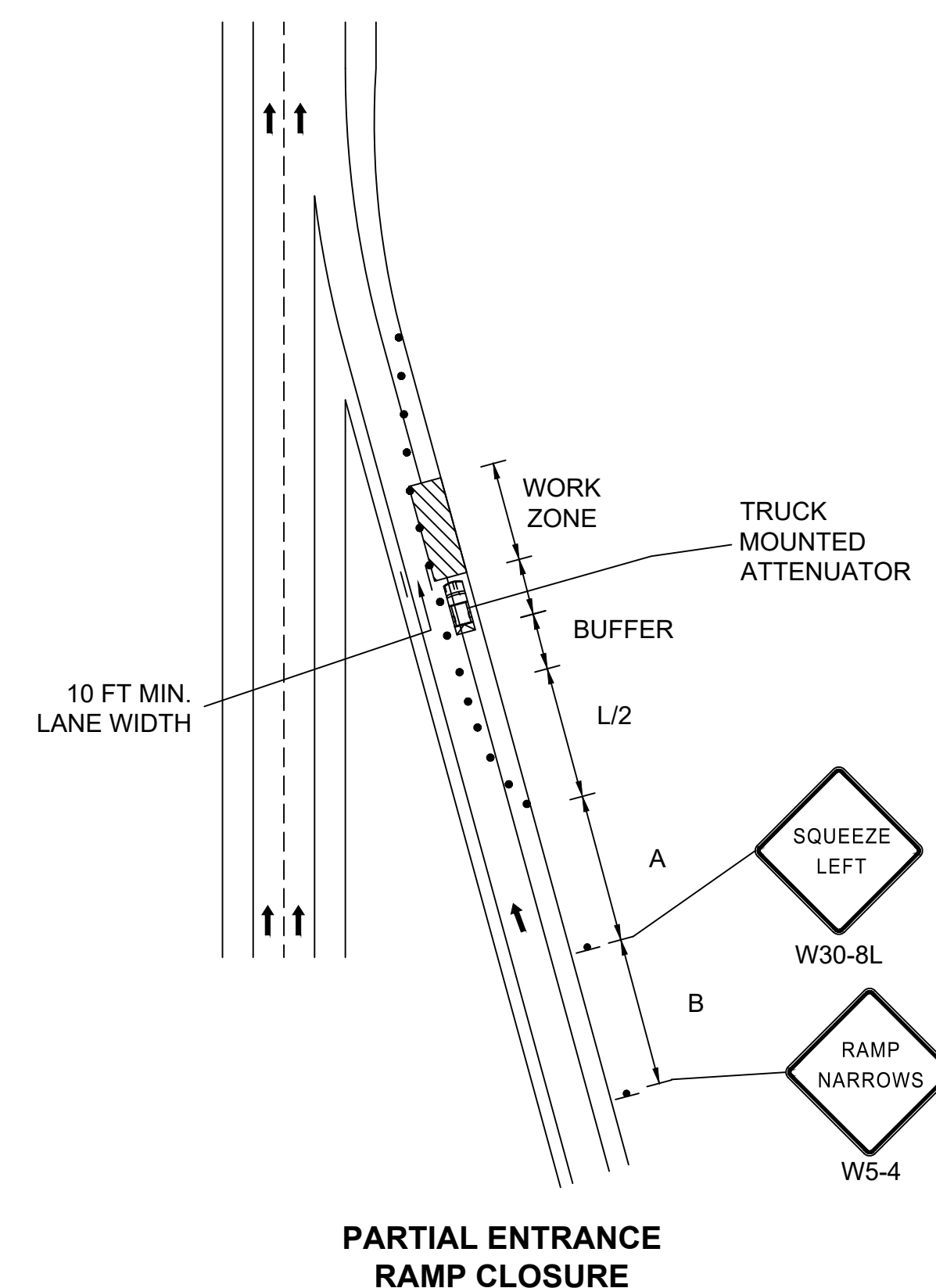
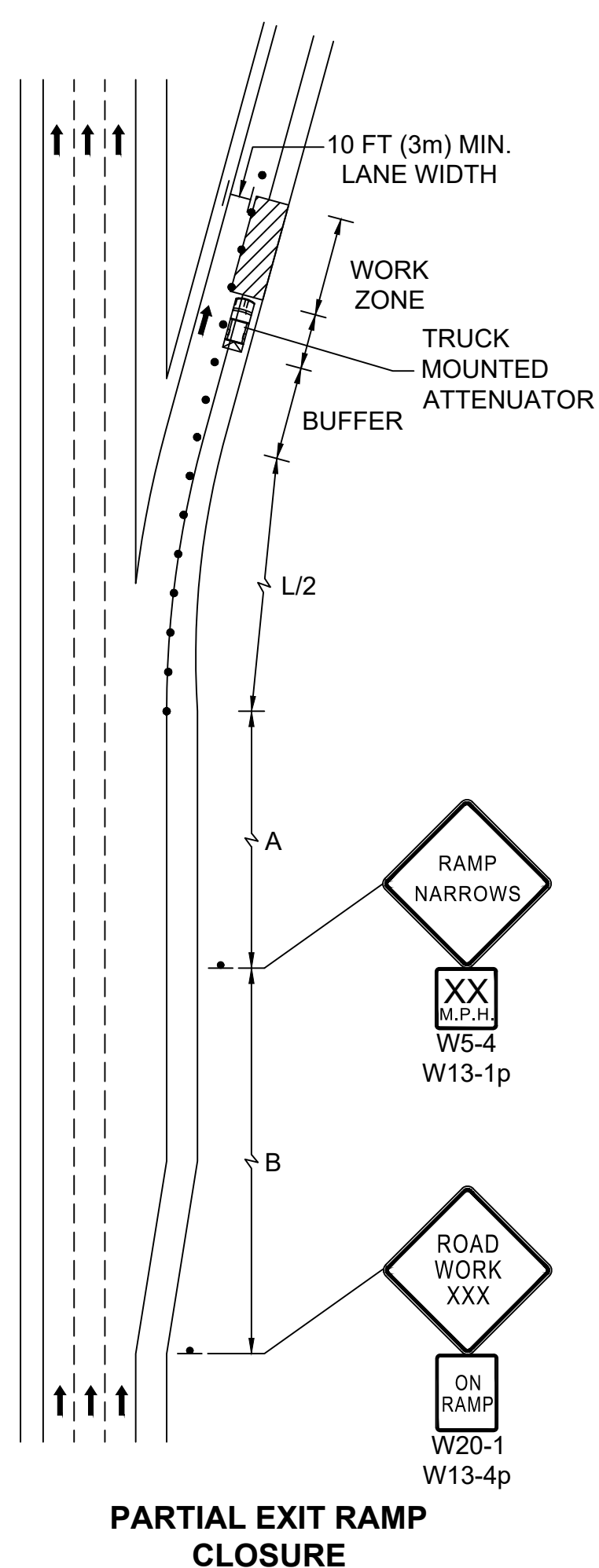
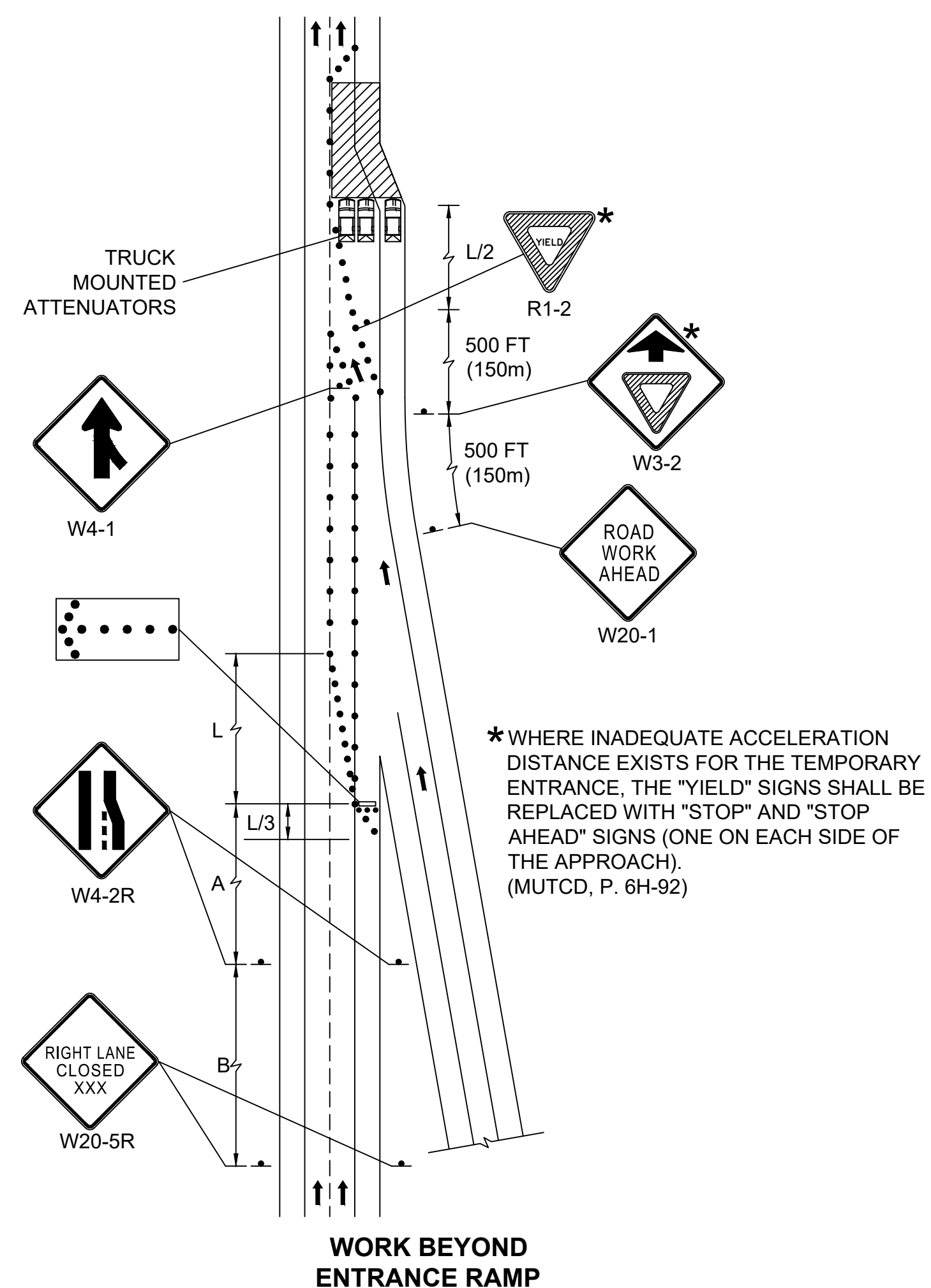
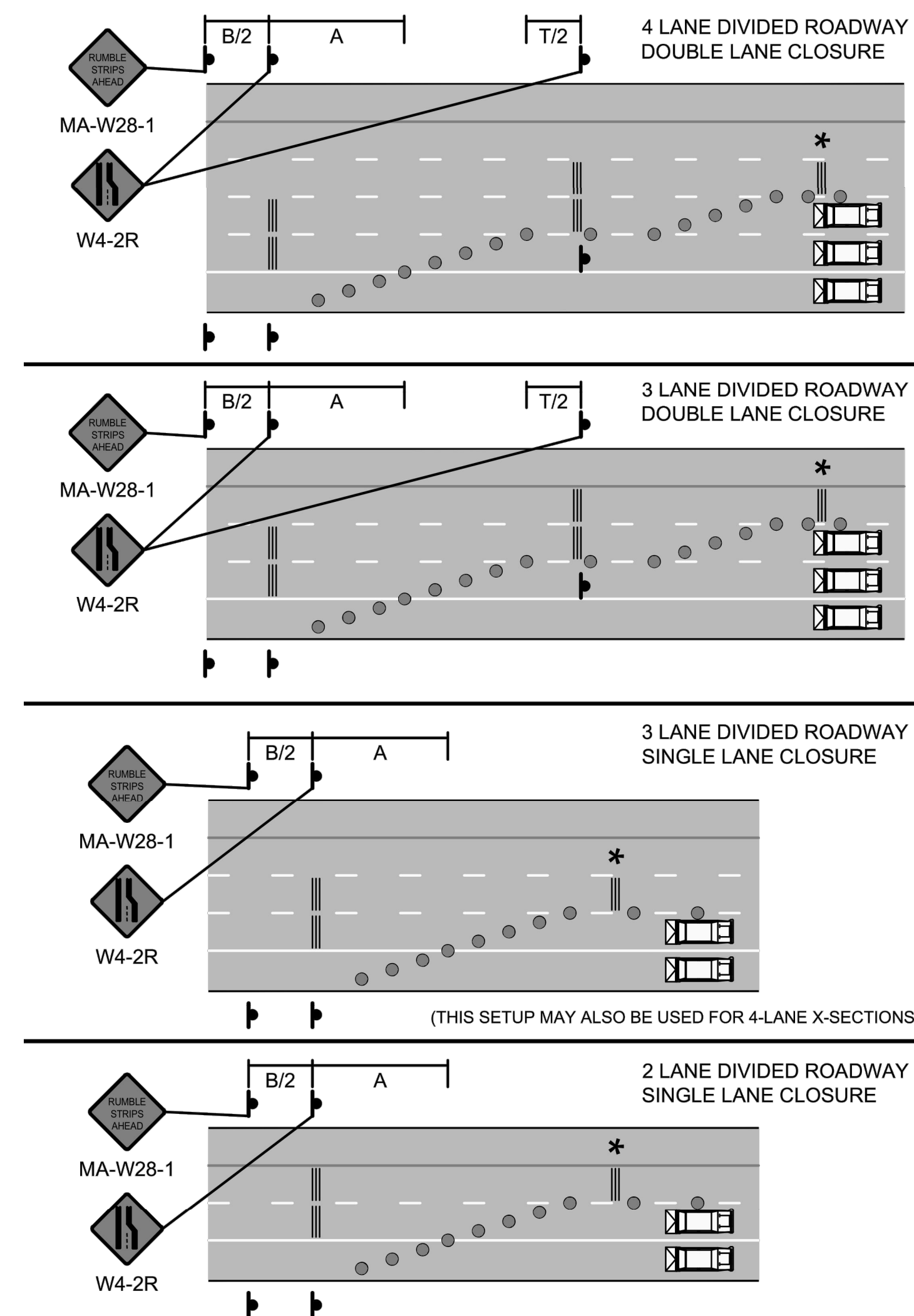
LEGEND

- CHANNELIZATION DEVICE
- ▭ TRUCK MOUNTED ATTENUATOR
- ≡≡≡ TEMPORARY PORTABLE RUMBLE STRIP

NOT TO SCALE



MULTILANE DIVIDED ROADWAY PLACEMENT OF TEMPORARY RUMBLE STRIPS



**CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	10	55
PROJECT FILE NO.		612106	

TEMPORARY TRAFFIC CONTROL PLANS

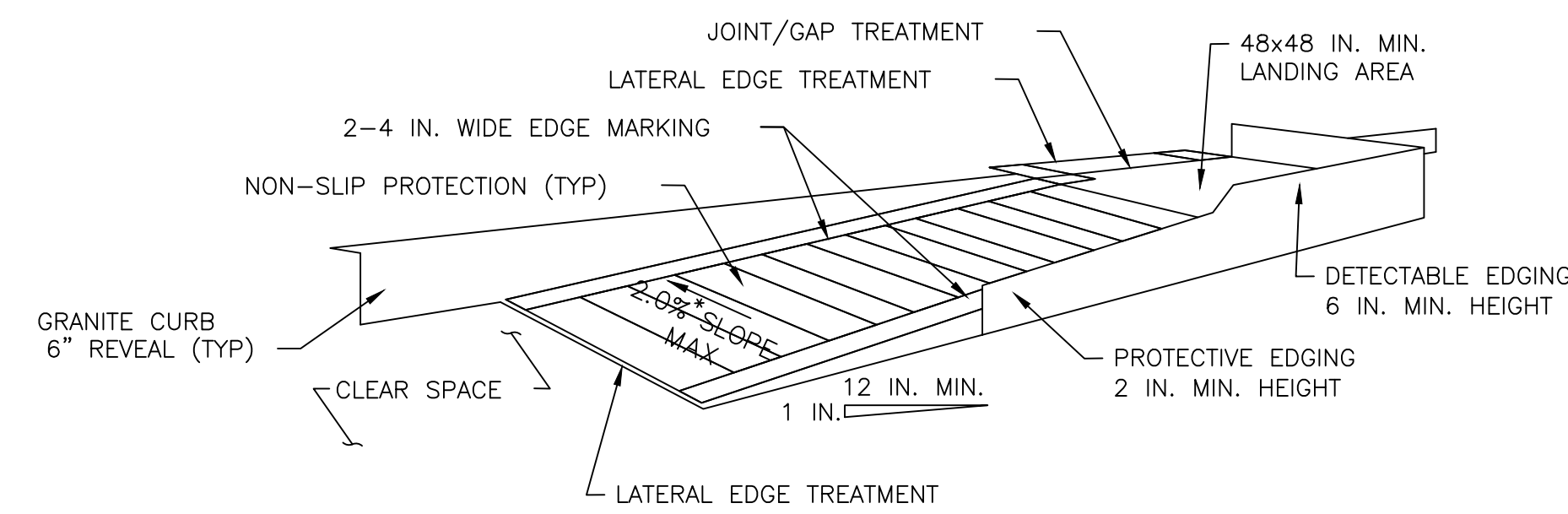
CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	11	55
PROJECT FILE NO.		612106	

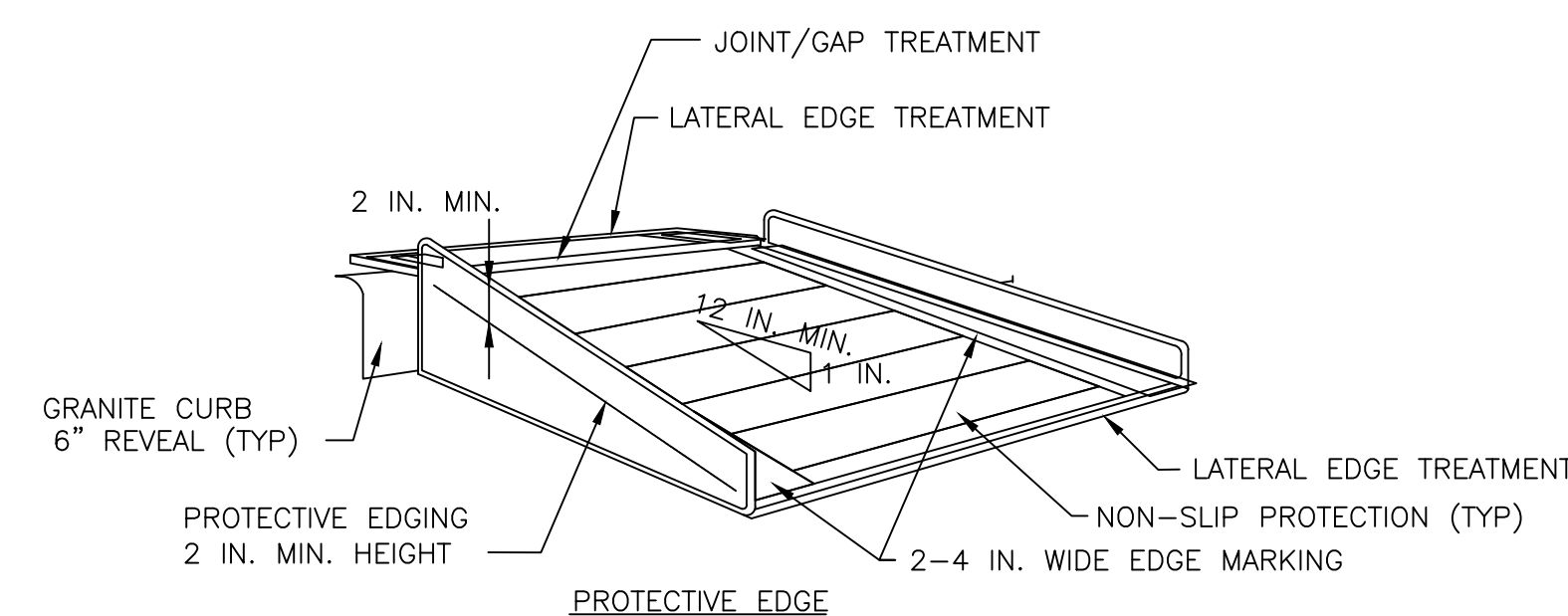
TEMPORARY TRAFFIC CONTROL PLANS

NOTES:

- CURB RAMPS SHALL BE 60 IN. MINIMUM WIDTH WITH A FIRM, STABLE AND NON-SLIP SURFACE.
- PROTECTIVE EDGING WITH A 2 IN. MINIMUM HEIGHT SHALL BE INSTALLED WHEN THE CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 6 IN. OR GREATER OR HAS A SIDE APRON SLOP STEEPER THAN 1:3 (33%). PROTECTIVE EDGING SHOULD BE CONSIDERED WHEN THE CURB RAMPS OR LANDING PLATFORMS HAVE A VERTICAL DROP OF 3 IN. OR MORE.
- DETECTABLE EDGING WITH 6 IN. MINIMUM HEIGHT AND CONTRASTING COLOR SHALL BE INSTALLED ON ALL CURB RAMP LANDINGS WHERE THE WALKWAY CHANGES DIRECTION (TURNS).
- CURB RAMPS AND LANDINGS SHOULD HAVE A 1:50 (2%) MAX CROSS-SLOPE.
- CLEAR SPACE OF 48x48 IN. MINIMUM SHALL BE PROVIDED ABOVE AND BELOW THE CURB RAMP.
- THE CURB RAMP WALKWAY EDGE SHALL BE MARKED WITH A CONTRASTING COLOR 2 TO 4 IN. WIDE MARKING. THE MARKING IS OPTIONAL WHERE COLOR CONTRASTING EDGING IS USED.
- WATER FLOW IN THE GUTTER SYSTEM SHALL HAVE MINIMAL RESTRICTION.
- LATERAL JOINTS OR GAPS BETWEEN SURFACES SHALL BE LESS THAN 0.5 IN. WIDTH.
- CHANGES BETWEEN SURFACE HEIGHTS SHOULD NOT EXCEED 0.5 IN. LATERAL EDGES SHOULD BE VERTICAL UP TO 0.25 IN. HIGH, AND BEVELED AT 1:2 BETWEEN 0.25 IN. AND 0.5 IN. HEIGHT.

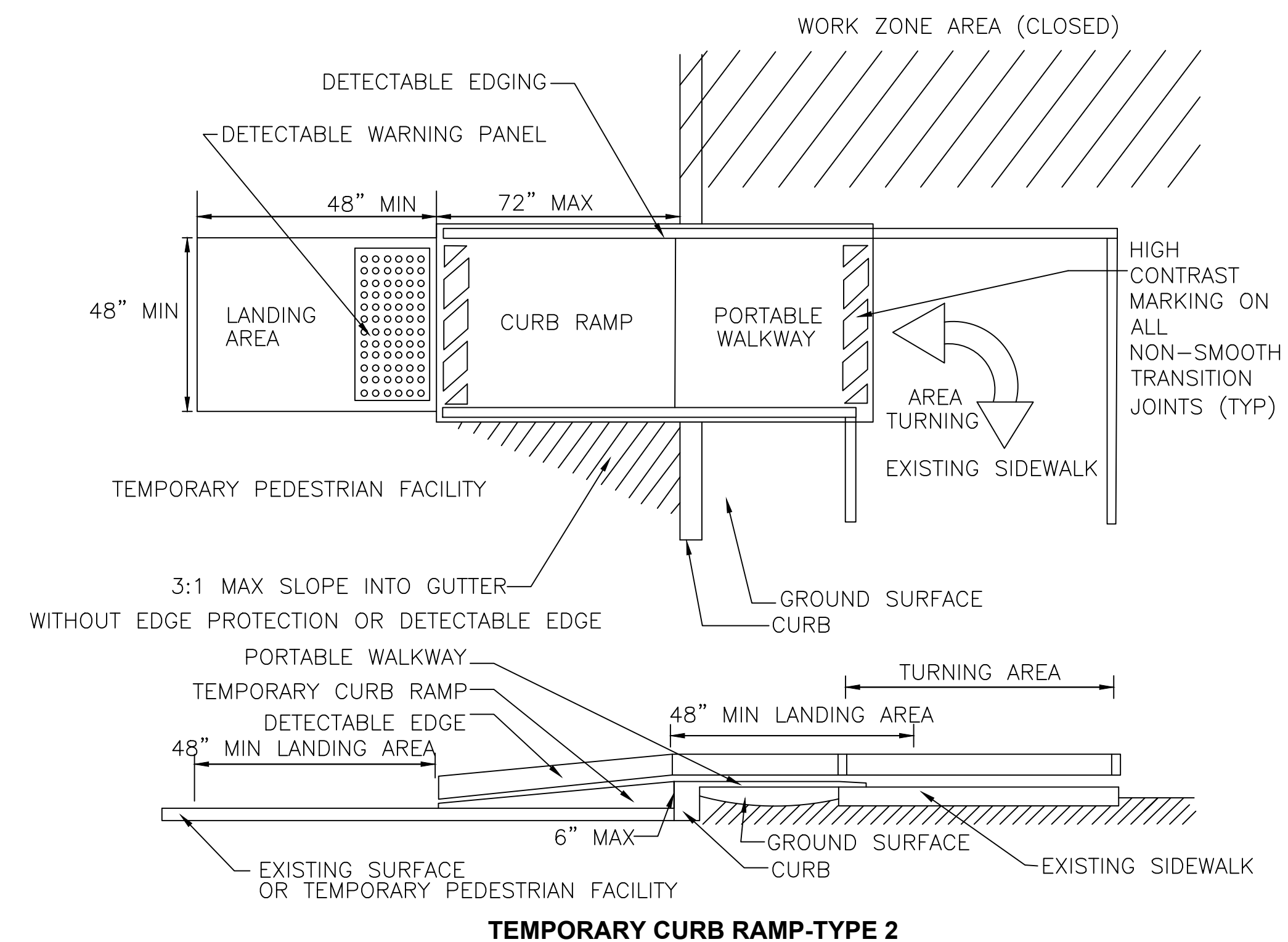


TEMPORARY CURB RAMP-PARALLEL TO CURB



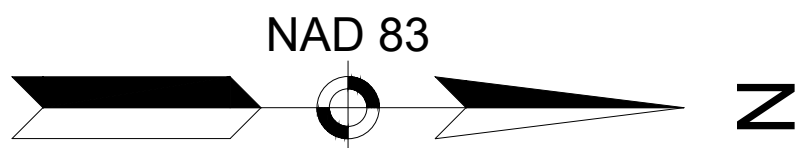
TEMPORARY CURB RAMP-PERPENDICULAR TO CURB

PEDESTRIAN DETAILS



TEMPORARY CURB RAMP-TYPE 2

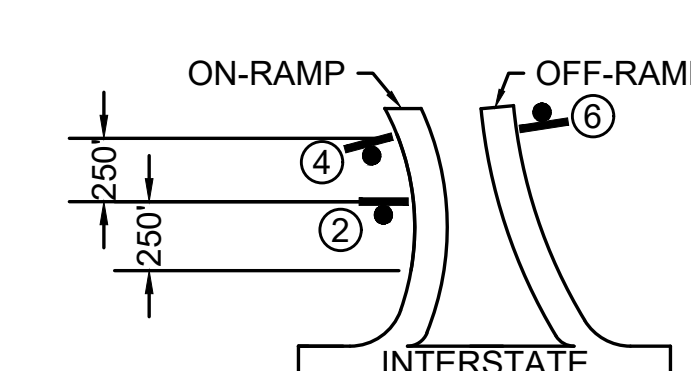
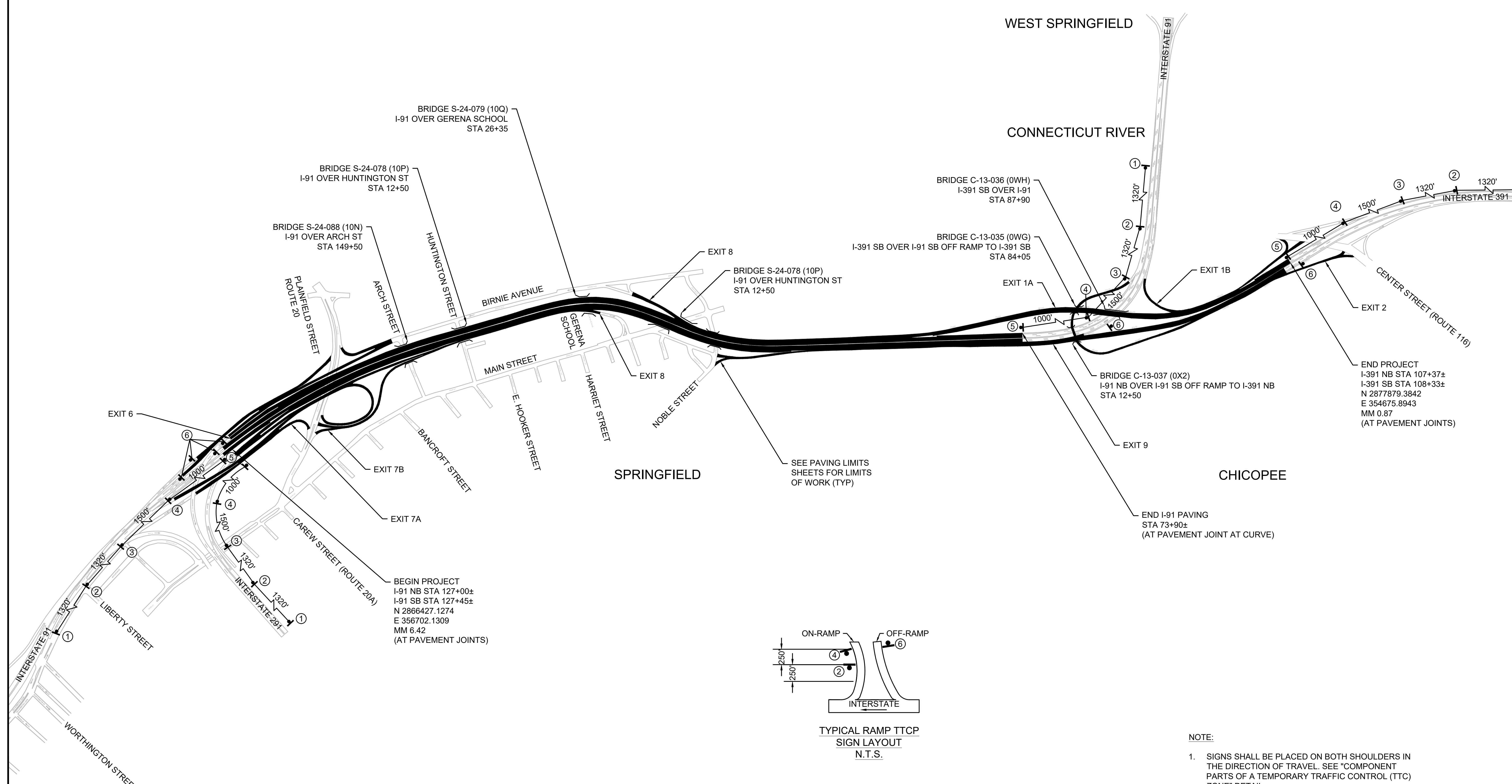
PEDESTRIAN DETAILS



**CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	12	55
PROJECT FILE NO.		612106	

TEMPORARY TRAFFIC CONTROL PLANS



TYPICAL RAMP TTCP
SIGN LAYOUT
N.T.S.

LEGEND:

- 1. W20-1a ROAD WORK 1 MILE
- 2. MA-R2-10a WORK ZONE SPEEDING FINES DOUBLE
- 3. W20-1b ROAD WORK 1/2 MILE
- 4. W20-1c ROAD WORK AHEAD
- 5. G20-1 ROAD WORK NEXT 2.3 MILES
- 6. MA-R2-10e END ROAD WORK DOUBLE FINES END

NOTE:




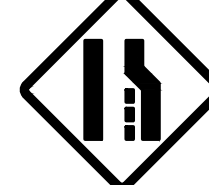
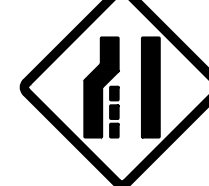







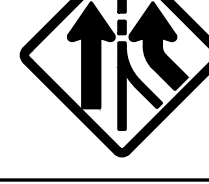

- 1. SIGNS SHALL BE PLACED ON BOTH SHOULDERS IN THE DIRECTION OF TRAVEL. SEE "COMPONENT PARTS OF A TEMPORARY TRAFFIC CONTROL (TTC) ZONE" DETAIL.












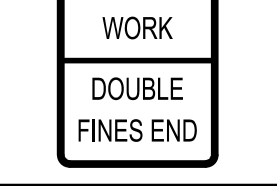

TRAFFIC CONTROL SIGN SUMMARY

**CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	13	55
PROJECT FILE NO.		612106	

TEMPORARY TRAFFIC CONTROL PLANS

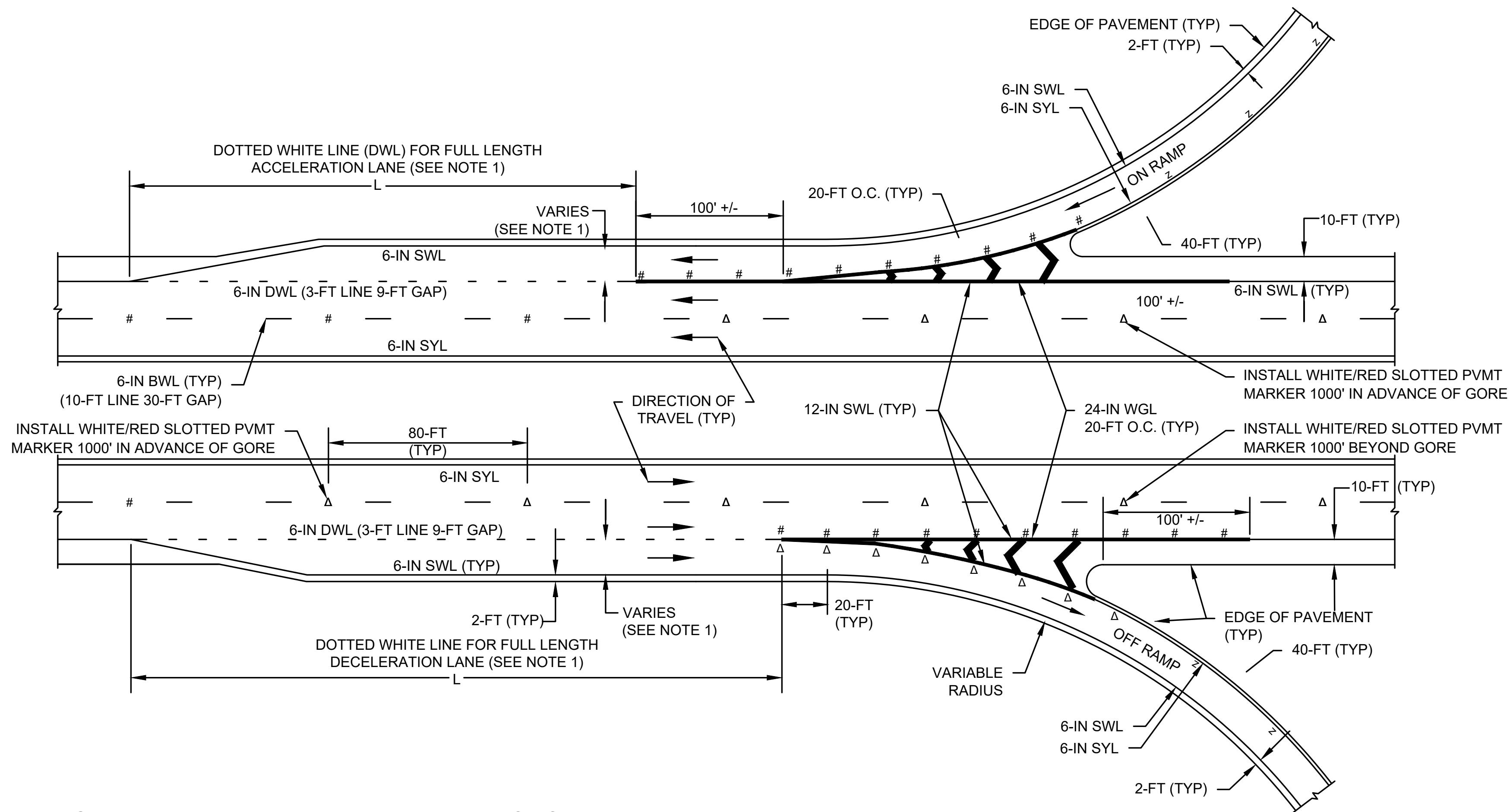
IDENTIFICATION NUMBER	SIZE OF SIGN (INCHES)		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQ'D	COLOR			UNIT AREA (S.F.)	TOTAL AREA (S.F.)
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE MKR.		BACK-GROUND	LEGEND	BORDER		
W8-1	48	48		SEE FHWA 2004 STANDARD HIGHWAY SIGNS MANUAL & 2012 SUPPLEMENT (ENGLISH VERSION)			4	FLUOR-ESCENT ORANGE	BLACK	BLACK	16.00	64.00
W8-15	48	48					4	FLUOR-ESCENT ORANGE	BLACK	BLACK	16.00	64.00
W8-15p	30	24					4	FLUOR-ESCENT ORANGE	BLACK	BLACK	5.00	20.00
W4-2R	48	48					18	FLUOR-ESCENT ORANGE	BLACK	BLACK	16.00	288.00
W4-2L	48	48					12	FLUOR-ESCENT ORANGE	BLACK	BLACK	16.00	192.00
W20-5R	48	48					10	FLUOR-ESCENT ORANGE	BLACK	BLACK	16.00	160.00
W20-5L	48	48					4	FLUOR-ESCENT ORANGE	BLACK	BLACK	16.00	64.00
W13-1p	30	30					8	FLUOR-ESCENT ORANGE	BLACK	BLACK	6.25	50.00
W20-5aR	48	48					4	FLUOR-ESCENT ORANGE	BLACK	BLACK	16.00	64.00
w20-5aL	48	48					4	FLUOR-ESCENT ORANGE	BLACK	BLACK	16.00	64.00
W21-5a	48	48					2	FLUOR-ESCENT ORANGE	BLACK	BLACK	16.00	32.00
W21-5b	48	48					2	FLUOR-ESCENT ORANGE	BLACK	BLACK	16.00	32.00
W4-3	48	48					1	FLUOR-ESCENT ORANGE	BLACK	BLACK	16.00	16.00
W5-1	48	48					1	FLUOR-ESCENT ORANGE	BLACK	BLACK	16.00	16.00

IDENTIFICATION NUMBER	SIZE OF SIGN (INCHES)		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQ'D	COLOR			UNIT AREA (S.F.)	TOTAL AREA (S.F.)
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE MKR.		BACK-GROUND	LEGEND	BORDER		
E5-1	72	60		SEE FHWA 2004 STANDARD HIGHWAY SIGNS MANUAL & 2012 SUPPLEMENT (ENGLISH VERSION)			1	FLUOR-ESCENT ORANGE	BLACK	BLACK	30.00	30.00
E5-2	48	36					1	FLUOR-ESCENT ORANGE	BLACK	BLACK	12.00	12.00
R1-2	60	60					1	WHITE	RED	WHITE	10.83	10.83
W4-1	48	48					1	FLUOR-ESCENT ORANGE	BLACK	BLACK	16.00	16.00
W3-2	48	48					1	FLUOR-ESCENT ORANGE	BLACK	BLACK	16.00	16.00
W20-1	48	48					1	FLUOR-ESCENT ORANGE	BLACK	BLACK	16.00	16.00
G20-1	48	24					6	FLUOR-ESCENT ORANGE	BLACK	BLACK	8.00	48.00
W20-1A	48	48					6	FLUOR-ESCENT ORANGE	BLACK	BLACK	16.00	96.00
W20-1B	48	48					8	FLUOR-ESCENT ORANGE	BLACK	BLACK	16.00	128.00
W20-1C	48	48					5	FLUOR-ESCENT ORANGE	BLACK	BLACK	16.00	80.00
MA-R2-10a	60	48		SEE MassDOT 2016 STANDARD SIGNS BOOK			10	FLUOR-ESCENT ORANGE WHITE	BLACK	BLACK	20.00	200.00
MA-R2-10e	48	60		SEE MassDOT 2016 STANDARD SIGNS BOOK			10	FLUOR-ESCENT ORANGE WHITE	BLACK	BLACK	20.00	200.00
MA-W28-1	48	48		SEE MassDOT 2016 STANDARD SIGNS BOOK			2	FLUOR-ESCENT ORANGE WHITE	BLACK	BLACK	16.00	32.00

**CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	14	55
PROJECT FILE NO.		612106	

CONSTRUCTION DETAILS



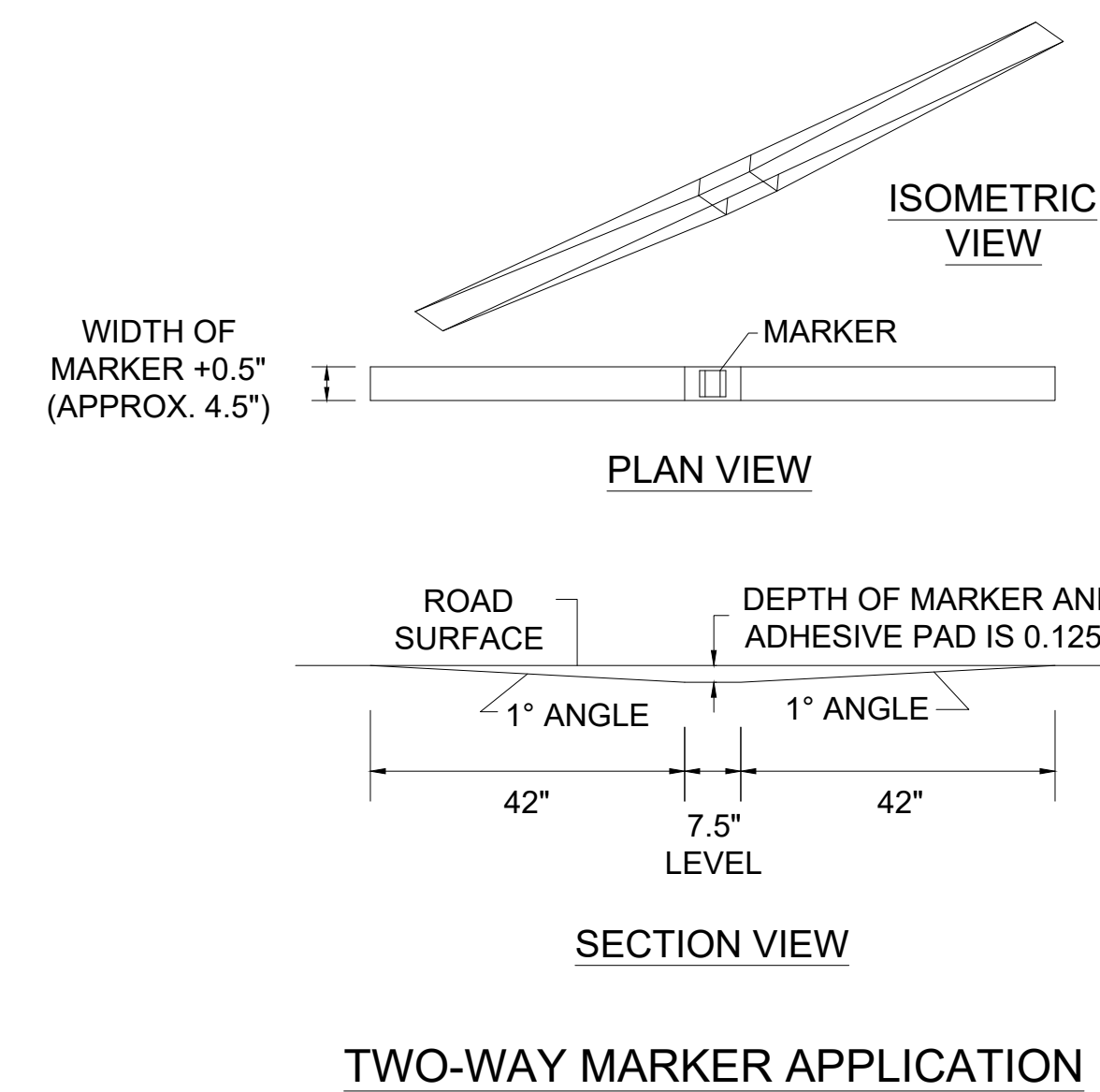
LEGEND

- # - SLOTTED ONE-WAY WHITE PAVEMENT MARKERS
- Δ - SLOTTED TWO-WAY WHITE /RED PAVEMENT MARKER
- z - SLOTTED TWO-WAY YELLOW/RED PAVEMENT MARKER

NOTES:

- THIS DRAWING IS INTENDED TO SUPPLEMENT TR.6.3 WITH THE ADDITION OF THE DOTTED WHITE LINE (DWL) AT ENTRANCE AND EXIT RAMP AND TO DEFINE LOCATION OF SLOTTED PAVEMENT MARKERS.
- IF FULL WIDTH ACCELERATION LANE OR DECELERATION LANE IS LESS THAN 10-FOOT WIDE, DO NOT INSTALL 6-IN DOTTED WHITE LINES (DWL).
 - ALL PAVEMENT MARKINGS SHALL CONFORM TO THE CURRENT M.U.T.C.D.
 - SEE DRAWING TR.6.1 FOR PAVEMENT MARKING TABLES.
 - RED REFLECTORS SHALL FACE AWAY FROM ONCOMING TRAFFIC.

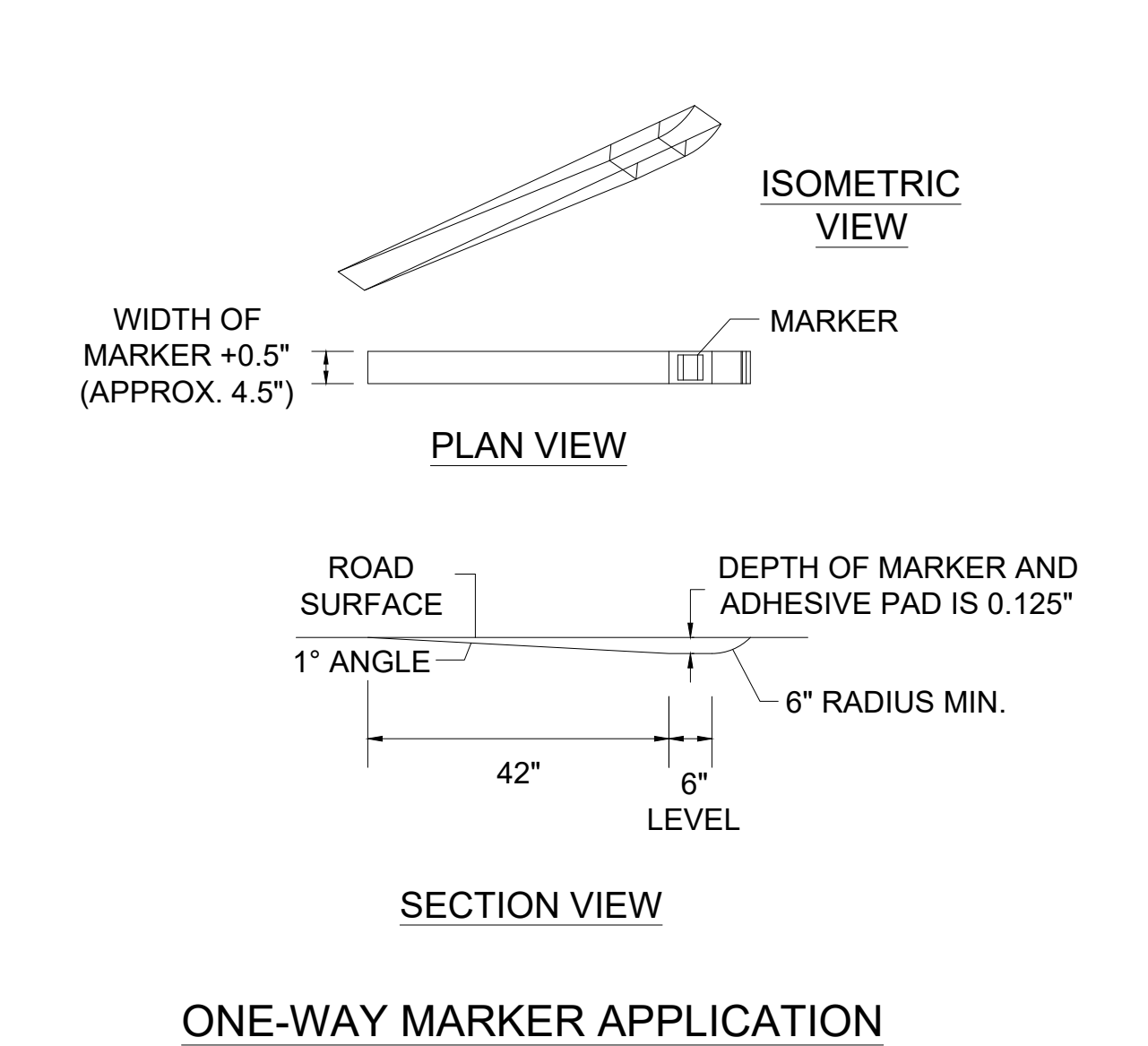
**TYPICAL PAVEMENT MARKINGS AT GORE AREA
NOT TO SCALE**



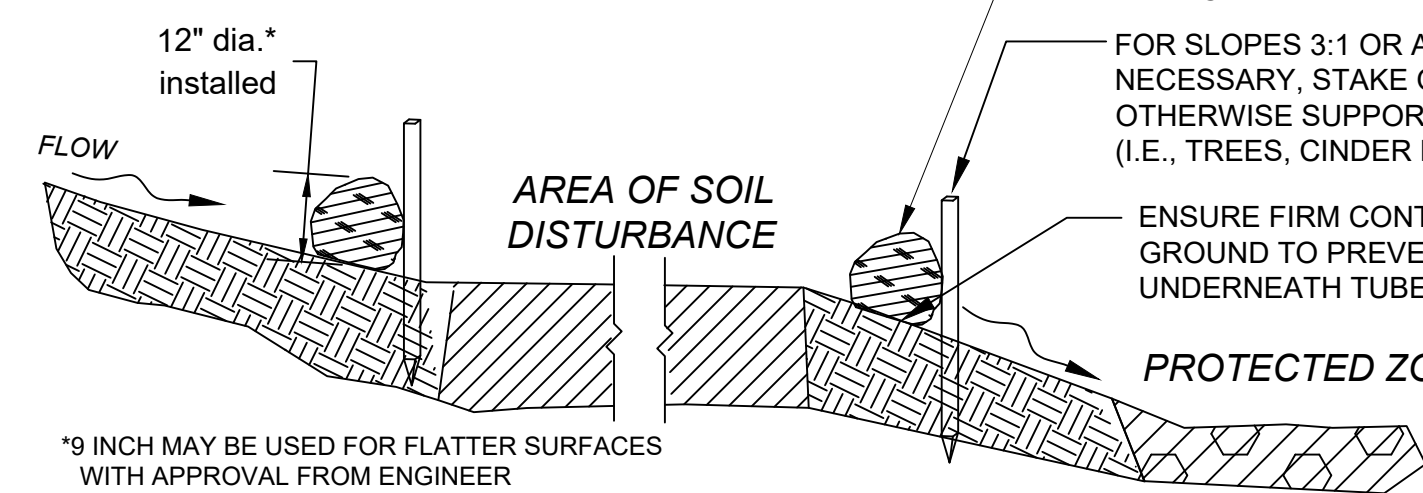
NOTES:

- THE SLOT MUST BE DRY AND FREE OF DUST, DIRT, OR ANY MATERIAL WHICH WILL ADVERSELY AFFECT THE BOND OF THE ADHESIVE.
- INSTALL MARKERS WITH APPROVED ADHESIVE. DO NOT ALLOW ADHESIVE TO BUILD UP IN FRONT OF MARKER LENS.
- THE MARKER AND THE ADHESIVE PAD SHALL BE 1/8" BELOW THE TOP OF THE PAVEMENT SURFACE.

**RECESSED GROOVE DETAILS
NOT TO SCALE**



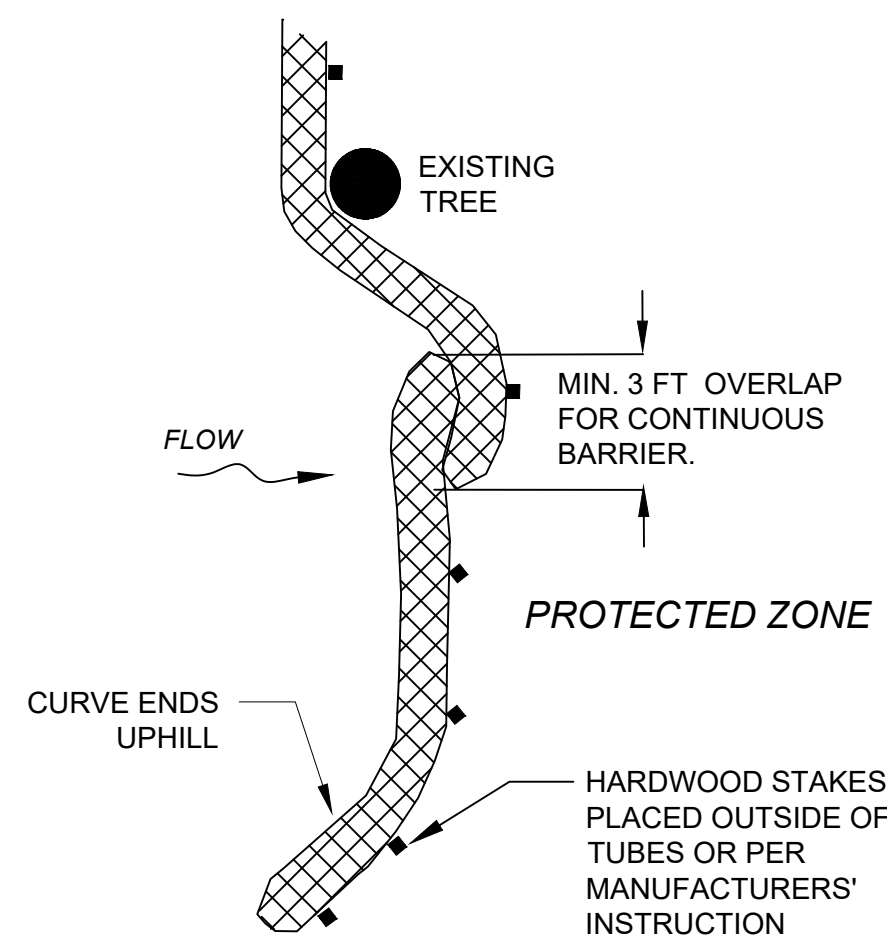
REDUCE HIGH WATER FLOW ONTO WORK ZONE



**SEDIMENT BARRIER - COMPOST FILTER TUBES
NOT TO SCALE**

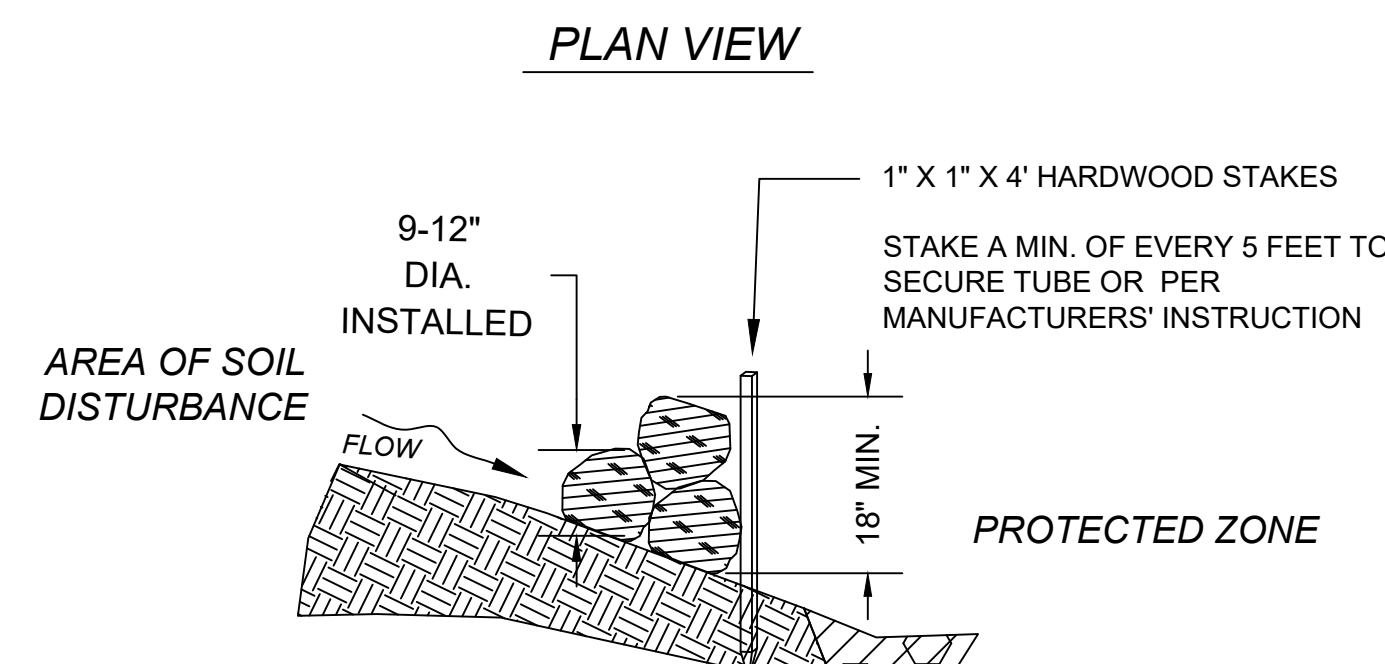
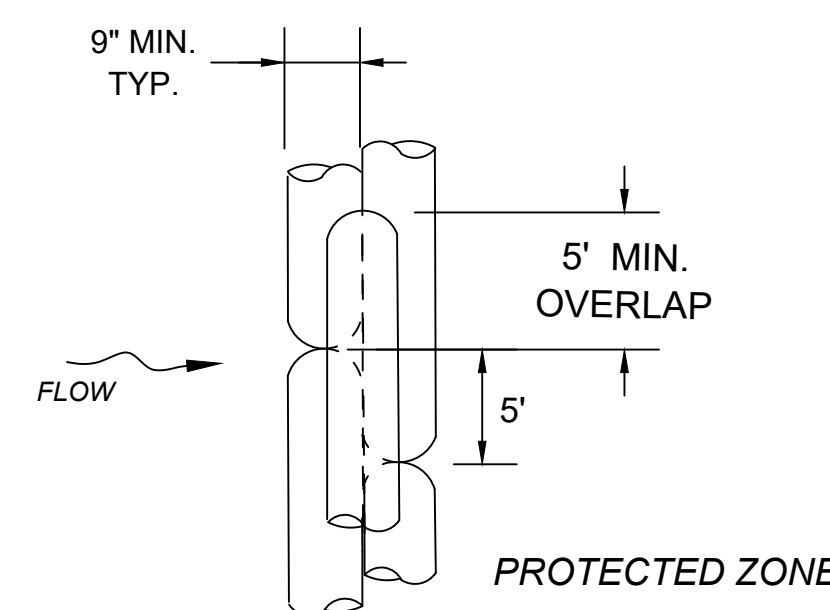
CAPTURE SEDIMENT AND PREVENT FLOW OFF SITE

- BIODEGRADABLE FABRIC
- FOR SLOPES 3:1 OR AS NECESSARY, STAKE OR OTHERWISE SUPPORT TUBES (I.E., TREES, CINDER BLOCKS)
- ENSURE FIRM CONTACT WITH GROUND TO PREVENT FLOW UNDERNEATH TUBES

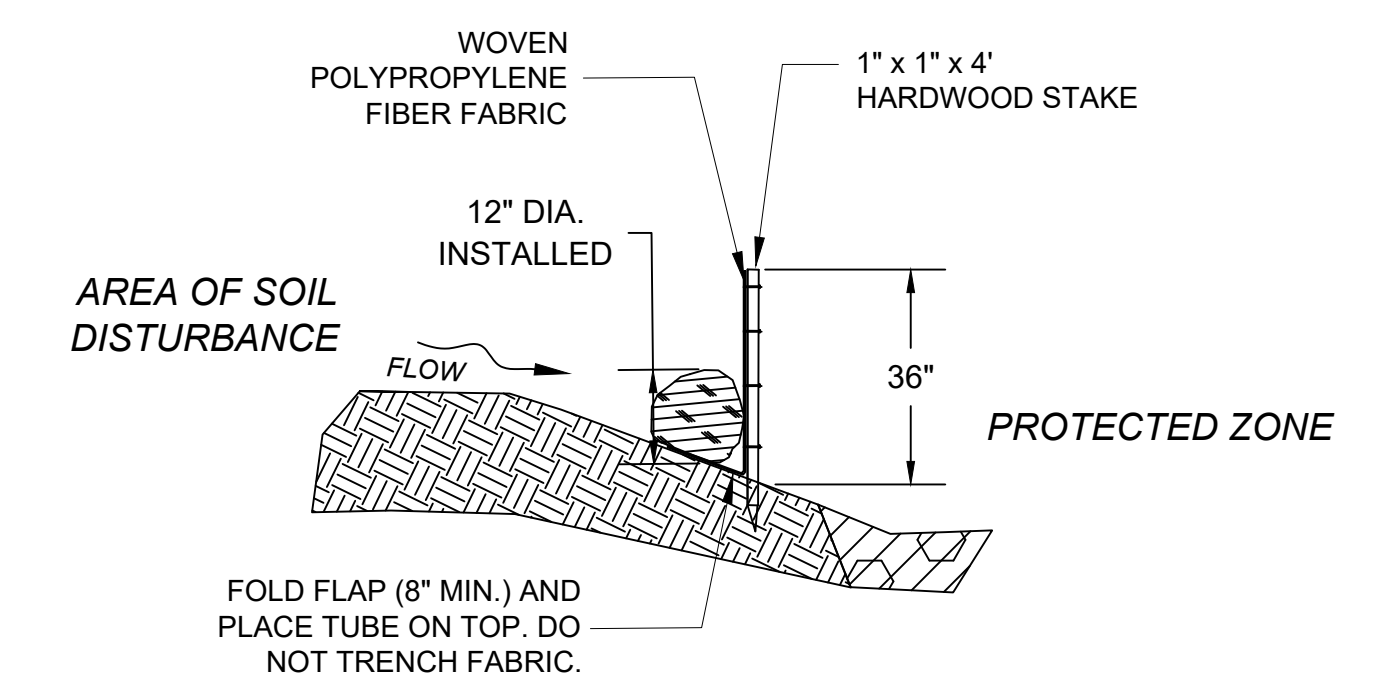


- PLACE TUBE ALONG CONTOURS AND PERPENDICULAR TO FLOW.
- PLACE AS CLOSE TO LIMIT OF SOIL DISTURBANCE AS POSSIBLE
- ADJUST LOCATION AS REQUIRED FOR OPTIMUM EFFECTIVENESS. DO NOT INSTALL IN WATERWAYS.
- PLACE STAKES AS NEEDED TO SECURE TUBES IN PLACE.

**COMPOST FILTER TUBE
NOT TO SCALE**



**COMPOST FILTER TUBE BERM (SLOPES 2:1 OR STEEPER)
NOT TO SCALE**

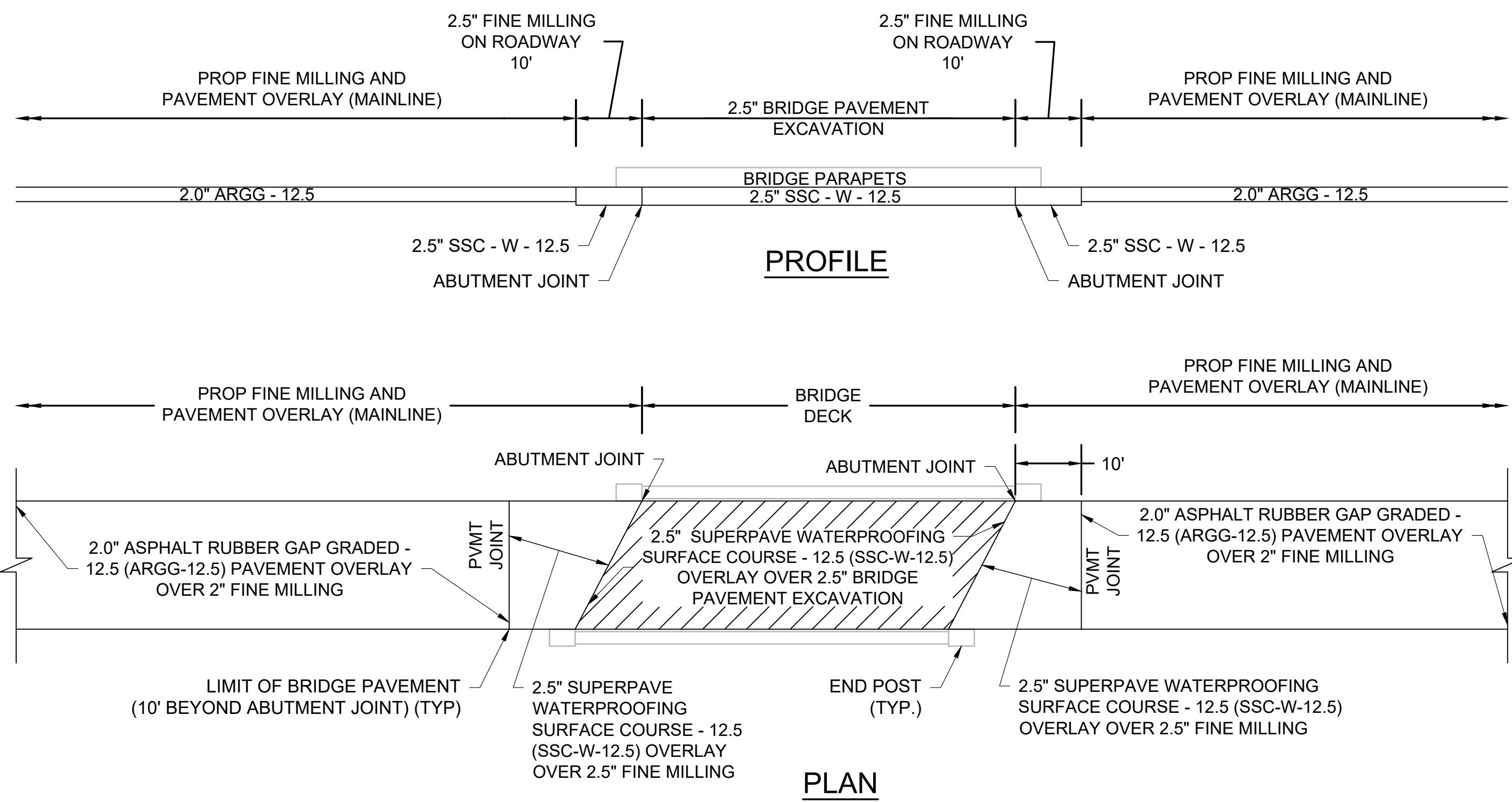


**COMPOST FILTER TUBE & SILT FENCE
NOT TO SCALE**

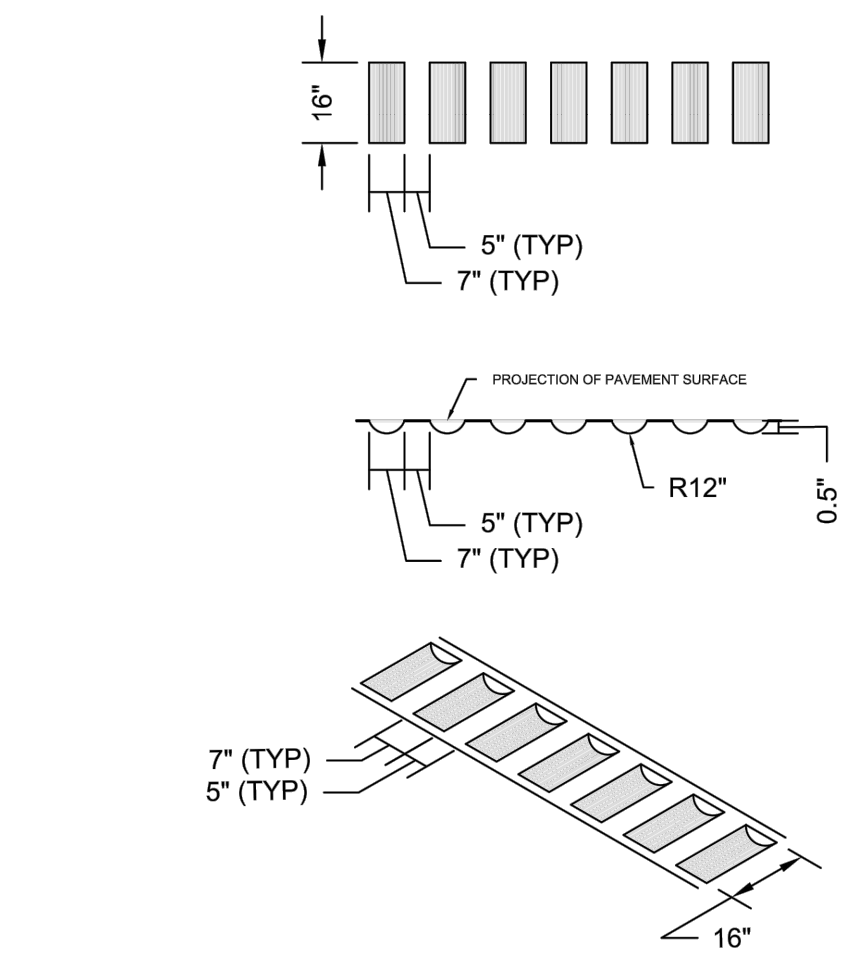
**CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	15	55
PROJECT FILE NO.		612106	

CONSTRUCTION DETAILS

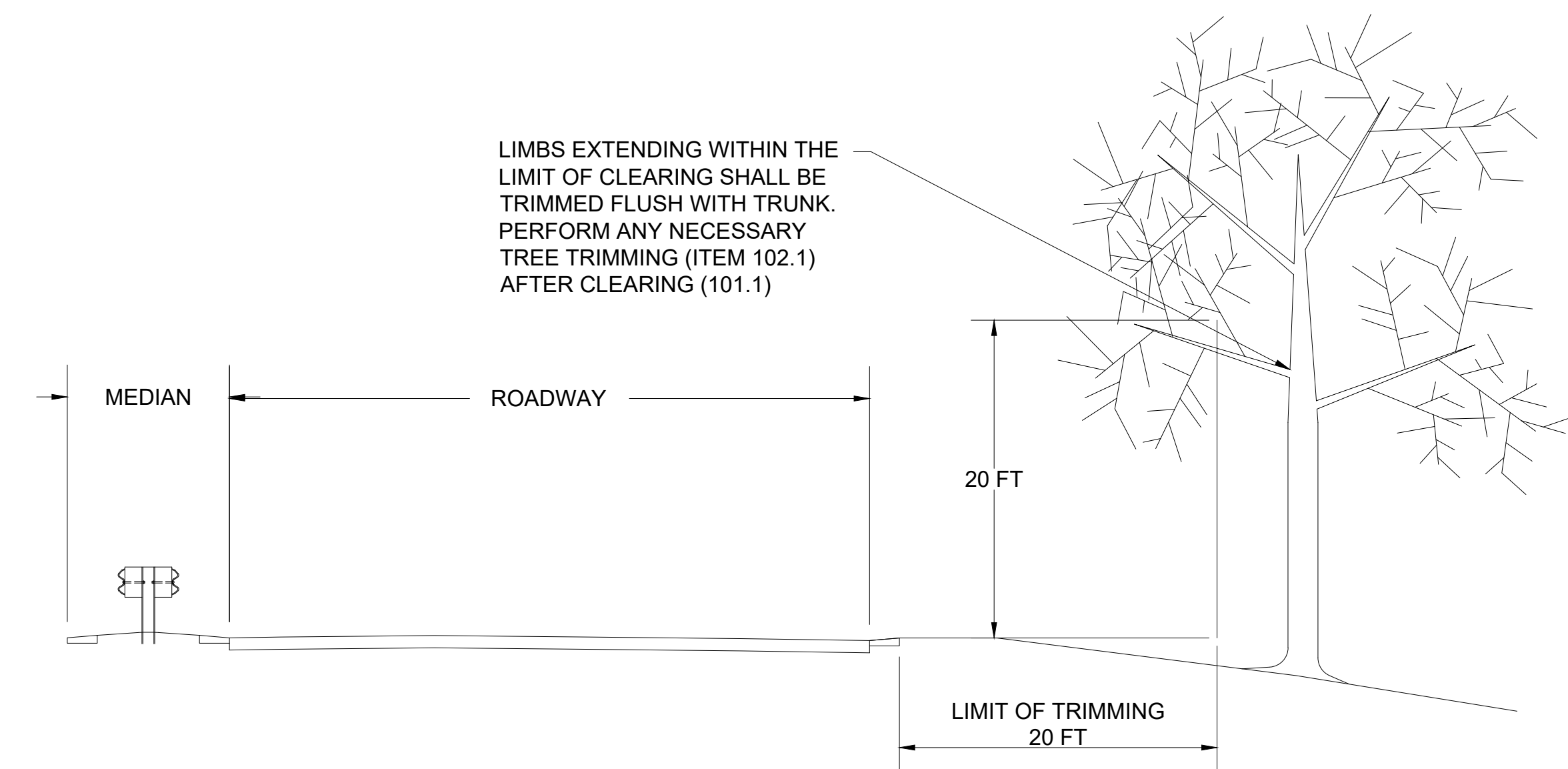


PAVEMENT TRANSITION AT BRIDGE DECKS
NOT TO SCALE

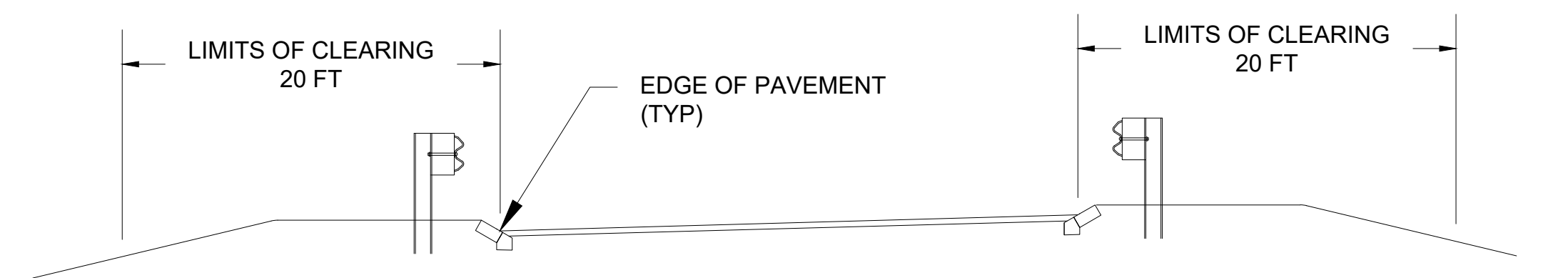


NOTES:
1. NOT TO SCALE. SOME LINE WORK EXAGGERATED FOR CLARITY.

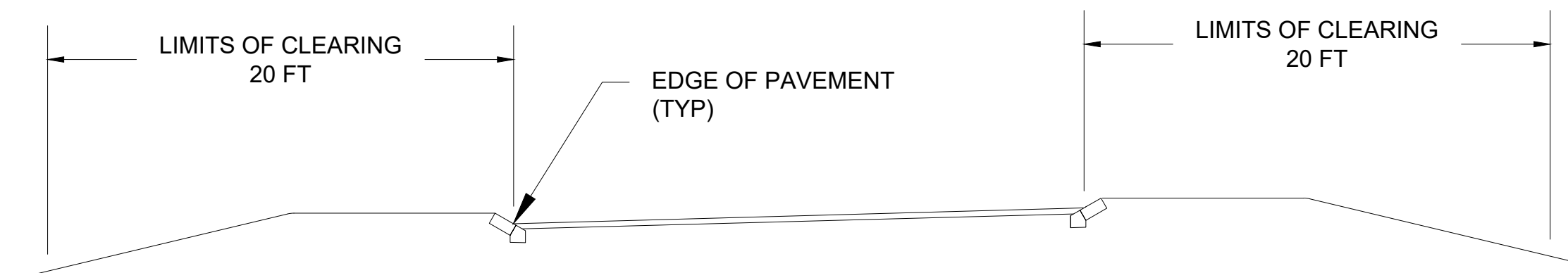
**TYPE A
CYLINDER RUMBLE STRIP
(BICYCLE TRAVEL PROHIBITED)**



TREE TRIMMING
NOT TO SCALE

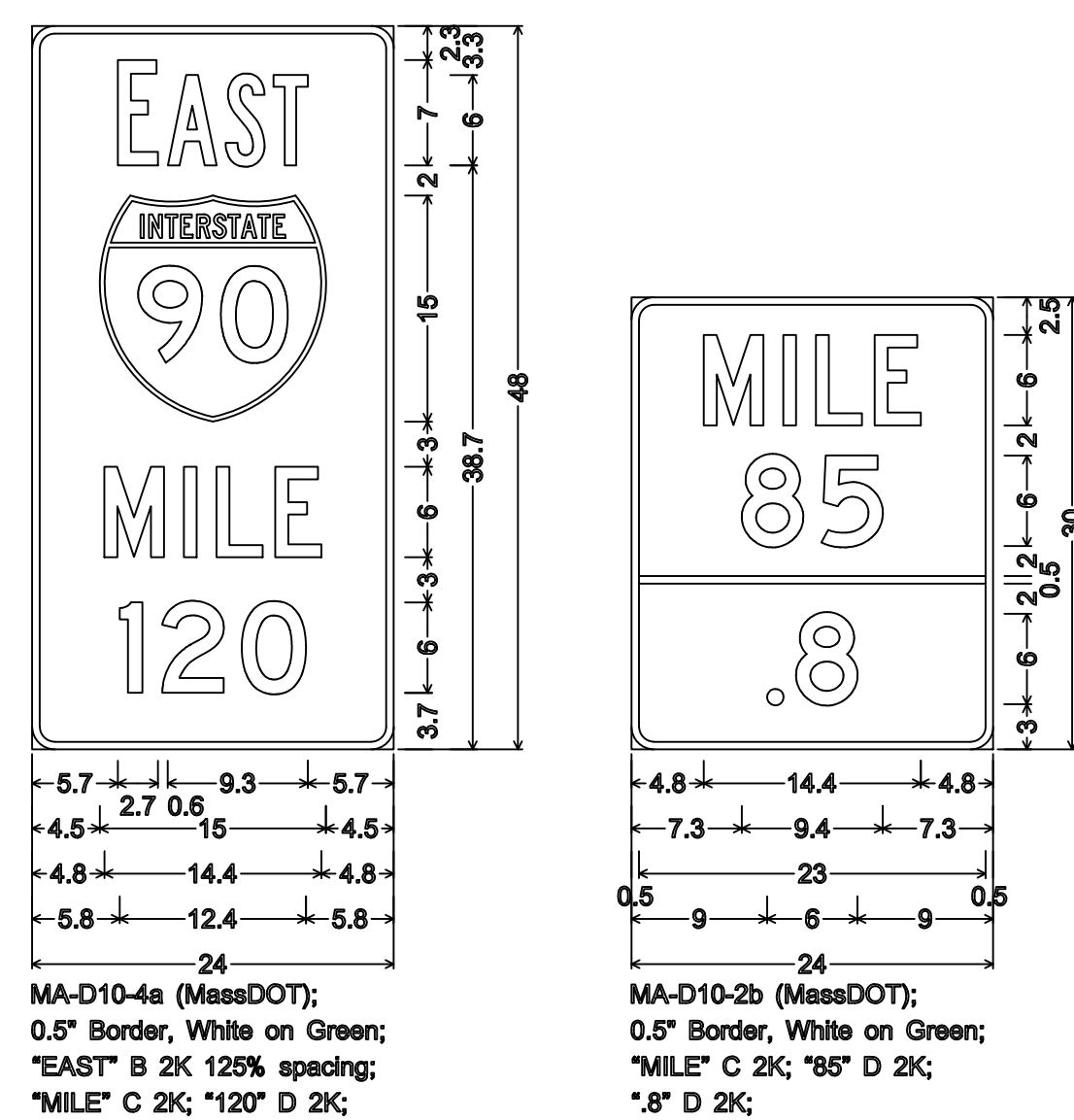


**LIMITS OF CLEARING ON MAINLINE/RAMP AREAS
WITH GUARDRAIL**



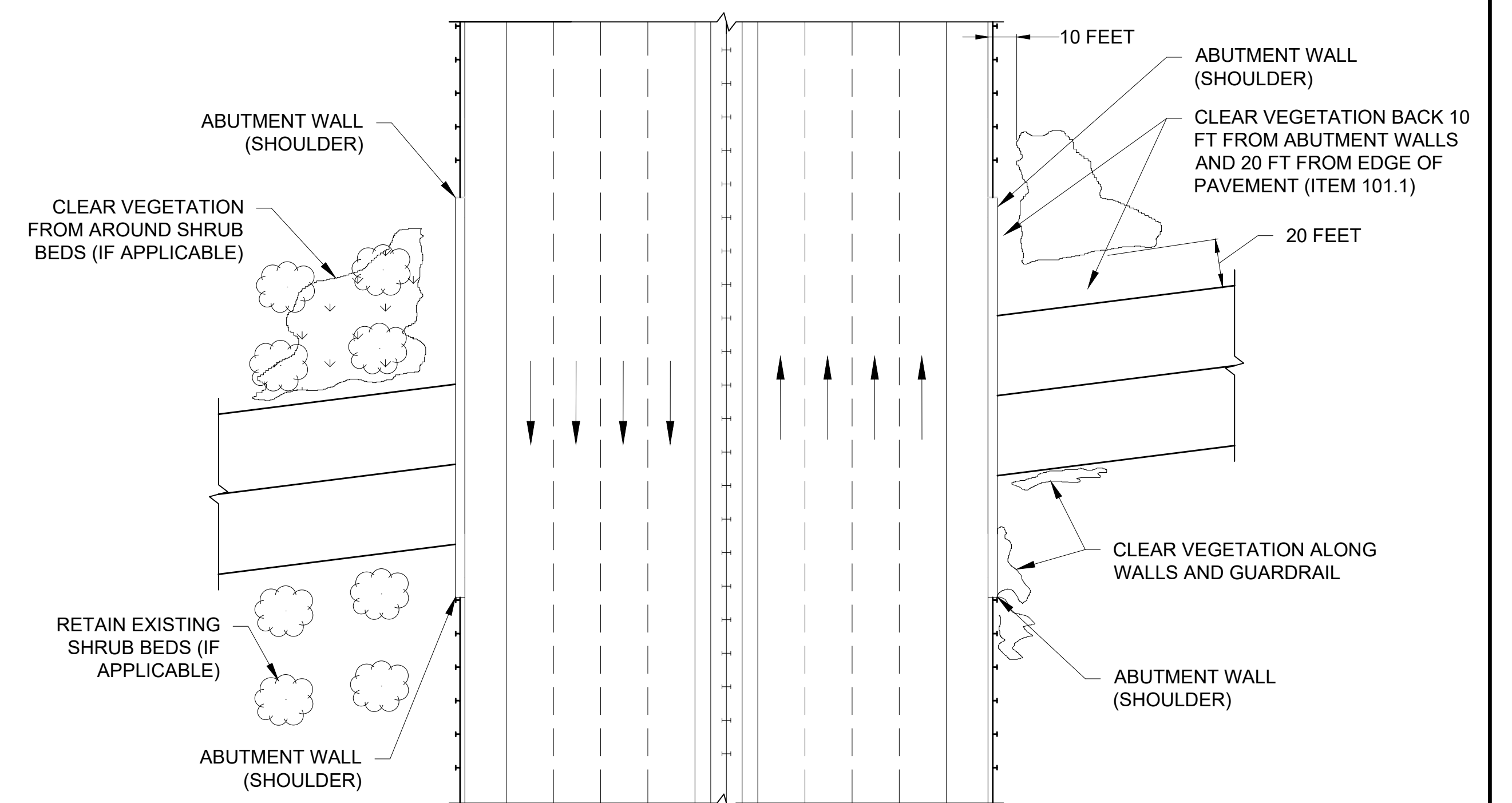
**LIMITS OF CLEARING ON MAINLINE/RAMP AREAS
WITHOUT GUARDRAIL**

LIMITS OF CLEARING
NOT TO SCALE



MILE AND TENTH-OF-MILE MARKER SIGN
NOT TO SCALE

NOTE: THIS DETAIL IS FOR DIMENSIONS ONLY. SIGNS ON THIS PROJECT WILL REFLECT DIRECTION OF TRAVEL (NORTH OR SOUTH) AND THE I-91 SHIELD.

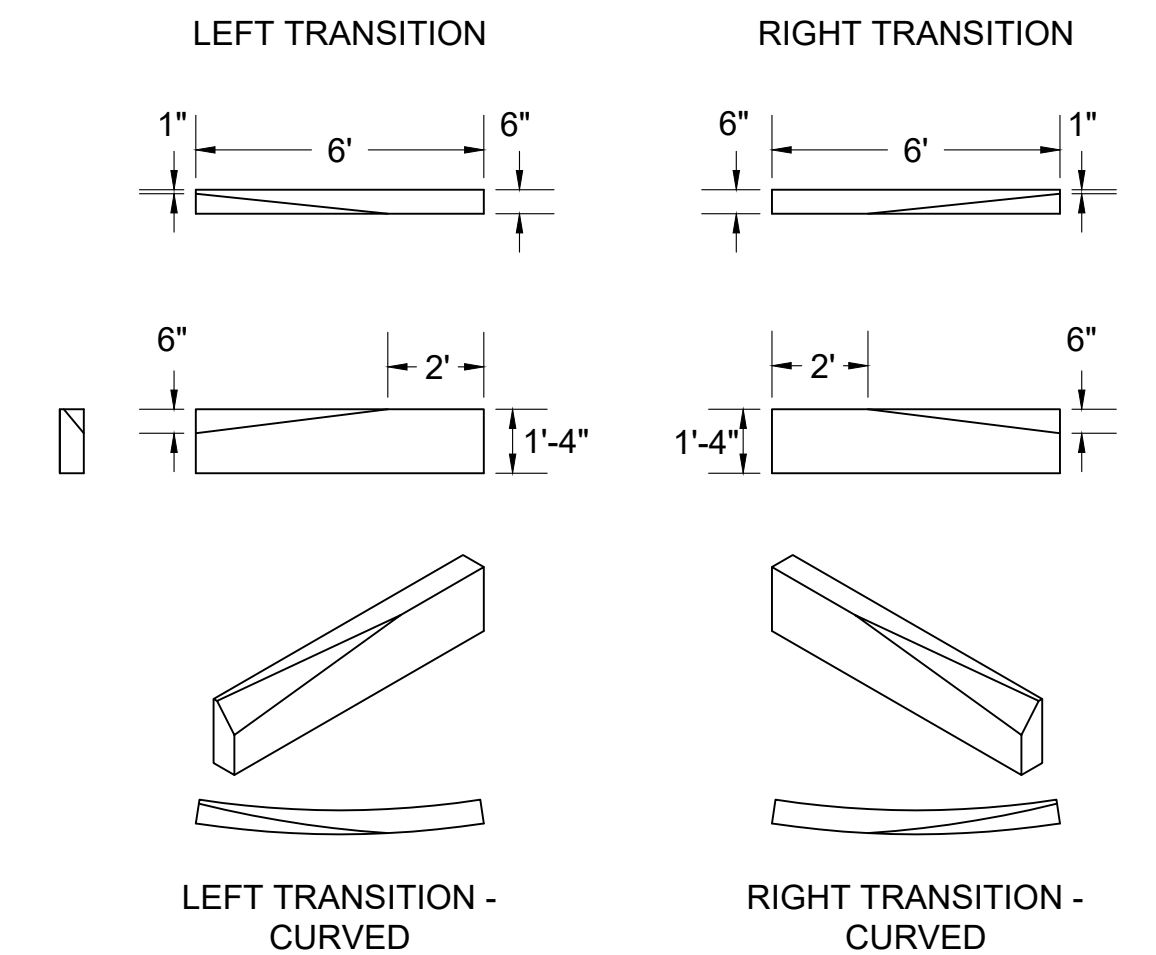


CLEARING AND TREE TRIMMING
NOT TO SCALE

**CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391**

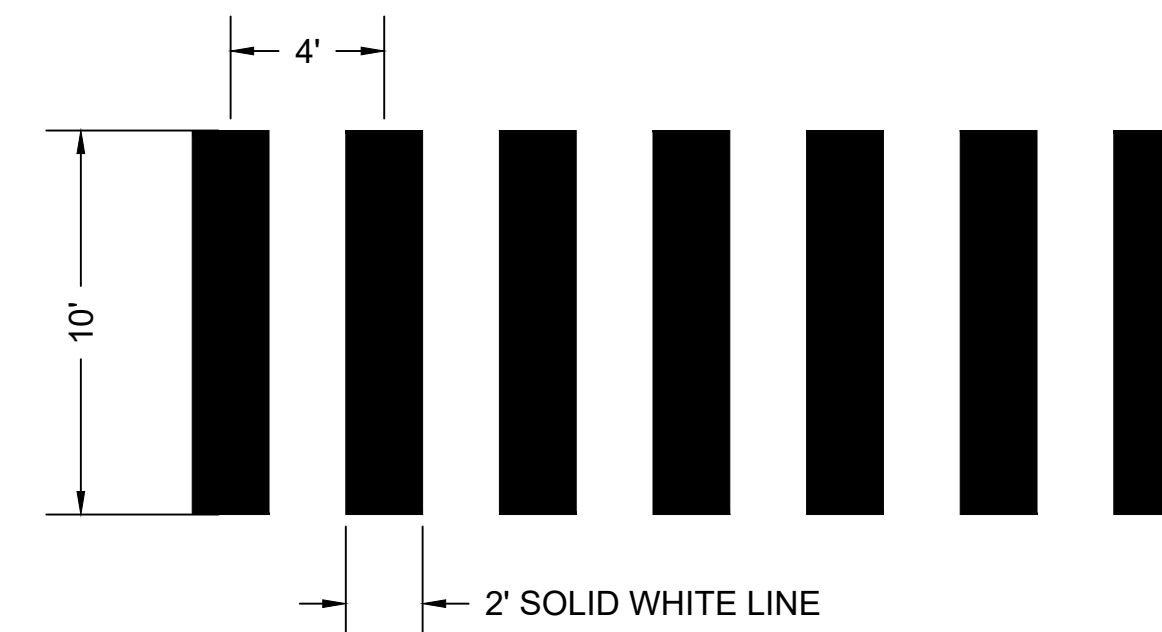
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	16	55
PROJECT FILE NO.		612106	

CONSTRUCTION DETAILS



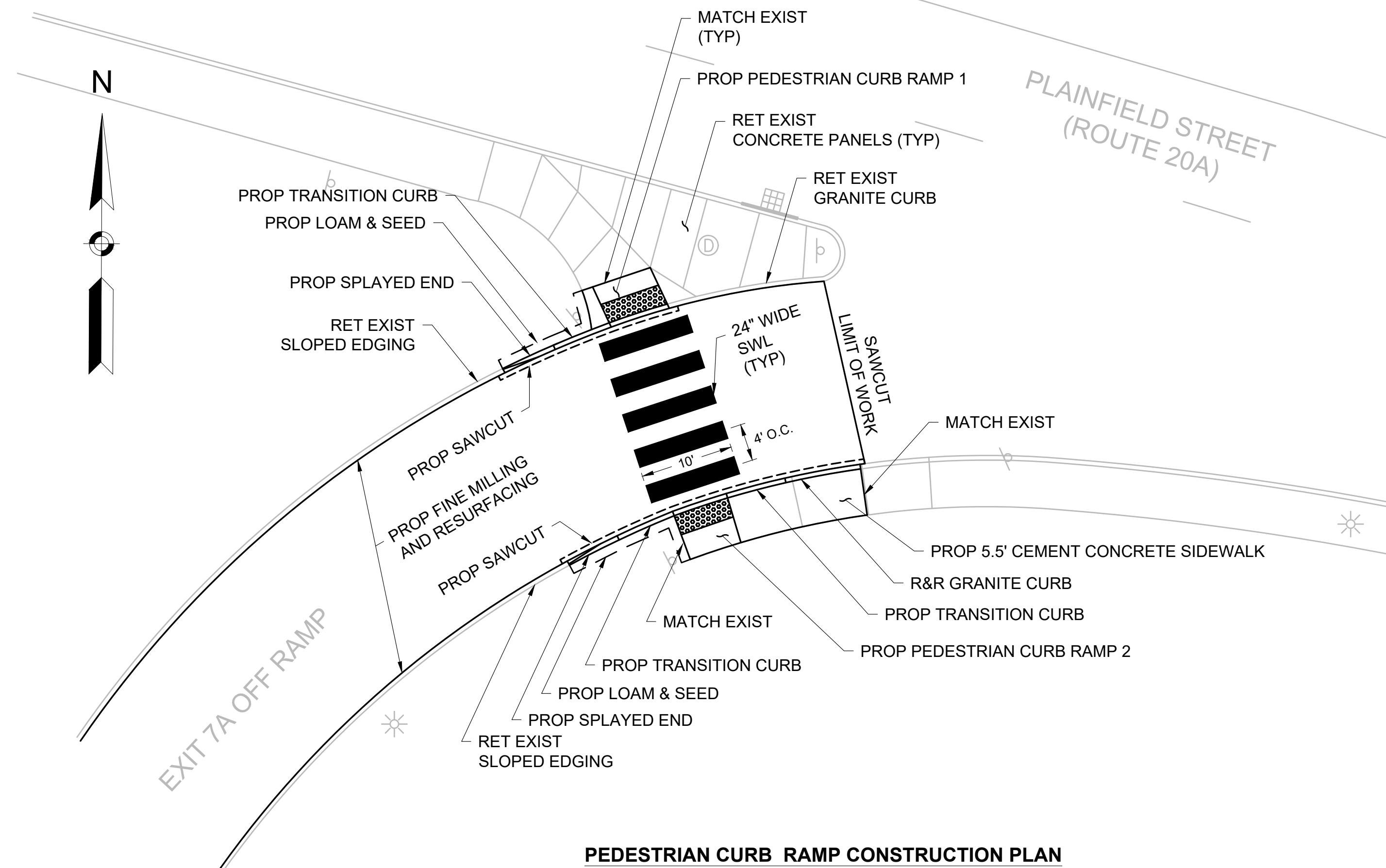
- NOTES:**
1. LENGTH DIMENSIONS (6" OR 2") SHALL HAVE A TOLERANCE OF $\pm 1"$.
 2. ALL OTHER DIMENSIONS SHALL HAVE A TOLERANCE OF $\pm \frac{1}{2}"$.

GRANITE CURB - SPLAYED END DETAIL
NOT TO SCALE

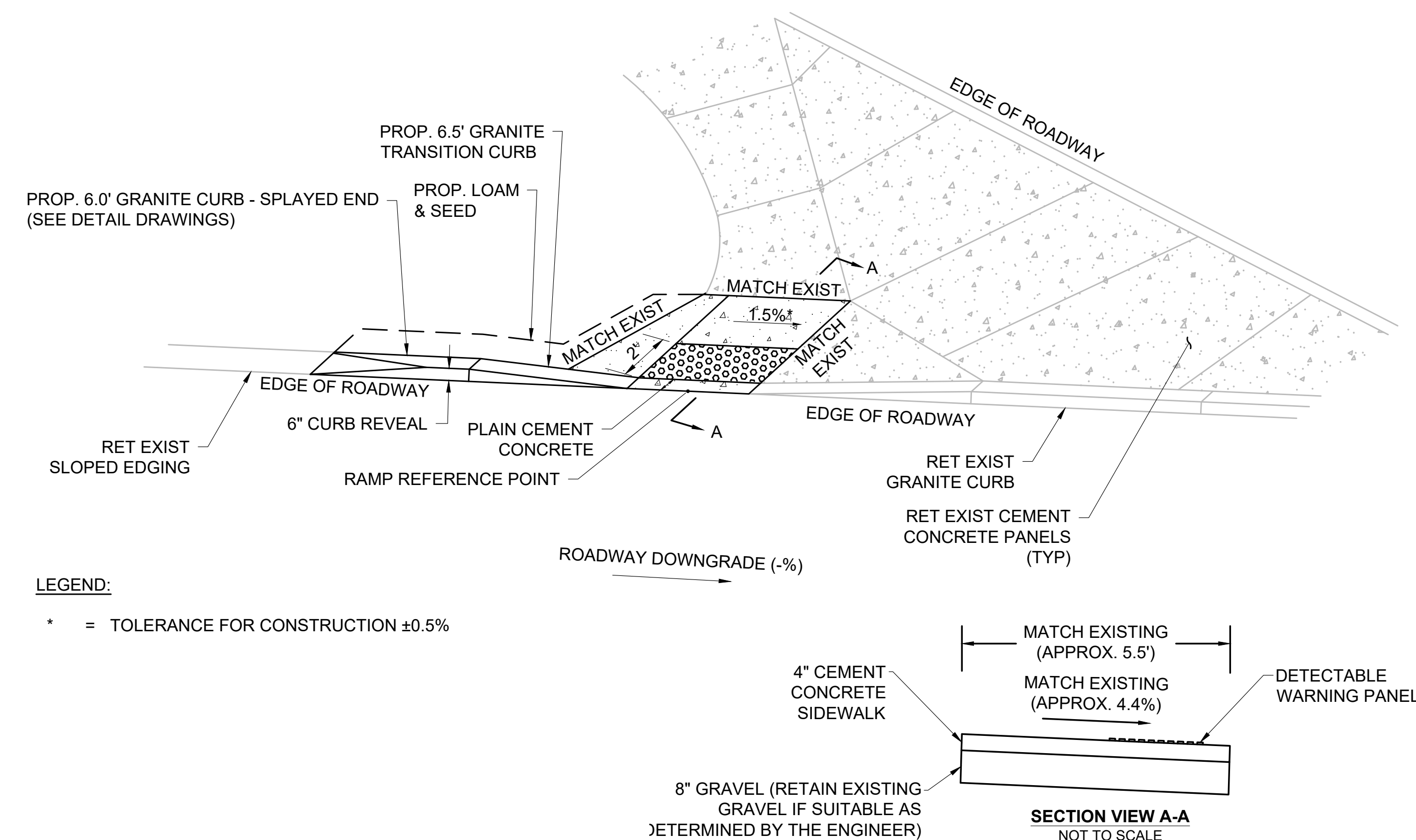


DIMENSIONS FOR CROSSWALK PAVEMENT MARKINGS
NOT TO SCALE

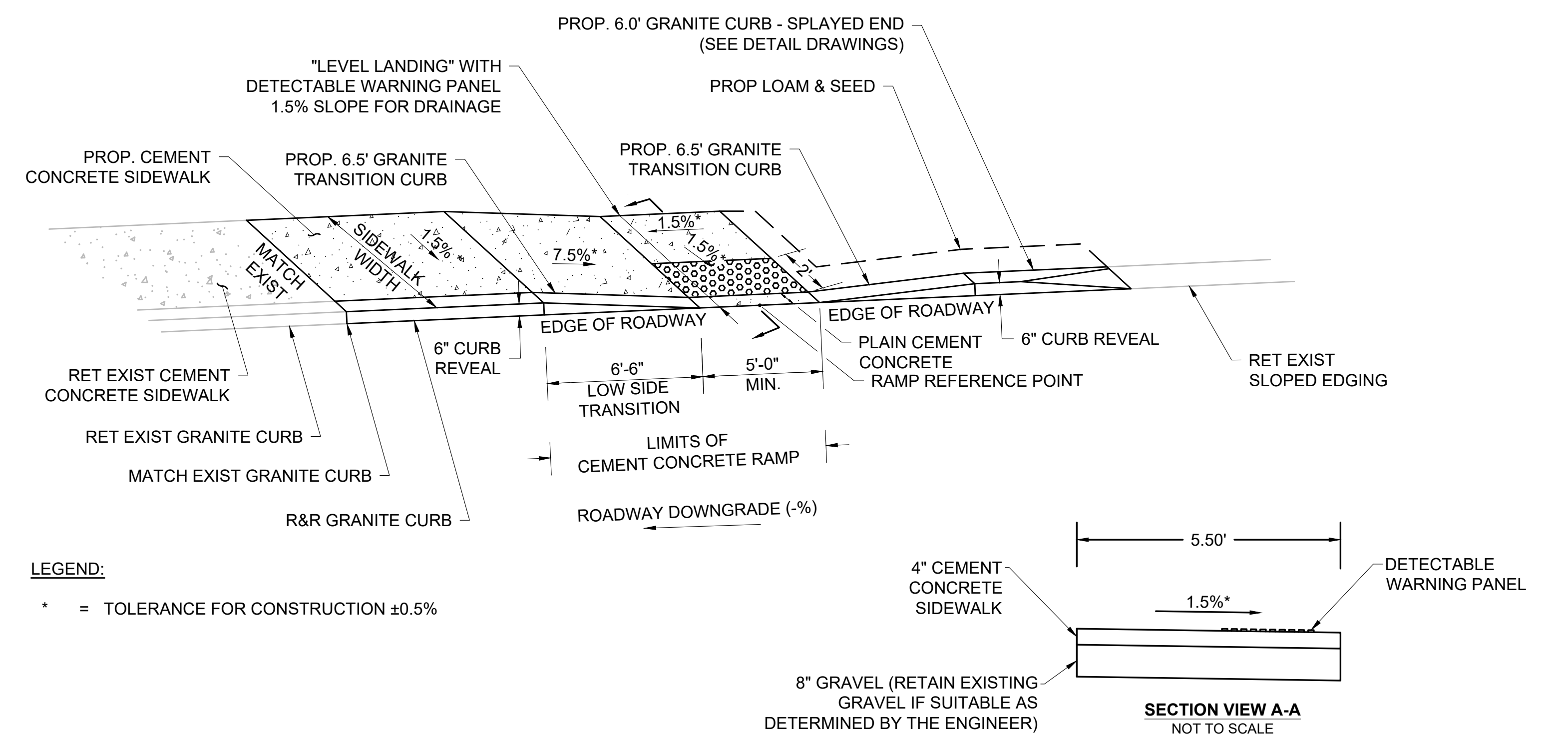
PCR NO.	RAMP REFERENCE POINT		SIDEWALK WIDTH	RAMP ENTRANCE WIDTH	ROADWAY GUTTER SLOPE	TRANSITION LENGTH	
	LOCATION	SIDE				LEFT SIDE	RIGHT SIDE
1	EXIT 7A OFF RAMP	LEFT	5.5'	5.0'	-	N/A	N/A
2	EXIT 7A OFF RAMP	RIGHT	5.5'	5.0'	-	6.5'	N/A



PEDESTRIAN CURB RAMP CONSTRUCTION PLAN
NOT TO SCALE

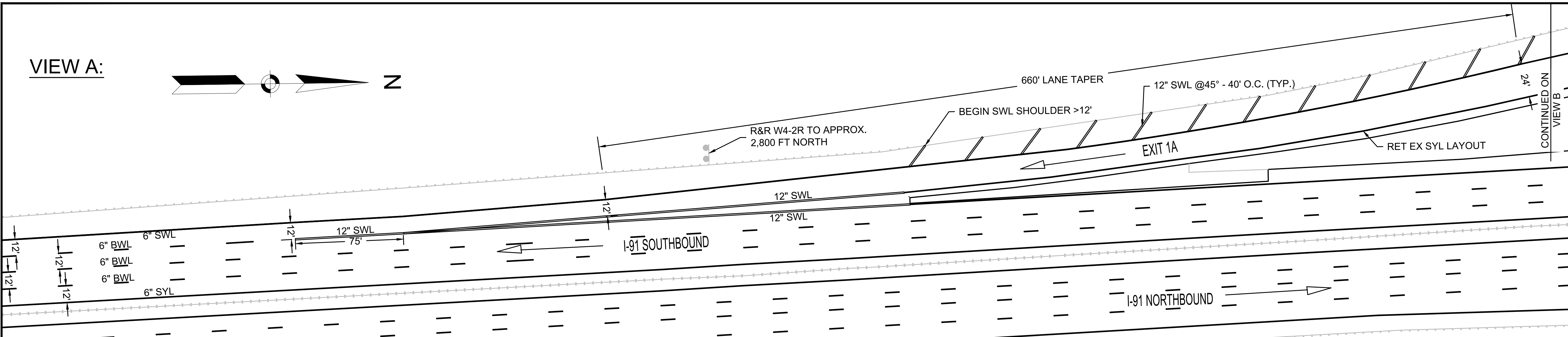
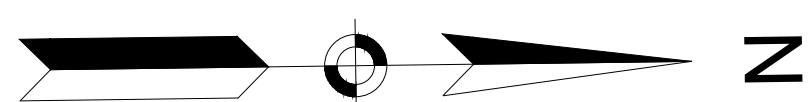


PEDESTRIAN CURB RAMP 1 AT LEFT SIDE OF EXIT 7A OFF RAMP
NOT TO SCALE



PEDESTRIAN CURB RAMP 2 AT RIGHT SIDE OF EXIT 7A OFF RAMP
NOT TO SCALE

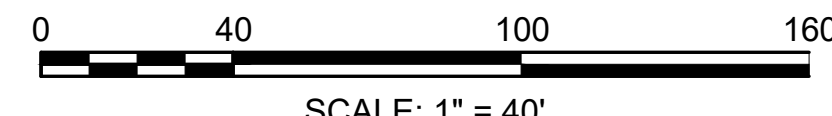
VIEW A:



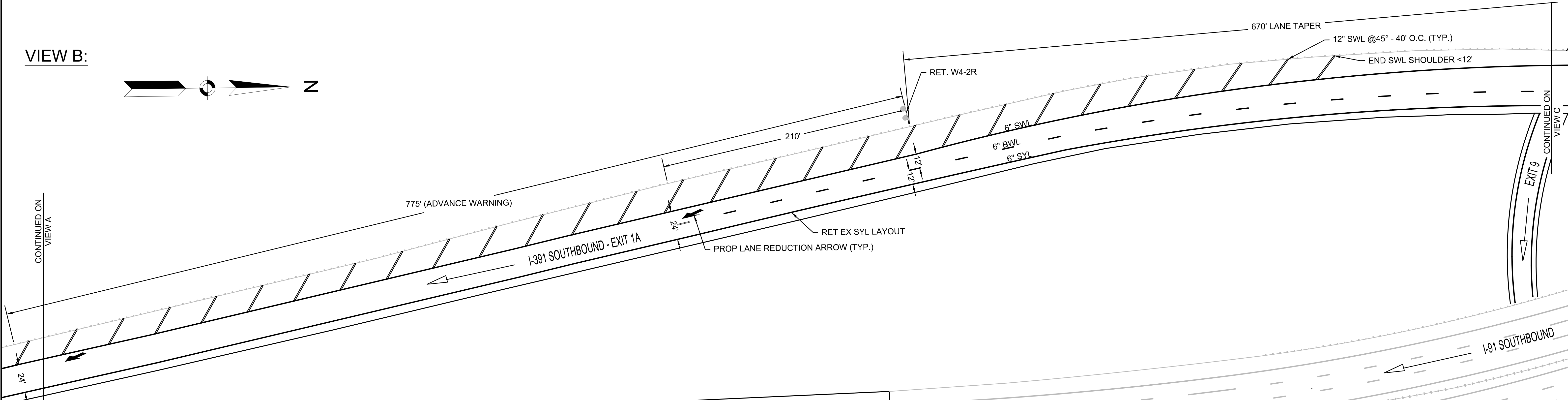
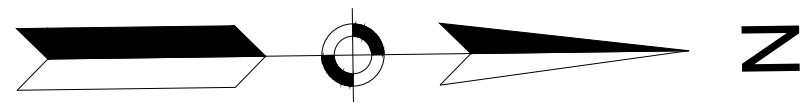
**CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	17	55
PROJECT FILE NO.		612106	

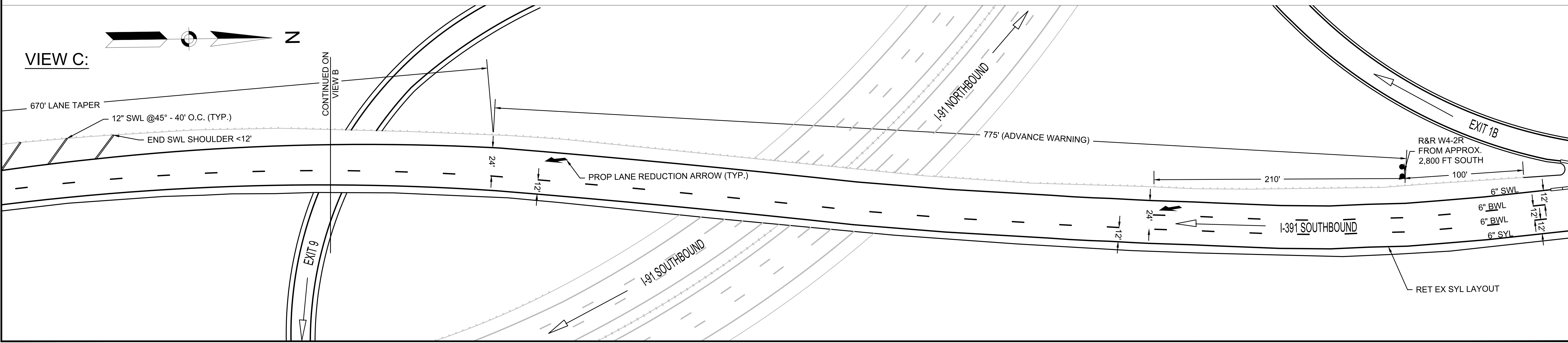
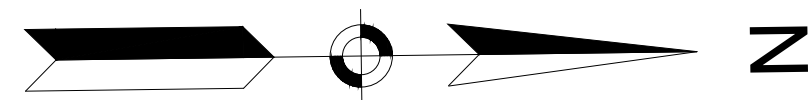
**CONSTRUCTION DETAILS
I-391 LANE REDUCTION MARKINGS SKETCH**



VIEW B:



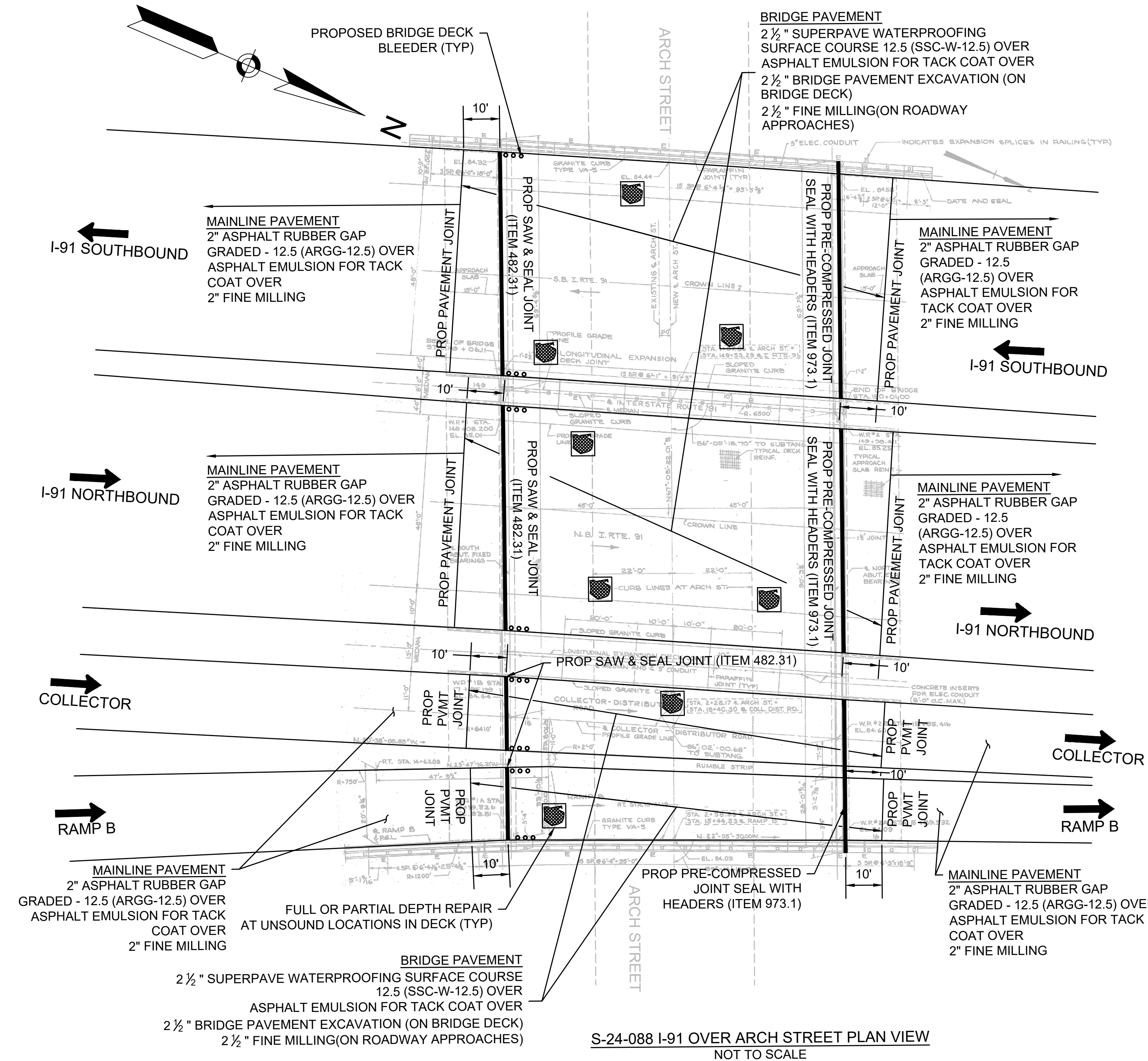
VIEW C:



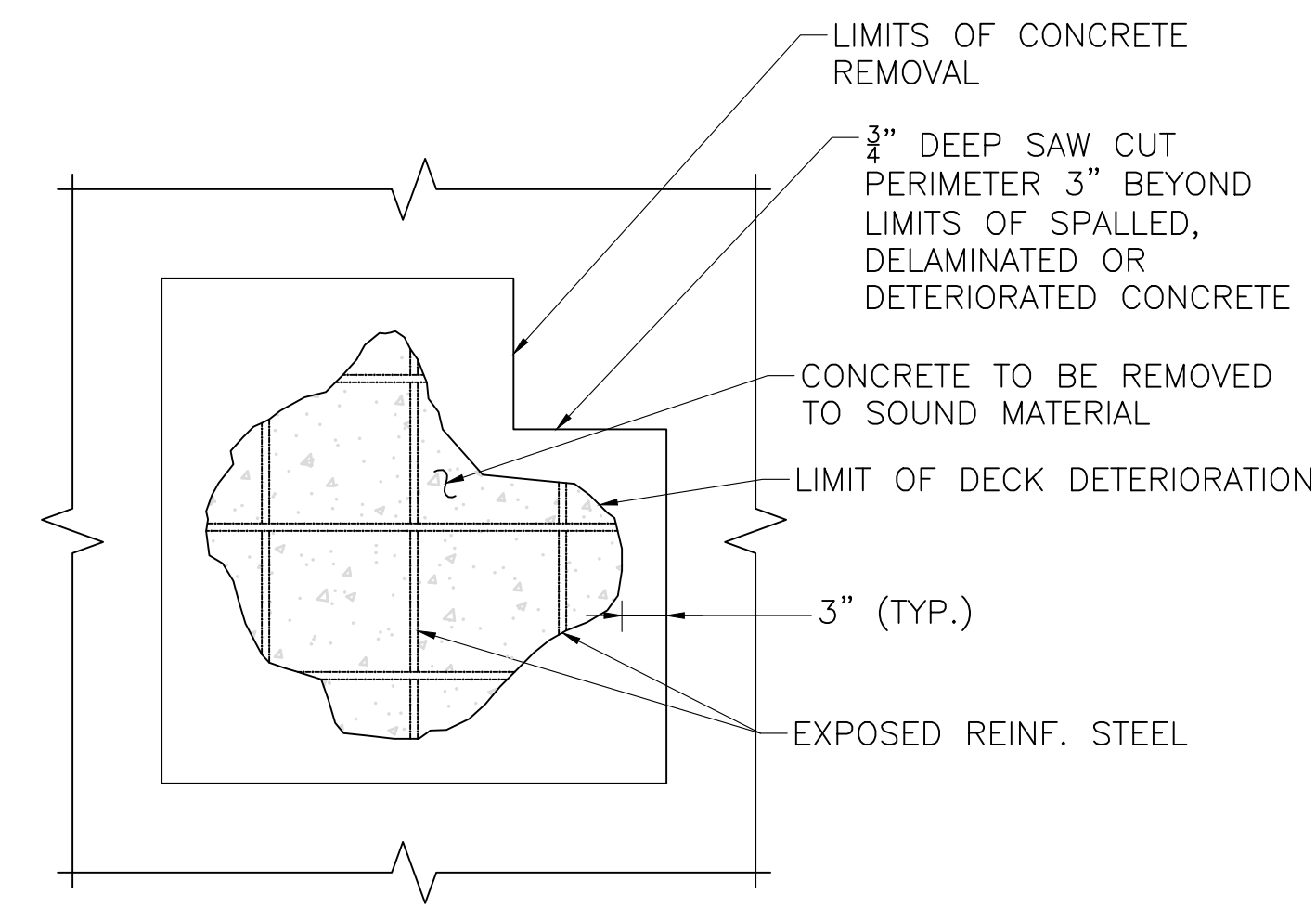
**CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	18	55
PROJECT FILE NO. 612106			

**BRIDGE DETAILS
INTERSTATE 91 OVER ARCH STREET**

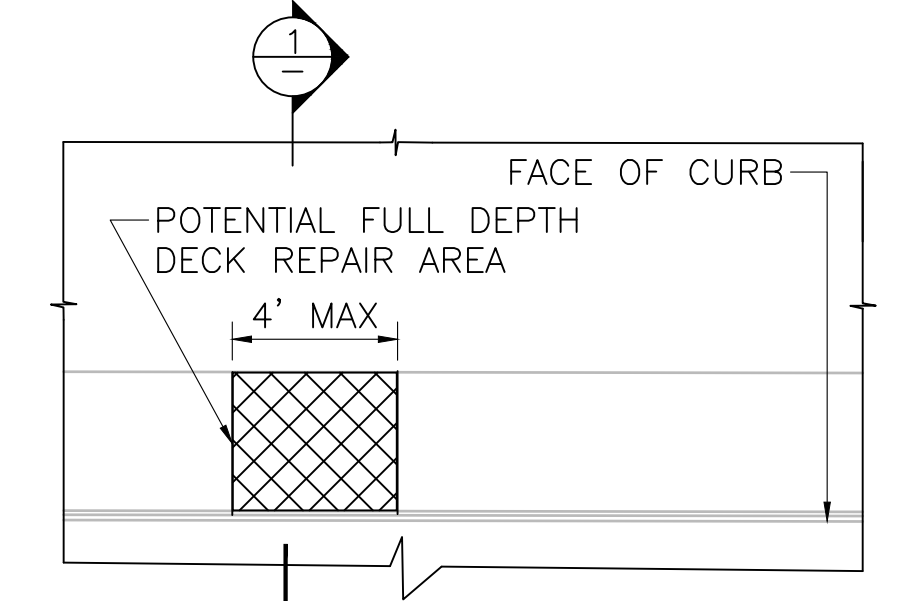


S-24-088 I-91 OVER ARCH STREET PLAN VIEW
NOT TO SCALE

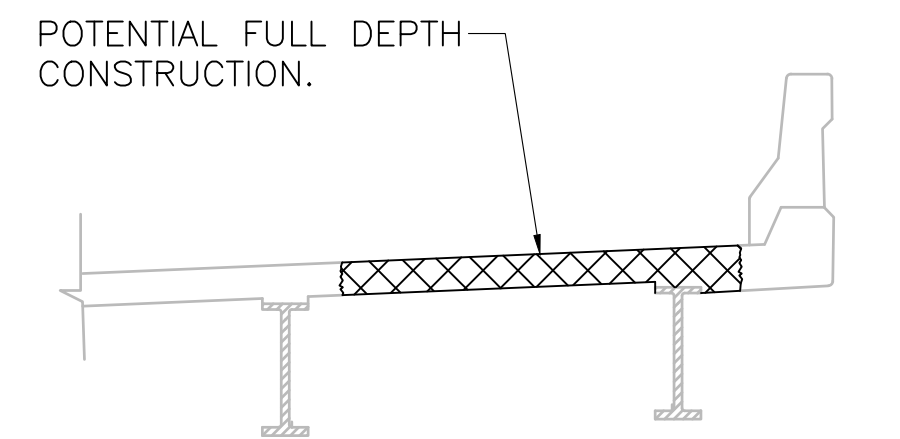


LIMITS OF DECK REPAIR AREA
NOT TO SCALE

- BRIDGE DECK REPAIR SEQUENCE NOTES:**
- ALL EXISTING HOT MIX ASPHALT WEARING SURFACE AND MEMBRANE WATERPROOFING MATERIAL SHALL BE REMOVED PRIOR TO PERFORMING DECK REPAIRS. THE EXPOSED DECK SURFACE SHALL BE INSPECTED BY THE ENGINEER TO DETERMINE APPROXIMATE LIMITS OF REPAIR. IN ADDITION, AREAS OF THE UNDERSIDE WITH EVIDENCE OF DETERIORATION SHALL BE SOUNDED IN THE PRESENCE OF THE CONTRACTOR AND THE ENGINEER TO IDENTIFY AREAS IN NEED OF FULL DEPTH REPAIRS.
 - THE TOP SURFACE OF THE DECK REPAIRS SHALL BE FINISHED FLUSH WITH THE ADJACENT TOP OF DECK SLAB AND SHALL MAINTAIN THE EXISTING GRADES AND CROSS SLOPES.
 - UPON COMPLETION OF EACH STAGE OF DECK REPAIRS, THE DECK SHALL BE ABRASIVELY BLAST CLEANED FOLLOWED BY PLACEMENT OF THE HOT MIX ASPHALT WEARING SURFACE.

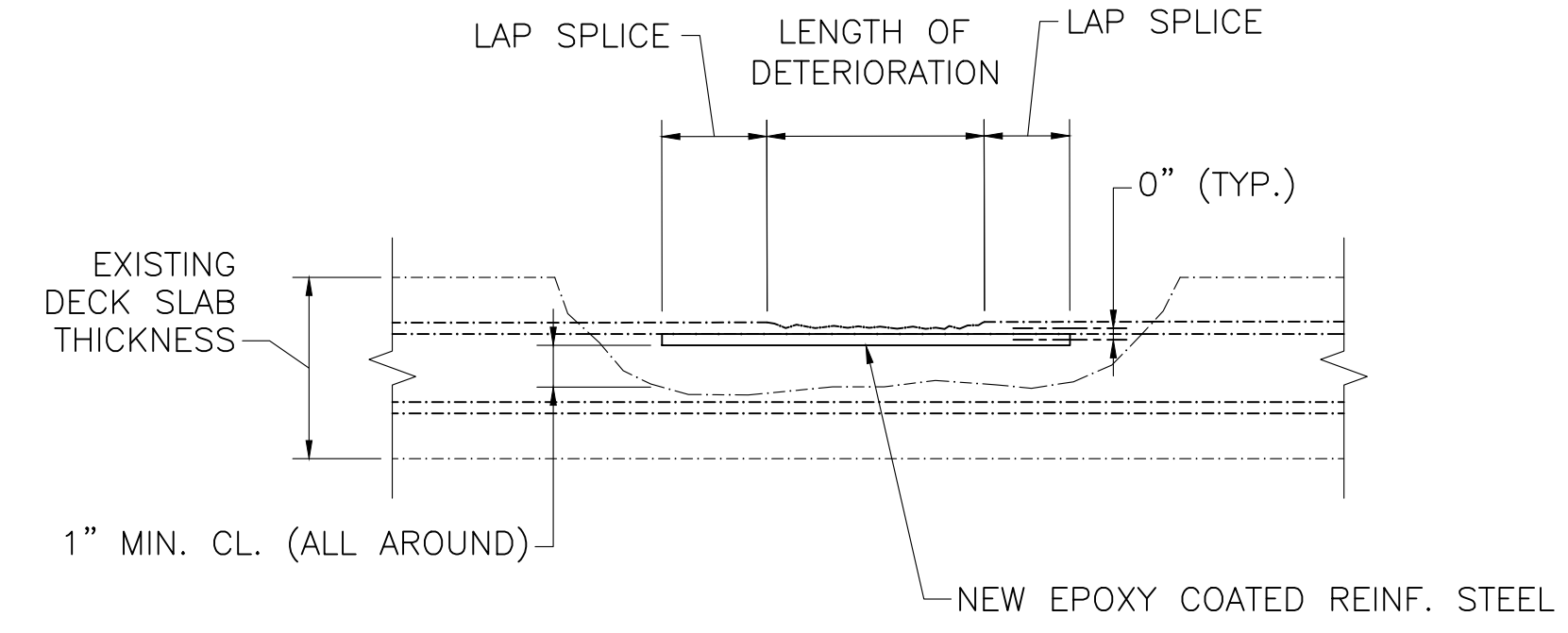


PLAN



SECTION 1

FULL DEPTH OVERHANG DECK REPAIR
NOT TO SCALE

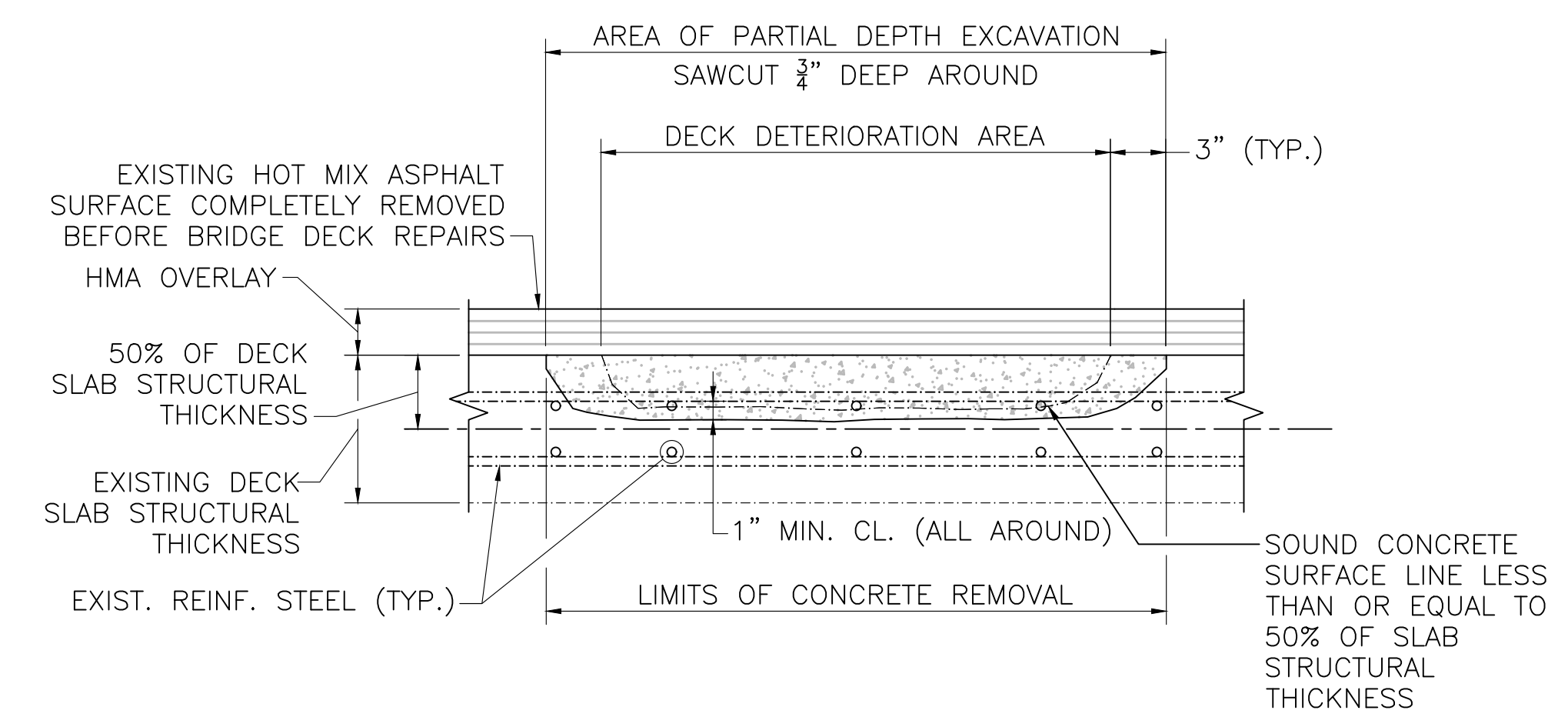


TYPICAL DETERIORATED REINFORCEMENT STEEL REPAIR
SCALE: 1 1/2" = 1'-0"

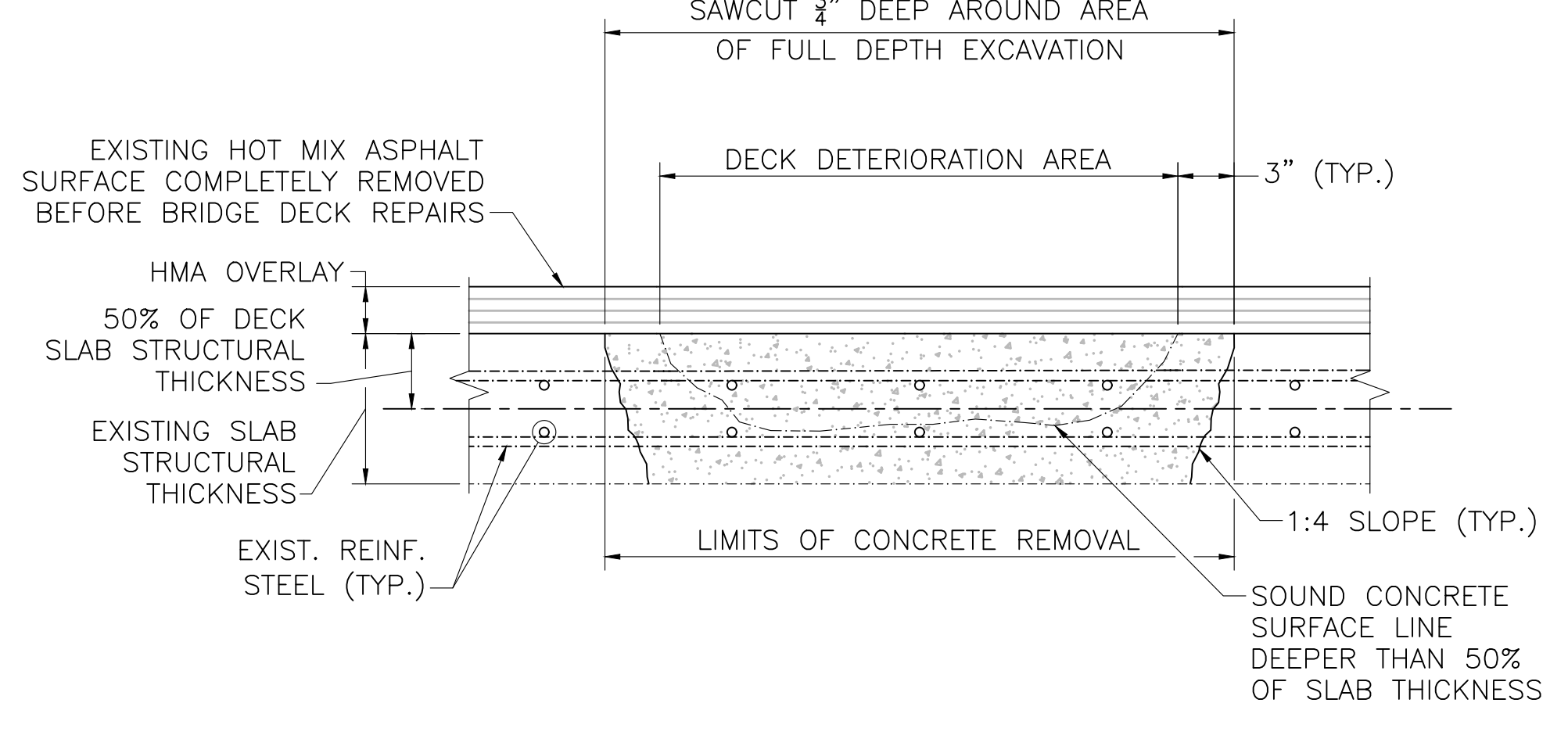
- NOTE**
- OVERHANG SUPPORT MUST BE PROVIDED WHEN CONSTRUCTION WIDTHS EXCEED 4' (FOUR FEET). IF THE CONTRACTOR EXTENDS THE EXCAVATION BEYOND 4' THEN THEY MUST FURNISH A SHIELDING DESIGN CAPACITY CHECK. THIS CHECK MUST BE DESIGNED AND STAMPED BY A MASSACHUSETTS REGISTERED PROFESSIONAL ENGINEER OF THE APPROPRIATE DISCIPLINE.

BRIDGE DECK REPAIR NOTES:

- SPALLED, DELAMINATED, AND DETERIORATED CONCRETE DECK AREAS SHALL BE REPAIRED USING AN APPROVED RAPID SETTING CONCRETE (ITEM 909.5) AS DIRECTED BY THE ENGINEER.
- PARTIAL DEPTH REPAIRS: ALL DETERIORATED AND DELAMINATED CONCRETE SHALL BE REMOVED TO A MINIMUM DEPTH OF 1" BELOW THE BOTTOM OF THE TOP LAYER OF EXISTING TRANSVERSE REINFORCEMENT STEEL TO A MAXIMUM OF 50% OF THE THICKNESS OF THE EXISTING CONCRETE DECK.
- FULL DEPTH REPAIRS: ALL DETERIORATED AND DELAMINATED CONCRETE SHALL BE REMOVED, AND IF THE SOUND CONCRETE SURFACE IS LOCATED AT A DEPTH GREATER THAN 50% OF THE DECK THICKNESS WHEN MEASURED FROM THE TOP OF DECK, A FULL DEPTH DECK REPAIR SHALL BE PERFORMED.
- ALL EXISTING REINFORCING STEEL AND CONCRETE SURFACES THAT ARE TO BE IN CONTACT WITH REPAIR CONCRETE SHALL BE ABRASIVELY BLAST CLEANED IN ORDER TO REMOVE ALL RUST, OIL, AND DEBRIS THAT IS NOT TIGHTLY ADHERED, FOLLOWED BY APPLICATION OF COMPRESSED AIR TO REMOVE ALL DUST. EXISTING CONCRETE REPAIR SURFACES THAT WILL BE IN CONTACT WITH REPAIR CONCRETE SHALL BE PRE-WETTED FOR A MINIMUM OF 15 MINUTES USING POTABLE WATER IN ORDER TO ACHIEVE A SATURATED SURFACE DRY CONDITION IMMEDIATELY PRIOR TO PLACEMENT OF REPAIR CONCRETE.
- NEW EPOXY COATED STEEL REINFORCEMENT SHALL BE PLACED TO SUPPLEMENT EXISTING REINFORCEMENT THAT HAS A SECTION LOSS OF 25% OR MORE OF THE ORIGINAL CROSS SECTION AREA OR HAS BROKEN, AS DETERMINED BY THE ENGINEER. NEW REINFORCEMENT SHALL EXTEND 30 BAR DIAMETERS IN EACH DIRECTION FROM WHERE THE SECTION LOSS OR BREAK ENDS. THE LIMITS OF THE REPAIR SHALL BE MODIFIED TO MEET THE REINFORCEMENT STEEL LAP SPLICE REQUIREMENTS. NEW REINFORCING STEEL SHALL BE PLACED AT THE SAME LEVEL ALONGSIDE THE EXISTING DETERIORATED OR BROKEN REINFORCING STEEL.



TYPICAL PARTIAL DEPTH DECK REPAIR DETAIL
NOT TO SCALE



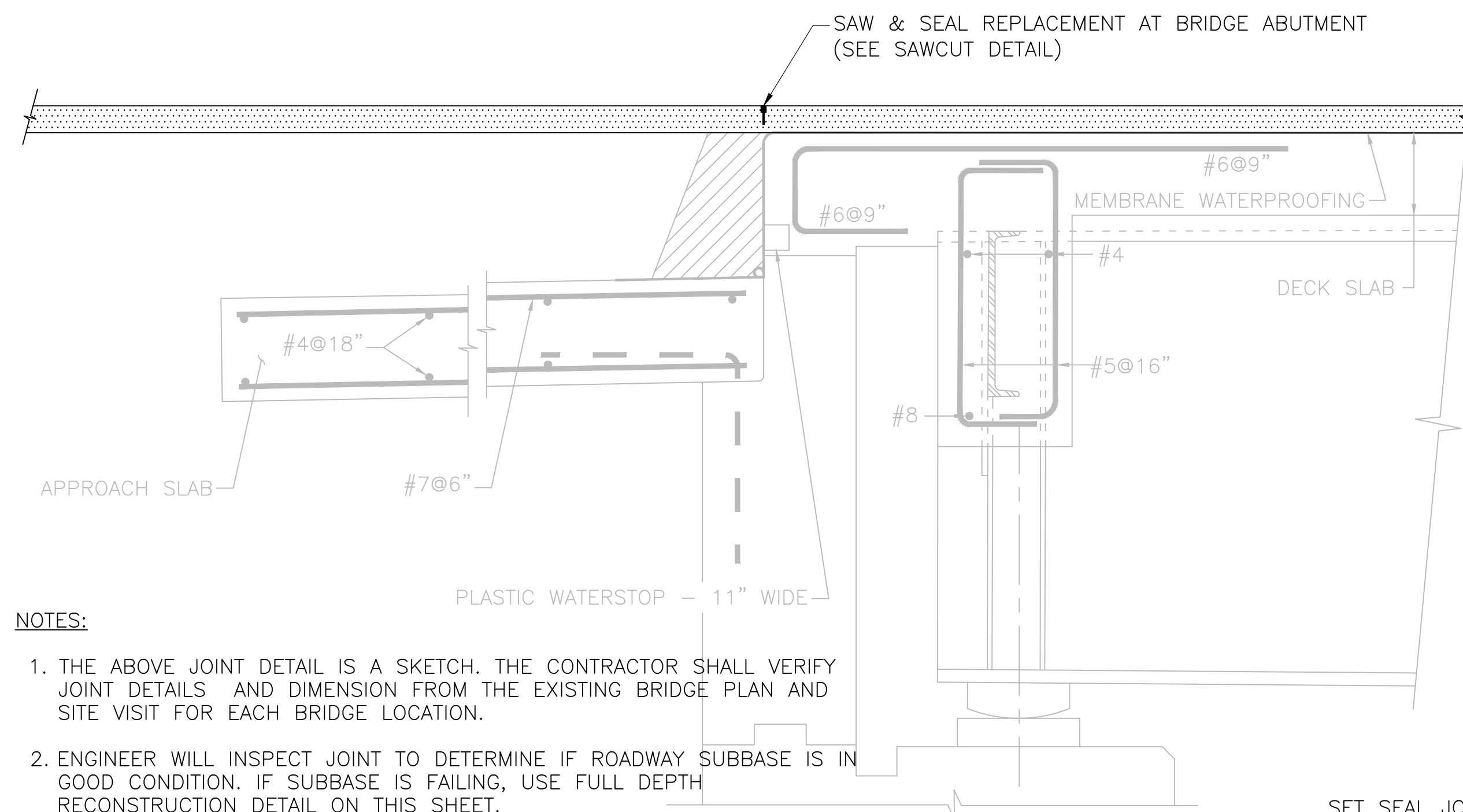
TYPICAL FULL DEPTH DECK REPAIR DETAIL
NOT TO SCALE

- NOTES:**
- DECK FORMS SHALL BE FLUSH WITH EXISTING DECK UNDERSIDE AND SHALL BE REMOVED AFTER CURING IS COMPLETE.

CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	19	55
PROJECT FILE NO.		612106	

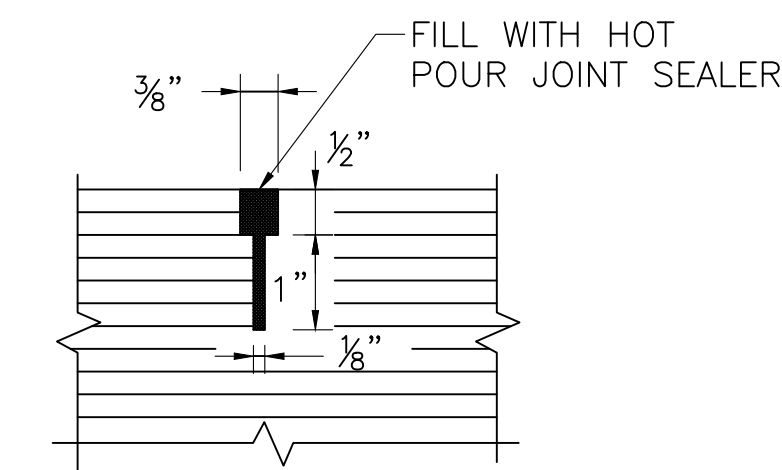
BRIDGE DETAILS
INTERSTATE 91 OVER ARCH STREET



NOTES:

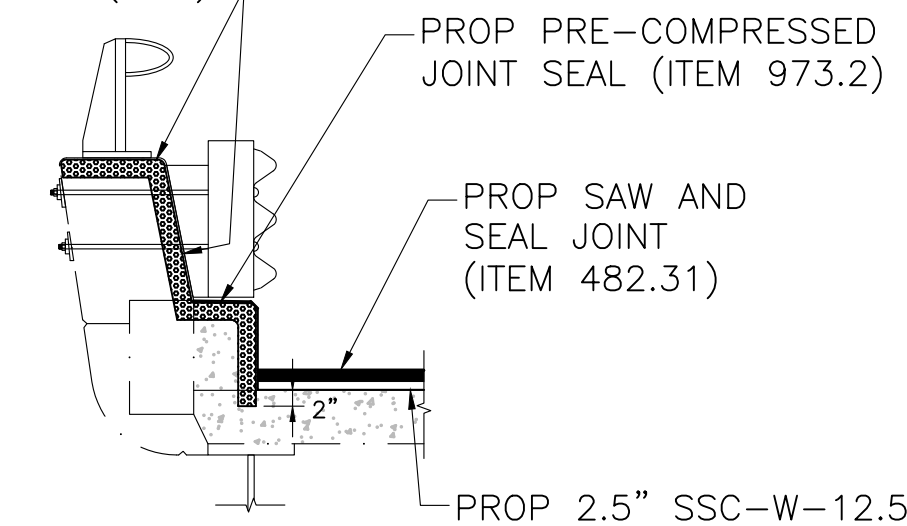
1. THE ABOVE JOINT DETAIL IS A SKETCH. THE CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSION FROM THE EXISTING BRIDGE PLAN AND SITE VISIT FOR EACH BRIDGE LOCATION.
2. ENGINEER WILL INSPECT JOINT TO DETERMINE IF ROADWAY SUBBASE IS IN GOOD CONDITION. IF SUBBASE IS FAILING, USE FULL DEPTH RECONSTRUCTION DETAIL ON THIS SHEET.

**PROPOSED SAW & SEAL
REPLACEMENT AT BRIDGE ABUTMENT**
NOT TO SCALE



PAVEMENT SAWCUT DETAIL
NOT TO SCALE

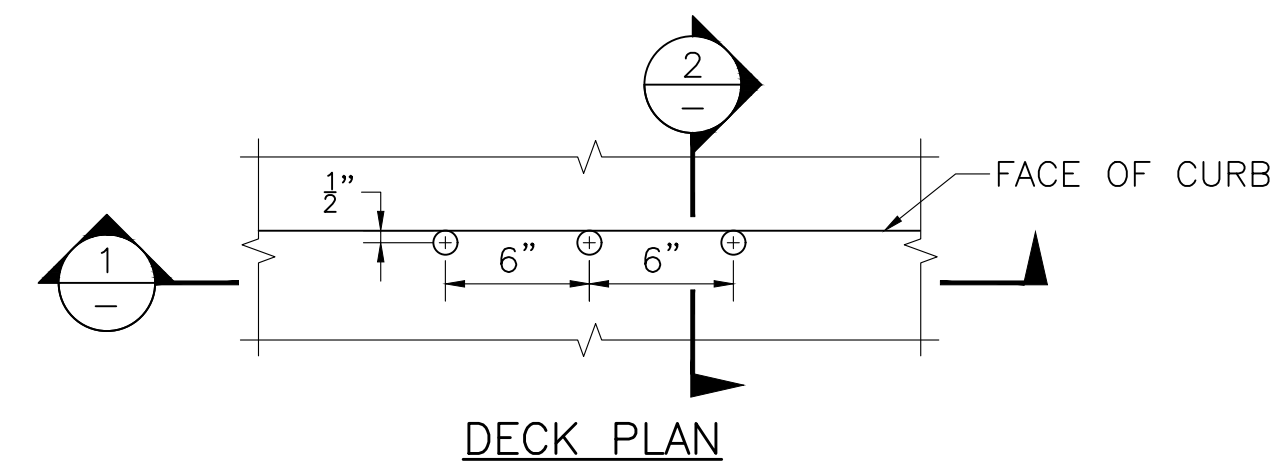
SET SEAL JOINT 1/4" MIN.
BELOW OR BEHIND
CONC. SURFACE (TYP.)



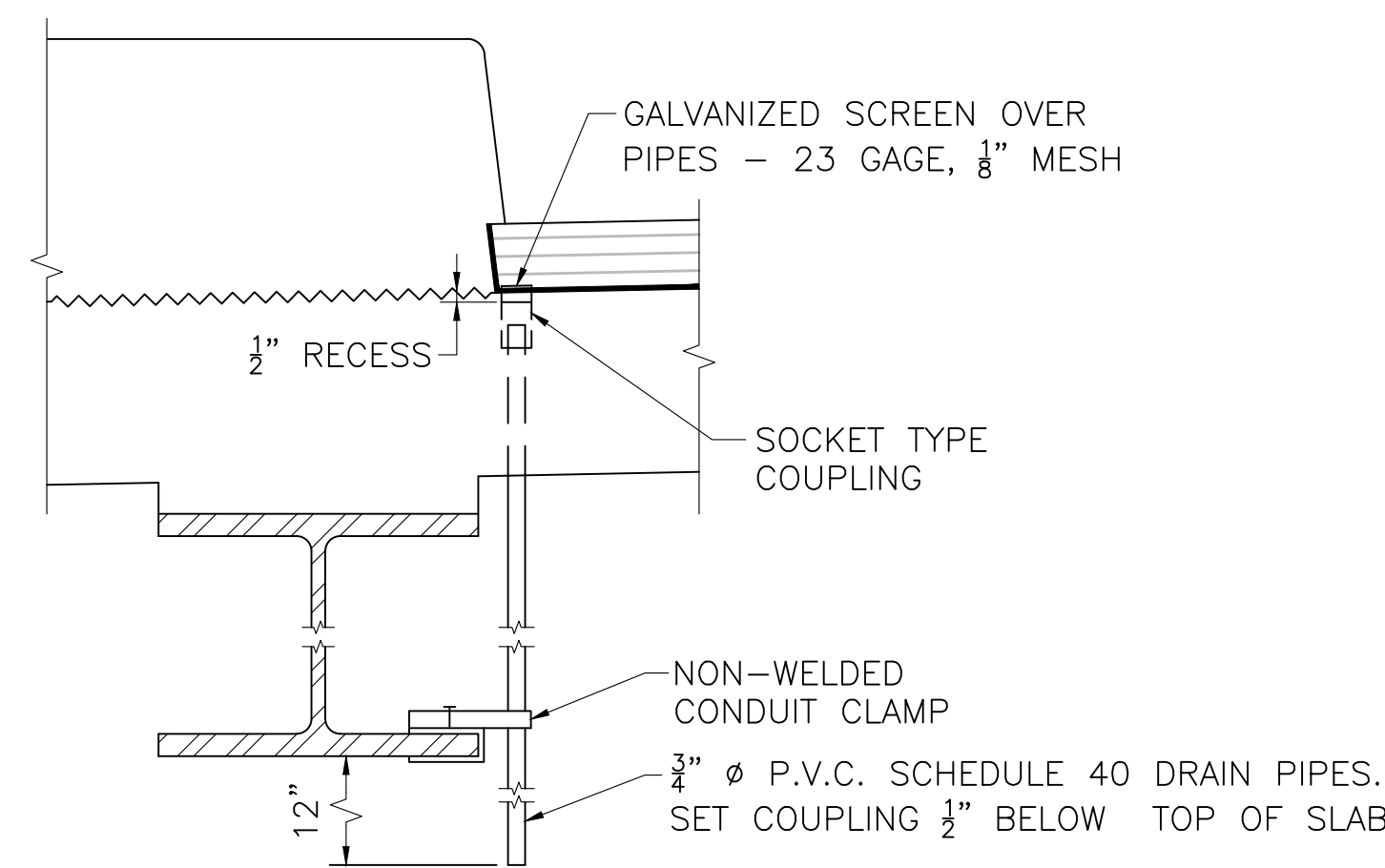
NOTES:

- 1). SEE PRE-COMPRESSED JOINT SEAL DETAIL.
- 2). CLEAN JOINT PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL.
- 3). REPAIR PARAPET PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL AS DIRECTED BY THE ENGINEER.

**PRE-COMPRESSED SEAL AT PARAPET
FOR SAW AND SEAL JOINTS**
NOT TO SCALE



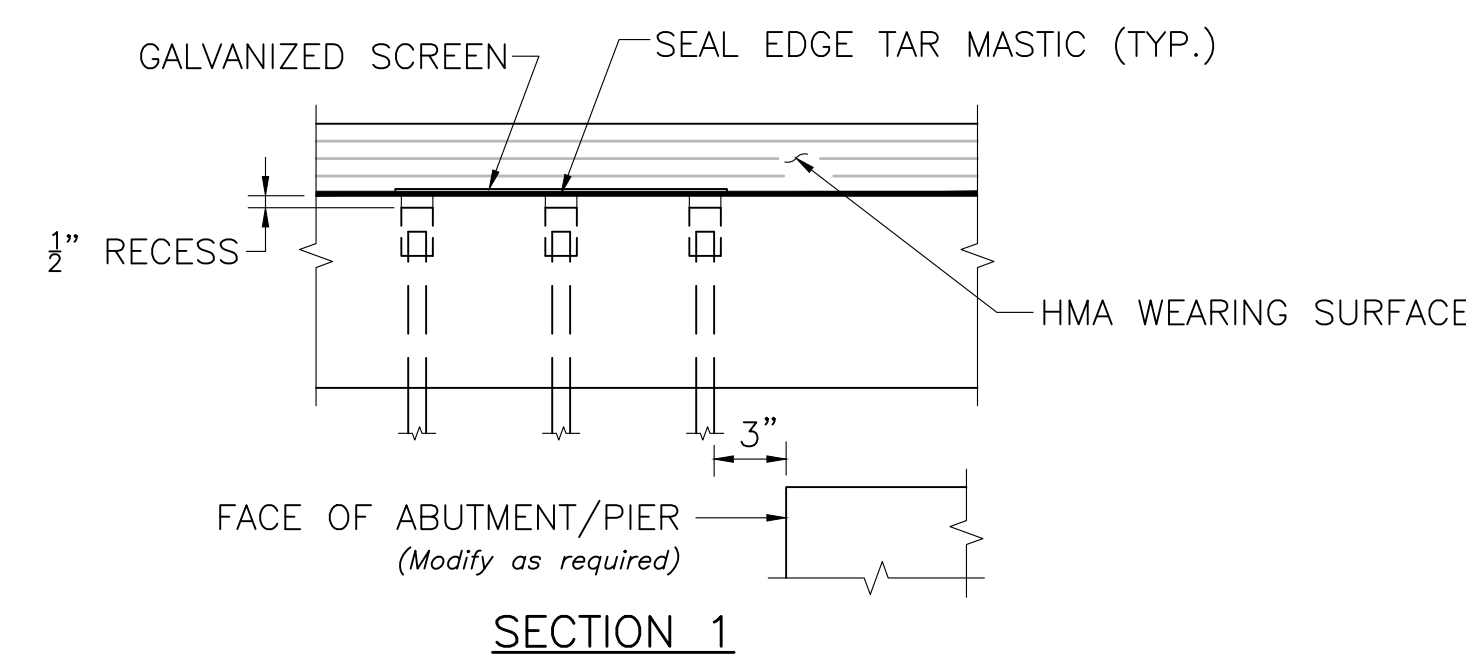
DECK PLAN



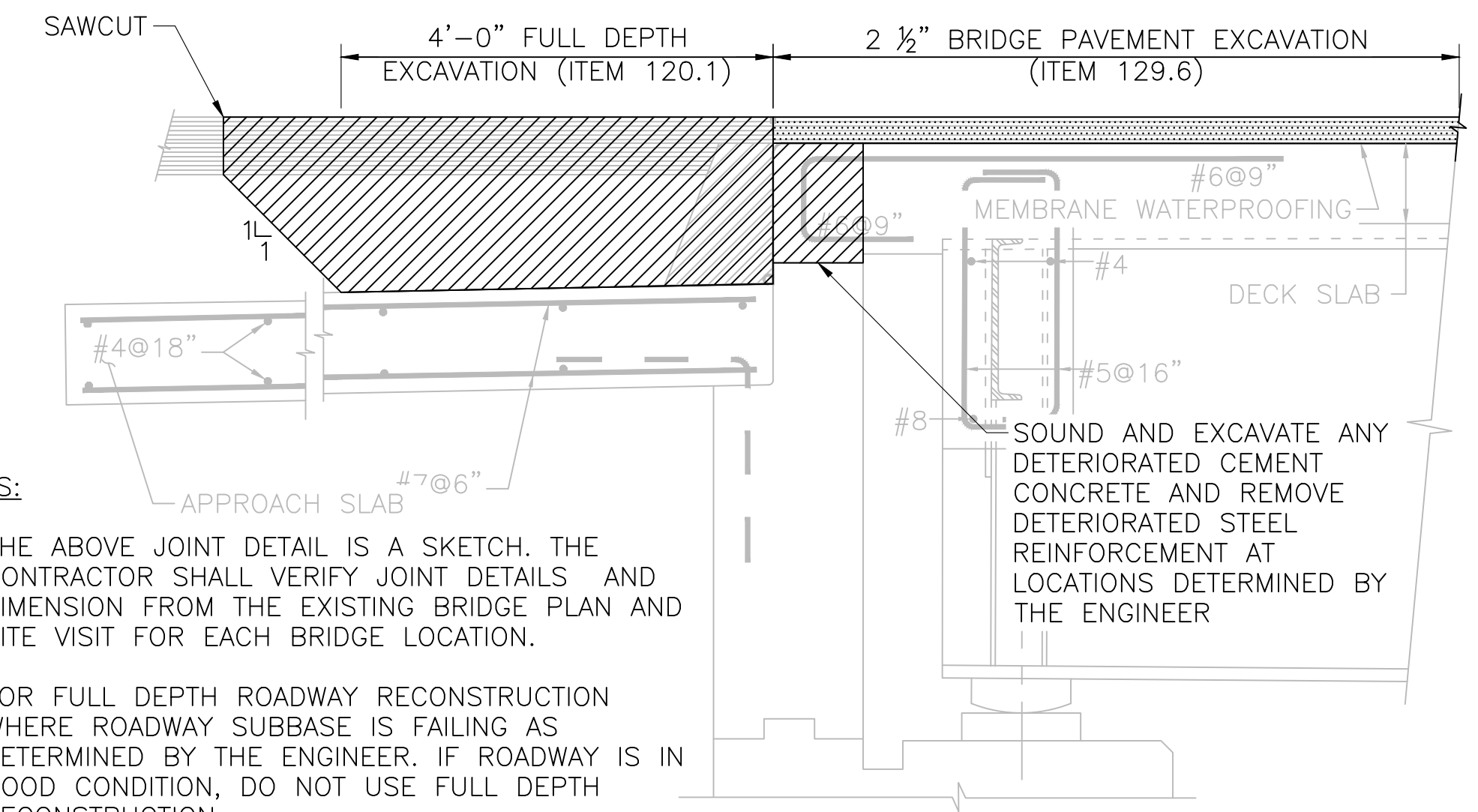
SECTION 2

DECK DRAIN PIPES

SCALE: 1 1/2" = 1'-0"



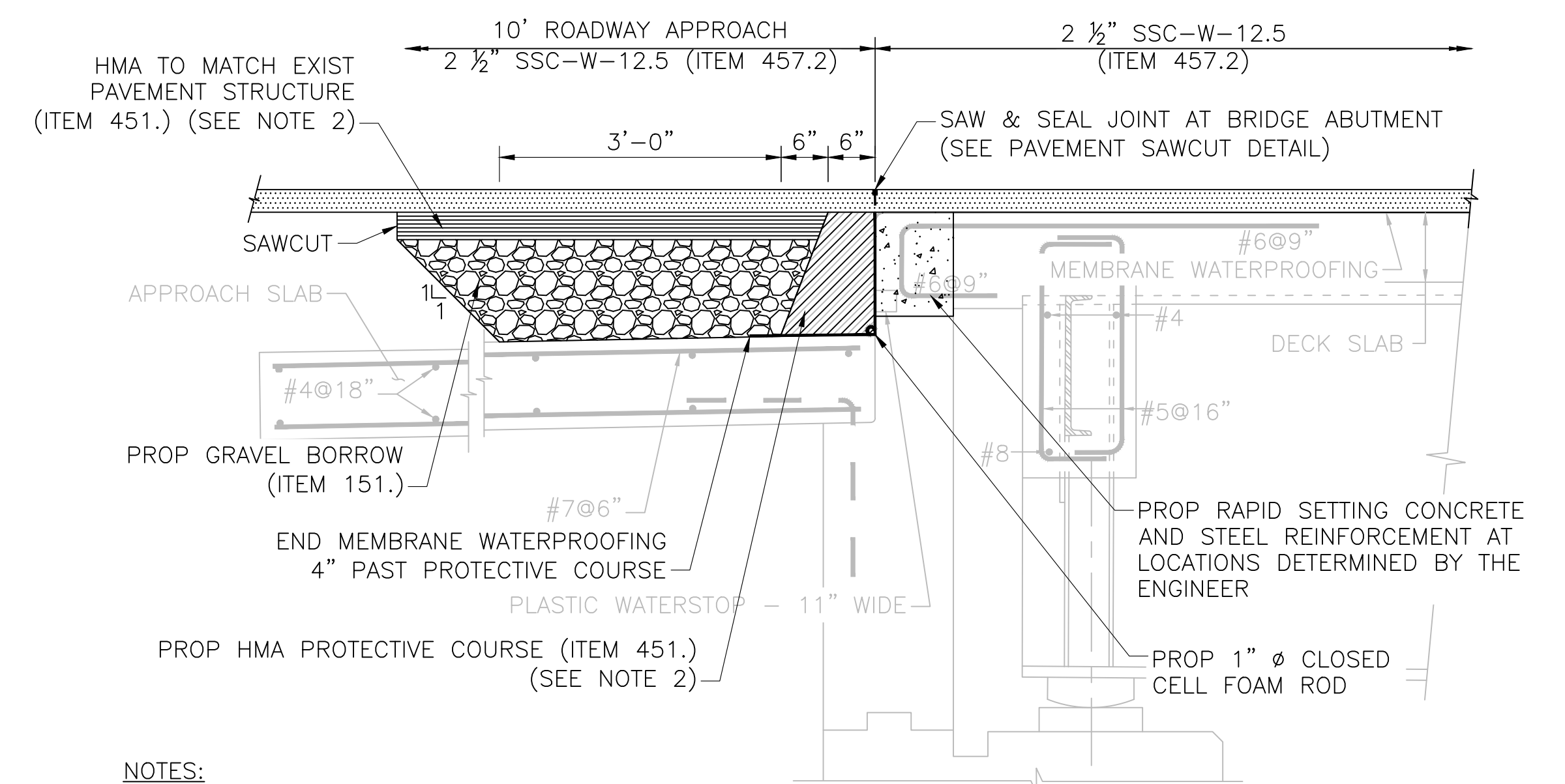
SECTION 1



NOTES:

1. THE ABOVE JOINT DETAIL IS A SKETCH. THE CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSION FROM THE EXISTING BRIDGE PLAN AND SITE VISIT FOR EACH BRIDGE LOCATION.
2. FOR FULL DEPTH ROADWAY RECONSTRUCTION WHERE ROADWAY SUBBASE IS FAILING AS DETERMINED BY THE ENGINEER, IF ROADWAY IS IN GOOD CONDITION, DO NOT USE FULL DEPTH RECONSTRUCTION.

**EXISTING SAW & SEAL JOINT EXCAVATION
FOR FULL DEPTH RECONSTRUCTION**
NOT TO SCALE

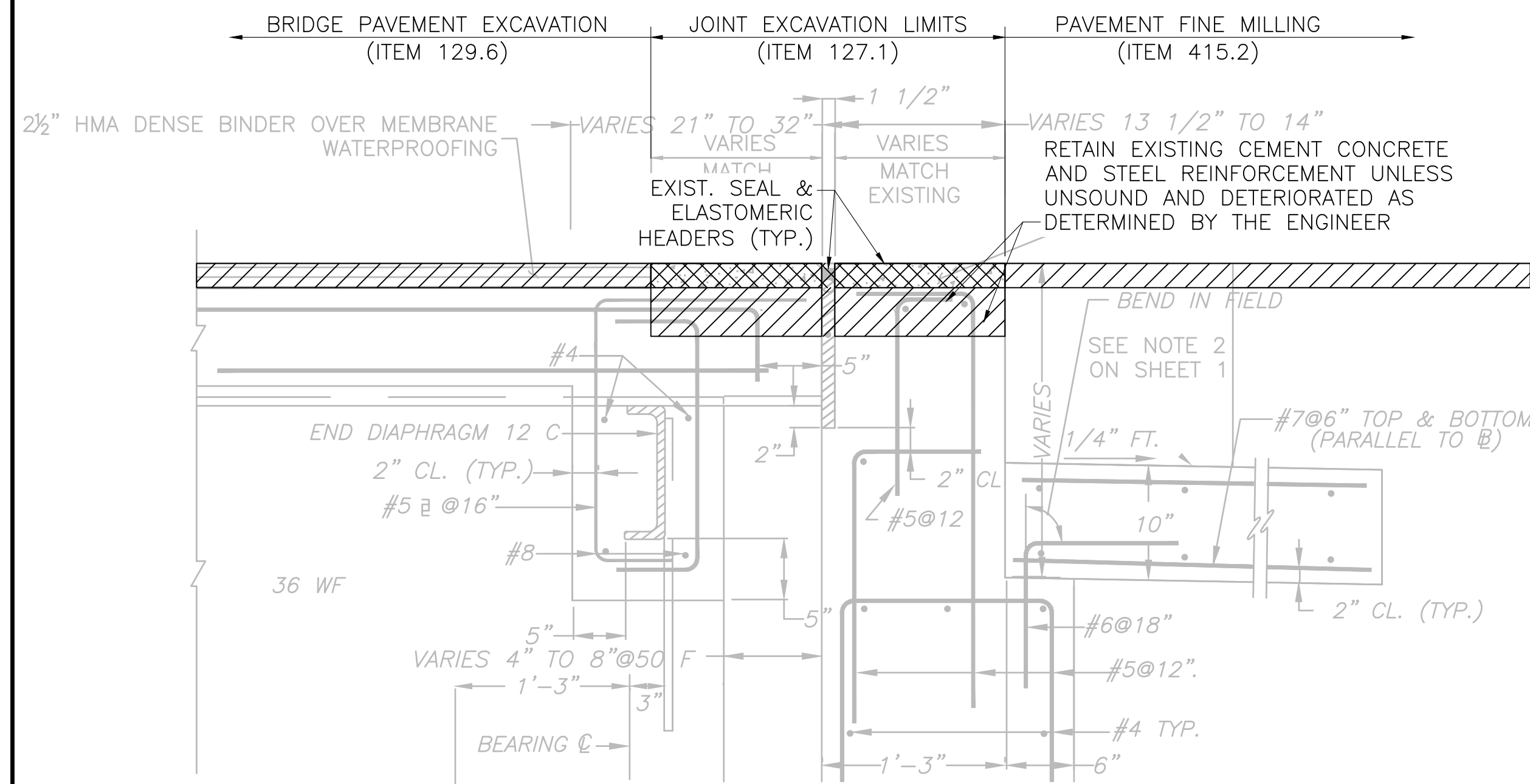


NOTES:

1. THE ABOVE JOINT DETAIL IS A SKETCH. THE CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSION FROM THE EXISTING BRIDGE PLAN AND SITE VISIT FOR EACH BRIDGE LOCATION.
2. PROTECTIVE COURSE TO BE SUPERPAVE BRIDGE PROTECTIVE COURSE, PLACED IN 2" LAYERS AND COMPACTED WITH A MECHANICAL HAND-GUIDED TAMPER AFTER PLACING MEMBRANE WATERPROOFING.
3. FOR FULL DEPTH ROADWAY RECONSTRUCTION WHERE ROADWAY SUBBASE IS FAILING AS DETERMINED BY THE ENGINEER, IF ROADWAY IS IN GOOD CONDITION, DO NOT USE FULL DEPTH RECONSTRUCTION.

**PROPOSED SAW & SEAL WITH
FULL DEPTH RECONSTRUCTION**
NOT TO SCALE

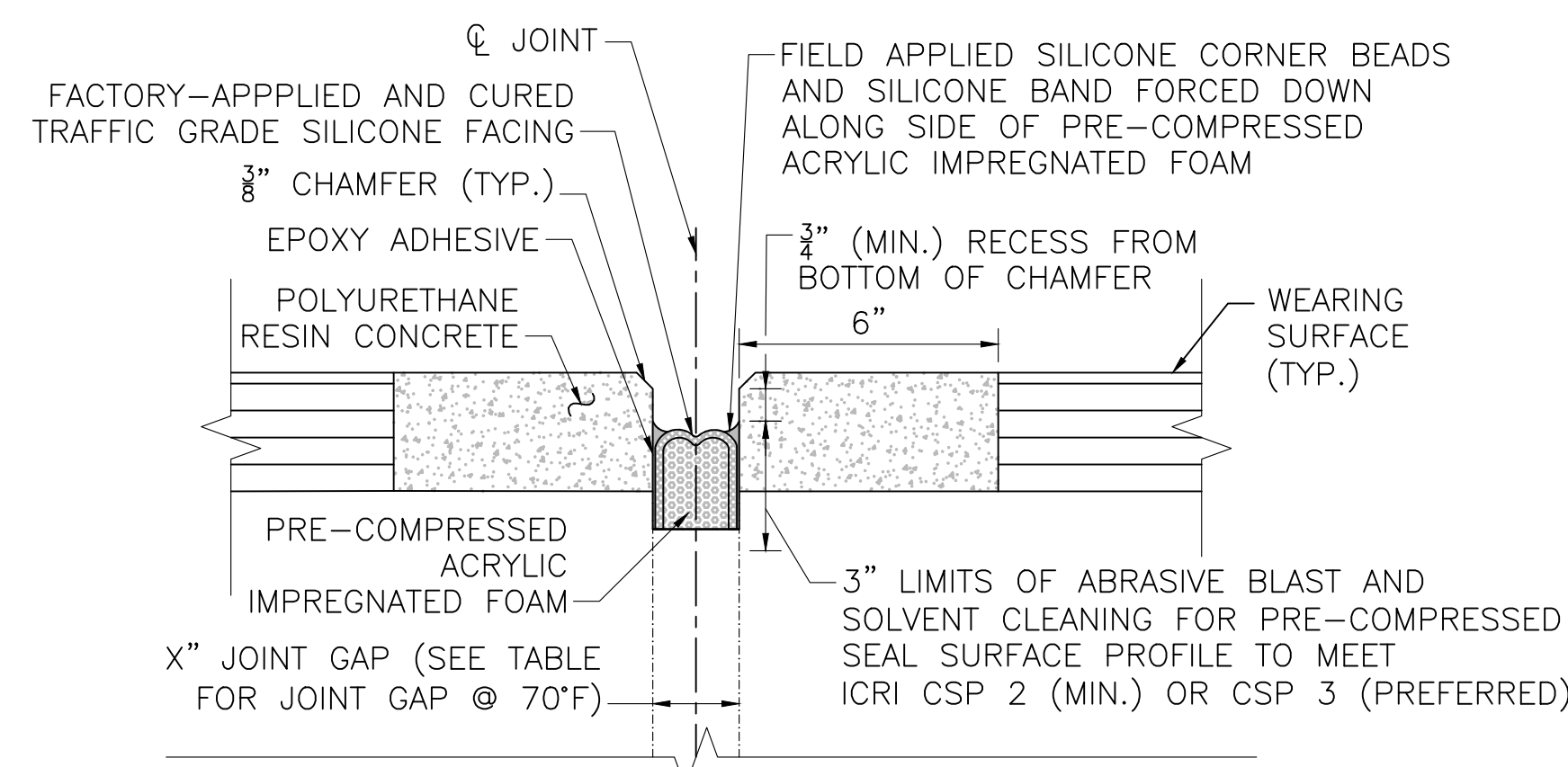
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	20	55
PROJECT FILE NO.		612106	



- NOTES:
- 1). THE ABOVE DETAIL IS A SKETCH. CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSIONS FROM THE EXISTING BRIDGE PLAN AND SITE VISIT.
 - 2). COMPLETE REMOVAL OF THE JOINT, BACKWALL, AND DECK SHOWN FOR CASES WHERE THE JOINT, BACKWALL, AND DECK ARE DETERIORATED. DETERIORATED CONCRETE SHALL BE REMOVED AS DIRECTED BY THE ENGINEER.

LIMITS OF EXCAVATION AT EXISTING ELASTOMERIC CONCRETE HEADERS WITH PRE-COMPRESSED SEAL BRIDGE JOINT SYSTEM AT ABUTMENT

NOT TO SCALE



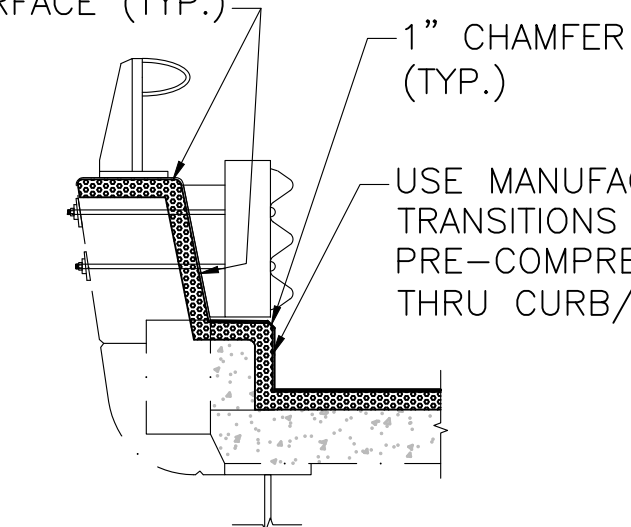
PRE-COMPRESSED SEAL SECTION

SCALE: 3" = 1'-0"

TRIBUTARY THERMAL EXPANSION/CONTRACTION LENGTH (STEEL)	TRIBUTARY THERMAL EXPANSION/CONTRACTION LENGTH (CONC.)	X" JOINT OPENING @ 70°F	NOMINAL JOINT SEAL WIDTH
<128'	<216'	2"	2 1/2"
<160'	<271'	2 1/2"	3"
<192'	<325'	3"	3 1/2"
<224'	<379'	3 1/2"	4"

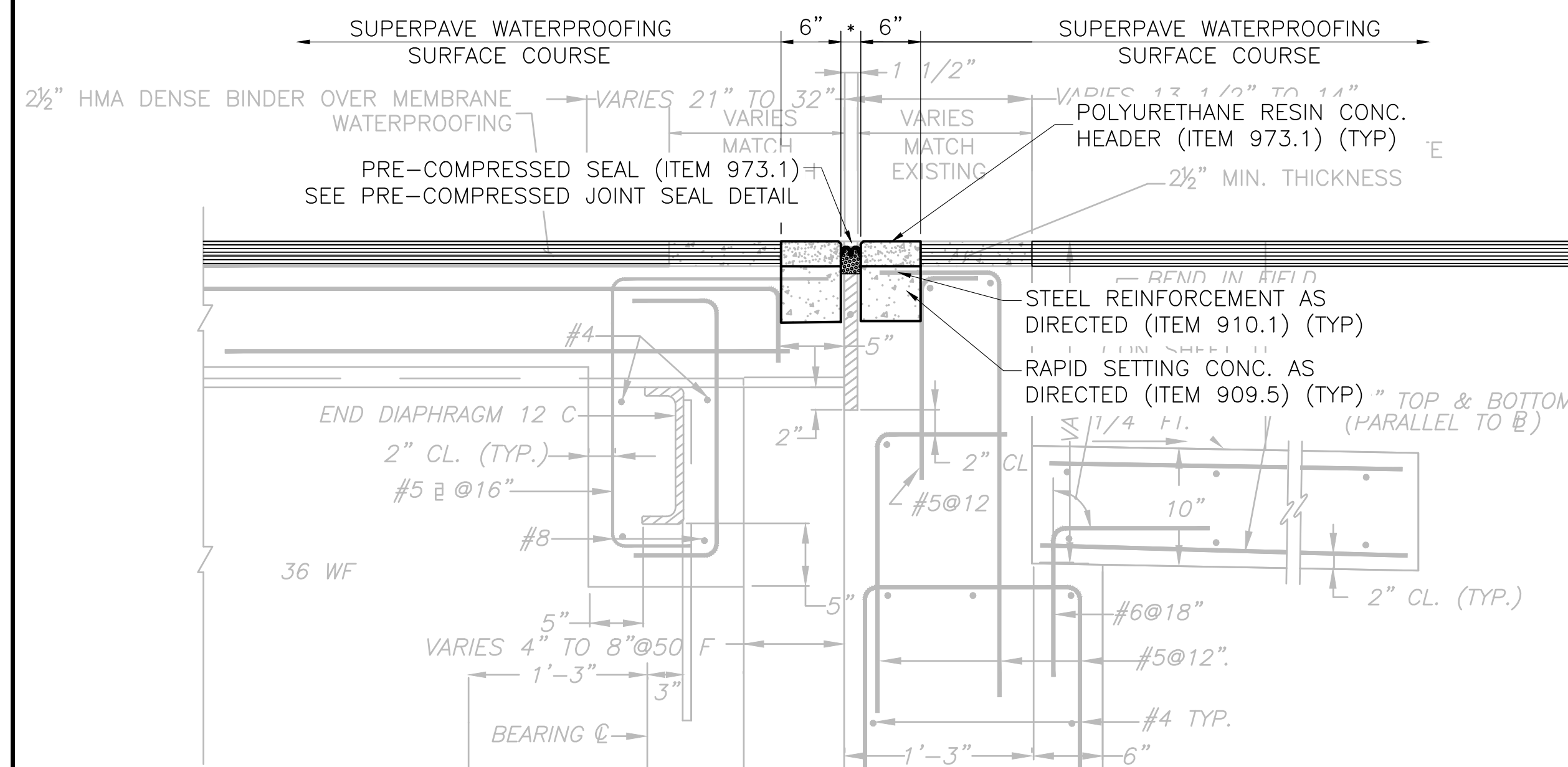
- NOTES:
- 1). THIS TABLE IS DEVELOPED BASED ON THE EQUATION FOR MAXIMUM ONE-WAY THERMAL MOVEMENT IN SECTION 3.1.8 OF THE BRIDGE MANUAL AND THE ASSOCIATED ASSUMPTIONS FOR TEMPERATURE RISE AND FALL. THE THERMAL MOVEMENT EQUATION IS REARRANGED SO THAT IT YIELDS THE TRIBUTARY THERMAL EXPANSION/CONTRACTION LENGTH ASSOCIATED WITH A 50% VARIATION FROM THE NOMINAL PRE-COMPRESSED SEAL WIDTH.
 - 2). AN ADDITIONAL 1/2" HAS BEEN ADDED TO THE REQUIRED NOMINAL JOINT SEAL WIDTH TO ENSURE THAT THE SEAL REMAINS IN COMPRESSION WHEN THE JOINT GAP IS AT IT'S MAXIMUM ANTICIPATED OPENING.

SET SEAL JOINT 1/2" MIN. BELOW OR BEHIND CONC. SURFACE (TYP.)



NOTES:

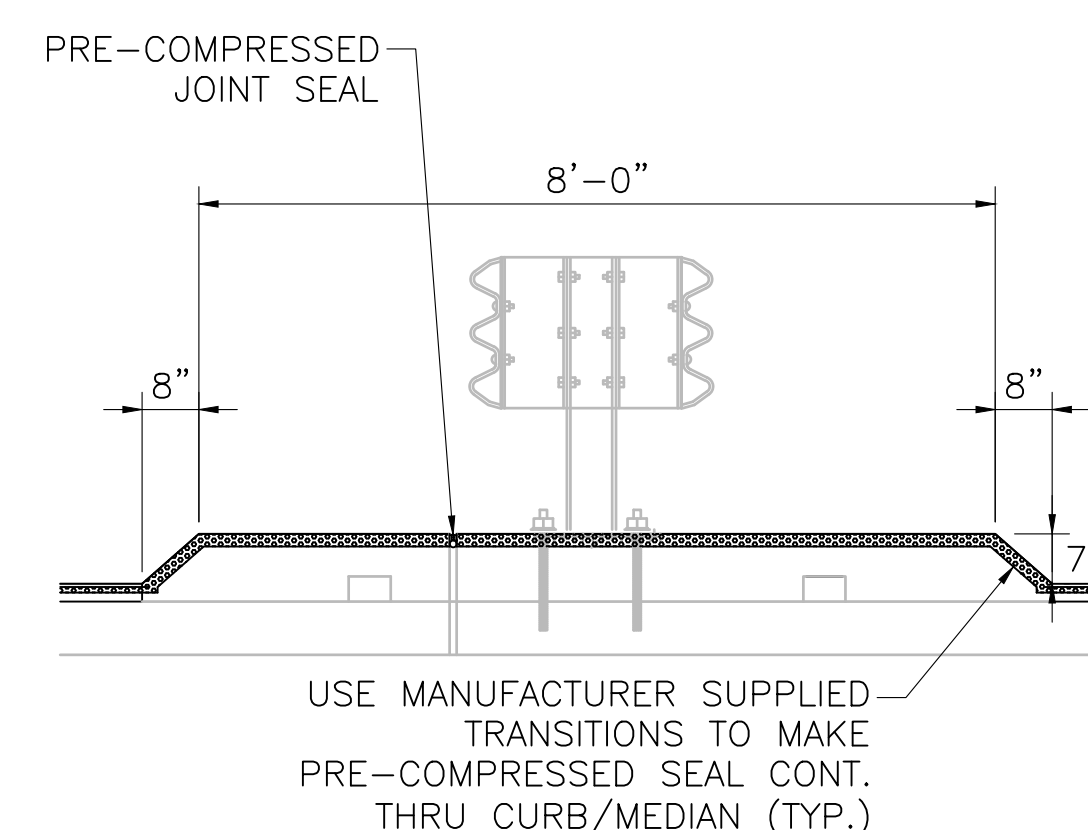
- 1). SEE PRE-COMPRESSED JOINT SEAL DETAIL.
- 2). CLEAN JOINT PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL.
- 3). REPAIR PARAPET PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL AS DIRECTED BY THE ENGINEER.



- NOTES:
- 1). THE ABOVE DETAIL IS A SKETCH. CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSIONS FROM THE EXISTING BRIDGE PLAN AND SITE VISIT.

PROPOSED PRE-COMPRESSED JOINT SEAL WITH POLYURETHANE RESIN CONCRETE HEADERS AT ABUTMENT

NOT TO SCALE



PRE-COMPRESSED SEAL AT MEDIAN

NOT TO SCALE

PRE-COMPRESSED SEAL AT PARAPET

NOT TO SCALE

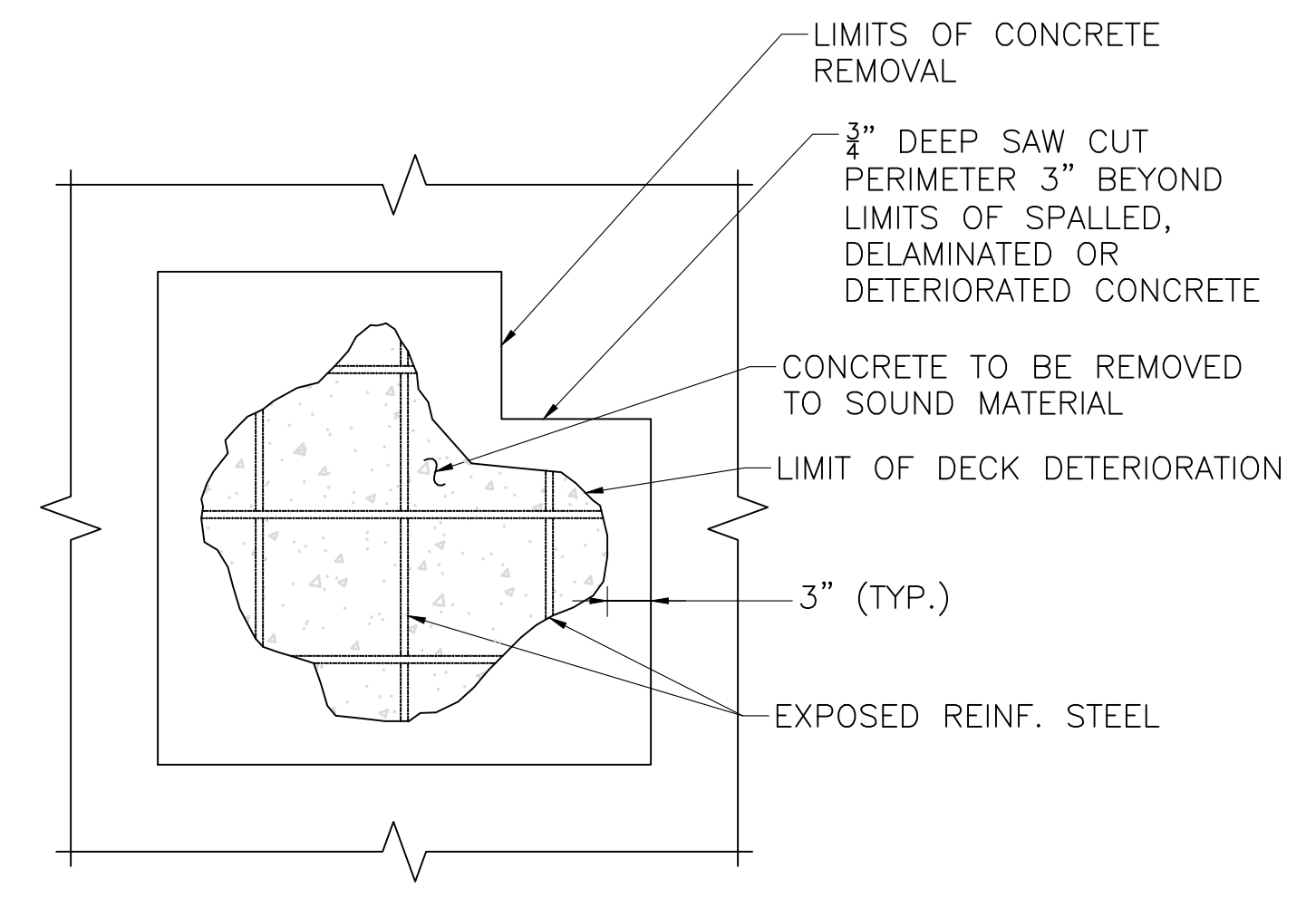
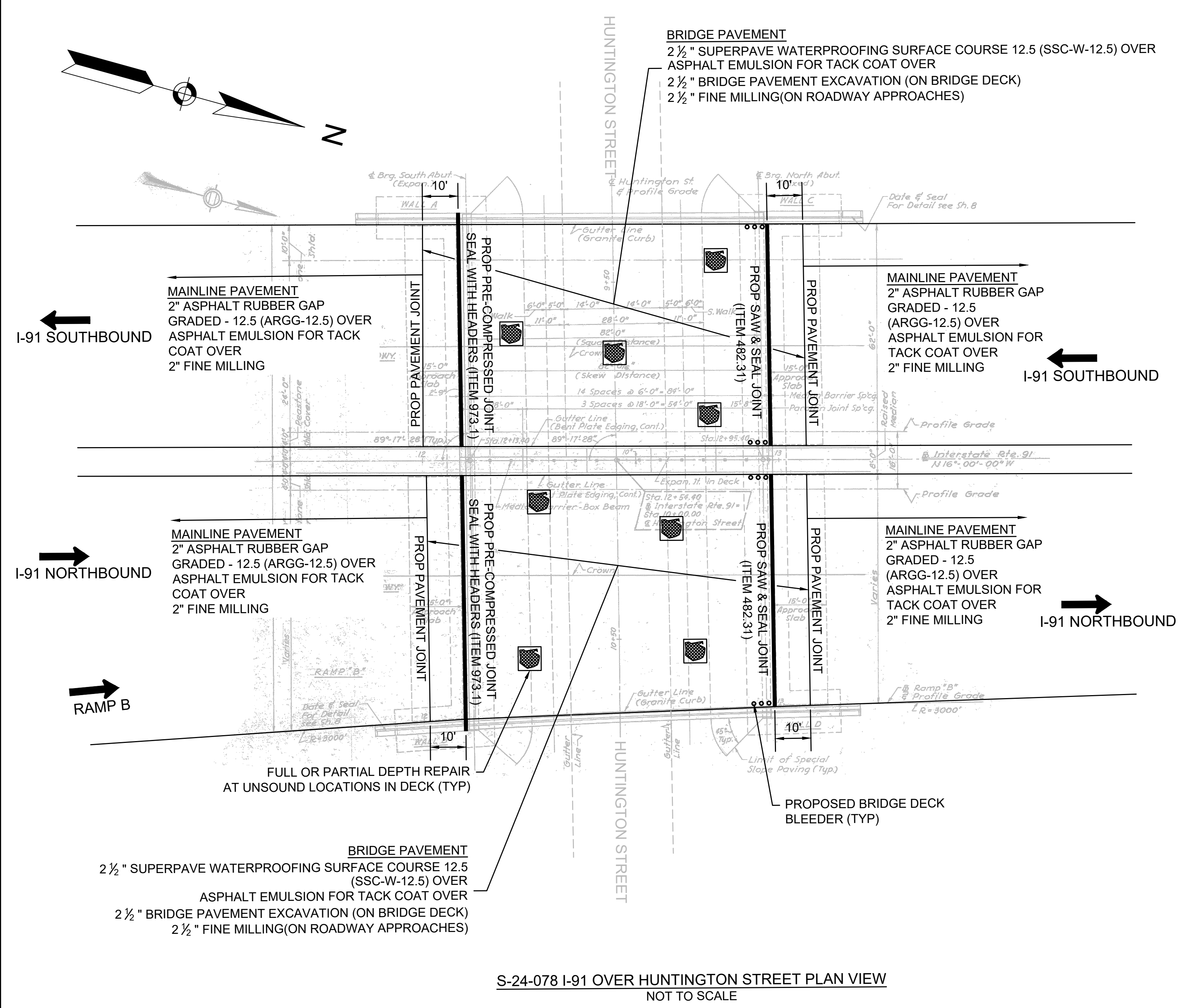
TEMPORARY TRAFFIC CONTROL AND CONSTRUCTION SEQUENCE

1. ALL WORK ON THIS BRIDGE SHALL BE DONE AT NIGHT USING SHORT TERM LANE CLOSURES. TEMPORARY BARRIER WILL NOT BE UTILIZED UNLESS REQUIRED BY THE ENGINEER.
2. ALL WORK SHALL BE DONE BETWEEN THE HOURS OF 7:00 PM AND 5:00 AM.
3. AT LEAST ONE LANE OF TRAFFIC MUST BE KEPT OPEN AT ALL TIMES DURING THE WORK SHIFT. ALL LANES MUST BE OPEN AT THE END OF THE WORK SHIFT IN THEIR ORIGINAL CONFIGURATION.
4. THE CONTRACTOR MAY REMOVE ONLY AS MUCH CONCRETE AS CAN BE PLACED AND CURED IN ONE WORK SHIFT. RAPID SETTING CONCRETE PLACEMENTS SHALL BE COMPLETED NO LATER THAN 2:00 AM FOR NIGHT-TIME OPERATIONS SO THAT THE REQUIRED COMPRESSIVE STRENGTH OF 2000 PSI IS ATTAINED BEFORE THE AREA IS OPENED TO TRAFFIC.
5. TEMPORARY HMA RAMPS SHALL BE USED AT ALL TRANSVERSE AND LONGITUDINAL DROP-OFFS TO TRANSITION TRAFFIC TO THE BRIDGE DECK.
6. FOR THE CONVENIENCE OF THE TRAVELING PUBLIC THE CONTRACTOR IS LIMITED TO WORKING ON NO MORE THAN THREE BRIDGE DECKS AT A TIME. ALL BRIDGE WORK INCLUDING FINAL SURFACE COURSE PAVING MUST BE COMPLETED BEFORE ANY WORK CAN BEGIN ON ADDITIONAL BRIDGES. FOR THIS PURPOSE, A BRIDGE DECK IS DEFINED AS A SINGLE BRIDGE IN A SINGLE DIRECTION, REGARDLESS OF IF THE BRIDGE NUMBER INCLUDES A DECK IN EACH DIRECTION OF TRAVEL.
7. BRIDGE DECKS SHALL NOT BE LEFT EXPOSED TO TRAFFIC WITHOUT SURFACE COURSE PAVEMENT FOR MORE THAN 2 WEEKS.

**CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391**

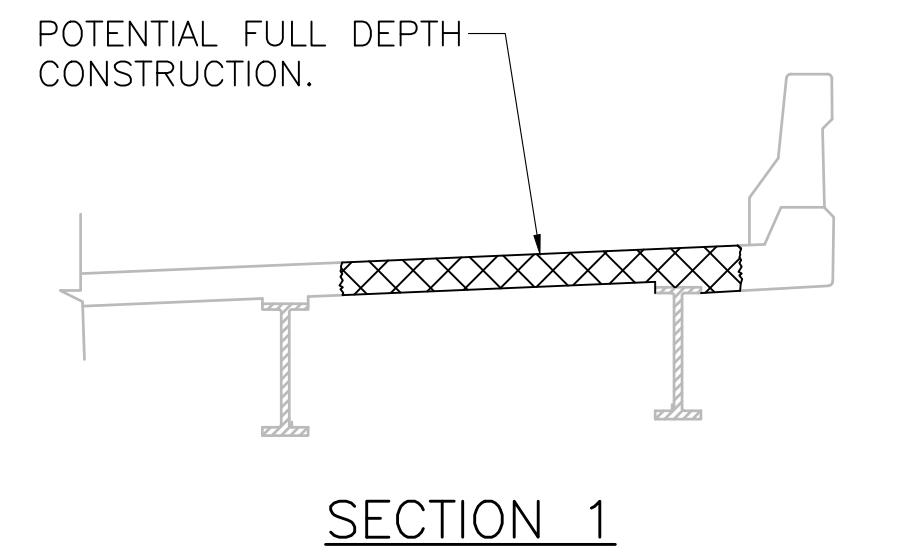
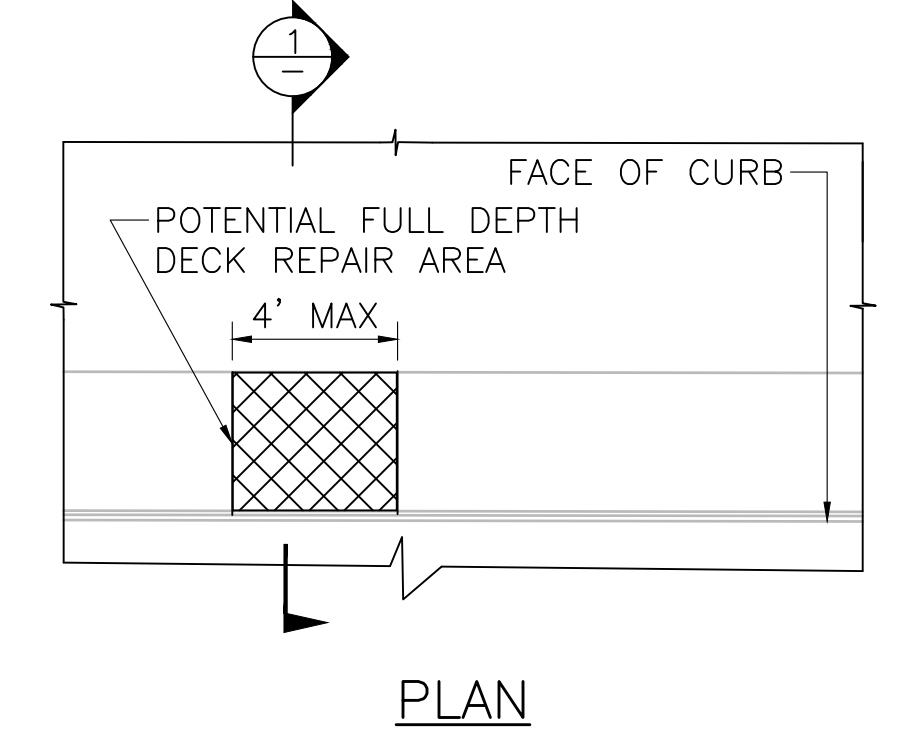
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	21	55
PROJECT FILE NO.			612106

**BRIDGE DETAILS
INTERSTATE 91 OVER HUNTINGTON STREET**

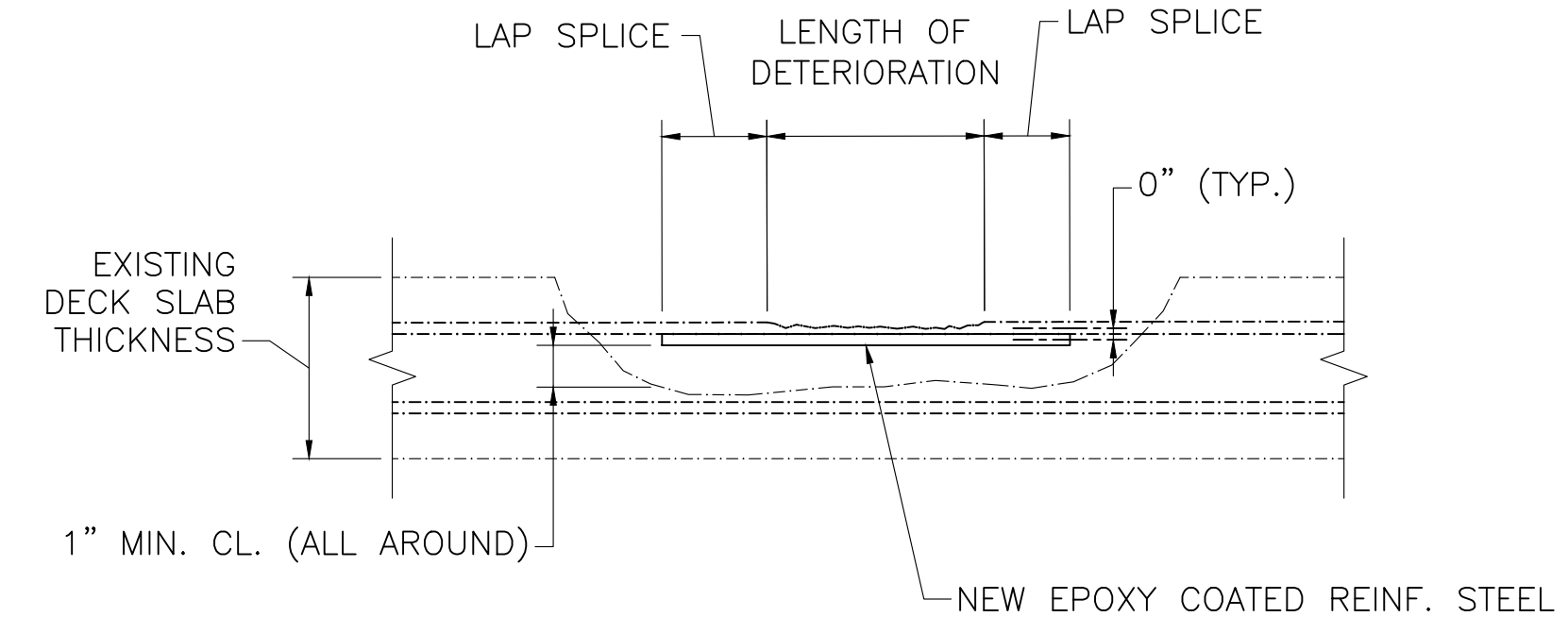


LIMITS OF DECK REPAIR AREA
NOT TO SCALE

- BRIDGE DECK REPAIR SEQUENCE NOTES:**
- ALL EXISTING HOT MIX ASPHALT WEARING SURFACE AND MEMBRANE WATERPROOFING MATERIAL SHALL BE REMOVED PRIOR TO PERFORMING DECK REPAIRS. THE EXPOSED DECK SURFACE SHALL BE INSPECTED BY THE ENGINEER TO DETERMINE APPROXIMATE LIMITS OF REPAIR. IN ADDITION, AREAS OF THE UNDERSIDE WITH EVIDENCE OF DETERIORATION SHALL BE SOUNDED IN THE PRESENCE OF THE CONTRACTOR AND THE ENGINEER TO IDENTIFY AREAS IN NEED OF FULL DEPTH REPAIRS.
 - THE TOP SURFACE OF THE DECK REPAIRS SHALL BE FINISHED FLUSH WITH THE ADJACENT TOP OF DECK SLAB AND SHALL MAINTAIN THE EXISTING GRADES AND CROSS SLOPES.
 - UPON COMPLETION OF EACH STAGE OF DECK REPAIRS, THE DECK SHALL BE ABRASIVELY BLAST CLEANED FOLLOWED BY PLACEMENT OF THE HOT MIX ASPHALT WEARING SURFACE.



FULL DEPTH OVERHANG DECK REPAIR
NOT TO SCALE

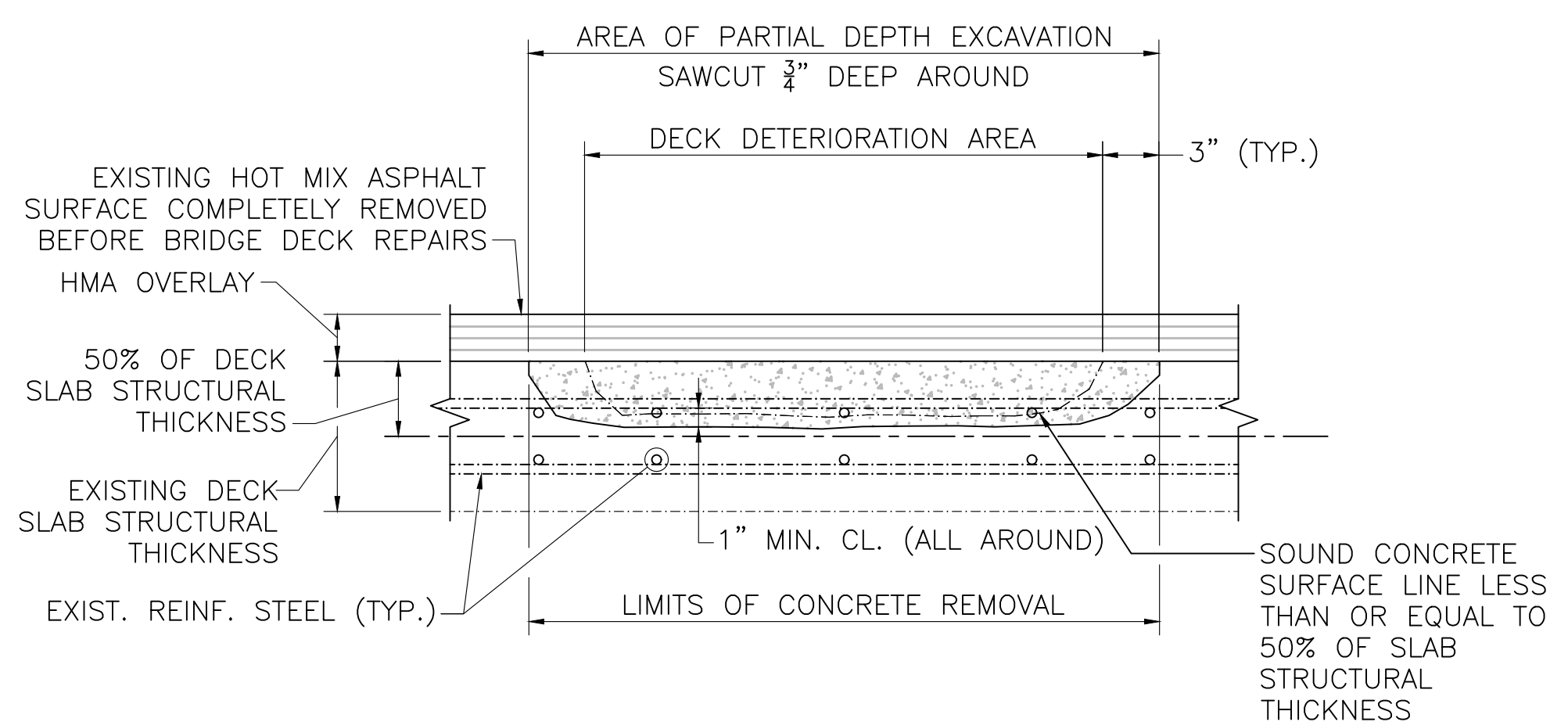


TYPICAL DETERIORATED REINFORCEMENT STEEL REPAIR
SCALE: 1 1/2" = 1'-0"

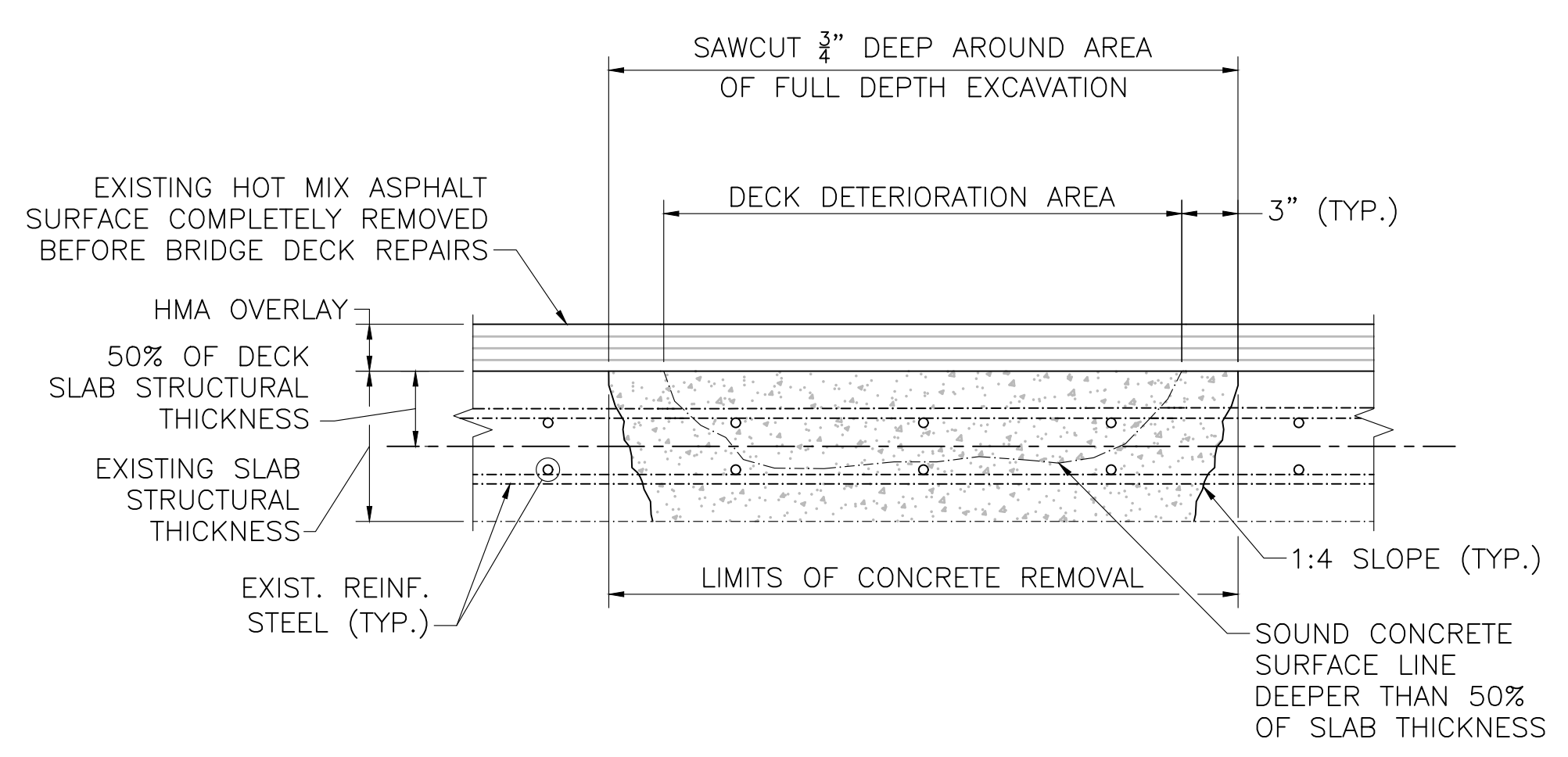
- NOTE**
- OVERHANG SUPPORT MUST BE PROVIDED WHEN CONSTRUCTION WIDTHS EXCEED 4' (FOUR FEET). IF THE CONTRACTOR EXTENDS THE EXCAVATION BEYOND 4' THEN THEY MUST FURNISH A SHIELDING DESIGN CAPACITY CHECK. THIS CHECK MUST BE DESIGNED AND STAMPED BY A MASSACHUSETTS REGISTERED PROFESSIONAL ENGINEER OF THE APPROPRIATE DISCIPLINE.

BRIDGE DECK REPAIR NOTES:

- SPALLED, DELAMINATED, AND DETERIORATED CONCRETE DECK AREAS SHALL BE REPAIRED USING AN APPROVED RAPID SETTING CONCRETE (ITEM 909.5) AS DIRECTED BY THE ENGINEER.
- PARTIAL DEPTH REPAIRS: ALL DETERIORATED AND DELAMINATED CONCRETE SHALL BE REMOVED TO A MINIMUM DEPTH OF 1" BELOW THE BOTTOM OF THE TOP LAYER OF EXISTING TRANSVERSE REINFORCEMENT STEEL TO A MAXIMUM OF 50% OF THE THICKNESS OF THE EXISTING CONCRETE DECK.
- FULL DEPTH REPAIRS: ALL DETERIORATED AND DELAMINATED CONCRETE SHALL BE REMOVED, AND IF THE SOUND CONCRETE SURFACE IS LOCATED AT A DEPTH GREATER THAN 50% OF THE DECK THICKNESS WHEN MEASURED FROM THE TOP OF DECK, A FULL DEPTH DECK REPAIR SHALL BE PERFORMED.
- ALL EXISTING REINFORCING STEEL AND CONCRETE SURFACES THAT ARE TO BE IN CONTACT WITH REPAIR CONCRETE SHALL BE ABRASIVELY BLAST CLEANED IN ORDER TO REMOVE ALL RUST, OIL, AND DEBRIS THAT IS NOT TIGHTLY ADHERED, FOLLOWED BY APPLICATION OF COMPRESSED AIR TO REMOVE ALL DUST. EXISTING CONCRETE REPAIR SURFACES THAT WILL BE IN CONTACT WITH REPAIR CONCRETE SHALL BE PRE-WETTED FOR A MINIMUM OF 15 MINUTES USING POTABLE WATER IN ORDER TO ACHIEVE A SATURATED SURFACE DRY CONDITION IMMEDIATELY PRIOR TO PLACEMENT OF REPAIR CONCRETE.
- NEW EPOXY COATED STEEL REINFORCEMENT SHALL BE PLACED TO SUPPLEMENT EXISTING REINFORCEMENT THAT HAS A SECTION LOSS OF 25% OR MORE OF THE ORIGINAL CROSS SECTION AREA OR HAS BROKEN, AS DETERMINED BY THE ENGINEER. NEW REINFORCEMENT SHALL EXTEND 30 BAR DIAMETERS IN EACH DIRECTION FROM WHERE THE SECTION LOSS OR BREAK ENDS. THE LIMITS OF THE REPAIR SHALL BE MODIFIED TO MEET THE REINFORCEMENT STEEL LAP SPLICE REQUIREMENTS. NEW REINFORCING STEEL SHALL BE PLACED AT THE SAME LEVEL ALONGSIDE THE EXISTING DETERIORATED OR BROKEN REINFORCING STEEL.



TYPICAL PARTIAL DEPTH DECK REPAIR DETAIL
NOT TO SCALE

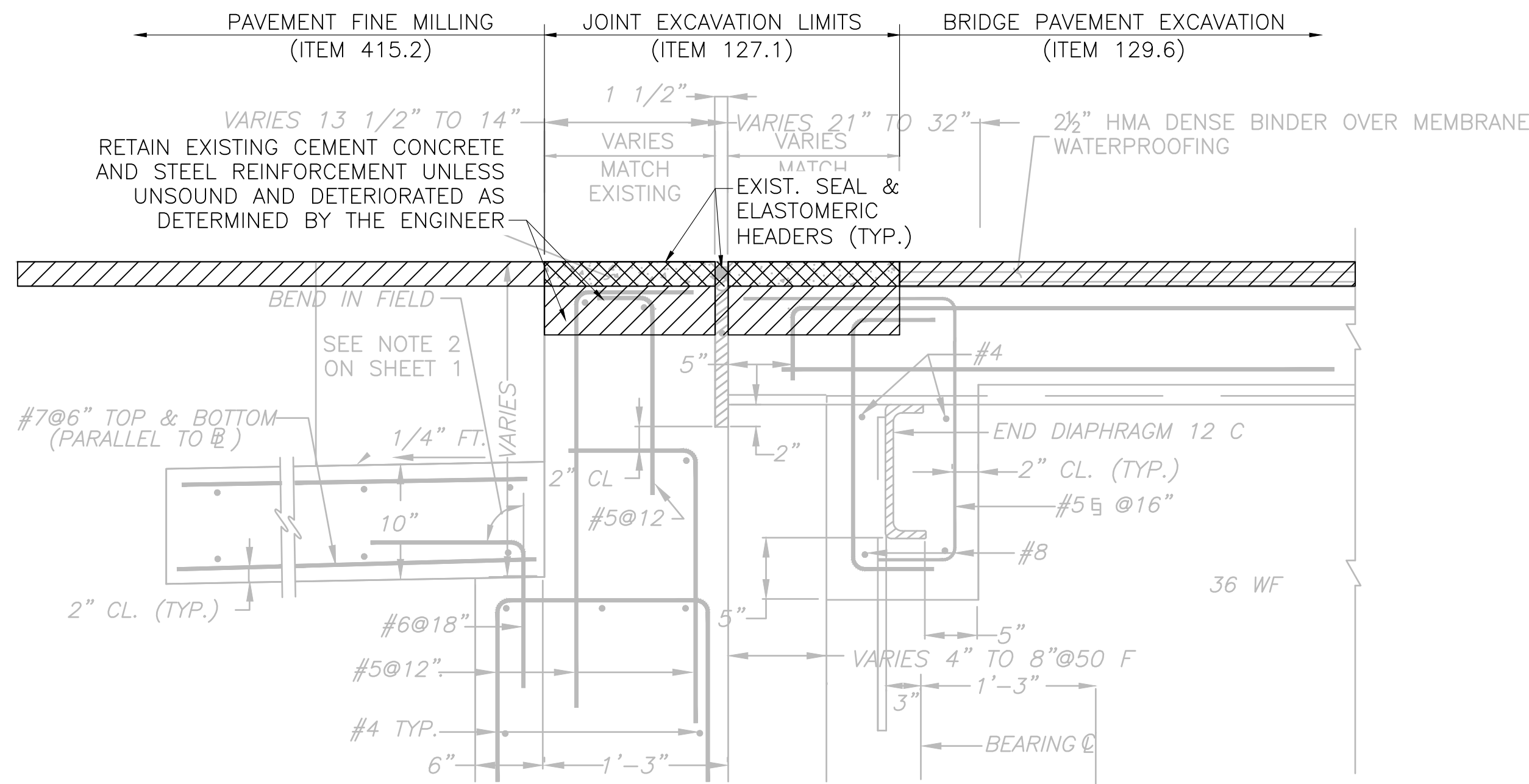


TYPICAL FULL DEPTH DECK REPAIR DETAIL
NOT TO SCALE

- NOTES:**
- DECK FORMS SHALL BE FLUSH WITH EXISTING DECK UNDERSIDE AND SHALL BE REMOVED AFTER CURING IS COMPLETE.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	22	55
PROJECT FILE NO.		612106	

BRIDGE DETAILS
INTERSTATE 91 OVER HUNTINGTON STREET

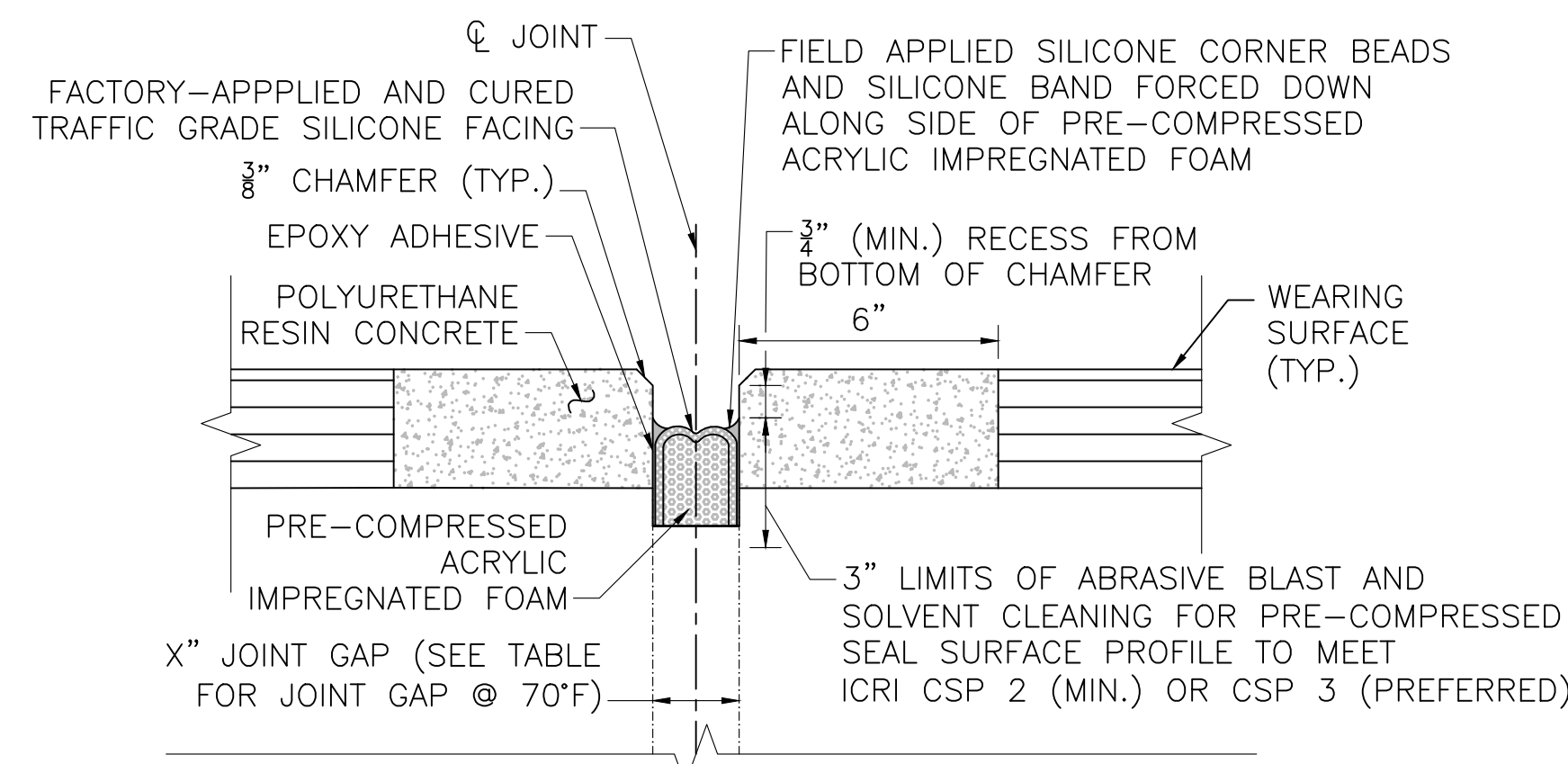


NOTES:

- 1). THE ABOVE DETAIL IS A SKETCH. CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSIONS FROM THE EXISTING BRIDGE PLAN AND SITE VISIT.
- 2). COMPLETE REMOVAL OF THE JOINT, BACKWALL, AND DECK SHOWN FOR CASES WHERE THE JOINT, BACKWALL, AND DECK ARE DETERIORATED. DETERIORATED CONCRETE SHALL BE REMOVED AS DIRECTED BY THE ENGINEER.

LIMITS OF EXCAVATION AT EXISTING ELASTOMERIC CONCRETE HEADERS WITH PRE-COMPRESSED SEAL BRIDGE JOINT SYSTEM AT ABUTMENT

NOT TO SCALE



PRE-COMPRESSED SEAL SECTION

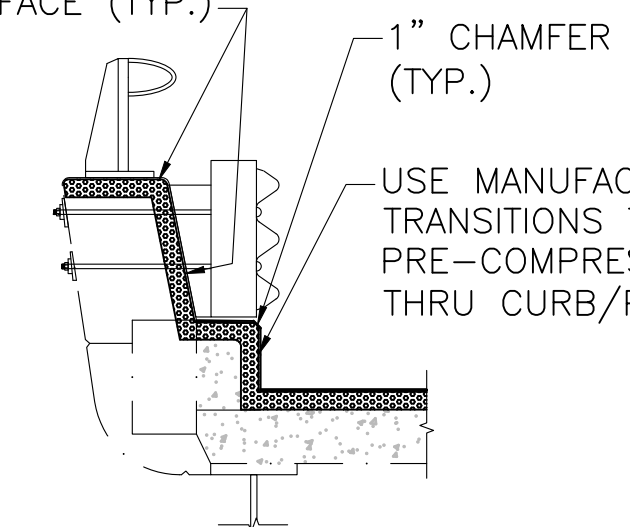
SCALE: 3" = 1'-0"

TRIBUTARY THERMAL EXPANSION/CONTRACTION LENGTH (STEEL)	TRIBUTARY THERMAL EXPANSION/CONTRACTION LENGTH (CONC.)	X" JOINT OPENING @ 70°F	NOMINAL JOINT SEAL WIDTH
<128'	<216'	2"	2 1/2"
<160'	<271'	2 1/2"	3"
<192'	<325'	3"	3 1/2"
<224'	<379'	3 1/2"	4"

NOTES:

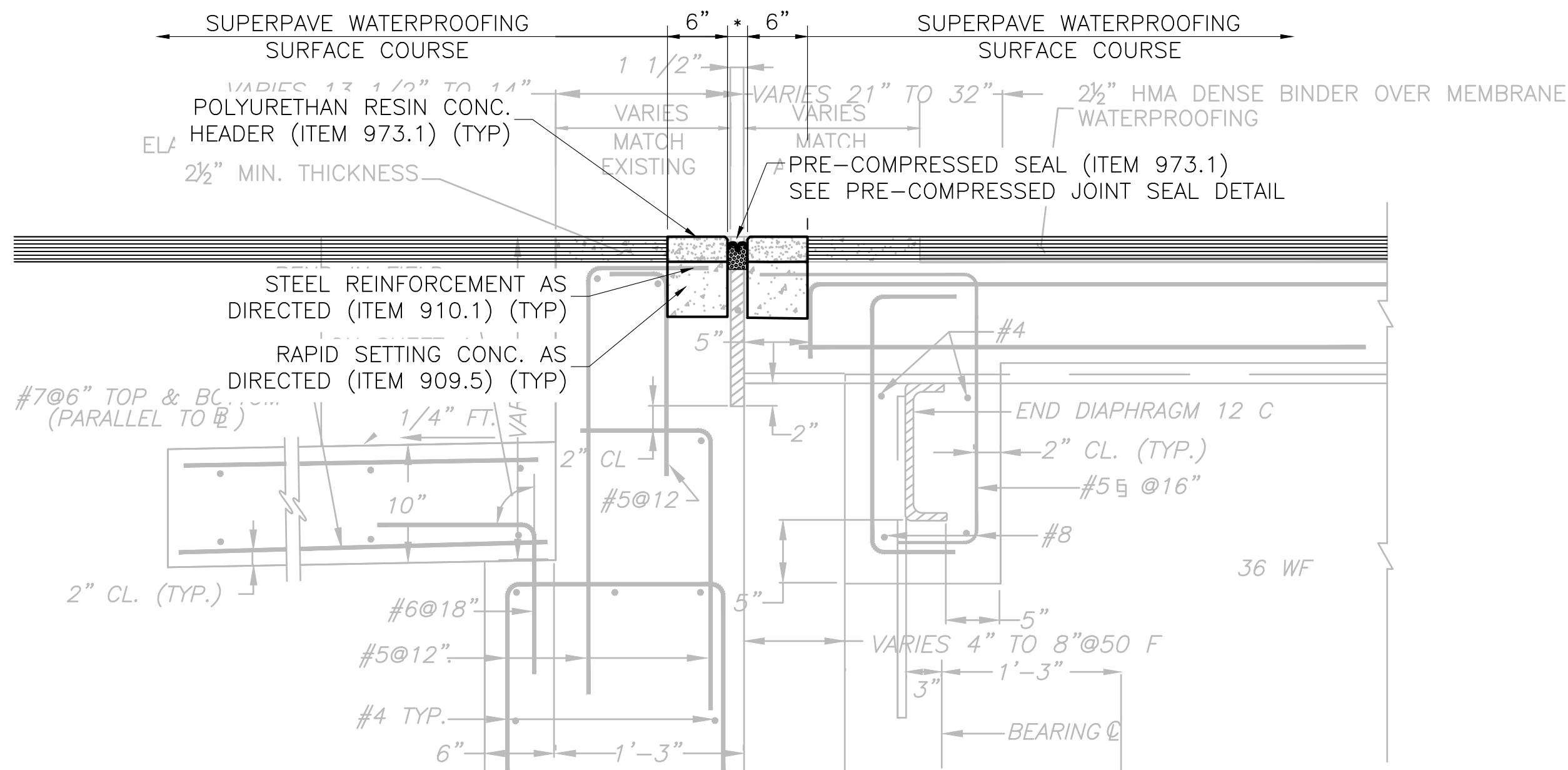
1. THIS TABLE IS DEVELOPED BASED ON THE EQUATION FOR MAXIMUM ONE-WAY THERMAL MOVEMENT IN SECTION 3.1.8 OF THE BRIDGE MANUAL AND THE ASSOCIATED ASSUMPTIONS FOR TEMPERATURE RISE AND FALL. THE THERMAL MOVEMENT EQUATION IS REARRANGED SO THAT IT YIELDS THE TRIBUTARY THERMAL EXPANSION/CONTRACTION LENGTH ASSOCIATED WITH A 50% VARIATION FROM THE NOMINAL PRE-COMPRESSED SEAL WIDTH.
2. AN ADDITIONAL 1/2" HAS BEEN ADDED TO THE REQUIRED NOMINAL JOINT SEAL WIDTH TO ENSURE THAT THE SEAL REMAINS IN COMPRESSION WHEN THE JOINT GAP IS AT IT'S MAXIMUM ANTICIPATED OPENING.

SET SEAL JOINT 1/2" MIN. BELOW OR BEHIND CONC. SURFACE (TYP.)



NOTES:

- 1). SEE PRE-COMPRESSED JOINT SEAL DETAIL.
- 2). CLEAN JOINT PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL.
- 3). REPAIR PARAPET PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL AS DIRECTED BY THE ENGINEER.

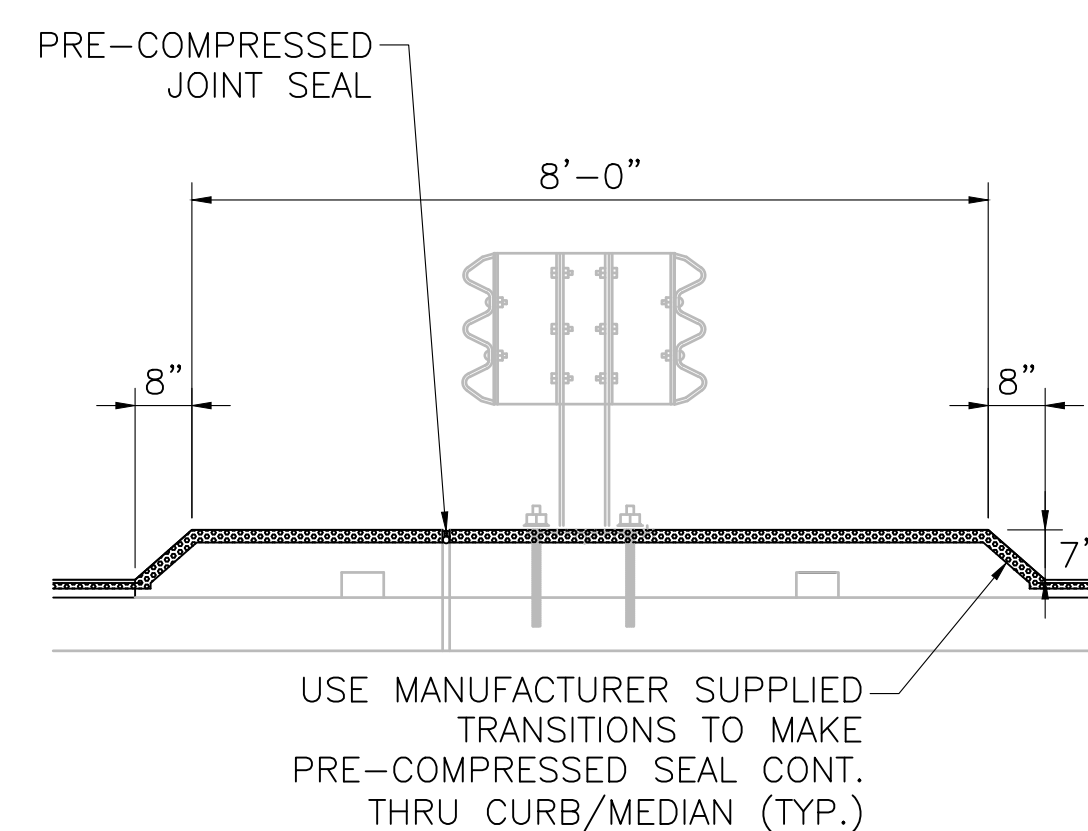


NOTES:

- 1). THE ABOVE DETAIL IS A SKETCH. CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSIONS FROM THE EXISTING BRIDGE PLAN AND SITE VISIT.

PROPOSED PRE-COMPRESSED JOINT SEAL WITH POLYURETHANE RESIN CONCRETE HEADERS AT ABUTMENT

NOT TO SCALE



PRE-COMPRESSED SEAL AT MEDIAN

NOT TO SCALE

PRE-COMPRESSED SEAL AT PARAPET

NOT TO SCALE

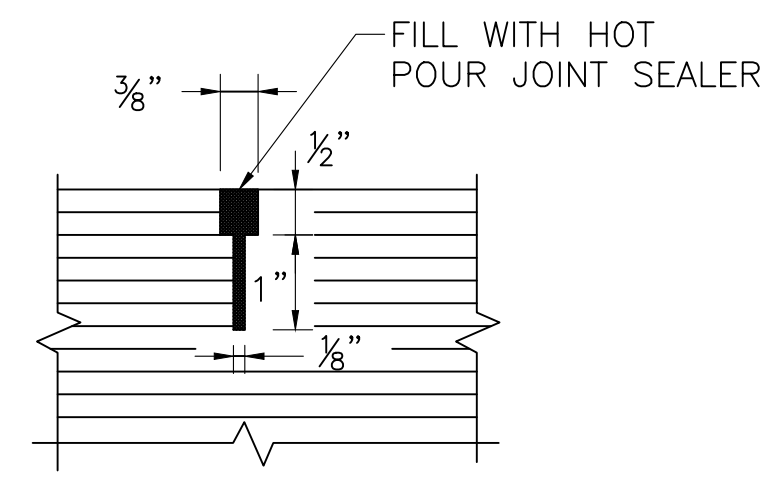
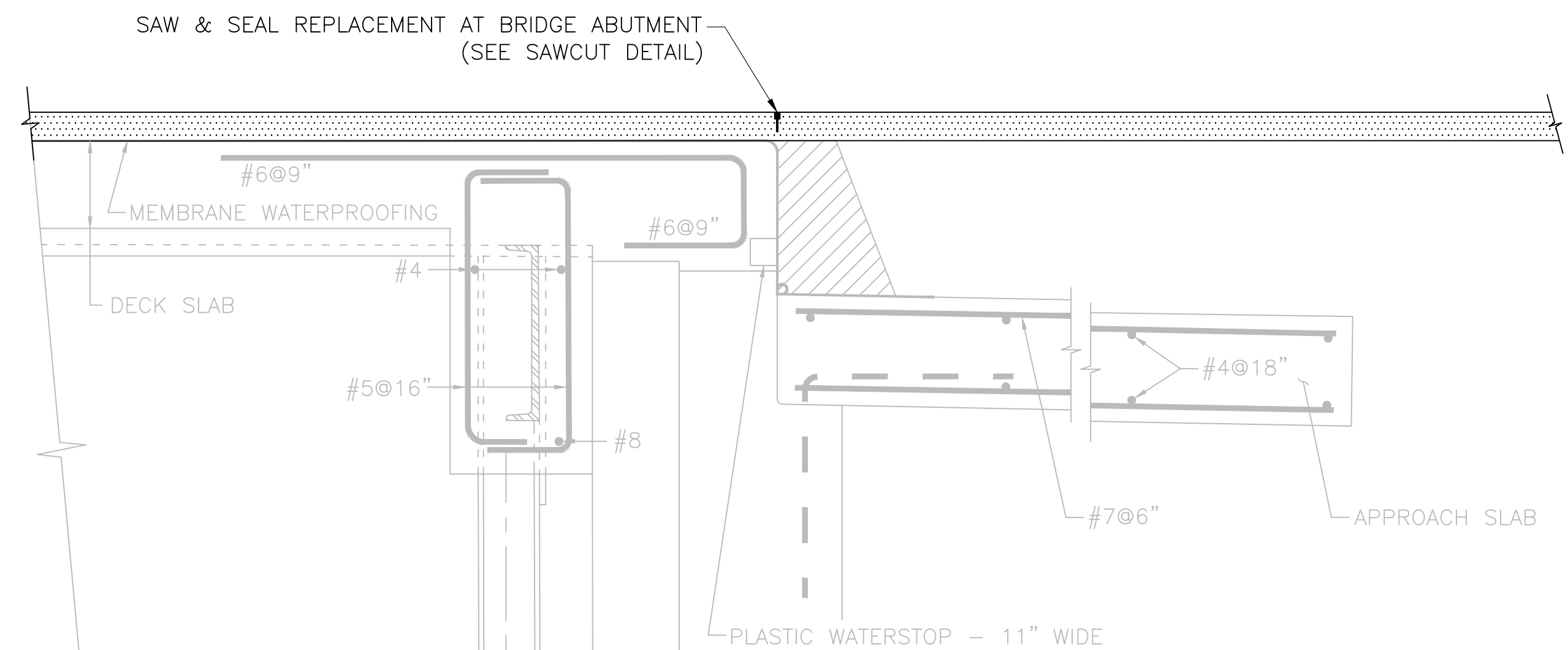
TEMPORARY TRAFFIC CONTROL AND CONSTRUCTION SEQUENCE

1. ALL WORK ON THIS BRIDGE SHALL BE DONE AT NIGHT USING SHORT TERM LANE CLOSURES. TEMPORARY BARRIER WILL NOT BE UTILIZED UNLESS REQUIRED BY THE ENGINEER.
2. ALL WORK SHALL BE DONE BETWEEN THE HOURS OF 7:00 PM AND 5:00 AM.
3. AT LEAST ONE LANE OF TRAFFIC MUST BE KEPT OPEN AT ALL TIMES DURING THE WORK SHIFT. ALL LANES MUST BE OPEN AT THE END OF THE WORK SHIFT IN THEIR ORIGINAL CONFIGURATION.
4. THE CONTRACTOR MAY REMOVE ONLY AS MUCH CONCRETE AS CAN BE PLACED AND CURED IN ONE WORK SHIFT. RAPID SETTING CONCRETE PLACEMENTS SHALL BE COMPLETED NO LATER THAN 2:00 AM FOR NIGHT-TIME OPERATIONS SO THAT THE REQUIRED COMPRESSIVE STRENGTH OF 2000 PSI IS ATTAINED BEFORE THE AREA IS OPENED TO TRAFFIC.
5. TEMPORARY HMA RAMPS SHALL BE USED AT ALL TRANSVERSE AND LONGITUDINAL DROP-OFFS TO TRANSITION TRAFFIC TO THE BRIDGE DECK.
6. FOR THE CONVENIENCE OF THE TRAVELING PUBLIC THE CONTRACTOR IS LIMITED TO WORKING ON NO MORE THAN THREE BRIDGE DECKS AT A TIME. ALL BRIDGE WORK INCLUDING FINAL SURFACE COURSE PAVING MUST BE COMPLETED BEFORE ANY WORK CAN BEGIN ON ADDITIONAL BRIDGES. FOR THIS PURPOSE, A BRIDGE DECK IS DEFINED AS A SINGLE BRIDGE IN A SINGLE DIRECTION, REGARDLESS OF IF THE BRIDGE NUMBER INCLUDES A DECK IN EACH DIRECTION OF TRAVEL.
7. BRIDGE DECKS SHALL NOT BE LEFT EXPOSED TO TRAFFIC WITHOUT SURFACE COURSE PAVEMENT FOR MORE THAN 2 WEEKS.

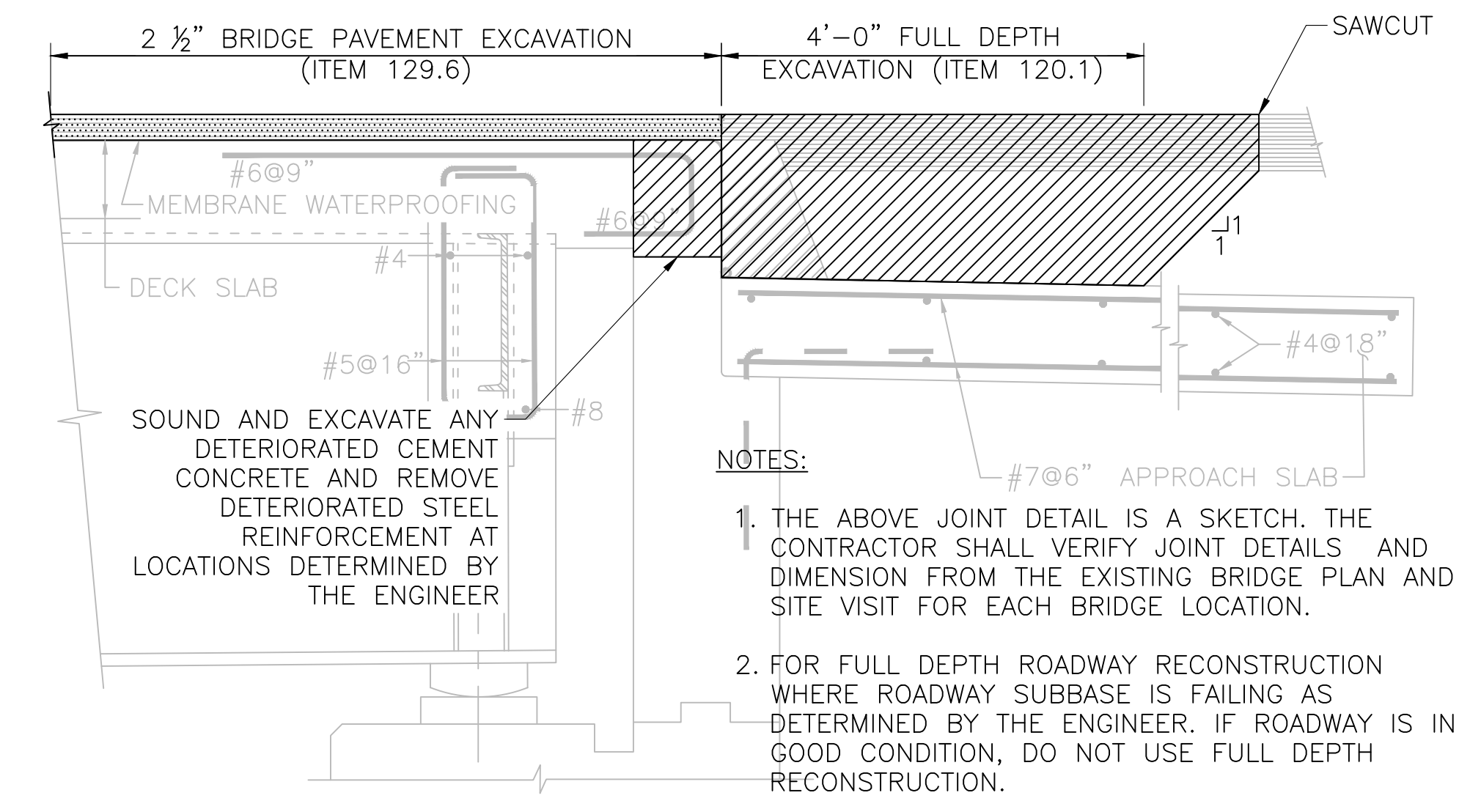
CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	23	55
PROJECT FILE NO.		612106	

BRIDGE DETAILS
INTERSTATE 91 OVER HUNTINGTON STREET



PAVEMENT SAWCUT DETAIL
NOT TO SCALE



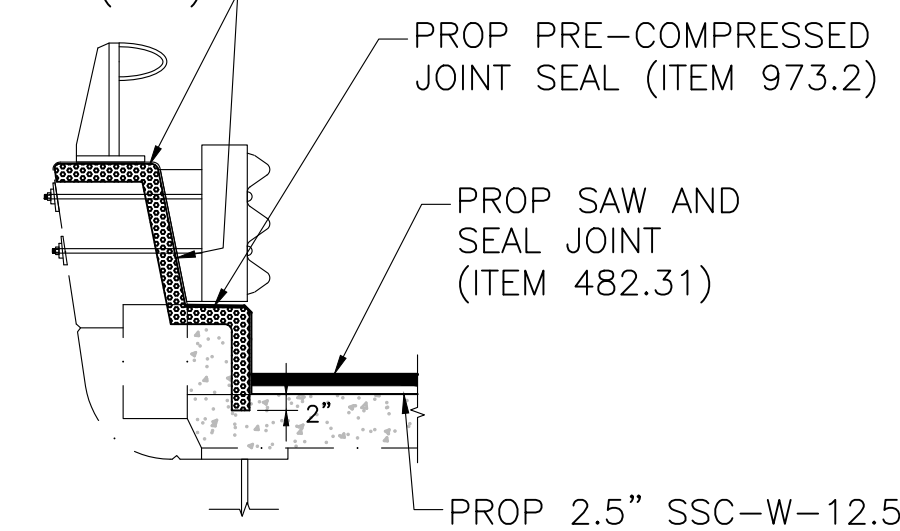
EXISTING SAW & SEAL JOINT EXCAVATION
FOR FULL DEPTH RECONSTRUCTION
NOT TO SCALE

NOTES:

1. THE ABOVE JOINT DETAIL IS A SKETCH. THE CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSION FROM THE EXISTING BRIDGE PLAN AND SITE VISIT FOR EACH BRIDGE LOCATION.
2. ENGINEER WILL INSPECT JOINT TO DETERMINE IF ROADWAY SUBBASE IS IN GOOD CONDITION. IF SUBBASE IS FAILING, USE FULL DEPTH RECONSTRUCTION DETAIL ON THIS SHEET.

PROPOSED SAW & SEAL
REPLACEMENT AT BRIDGE ABUTMENT
NOT TO SCALE

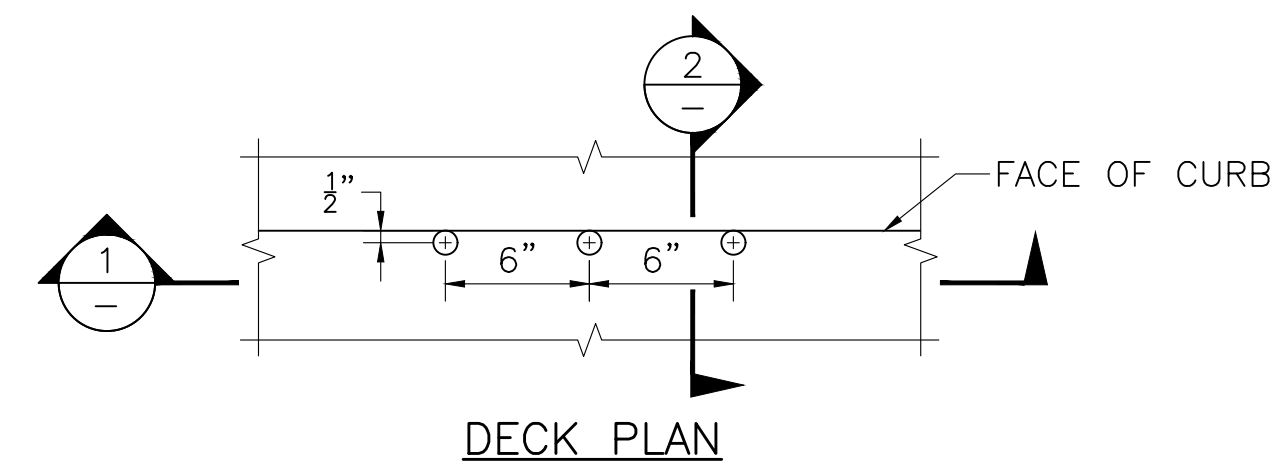
SET SEAL JOINT 1/4" MIN.
BELOW OR BEHIND
CONC. SURFACE (TYP.)



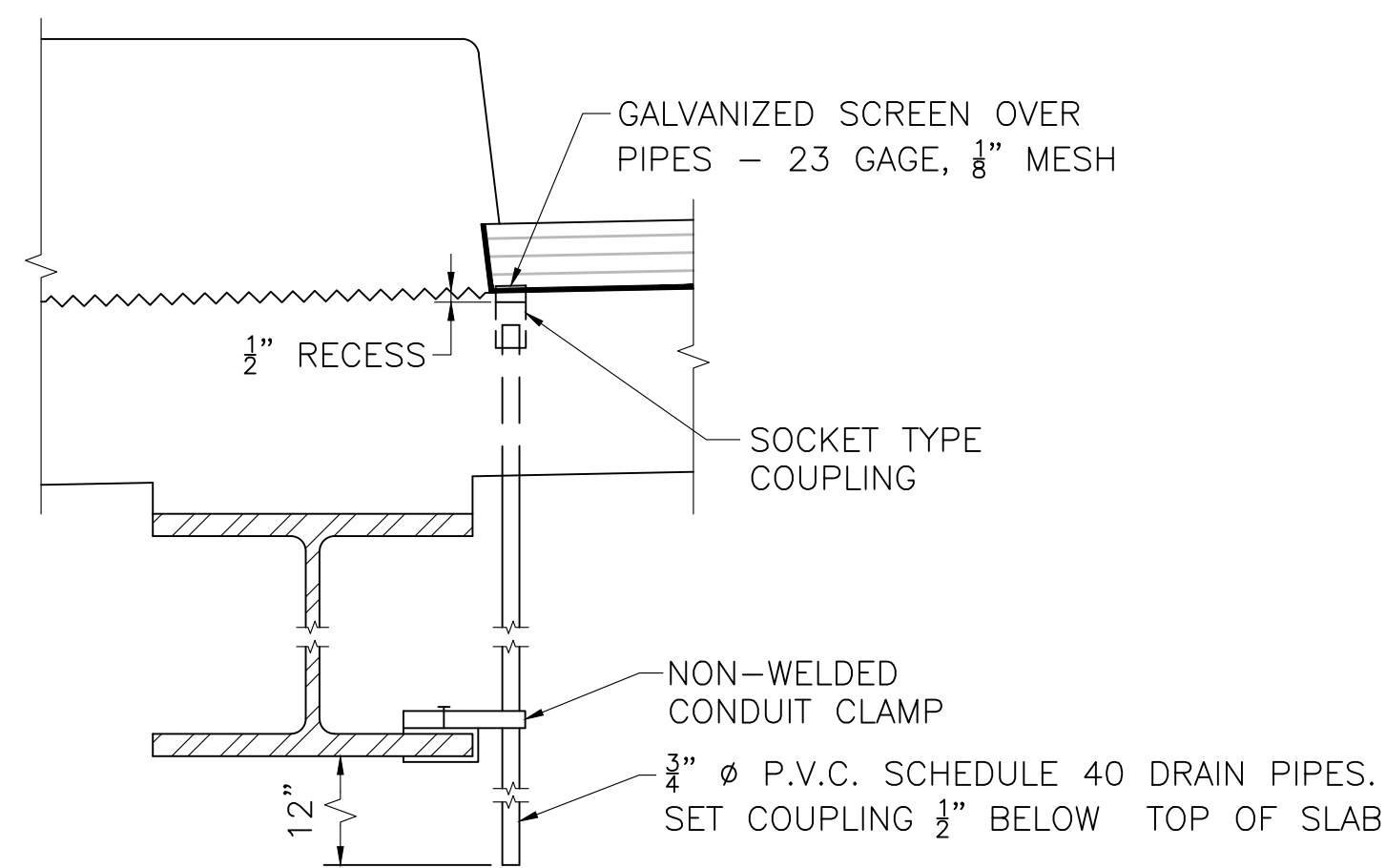
NOTES:

- 1). SEE PRE-COMPRESSED JOINT SEAL DETAIL.
- 2). CLEAN JOINT PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL.
- 3). REPAIR PARAPET PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL AS DIRECTED BY THE ENGINEER.

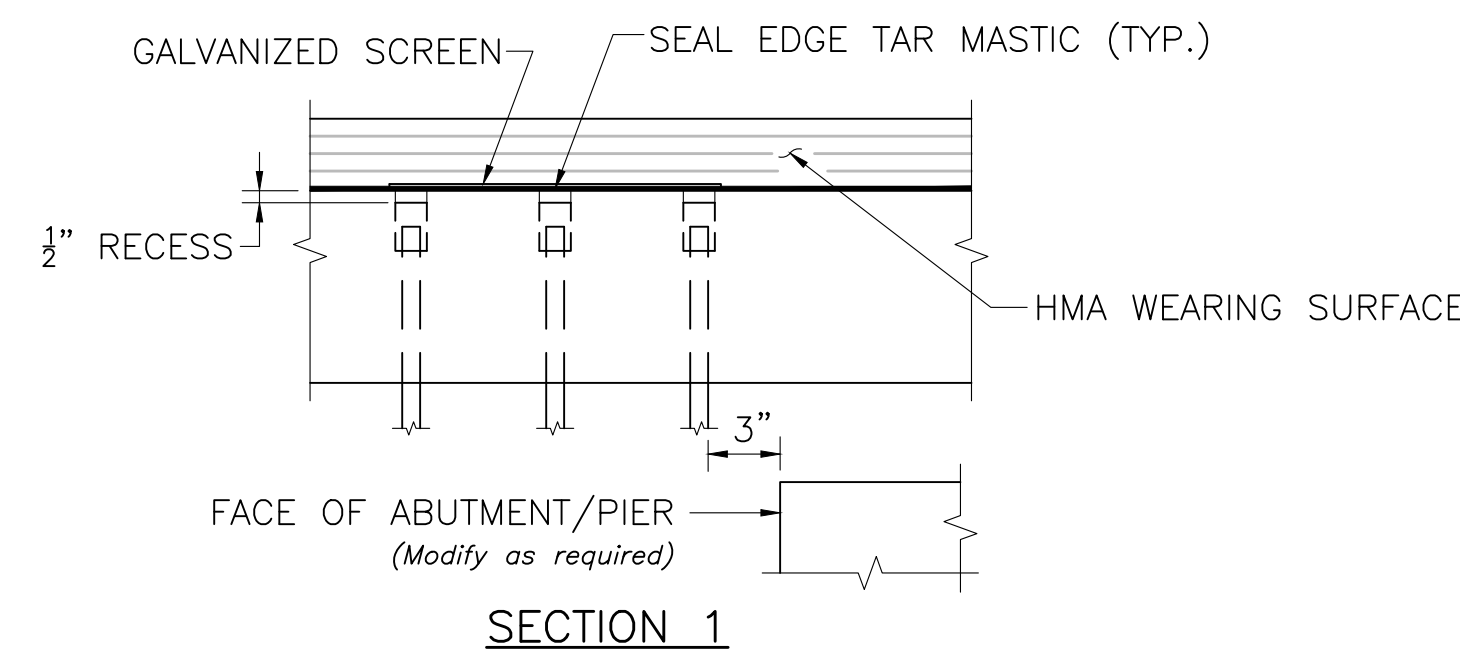
PRE-COMPRESSED SEAL AT PARAPET
FOR SAW AND SEAL JOINTS
NOT TO SCALE



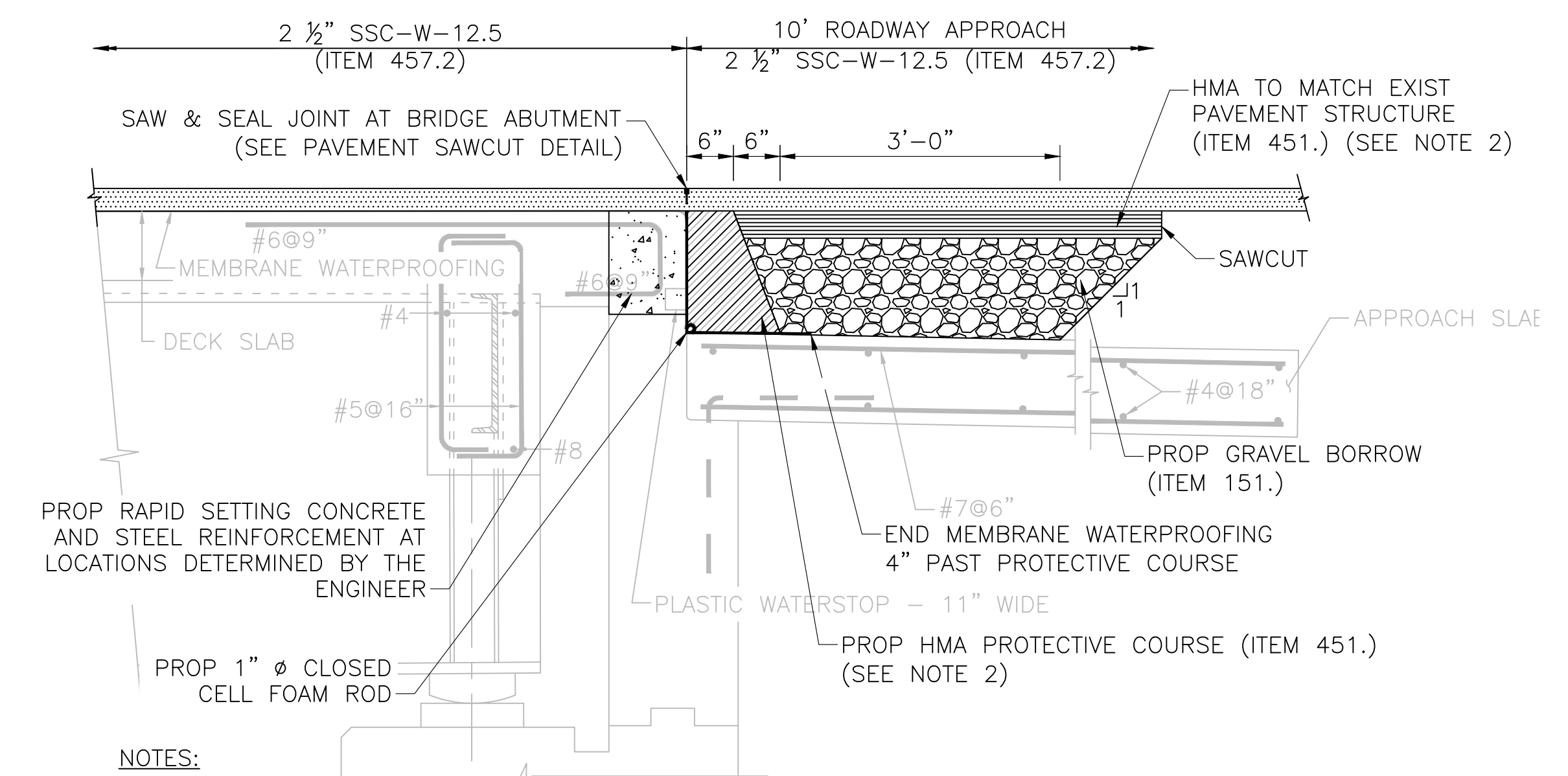
DECK PLAN



SECTION 2
DECK DRAIN PIPES
SCALE: 1 1/2" = 1'-0"



SECTION 1



NOTES:

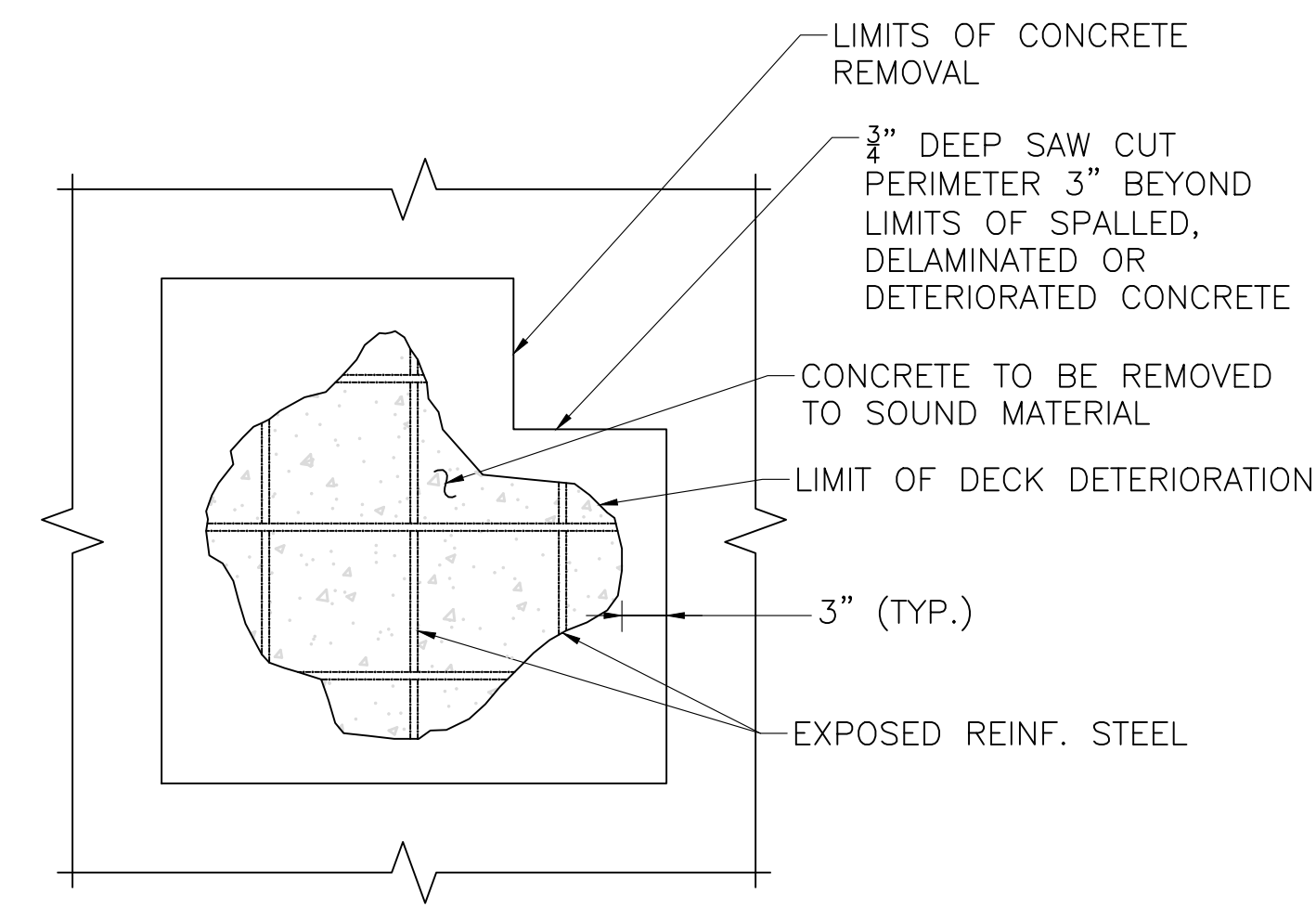
1. THE ABOVE JOINT DETAIL IS A SKETCH. THE CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSION FROM THE EXISTING BRIDGE PLAN AND SITE VISIT FOR EACH BRIDGE LOCATION.
2. PROTECTIVE COURSE TO BE SUPERPAVE BRIDGE PROTECTIVE COURSE, PLACED IN 2" LAYERS AND COMPACTED WITH A MECHANICAL HAND-GUIDED TAMPER AFTER PLACING MEMBRANE WATERPROOFING.
3. FOR FULL DEPTH ROADWAY RECONSTRUCTION WHERE ROADWAY SUBBASE IS FAILING AS DETERMINED BY THE ENGINEER. IF ROADWAY IS IN GOOD CONDITION, DO NOT USE FULL DEPTH RECONSTRUCTION.

PROPOSED SAW & SEAL WITH
FULL DEPTH RECONSTRUCTION
NOT TO SCALE

**CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391**

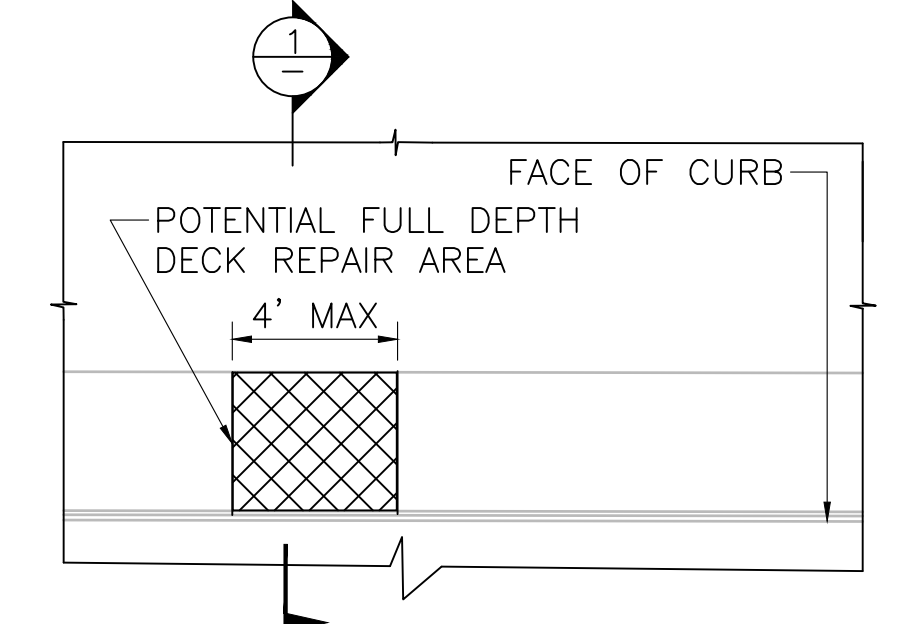
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	24	55
PROJECT FILE NO.			612106

**BRIDGE DETAILS
INTERSTATE 91 OVER GERENA SCHOOL**

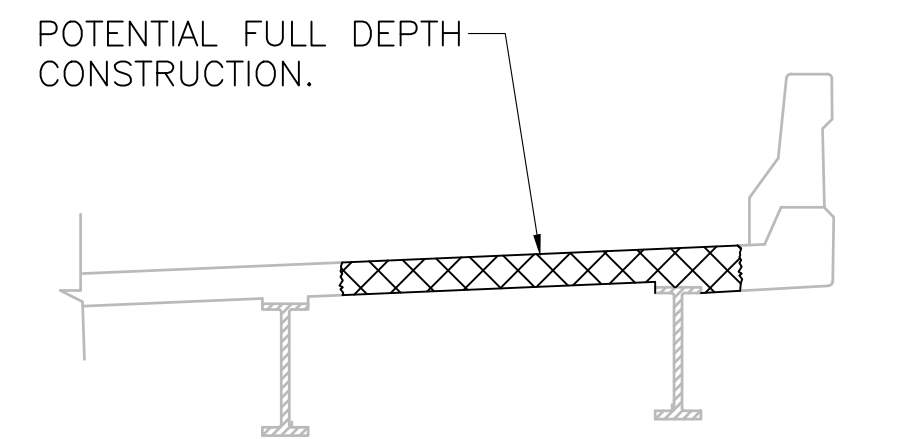


LIMITS OF DECK REPAIR AREA
NOT TO SCALE

- BRIDGE DECK REPAIR SEQUENCE NOTES:**
1. ALL EXISTING HOT MIX ASPHALT WEARING SURFACE AND MEMBRANE WATERPROOFING MATERIAL SHALL BE REMOVED PRIOR TO PERFORMING DECK REPAIRS. THE EXPOSED DECK SURFACE SHALL BE INSPECTED BY THE ENGINEER TO DETERMINE APPROXIMATE LIMITS OF REPAIR. IN ADDITION, AREAS OF THE UNDERSIDE WITH EVIDENCE OF DETERIORATION SHALL BE SOUNDED IN THE PRESENCE OF THE CONTRACTOR AND THE ENGINEER TO IDENTIFY AREAS IN NEED OF FULL DEPTH REPAIRS.
 2. THE TOP SURFACE OF THE DECK REPAIRS SHALL BE FINISHED FLUSH WITH THE ADJACENT TOP OF DECK SLAB AND SHALL MAINTAIN THE EXISTING GRADES AND CROSS SLOPES.
 3. UPON COMPLETION OF EACH STAGE OF DECK REPAIRS, THE DECK SHALL BE ABRASIVELY BLAST CLEANED FOLLOWED BY PLACEMENT OF THE HOT MIX ASPHALT WEARING SURFACE.



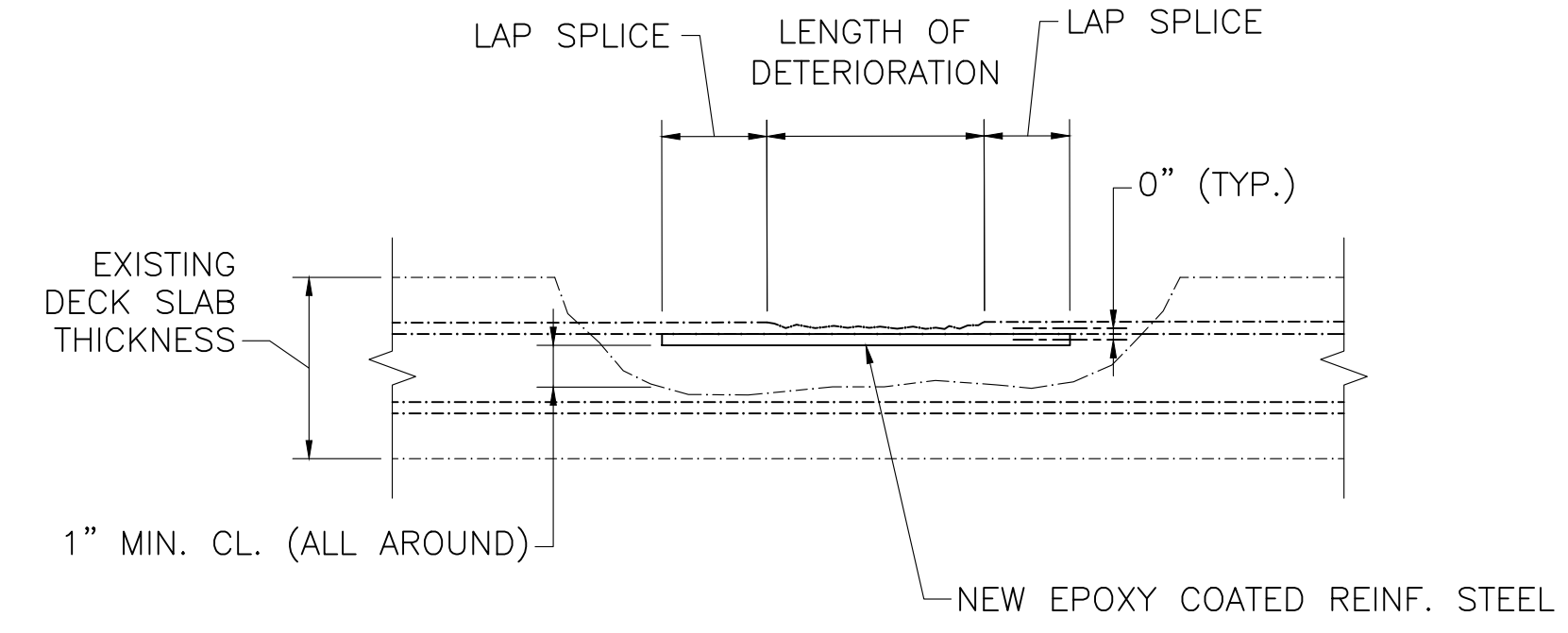
PLAN



SECTION 1

FULL DEPTH OVERHANG DECK REPAIR
NOT TO SCALE

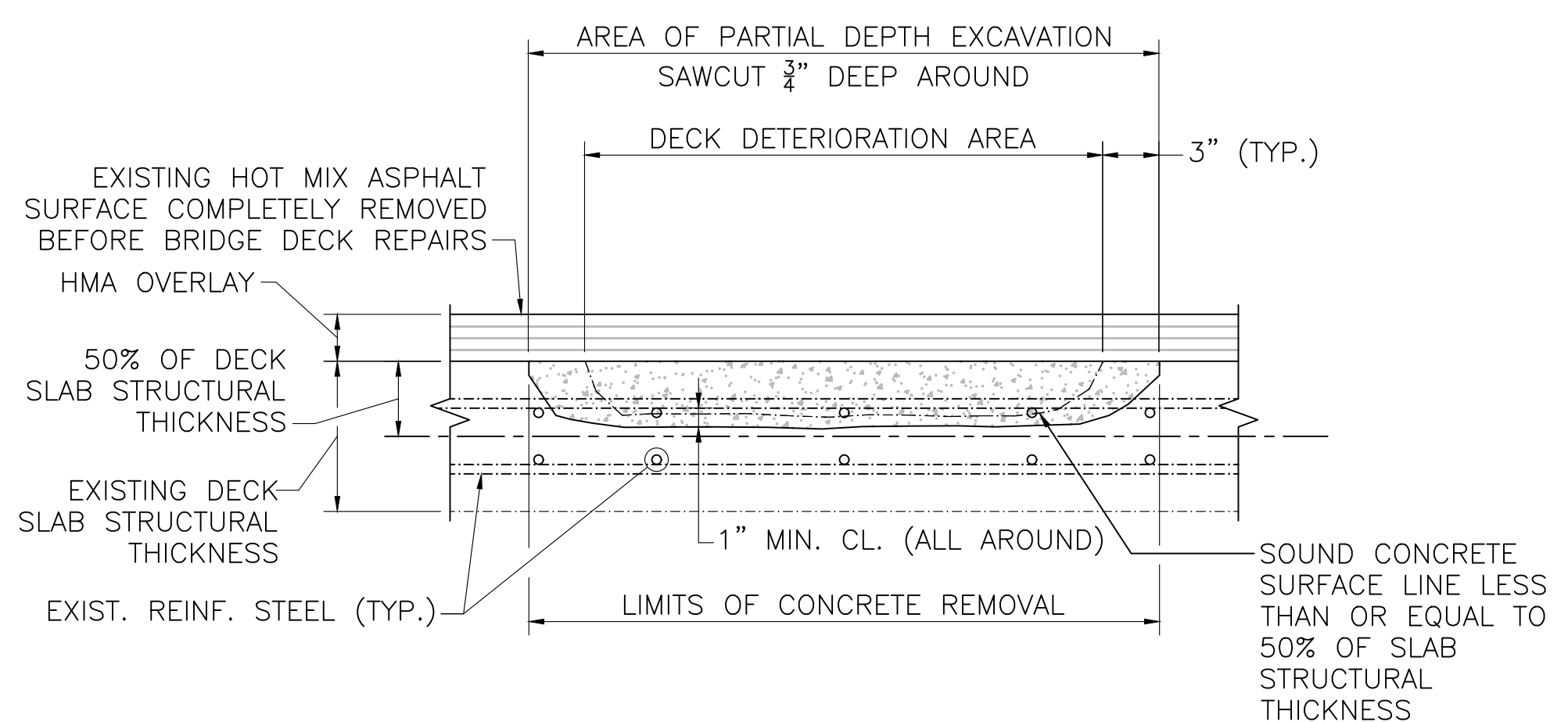
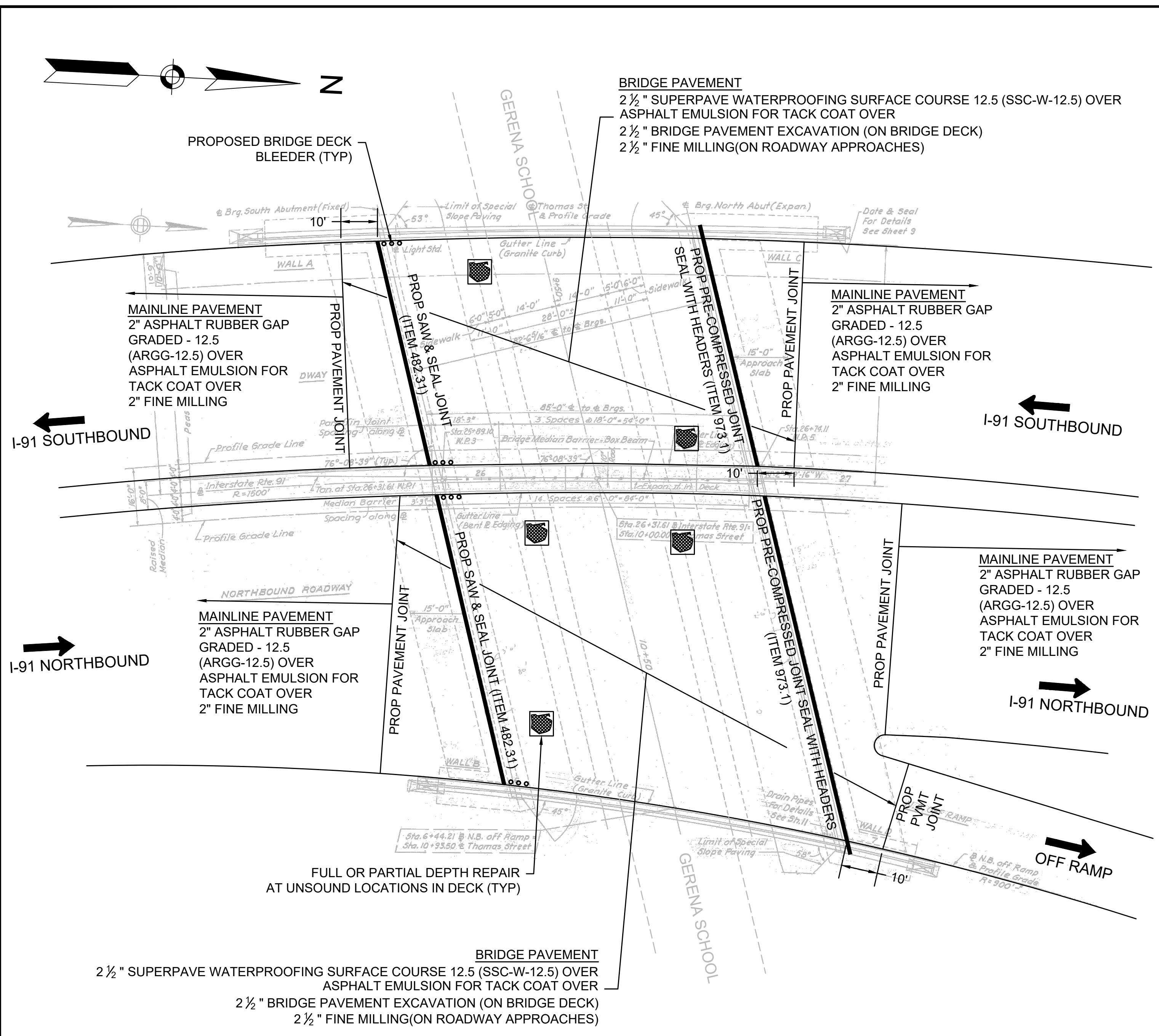
- NOTE**
1. OVERHANG SUPPORT MUST BE PROVIDED WHEN CONSTRUCTION WIDTHS EXCEED 4' (FOUR FEET). IF THE CONTRACTOR EXTENDS THE EXCAVATION BEYOND 4' THEN THEY MUST FURNISH A SHIELDING DESIGN CAPACITY CHECK. THIS CHECK MUST BE DESIGNED AND STAMPED BY A MASSACHUSETTS REGISTERED PROFESSIONAL ENGINEER OF THE APPROPRIATE DISCIPLINE.



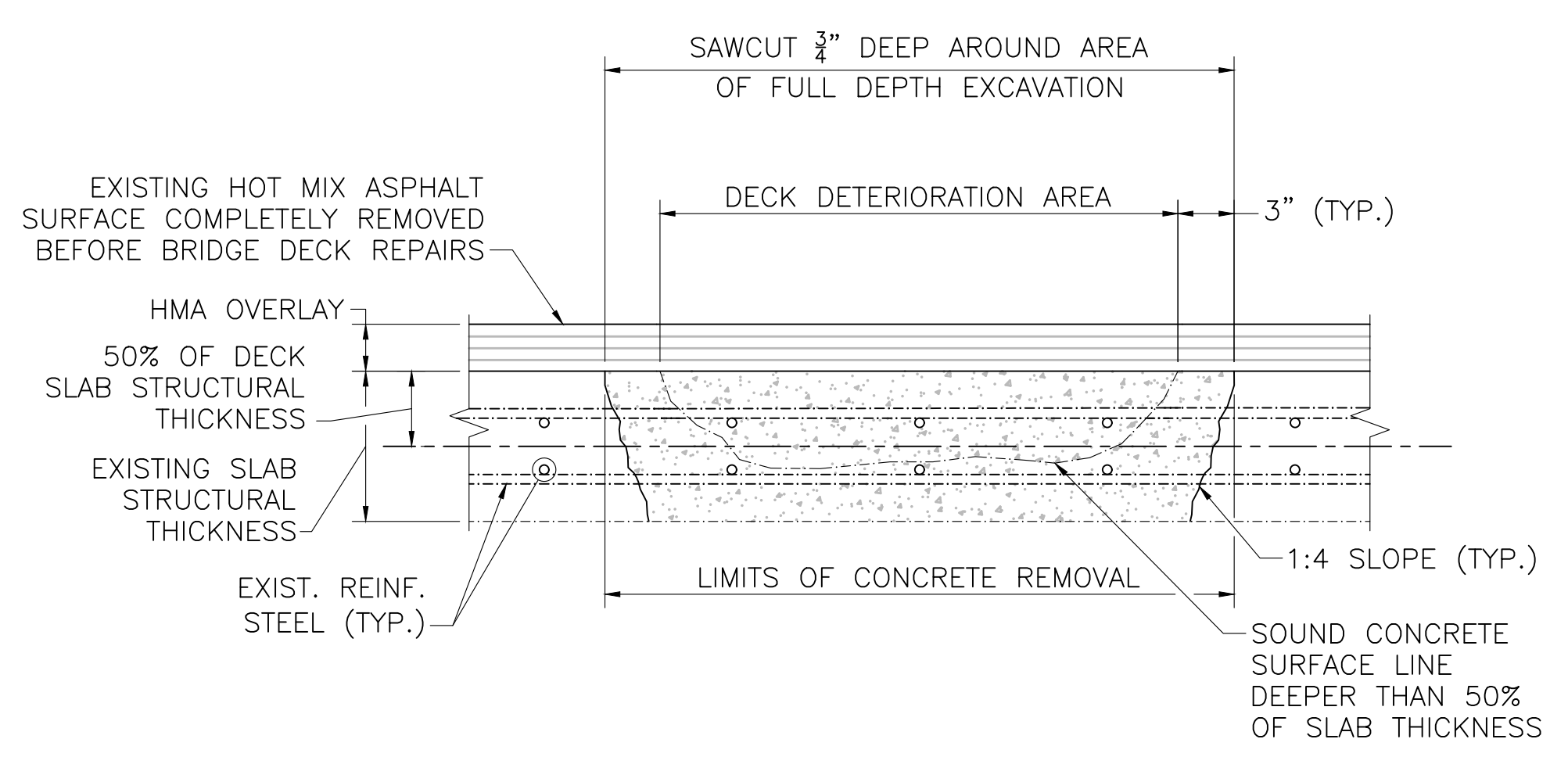
TYPICAL DETERIORATED REINFORCEMENT STEEL REPAIR
SCALE: 1 1/2" = 1'-0"

BRIDGE DECK REPAIR NOTES:

1. SPALLED, DELAMINATED, AND DETERIORATED CONCRETE DECK AREAS SHALL BE REPAIRED USING AN APPROVED RAPID SETTING CONCRETE (ITEM 909.5) AS DIRECTED BY THE ENGINEER.
2. PARTIAL DEPTH REPAIRS: ALL DETERIORATED AND DELAMINATED CONCRETE SHALL BE REMOVED TO A MINIMUM DEPTH OF 1" BELOW THE BOTTOM OF THE TOP LAYER OF EXISTING TRANSVERSE REINFORCEMENT STEEL TO A MAXIMUM OF 50% OF THE THICKNESS OF THE EXISTING CONCRETE DECK.
3. FULL DEPTH REPAIRS: ALL DETERIORATED AND DELAMINATED CONCRETE SHALL BE REMOVED, AND IF THE SOUND CONCRETE SURFACE IS LOCATED AT A DEPTH GREATER THAN 50% OF THE DECK THICKNESS WHEN MEASURED FROM THE TOP OF DECK, A FULL DEPTH DECK REPAIR SHALL BE PERFORMED.
4. ALL EXISTING REINFORCING STEEL AND CONCRETE SURFACES THAT ARE TO BE IN CONTACT WITH REPAIR CONCRETE SHALL BE ABRASIVELY BLAST CLEANED IN ORDER TO REMOVE ALL RUST, OIL, AND DEBRIS THAT IS NOT TIGHTLY ADHERED, FOLLOWED BY APPLICATION OF COMPRESSED AIR TO REMOVE ALL DUST. EXISTING CONCRETE REPAIR SURFACES THAT WILL BE IN CONTACT WITH REPAIR CONCRETE SHALL BE PRE-WETTED FOR A MINIMUM OF 15 MINUTES USING POTABLE WATER IN ORDER TO ACHIEVE A SATURATED SURFACE DRY CONDITION IMMEDIATELY PRIOR TO PLACEMENT OF REPAIR CONCRETE.
5. NEW EPOXY COATED STEEL REINFORCEMENT SHALL BE PLACED TO SUPPLEMENT EXISTING REINFORCEMENT THAT HAS A SECTION LOSS OF 25% OR MORE OF THE ORIGINAL CROSS SECTION AREA OR HAS BROKEN, AS DETERMINED BY THE ENGINEER. NEW REINFORCEMENT SHALL EXTEND 30 BAR DIAMETERS IN EACH DIRECTION FROM WHERE THE SECTION LOSS OR BREAK ENDS. THE LIMITS OF THE REPAIR SHALL BE MODIFIED TO MEET THE REINFORCEMENT STEEL LAP SPLICE REQUIREMENTS. NEW REINFORCING STEEL SHALL BE PLACED AT THE SAME LEVEL ALONGSIDE THE EXISTING DETERIORATED OR BROKEN REINFORCING STEEL.



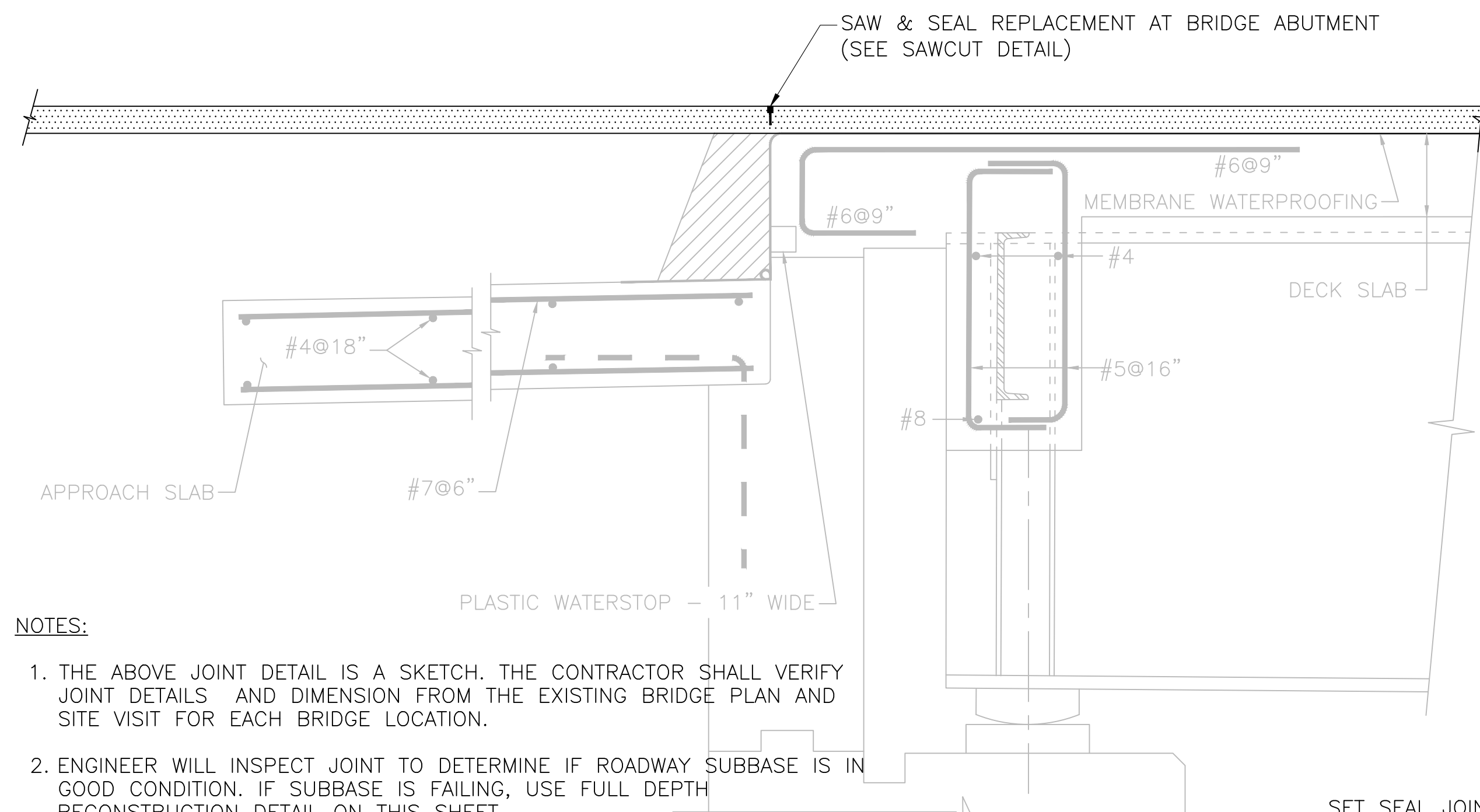
TYPICAL PARTIAL DEPTH DECK REPAIR DETAIL
NOT TO SCALE



TYPICAL FULL DEPTH DECK REPAIR DETAIL
NOT TO SCALE

- NOTES:**
1. DECK FORMS SHALL BE FLUSH WITH EXISTING DECK UNDERSIDE AND SHALL BE REMOVED AFTER CURING IS COMPLETE.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	25	55
PROJECT FILE NO.		612106	

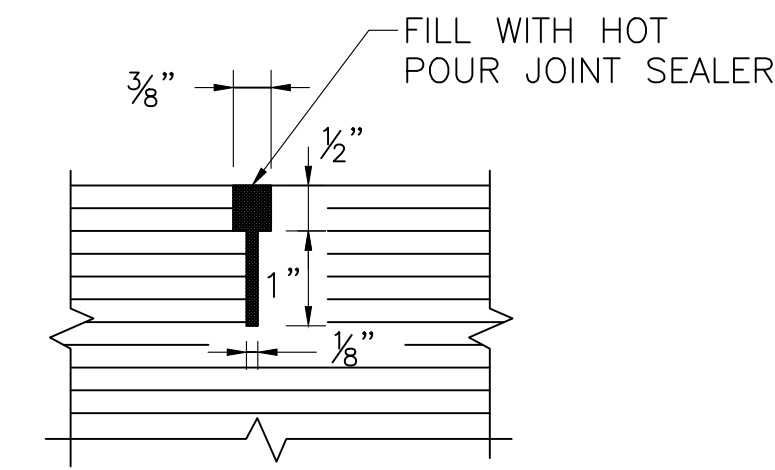


NOTES:

1. THE ABOVE JOINT DETAIL IS A SKETCH. THE CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSION FROM THE EXISTING BRIDGE PLAN AND SITE VISIT FOR EACH BRIDGE LOCATION.
2. ENGINEER WILL INSPECT JOINT TO DETERMINE IF ROADWAY SUBBASE IS IN GOOD CONDITION. IF SUBBASE IS FAILING, USE FULL DEPTH RECONSTRUCTION DETAIL ON THIS SHEET.

PROPOSED SAW & SEAL REPLACEMENT AT BRIDGE ABUTMENT

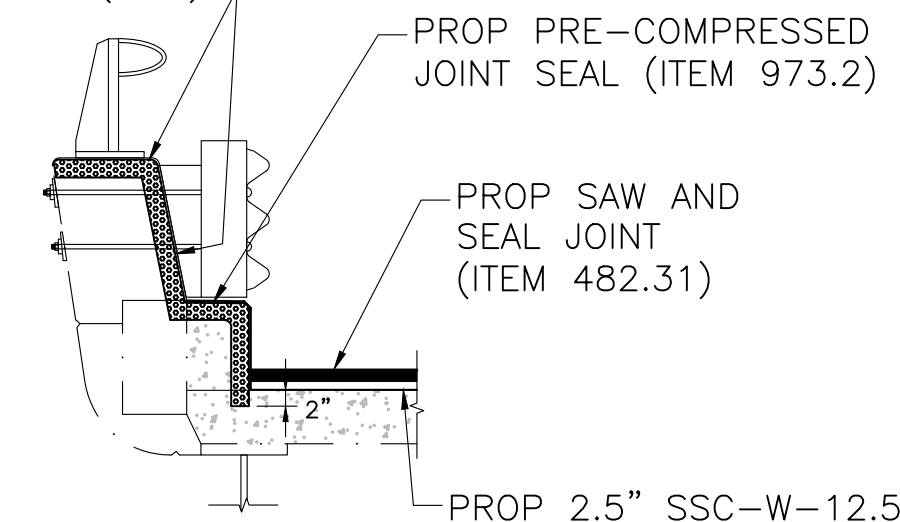
NOT TO SCALE



PAVEMENT SAWCUT DETAIL

NOT TO SCALE

SET SEAL JOINT 1/4" MIN. BELOW OR BEHIND CONC. SURFACE (TYP.)

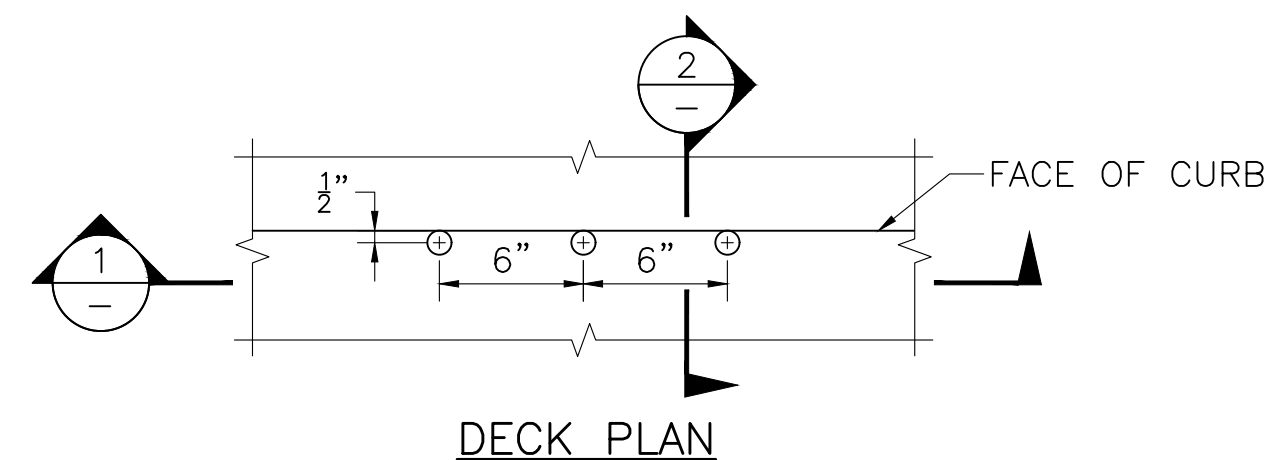


NOTES:

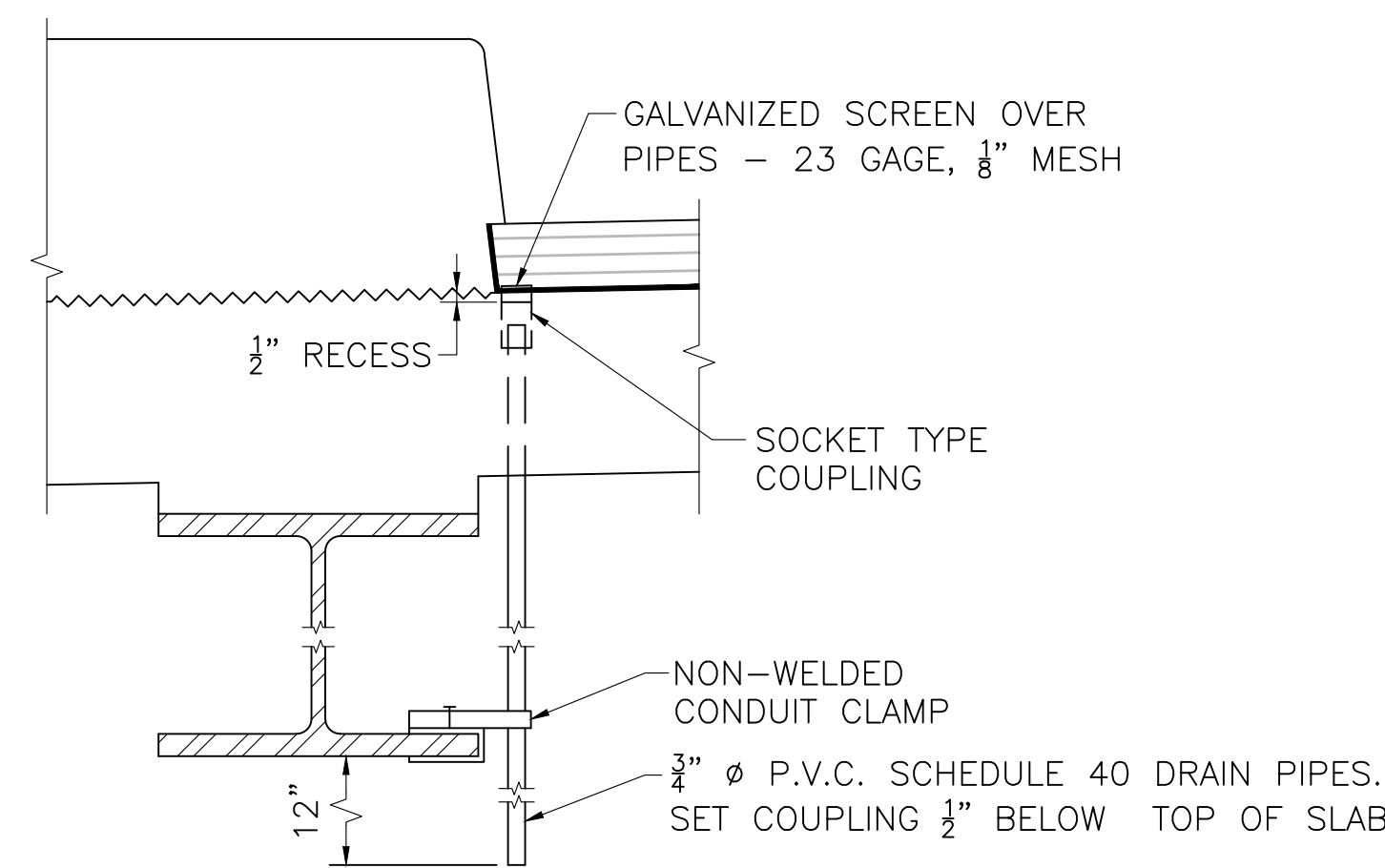
- 1). SEE PRE-COMPRESSED JOINT SEAL DETAIL.
- 2). CLEAN JOINT PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL.
- 3). REPAIR PARAPET PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL AS DIRECTED BY THE ENGINEER.

PRE-COMPRESSED SEAL AT PARAPET FOR SAW AND SEAL JOINTS

NOT TO SCALE



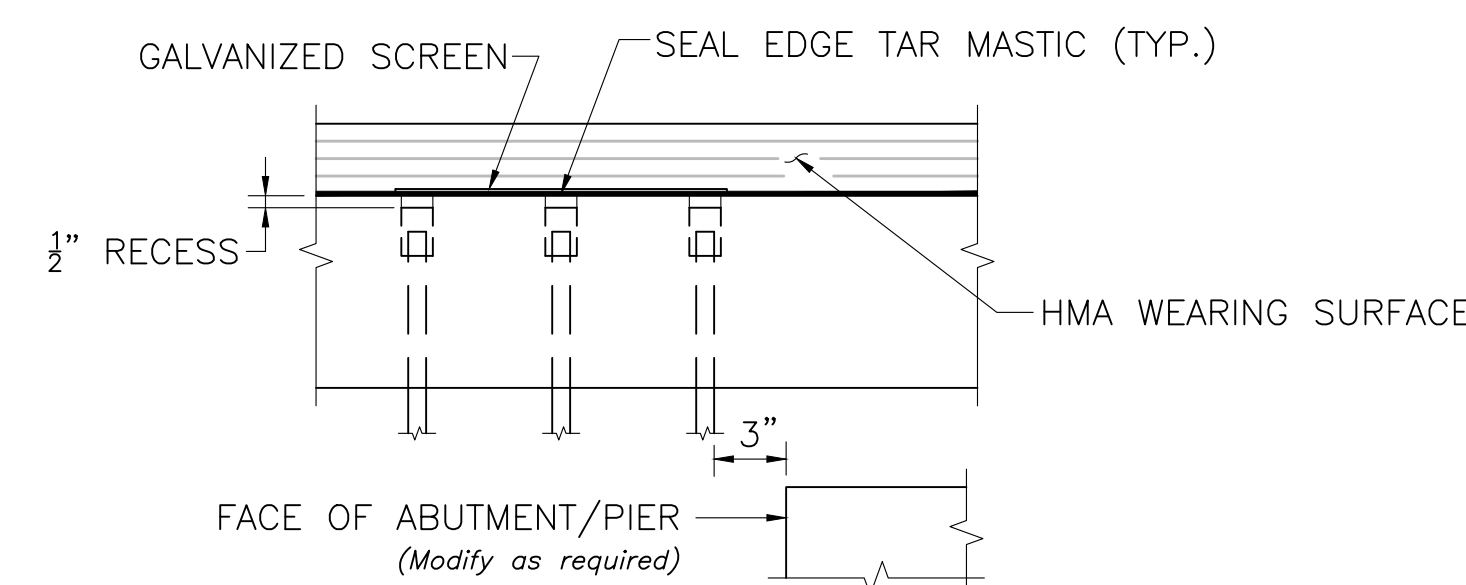
DECK PLAN



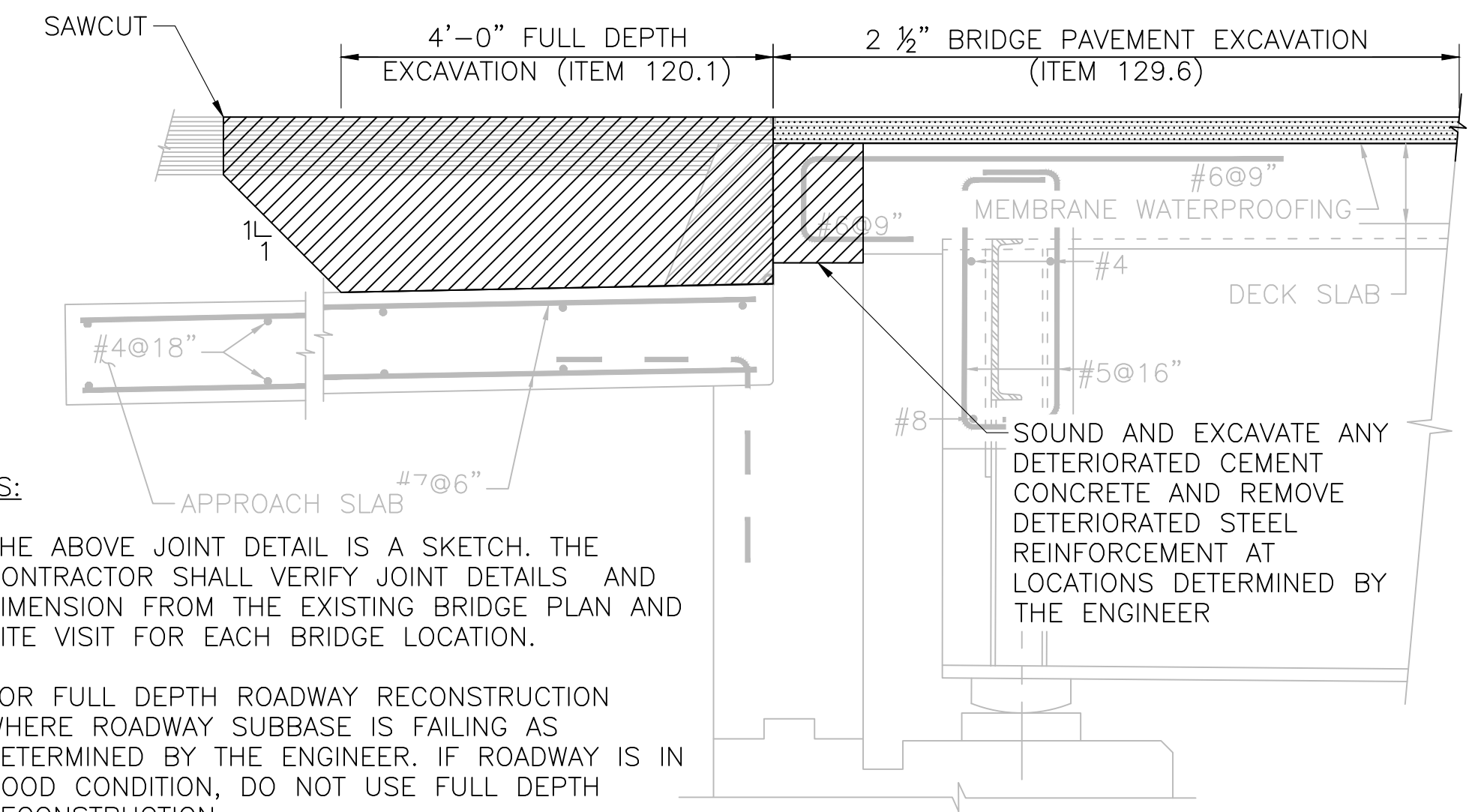
SECTION 2

DECK DRAIN PIPES

SCALE: 1 1/2" = 1'-0"



SECTION 1

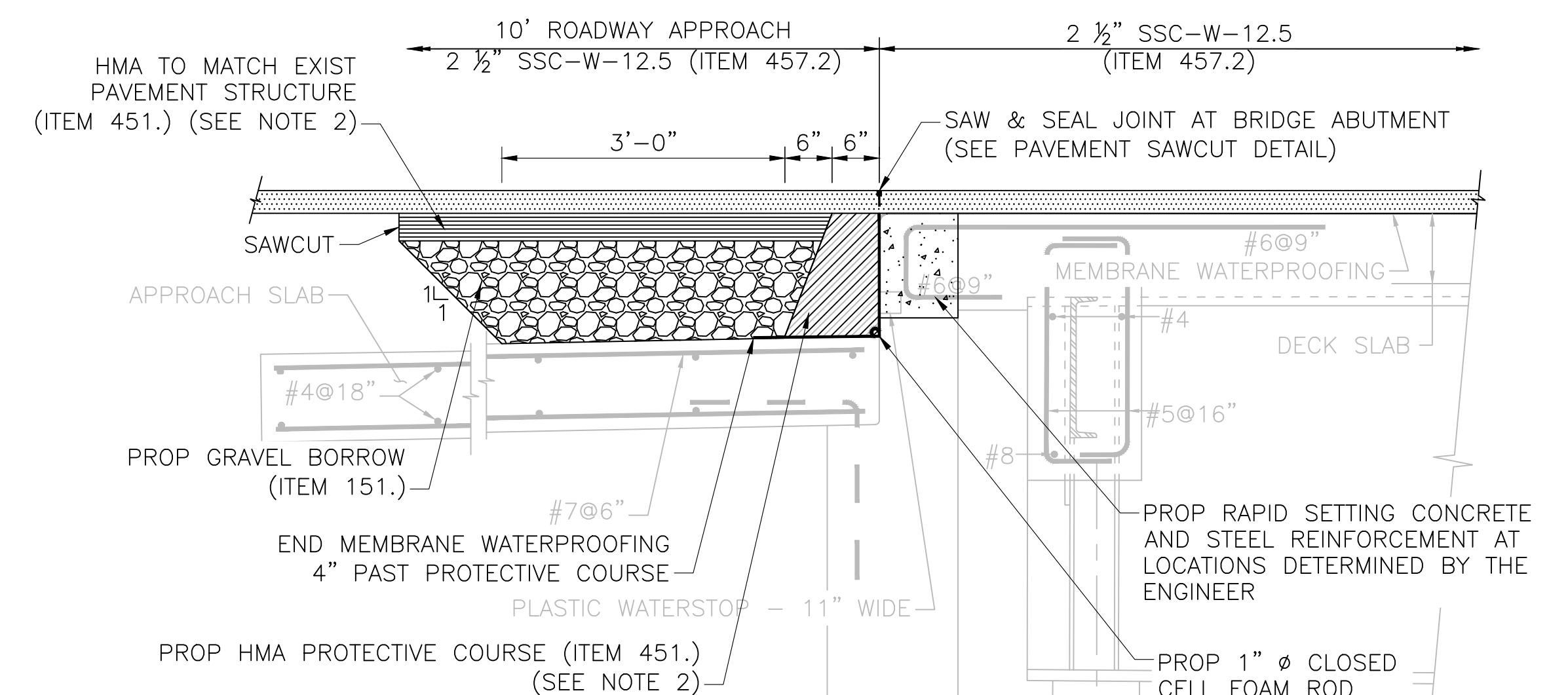


NOTES:

1. THE ABOVE JOINT DETAIL IS A SKETCH. THE CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSION FROM THE EXISTING BRIDGE PLAN AND SITE VISIT FOR EACH BRIDGE LOCATION.
2. FOR FULL DEPTH ROADWAY RECONSTRUCTION WHERE ROADWAY SUBBASE IS FAILING AS DETERMINED BY THE ENGINEER. IF ROADWAY IS IN GOOD CONDITION, DO NOT USE FULL DEPTH RECONSTRUCTION.

EXISTING SAW & SEAL JOINT EXCAVATION FOR FULL DEPTH RECONSTRUCTION

NOT TO SCALE



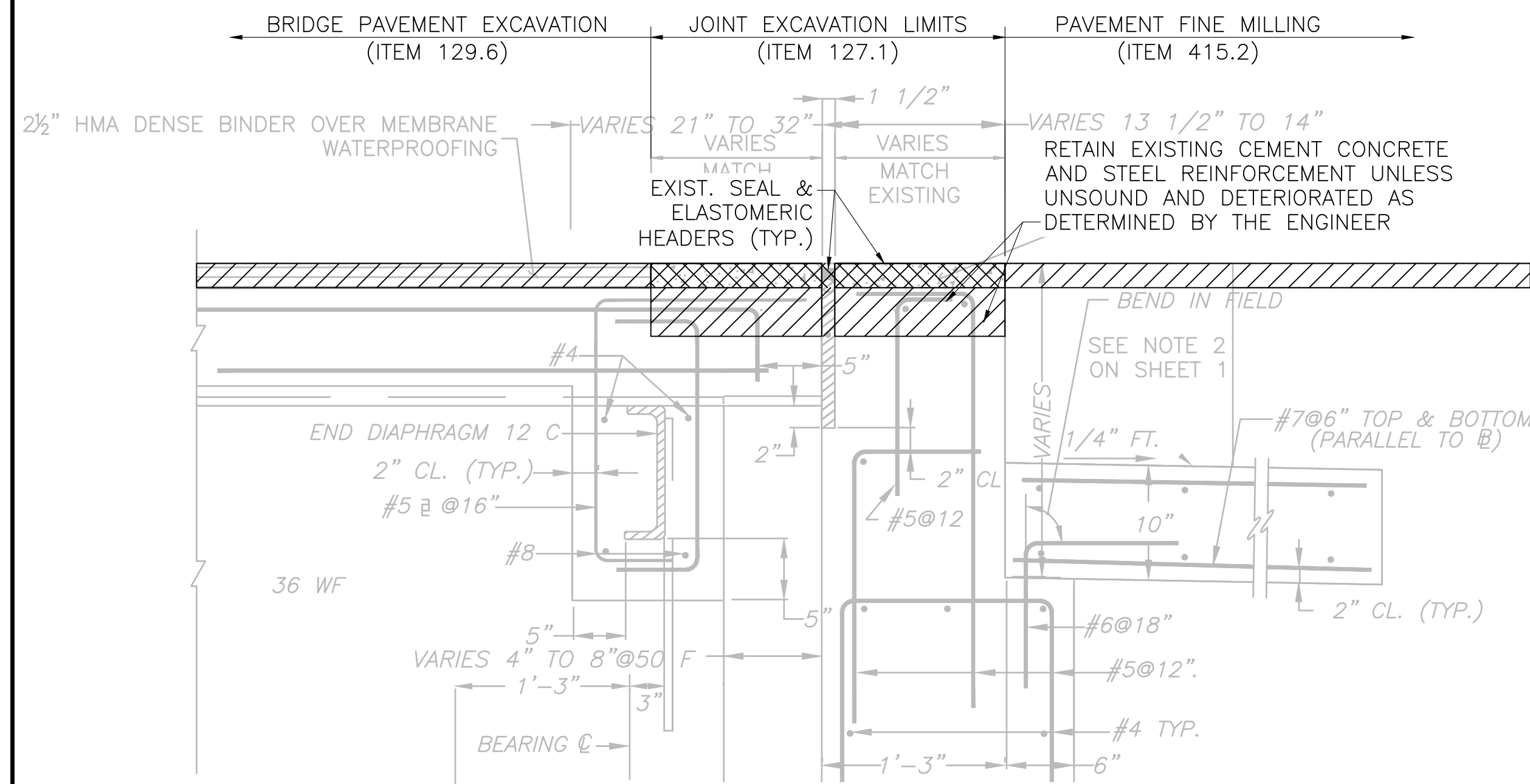
NOTES:

1. THE ABOVE JOINT DETAIL IS A SKETCH. THE CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSION FROM THE EXISTING BRIDGE PLAN AND SITE VISIT FOR EACH BRIDGE LOCATION.
2. PROTECTIVE COURSE TO BE SUPERPAVE BRIDGE PROTECTIVE COURSE, PLACED IN 2" LAYERS AND COMPACTED WITH A MECHANICAL HAND-GUIDED TAMPER AFTER PLACING MEMBRANE WATERPROOFING.
3. FOR FULL DEPTH ROADWAY RECONSTRUCTION WHERE ROADWAY SUBBASE IS FAILING AS DETERMINED BY THE ENGINEER. IF ROADWAY IS IN GOOD CONDITION, DO NOT USE FULL DEPTH RECONSTRUCTION.

PROPOSED SAW & SEAL WITH FULL DEPTH RECONSTRUCTION

NOT TO SCALE

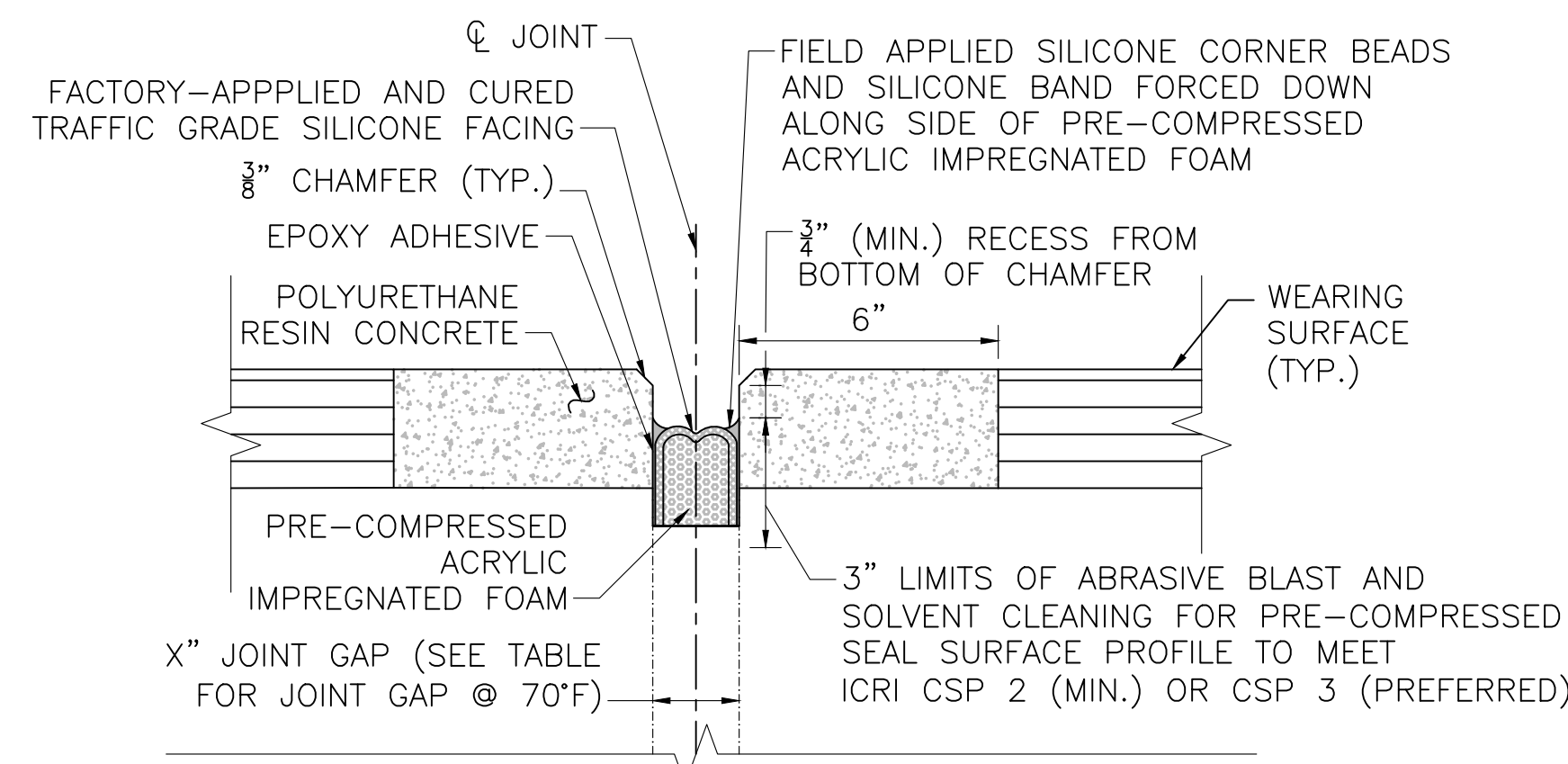
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	26	55
PROJECT FILE NO.		612106	



- NOTES:**
- 1). THE ABOVE DETAIL IS A SKETCH. CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSIONS FROM THE EXISTING BRIDGE PLAN AND SITE VISIT.
 - 2). COMPLETE REMOVAL OF THE JOINT, BACKWALL, AND DECK SHOWN FOR CASES WHERE THE JOINT, BACKWALL, AND DECK ARE DETERIORATED. DETERIORATED CONCRETE SHALL BE REMOVED AS DIRECTED BY THE ENGINEER.

LIMITS OF EXCAVATION AT EXISTING ELASTOMERIC CONCRETE HEADERS WITH PRE-COMPRESSED SEAL BRIDGE JOINT SYSTEM AT ABUTMENT

NOT TO SCALE



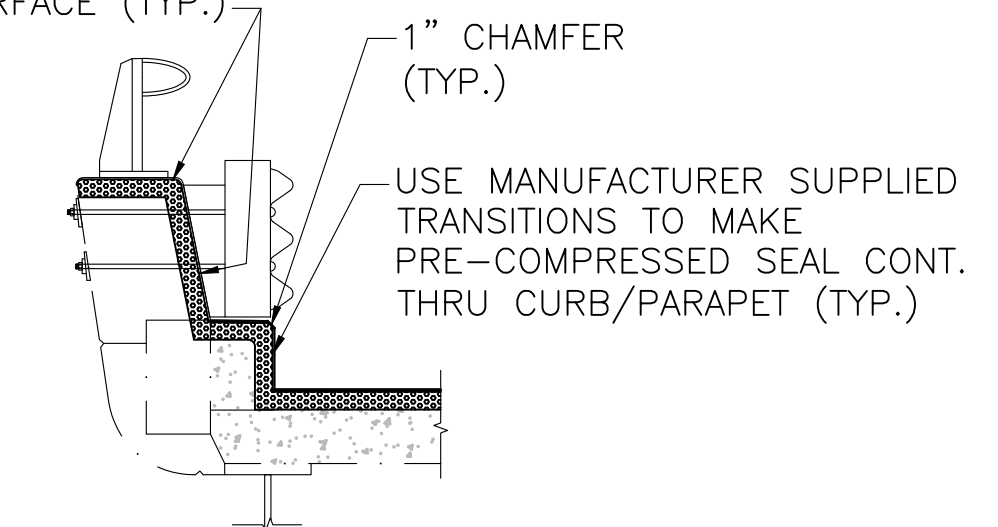
PRE-COMPRESSED SEAL SECTION

SCALE: 3" = 1'-0"

TRIBUTARY THERMAL EXPANSION/CONTRACTION LENGTH (STEEL)	TRIBUTARY THERMAL EXPANSION/CONTRACTION LENGTH (CONC.)	X" JOINT OPENING @ 70°F	NOMINAL JOINT SEAL WIDTH
<128'	<216'	2"	2 1/2"
<160'	<271'	2 1/2"	3"
<192'	<325'	3"	3 1/2"
<224'	<379'	3 1/2"	4"

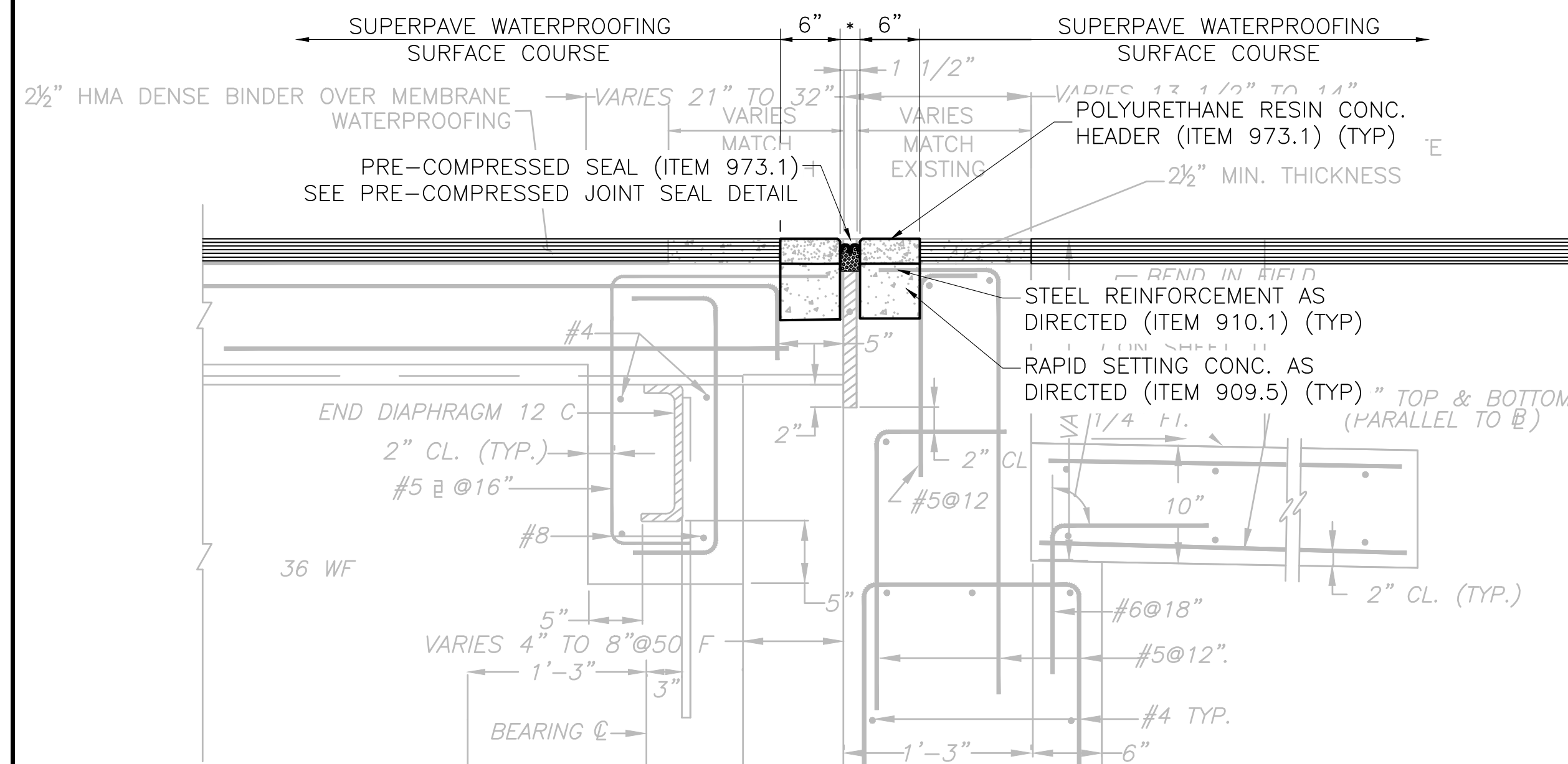
- NOTES:**
- 1). THIS TABLE IS DEVELOPED BASED ON THE EQUATION FOR MAXIMUM ONE-WAY THERMAL MOVEMENT IN SECTION 3.1.8 OF THE BRIDGE MANUAL AND THE ASSOCIATED ASSUMPTIONS FOR TEMPERATURE RISE AND FALL. THE THERMAL MOVEMENT EQUATION IS REARRANGED SO THAT IT YIELDS THE TRIBUTARY THERMAL EXPANSION/CONTRACTION LENGTH ASSOCIATED WITH A 50% VARIATION FROM THE NOMINAL PRE-COMPRESSED SEAL WIDTH.
 - 2). AN ADDITIONAL 1/2" HAS BEEN ADDED TO THE REQUIRED NOMINAL JOINT SEAL WIDTH TO ENSURE THAT THE SEAL REMAINS IN COMPRESSION WHEN THE JOINT GAP IS AT IT'S MAXIMUM ANTICIPATED OPENING.

SET SEAL JOINT 1/2" MIN. BELOW OR BEHIND CONC. SURFACE (TYP.)



NOTES:

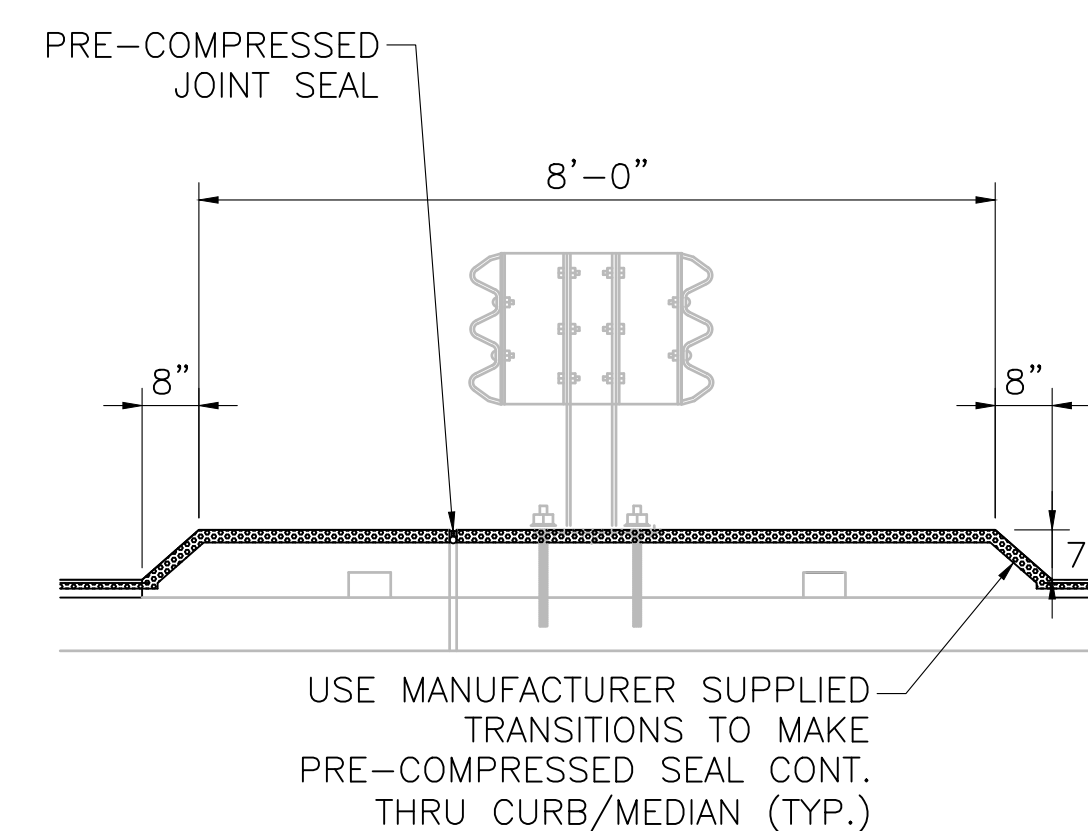
- 1). SEE PRE-COMPRESSED JOINT SEAL DETAIL.
- 2). CLEAN JOINT PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL.
- 3). REPAIR PARAPET PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL AS DIRECTED BY THE ENGINEER.



- NOTES:**
- 1). THE ABOVE DETAIL IS A SKETCH. CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSIONS FROM THE EXISTING BRIDGE PLAN AND SITE VISIT. * VARIES

PROPOSED PRE-COMPRESSED JOINT SEAL WITH POLYURETHANE RESIN CONCRETE HEADERS AT ABUTMENT

NOT TO SCALE



PRE-COMPRESSED SEAL AT MEDIAN

NOT TO SCALE

PRE-COMPRESSED SEAL AT PARAPET

NOT TO SCALE

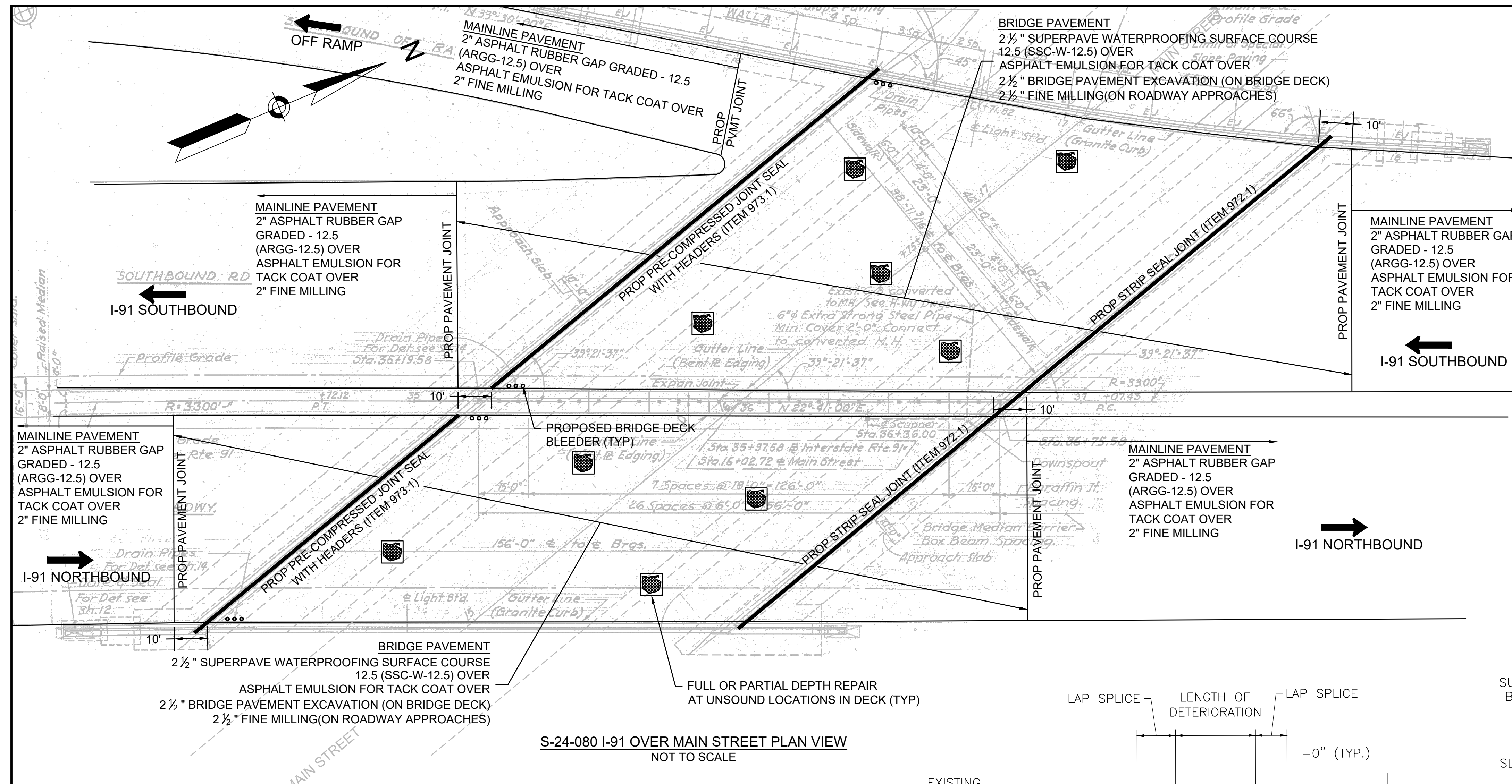
TEMPORARY TRAFFIC CONTROL AND CONSTRUCTION SEQUENCE

1. ALL WORK ON THIS BRIDGE SHALL BE DONE AT NIGHT USING SHORT TERM LANE CLOSURES. TEMPORARY BARRIER WILL NOT BE UTILIZED UNLESS REQUIRED BY THE ENGINEER.
2. ALL WORK SHALL BE DONE BETWEEN THE HOURS OF 7:00 PM AND 5:00 AM.
3. AT LEAST ONE LANE OF TRAFFIC MUST BE KEPT OPEN AT ALL TIMES DURING THE WORK SHIFT. ALL LANES MUST BE OPEN AT THE END OF THE WORK SHIFT IN THEIR ORIGINAL CONFIGURATION.
4. THE CONTRACTOR MAY REMOVE ONLY AS MUCH CONCRETE AS CAN BE PLACED AND CURED IN ONE WORK SHIFT. RAPID SETTING CONCRETE PLACEMENTS SHALL BE COMPLETED NO LATER THAN 2:00 AM FOR NIGHT-TIME OPERATIONS SO THAT THE REQUIRED COMPRESSIVE STRENGTH OF 2000 PSI IS ATTAINED BEFORE THE AREA IS OPENED TO TRAFFIC.
5. TEMPORARY HMA RAMPS SHALL BE USED AT ALL TRANSVERSE AND LONGITUDINAL DROP-OFFS TO TRANSITION TRAFFIC TO THE BRIDGE DECK.
6. FOR THE CONVENIENCE OF THE TRAVELING PUBLIC THE CONTRACTOR IS LIMITED TO WORKING ON NO MORE THAN THREE BRIDGE DECKS AT A TIME. ALL BRIDGE WORK INCLUDING FINAL SURFACE COURSE PAVING MUST BE COMPLETED BEFORE ANY WORK CAN BEGIN ON ADDITIONAL BRIDGES. FOR THIS PURPOSE, A BRIDGE DECK IS DEFINED AS A SINGLE BRIDGE IN A SINGLE DIRECTION, REGARDLESS OF IF THE BRIDGE NUMBER INCLUDES A DECK IN EACH DIRECTION OF TRAVEL.
7. BRIDGE DECKS SHALL NOT BE LEFT EXPOSED TO TRAFFIC WITHOUT SURFACE COURSE PAVEMENT FOR MORE THAN 2 WEEKS.

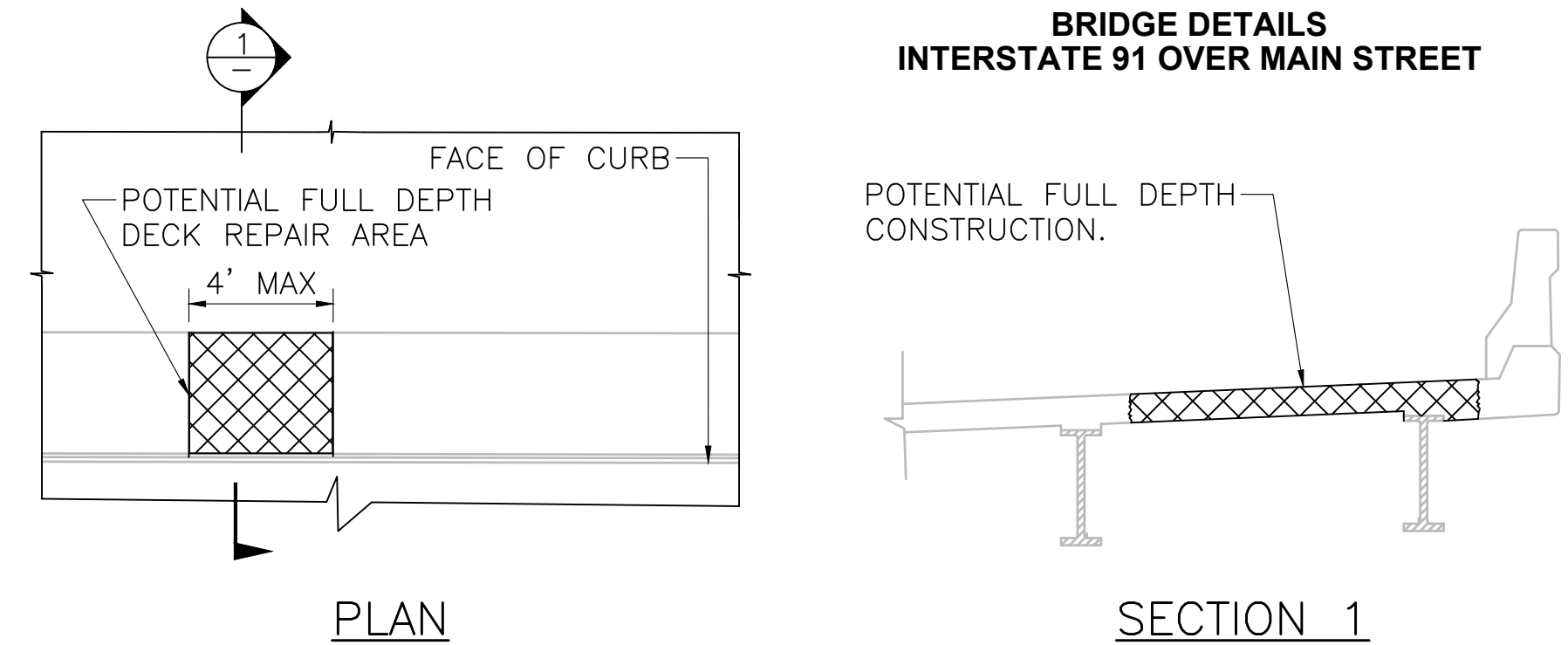
**CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	27	55
PROJECT FILE NO.			612106

**BRIDGE DETAILS
INTERSTATE 91 OVER MAIN STREET**

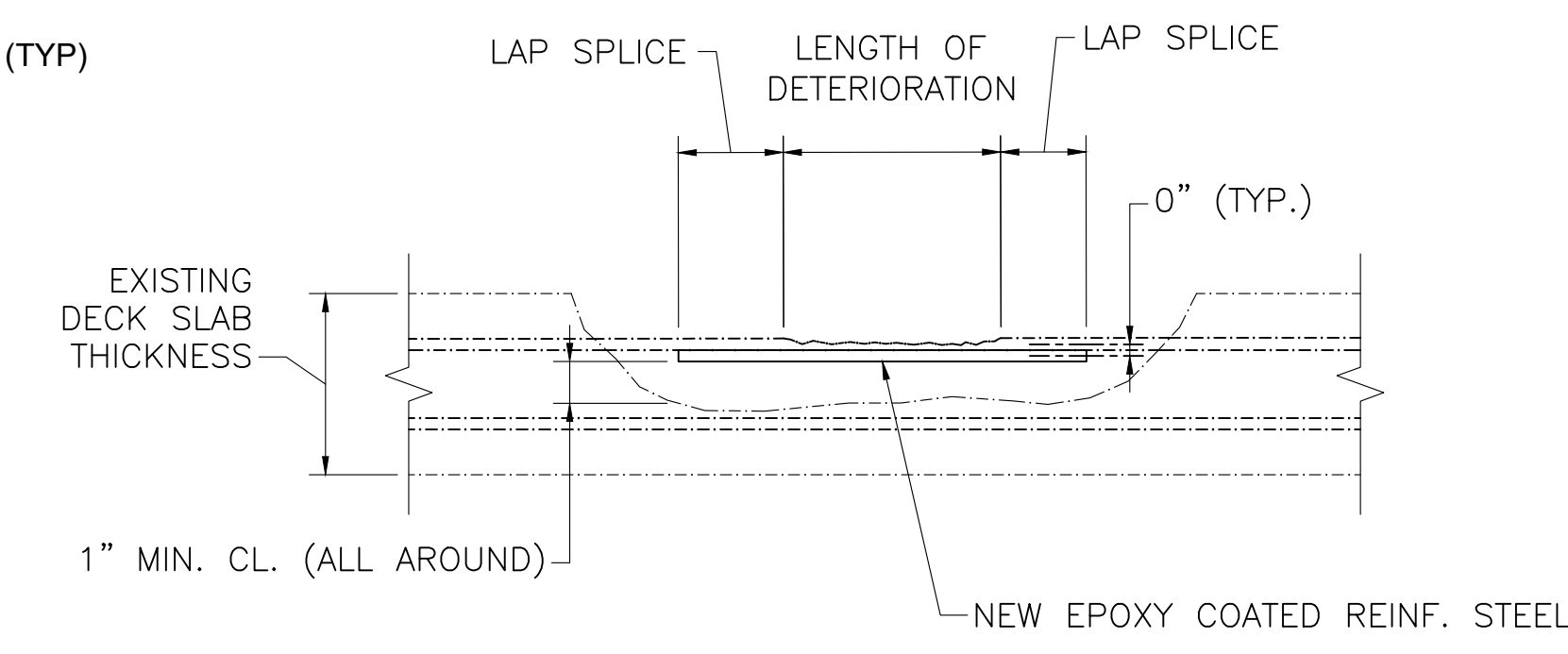


S-24-080 I-91 OVER MAIN STREET PLAN VIEW
NOT TO SCALE

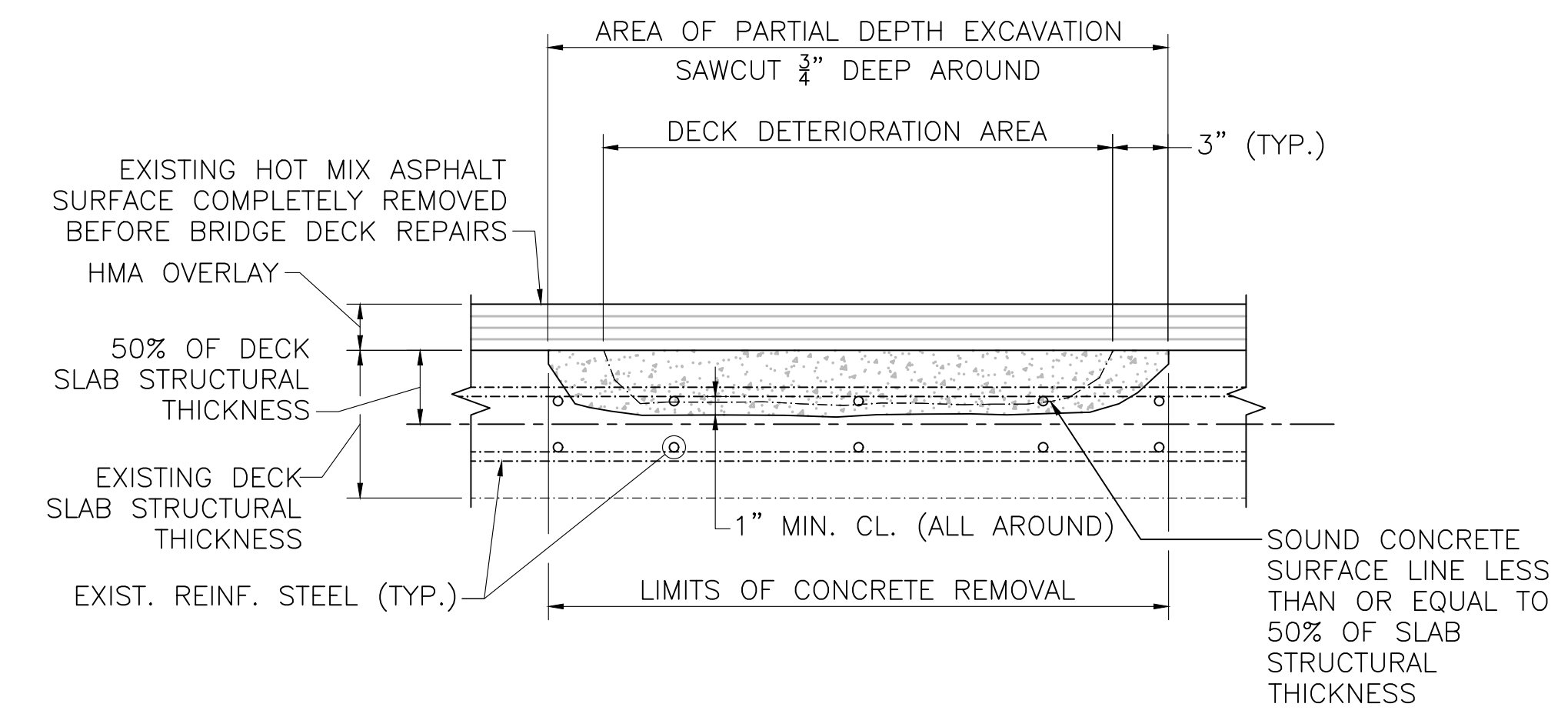


PLAN SECTION 1
FULL DEPTH OVERHANG DECK REPAIR
NOT TO SCALE

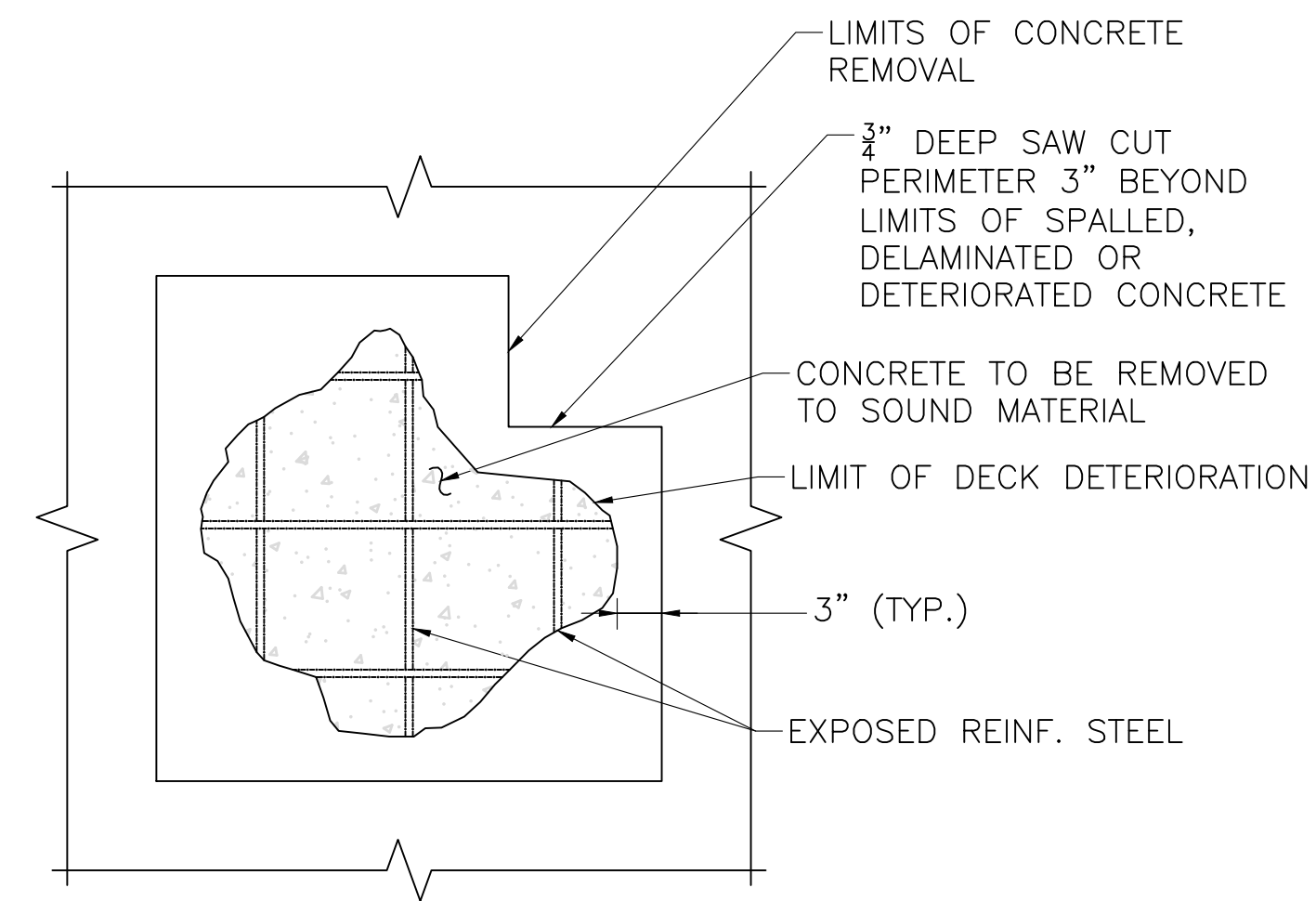
NOTE
1. OVERHANG SUPPORT MUST BE PROVIDED WHEN CONSTRUCTION WIDTHS EXCEED 4' (FOUR FEET). IF THE CONTRACTOR EXTENDS THE EXCAVATION BEYOND 4' THEN THEY MUST FURNISH A SHIELDING DESIGN CAPACITY CHECK. THIS CHECK MUST BE DESIGNED AND STAMPED BY A MASSACHUSETTS REGISTERED PROFESSIONAL ENGINEER OF THE APPROPRIATE DISCIPLINE.



TYPICAL DETERIORATED REINFORCEMENT STEEL REPAIR
SCALE: 1 1/2" = 1'-0"



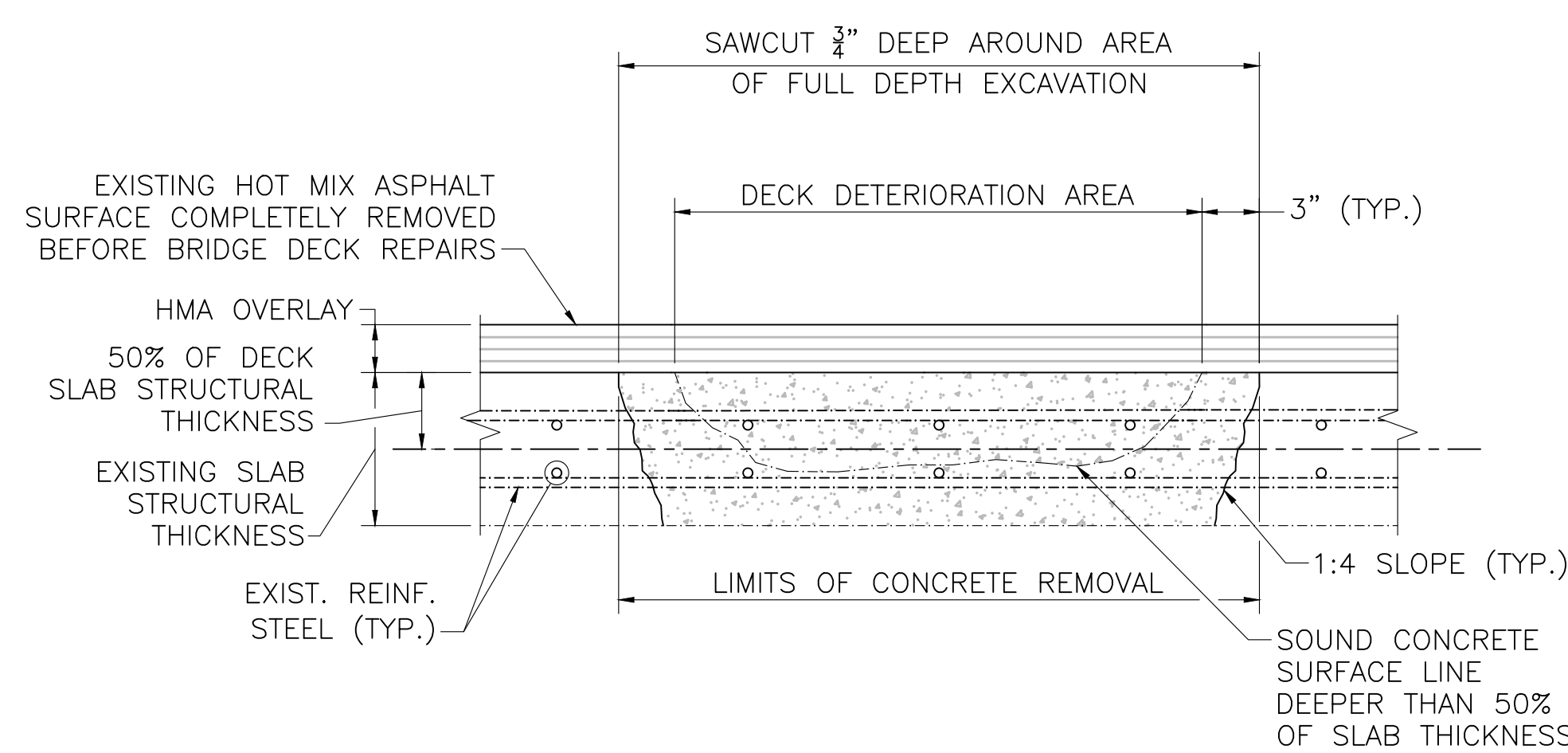
TYPICAL PARTIAL DEPTH DECK REPAIR DETAIL
NOT TO SCALE



LIMITS OF DECK REPAIR AREA
NOT TO SCALE

BRIDGE DECK REPAIR SEQUENCE NOTES:

1. ALL EXISTING HOT MIX ASPHALT WEARING SURFACE AND MEMBRANE WATERPROOFING MATERIAL SHALL BE REMOVED PRIOR TO PERFORMING DECK REPAIRS. THE EXPOSED DECK SURFACE SHALL BE INSPECTED BY THE ENGINEER TO DETERMINE APPROXIMATE LIMITS OF REPAIR. IN ADDITION, AREAS OF THE UNDERSIDE WITH EVIDENCE OF DETERIORATION SHALL BE SOUNDED IN THE PRESENCE OF THE CONTRACTOR AND THE ENGINEER TO IDENTIFY AREAS IN NEED OF FULL DEPTH REPAIRS.
2. THE TOP SURFACE OF THE DECK REPAIRS SHALL BE FINISHED FLUSH WITH THE ADJACENT TOP OF DECK SLAB AND SHALL MAINTAIN THE EXISTING GRADES AND CROSS SLOPES.
3. UPON COMPLETION OF EACH STAGE OF DECK REPAIRS, THE DECK SHALL BE ABRASIVELY BLAST CLEANED FOLLOWED BY PLACEMENT OF THE HOT MIX ASPHALT WEARING SURFACE.



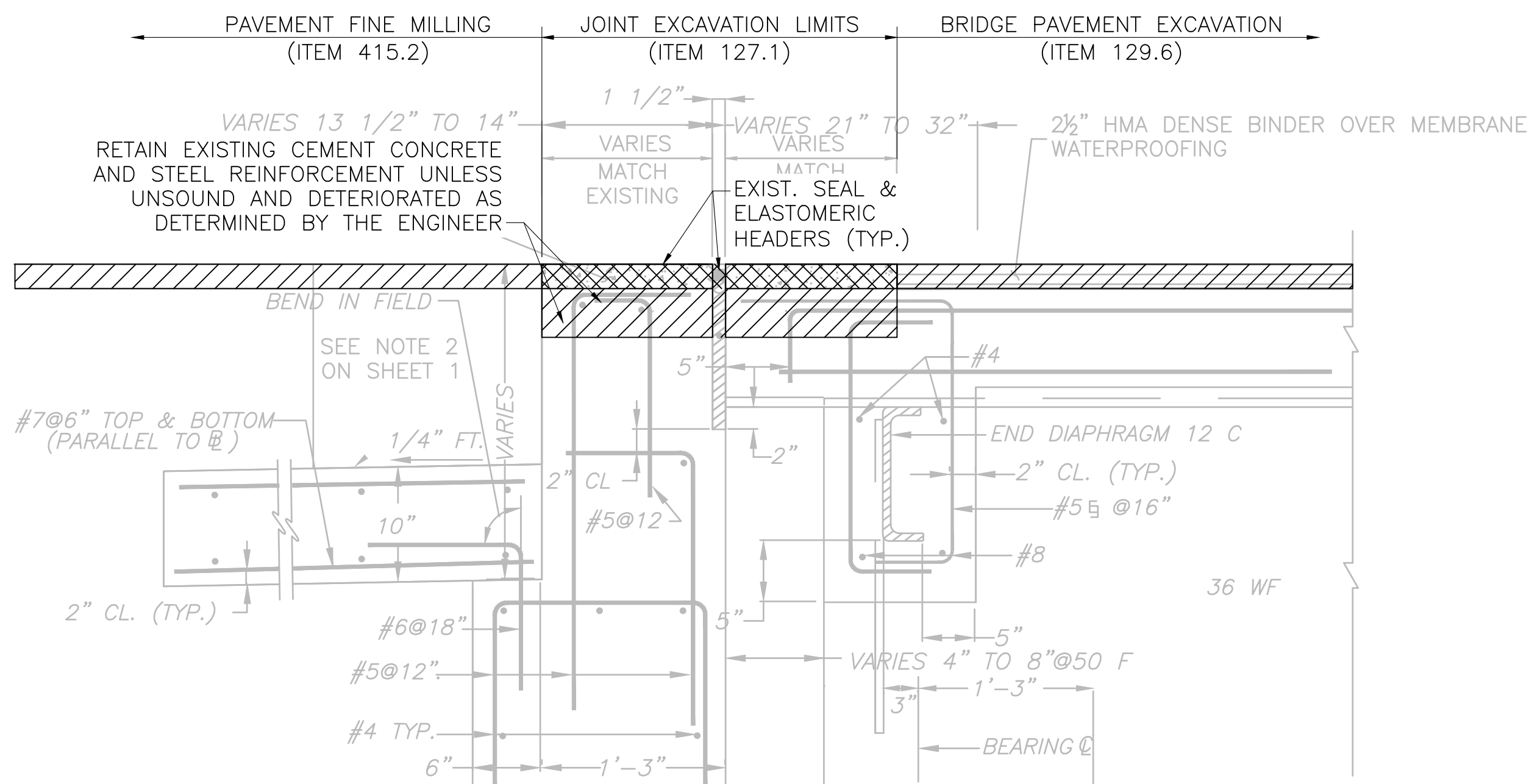
TYPICAL FULL DEPTH DECK REPAIR DETAIL
NOT TO SCALE

NOTES:
1. DECK FORMS SHALL BE FLUSH WITH EXISTING DECK UNDERSIDE AND SHALL BE REMOVED AFTER CURING IS COMPLETE.

BRIDGE DECK REPAIR NOTES:

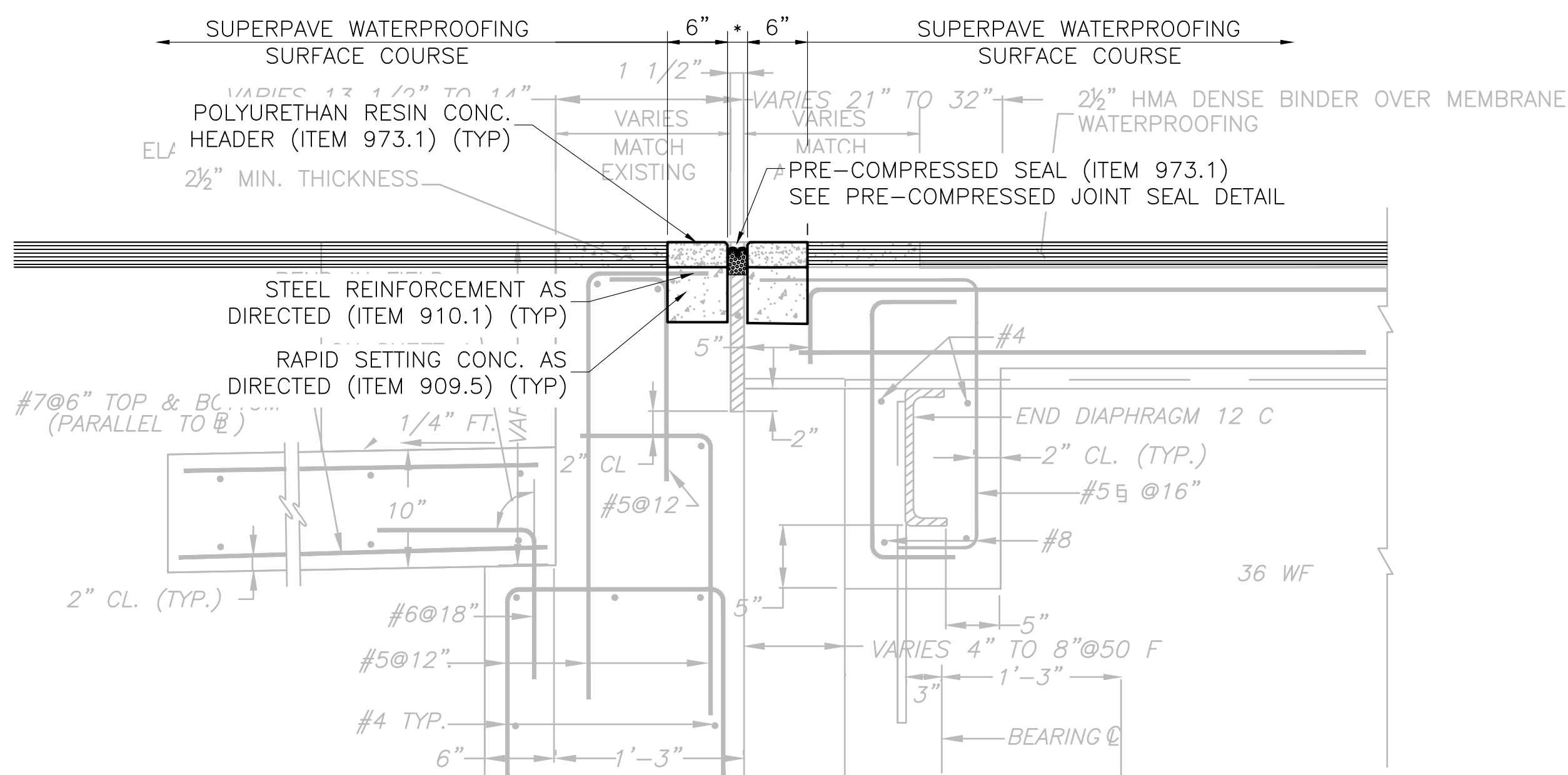
1. SPALLED, DELAMINATED, AND DETERIORATED CONCRETE DECK AREAS SHALL BE REPAIRED USING AN APPROVED RAPID SETTING CONCRETE (ITEM 909.5) AS DIRECTED BY THE ENGINEER.
2. PARTIAL DEPTH REPAIRS: ALL DETERIORATED AND DELAMINATED CONCRETE SHALL BE REMOVED TO A MINIMUM DEPTH OF 1" BELOW THE BOTTOM OF THE TOP LAYER OF EXISTING TRANSVERSE REINFORCEMENT STEEL TO A MAXIMUM OF 50% OF THE THICKNESS OF THE EXISTING CONCRETE DECK.
3. FULL DEPTH REPAIRS: ALL DETERIORATED AND DELAMINATED CONCRETE SHALL BE REMOVED, AND IF THE SOUND CONCRETE SURFACE IS LOCATED AT A DEPTH GREATER THAN 50% OF THE DECK THICKNESS WHEN MEASURED FROM THE TOP OF DECK, A FULL DEPTH DECK REPAIR SHALL BE PERFORMED.
4. ALL EXISTING REINFORCING STEEL AND CONCRETE SURFACES THAT ARE TO BE IN CONTACT WITH REPAIR CONCRETE SHALL BE ABRASIVELY BLAST CLEANED IN ORDER TO REMOVE ALL RUST, OIL, AND DEBRIS THAT IS NOT TIGHTLY ADHERED, FOLLOWED BY APPLICATION OF COMPRESSED AIR TO REMOVE ALL DUST. EXISTING CONCRETE REPAIR SURFACES THAT WILL BE IN CONTACT WITH REPAIR CONCRETE SHALL BE PRE-WETTED FOR A MINIMUM OF 15 MINUTES USING POTABLE WATER IN ORDER TO ACHIEVE A SATURATED SURFACE DRY CONDITION IMMEDIATELY PRIOR TO PLACEMENT OF REPAIR CONCRETE.
5. NEW EPOXY COATED STEEL REINFORCEMENT SHALL BE PLACED TO SUPPLEMENT EXISTING REINFORCEMENT THAT HAS A SECTION LOSS OF 25% OR MORE OF THE ORIGINAL CROSS SECTION AREA OR HAS BROKEN, AS DETERMINED BY THE ENGINEER. NEW REINFORCEMENT SHALL EXTEND 30 BAR DIAMETERS IN EACH DIRECTION FROM WHERE THE SECTION LOSS OR BREAK ENDS. THE LIMITS OF THE REPAIR SHALL BE MODIFIED TO MEET THE REINFORCEMENT STEEL LAP SPLICE REQUIREMENTS. NEW REINFORCING STEEL SHALL BE PLACED AT THE SAME LEVEL ALONGSIDE THE EXISTING DETERIORATED OR BROKEN REINFORCING STEEL.

612106-HD-7-BRIDGE DETAILS.DWG Plotted on 3-Nov-2023 10:39 AM

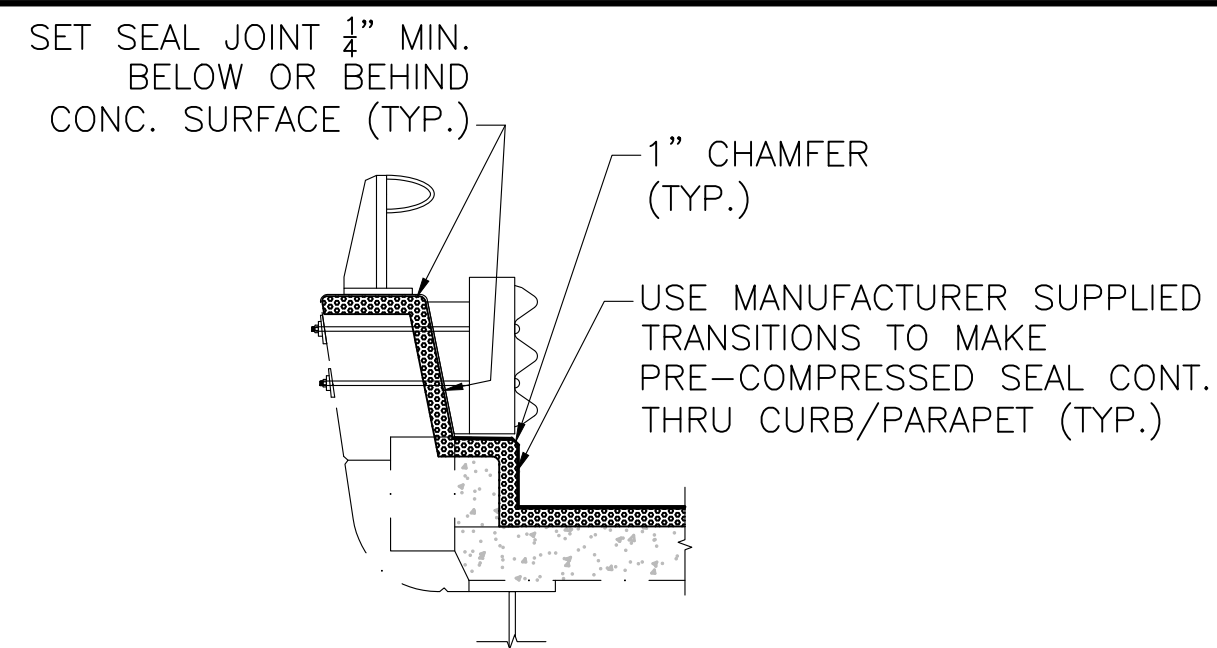


- NOTES:**
- 1). THE ABOVE DETAIL IS A SKETCH. CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSIONS FROM THE EXISTING BRIDGE PLAN AND SITE VISIT.
 - 2). COMPLETE REMOVAL OF THE JOINT, BACKWALL, AND DECK SHOWN FOR CASES WHERE THE JOINT, BACKWALL, AND DECK ARE DETERIORATED. DETERIORATED CONCRETE SHALL BE REMOVED AS DIRECTED BY THE ENGINEER.

LIMITS OF EXCAVATION AT EXISTING ELASTOMERIC CONCRETE HEADERS WITH PRE-COMPRESSED SEAL BRIDGE JOINT SYSTEM AT ABUTMENT
NOT TO SCALE

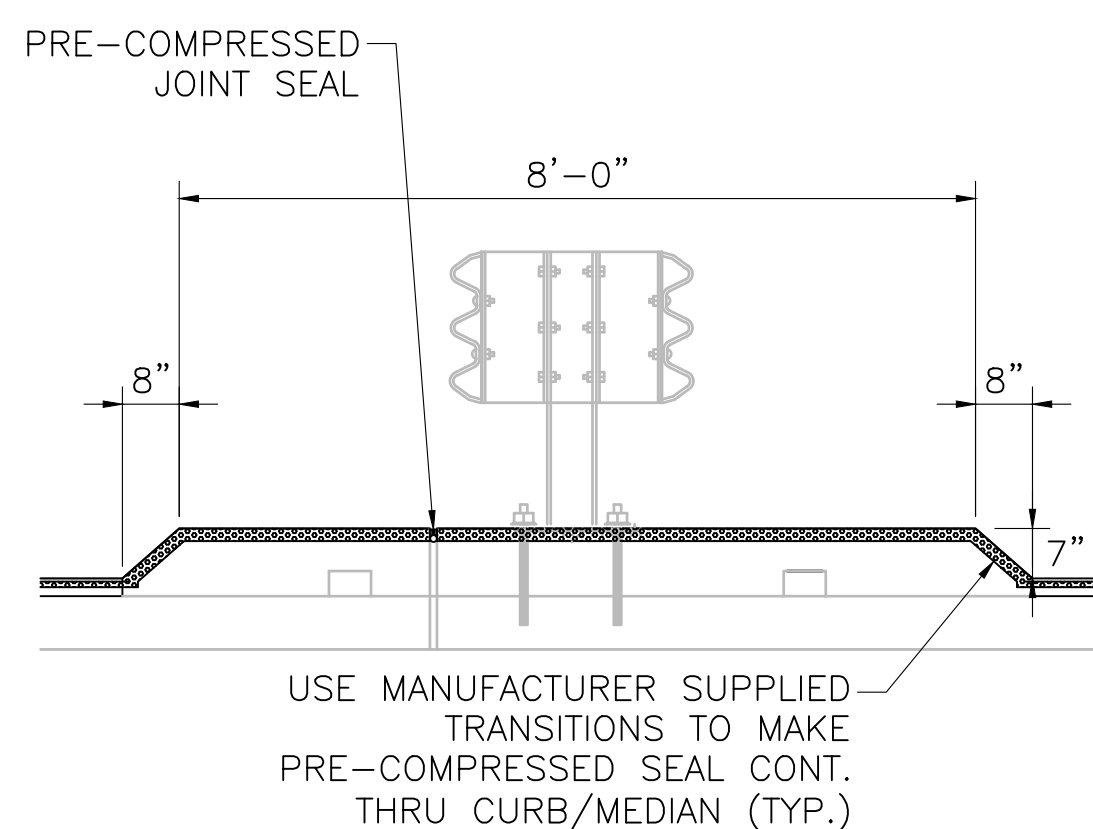


- NOTES:**
- 1). THE ABOVE DETAIL IS A SKETCH. CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSIONS FROM THE EXISTING BRIDGE PLAN AND SITE VISIT.
- PROPOSED PRE-COMPRESSED JOINT SEAL WITH POLYURETHANE RESIN CONCRETE HEADERS AT ABUTMENT**
NOT TO SCALE

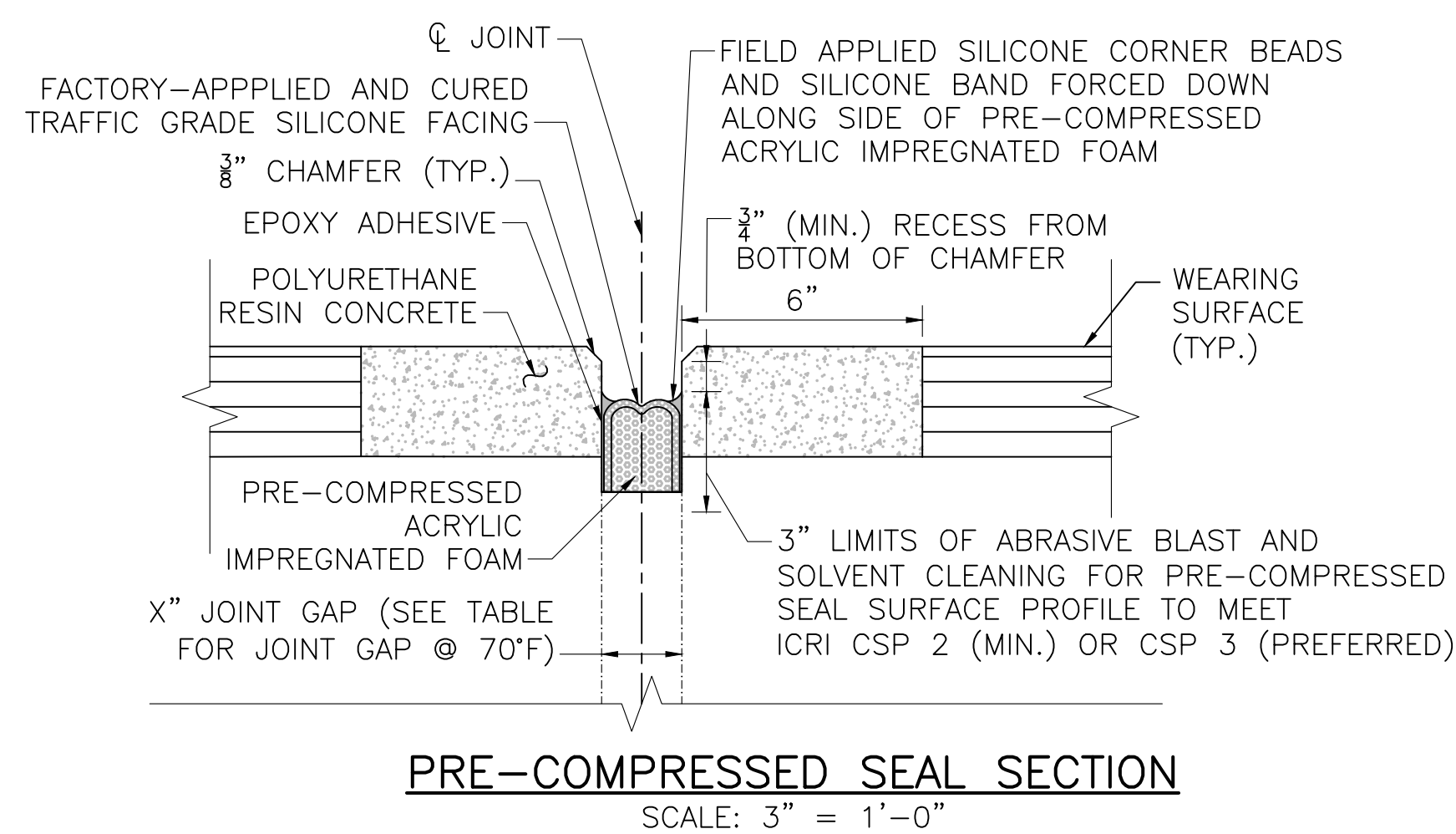


- NOTES:**
- 1). SEE PRE-COMPRESSED JOINT SEAL DETAIL.
 - 2). CLEAN JOINT PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL.
 - 3). REPAIR PARAPET PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL AS DIRECTED BY THE ENGINEER.

PRE-COMPRESSED SEAL AT PARAPET
NOT TO SCALE



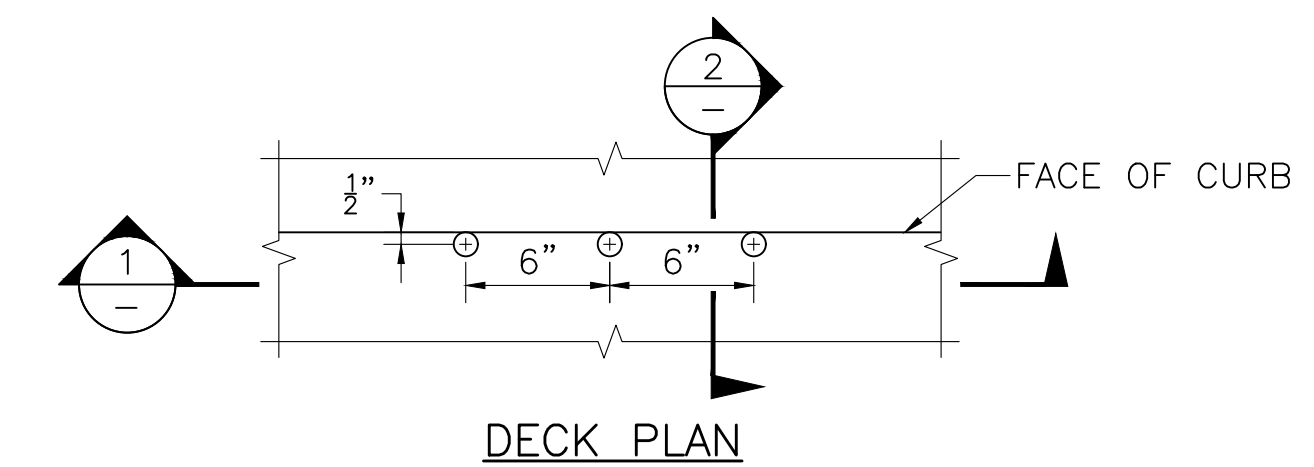
PRE-COMPRESSED SEAL AT MEDIAN
NOT TO SCALE



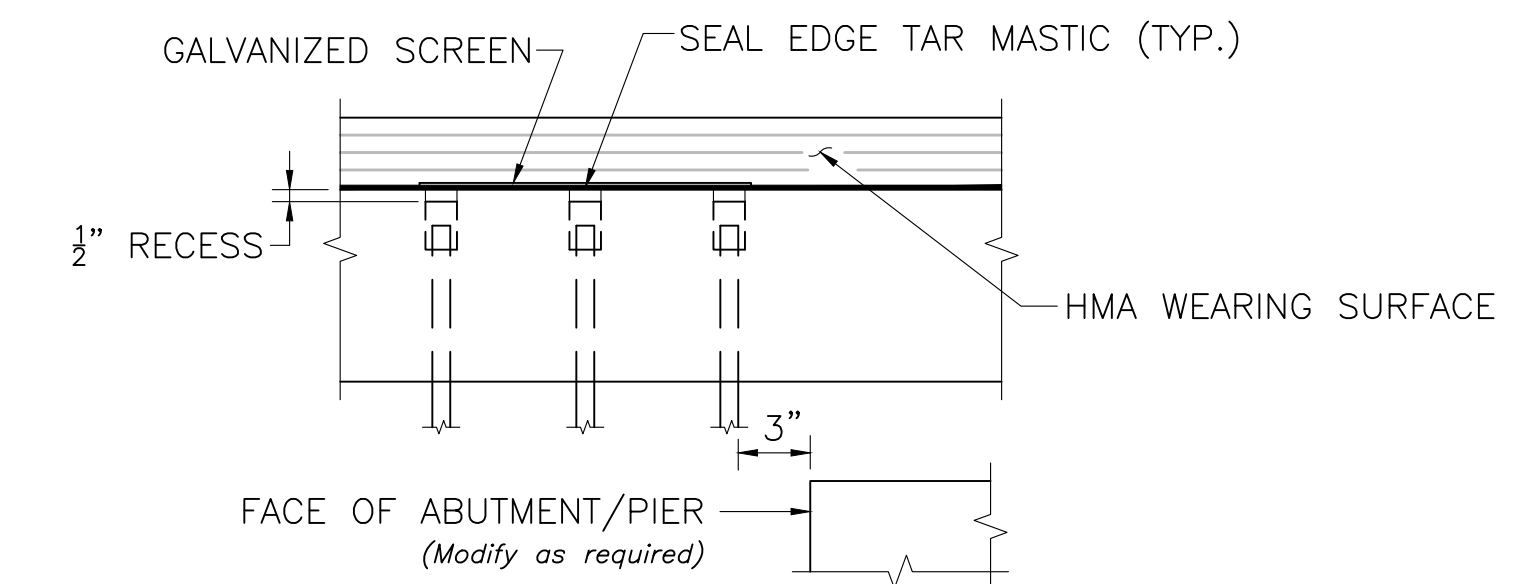
PRE-COMPRESSED SEAL SECTION
SCALE: 3" = 1'-0"

TRIBUTARY THERMAL EXPANSION/CONTRACTION LENGTH (STEEL)	TRIBUTARY THERMAL EXPANSION/CONTRACTION LENGTH (CONC.)	X" JOINT OPENING @ 70°F	NOMINAL JOINT SEAL WIDTH
<128'	<216'	2"	2½"
<160'	<271'	2½"	3"
<192'	<325'	3"	3½"
<224'	<379'	3½"	4"

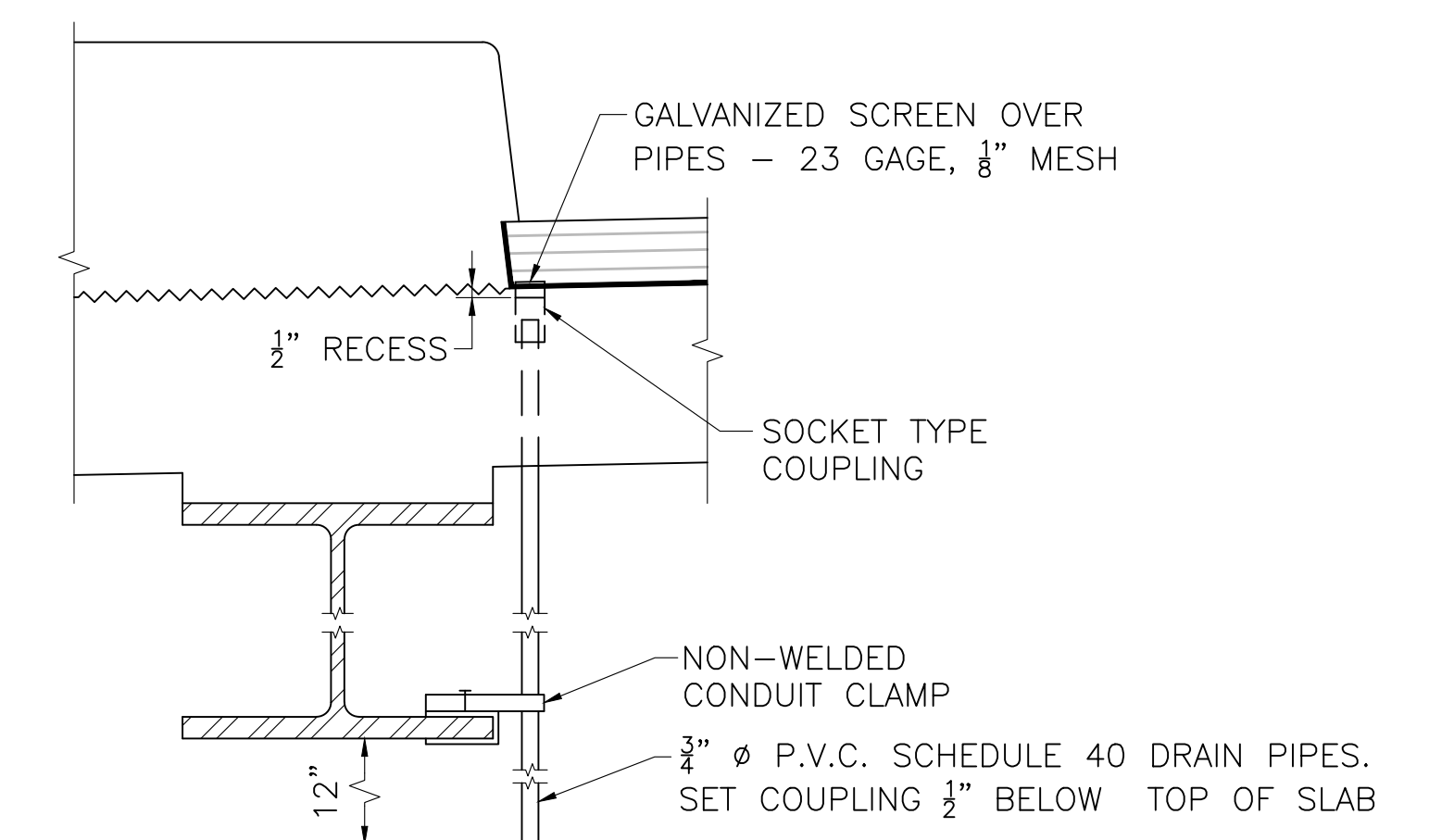
- NOTES:**
1. THIS TABLE IS DEVELOPED BASED ON THE EQUATION FOR MAXIMUM ONE-WAY THERMAL MOVEMENT IN SECTION 3.1.8 OF THE BRIDGE MANUAL AND THE ASSOCIATED ASSUMPTIONS FOR TEMPERATURE RISE AND FALL. THE THERMAL MOVEMENT EQUATION IS REARRANGED SO THAT IT YIELDS THE TRIBUTARY THERMAL EXPANSION/CONTRACTION LENGTH ASSOCIATED WITH A 50% VARIATION FROM THE NOMINAL PRE-COMPRESSED SEAL WIDTH. AN ADDITIONAL ½" HAS BEEN ADDED TO THE REQUIRED NOMINAL JOINT SEAL WIDTH TO ENSURE THAT THE SEAL REMAINS IN COMPRESSION WHEN THE JOINT GAP IS AT IT'S MAXIMUM ANTICIPATED OPENING.



DECK PLAN



SECTION 1

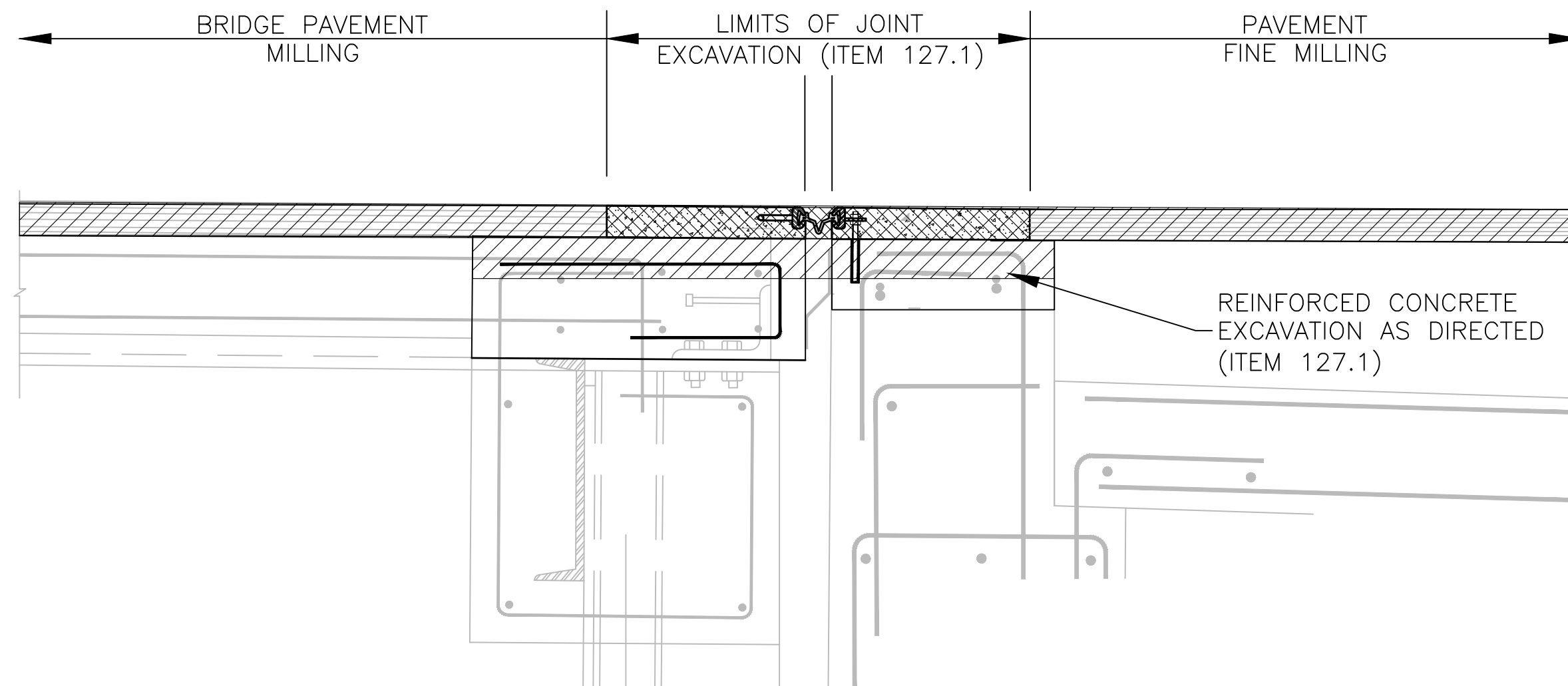


**SECTION 2
DECK DRAIN PIPES**
SCALE: 1½" = 1'-0"

TEMPORARY TRAFFIC CONTROL AND CONSTRUCTION SEQUENCE

1. ALL WORK ON THIS BRIDGE SHALL BE DONE AT NIGHT USING SHORT TERM LANE CLOSURES. TEMPORARY BARRIER WILL NOT BE UTILIZED UNLESS REQUIRED BY THE ENGINEER.
2. ALL WORK SHALL BE DONE BETWEEN THE HOURS OF 7:00 PM AND 5:00 AM.
3. AT LEAST ONE LANE OF TRAFFIC MUST BE KEPT OPEN AT ALL TIMES DURING THE WORK SHIFT. ALL LANES MUST BE OPEN AT THE END OF THE WORK SHIFT IN THEIR ORIGINAL CONFIGURATION.
4. THE CONTRACTOR MAY REMOVE ONLY AS MUCH CONCRETE AS CAN BE PLACED AND CURED IN ONE WORK SHIFT. RAPID SETTING CONCRETE PLACEMENTS SHALL BE COMPLETED NO LATER THAN 2:00 AM FOR NIGHT-TIME OPERATIONS SO THAT THE REQUIRED COMPRESSIVE STRENGTH OF 2000 PSI IS ATTAINED BEFORE THE AREA IS OPENED TO TRAFFIC.
5. TEMPORARY HMA RAMPS SHALL BE USED AT ALL TRANSVERSE AND LONGITUDINAL DROP-OFFS TO TRANSITION TRAFFIC TO THE BRIDGE DECK.
6. FOR THE CONVENIENCE OF THE TRAVELING PUBLIC THE CONTRACTOR IS LIMITED TO WORKING ON NO MORE THAN THREE BRIDGE DECKS AT A TIME. ALL BRIDGE WORK INCLUDING FINAL SURFACE COURSE PAVING MUST BE COMPLETED BEFORE ANY WORK CAN BEGIN ON ADDITIONAL BRIDGES. FOR THIS PURPOSE, A BRIDGE DECK IS DEFINED AS A SINGLE BRIDGE IN A SINGLE DIRECTION, REGARDLESS OF IF THE BRIDGE NUMBER INCLUDES A DECK IN EACH DIRECTION OF TRAVEL.
7. BRIDGE DECKS SHALL NOT BE LEFT EXPOSED TO TRAFFIC WITHOUT SURFACE COURSE PAVEMENT FOR MORE THAN 2 WEEKS.

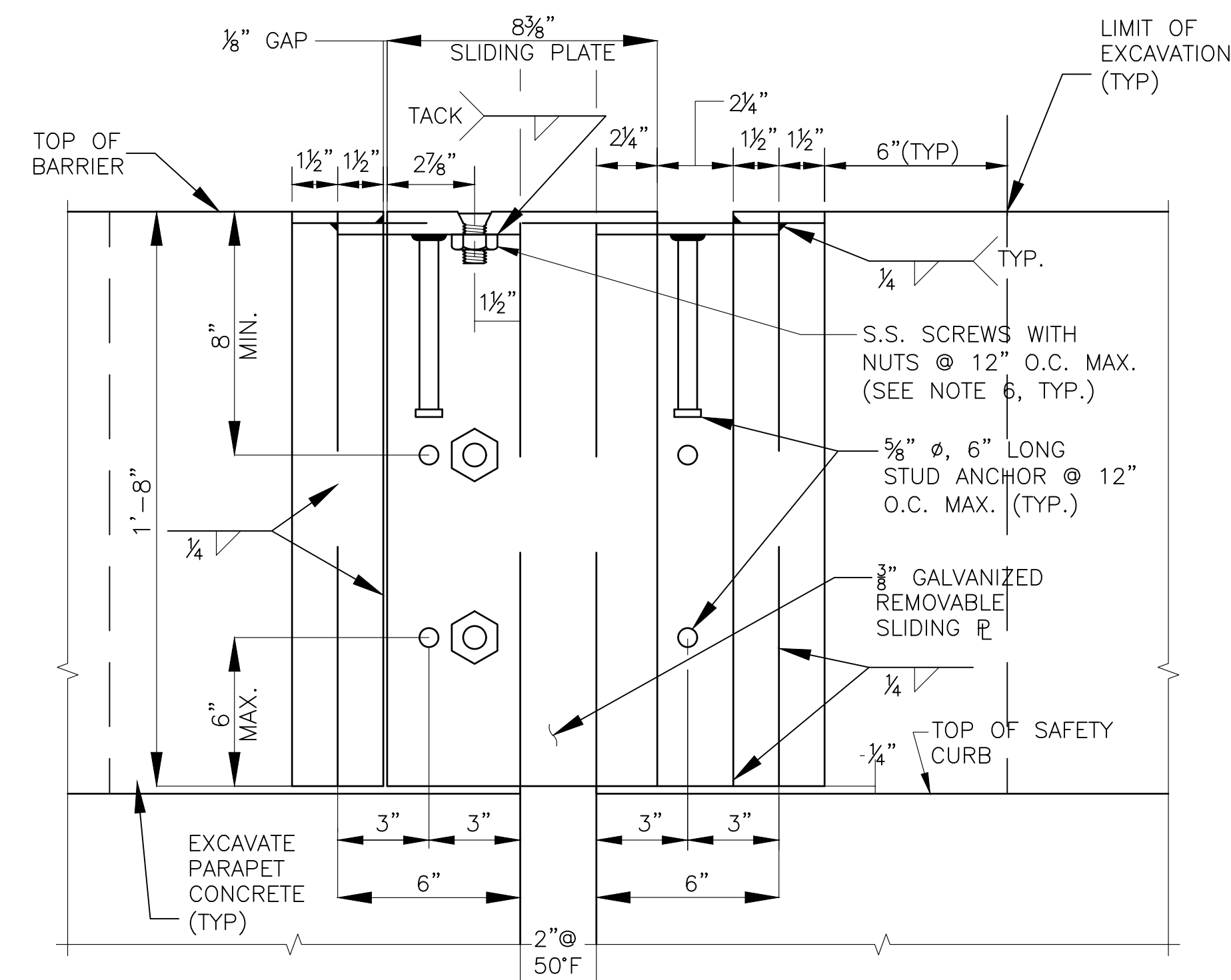
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	29	55
PROJECT FILE NO.		612106	



NOTES:

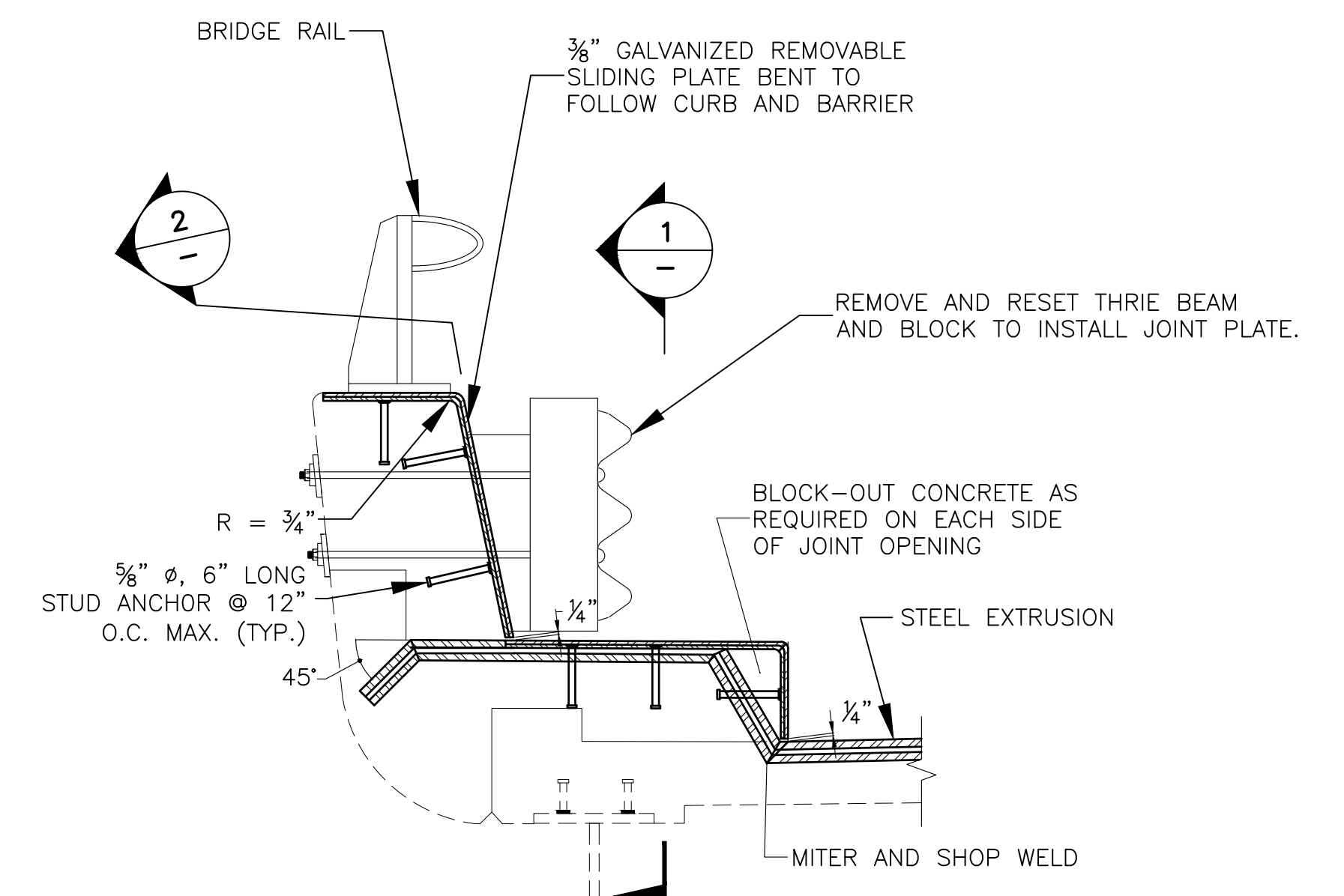
1. THE ABOVE DETAIL IS FROM A SKETCH. CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSIONS FROM THE EXISTING BRIDGE PLAN AND SITE VISIT.
2. THIS DETAIL IS FOR BRIDGE S-24-080 (10R) AT THE NORTH ABUTMENT.
3. DETERIORATED REINFORCED CONCRETE SHALL BE REMOVED AS DIRECTED BY THE ENGINEER.

EXISTING STRIP SEAL BRIDGE JOINT SYSTEM



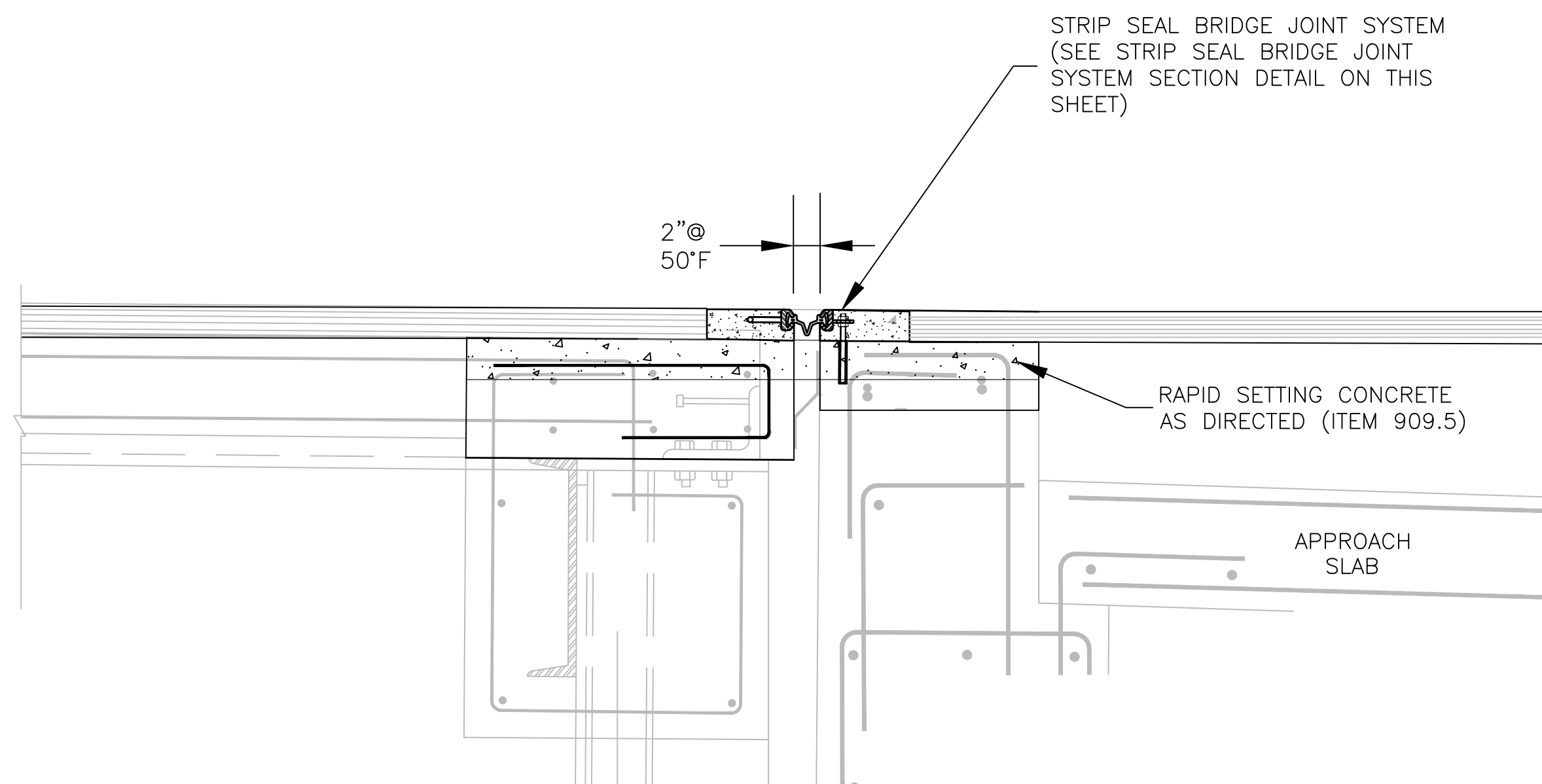
SECTION 2

STRIP SEAL JOINT VERTICAL SECTION THRU BARRIER



NOT TO SCALE

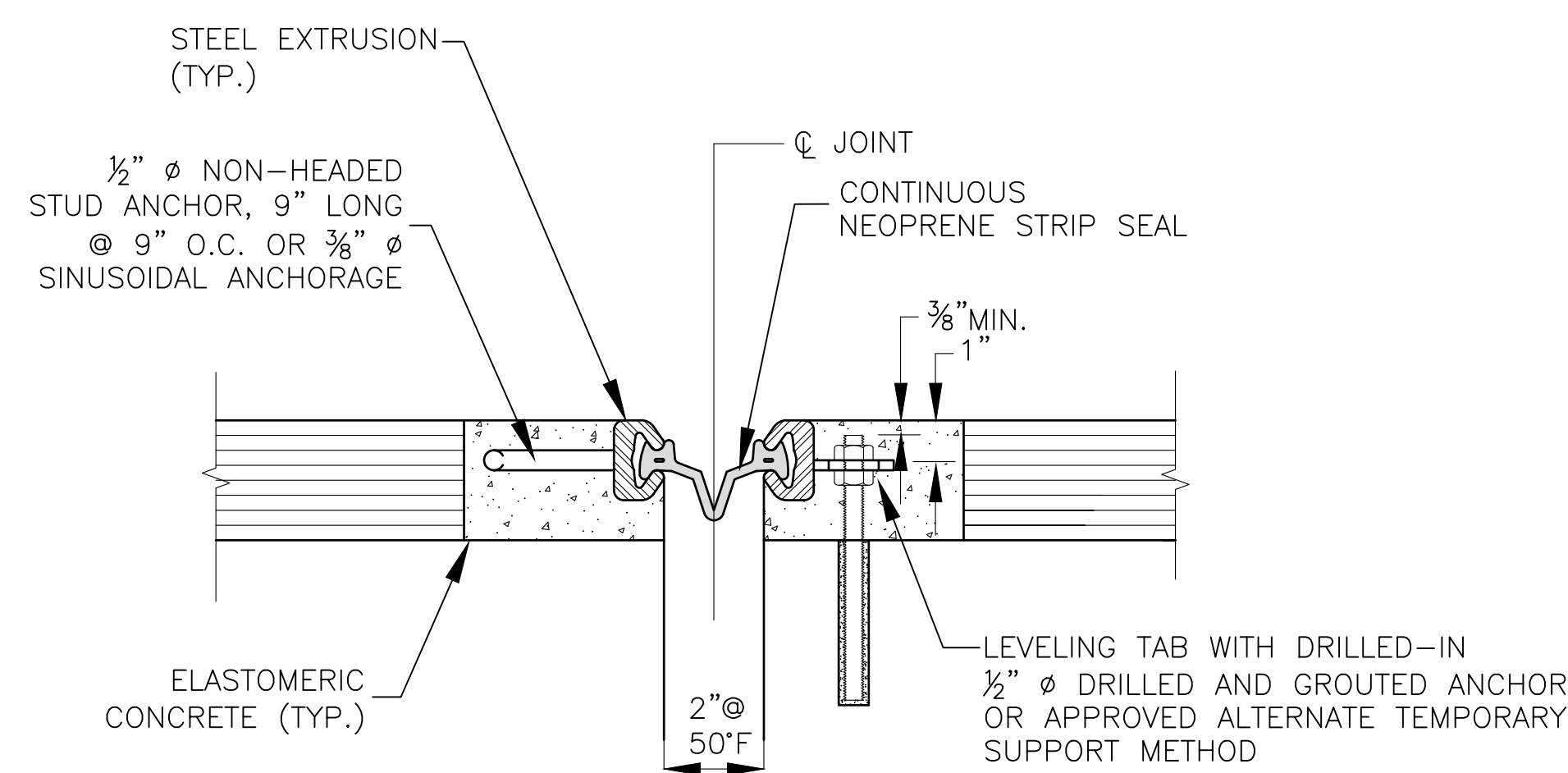
STRIP SEAL JOINT AT SAFETY CURB



NOTES:

1. THE ABOVE DETAIL IS A SKETCH. CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSIONS FROM THE EXISTING BRIDGE PLAN AND SITE VISIT.
2. THIS DETAIL IS FOR BRIDGE S-24-080(10R) AT THE NORTH ABUTMENT.

PROPOSED STRIP SEAL BRIDGE JOINT SYSTEM



AT ANCHOR LOCATIONS

AT TEMPORARY SUPPORT LOCATIONS

NOTES:

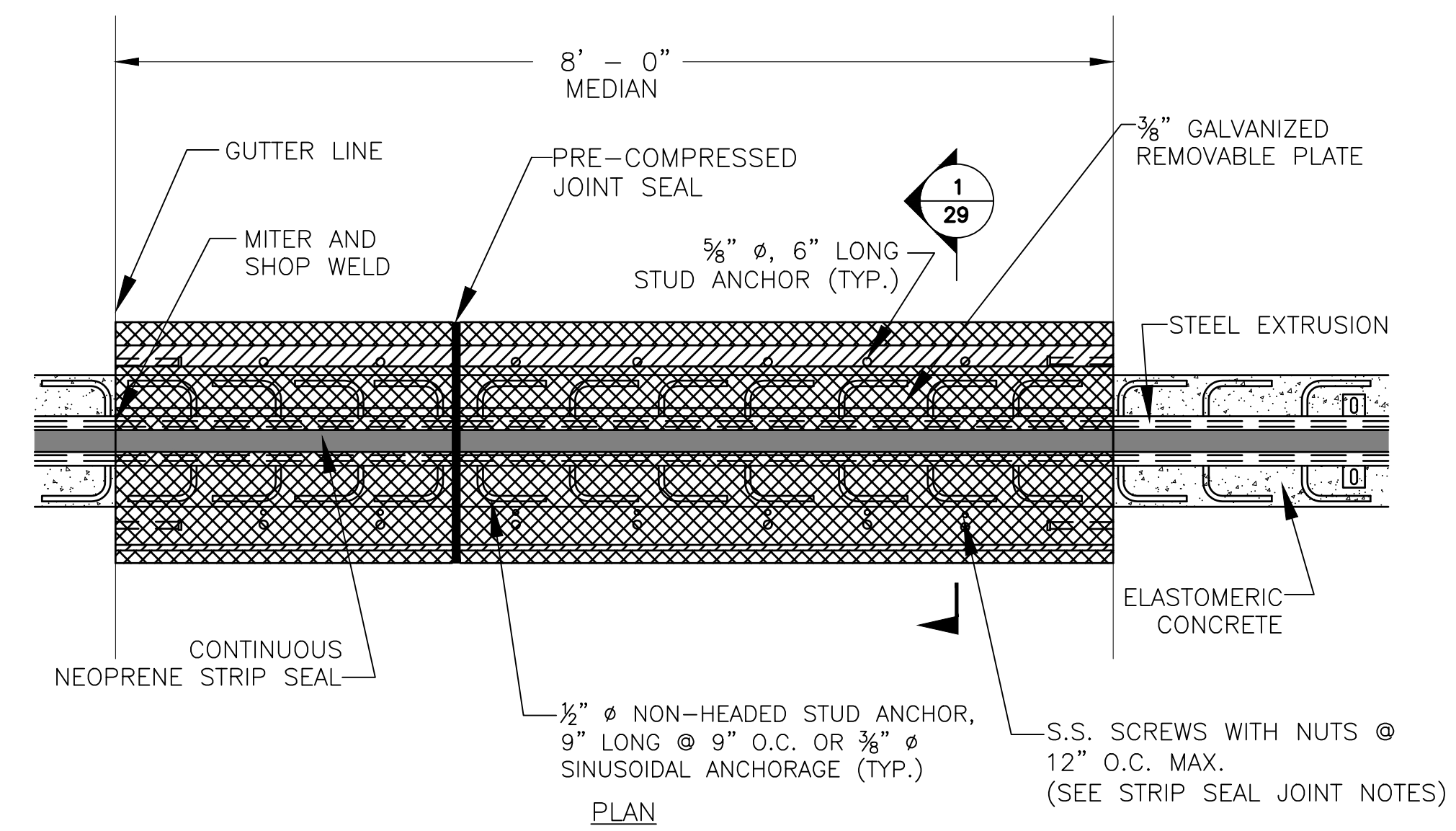
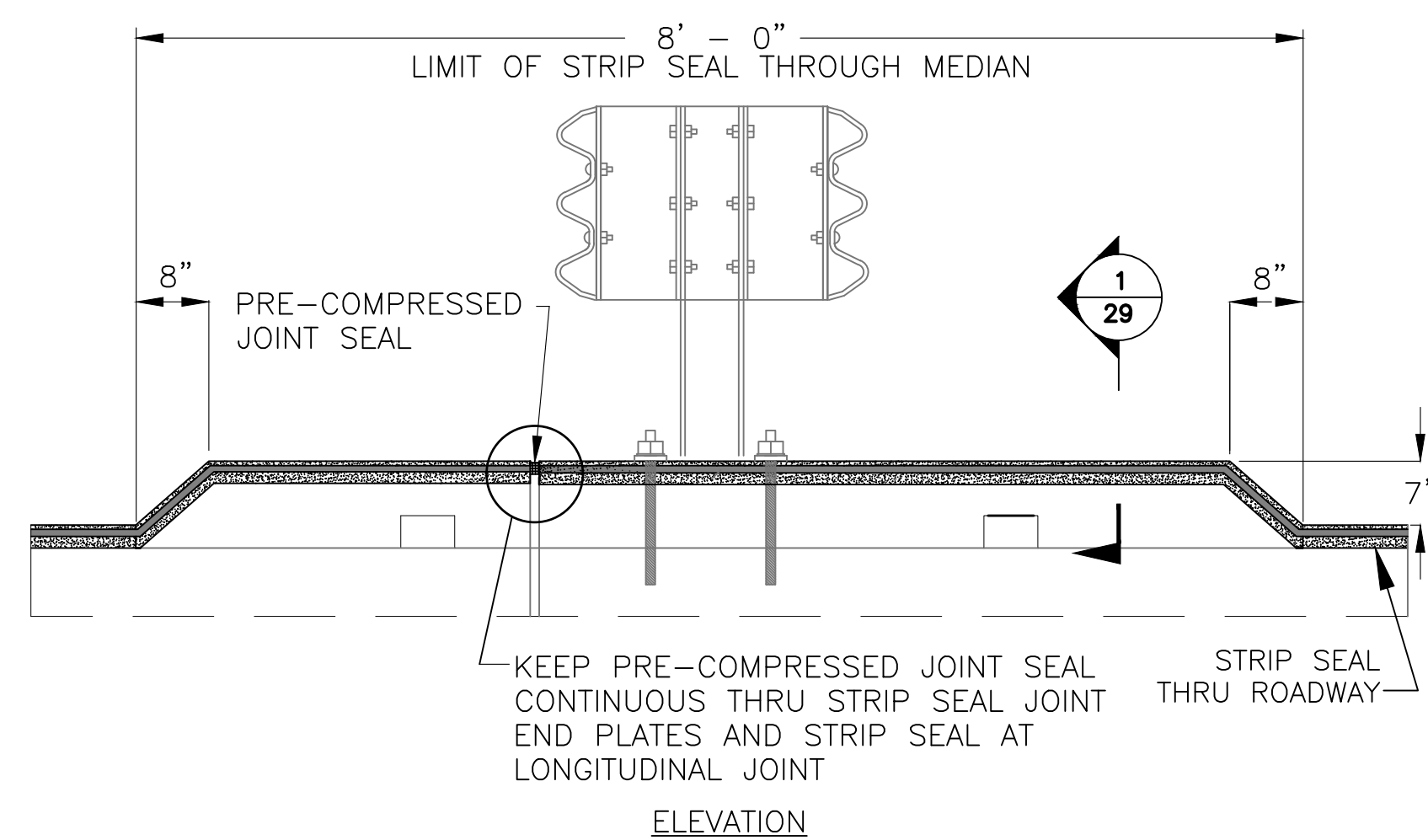
1. SEE STRIP SEAL JOINT NOTES ON SHEET 30.

PROPOSED STRIP SEAL BRIDGE JOINT SYSTEM SECTION

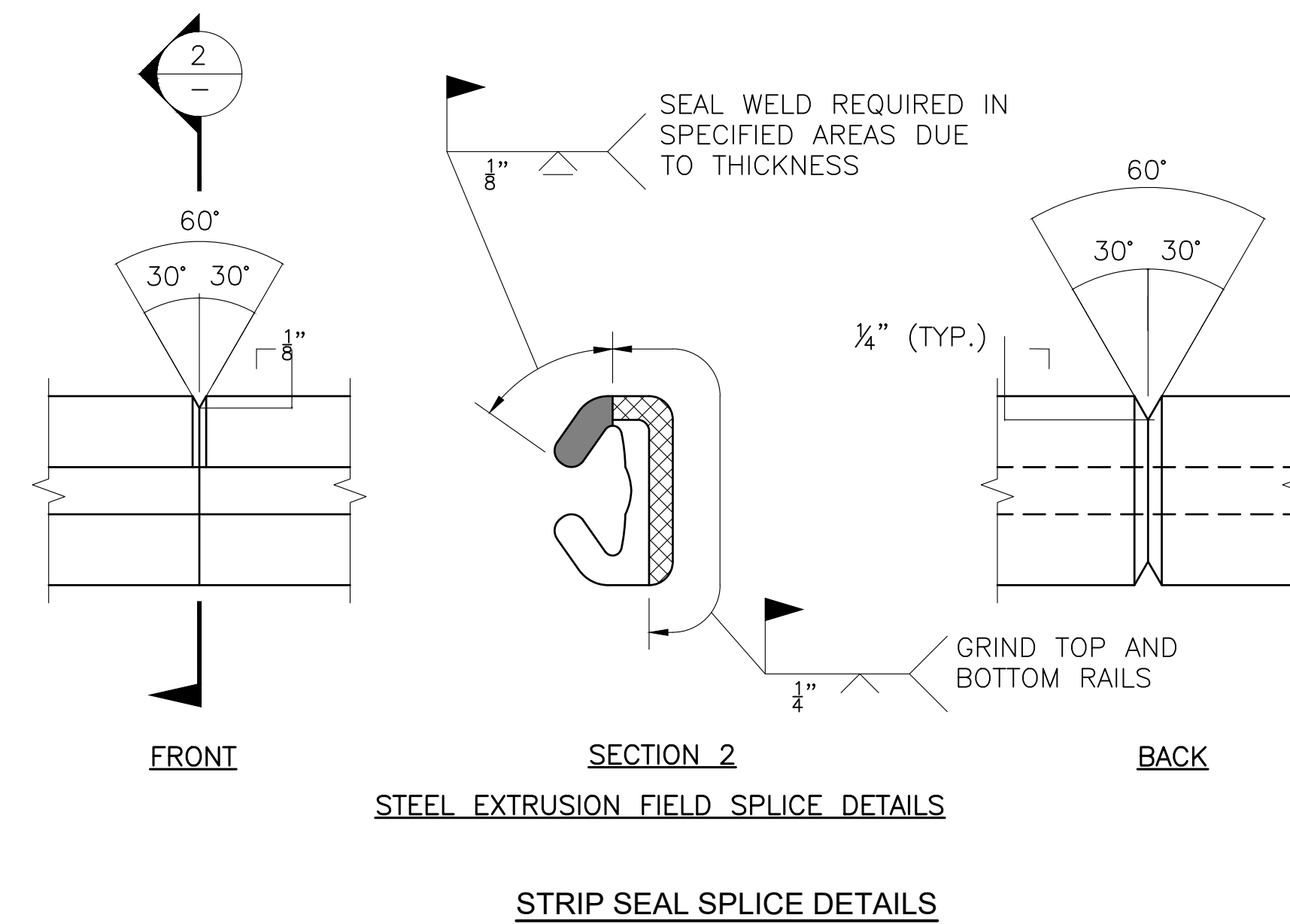
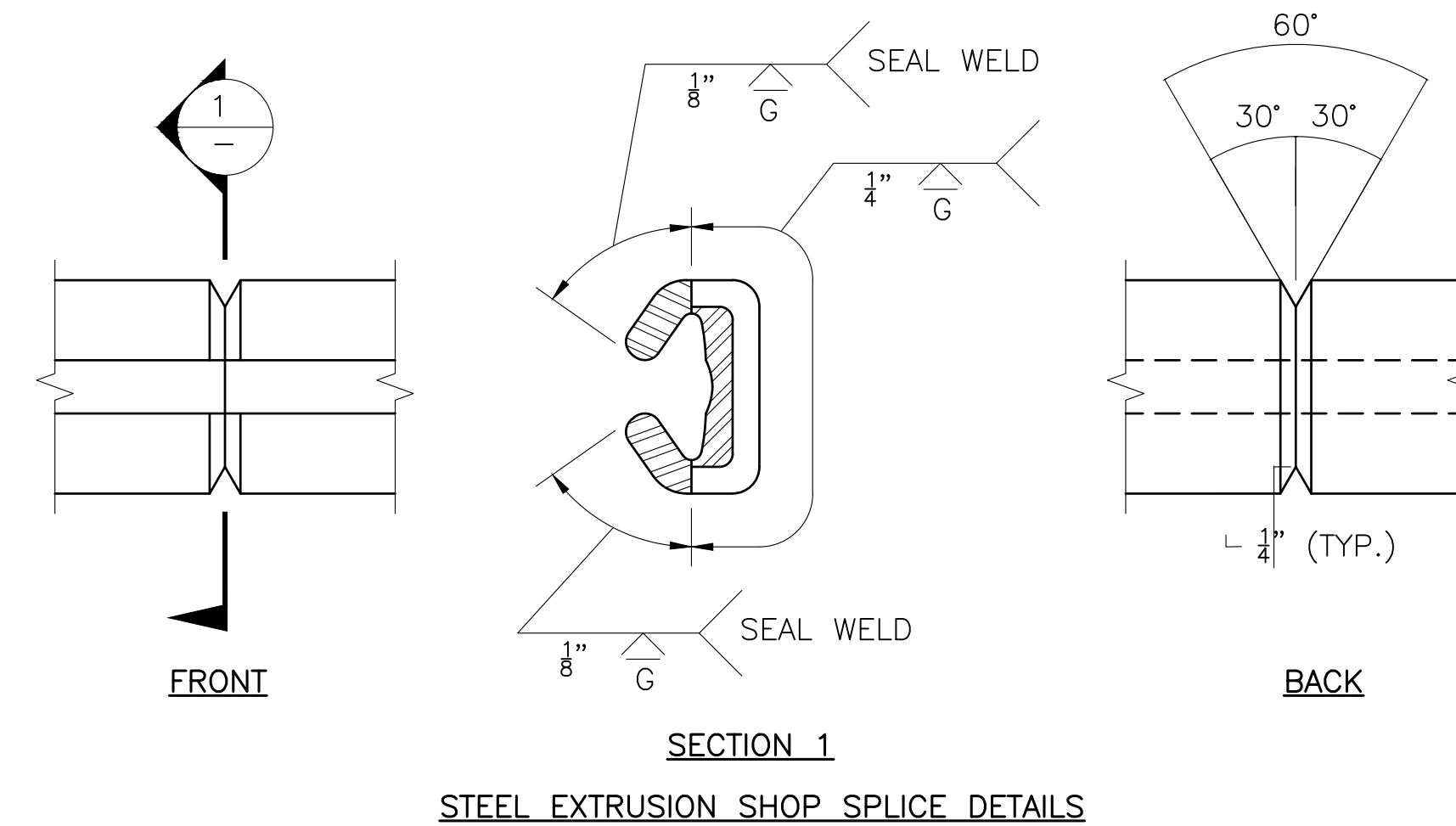
CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	30	55
PROJECT FILE NO.		612106	

BRIDGE DETAILS
INTERSTATE 91 OVER MAIN STREET



STRIP SEAL JOINT AT MEDIAN



STRIP SEAL JOINT NOTES:

1. THE DETAILS SHOWN HERE ARE INTENDED AS A GENERAL GUIDE FOR A TYPICAL GLANDULAR TYPE STRIP SEAL JOINT SYSTEM. SHOP DRAWINGS WHICH INCLUDE DETAILS OF THE GLAND SHAPE, STEEL EXTRUSION SHAPE, WELDING PROCEDURE SPECIFICATIONS, ANCHOR ARRANGEMENT, TEMPERATURE CORRECTION REQUIREMENTS, AND TEMPORARY SUPPORT DETAILS ARE PROVIDED ON THE FOLLOWING SHEETS.
2. ALL STRUCTURAL STEEL COMPONENTS SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER THE COMPLETION OF ALL WELDING OPERATIONS STEEL PLATE ASSEMBLIES SHALL BE HOT-DIP GALVANIZED.
3. ELASTOMERIC CONCRETE BLOCKOUT SHALL BE ABRASIVE BLASTED, CLEANED WITH OIL FREE COMPRESSED AIR, AND PRIMED WITH BONDING AGENT PRIOR TO CASTING ELASTOMERIC CONCRETE.
4. NEOPRENE STRIP SEAL SHALL BE BONDED TO STEEL EXTRUSION WITH MANUFACTURERS APPROVED ADHESIVE.
5. INSTALL CONTINUOUS NEOPRENE STRIP SEAL IN THE FIELD. SPLICING OF SEAL IS NOT PERMITTED. TEMPORARY SEAL SHALL BE REQUIRED ON STAGE CONSTRUCTION PROJECTS.
6. 3/4" ϕ STAINLESS STEEL FLAT HEAD MACHINE SCREWS STAINLESS STEEL NUTS. RECESS STAINLESS STEEL SCREWS 1/8" BELOW PLATE SURFACE. PRIOR TO PLACEMENT OF SIDEWALK/SAFETY CURB CONCRETE, LUBRICATE STAINLESS STEEL SCREWS WITH GRAPHITE AND SET SECURELY IN PLACE. MACHINE SCREWS TO BE TEMPORARILY REMOVED AFTER CONCRETE HAS ATTAINED FINAL SET.
7. NO WELDING OF PORTIONS OF STEEL EXTRUSIONS IN DIRECT CONTACT WITH NEOPRENE SEAL SHALL BE PERMITTED.
8. THE STRIP SEAL BRIDGE JOINT SYSTEM WILL BE PROVIDED TO THE CONTRACTOR BY MASSDOT.

THESE SHEETS ARE INCLUDED FOR REFERENCE AND DEPICT THE BRIDGE EXPANSION JOINT THAT MASSDOT WILL PROVIDE TO THE CONTRACTOR TO INSTALL UNDER ITEM 972.1. SEE THE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	31	55
PROJECT FILE NO.		612106	

BRIDGE JOINT REPAIRS ON INTERSTATE 91 - 608550

Transmittal

Date: 10/21/2020
WBA Project No.: 219794

To:

Lindon Group, Inc
28 Sutton Ave

East Providence, RI 02914
Attn: Phil Brooks

phone: 401-272-2081
fax:
e-mail: pbrooks@lindongroup.com

We Are Sending You: Qty - (1) Shop Drawing(s)
Drawing No.: 219794-01
Status: SUBMITTED
Rev. No.: 0
Description: WABO STRIP SEAL TYPE A EXPANSION JOINT

Comments:

Sincerely,
Watson Bowman Acme Corp.

G. GRYSKALCZYK

BASF
We create chemistry

Watson Bowman Acme Corp.
95 Pineview Drive Amherst, NY 14228
phone: (716) 691-7566 fax: (716) 691-9239
www.wbacorp.com



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<input checked="" type="checkbox"/>	Approved	<input type="checkbox"/>	Revise and resubmit
<input type="checkbox"/>	Approved as noted, Resubmission not required	<input type="checkbox"/>	Not Approved

massDOT
Massachusetts Department of Transportation
Highway Division

District 2 NORTHAMPTON

Daniel J. Sund Digitally signed by Daniel J. Sund
Date: 2021.01.06 10:14:37 -05'00'

- Approval of shop drawings indicates conformance with the concept of this project and general compliance with the contract documents.
- Contractor is responsible for all dimensions and quantities and for the details of fabrication, construction and coordination of all trades and subcontractors.
- Approval does not authorize changes to contract requirements unless authorized by prior letter or change order.

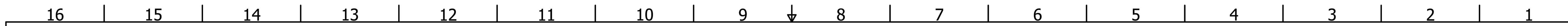
NO.	REVISION DESCRIPTION	INIT	DATE
0	ORIGINAL RELEASE	GPR	10/20/2020

THESE SHEETS ARE INCLUDED FOR REFERENCE AND DEPICT THE BRIDGE EXPANSION JOINT THAT MASSDOT WILL PROVIDE TO THE CONTRACTOR TO INSTALL UNDER ITEM 972.1. SEE THE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

**CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	32	55
PROJECT FILE NO.		612106	

**BRIDGE DETAILS
S-24-080 SHOP DRAWING**



GENERAL NOTES

1.0 GENERAL

1.1 THE CONTRACTOR MUST VERIFY ALL DIMENSIONS PRIOR TO FABRICATION TO ENSURE ACCURACY OF THE EXPANSION JOINT.

1.2 ALL WORK SHALL COMPLY WITH THE 2020 ENGLISH EDITION MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES AND THE SUPPLEMENTAL SPECIFICATIONS CONTAINED IN THIS VERSION.

1.3 IN THE EVENT OF CONFLICT BETWEEN THE DRAWINGS AND FIGURES WRITTEN THEREON, THE FIGURES, UNLESS OBVIOUSLY INCORRECT, ARE TO GOVERN OVER SCALED DIMENSIONS. IN THE CASE OF AN DISCREPANCY BETWEEN THE PLANS AND THE SPECIFICATIONS, THE PLANS ARE TO GOVERN. IF THERE IS A DISCREPANCY BETWEEN THE STANDARD SPECIFICATIONS AND SUPPLEMENTAL SPECIFICATIONS, THE SUPPLEMENTAL SPECIFICATIONS ARE TO GOVERN. SPECIAL PROVISIONS SHALL GOVERN OVER SUPPLEMENTAL SPECIFICATIONS, PLANS AND STANDARD SPECIFICATIONS, IN ACCORDANCE WITH SECTION 5.04 OF THE STANDARD SPECIFICATIONS.

2.0 STANDARD SPECIFICATION CRITERIA

2.1 WATSON BOWMAN ACME MEETS THE QUALITY CERTIFICATION REQUIREMENTS FOR AISC CATEGORY SIMPLE STEEL BRIDGES.

3.0 SPECIAL PROVISION CRITERIA

4.0 MATERIALS

4.1 ALL STRUCTURAL AND PERMANENT MATERIALS SHALL BE OF DOMESTIC ORIGIN, AND MATERIAL CERTIFICATION STATING ALL SUCH MATERIALS ARE "MELTED AND MANUFACTURED" IN THE UNITED STATES OF AMERICA SHALL BE SUBMITTED.

4.2 STEEL EXTRUSIONS, PLATES, BARS AND ANGLE WILL CONFORM TO ASTM A 709, GRADE 36 (AASHTO M 270, GRADE 36), CHECKERED PLATE IS NO LONGER MANUFACTURED IN THE UNITED STATES, IF REQUIRED MAY BE OF FOREIGN ORIGIN.

4.3 BOLTS, NUTS AND WASHERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-325, A-563 AND F-436 RESPECTIVELY. COUNTERSUNK MACHINE SCREWS AND RICHMOND CAST IN PLACE INSERTS SHALL BE ZINC PLATED.

4.4 THE MATERIAL FOR THE NEOPRENE STRIP SEAL SHALL BE IN ACCORDANCE WITH ASTM D-2628, AS MODIFIED BELOW, EXCEPT THAT NO RECOVERY TESTS OR COMPRESSION-DEFLECTION TESTS WILL BE REQUIRED:

REQUIRED PHYSICAL PROPERTIES	ASTM PROCEDURE	PHISICAL REQUIREMENTS
TENSILE STRENGTH, MIN. PSI (MPA)	D-412	2000 (13.8)
ELONGATION @ BREAK, MIN	D-412	250%
HARDNESS, TYPE A DUROMETER	D-2240	55±5
OVEN AGING 70 HRS. @ 212°F	D-573	
TENSILE STRENGTH, LOSS, MAX.		20%
ELONATION, LOSS MAX.		20%
HARDNESS, TYPE A DURO (POINTS CHANGE)		0 TO +10
OIL SWELL, ASTM #3 OIL, 70 HRS. @ 212°F		
WEIGHT CHANGE, MAX.	D-471	45%
OZONE RESISTANCE, 20% STRAIN 300 PPHM IN AIR 70 HRS. @ 104°F (WIPE WITH TOLUENE TO REMOVE SURFACE CONTAMINANTS)	D-1149	NO CRACKS
LOW TEMPERATURE STIFFENING 7 DAYS @ 14°F		
HARDNESS TYPE A DURO, POINTS CHANGE.	D-2240	0 TO +15
LOW TEMPERATURE	D746	NOT BRITTLE
COMPRESSION SET, 70 HRS @ 212°F	D395 METHOD B	40% MAXIMUM

4.5 PRIMA LUB ADHESIVE IS USED TO BOND THE NEOPRENE STRIP SEAL TO THE STEEL EXTRUSIONS. THIS ADHESIVE SHALL BE A ONE-PART MOISTURE CURING POLYURETHANE HYDROCARBON SOLVENT MIXTURE WITH THE FOLLOWING PHYSICAL PROPERTIES IN ACCORDANCE WITH ASTM D 4070:

AVERAGE WEIGHT PER GALLON 8.5 lbs ± 10%
 SOLIDS CONTENT 72% (MIN.)
 ADHESIVE TO REMAIN WORKABLE FROM 5 - 120°F
 FILM STRENGTH 2000 psi (MIN.)
 ELONGATION AT ROOM TEMPERATURE 350% (MIN.)
 FLASH POINT (SETA CLOSED CUP) OVER 100°F

5.2 QUALITY CONTROL INSPECTION

5.2.1 DURING FABRICATION OF THE EXPANSION JOINT, WATSON BOWMAN ACME SHALL PROVIDE FULL TIME QUALITY CONTROL INSPECTION TO INSURE THAT THE MATERIALS AND WORKMANSHIP MEET OR EXCEED THE MINIMUM REQUIREMENTS OF THE CONTRACT.

5.2.2 QUALITY CONTROL INSPECTION SHALL BE THE RESPONSIBILITY OF A QUALITY CONTROL GROUP, WHICH SHALL BE INDEPENDENT OF THE FABRICATION GROUP.

5.3 WATSON BOWMAN ACME SHALL NOTIFY THE ENGINEER WHEN MATERIALS HAVE BEEN DELIVERED TO THE FABRICATION SITE. WATSON BOWMAN ACME SHALL GIVE THE ENGINEER AT LEAST 10 DAYS' NOTICE AFTER DELIVERY BEFORE COMMENCING THE FABRICATION OF THE EXPANSION JOINTS.

6.0 FABRICATION

6.1 FABRICATION SHALL BE IN ACCORDANCE WITH WATSON BOWMAN ACME'S QUALITY CONTROL MANUAL AND MANUFACTURING TOLERANCES.

6.2 STEEL SHALL BE BLAST CLEANED PRIOR TO STARTING FABRICATION. FABRICATION INCLUDES, BUT IS NOT LIMITED TO, DRILLING, CUTTING AND WELDING. 6.2.1 THE BLAST CLEANING SHALL CONFORM TO SSPC-SP10 "NEAR-WHITE BLAST CLEANING."

6.3 WELDING SHALL NOT COMMENCE UNTIL THE WELDING PROCEDURES AND WELDER CERTIFICATIONS HAVE BEEN APPROVED BY THE ENGINEER.

6.4 ALL WELDING AND PREPARATION AND ASSEMBLY OF MATERIAL FOR WELDING SHALL CONFORM TO THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES AND THE BRIDGE WELDING CODE AASHTO/AWS D1.5M/D1.5:2008.

6.5 ALL WELDING SHALL BE EXECUTED USING EITHER GMAW OR FCAW PROCESSES UNLESS A PROCESS IS SPECIFICALLY IDENTIFIED ON THE SHOP DRAWINGS HEREIN.

6.6 NEOPRENE SEAL SHALL BE FIELD INSTALLED BY THE CONTRACTOR IN THE EXPANSION JOINT USING THE SEAL INSTALLATION TOOLS AND PRIMA LUB ADHESIVE. ADHESIVE SHALL BE APPLIED TO THE FULL PERIMETER OF THE WALLS OF THE STRIP SEAL CAVITY. THE SEAL SHALL BE ONE CONTINUOUS PIECE, FIELD SPICES WILL NOT BE PERMITTED.

6.7 THE EXPANSION JOINT OPENING SHALL BE PRESET BY WATSON BOWMAN ACME TO A JOINT OPENING SHOWN AT 50°F. FINAL ADJUSTMENT SHALL BE MADE IN THE FIELD BY THE CONTRACTOR AT THE DIRECTION OF THE ENGINEER IN CHARGE, PRIOR TO FINAL CONCRETE PLACEMENT.

6.8 DISTORTED MEMBERS SHALL BE STRAIGHTENED BY MECHANICAL MEANS OR, IF APPROVED BY THE ENGINEER, BY CAREFULLY PLANNED PROCEDURE AND SUPERVISED APPLICATION OF A LIMITED AMOUNT OF LOCALIZED HEAT.

6.9 THE SHOP SHALL PREPARE THE ENDS OF THE TYPE "A" STEEL SHAPE FOR FIELD WELDING.

7.0 COATINGS

7.1 THE EXPANSION JOINT ASSEMBLIES SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH AASHTO M111 (ASTM A123), SECTION M7.10.0 "GALVANIZED COATINGS" OF THE STANDARD SPECIFICATION AND SUB-SECTION 960.64 "GALVANIZING" OF THE SUPPLEMENTAL SPECIFICATIONS.

7.2 GALVANIZED MEMBERS REQUIRING SHOP FABRICATION AND ASSEMBLY SHALL BE CUT, WELDED, AND/OR DRILLED PRIOR TO GALVANIZING. MEMBERS TO BE MILLED SHALL BE GALVANIZED PRIOR TO MILLING. A THIN LAYER OF A RUST INHIBITOR SHALL BE APPLIED TO THE MILLED SURFACES.

7.3 GALVANIZED MEMBERS THAT ARE TO BE WELDED AFTER GALVANIZING SHALL BE MASKED 1 INCH ON EITHER SIDE OF THE WELD LINE PRIOR TO GALVANIZING. AFTER WELDING, THE WELD AREAS SHALL BE CLEANED IN ACCORDANCE WITH THE SSPC-SP3 "POWER TOOL CLEAN" AND COATED WITH "HIGH ZINC DUST CONTENT" PAINT MEETING SUPPLEMENTAL SPECIFICATION M7.04.11.

7.4 GALVANIZED SURFACES THAT ARE DAMAGED AT ANY TIME AFTER THE APPLICATION OF THE ZINC COATING SHALL BE REPAIRED IN ACCORDANCE WITH ASTM A 780 "REPAIR OF HOT DIP GALVANIZING".

7.5 PREPARATION OF THE DAMAGED SURFACE SHALL BE PERFORMED AS RECOMMENDED ON THE TOUCH-UP PAINT LABEL. THE SURFACES TO BE RECONDITIONED WITH ZINC-RICH PAINT SHALL BE CLEAN, DRY, AND FREE OF OIL, GREASE, AND CORROSION PRODUCTS.

7.6 POWER DISK SAND AREAS TO BE REPAIRED TO BRIGHT METAL. TO ENSURE A SMOOTH RECONDITIONED COATING CAN BE EFFECTED, SURFACE PREPARATION SHALL EXTEND INTO THE UNDAMAGED GALVANIZED COATING.

7.7 IF AREAS TO BE RECONDITIONED INCLUDE WELDS, FIRST REMOVE ALL FLUX RESIDUE AND WELD SPATTER BY MECHANICAL MEANS, CHIPPING, ETC.

7.8 BRUSH-APPLY THE ZINC-RICH PAINT TO THE PREPARED AREA. THE PAINT SHALL BE APPLIED SUCH AS TO ACHIEVE A DRY FILM THICKNESS OF A MINIMUM OF 3 mils AND NOT MORE THAN 5 mils.

7.9 SHOP SHALL USE ZRC COLD GALVANIZING COMPOUND TO TOUCH-UP GALVANIZING.

<input checked="" type="checkbox"/> Approved	<input type="checkbox"/> Revise and resubmit
Approved as noted, Resubmission not required	Not Approved

District 2 NORTHAMPTON

Daniel J. Sund

Digitally signed by Daniel J. Sund
Date: 2021.01.06 10:14:15 -05'00'

1. Approval of shop drawings indicates conformance with the concept of this project and general compliance with the contract documents.
2. Contractor is responsible for all dimensions and quantities and for the details of fabrication, construction and coordination of all trades and subcontractors.
3. Approval does not authorize changes to contract requirements unless authorized by prior letter or change order.

5.0 INSPECTION REQUIREMENTS

5.1 IN HOUSE SHOP INSPECTION BY A REPRESENTATIVE OF MASSACHUSETTS HIGHWAY DEPARTMENT OF TRANSPORTATION OR DESIGNATED REPRESENTATIVE INDEPENDENT OF WATSON BOWMAN ACME CORP.'S QUALITY CONTROL INSPECTOR IS REQUIRED.

PROJECT INFORMATION	
STATE:	MA
CITY:	SPRINGFIELD (DISTRICT 2)
CONTRACT NO.:	
PROJECT ID:	608550
BRIDGE NAME/NO.:	MAIN ST BRIDGE, S-24-080 (10R)
WBA PRODUCT NO.:	SSA219794AA, AB
JOINT TYPE:	STRIP SEAL TYPE "A"
CONTRACTOR:	LINDON GROUP, INC
FEDERAL AID NO.:	NHP(BR-ON)-0035(133)X

INSPECTION REQUIRED	DRAWING ACTION: <div style="border: 1px solid black; padding: 5px; width: 80px; margin: 0 auto;">SUBMITTED</div>	<p>TOLERANCES (UNLESS OTHERWISE SPECIFIED) ALL DIMENSIONS ARE IN INCHES</p> <p>DECIMAL: X ± .030 .XX ± .015 .XXX ± .010</p> <p>FRACTION:</p> <p>OVERALL LGTH: ±1/4 / 20 FT</p> <p>ANGULAR: ±2° (FAB) / ±1° (FORM)</p> <p>LINEAR (DTLS): ±1/16</p> <p>HOLE SIZE/DEPTH: ±1/16 -0</p> <p>SWEEP/CAMBER: 1/4 IN ANY 5 FT SECTION</p> <p>STUD LOCATION: ±1</p> <p>HOLE LOCATION: ±1/2</p> <p>BUTT SPICE: ±1/2</p> <p>LOCATION: ±1/2</p> <p>*WELD LOCATIONS PER APPLICABLE CODE/SPEC</p>
DATE: 10/21/2020		

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Watson Bowman Acme Corp.
 95 Pineview Drive Amherst, NY 14228
 phone: (716) 691-7566 fax: (716) 691-9239
www.wbacorp.com

DRAWING INFORMATION:	
BRIDGE JOINT REPAIRS ON INTERSTATE 91 - 608550	INTERSTATE 91 OVER MAIN STREET (NORTH END)
BRIDGE S-24-080 (10R)	WABO STRIP SEAL TYPE A EXPANSION JOINT
GPR 10/20/2020	DATE
INIT	DATE
GPR 10/20/2020	DATE
JFW	DATE
NTS	DATE
WBA JOB NO.: 219794	REV.: 0
SHEET: 1 OF 9	DRAWING NO.: 219794-01

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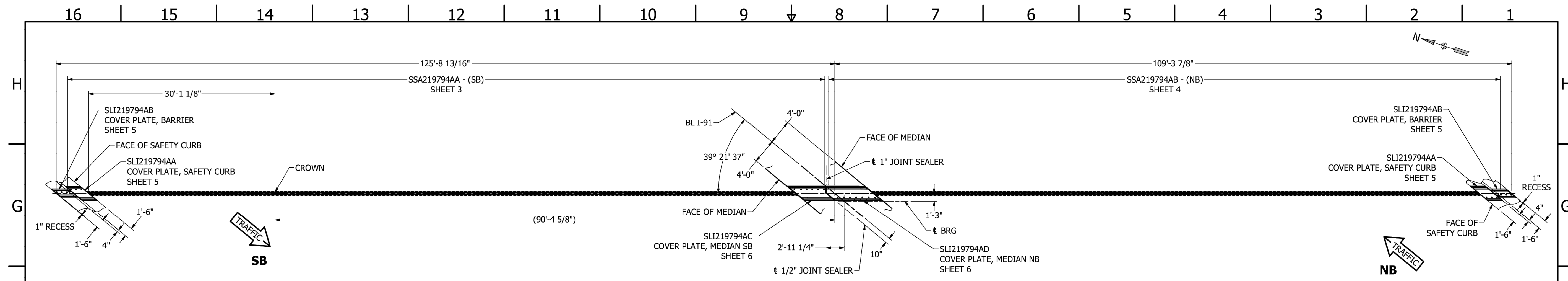
612106-HD-5-BRIDGE SHOP DRAWINGS.DWG Plotted on 3-Nov-2023 10:40 AM

THESE SHEETS ARE INCLUDED FOR REFERENCE AND DEPICT THE BRIDGE EXPANSION JOINT THAT MASSDOT WILL PROVIDE TO THE CONTRACTOR TO INSTALL UNDER ITEM 972.1. SEE THE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

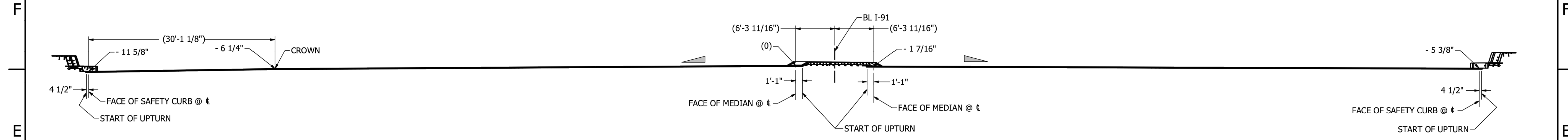
CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	33	55
PROJECT FILE NO.		612106	

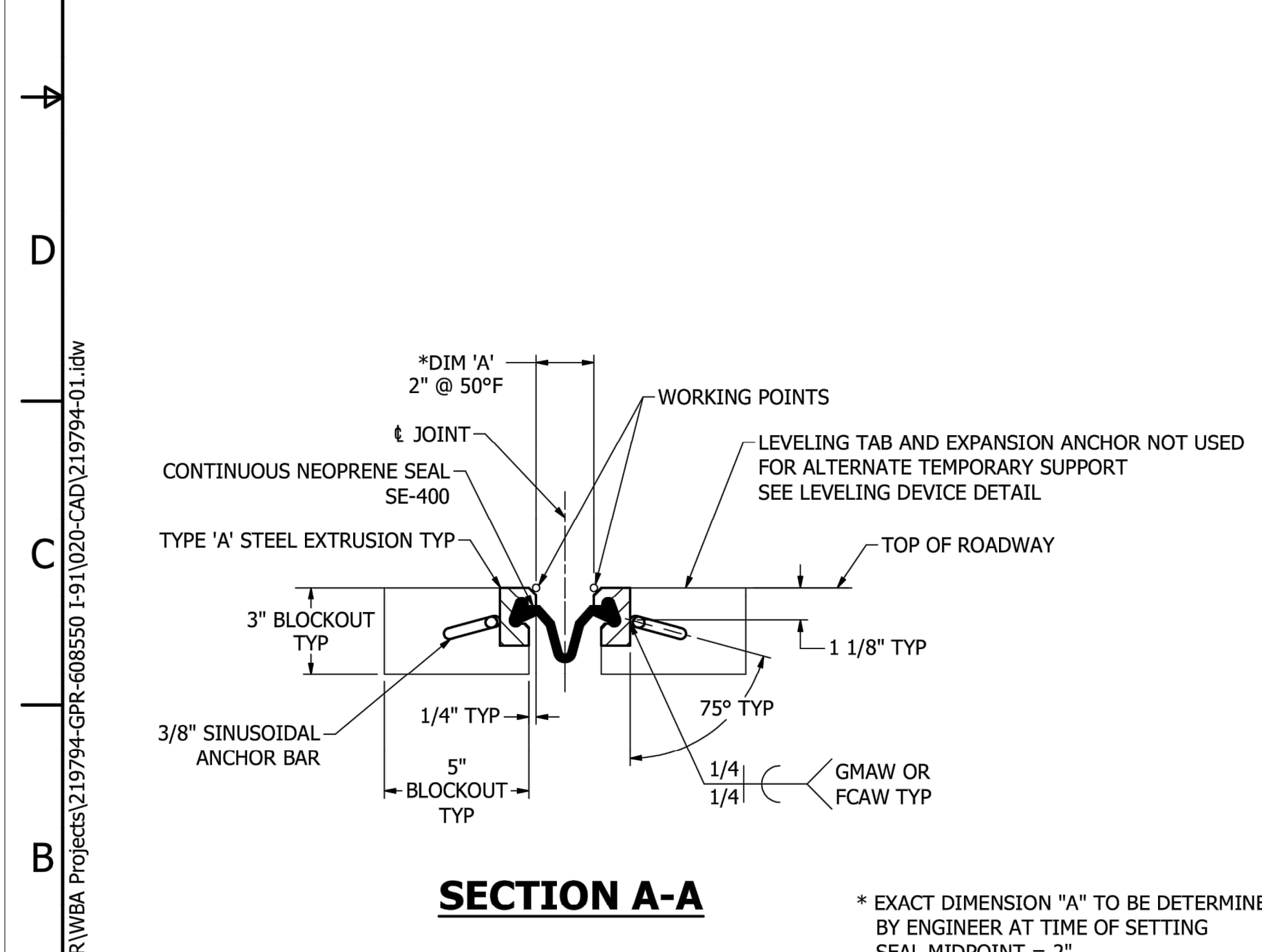
BRIDGE DETAILS
S-24-080 SHOP DRAWING



PLAN VIEW - NORTH ABUTMENT

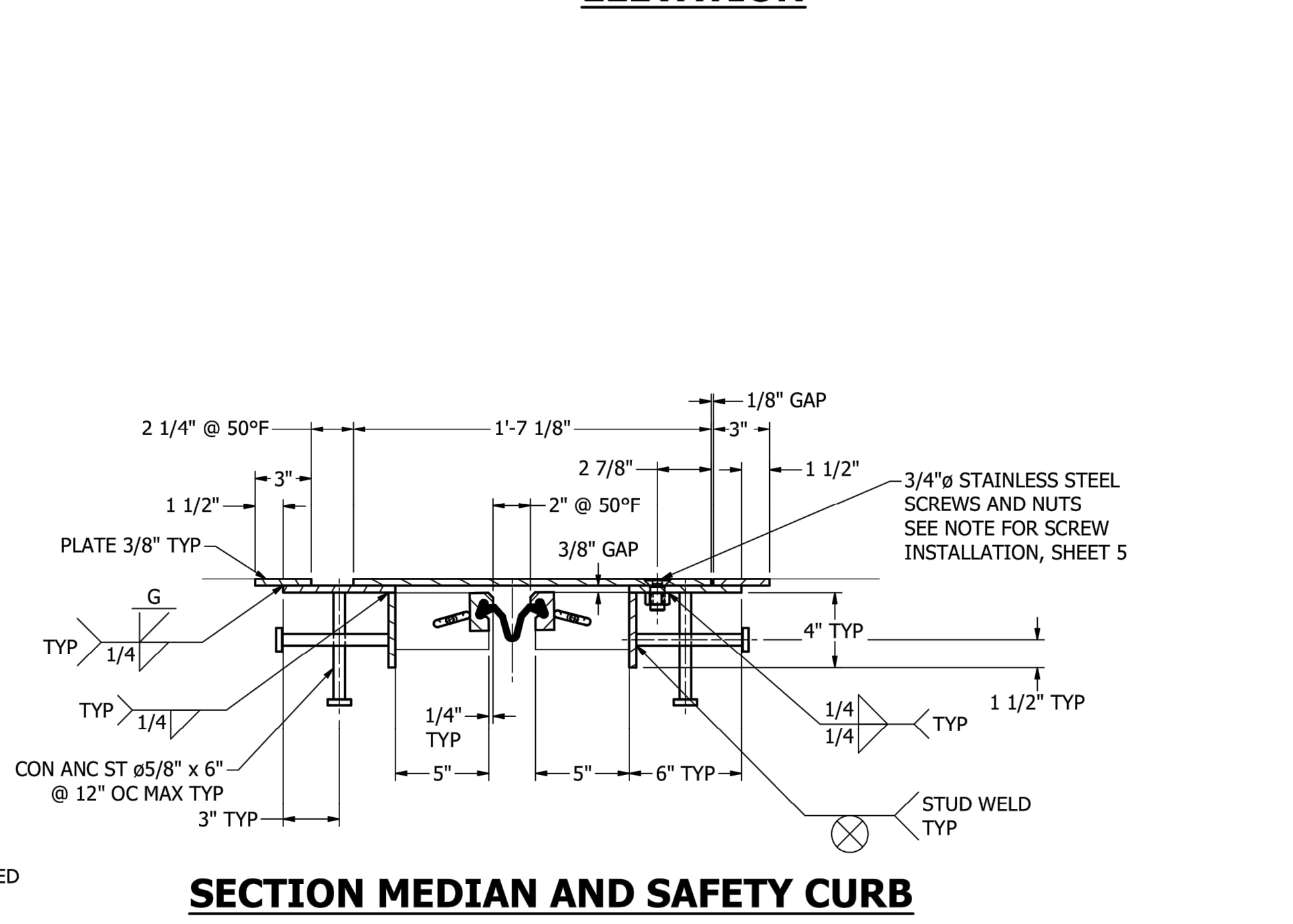


ELEVATION



SECTION A-A

* EXACT DIMENSION "A" TO BE DETERMINED BY ENGINEER AT TIME OF SETTING SEAL MIDPOINT = 2"



SECTION MEDIAN AND SAFETY CURB

<input checked="" type="checkbox"/>	Approved	<input type="checkbox"/>	Revise and resubmit
<input type="checkbox"/>	Approved as noted, Resubmission not required	<input type="checkbox"/>	Not Approved

massDOT
Massachusetts Department of Transportation
Highway Division

District 2 NORTHAMPTON

Daniel J. Sund Digitally signed by Daniel J. Sund
Date: 2021.01.06 10:13:47 -05'00'

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PROJECT INFORMATION	
STATE:	MA
CITY:	SPRINGFIELD (DISTRICT 2)
CONTRACT NO.:	
PROJECT ID:	608550
BRIDGE NAME/NO.:	MAIN ST BRIDGE, S-24-080 (10R)
WBA PRODUCT NO.:	SSA219794AA, AB
JOINT TYPE:	STRIP SEAL TYPE "A"
CONTRACTOR:	LINDON GROUP, INC
FEDERAL AID NO.:	NHP(BR-ON)-0035(133)X

INSPECTION REQUIRED

DRAWING ACTION:
SUBMITTED
DATE: 10/21/2020

TOLERANCES (UNLESS OTHERWISE SPECIFIED)	
ALL DIMENSIONS ARE IN INCHES	
DECIMAL: .X ± .030 .XX ± .015 .XXX ± .010	
FRACTION:	
OVERALL LGTH:	±1/4 / 20 FT
ANGULAR:	±2" (FAB) / ±1" (FORM)
LINEAR (DTLS):	±1/16
HOLE SIZE/DEPTH:	+1/16 -0
SWEEP/CAMBER:	1/4 IN ANY 5 FT SECTION
STUD LOCATION:	±1
BUTT SPlice:	±1/2
LOCATION:	±1/2
*WELD LOCATIONS PER APPLICABLE CODE/SPEC	

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www.wbcorp.com

Watson Bowman Acme

NO.	ORIGINAL RELEASE	GPR	INIT	DATE
0				10/20/2020

DRAWING INFORMATION:
BRIDGE JOINT REPAIRS ON INTERSTATE 91 - 608550
INTERSTATE 91 OVER MAIN STREET (NORTH END)
BRIDGE S-24-080 (10R)
WABO STRIP SEAL TYPE A EXPANSION JOINT

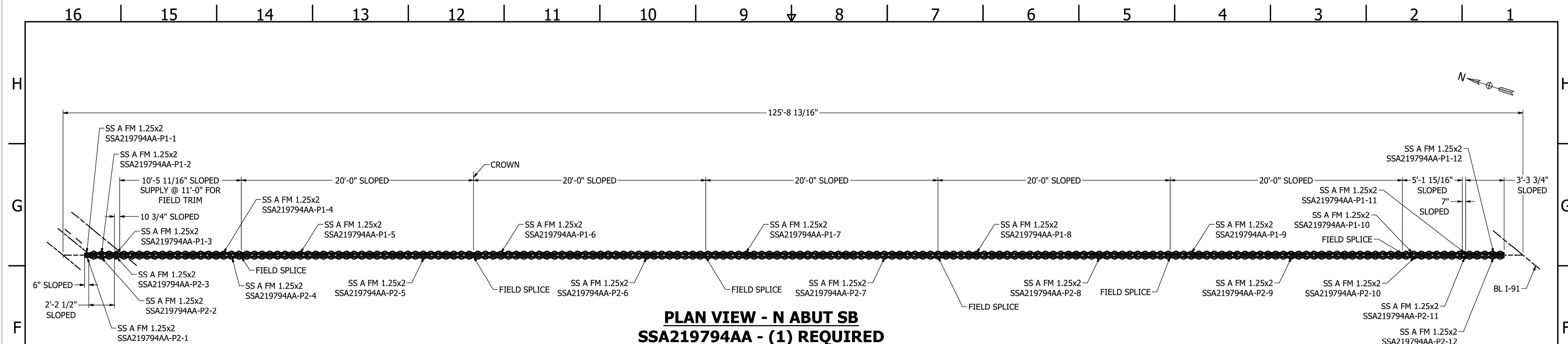
DETAILED BY:		DRAWING DATE:	
GPR		10/12/2020	
CHECKED BY:		CHECKED DATE:	
JFW		10/14/2020	
SCALE:		WBA JOB NO.:	
NTS		219794	
SHEET:	DRAWING NO.:	REV.:	
2 OF 9	219794-01	0	

THESE SHEETS ARE INCLUDED FOR REFERENCE AND DEPICT THE BRIDGE EXPANSION JOINT THAT MASSDOT WILL PROVIDE TO THE CONTRACTOR TO INSTALL UNDER ITEM 972.1. SEE THE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

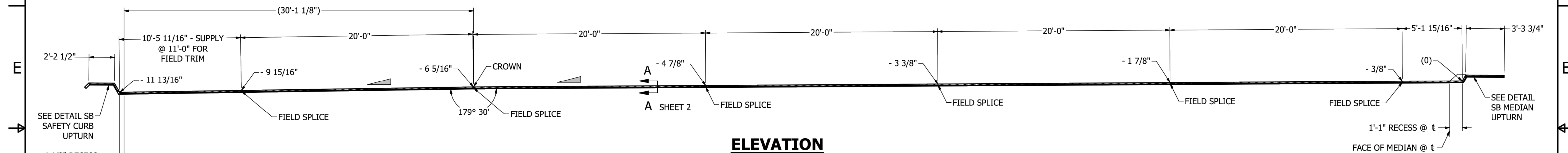
CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	34	55
PROJECT FILE NO.		612106	

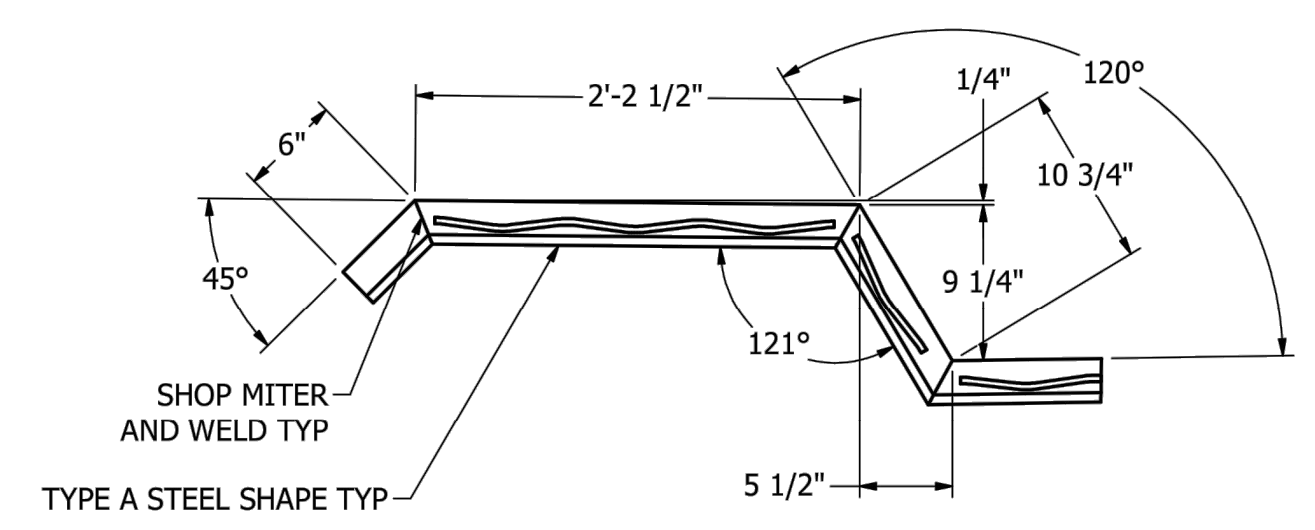
BRIDGE DETAILS
S-24-080 SHOP DRAWING



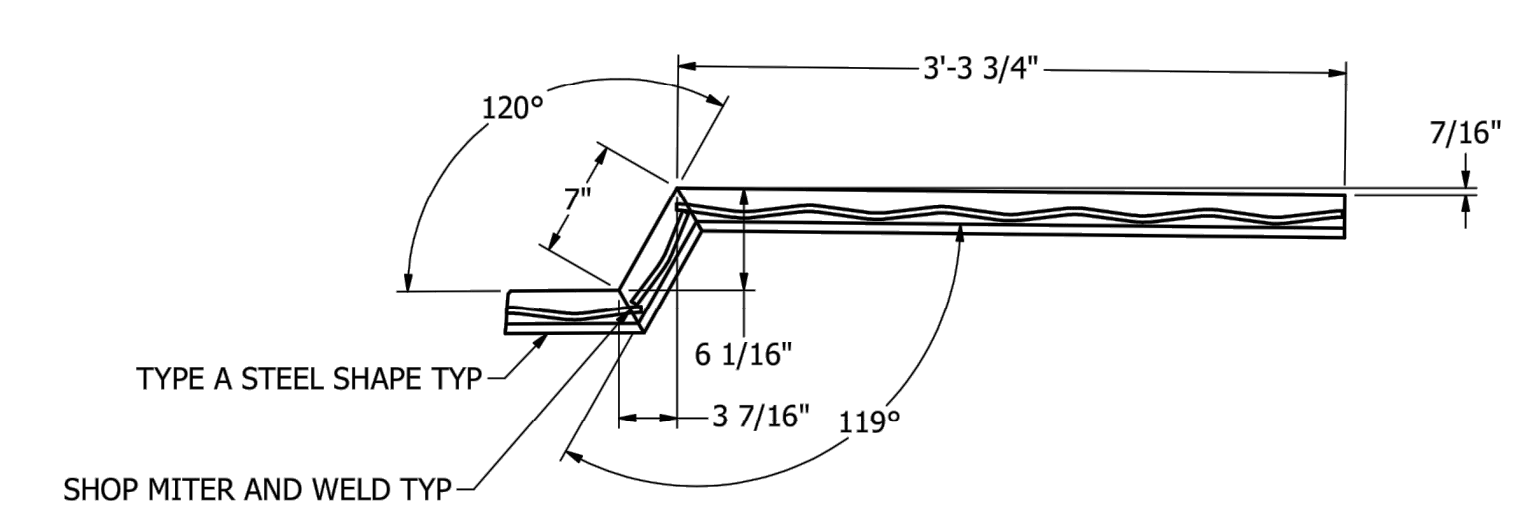
PLAN VIEW - N ABUT SB
SSA219794AA - (1) REQUIRED



ELEVATION



DETAIL SB SAFETY CURB UPTURN



DETAIL SB MEDIAN UPTURN

<input checked="" type="checkbox"/>	Approved	Revise and resubmit
<input type="checkbox"/>	Approved as noted. Resubmission not required	Not Approved

massDOT District 2 NORTHAMPTON
Digitally signed by Daniel J. Sund
Signed: Daniel J. Sund Date: 2021.04.06 10:13:23 -05'00'

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PROJECT INFORMATION	
STATE:	MA
CITY:	SPRINGFIELD (DISTRICT 2)
CONTRACT NO.:	
PROJECT ID:	608550
BRIDGE NAME/NO.:	MAIN ST BRIDGE, S-24-080 (10R)
WBA PRODUCT NO.:	SSA219794AA, AB
JOINT TYPE:	STRIP SEAL TYPE "A"
CONTRACTOR:	LINDON GROUP, INC
FEDERAL AID NO.:	NHP(BR-ON)-0035(133)X

INSPECTION REQUIRED

DRAWING ACTION:
SUBMITTED
DATE: 10/21/2020

TOLERANCES (UNLESS OTHERWISE SPECIFIED)	
ALL DIMENSIONS ARE IN INCHES	
DECIMAL: X ± .030	.XX ± .015
FRACTION:	
OVERALL LGTH:	±1/4 / 20 FT
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LINEAR (DTLS):	±1/16
HOLE SIZE/DEPTH:	+1/16 -0
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STUD LOCATION:	±1
HOLE LOCATION:	±1/2
BUTT SPLICE:	±1/2
LOCATION:	±1/2
*WELD LOCATIONS PER APPLICABLE CODE/SPEC	

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Watson Bowman Acme

DRAWING INFORMATION:		ORIGINAL RELEASE		REVISION DESCRIPTION	
NO.	DATE	INIT	DATE	NO.	DESCRIPTION
0	10/20/2020	GPR	10/20/2020		
BRIDGE JOINT REPAIRS ON INTERSTATE 91 - 608550 INTERSTATE 91 OVER MAIN STREET (NORTH END) BRIDGE S-24-080 (10R) WABO STRIP SEAL TYPE A EXPANSION JOINT					

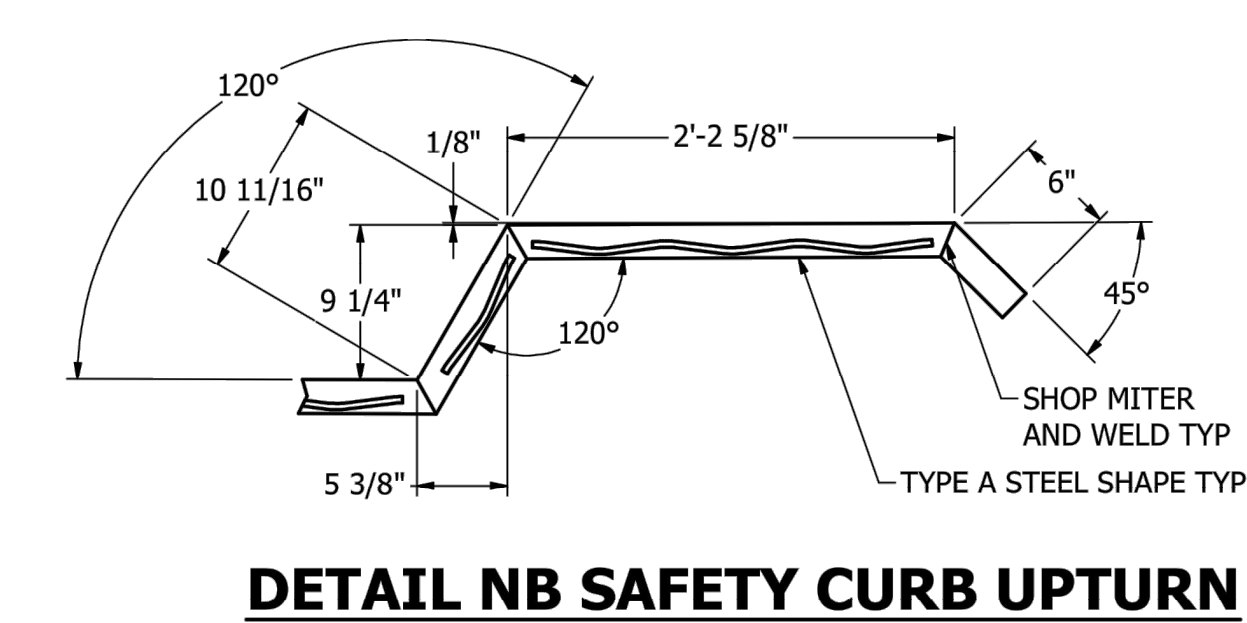
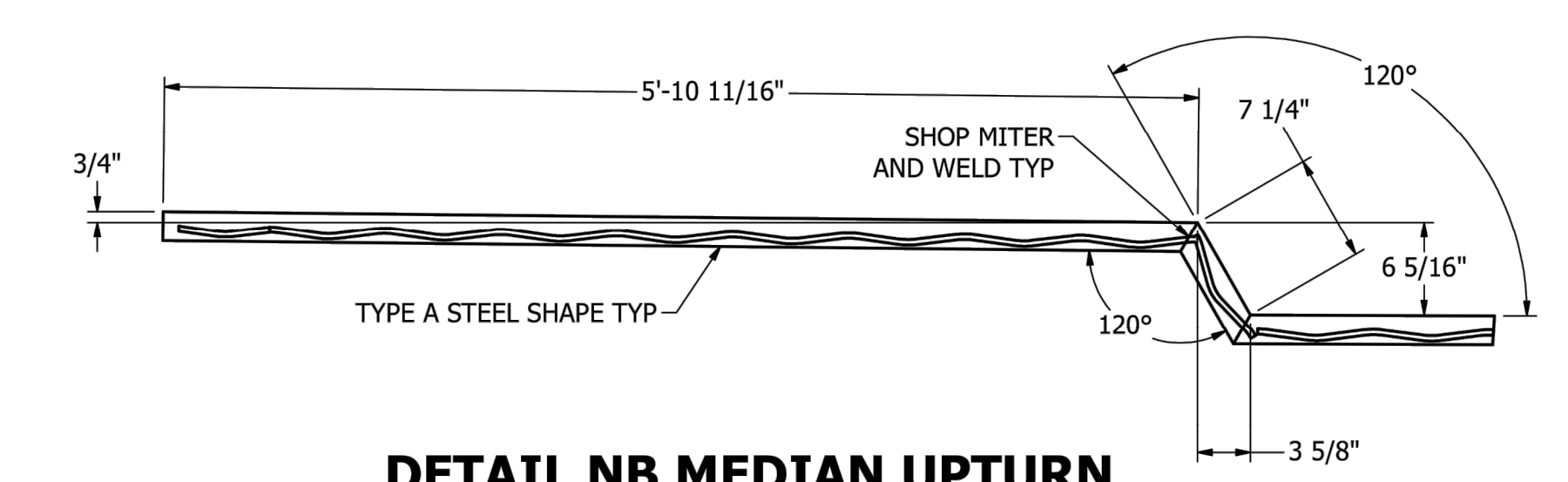
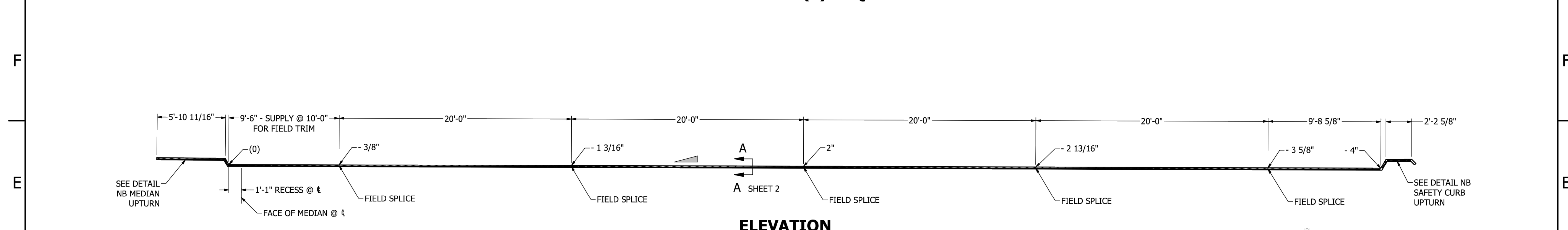
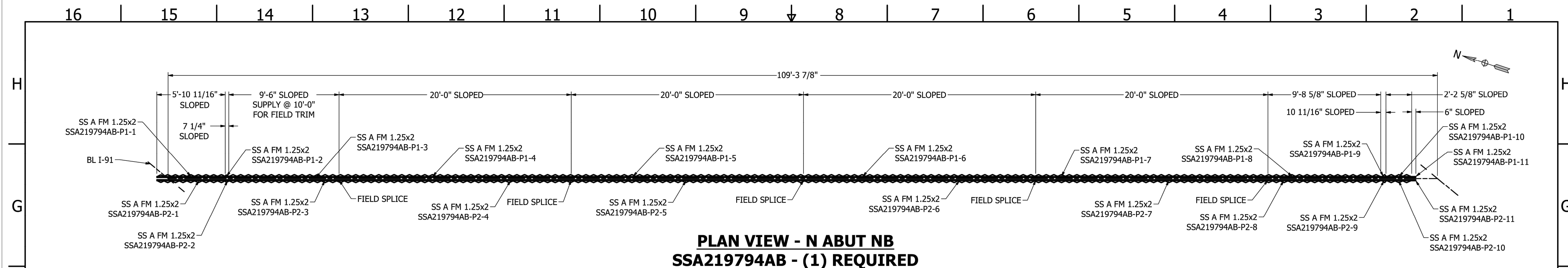
DETAILED BY:	DRAWING DATE:	
GPR	10/12/2020	
CHECKED BY:	CHECKED DATE:	
JFW	10/14/2020	
SCALE:	WBA JOB NO.:	
NTS	219794	
SHEET:	DRAWING NO.:	REV.:
3 OF 9	219794-01	0

THESE SHEETS ARE INCLUDED FOR REFERENCE AND DEPICT THE BRIDGE EXPANSION JOINT THAT MASSDOT WILL PROVIDE TO THE CONTRACTOR TO INSTALL UNDER ITEM 972.1. SEE THE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	35	55
PROJECT FILE NO.		612106	

BRIDGE DETAILS
S-24-080 SHOP DRAWING



<input checked="" type="checkbox"/>	Approved	<input type="checkbox"/>	Revise and resubmit
<input type="checkbox"/>	Approved as noted, Resubmission not required	<input type="checkbox"/>	Not Approved

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District 2 NORTHAMPTON
Digitally signed by Daniel J. Sund
Signed: Daniel J. Sund Date: 2021.01.06 10:12:56 -05'00'

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PROJECT INFORMATION	
STATE:	MA
CITY:	SPRINGFIELD (DISTRICT 2)
CONTRACT NO.:	
PROJECT ID:	608550
BRIDGE NAME/NO.:	MAIN ST BRIDGE, S-24-080 (10R)
WBA PRODUCT NO.:	SSA219794AA, AB
JOINT TYPE:	STRIP SEAL TYPE "A"
CONTRACTOR:	LINDON GROUP, INC
FEDERAL AID NO.:	NHP(BR-ON)-0035(133)X

INSPECTION REQUIRED

DRAWING ACTION:
SUBMITTED
DATE: 10/21/2020

TOLERANCES (UNLESS OTHERWISE SPECIFIED) ALL DIMENSIONS ARE IN INCHES	
DECIMAL: X ± .030	XX ± .015
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Watson Bowman Acme

NO.	ORIGINAL RELEASE	GPR	INIT	DATE
0				10/20/2020

DRAWING INFORMATION:
BRIDGE JOINT REPAIRS ON INTERSTATE 91 - 608550
INTERSTATE 91 OVER MAIN STREET (NORTH END)
BRIDGE S-24-080 (10R)
WABO STRIP SEAL TYPE A EXPANSION JOINT

DETAILED BY:	GPR	DRAWING DATE:	10/12/2020
CHECKED BY:	JFW	CHECKED DATE:	10/14/2020
SCALE:	NTS	WBA JOB NO.:	219794
SHEET:	4 OF 9	DRAWING NO.:	219794-01
REV.:	0		

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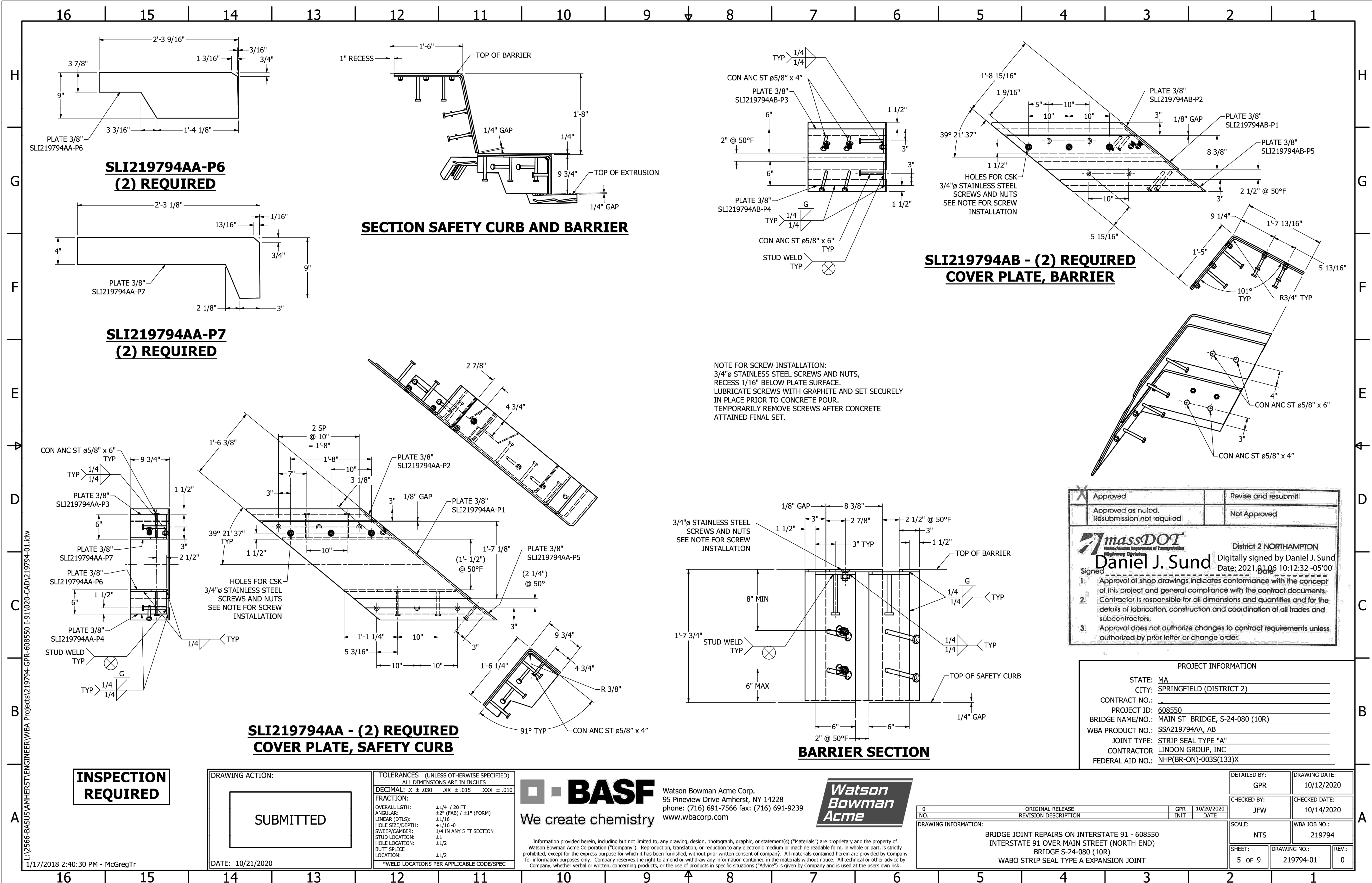
612106-HD-5-BRIDGE SHOP DRAWINGS.DWG Plotted on 3-Nov-2023 10:40 AM

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CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	36	55
PROJECT FILE NO.		612106	

BRIDGE DETAILS
S-24-080 SHOP DRAWING



612106-HD-5-BRIDGE SHOP DRAWINGS.DWG Plotted on 3-Nov-2023 10:40 AM

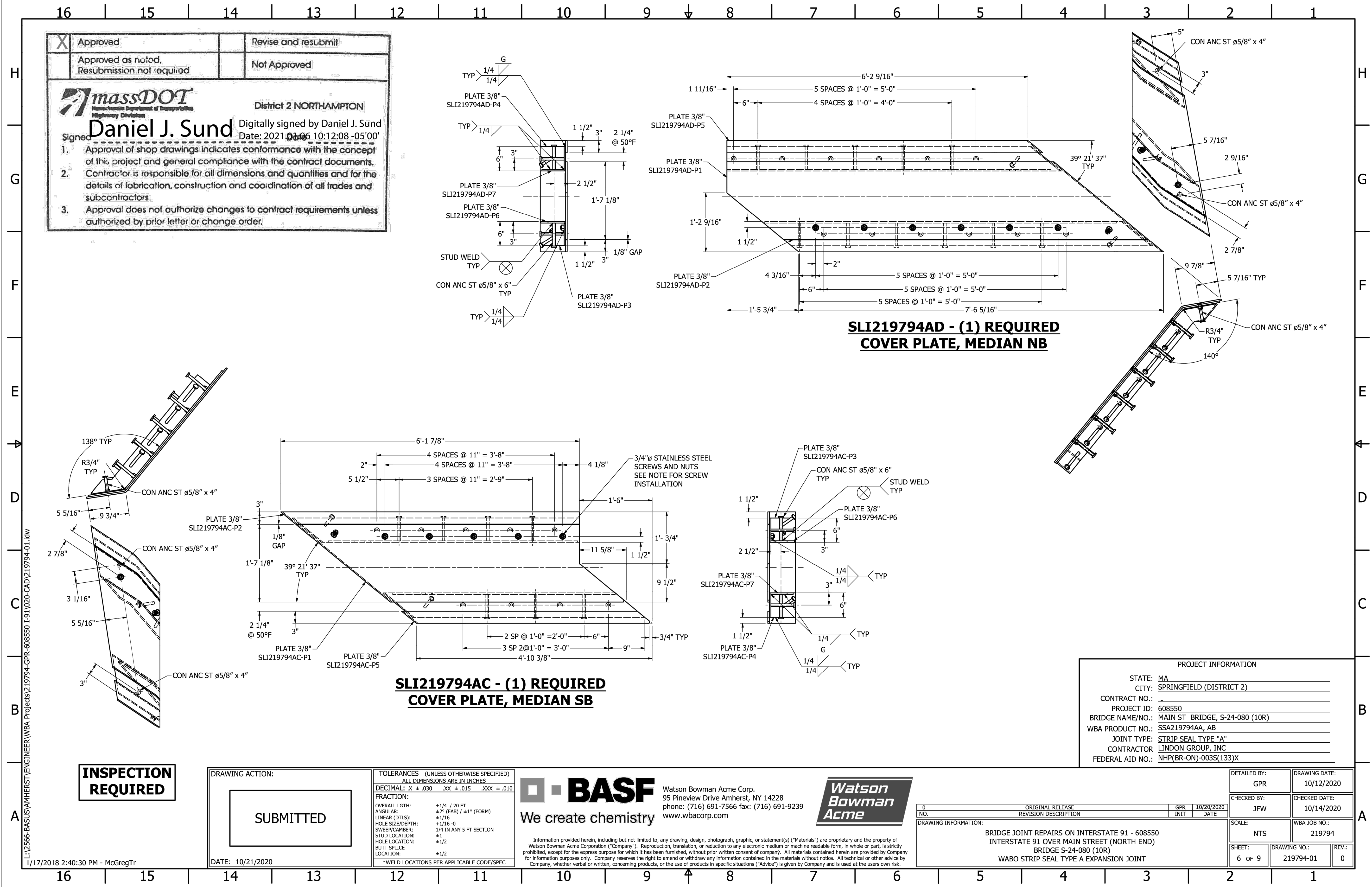
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CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	37	55
PROJECT FILE NO.		612106	

BRIDGE DETAILS
S-24-080 SHOP DRAWING

612106-HD-5-BRIDGE SHOP DRAWINGS.DWG Plotted on 3-Nov-2023 10:40 AM



<input checked="" type="checkbox"/> Approved	Revise and resubmit
Approved as noted, Resubmission not required	Not Approved

massDOT
Massachusetts Department of Transportation
Highway Division

District 2 NORTHAMPTON

Signed: **Daniel J. Sund** Digitally signed by Daniel J. Sund
Date: 2021.06.10 10:12:08 -05'00'

- Approval of shop drawings indicates conformance with the concept of this project and general compliance with the contract documents.
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JOINT TYPE:	STRIP SEAL TYPE "A"
CONTRACTOR:	LINDON GROUP, INC
FEDERAL AID NO.:	NHP(BR-ON)-0035(133)X

INSPECTION REQUIRED

DRAWING ACTION:	TOLERANCES (UNLESS OTHERWISE SPECIFIED) ALL DIMENSIONS ARE IN INCHES
SUBMITTED	DECIMAL: .X ± .030 .XX ± .015 .XXX ± .010
	FRACTION: ±1/4 / 20 FT
	ANGULAR: ±2° (FAB) / ±1° (FORM)
	LINEAR (DTLS): ±1/16
	HOLE SIZE/DEPTH: +1/16 -0
	SWEEEP/CAMBER: 1/4 IN ANY 5 FT SECTION
	STUD LOCATION: ±1
	HOLE LOCATION: ±1/2
	BUTT SPLICE: ±1/2
	LOCATION: ±1/2
	*WELD LOCATIONS PER APPLICABLE CODE/SPEC
DATE: 10/21/2020	

BASF
We create chemistry

Watson Bowman Acme Corp.
95 Pineview Drive Amherst, NY 14228
phone: (716) 691-7566 fax: (716) 691-9239
www.wbacorp.com

Watson Bowman Acme

NO.	ORIGINAL RELEASE	GPR	INIT	DATE
0				10/20/2020

DRAWING INFORMATION:

BRIDGE JOINT REPAIRS ON INTERSTATE 91 - 608550
INTERSTATE 91 OVER MAIN STREET (NORTH END)
BRIDGE S-24-080 (10R)
WABO STRIP SEAL TYPE A EXPANSION JOINT

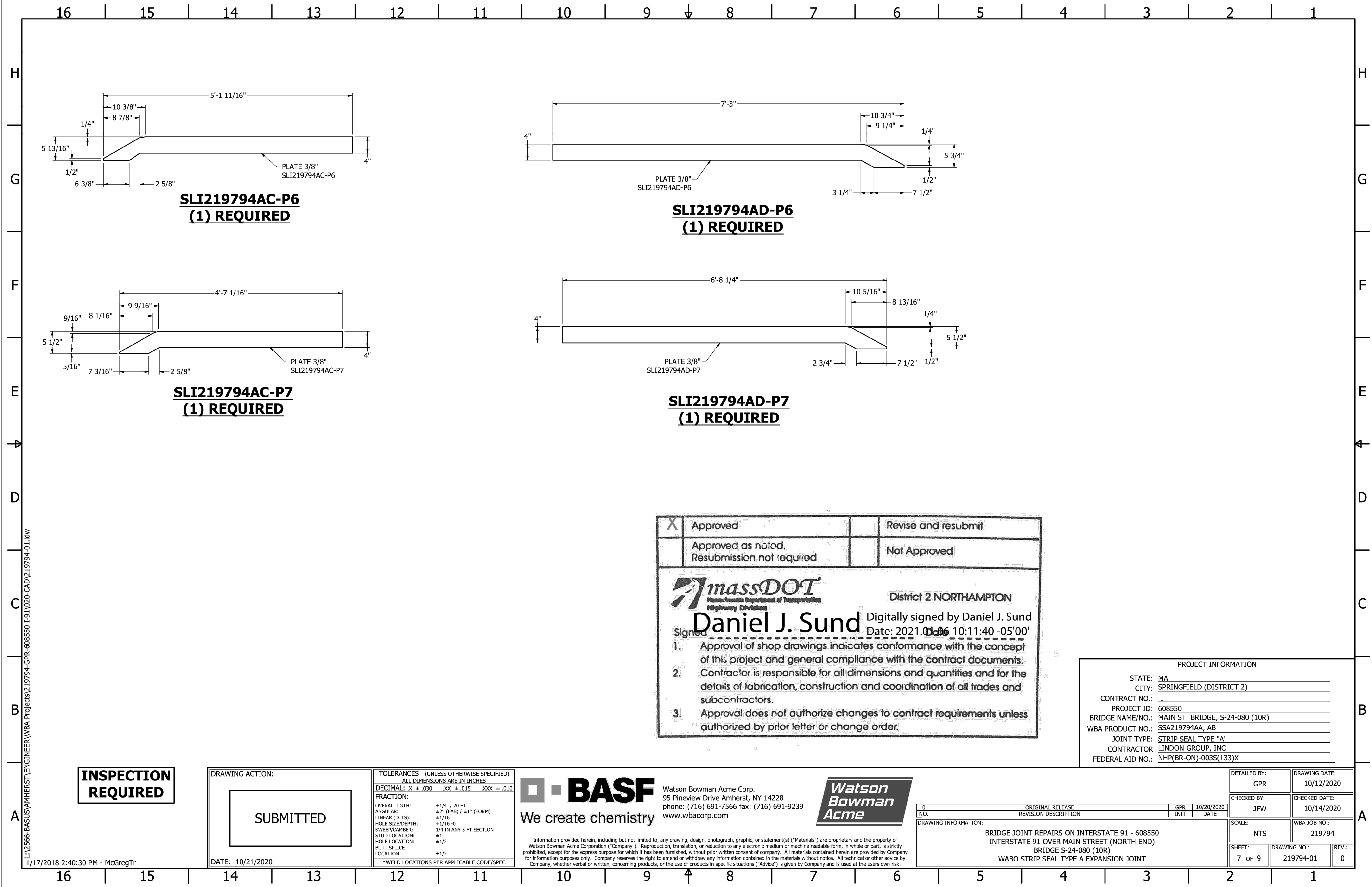
DETAILED BY:	DRAWING DATE:	
GPR	10/12/2020	
CHECKED BY:	CHECKED DATE:	
JFW	10/14/2020	
SCALE:	WBA JOB NO.:	
NTS	219794	
SHEET:	DRAWING NO.:	REV.:
6 OF 9	219794-01	0

THESE SHEETS ARE INCLUDED FOR REFERENCE AND DEPICT THE BRIDGE EXPANSION JOINT THAT MASSDOT WILL PROVIDE TO THE CONTRACTOR TO INSTALL UNDER ITEM 972.1. SEE THE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	38	55
PROJECT FILE NO.		612106	

BRIDGE DETAILS
S-24-080 SHOP DRAWING



<input checked="" type="checkbox"/>	Approved	Revise and resubmit
<input type="checkbox"/>	Approved as noted, Resubmission not required	Not Approved

massDOT
Massachusetts Department of Transportation
Highway Division

District 2 NORTHAMPTON

Daniel J. Sund Digitally signed by Daniel J. Sund
Date: 2021.10.26 10:11:40 -05'00'

- Approval of shop drawings indicates conformance with the concept of this project and general compliance with the contract documents.
- Contractor is responsible for all dimensions and quantities and for the details of fabrication, construction and coordination of all trades and subcontractors.
- Approval does not authorize changes to contract requirements unless authorized by prior letter or change order.

PROJECT INFORMATION	
STATE:	MA
CITY:	SPRINGFIELD (DISTRICT 2)
CONTRACT NO.:	
PROJECT ID:	608550
BRIDGE NAME/NO.:	MAIN ST BRIDGE, S-24-080 (10R)
WBA PRODUCT NO.:	SSA219794AA, AB
JOINT TYPE:	STRIP SEAL TYPE "A"
CONTRACTOR:	LINDON GROUP, INC
FEDERAL AID NO.:	NHP(BR-ON)-0035(133)X

**INSPECTION
REQUIRED**

DRAWING ACTION:	TOLERANCES (UNLESS OTHERWISE SPECIFIED) ALL DIMENSIONS ARE IN INCHES
SUBMITTED	DECIMAL: .X ± .030 .XX ± .015 .XXX ± .010
	FRACTION: OVERALL LGTH: ±1/4 / 20 FT ANGULAR: ±2" (FAB) / ±1" (FORM) LINEAR (DTLS): ±1/16 HOLE SIZE/DEPTH: ±1/16 -0 SWEEP/CAMBER: 1/4 IN ANY 5 FT SECTION STUD LOCATION: ±1 HOLE LOCATION: ±1/2 BUTT SPLICE LOCATION: ±1/2
DATE: 10/21/2020	*WELD LOCATIONS PER APPLICABLE CODE/SPEC

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95 Pineview Drive Amherst, NY 14228
phone: (716) 691-7566 fax: (716) 691-9239
www.wbcorp.com

**Watson
Bowman
Acme**

NO.	ORIGINAL RELEASE	GPR	INIT	DATE
0				10/20/2020

DRAWING INFORMATION:

BRIDGE JOINT REPAIRS ON INTERSTATE 91 - 608550
INTERSTATE 91 OVER MAIN STREET (NORTH END)
BRIDGE S-24-080 (10R)
WABO STRIP SEAL TYPE A EXPANSION JOINT

DETAILED BY:	GPR	DRAWING DATE:	10/12/2020
CHECKED BY:	JFW	CHECKED DATE:	10/14/2020
SCALE:	NTS	WBA JOB NO.:	219794
SHEET:	7 OF 9	DRAWING NO.:	219794-01
REV.:	0		

L:\2566-BASUS\AMHERST\ENGINEER\WBA Projects\219794-GPR-608550 1-91\020-CAD\219794-01.idw

Plotted on 3-Nov-2023 10:40 AM

THESE SHEETS ARE INCLUDED FOR REFERENCE AND DEPICT THE BRIDGE EXPANSION JOINT THAT MASSDOT WILL PROVIDE TO THE CONTRACTOR TO INSTALL UNDER ITEM 972.1. SEE THE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391

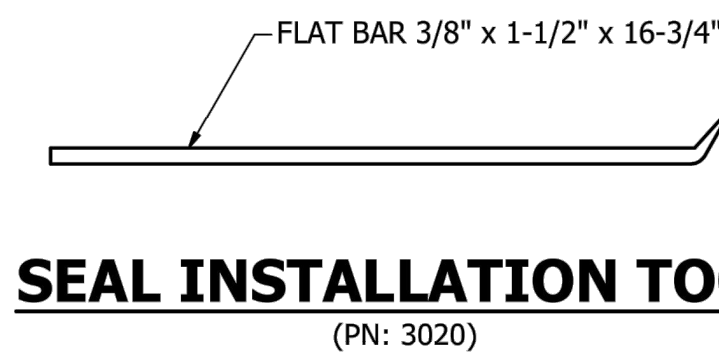
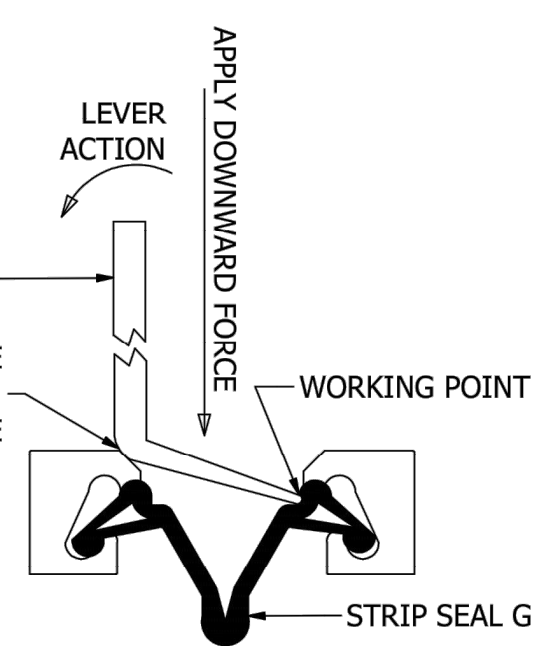
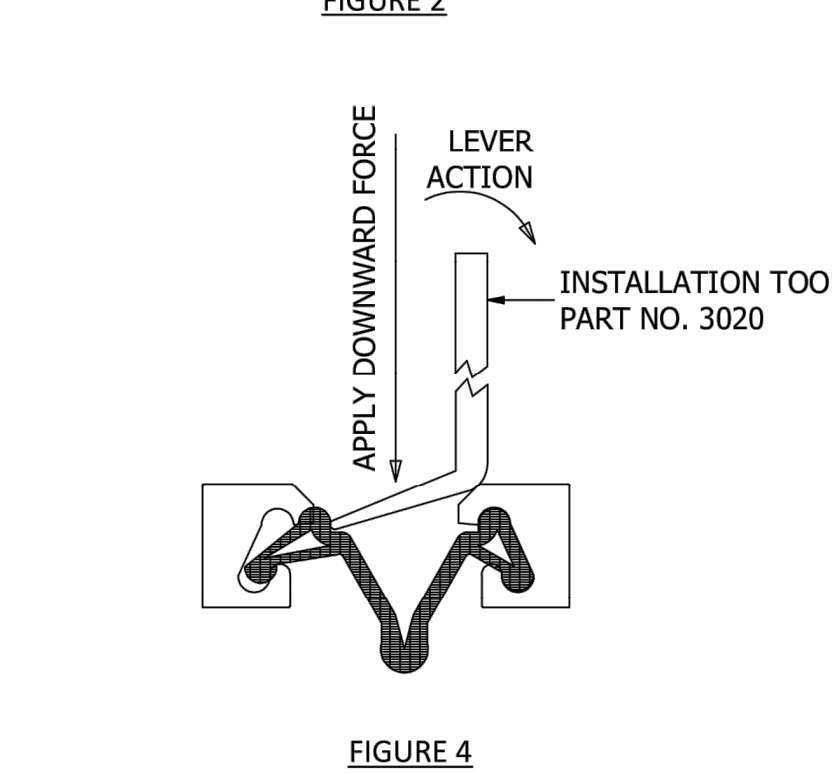
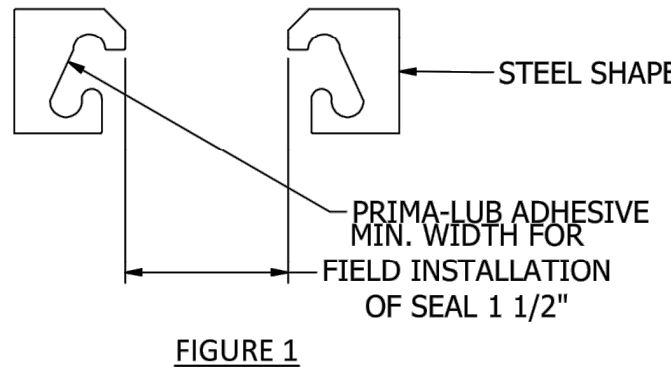
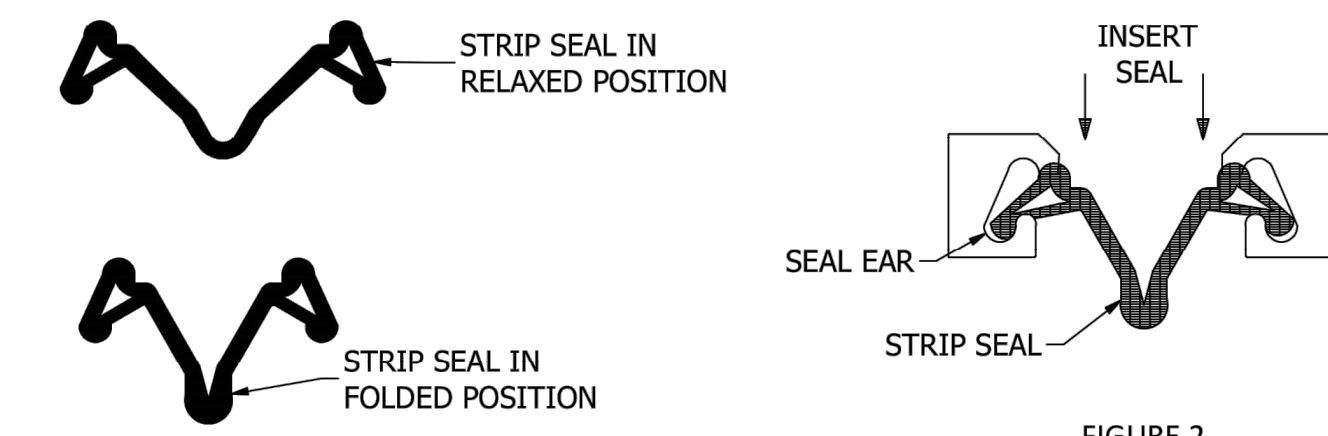
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	39	55
PROJECT FILE NO.		612106	

BRIDGE DETAILS
S-24-080 SHOP DRAWING

16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1

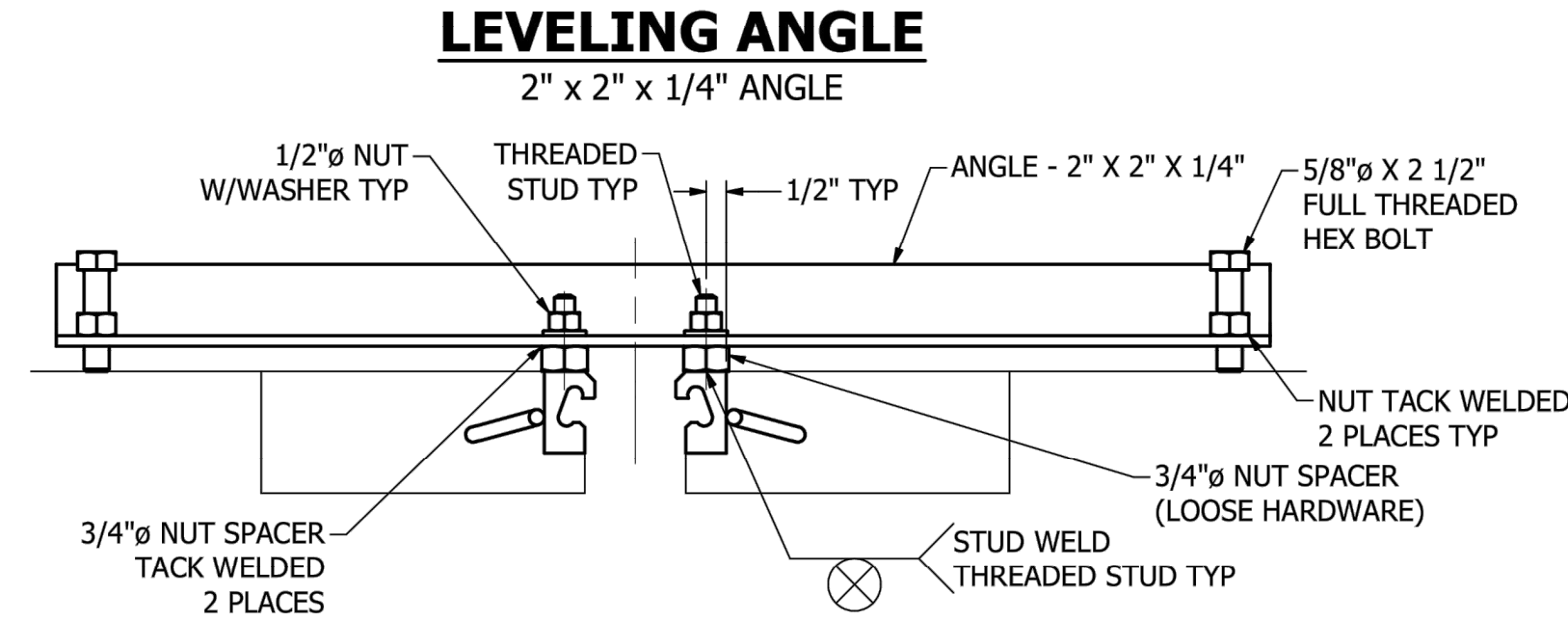
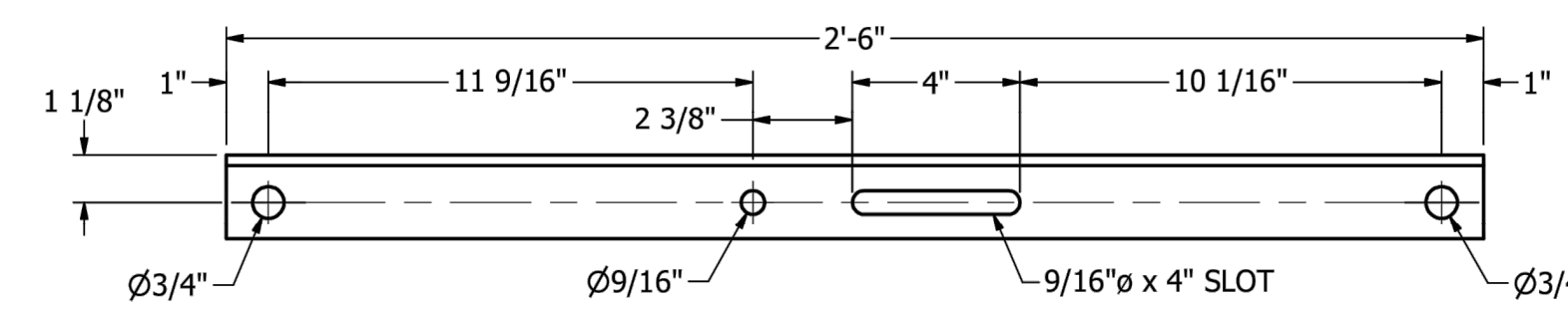
NEOPRENE SEAL INSTALLATION PROCEDURE

- PRIOR TO INSTALLATION OF THE SEAL, THE EXTRUSION CAVITY MUST BE FREE OF ALL CONCRETE, DIRT, OIL OR ANY OTHER CONTAMINANTS. THOROUGHLY CLEAN THE EXTRUSION CAVITY AND THE SEAL EARS WITH AN APPROVED SOLVENT (ex. TOLUENE OR XYLENE).
- APPLY THE LUBRICANT/ADHESIVE TO THE INSIDE OF THE EXTRUSION CAVITY AND TO THE SEAL EAR LUGS ON BOTH SIDES OF THE EXPANSION JOINT. (APPLY THE LUBRICANT/ ADHESIVE IN APPROX. 4'-0" INCREMENTS TO PREVENT IT FROM SETTING BEFORE THE SEAL IS INSERTED INTO THE EXTRUSION CAVITY.)
- MANUALLY FOLD SEAL AS SHOWN IN FIG. 1, AND INSERT INTO THE OPENING BETWEEN THE EXTRUSIONS. MAKE SURE THAT THE NEOPRENE SEAL IS NOT INSERTED THROUGH AND PAST THE EXTRUSION SEAL CAVITY. ONCE PROPERLY INSERTED, THE BOTTOM HALF OF THE EAR LUGS SHOULD BE AUTOMATICALLY EXTENDED OUTWARD AND SEAT THEMSELVES INTO THE BOTTOM PORTION OF THE EXTRUSION CAVITY. (SEE FIGURE 2)
- USING THE INSTALLATION TOOLS PROVIDED, WORK THE UPPER EARLUG OF THE SEAL TO ROTATE TOWARD THE BACK OF THE EXTRUSION CAVITY AND LOCK IN UNDER THE UPPER LIP. (SEE FIG. 3) USE ONE OF THE TOOLS TO HOLD THE UPPER EARLUG AND A SECOND TOOL TO APPLY THE LEVER ACTION, UNTIL THE UPPER EARLUG HAS BEEN PROPERLY SEATED AND LOCKED INTO PLACE. REVERSE THE TOOL AND INSTALL OPPOSITE SIDE IN THE SAME MANNER. (FIGURE 4)
- REPEAT STEPS 2 THRU 4 UNTIL THE ENTIRE SEAL HAS BEEN INSTALLED. INSPECT THE OVERALL SEAL INSTALLATION AND INSURE THAT THE SEAL HAS BEEN PROPERLY INSTALLED AND LOCKED IN THE EXTRUSION CAVITY. ANY PORTION OF THE SEAL NOT PROPERLY LOCKED MUST BE CORRECTED AT ONCE BY REPEATING STEP 4. ALLOW LUBRICANT/ ADHESIVE 24 HOURS TO FULLY CURE.



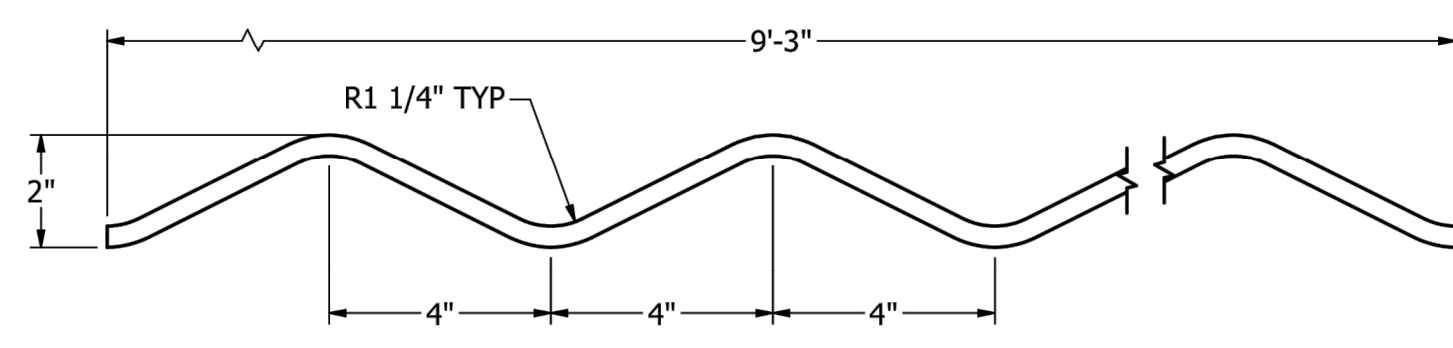
EXPANSION JOINT INSTALLATION PROCEDURE

- VERIFY THE DIMENSIONS OF THE BLOCKOUT IN SECTION A-A ON SHEET 2. CORRECT AS NECESSARY.
- PLACE EXPANSION JOINT OVER CENTERLINE OF OPEN JOINT AND ADJUST TO PROPER GRADE AND ELEVATION.
- CHECK WIDTH ON OPEN JOINT AND MAKE FINAL ADJUSTMENTS IF NECESSARY. (AS DIRECTED BY ENGINEER)
- MAKE NECESSARY FIELD TRIM AND FIELD WELDS.
- TIE JOINT TO BLOCKOUT REINFORCING OR FORMWORK.
- POUR WABOCONCRETE INTO BLOCKOUT AS PER CONTRACT SPECIFICATIONS.
- CONTRACTOR SHALL REMOVE ANY LEVELING DEVICES AFTER CONCRETE HAS SET, RETAIN INDICATED HARDWARE FOR RE-USE, GRIND WELDS SMOOTH AND REPAIR ANY DAMAGED GALVANIZING.
- CONTRACTOR SHALL FIELD INSTALL NEOPRENE SEAL ACROSS THE ENTIRE ROADWAY WIDTH.

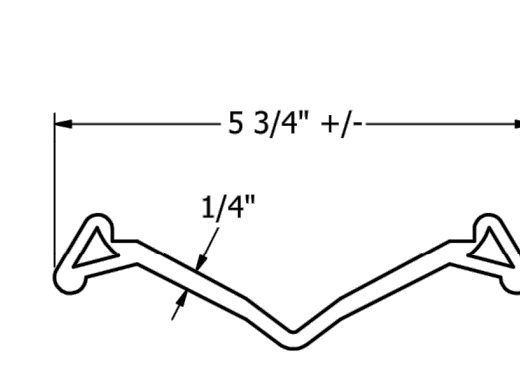


LEVELING DEVICE DETAIL

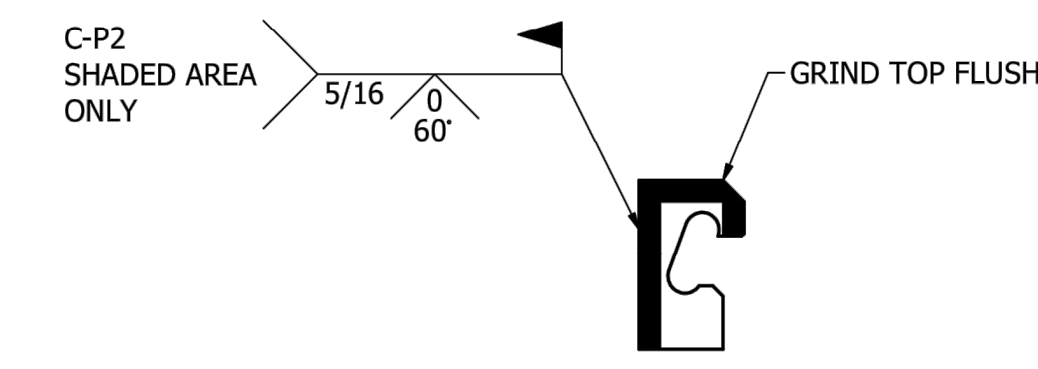
- NOTES:
- LEVELING ASSEMBLY SHALL BE SPACED 2'-0" FROM FIELD SPLICE LOCATION OR FROM END OF JOINT AND 4'-0" THEREAFTER, OR AS NOTED.
 - THE CONTRACTOR IS TO REMOVE THE LEVELING ASSEMBLY, WHEN THE JOINT IS SET. HOLES ARE TO BE FILLED WITH GROUT, SUPPLIED BY OTHERS.
 - EACH LEVELING ASSEMBLY SHALL INCLUDE:
 - 1 - ANGLE - 2" X 2" X 1/4"
 - 2 - Ø5/8" X 2-1/2" BOLT
 - 1 - Ø5/8" NUT (TACKED TO STEEL SHAPE)
 - 1 - Ø3/4" NUT (TACKED TO STEEL SHAPE)



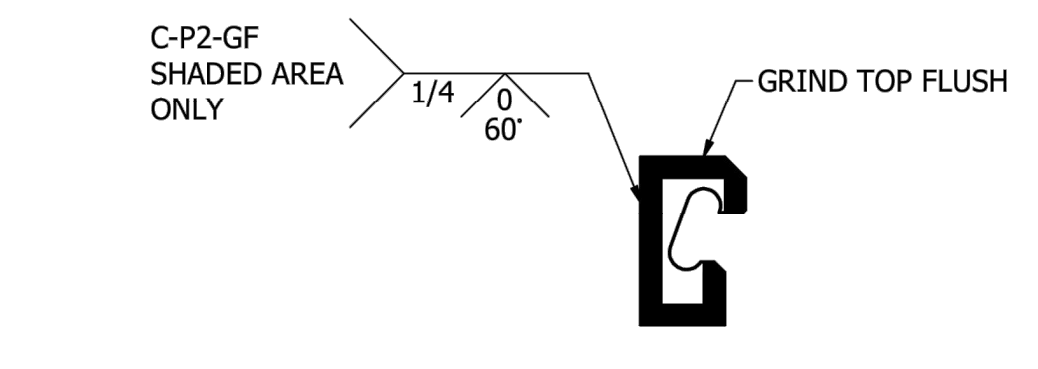
STANDARD 3/8" SINUSOIDAL ANCHOR DETAIL



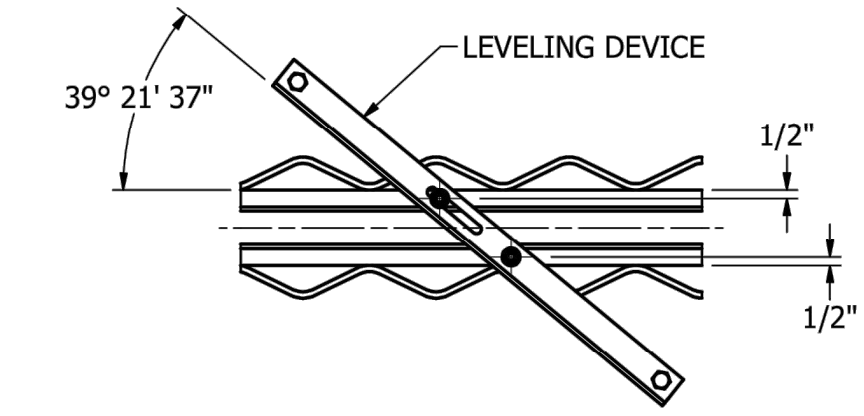
SE-400 SEAL MOVEMENT RATING - 4"



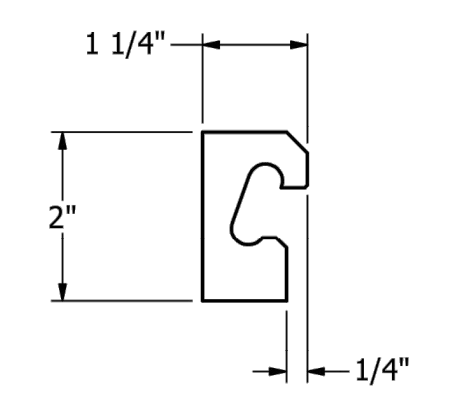
TYPE "A3" FIELD WELD DETAIL



TYPE "A3" SHOP WELD DETAIL



LEVELING DEVICE ORIENTATION



TYPE "A3" STEEL SHAPE

Approved	Revise and resubmit
Approved as noted, Resubmission not required	Not Approved

Digitally signed by Daniel J. Sund
Date: 2021.08.05 10:11:13 -05'00'

PROJECT INFORMATION	
STATE:	MA
CITY:	SPRINGFIELD (DISTRICT 2)
CONTRACT NO.:	
PROJECT ID:	608550
BRIDGE NAME/NO.:	MAIN ST BRIDGE, S-24-080 (10R)
WBA PRODUCT NO.:	SSA219794AA, AB
JOINT TYPE:	STRIP SEAL TYPE "A"
CONTRACTOR:	LINDON GROUP, INC
FEDERAL AID NO.:	NHP(BR-ON)-0035(133)X

INSPECTION REQUIRED

DRAWING ACTION:	TOLERANCES (UNLESS OTHERWISE SPECIFIED) ALL DIMENSIONS ARE IN INCHES
SUBMITTED	DECIMAL: .X ± .030 .XX ± .015 .XXX ± .010
	FRACTION: ±1/4 / 20 FT ±2" (FAB) / ±1" (FORM)
DATE: 10/21/2020	LINEAR (DTLS): ±1/16
	HOLE SIZE/DEPTH: ±1/16-0
	SWEEEP/CAMBER: 1/4 IN ANY 5 FT SECTION
	STUD LOCATION: ±1
	HOLE LOCATION: ±1/2
	BUTT SPlice: ±1/2
	LOCATION: ±1/2
	*WELD LOCATIONS PER APPLICABLE CODE/SPEC

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phone: (716) 691-7566 fax: (716) 691-9239
www.wbacorp.com

Watson Bowman Acme

NO.	ORIGINAL RELEASE	REVISION DESCRIPTION	INIT	DATE
0				

DRAWING INFORMATION:
BRIDGE JOINT REPAIRS ON INTERSTATE 91 - 608550
INTERSTATE 91 OVER MAIN STREET (NORTH END)
BRIDGE S-24-080 (10R)
WABO STRIP SEAL TYPE A EXPANSION JOINT

DETAILED BY:	DRAWING DATE:	
GPR	10/12/2020	
CHECKED BY:	CHECKED DATE:	
JFW	10/14/2020	
SCALE:	WBA JOB NO.:	
NTS	219794	
SHEET:	DRAWING NO.:	REV.:
8 OF 9	219794-01	0

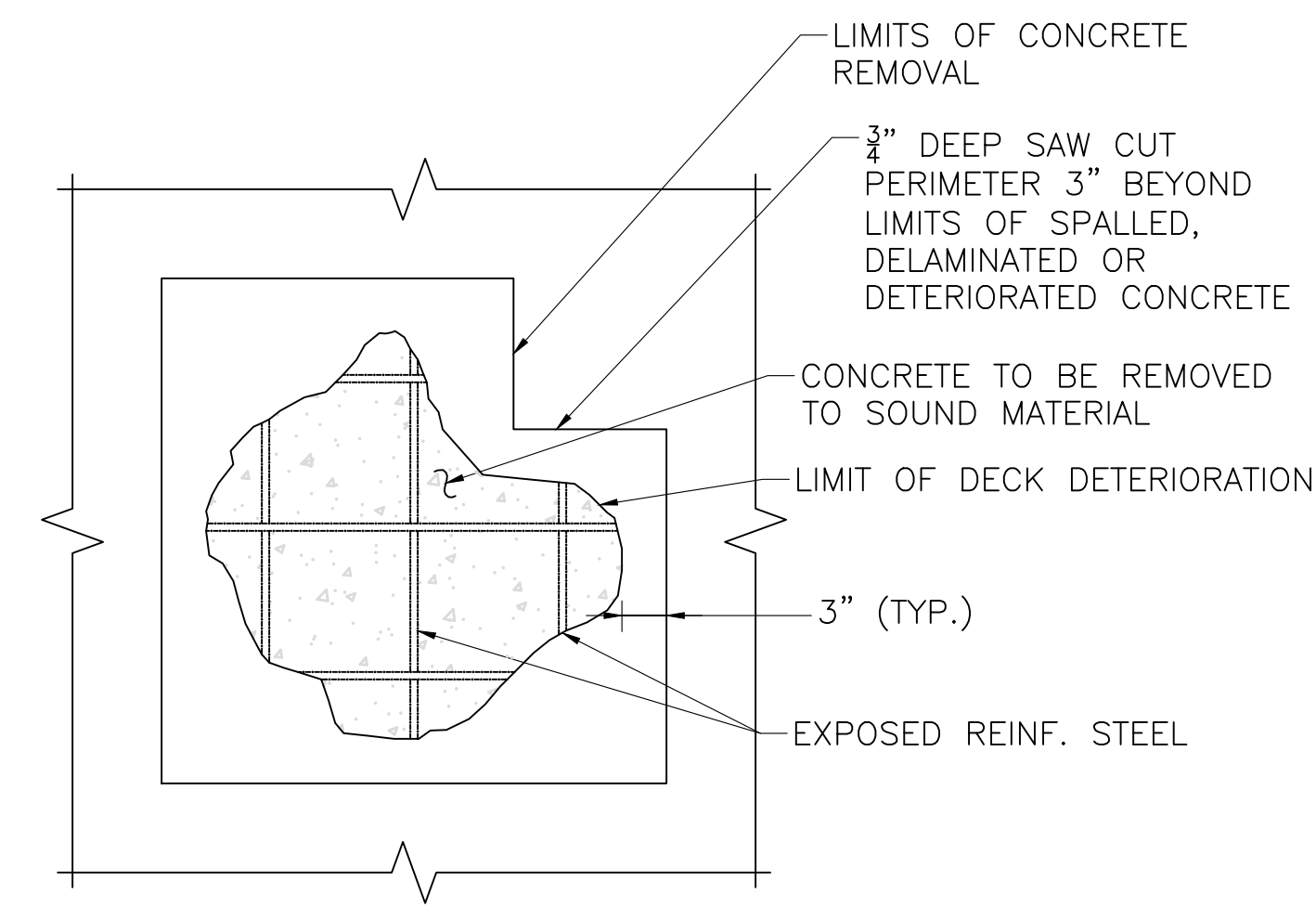
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612106-HD-5-BRIDGE SHOP DRAWINGS.DWG Plotted on 3-Nov-2023 10:40 AM

**CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391**

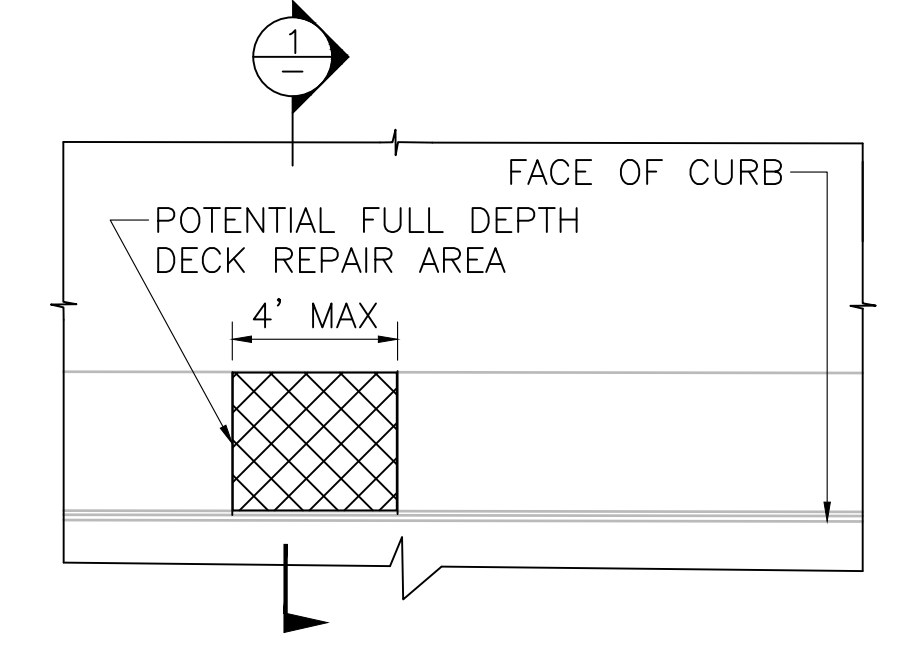
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	41	55
PROJECT FILE NO.			612106

**BRIDGE DETAILS
INTERSTATE 91 OVER NOBLE STREET**

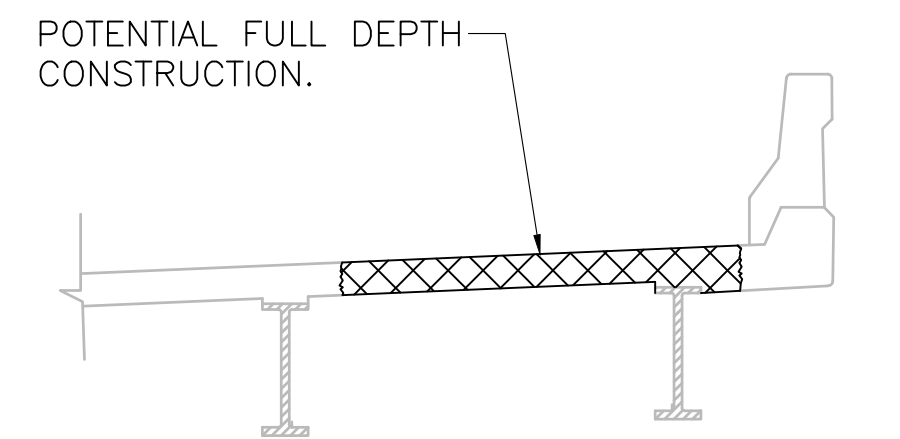


LIMITS OF DECK REPAIR AREA
NOT TO SCALE

- BRIDGE DECK REPAIR SEQUENCE NOTES:**
1. ALL EXISTING HOT MIX ASPHALT WEARING SURFACE AND MEMBRANE WATERPROOFING MATERIAL SHALL BE REMOVED PRIOR TO PERFORMING DECK REPAIRS. THE EXPOSED DECK SURFACE SHALL BE INSPECTED BY THE ENGINEER TO DETERMINE APPROXIMATE LIMITS OF REPAIR. IN ADDITION, AREAS OF THE UNDERSIDE WITH EVIDENCE OF DETERIORATION SHALL BE SOUNDED IN THE PRESENCE OF THE CONTRACTOR AND THE ENGINEER TO IDENTIFY AREAS IN NEED OF FULL DEPTH REPAIRS.
 2. THE TOP SURFACE OF THE DECK REPAIRS SHALL BE FINISHED FLUSH WITH THE ADJACENT TOP OF DECK SLAB AND SHALL MAINTAIN THE EXISTING GRADES AND CROSS SLOPES.
 3. UPON COMPLETION OF EACH STAGE OF DECK REPAIRS, THE DECK SHALL BE ABRASIVELY BLAST CLEANED FOLLOWED BY PLACEMENT OF THE HOT MIX ASPHALT WEARING SURFACE.



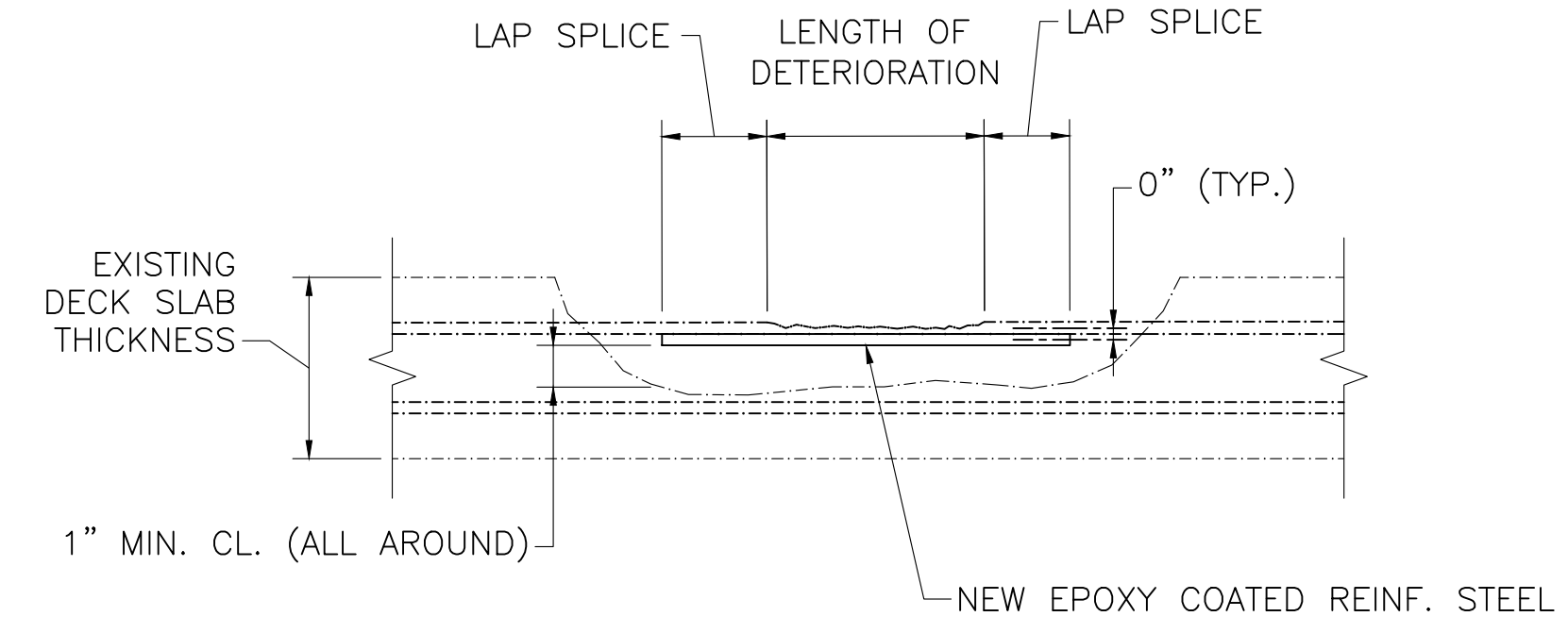
PLAN



SECTION 1

FULL DEPTH OVERHANG DECK REPAIR
NOT TO SCALE

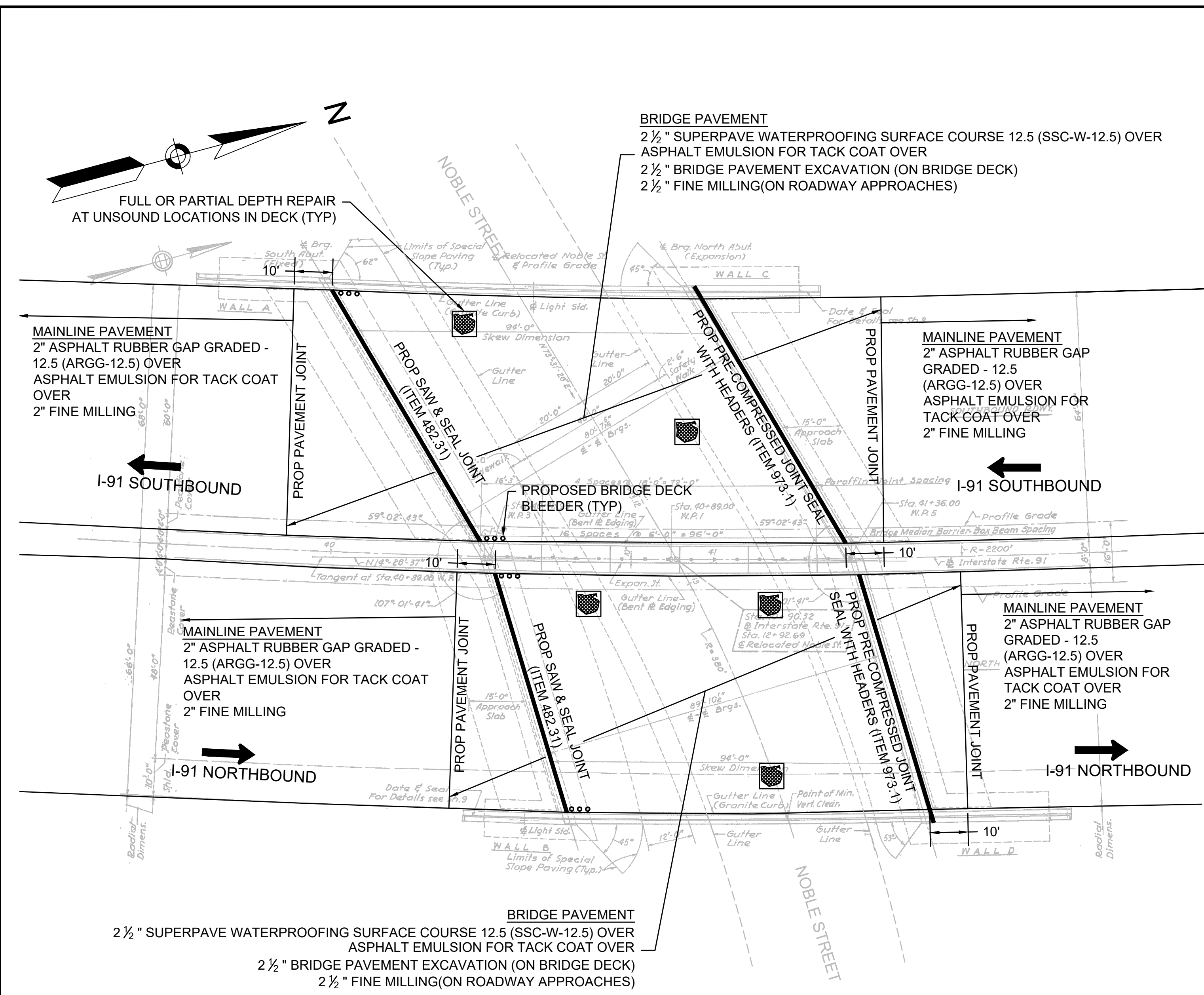
- NOTE**
1. OVERHANG SUPPORT MUST BE PROVIDED WHEN CONSTRUCTION WIDTHS EXCEED 4' (FOUR FEET). IF THE CONTRACTOR EXTENDS THE EXCAVATION BEYOND 4' THEN THEY MUST FURNISH A SHIELDING DESIGN CAPACITY CHECK. THIS CHECK MUST BE DESIGNED AND STAMPED BY A MASSACHUSETTS REGISTERED PROFESSIONAL ENGINEER OF THE APPROPRIATE DISCIPLINE.



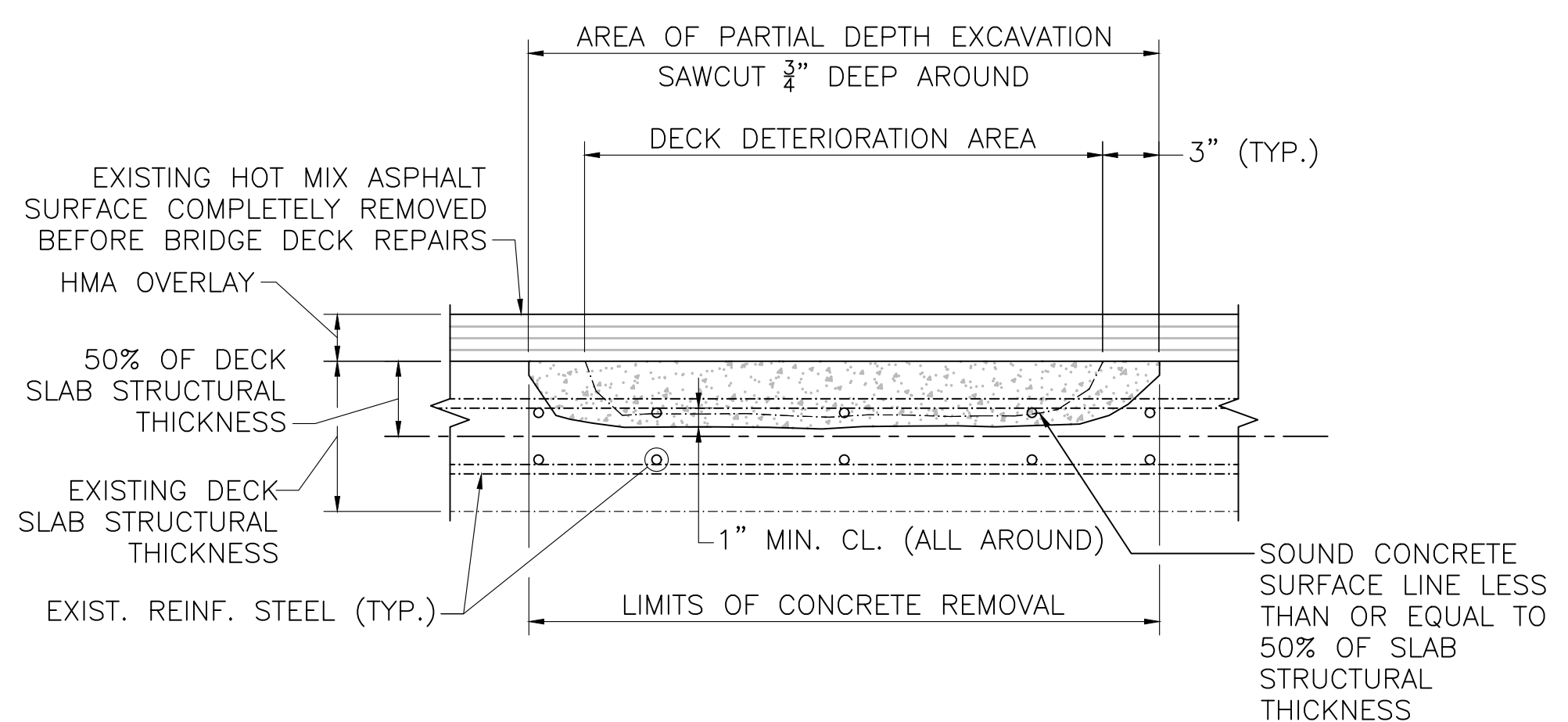
TYPICAL DETERIORATED REINFORCEMENT STEEL REPAIR
SCALE: 1 1/2" = 1'-0"

BRIDGE DECK REPAIR NOTES:

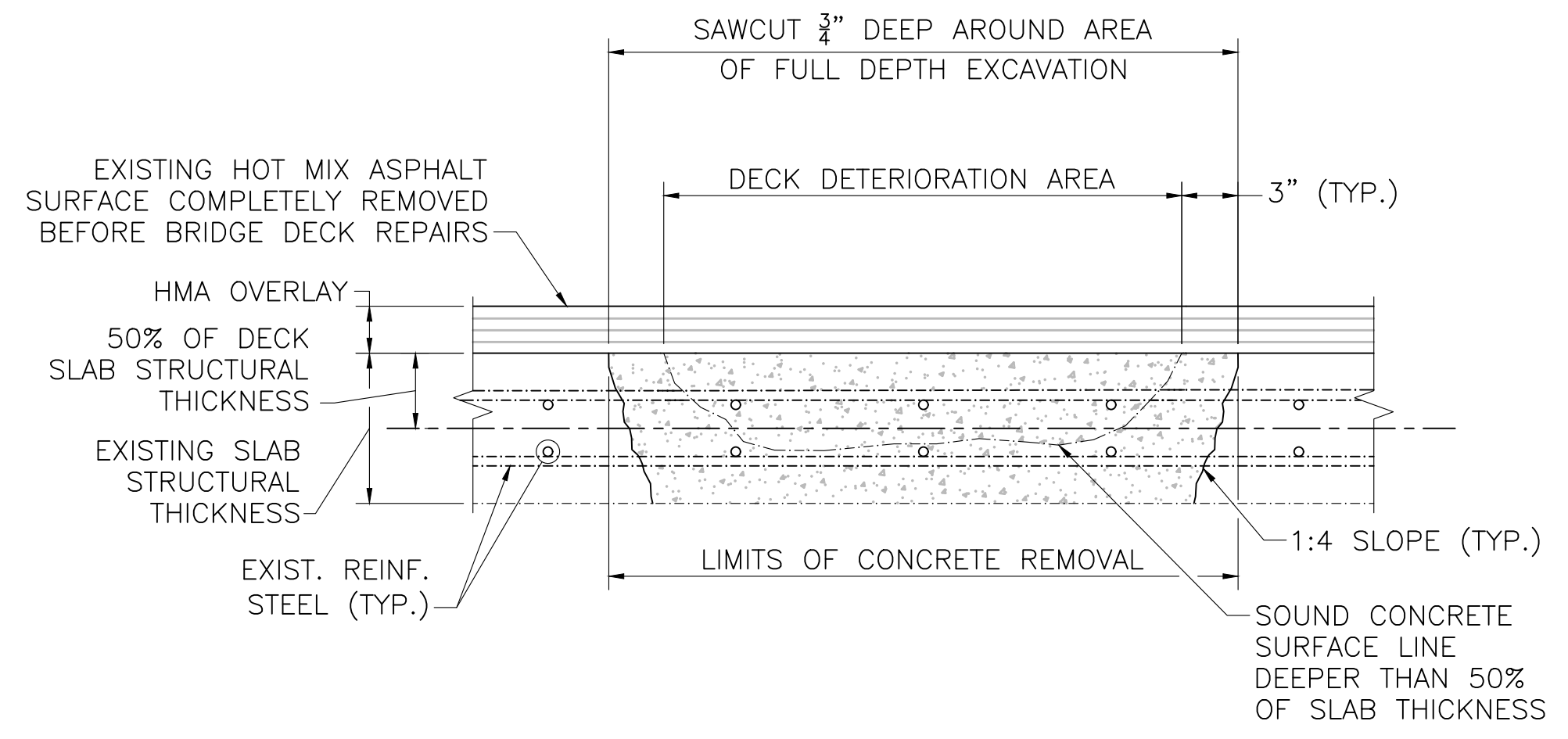
1. SPALLED, DELAMINATED, AND DETERIORATED CONCRETE DECK AREAS SHALL BE REPAIRED USING AN APPROVED RAPID SETTING CONCRETE (ITEM 909.5) AS DIRECTED BY THE ENGINEER.
2. PARTIAL DEPTH REPAIRS: ALL DETERIORATED AND DELAMINATED CONCRETE SHALL BE REMOVED TO A MINIMUM DEPTH OF 1" BELOW THE BOTTOM OF THE TOP LAYER OF EXISTING TRANSVERSE REINFORCEMENT STEEL TO A MAXIMUM OF 50% OF THE THICKNESS OF THE EXISTING CONCRETE DECK.
3. FULL DEPTH REPAIRS: ALL DETERIORATED AND DELAMINATED CONCRETE SHALL BE REMOVED, AND IF THE SOUND CONCRETE SURFACE IS LOCATED AT A DEPTH GREATER THAN 50% OF THE DECK THICKNESS WHEN MEASURED FROM THE TOP OF DECK, A FULL DEPTH DECK REPAIR SHALL BE PERFORMED.
4. ALL EXISTING REINFORCING STEEL AND CONCRETE SURFACES THAT ARE TO BE IN CONTACT WITH REPAIR CONCRETE SHALL BE ABRASIVELY BLAST CLEANED IN ORDER TO REMOVE ALL RUST, OIL, AND DEBRIS THAT IS NOT TIGHTLY ADHERED, FOLLOWED BY APPLICATION OF COMPRESSED AIR TO REMOVE ALL DUST. EXISTING CONCRETE REPAIR SURFACES THAT WILL BE IN CONTACT WITH REPAIR CONCRETE SHALL BE PRE-WETTED FOR A MINIMUM OF 15 MINUTES USING POTABLE WATER IN ORDER TO ACHIEVE A SATURATED SURFACE DRY CONDITION IMMEDIATELY PRIOR TO PLACEMENT OF REPAIR CONCRETE.
5. NEW EPOXY COATED STEEL REINFORCEMENT SHALL BE PLACED TO SUPPLEMENT EXISTING REINFORCEMENT THAT HAS A SECTION LOSS OF 25% OR MORE OF THE ORIGINAL CROSS SECTION AREA OR HAS BROKEN, AS DETERMINED BY THE ENGINEER. NEW REINFORCEMENT SHALL EXTEND 30 BAR DIAMETERS IN EACH DIRECTION FROM WHERE THE SECTION LOSS OR BREAK ENDS. THE LIMITS OF THE REPAIR SHALL BE MODIFIED TO MEET THE REINFORCEMENT STEEL LAP SPLICE REQUIREMENTS. NEW REINFORCING STEEL SHALL BE PLACED AT THE SAME LEVEL ALONGSIDE THE EXISTING DETERIORATED OR BROKEN REINFORCING STEEL.



S-24-085 I-91 OVER NOBLE STREET PLAN VIEW
NOT TO SCALE



TYPICAL PARTIAL DEPTH DECK REPAIR DETAIL
NOT TO SCALE



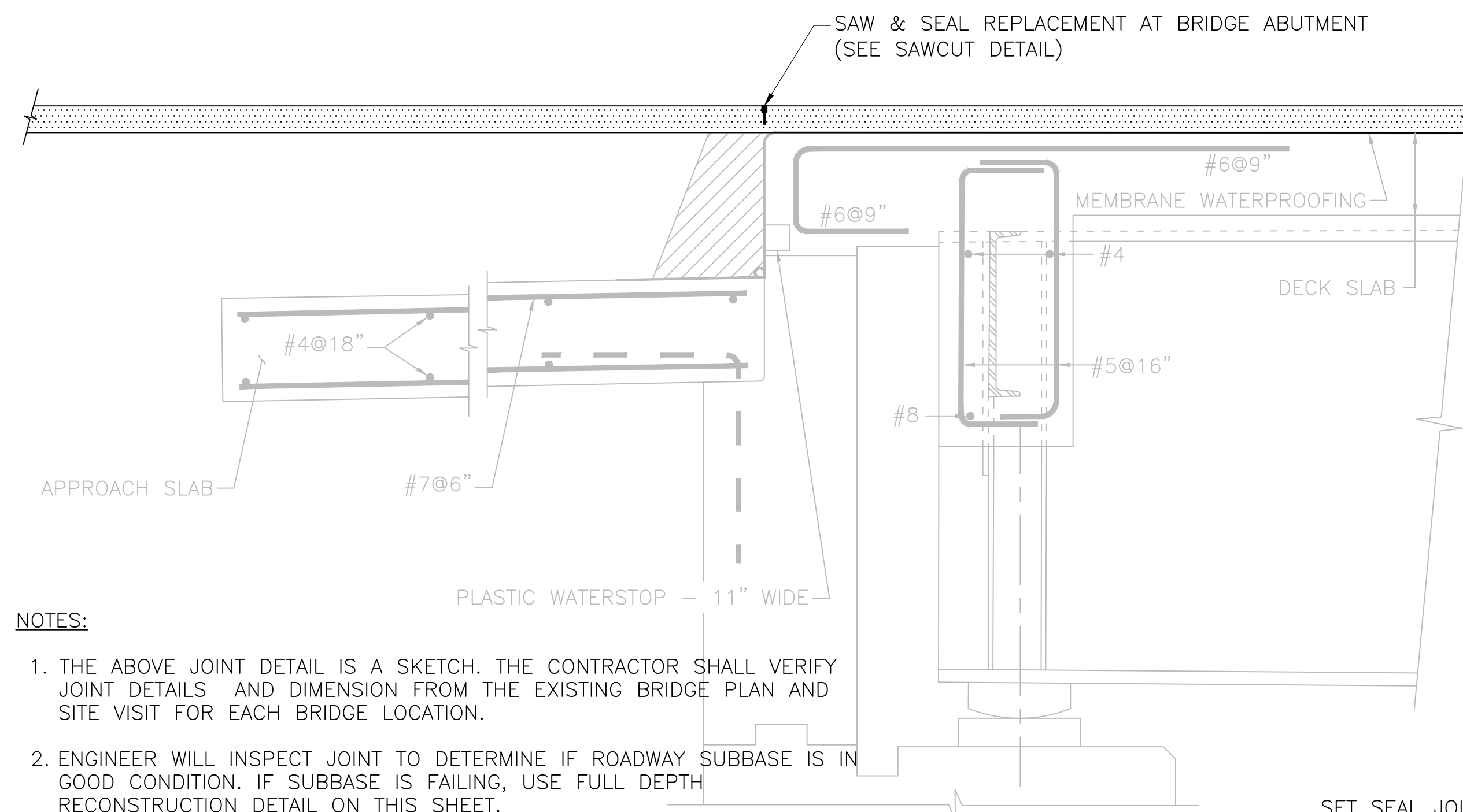
TYPICAL FULL DEPTH DECK REPAIR DETAIL
NOT TO SCALE

- NOTES:**
1. DECK FORMS SHALL BE FLUSH WITH EXISTING DECK UNDERSIDE AND SHALL BE REMOVED AFTER CURING IS COMPLETE.

CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	42	55
PROJECT FILE NO.		612106	

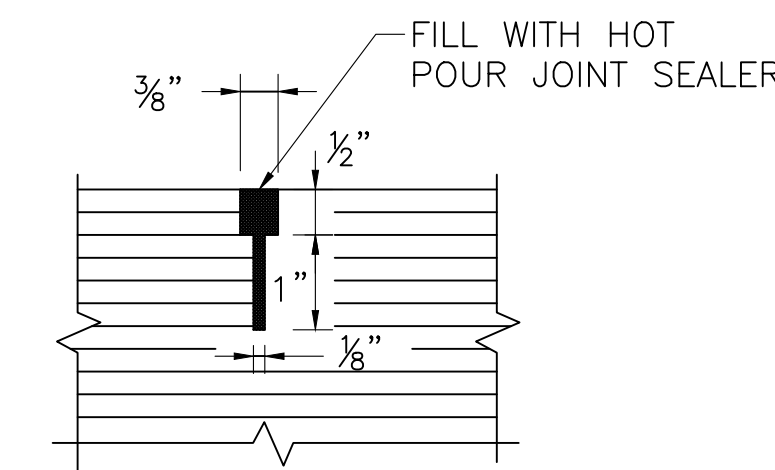
BRIDGE DETAILS
INTERSTATE 91 OVER NOBLE STREET



NOTES:

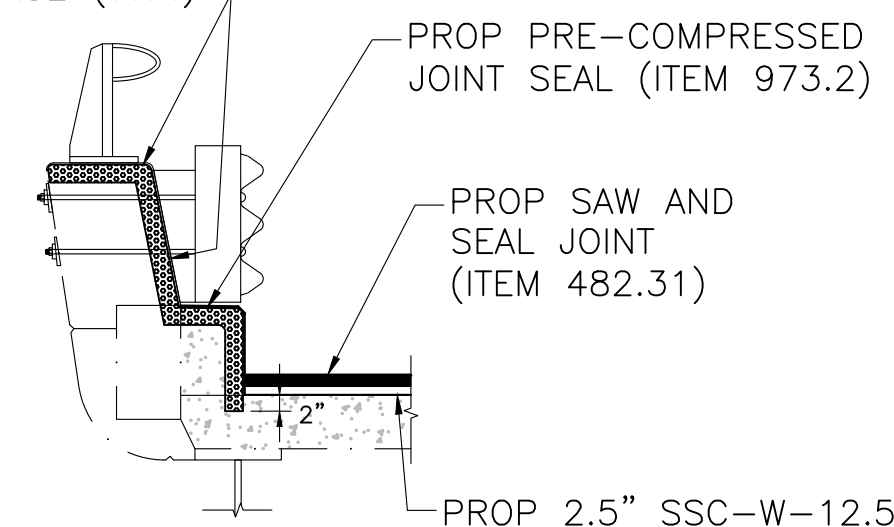
1. THE ABOVE JOINT DETAIL IS A SKETCH. THE CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSION FROM THE EXISTING BRIDGE PLAN AND SITE VISIT FOR EACH BRIDGE LOCATION.
2. ENGINEER WILL INSPECT JOINT TO DETERMINE IF ROADWAY SUBBASE IS IN GOOD CONDITION. IF SUBBASE IS FAILING, USE FULL DEPTH RECONSTRUCTION DETAIL ON THIS SHEET.

PROPOSED SAW & SEAL REPLACEMENT AT BRIDGE ABUTMENT
NOT TO SCALE



PAVEMENT SAWCUT DETAIL
NOT TO SCALE

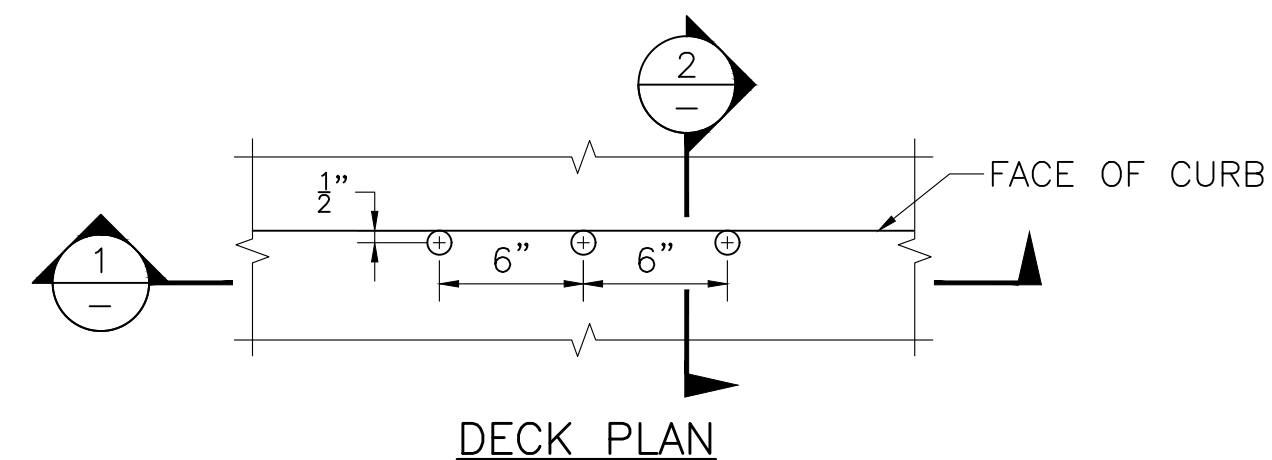
SET SEAL JOINT 1/4" MIN. BELOW OR BEHIND CONC. SURFACE (TYP.)



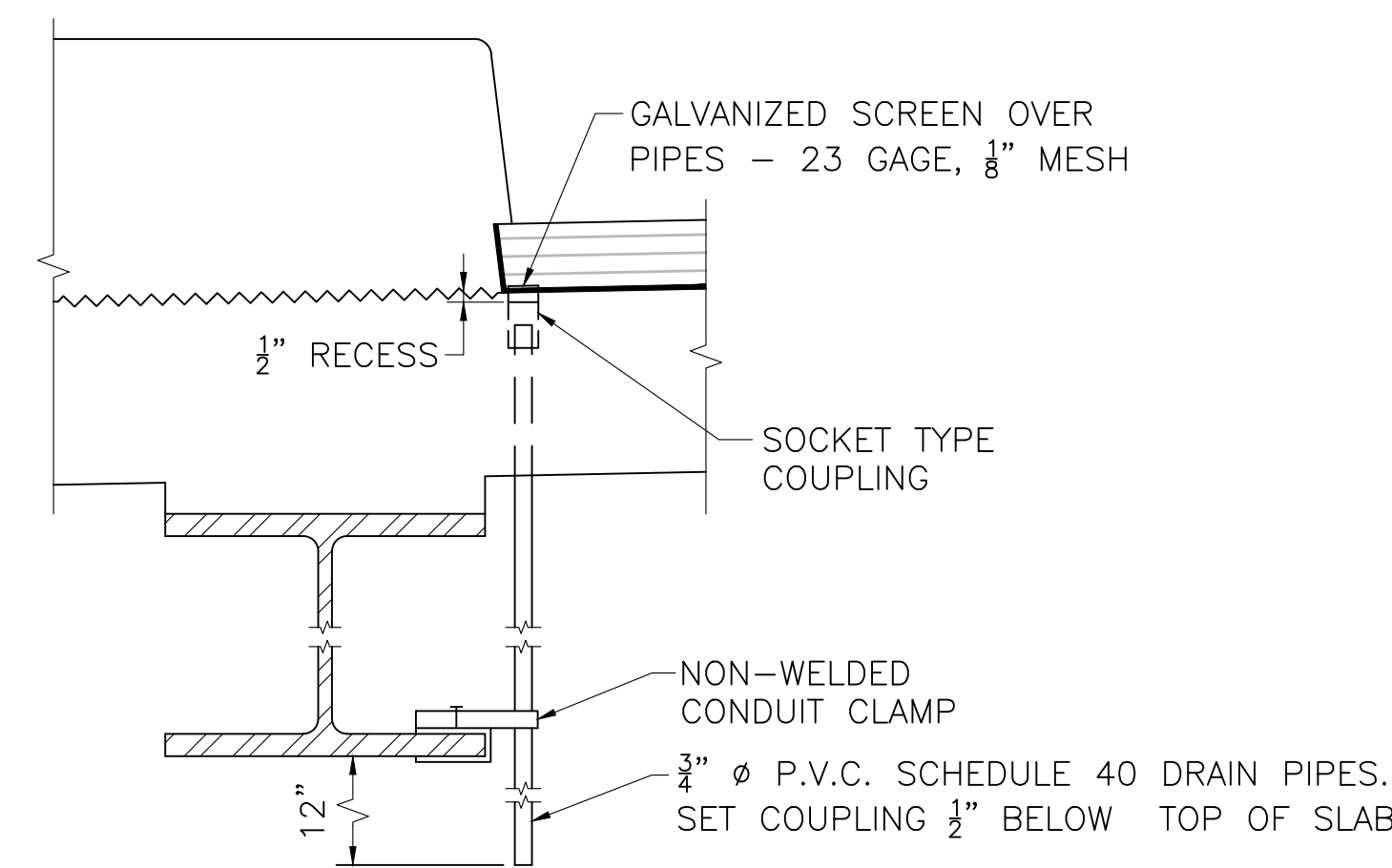
NOTES:

- 1). SEE PRE-COMPRESSED JOINT SEAL DETAIL.
- 2). CLEAN JOINT PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL.
- 3). REPAIR PARAPET PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL AS DIRECTED BY THE ENGINEER.

PRE-COMPRESSED SEAL AT PARAPET FOR SAW AND SEAL JOINTS
NOT TO SCALE



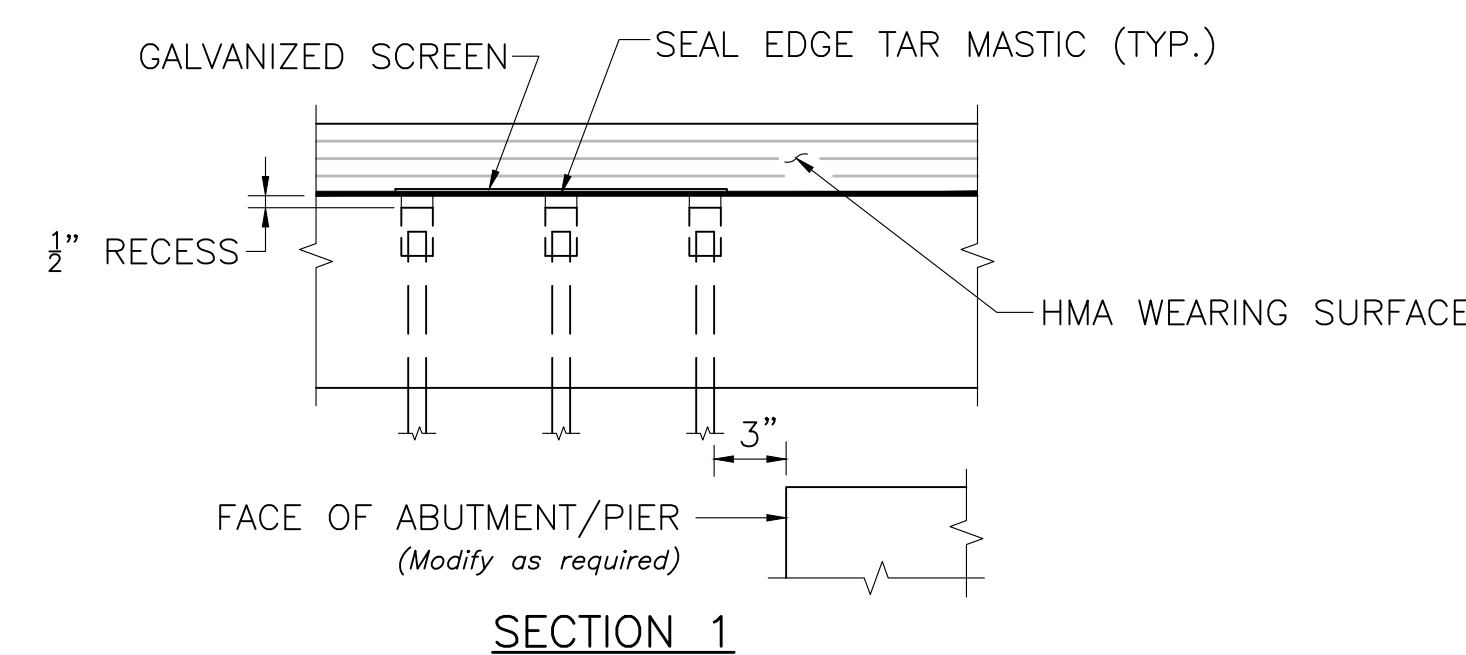
DECK PLAN



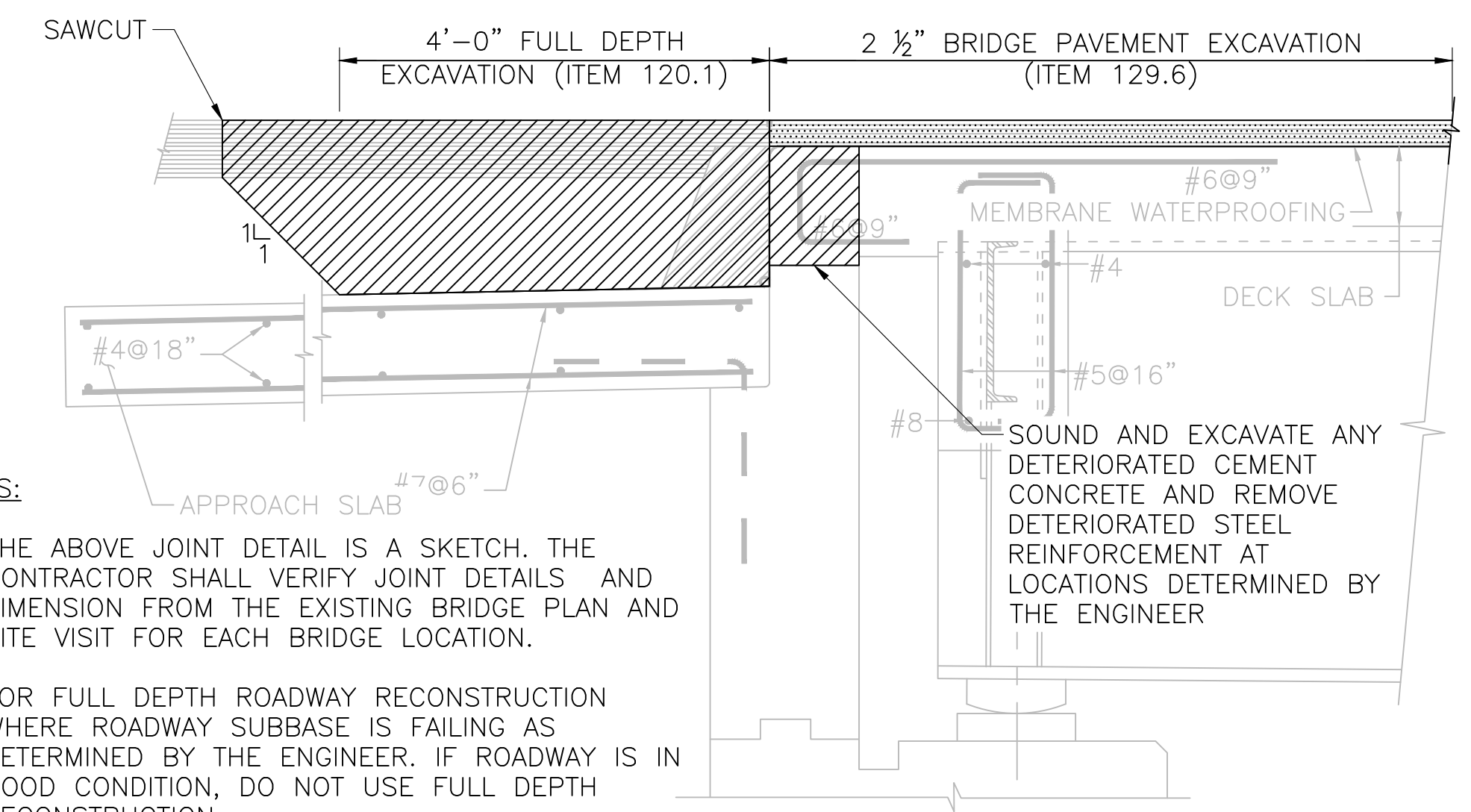
SECTION 2

DECK DRAIN PIPES

SCALE: 1 1/2" = 1'-0"



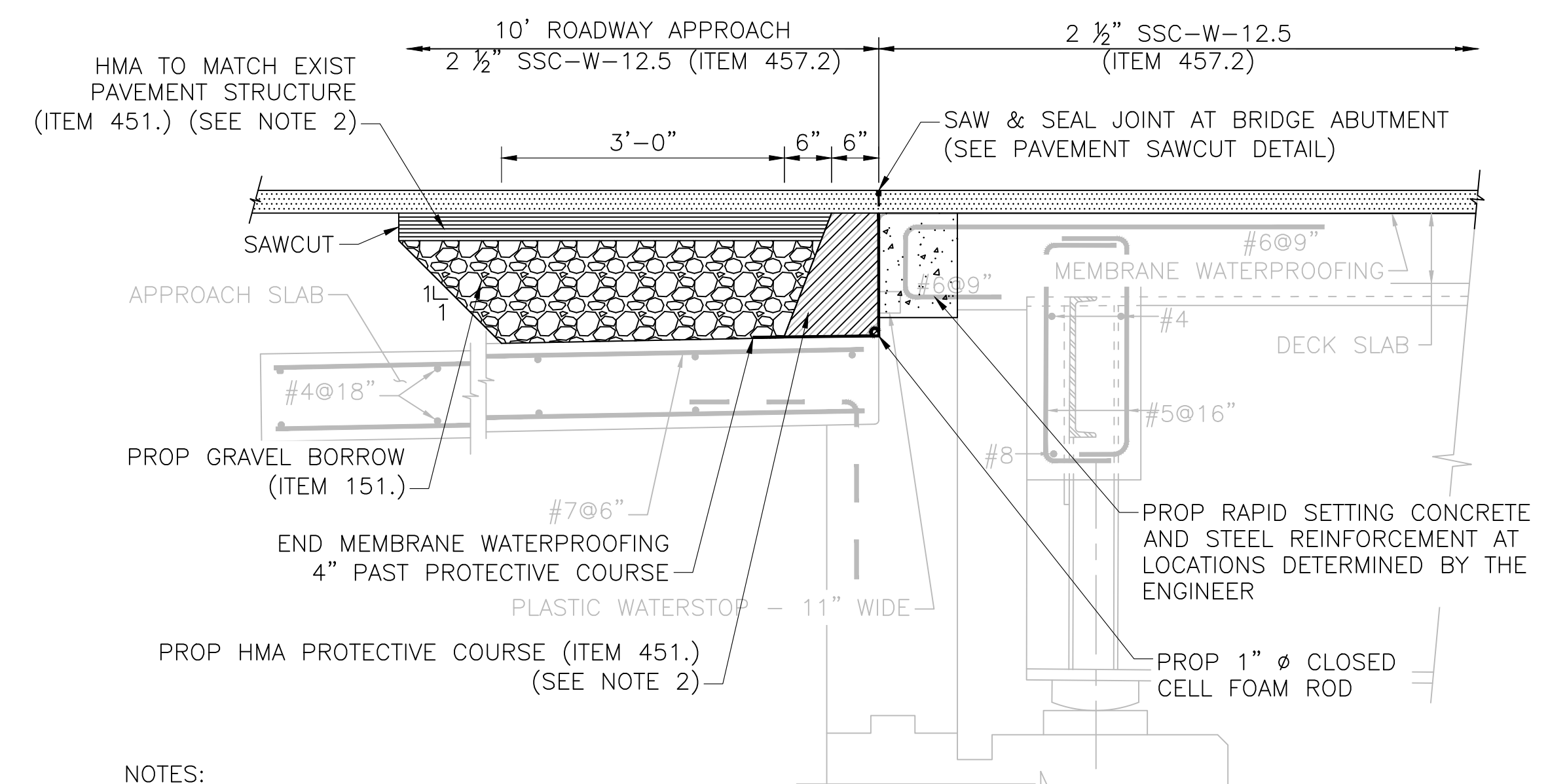
SECTION 1



NOTES:

1. THE ABOVE JOINT DETAIL IS A SKETCH. THE CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSION FROM THE EXISTING BRIDGE PLAN AND SITE VISIT FOR EACH BRIDGE LOCATION.
2. FOR FULL DEPTH ROADWAY RECONSTRUCTION WHERE ROADWAY SUBBASE IS FAILING AS DETERMINED BY THE ENGINEER. IF ROADWAY IS IN GOOD CONDITION, DO NOT USE FULL DEPTH RECONSTRUCTION.

EXISTING SAW & SEAL JOINT EXCAVATION FOR FULL DEPTH RECONSTRUCTION
NOT TO SCALE

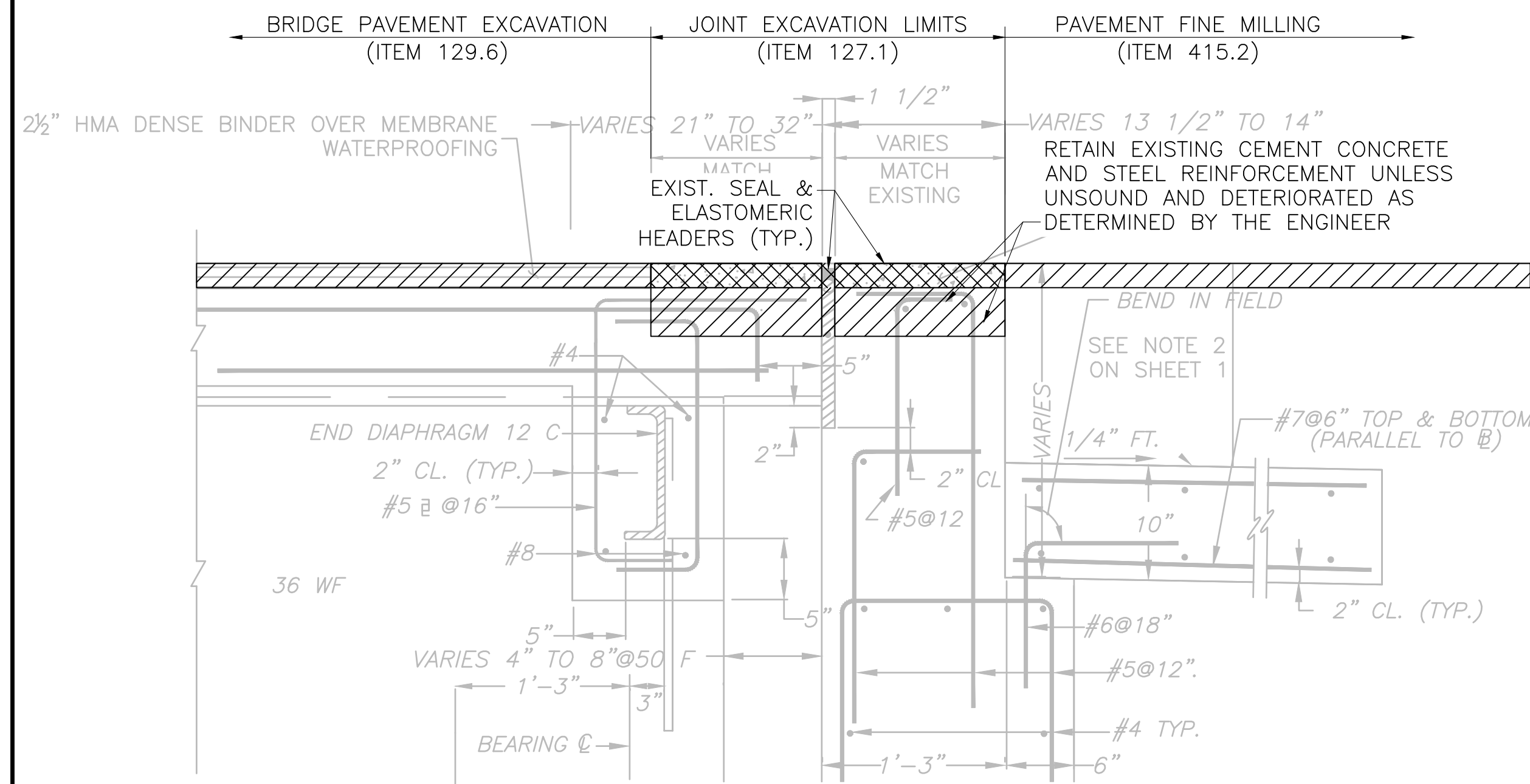


NOTES:

1. THE ABOVE JOINT DETAIL IS A SKETCH. THE CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSION FROM THE EXISTING BRIDGE PLAN AND SITE VISIT FOR EACH BRIDGE LOCATION.
2. PROTECTIVE COURSE TO BE SUPERPAVE BRIDGE PROTECTIVE COURSE, PLACED IN 2" LAYERS AND COMPACTED WITH A MECHANICAL HAND-GUIDED TAMPER AFTER PLACING MEMBRANE WATERPROOFING.
3. FOR FULL DEPTH ROADWAY RECONSTRUCTION WHERE ROADWAY SUBBASE IS FAILING AS DETERMINED BY THE ENGINEER. IF ROADWAY IS IN GOOD CONDITION, DO NOT USE FULL DEPTH RECONSTRUCTION.

PROPOSED SAW & SEAL WITH FULL DEPTH RECONSTRUCTION
NOT TO SCALE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	43	55
PROJECT FILE NO.		612106	

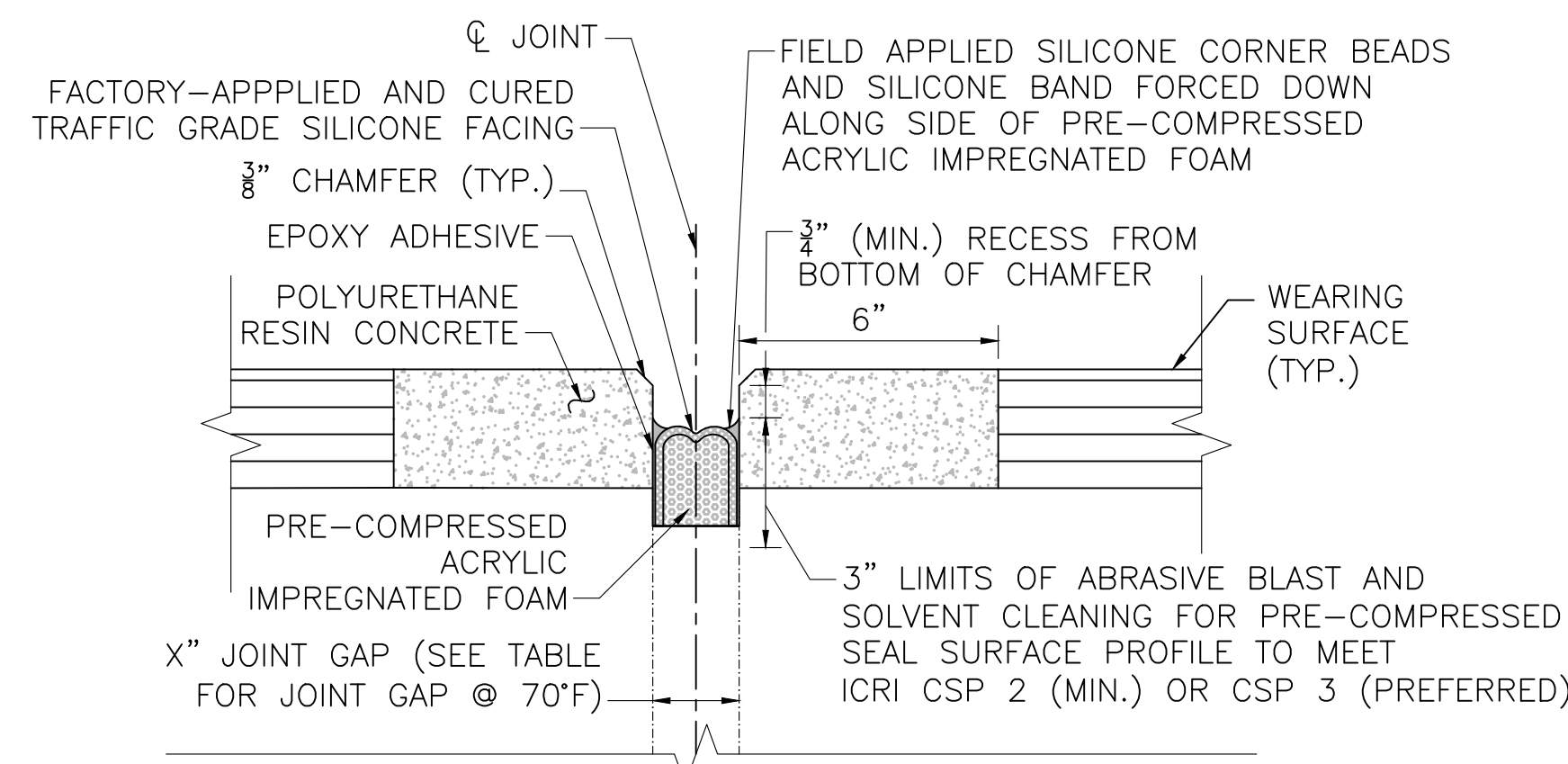


NOTES:

- 1). THE ABOVE DETAIL IS A SKETCH. CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSIONS FROM THE EXISTING BRIDGE PLAN AND SITE VISIT.
- 2). COMPLETE REMOVAL OF THE JOINT, BACKWALL, AND DECK SHOWN FOR CASES WHERE THE JOINT, BACKWALL, AND DECK ARE DETERIORATED. DETERIORATED CONCRETE SHALL BE REMOVED AS DIRECTED BY THE ENGINEER.

LIMITS OF EXCAVATION AT EXISTING ELASTOMERIC CONCRETE HEADERS WITH PRE-COMPRESSED SEAL BRIDGE JOINT SYSTEM AT ABUTMENT

NOT TO SCALE



PRE-COMPRESSED SEAL SECTION

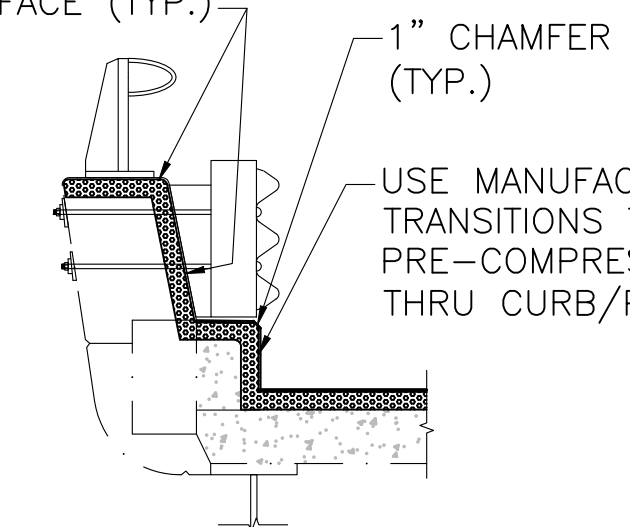
SCALE: 3" = 1'-0"

TRIBUTARY THERMAL EXPANSION/CONTRACTION LENGTH (STEEL)	TRIBUTARY THERMAL EXPANSION/CONTRACTION LENGTH (CONC.)	X" JOINT OPENING @ 70°F	NOMINAL JOINT SEAL WIDTH
<128'	<216'	2"	2 1/2"
<160'	<271'	2 1/2"	3"
<192'	<325'	3"	3 1/2"
<224'	<379'	3 1/2"	4"

NOTES:

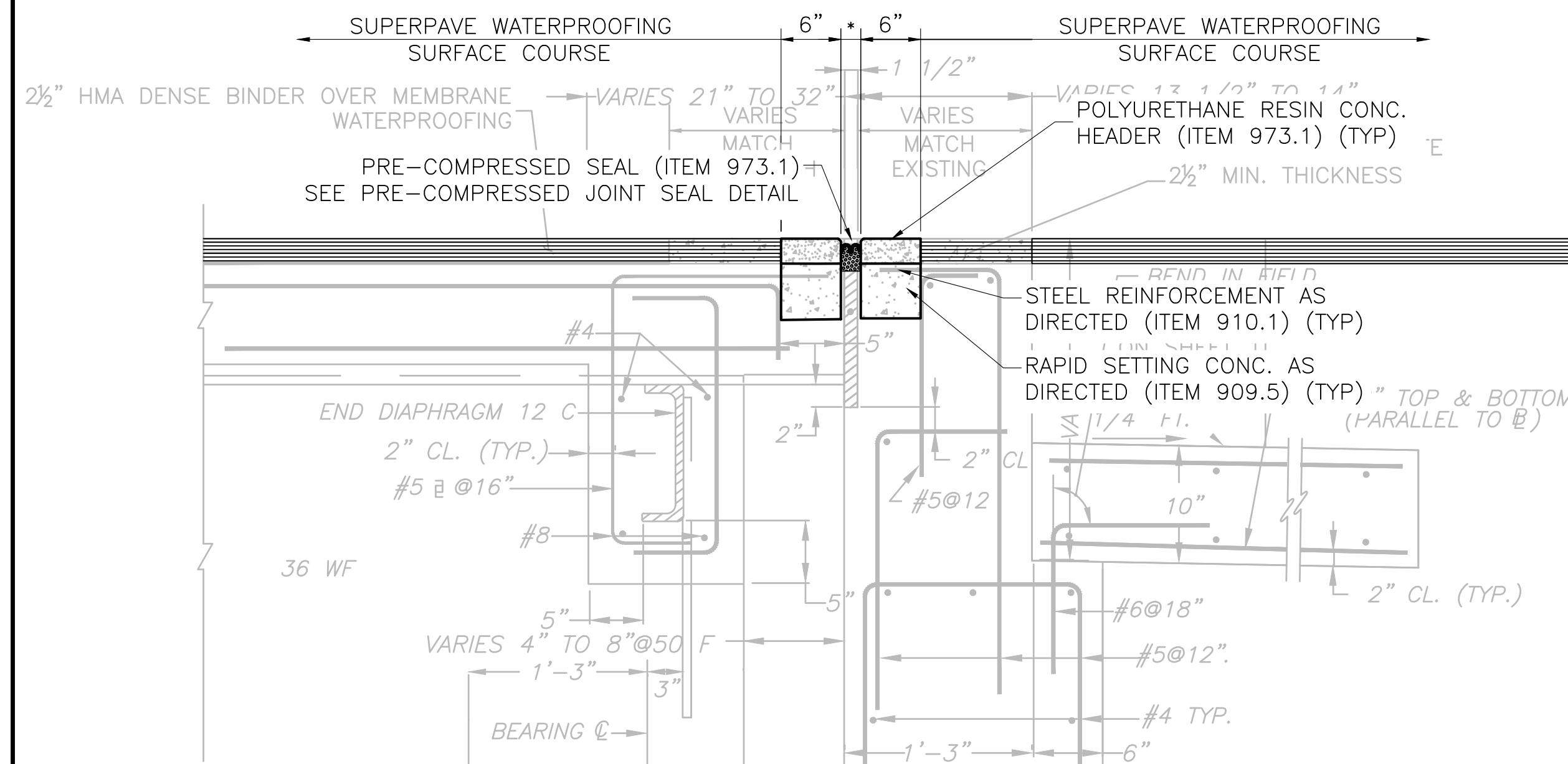
1. THIS TABLE IS DEVELOPED BASED ON THE EQUATION FOR MAXIMUM ONE-WAY THERMAL MOVEMENT IN SECTION 3.1.8 OF THE BRIDGE MANUAL AND THE ASSOCIATED ASSUMPTIONS FOR TEMPERATURE RISE AND FALL. THE THERMAL MOVEMENT EQUATION IS REARRANGED SO THAT IT YIELDS THE TRIBUTARY THERMAL EXPANSION/CONTRACTION LENGTH ASSOCIATED WITH A 50% VARIATION FROM THE NOMINAL PRE-COMPRESSED SEAL WIDTH.
2. AN ADDITIONAL 1/2" HAS BEEN ADDED TO THE REQUIRED NOMINAL JOINT SEAL WIDTH TO ENSURE THAT THE SEAL REMAINS IN COMPRESSION WHEN THE JOINT GAP IS AT IT'S MAXIMUM ANTICIPATED OPENING.

SET SEAL JOINT 1/2" MIN. BELOW OR BEHIND CONC. SURFACE (TYP.)



NOTES:

- 1). SEE PRE-COMPRESSED JOINT SEAL DETAIL.
- 2). CLEAN JOINT PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL.
- 3). REPAIR PARAPET PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL AS DIRECTED BY THE ENGINEER.

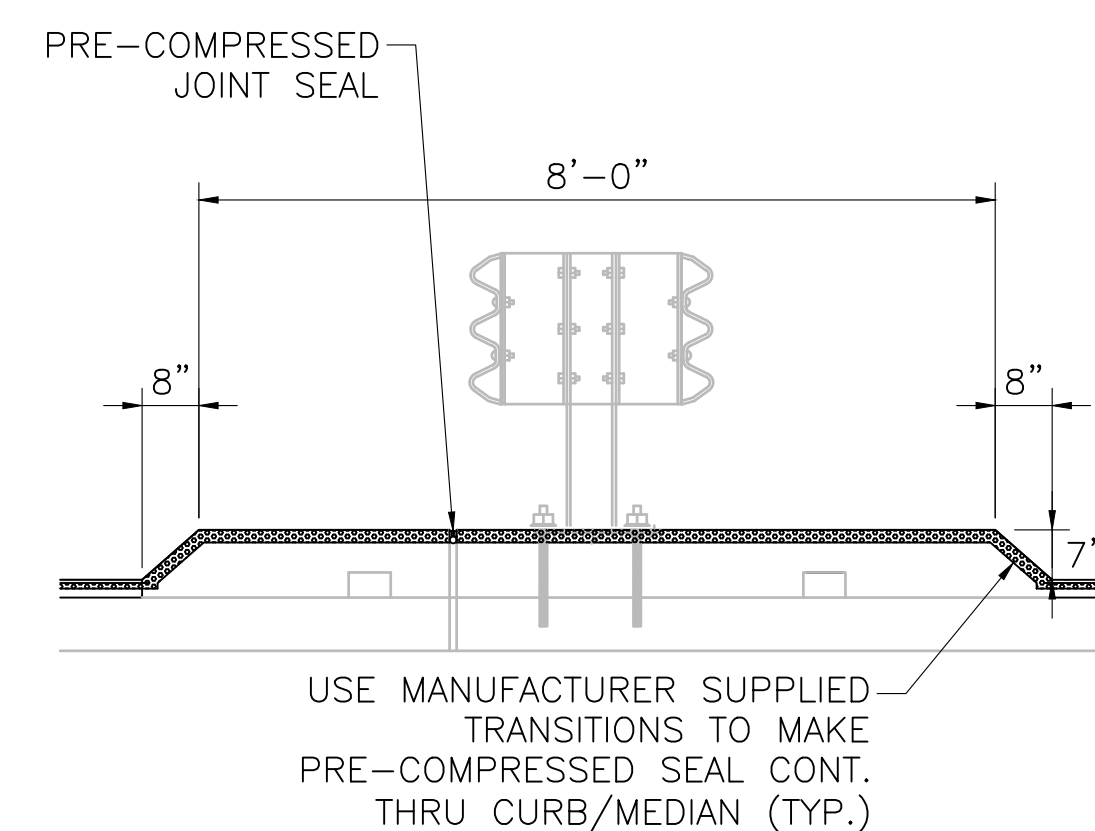


NOTES:

- 1). THE ABOVE DETAIL IS A SKETCH. CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSIONS FROM THE EXISTING BRIDGE PLAN AND SITE VISIT.

PROPOSED PRE-COMPRESSED JOINT SEAL WITH POLYURETHANE RESIN CONCRETE HEADERS AT ABUTMENT

NOT TO SCALE



PRE-COMPRESSED SEAL AT MEDIAN

NOT TO SCALE

PRE-COMPRESSED SEAL AT PARAPET

NOT TO SCALE

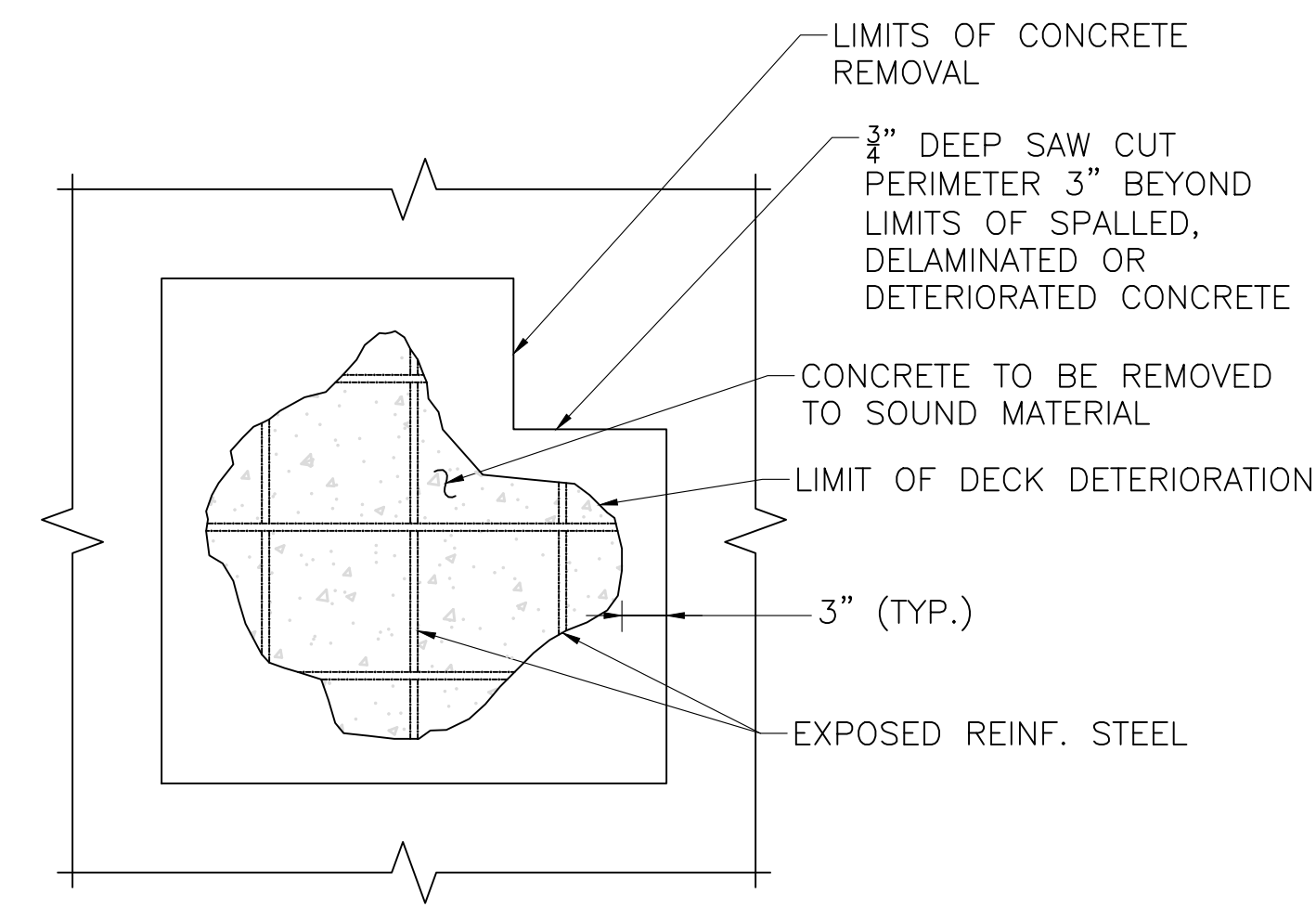
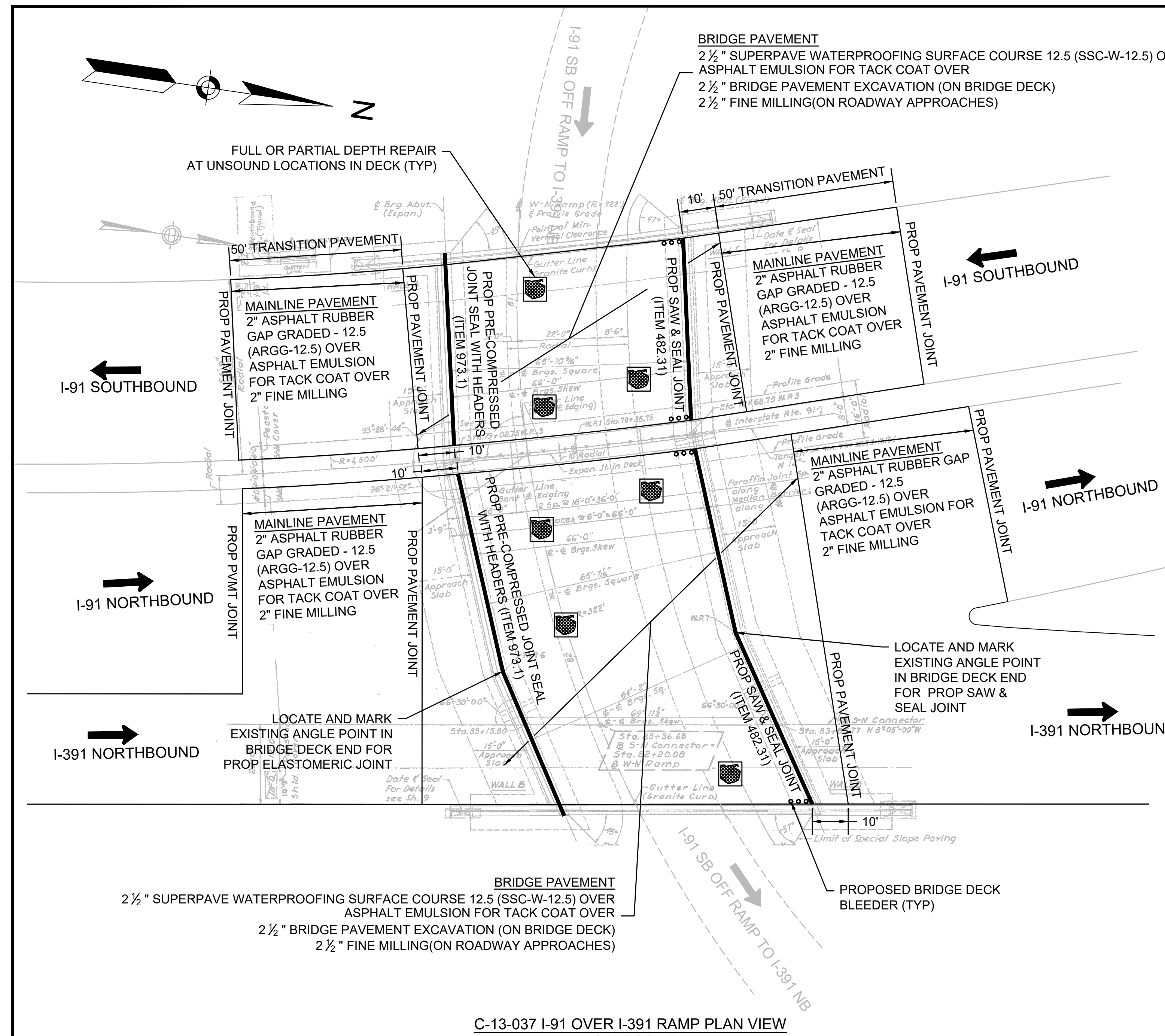
TEMPORARY TRAFFIC CONTROL AND CONSTRUCTION SEQUENCE

1. ALL WORK ON THIS BRIDGE SHALL BE DONE AT NIGHT USING SHORT TERM LANE CLOSURES. TEMPORARY BARRIER WILL NOT BE UTILIZED UNLESS REQUIRED BY THE ENGINEER.
2. ALL WORK SHALL BE DONE BETWEEN THE HOURS OF 7:00 PM AND 5:00 AM.
3. AT LEAST ONE LANE OF TRAFFIC MUST BE KEPT OPEN AT ALL TIMES DURING THE WORK SHIFT. ALL LANES MUST BE OPEN AT THE END OF THE WORK SHIFT IN THEIR ORIGINAL CONFIGURATION.
4. THE CONTRACTOR MAY REMOVE ONLY AS MUCH CONCRETE AS CAN BE PLACED AND CURED IN ONE WORK SHIFT. RAPID SETTING CONCRETE PLACEMENTS SHALL BE COMPLETED NO LATER THAN 2:00 AM FOR NIGHT-TIME OPERATIONS SO THAT THE REQUIRED COMPRESSIVE STRENGTH OF 2000 PSI IS ATTAINED BEFORE THE AREA IS OPENED TO TRAFFIC.
5. TEMPORARY HMA RAMPS SHALL BE USED AT ALL TRANSVERSE AND LONGITUDINAL DROP-OFFS TO TRANSITION TRAFFIC TO THE BRIDGE DECK.
6. FOR THE CONVENIENCE OF THE TRAVELING PUBLIC THE CONTRACTOR IS LIMITED TO WORKING ON NO MORE THAN THREE BRIDGE DECKS AT A TIME. ALL BRIDGE WORK INCLUDING FINAL SURFACE COURSE PAVING MUST BE COMPLETED BEFORE ANY WORK CAN BEGIN ON ADDITIONAL BRIDGES. FOR THIS PURPOSE, A BRIDGE DECK IS DEFINED AS A SINGLE BRIDGE IN A SINGLE DIRECTION, REGARDLESS OF IF THE BRIDGE NUMBER INCLUDES A DECK IN EACH DIRECTION OF TRAVEL.
7. BRIDGE DECKS SHALL NOT BE LEFT EXPOSED TO TRAFFIC WITHOUT SURFACE COURSE PAVEMENT FOR MORE THAN 2 WEEKS.

**CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391**

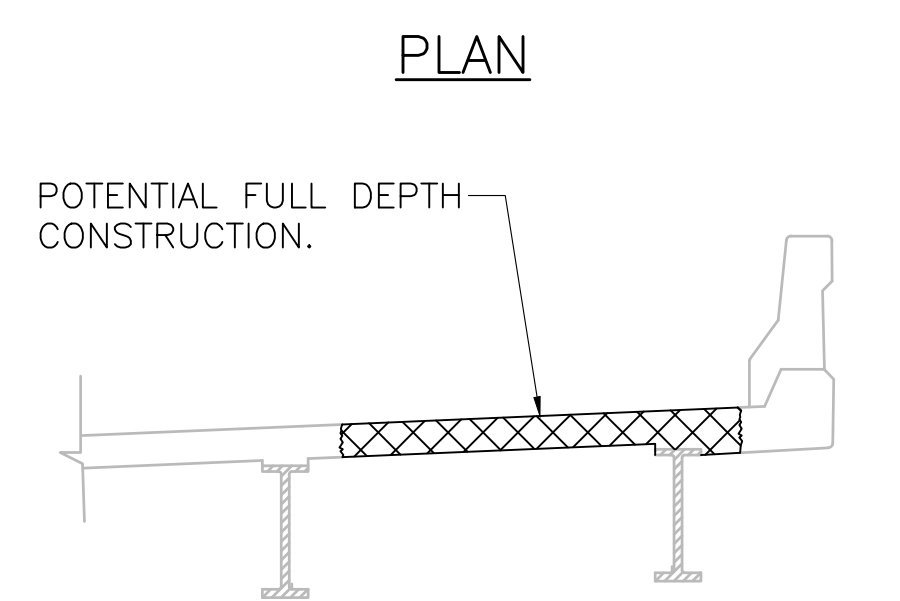
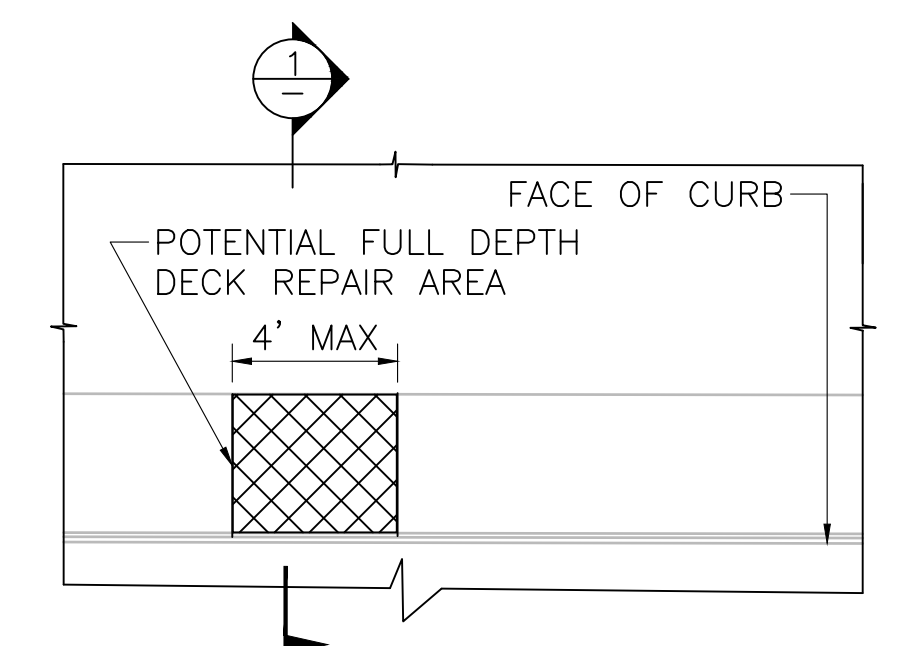
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	44	55
PROJECT FILE NO.			612106

**BRIDGE DETAILS
INTERSTATE 91 OVER INTERSTATE 91 RAMP**



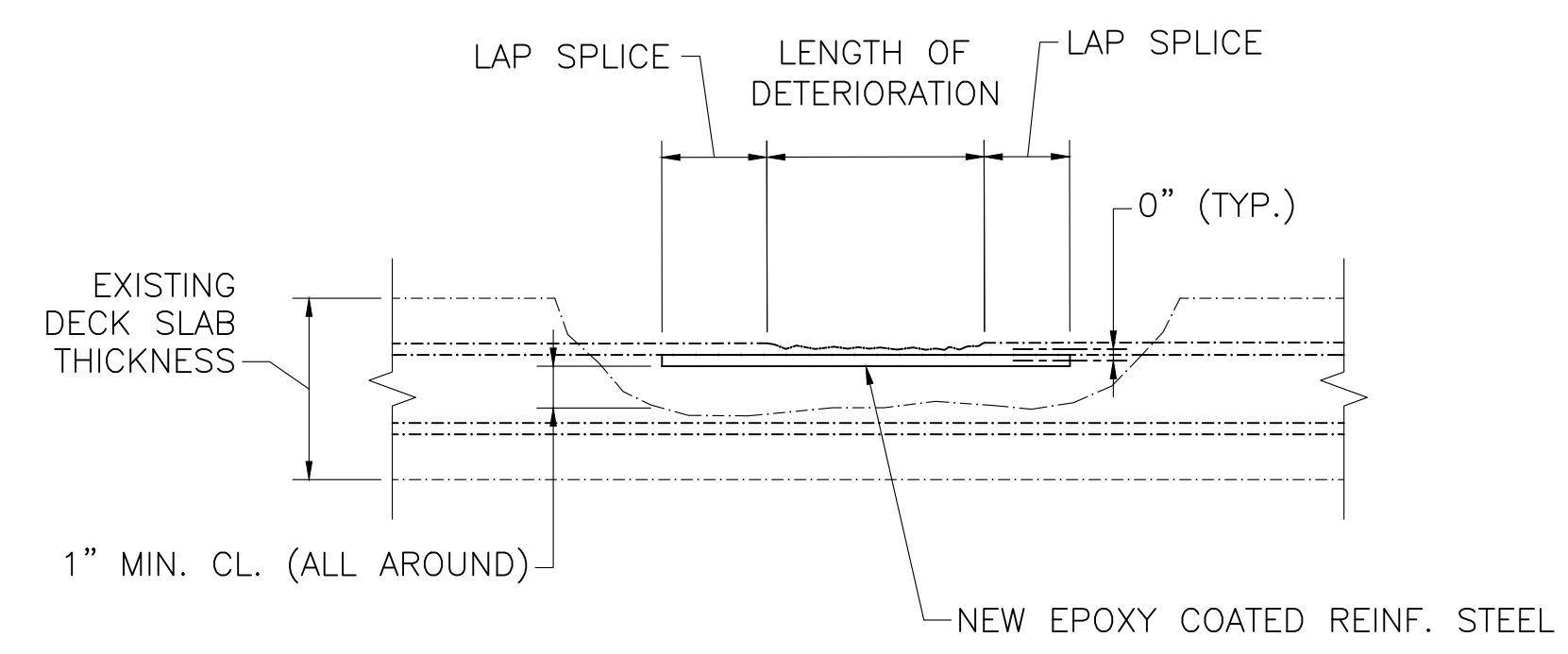
LIMITS OF DECK REPAIR AREA
NOT TO SCALE

- BRIDGE DECK REPAIR SEQUENCE NOTES:**
- ALL EXISTING HOT MIX ASPHALT WEARING SURFACE AND MEMBRANE WATERPROOFING MATERIAL SHALL BE REMOVED PRIOR TO PERFORMING DECK REPAIRS. THE EXPOSED DECK SURFACE SHALL BE INSPECTED BY THE ENGINEER TO DETERMINE APPROXIMATE LIMITS OF REPAIR. IN ADDITION, AREAS OF THE UNDERSIDE WITH EVIDENCE OF DETERIORATION SHALL BE SOUNDED IN THE PRESENCE OF THE CONTRACTOR AND THE ENGINEER TO IDENTIFY AREAS IN NEED OF FULL DEPTH REPAIRS.
 - THE TOP SURFACE OF THE DECK REPAIRS SHALL BE FINISHED FLUSH WITH THE ADJACENT TOP OF DECK SLAB AND SHALL MAINTAIN THE EXISTING GRADES AND CROSS SLOPES.
 - UPON COMPLETION OF EACH STAGE OF DECK REPAIRS, THE DECK SHALL BE ABRASIVELY BLAST CLEANED FOLLOWED BY PLACEMENT OF THE HOT MIX ASPHALT WEARING SURFACE.

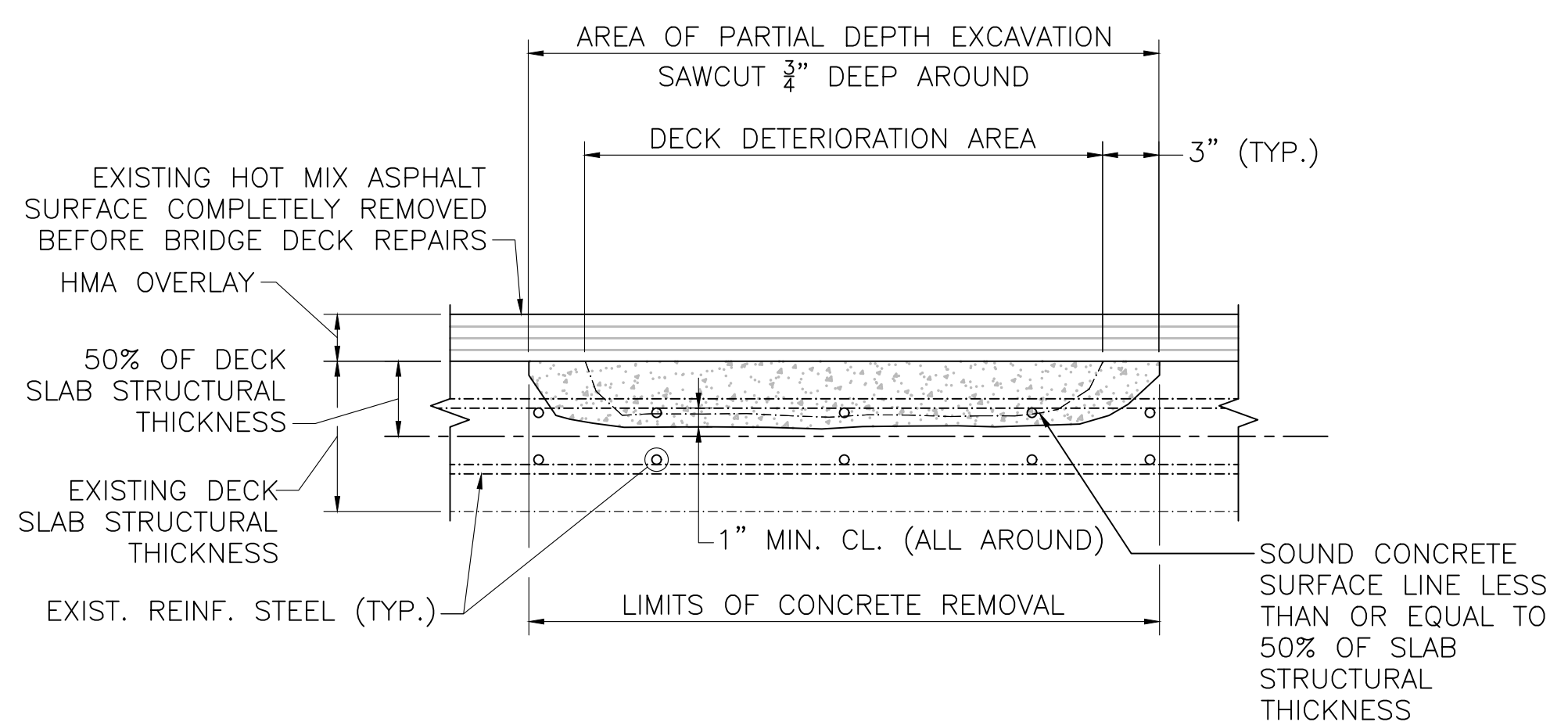


FULL DEPTH OVERHANG DECK REPAIR
NOT TO SCALE

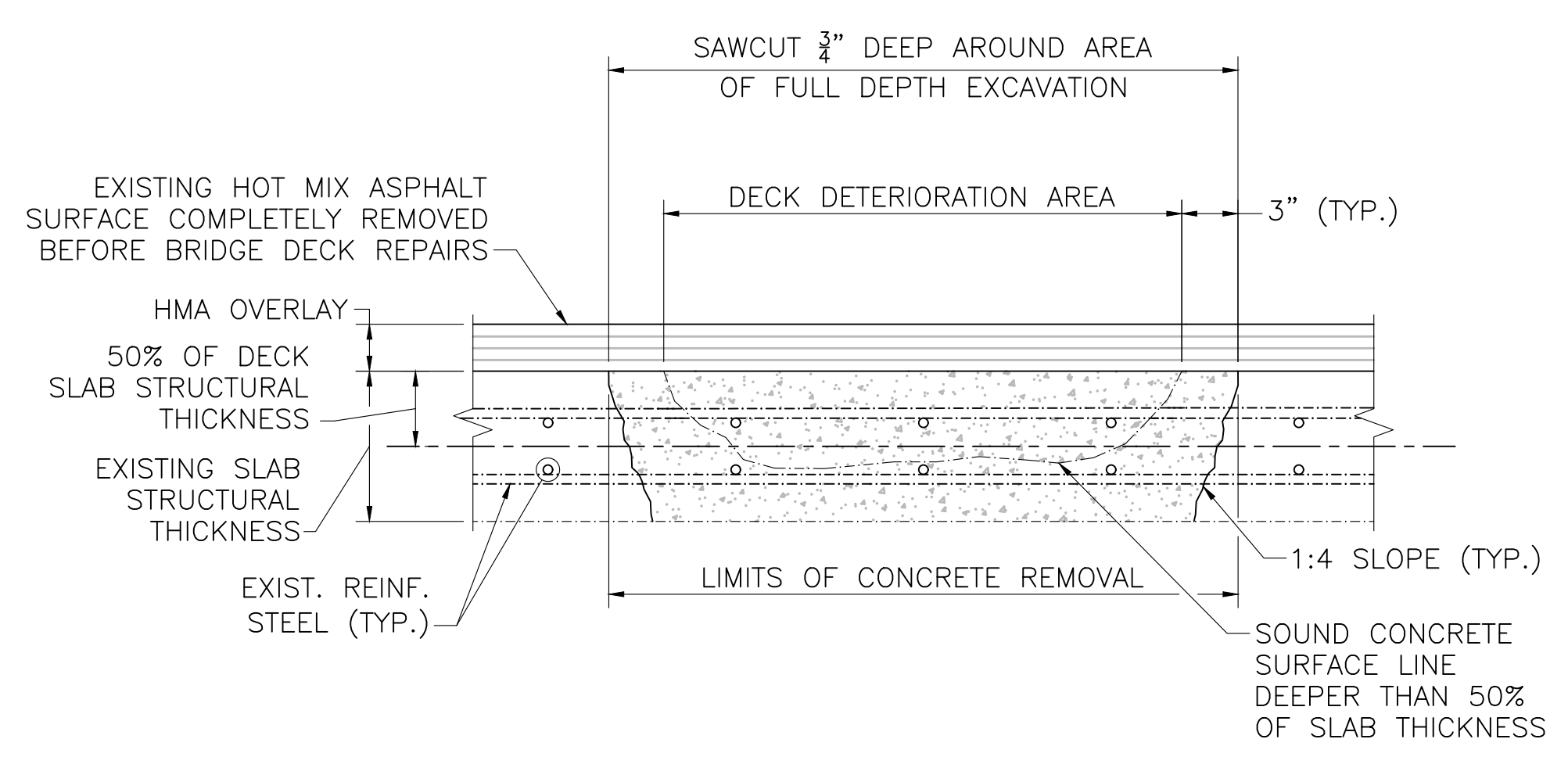
- NOTE**
- OVERHANG SUPPORT MUST BE PROVIDED WHEN CONSTRUCTION WIDTHS EXCEED 4' (FOUR FEET). IF THE CONTRACTOR EXTENDS THE EXCAVATION BEYOND 4' THEN THEY MUST FURNISH A SHIELDING DESIGN CAPACITY CHECK. THIS CHECK MUST BE DESIGNED AND STAMPED BY A MASSACHUSETTS REGISTERED PROFESSIONAL ENGINEER OF THE APPROPRIATE DISCIPLINE.



TYPICAL DETERIORATED REINFORCEMENT STEEL REPAIR
SCALE: 1 1/2" = 1'-0"



TYPICAL PARTIAL DEPTH DECK REPAIR DETAIL
NOT TO SCALE



TYPICAL FULL DEPTH DECK REPAIR DETAIL
NOT TO SCALE

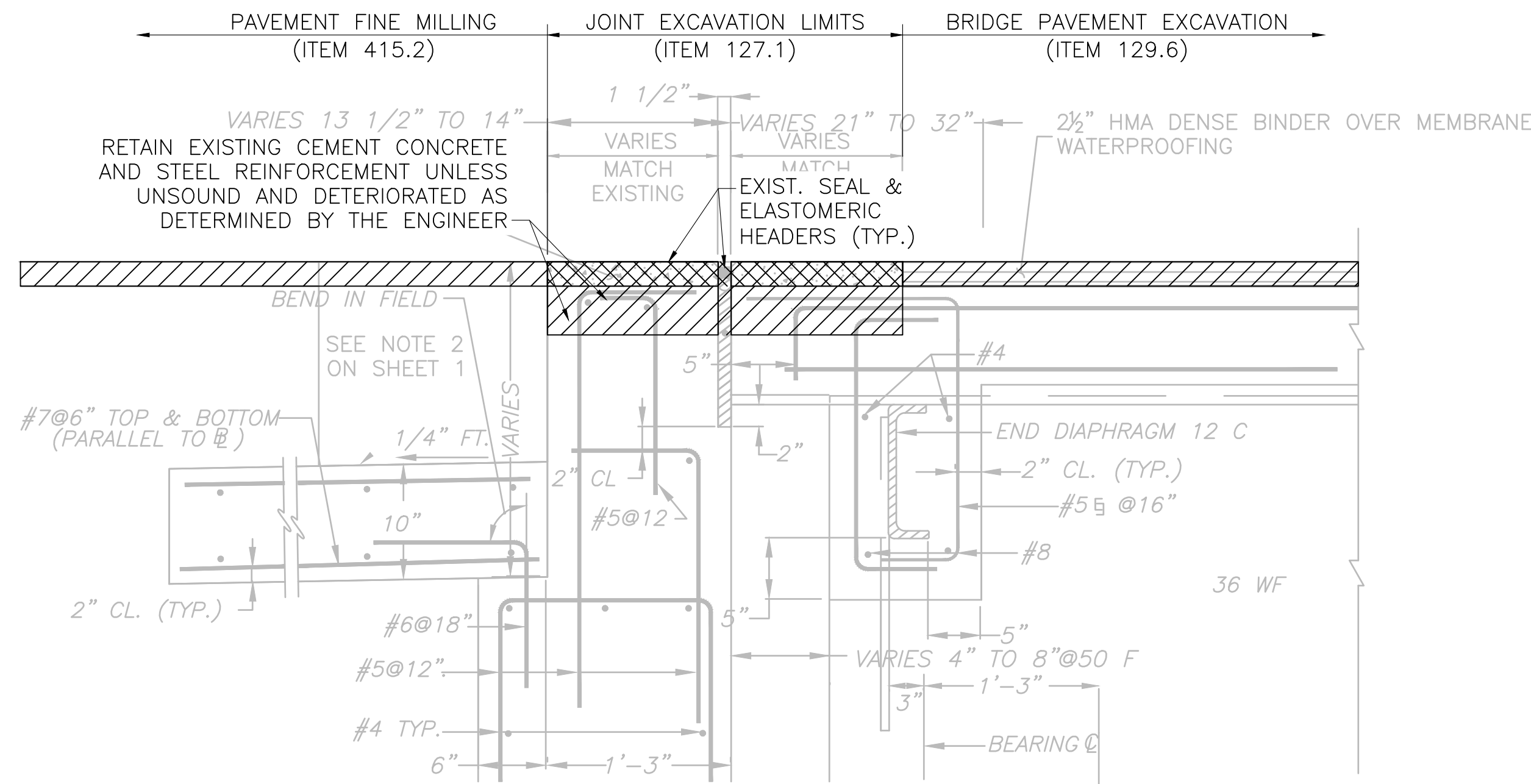
- NOTES:**
- DECK FORMS SHALL BE FLUSH WITH EXISTING DECK UNDERSIDE AND SHALL BE REMOVED AFTER CURING IS COMPLETE.

BRIDGE DECK REPAIR NOTES:

- SPALLED, DELAMINATED, AND DETERIORATED CONCRETE DECK AREAS SHALL BE REPAIRED USING AN APPROVED RAPID SETTING CONCRETE (ITEM 909.5) AS DIRECTED BY THE ENGINEER.
- PARTIAL DEPTH REPAIRS: ALL DETERIORATED AND DELAMINATED CONCRETE SHALL BE REMOVED TO A MINIMUM DEPTH OF 1" BELOW THE BOTTOM OF THE TOP LAYER OF EXISTING TRANSVERSE REINFORCEMENT STEEL TO A MAXIMUM OF 50% OF THE THICKNESS OF THE EXISTING CONCRETE DECK.
- FULL DEPTH REPAIRS: ALL DETERIORATED AND DELAMINATED CONCRETE SHALL BE REMOVED, AND IF THE SOUND CONCRETE SURFACE IS LOCATED AT A DEPTH GREATER THAN 50% OF THE DECK THICKNESS WHEN MEASURED FROM THE TOP OF DECK, A FULL DEPTH DECK REPAIR SHALL BE PERFORMED.
- ALL EXISTING REINFORCING STEEL AND CONCRETE SURFACES THAT ARE TO BE IN CONTACT WITH REPAIR CONCRETE SHALL BE ABRASIVELY BLAST CLEANED IN ORDER TO REMOVE ALL RUST, OIL, AND DEBRIS THAT IS NOT TIGHTLY ADHERED, FOLLOWED BY APPLICATION OF COMPRESSED AIR TO REMOVE ALL DUST. EXISTING CONCRETE REPAIR SURFACES THAT WILL BE IN CONTACT WITH REPAIR CONCRETE SHALL BE PRE-WETTED FOR A MINIMUM OF 15 MINUTES USING POTABLE WATER IN ORDER TO ACHIEVE A SATURATED SURFACE DRY CONDITION IMMEDIATELY PRIOR TO PLACEMENT OF REPAIR CONCRETE.
- NEW EPOXY COATED STEEL REINFORCEMENT SHALL BE PLACED TO SUPPLEMENT EXISTING REINFORCEMENT THAT HAS A SECTION LOSS OF 25% OR MORE OF THE ORIGINAL CROSS SECTION AREA OR HAS BROKEN, AS DETERMINED BY THE ENGINEER. NEW REINFORCEMENT SHALL EXTEND 30 BAR DIAMETERS IN EACH DIRECTION FROM WHERE THE SECTION LOSS OR BREAK ENDS. THE LIMITS OF THE REPAIR SHALL BE MODIFIED TO MEET THE REINFORCEMENT STEEL LAP SPLICE REQUIREMENTS. NEW REINFORCING STEEL SHALL BE PLACED AT THE SAME LEVEL ALONGSIDE THE EXISTING DETERIORATED OR BROKEN REINFORCING STEEL.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	45	55
PROJECT FILE NO.		612106	

BRIDGE DETAILS
INTERSTATE 91 OVER INTERSTATE 91 RAMP

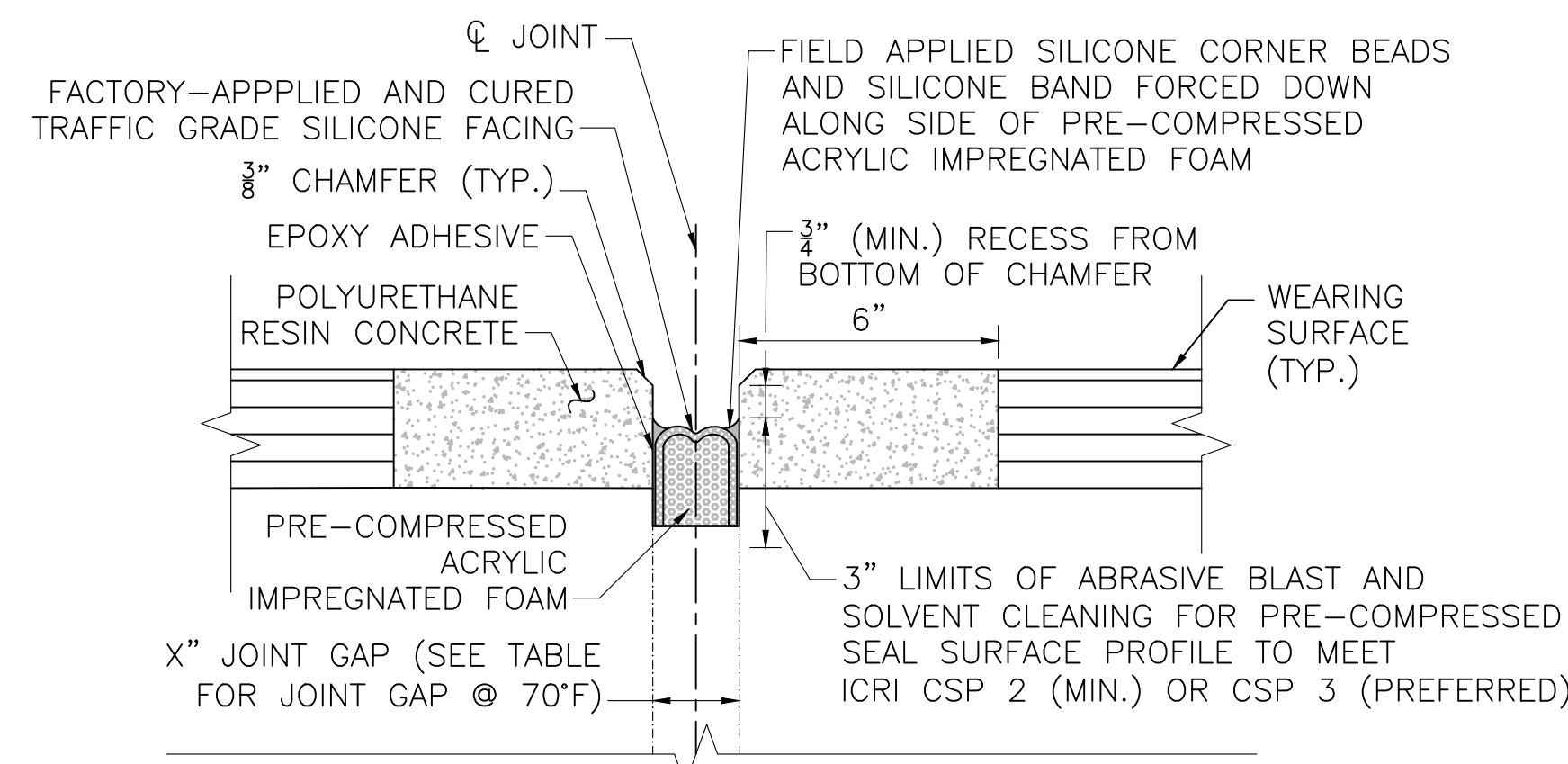


NOTES:

- 1). THE ABOVE DETAIL IS A SKETCH. CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSIONS FROM THE EXISTING BRIDGE PLAN AND SITE VISIT.
- 2). COMPLETE REMOVAL OF THE JOINT, BACKWALL, AND DECK SHOWN FOR CASES WHERE THE JOINT, BACKWALL, AND DECK ARE DETERIORATED. DETERIORATED CONCRETE SHALL BE REMOVED AS DIRECTED BY THE ENGINEER.

LIMITS OF EXCAVATION AT EXISTING ELASTOMERIC CONCRETE HEADERS WITH PRE-COMPRESSED SEAL BRIDGE JOINT SYSTEM AT ABUTMENT

NOT TO SCALE



PRE-COMPRESSED SEAL SECTION

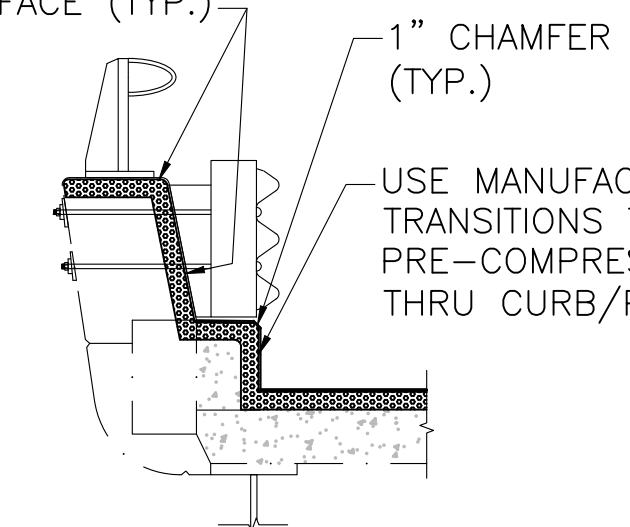
SCALE: 3" = 1'-0"

TRIBUTARY THERMAL EXPANSION/CONTRACTION LENGTH (STEEL)	TRIBUTARY THERMAL EXPANSION/CONTRACTION LENGTH (CONC.)	X" JOINT OPENING @ 70°F	NOMINAL JOINT SEAL WIDTH
<128'	<216'	2"	2 1/2"
<160'	<271'	2 1/2"	3"
<192'	<325'	3"	3 1/2"
<224'	<379'	3 1/2"	4"

NOTES:

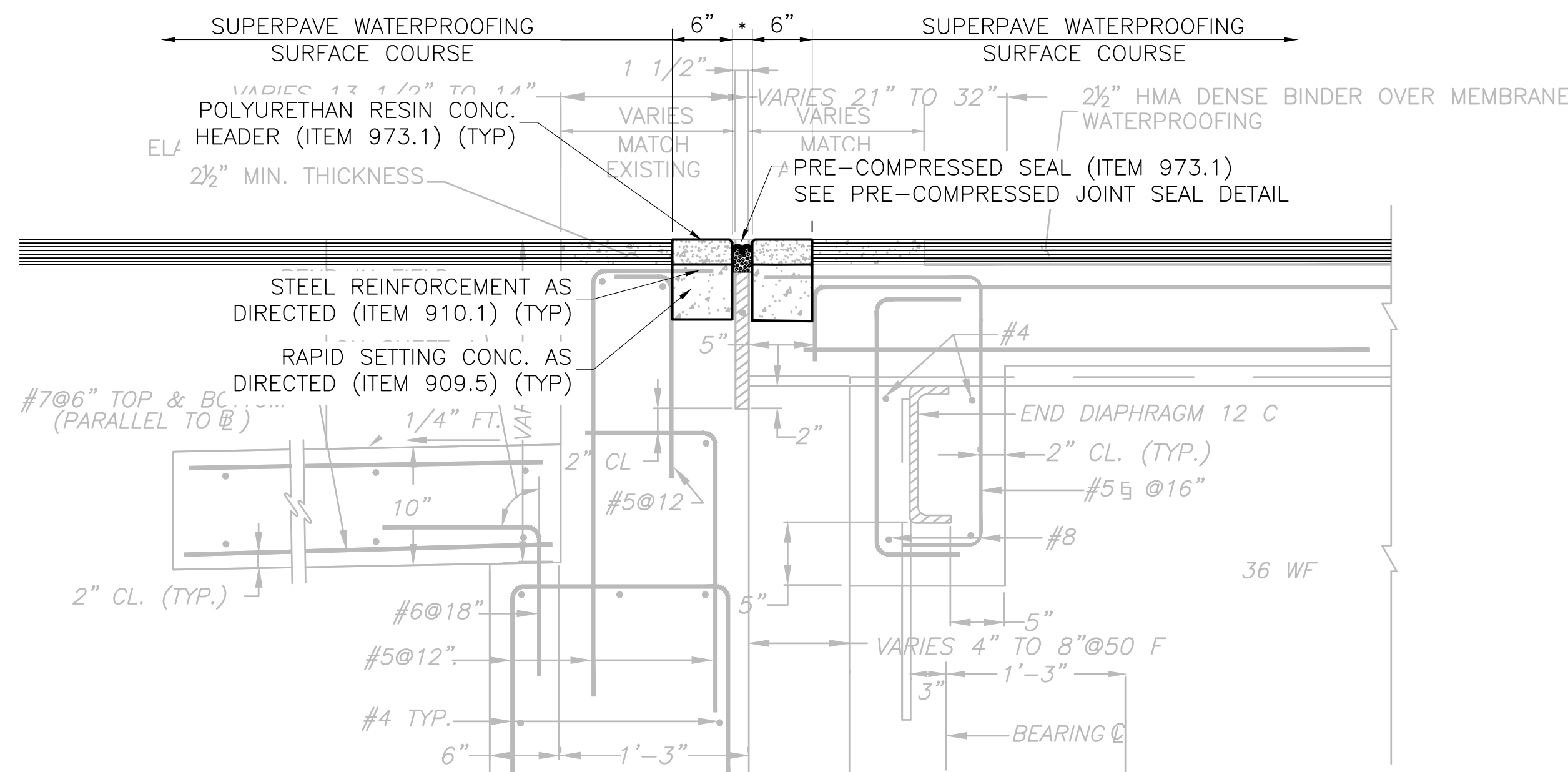
1. THIS TABLE IS DEVELOPED BASED ON THE EQUATION FOR MAXIMUM ONE-WAY THERMAL MOVEMENT IN SECTION 3.1.8 OF THE BRIDGE MANUAL AND THE ASSOCIATED ASSUMPTIONS FOR TEMPERATURE RISE AND FALL. THE THERMAL MOVEMENT EQUATION IS REARRANGED SO THAT IT YIELDS THE TRIBUTARY THERMAL EXPANSION/CONTRACTION LENGTH ASSOCIATED WITH A 50% VARIATION FROM THE NOMINAL PRE-COMPRESSED SEAL WIDTH.
2. AN ADDITIONAL 1/2" HAS BEEN ADDED TO THE REQUIRED NOMINAL JOINT SEAL WIDTH TO ENSURE THAT THE SEAL REMAINS IN COMPRESSION WHEN THE JOINT GAP IS AT IT'S MAXIMUM ANTICIPATED OPENING.

SET SEAL JOINT 1/2" MIN. BELOW OR BEHIND CONC. SURFACE (TYP.)



NOTES:

- 1). SEE PRE-COMPRESSED JOINT SEAL DETAIL.
- 2). CLEAN JOINT PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL.
- 3). REPAIR PARAPET PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL AS DIRECTED BY THE ENGINEER.

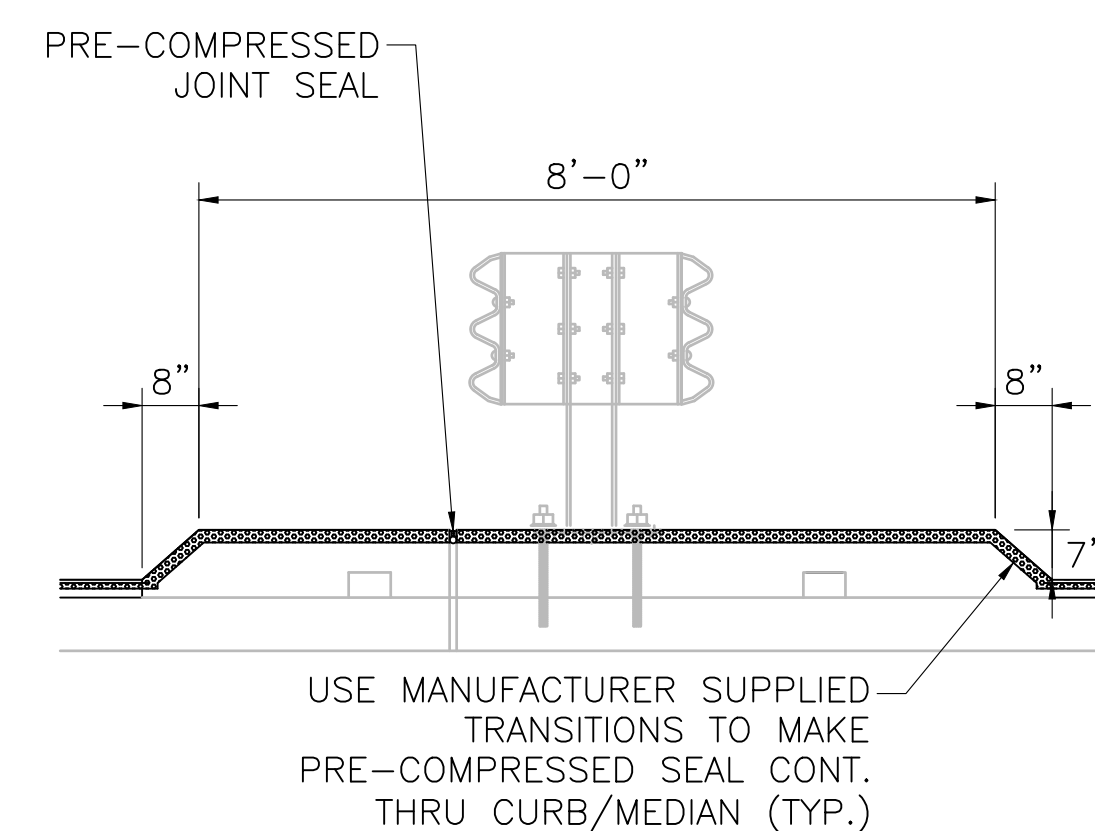


NOTES:

- 1). THE ABOVE DETAIL IS A SKETCH. CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSIONS FROM THE EXISTING BRIDGE PLAN AND SITE VISIT.

PROPOSED PRE-COMPRESSED JOINT SEAL WITH POLYURETHANE RESIN CONCRETE HEADERS AT ABUTMENT

NOT TO SCALE



PRE-COMPRESSED SEAL AT MEDIAN

NOT TO SCALE

PRE-COMPRESSED SEAL AT PARAPET

NOT TO SCALE

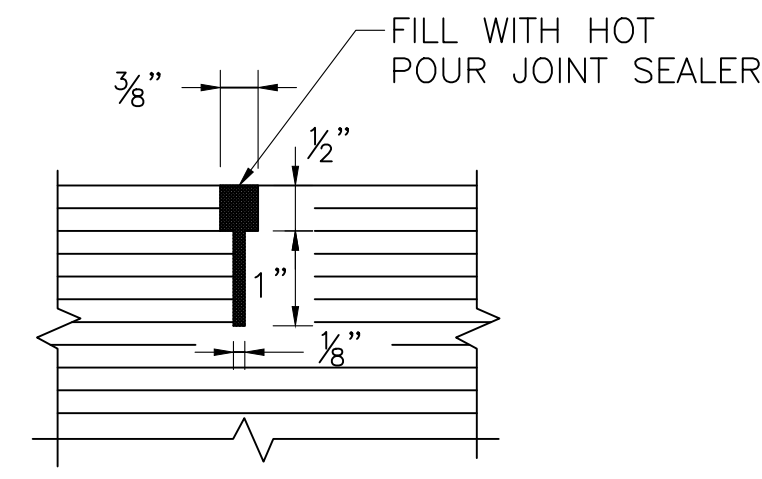
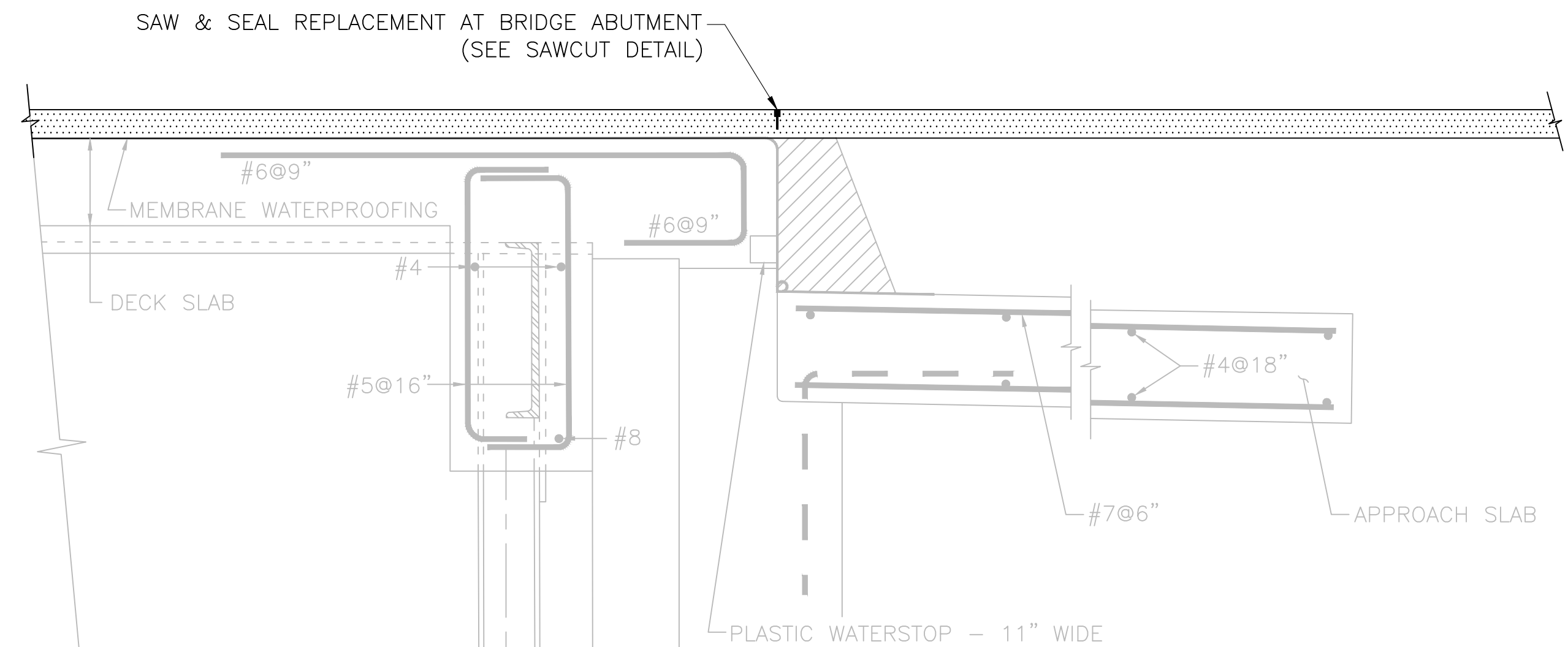
TEMPORARY TRAFFIC CONTROL AND CONSTRUCTION SEQUENCE

1. ALL WORK ON THIS BRIDGE SHALL BE DONE AT NIGHT USING SHORT TERM LANE CLOSURES. TEMPORARY BARRIER WILL NOT BE UTILIZED UNLESS REQUIRED BY THE ENGINEER.
2. ALL WORK SHALL BE DONE BETWEEN THE HOURS OF 7:00 PM AND 5:00 AM.
3. AT LEAST ONE LANE OF TRAFFIC MUST BE KEPT OPEN AT ALL TIMES DURING THE WORK SHIFT. ALL LANES MUST BE OPEN AT THE END OF THE WORK SHIFT IN THEIR ORIGINAL CONFIGURATION.
4. THE CONTRACTOR MAY REMOVE ONLY AS MUCH CONCRETE AS CAN BE PLACED AND CURED IN ONE WORK SHIFT. RAPID SETTING CONCRETE PLACEMENTS SHALL BE COMPLETED NO LATER THAN 2:00 AM FOR NIGHT-TIME OPERATIONS SO THAT THE REQUIRED COMPRESSIVE STRENGTH OF 2000 PSI IS ATTAINED BEFORE THE AREA IS OPENED TO TRAFFIC.
5. TEMPORARY HMA RAMPS SHALL BE USED AT ALL TRANSVERSE AND LONGITUDINAL DROP-OFFS TO TRANSITION TRAFFIC TO THE BRIDGE DECK.
6. FOR THE CONVENIENCE OF THE TRAVELING PUBLIC THE CONTRACTOR IS LIMITED TO WORKING ON NO MORE THAN THREE BRIDGE DECKS AT A TIME. ALL BRIDGE WORK INCLUDING FINAL SURFACE COURSE PAVING MUST BE COMPLETED BEFORE ANY WORK CAN BEGIN ON ADDITIONAL BRIDGES. FOR THIS PURPOSE, A BRIDGE DECK IS DEFINED AS A SINGLE BRIDGE IN A SINGLE DIRECTION, REGARDLESS OF IF THE BRIDGE NUMBER INCLUDES A DECK IN EACH DIRECTION OF TRAVEL.
7. BRIDGE DECKS SHALL NOT BE LEFT EXPOSED TO TRAFFIC WITHOUT SURFACE COURSE PAVEMENT FOR MORE THAN 2 WEEKS.

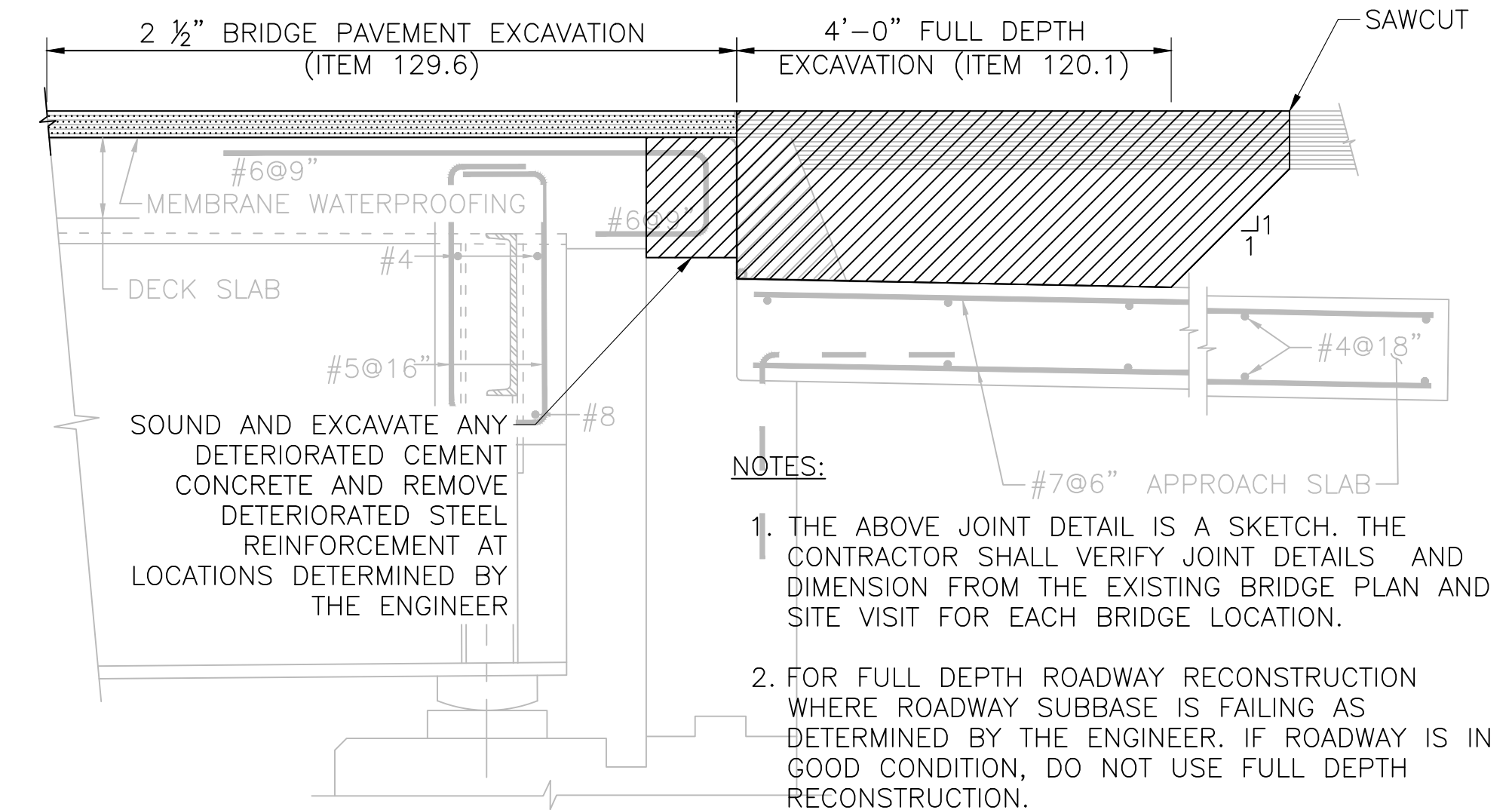
CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	46	55
PROJECT FILE NO.		612106	

BRIDGE DETAILS
INTERSTATE 91 OVER INTERSTATE 91 RAMP



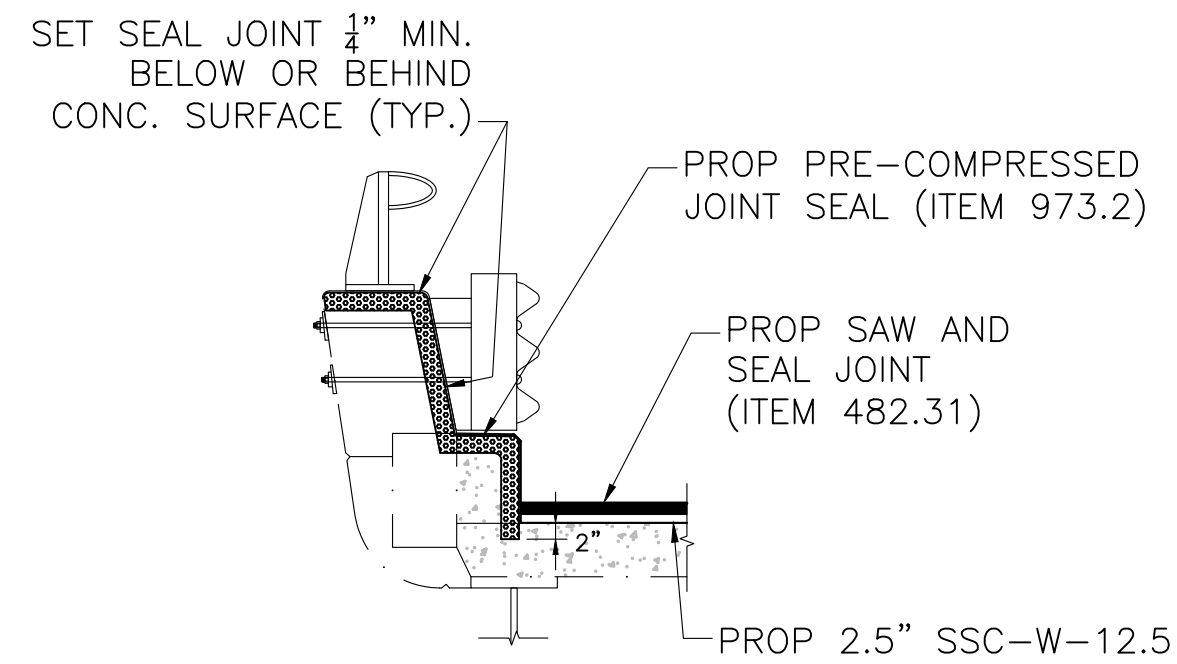
PAVEMENT SAWCUT DETAIL
NOT TO SCALE



EXISTING SAW & SEAL JOINT EXCAVATION
FOR FULL DEPTH RECONSTRUCTION
NOT TO SCALE

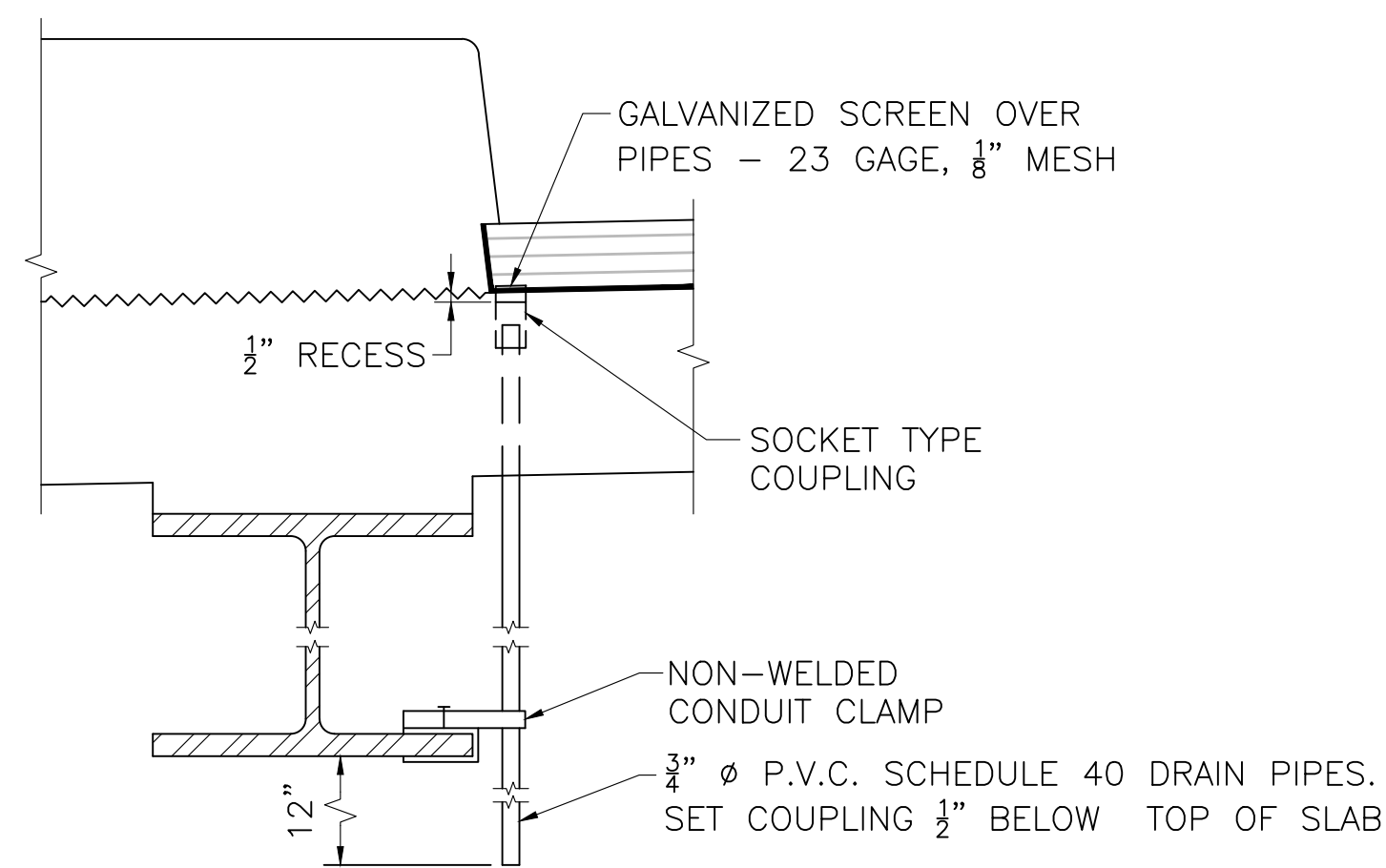
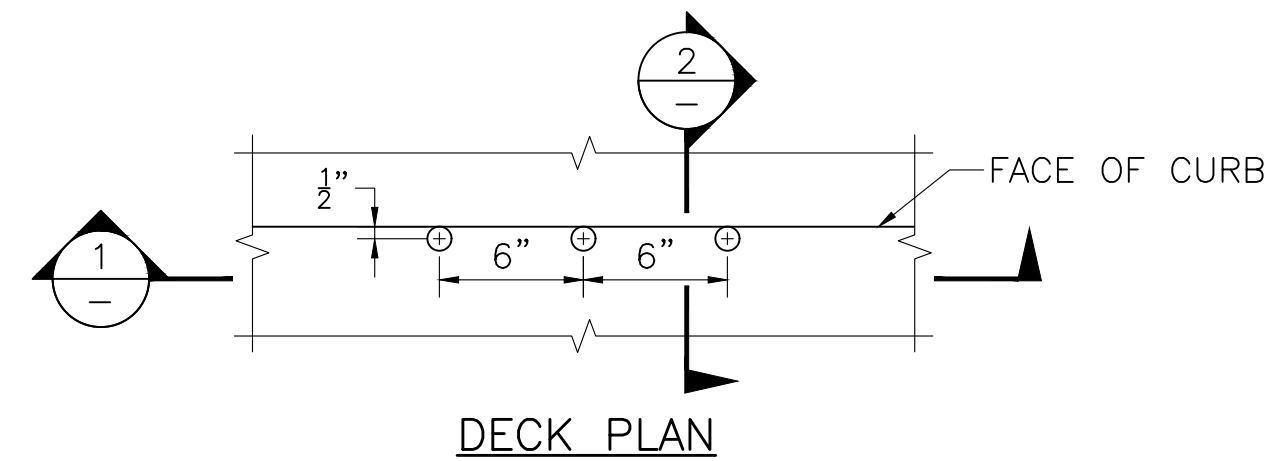
- NOTES:
1. THE ABOVE JOINT DETAIL IS A SKETCH. THE CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSION FROM THE EXISTING BRIDGE PLAN AND SITE VISIT FOR EACH BRIDGE LOCATION.
 2. ENGINEER WILL INSPECT JOINT TO DETERMINE IF ROADWAY SUBBASE IS IN GOOD CONDITION. IF SUBBASE IS FAILING, USE FULL DEPTH RECONSTRUCTION DETAIL ON THIS SHEET.

PROPOSED SAW & SEAL
REPLACEMENT AT BRIDGE ABUTMENT
NOT TO SCALE

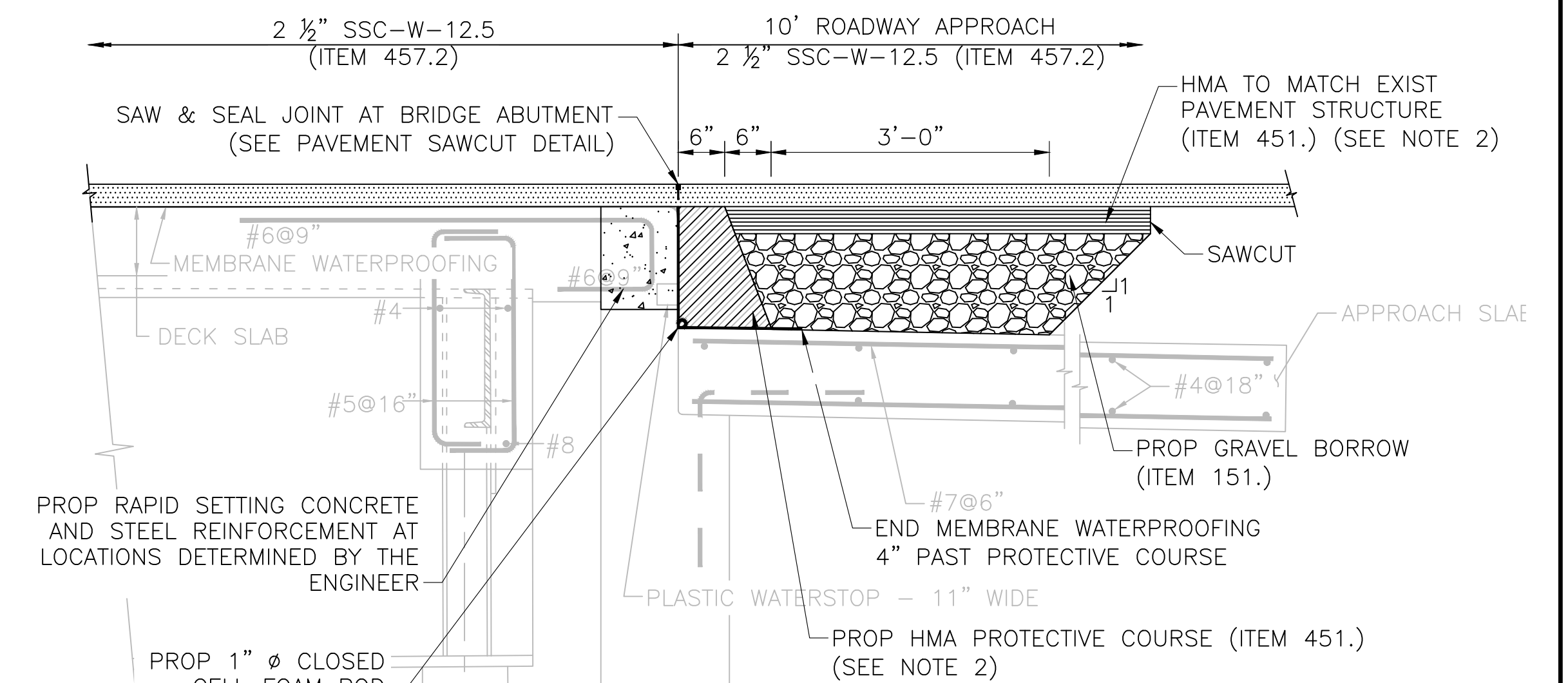
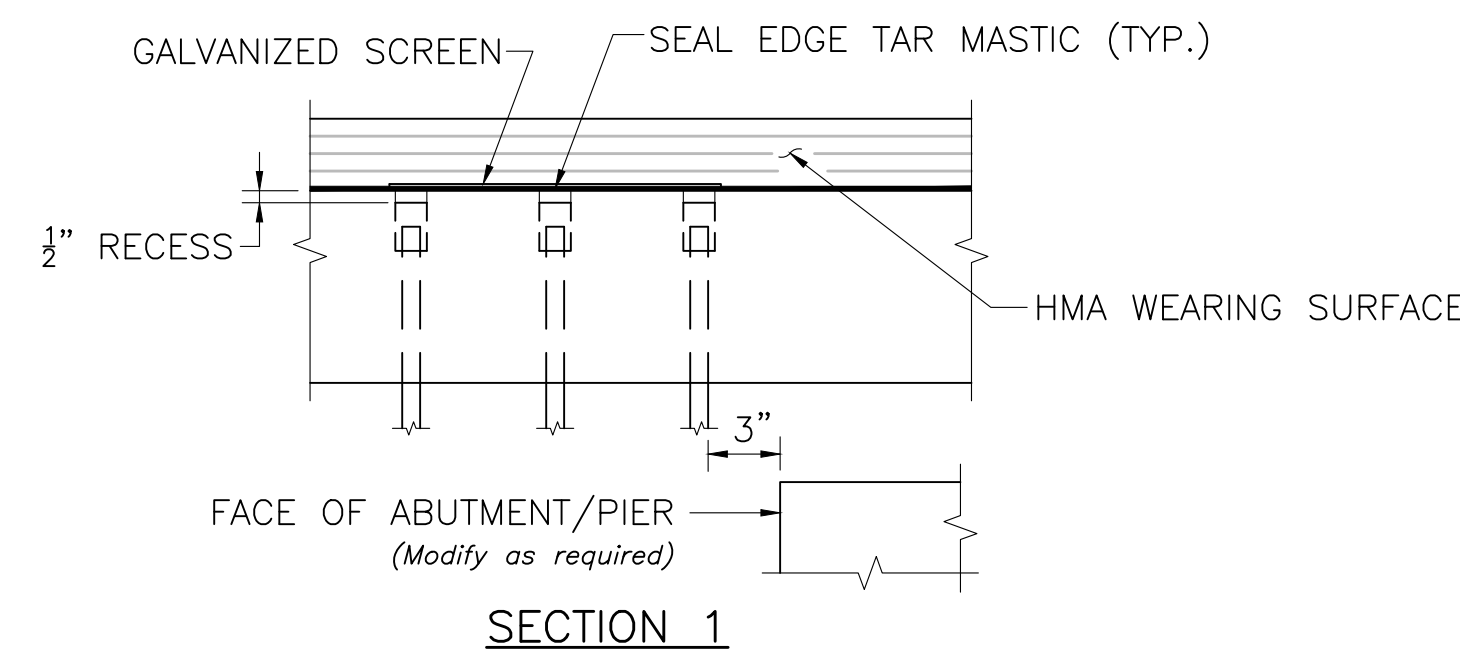


- NOTES:
- 1). SEE PRE-COMPRESSED JOINT SEAL DETAIL.
 - 2). CLEAN JOINT PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL.
 - 3). REPAIR PARAPET PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL AS DIRECTED BY THE ENGINEER.

PRE-COMPRESSED SEAL AT PARAPET
FOR SAW AND SEAL JOINTS
NOT TO SCALE



SECTION 2
DECK DRAIN PIPES
SCALE: 1 1/2" = 1'-0"



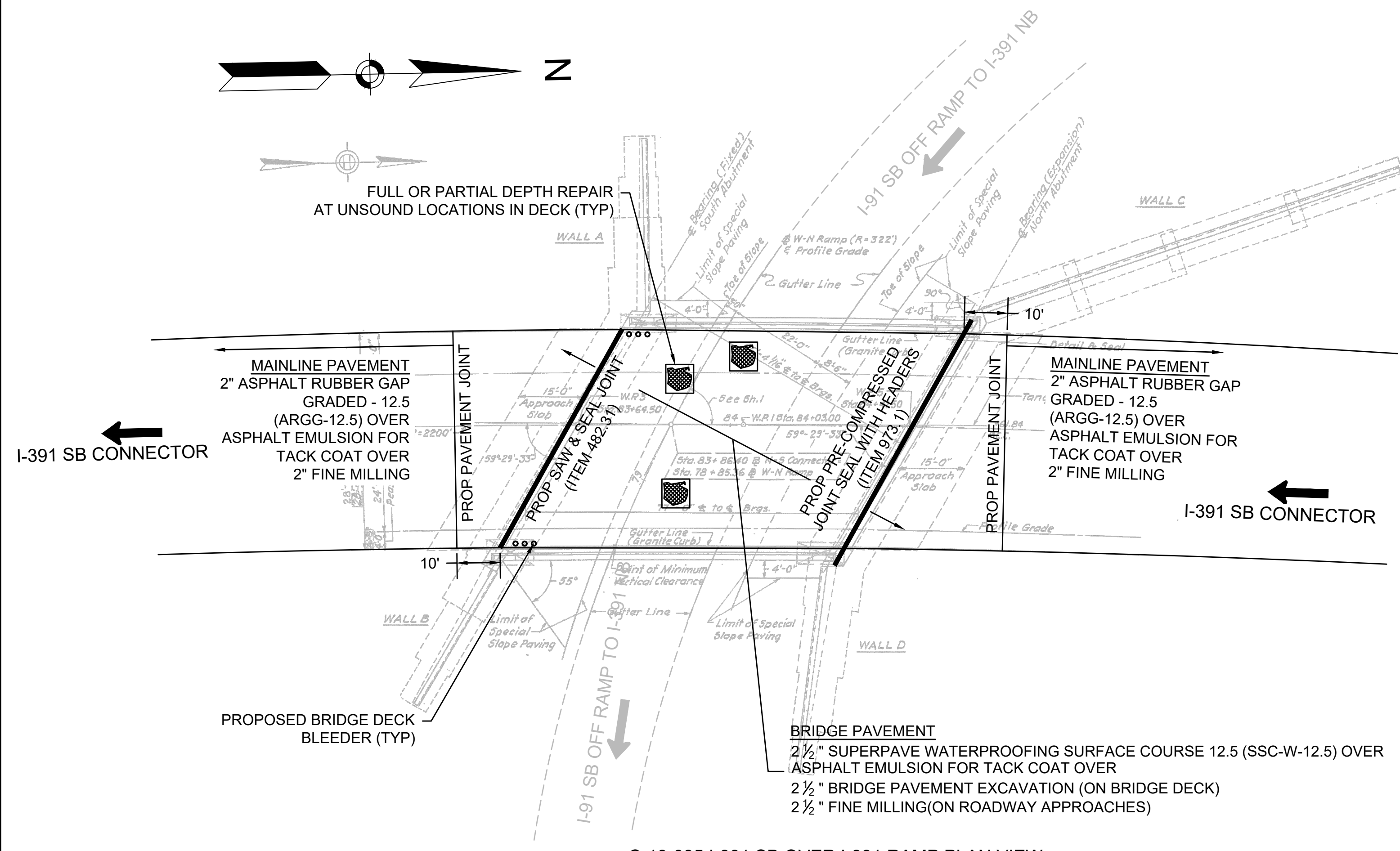
- NOTES:
1. THE ABOVE JOINT DETAIL IS A SKETCH. THE CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSION FROM THE EXISTING BRIDGE PLAN AND SITE VISIT FOR EACH BRIDGE LOCATION.
 2. PROTECTIVE COURSE TO BE SUPERPAVE BRIDGE PROTECTIVE COURSE, PLACED IN 2" LAYERS AND COMPACTED WITH A MECHANICAL HAND-GUIDED TAMPER AFTER PLACING MEMBRANE WATERPROOFING.
 3. FOR FULL DEPTH ROADWAY RECONSTRUCTION WHERE ROADWAY SUBBASE IS FAILING AS DETERMINED BY THE ENGINEER. IF ROADWAY IS IN GOOD CONDITION, DO NOT USE FULL DEPTH RECONSTRUCTION.

PROPOSED SAW & SEAL WITH
FULL DEPTH RECONSTRUCTION
NOT TO SCALE

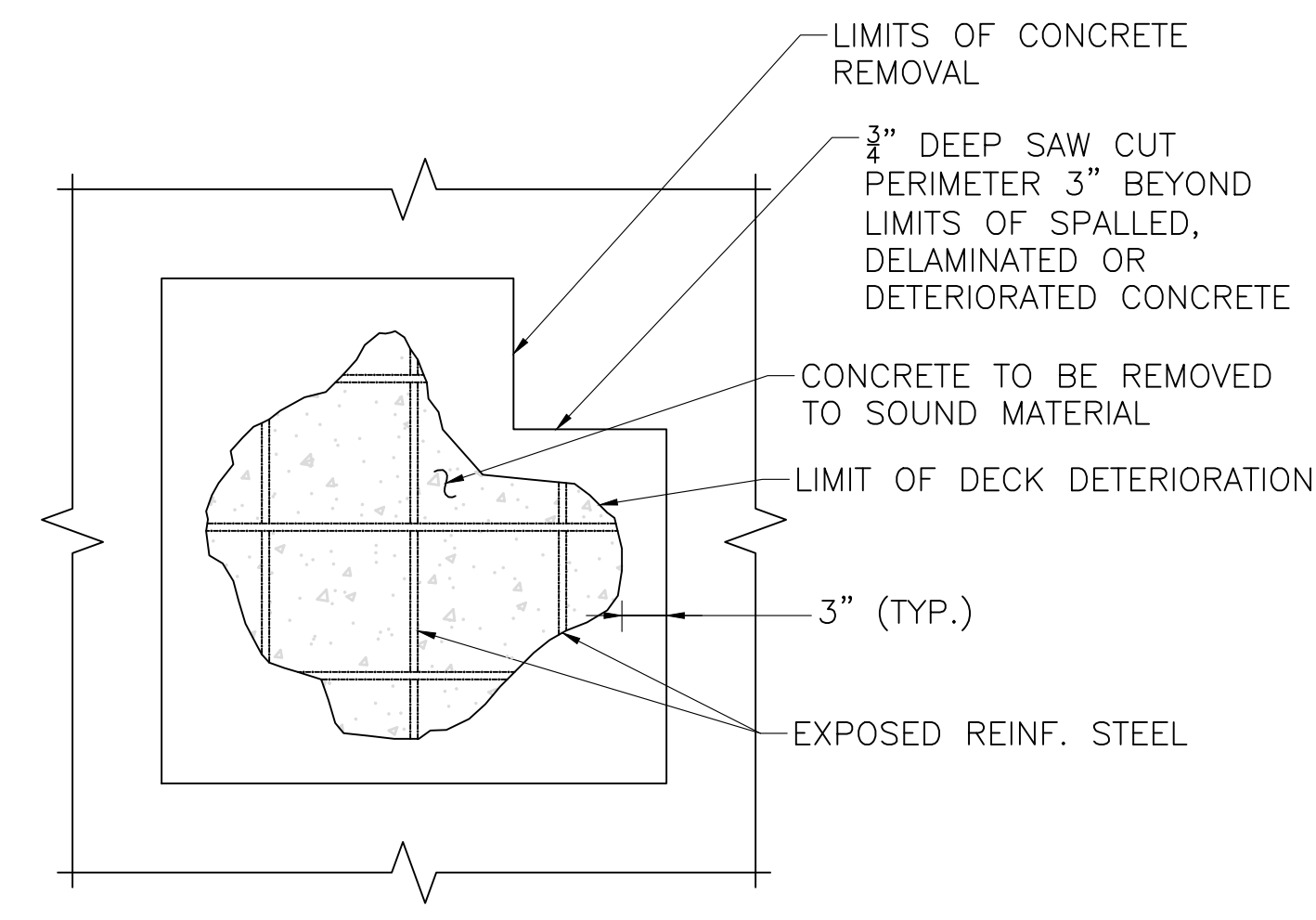
**CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	47	55
PROJECT FILE NO.			612106

**BRIDGE DETAILS
INTERSTATE 391 OVER INTERSTATE 91 RAMP**

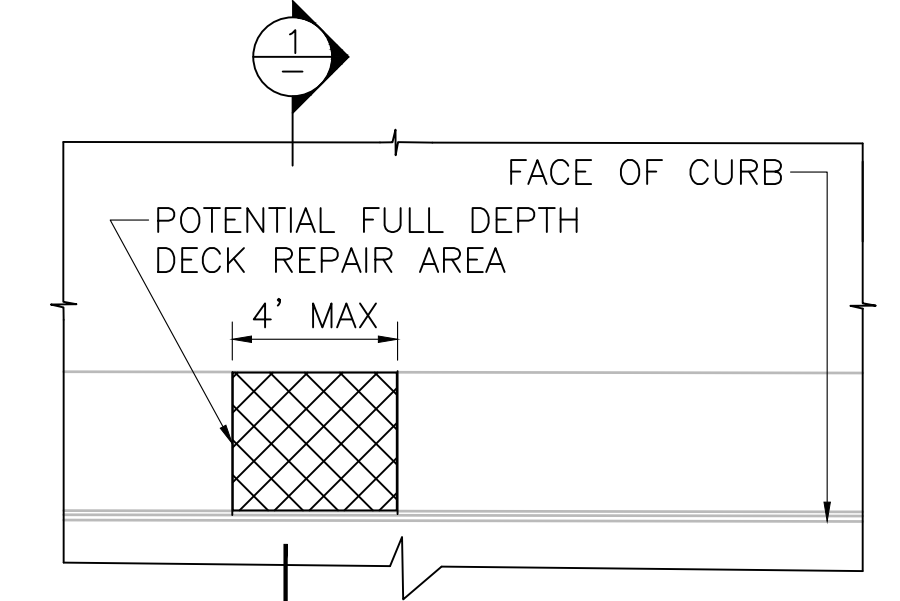


**C-13-035 I-391 SB OVER I-391 RAMP PLAN VIEW
NOT TO SCALE**

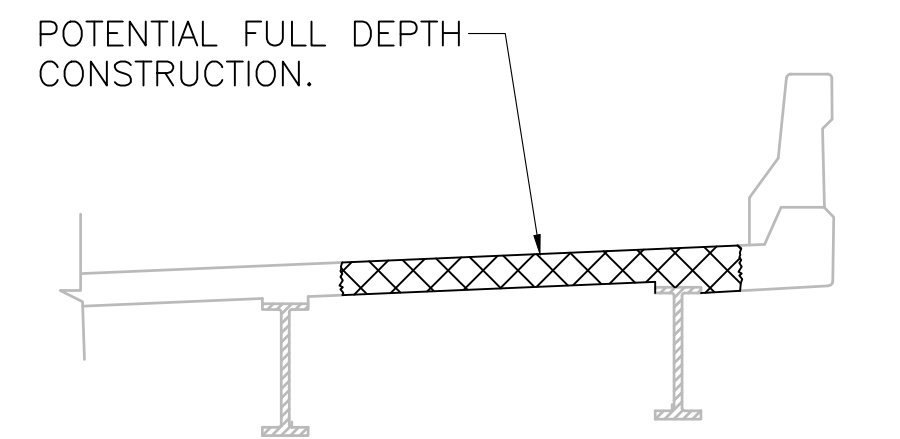


**LIMITS OF DECK REPAIR AREA
NOT TO SCALE**

- BRIDGE DECK REPAIR SEQUENCE NOTES:**
1. ALL EXISTING HOT MIX ASPHALT WEARING SURFACE AND MEMBRANE WATERPROOFING MATERIAL SHALL BE REMOVED PRIOR TO PERFORMING DECK REPAIRS. THE EXPOSED DECK SURFACE SHALL BE INSPECTED BY THE ENGINEER TO DETERMINE APPROXIMATE LIMITS OF REPAIR. IN ADDITION, AREAS OF THE UNDERSIDE WITH EVIDENCE OF DETERIORATION SHALL BE SOUNDED IN THE PRESENCE OF THE CONTRACTOR AND THE ENGINEER TO IDENTIFY AREAS IN NEED OF FULL DEPTH REPAIRS.
 2. THE TOP SURFACE OF THE DECK REPAIRS SHALL BE FINISHED FLUSH WITH THE ADJACENT TOP OF DECK SLAB AND SHALL MAINTAIN THE EXISTING GRADES AND CROSS SLOPES.
 3. UPON COMPLETION OF EACH STAGE OF DECK REPAIRS, THE DECK SHALL BE ABRASIVELY BLAST CLEANED FOLLOWED BY PLACEMENT OF THE HOT MIX ASPHALT WEARING SURFACE.



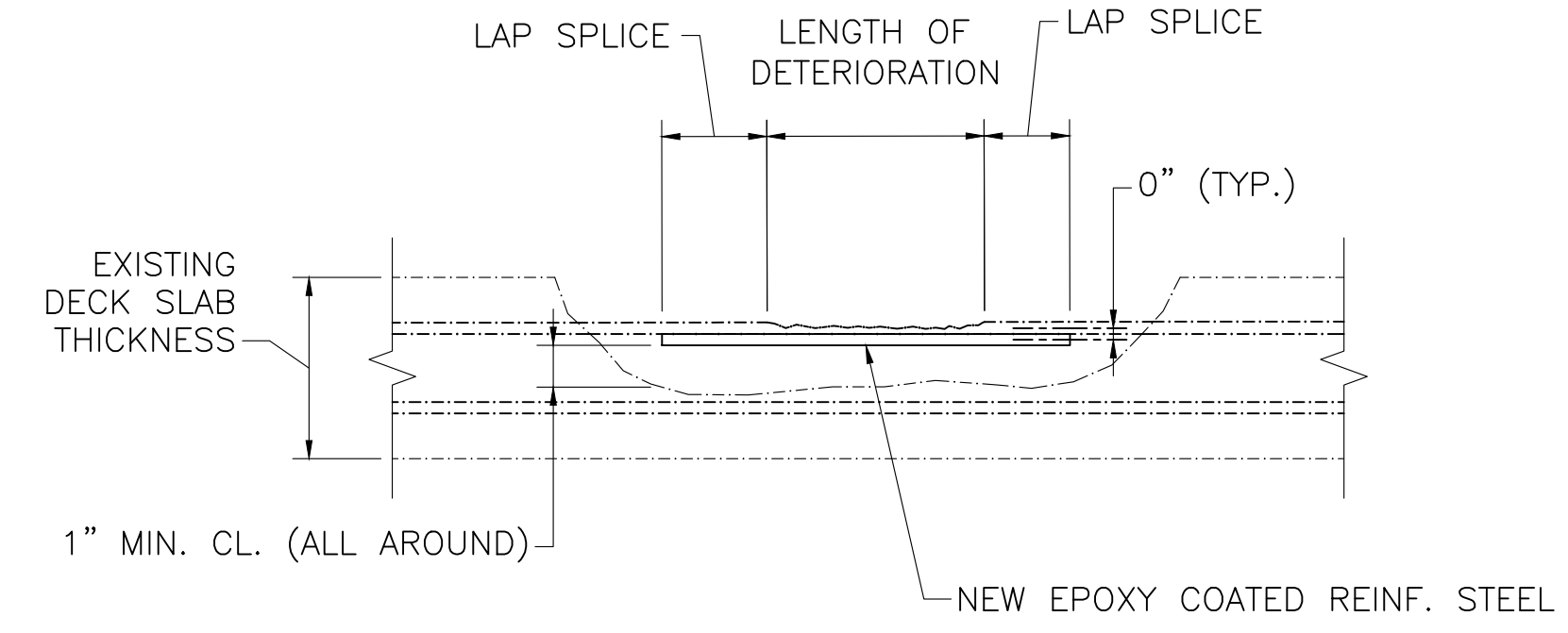
PLAN



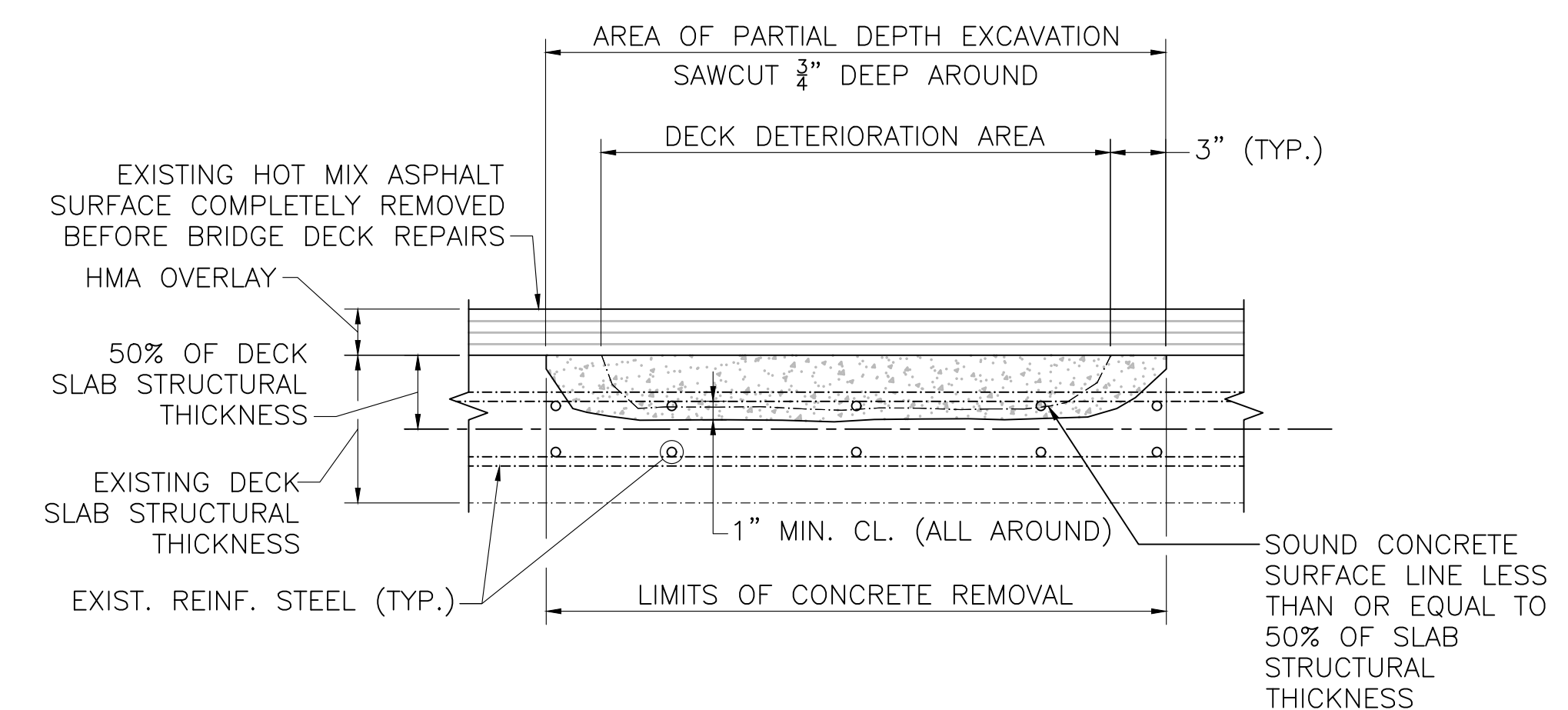
SECTION 1

**FULL DEPTH OVERHANG DECK REPAIR
NOT TO SCALE**

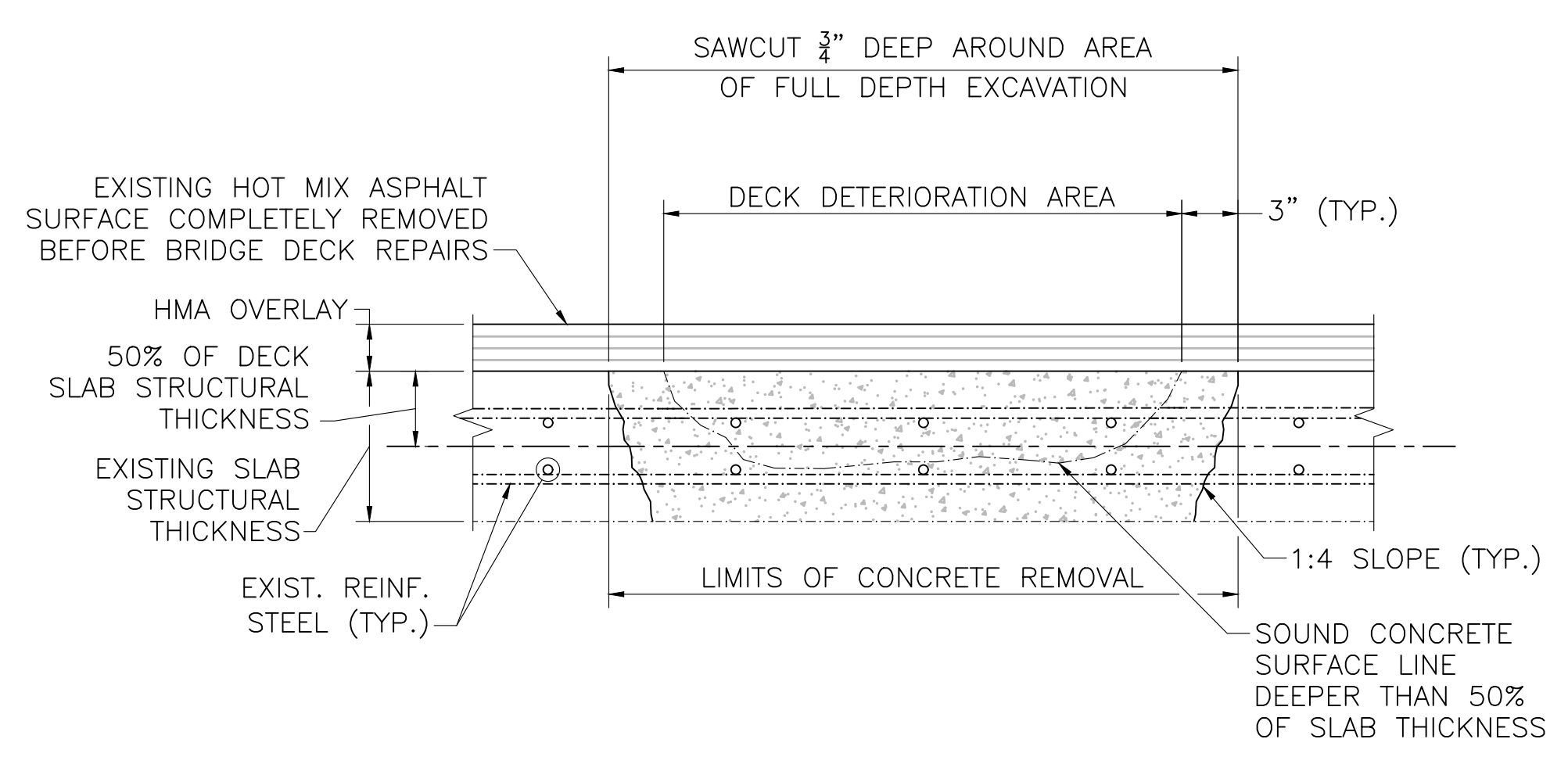
- NOTE**
1. OVERHANG SUPPORT MUST BE PROVIDED WHEN CONSTRUCTION WIDTHS EXCEED 4' (FOUR FEET). IF THE CONTRACTOR EXTENDS THE EXCAVATION BEYOND 4' THEN THEY MUST FURNISH A SHIELDING DESIGN CAPACITY CHECK. THIS CHECK MUST BE DESIGNED AND STAMPED BY A MASSACHUSETTS REGISTERED PROFESSIONAL ENGINEER OF THE APPROPRIATE DISCIPLINE.



**TYPICAL DETERIORATED REINFORCEMENT STEEL REPAIR
SCALE: 1 1/2\"/>**



**TYPICAL PARTIAL DEPTH DECK REPAIR DETAIL
NOT TO SCALE**



**TYPICAL FULL DEPTH DECK REPAIR DETAIL
NOT TO SCALE**

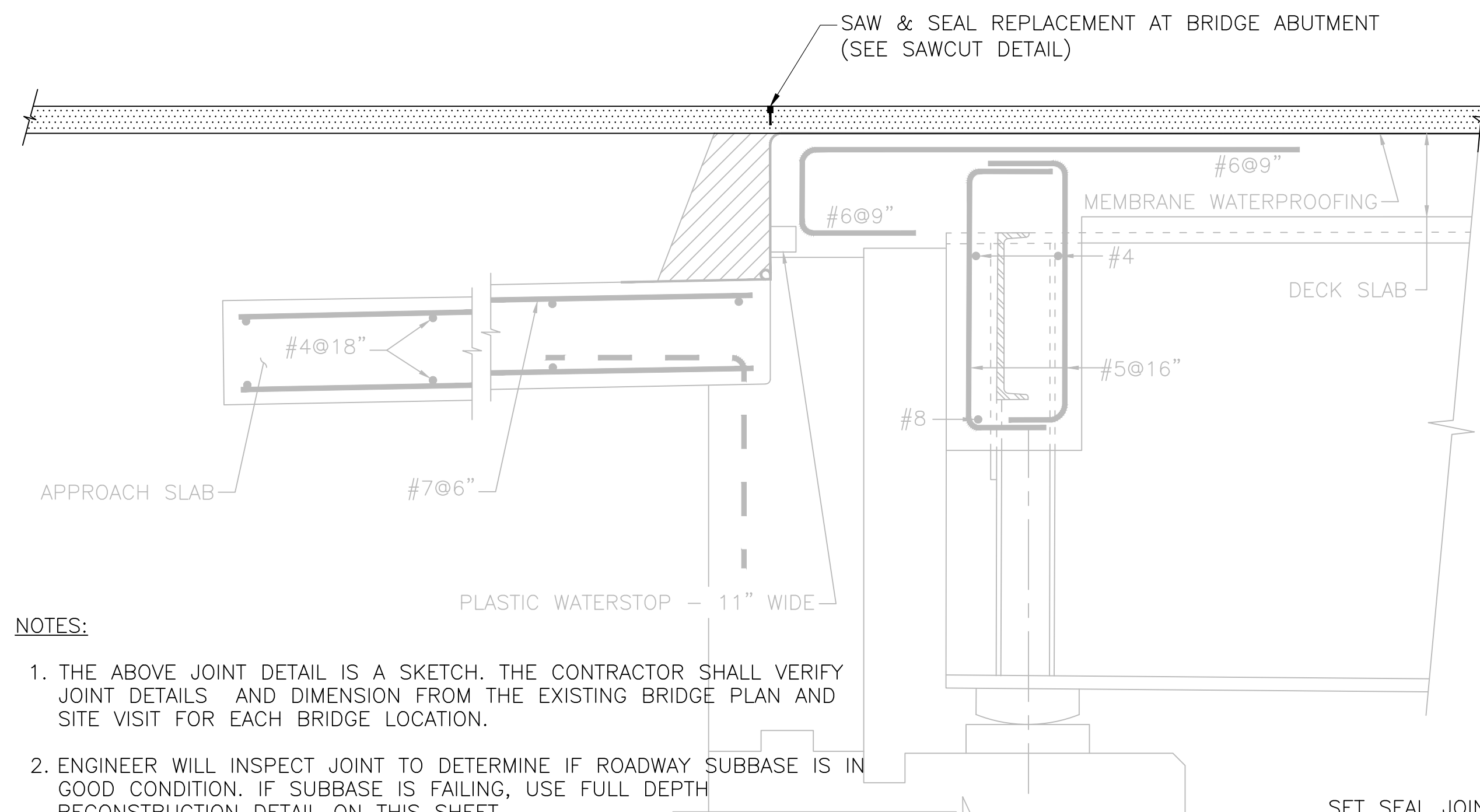
- NOTES:**
1. DECK FORMS SHALL BE FLUSH WITH EXISTING DECK UNDERSIDE AND SHALL BE REMOVED AFTER CURING IS COMPLETE.

- BRIDGE DECK REPAIR NOTES:**
1. SPALLED, DELAMINATED, AND DETERIORATED CONCRETE DECK AREAS SHALL BE REPAIRED USING AN APPROVED RAPID SETTING CONCRETE (ITEM 909.5) AS DIRECTED BY THE ENGINEER.
 2. PARTIAL DEPTH REPAIRS: ALL DETERIORATED AND DELAMINATED CONCRETE SHALL BE REMOVED TO A MINIMUM DEPTH OF 1" BELOW THE BOTTOM OF THE TOP LAYER OF EXISTING TRANSVERSE REINFORCEMENT STEEL TO A MAXIMUM OF 50% OF THE THICKNESS OF THE EXISTING CONCRETE DECK.
 3. FULL DEPTH REPAIRS: ALL DETERIORATED AND DELAMINATED CONCRETE SHALL BE REMOVED, AND IF THE SOUND CONCRETE SURFACE IS LOCATED AT A DEPTH GREATER THAN 50% OF THE DECK THICKNESS WHEN MEASURED FROM THE TOP OF DECK, A FULL DEPTH DECK REPAIR SHALL BE PERFORMED.
 4. ALL EXISTING REINFORCING STEEL AND CONCRETE SURFACES THAT ARE TO BE IN CONTACT WITH REPAIR CONCRETE SHALL BE ABRASIVELY BLAST CLEANED IN ORDER TO REMOVE ALL RUST, OIL, AND DEBRIS THAT IS NOT TIGHTLY ADHERED, FOLLOWED BY APPLICATION OF COMPRESSED AIR TO REMOVE ALL DUST. EXISTING CONCRETE REPAIR SURFACES THAT WILL BE IN CONTACT WITH REPAIR CONCRETE SHALL BE PRE-WETTED FOR A MINIMUM OF 15 MINUTES USING POTABLE WATER IN ORDER TO ACHIEVE A SATURATED SURFACE DRY CONDITION IMMEDIATELY PRIOR TO PLACEMENT OF REPAIR CONCRETE.
 5. NEW EPOXY COATED STEEL REINFORCEMENT SHALL BE PLACED TO SUPPLEMENT EXISTING REINFORCEMENT THAT HAS A SECTION LOSS OF 25% OR MORE OF THE ORIGINAL CROSS SECTION AREA OR HAS BROKEN, AS DETERMINED BY THE ENGINEER. NEW REINFORCEMENT SHALL EXTEND 30 BAR DIAMETERS IN EACH DIRECTION FROM WHERE THE SECTION LOSS OR BREAK ENDS. THE LIMITS OF THE REPAIR SHALL BE MODIFIED TO MEET THE REINFORCEMENT STEEL LAP SPLICE REQUIREMENTS. NEW REINFORCING STEEL SHALL BE PLACED AT THE SAME LEVEL ALONGSIDE THE EXISTING DETERIORATED OR BROKEN REINFORCING STEEL.

CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	48	55
PROJECT FILE NO.		612106	

BRIDGE DETAILS
INTERSTATE 391 OVER INTERSTATE 91 RAMP

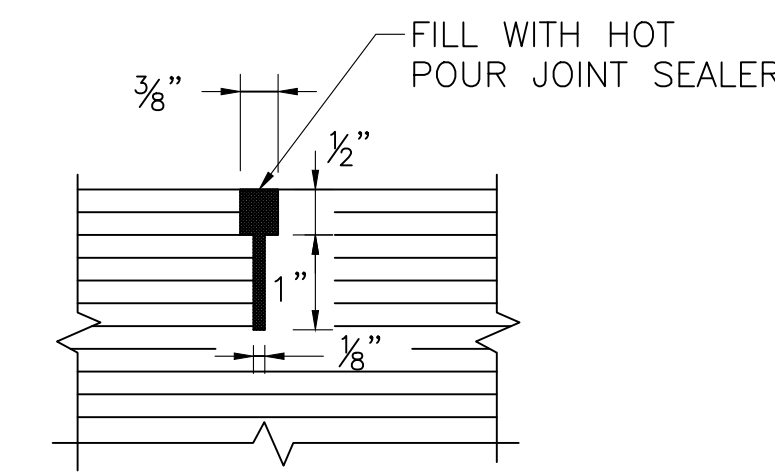


NOTES:

1. THE ABOVE JOINT DETAIL IS A SKETCH. THE CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSION FROM THE EXISTING BRIDGE PLAN AND SITE VISIT FOR EACH BRIDGE LOCATION.
2. ENGINEER WILL INSPECT JOINT TO DETERMINE IF ROADWAY SUBBASE IS IN GOOD CONDITION. IF SUBBASE IS FAILING, USE FULL DEPTH RECONSTRUCTION DETAIL ON THIS SHEET.

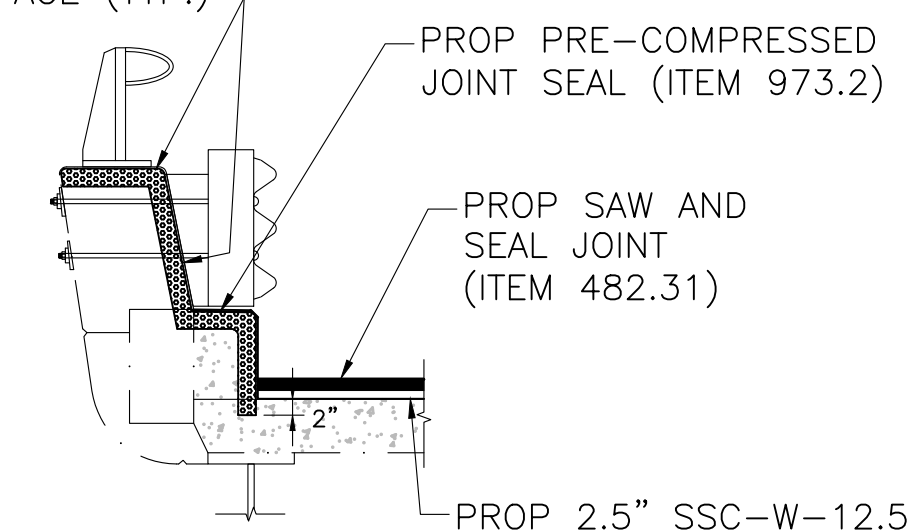
PROPOSED SAW & SEAL REPLACEMENT AT BRIDGE ABUTMENT

NOT TO SCALE



PAVEMENT SAWCUT DETAIL
NOT TO SCALE

SET SEAL JOINT 1/4" MIN. BELOW OR BEHIND CONC. SURFACE (TYP.)

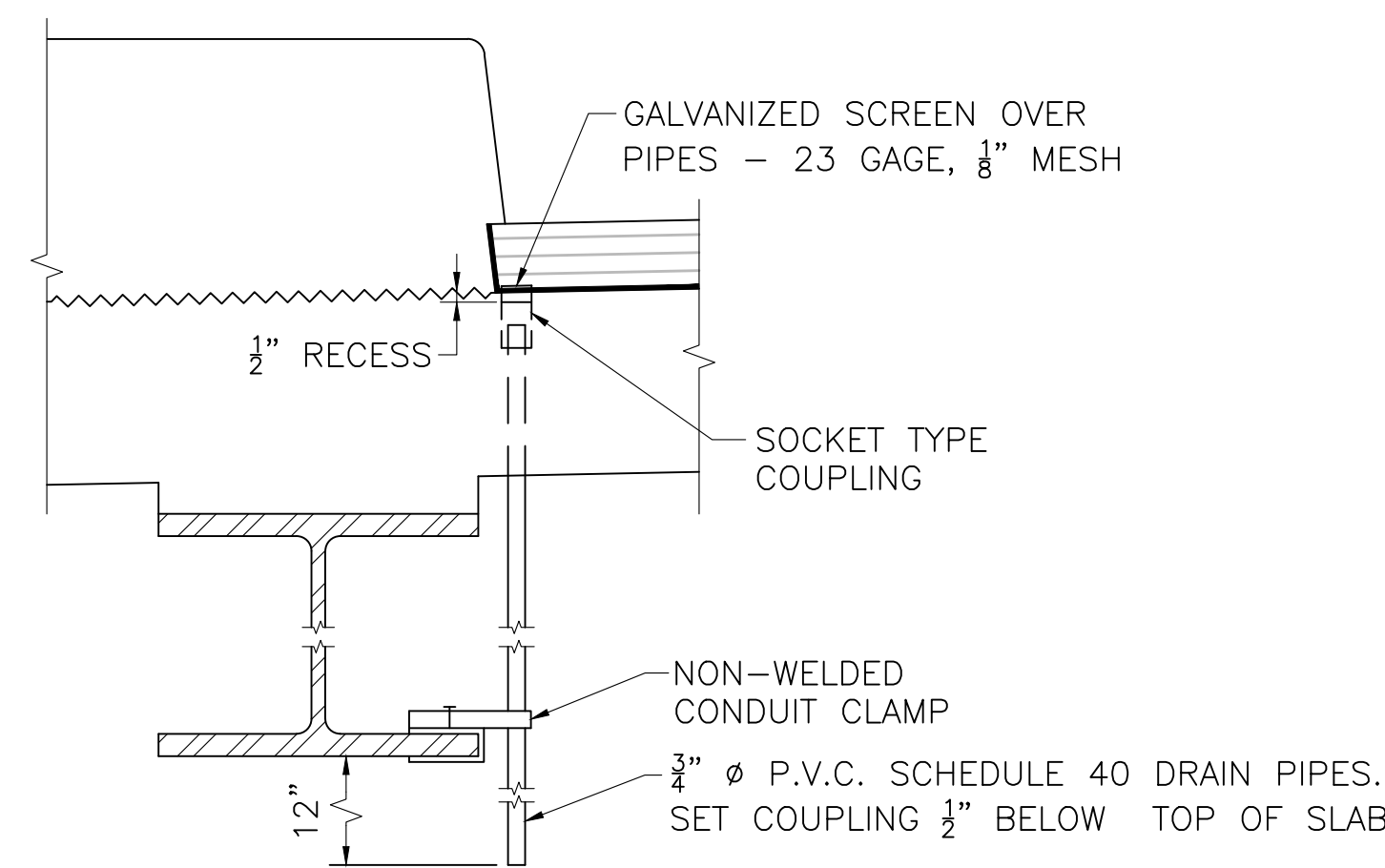
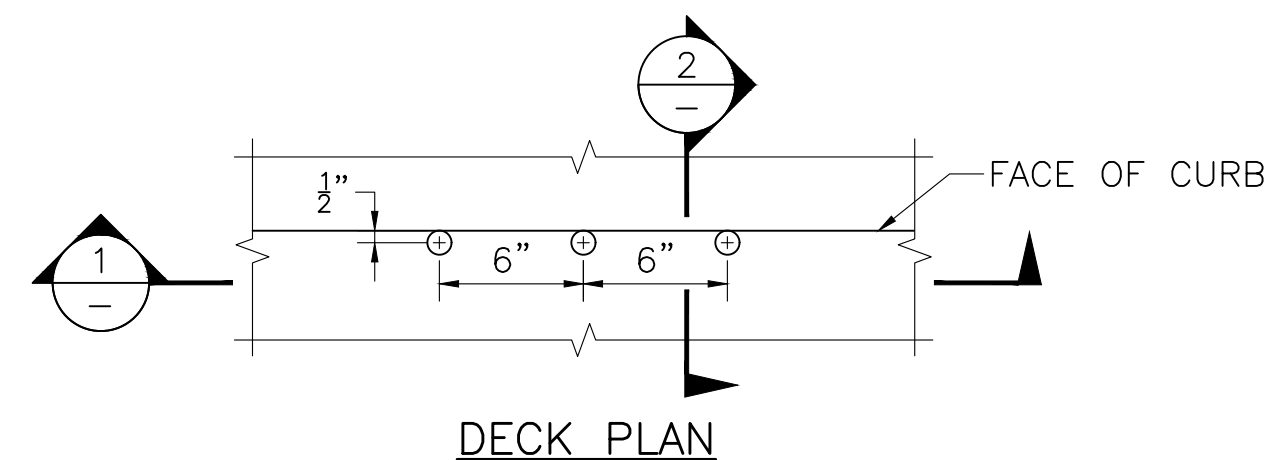


NOTES:

- 1). SEE PRE-COMPRESSED JOINT SEAL DETAIL.
- 2). CLEAN JOINT PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL.
- 3). REPAIR PARAPET PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL AS DIRECTED BY THE ENGINEER.

PRE-COMPRESSED SEAL AT PARAPET FOR SAW AND SEAL JOINTS

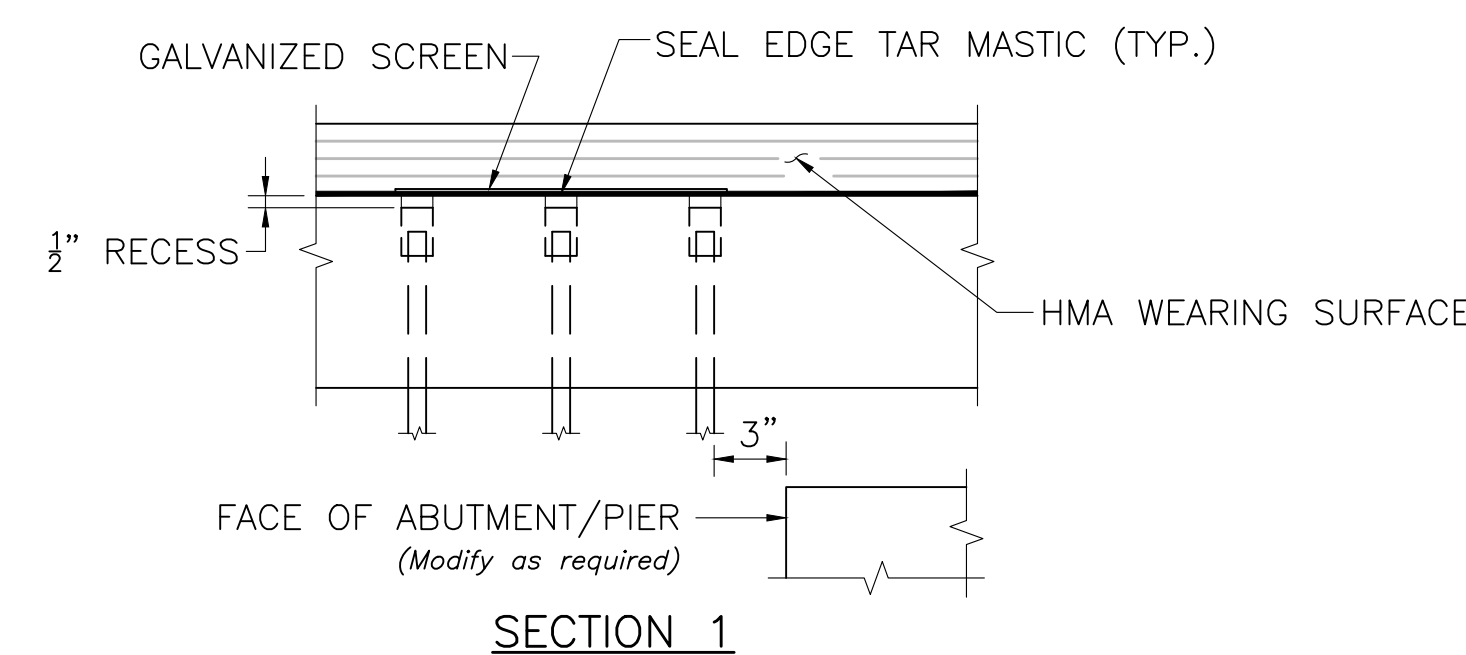
NOT TO SCALE



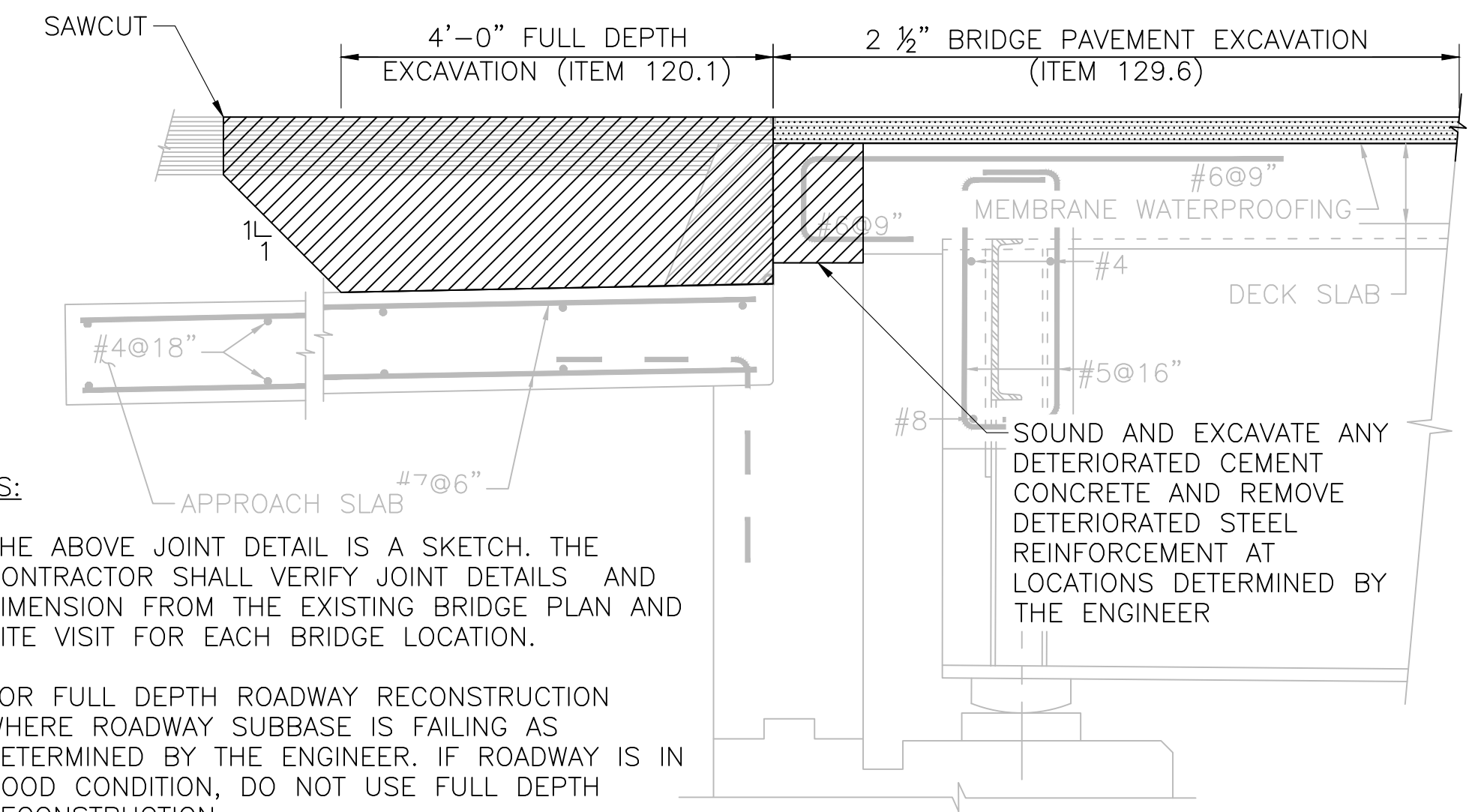
SECTION 2

DECK DRAIN PIPES

SCALE: 1 1/2" = 1'-0"



SECTION 1

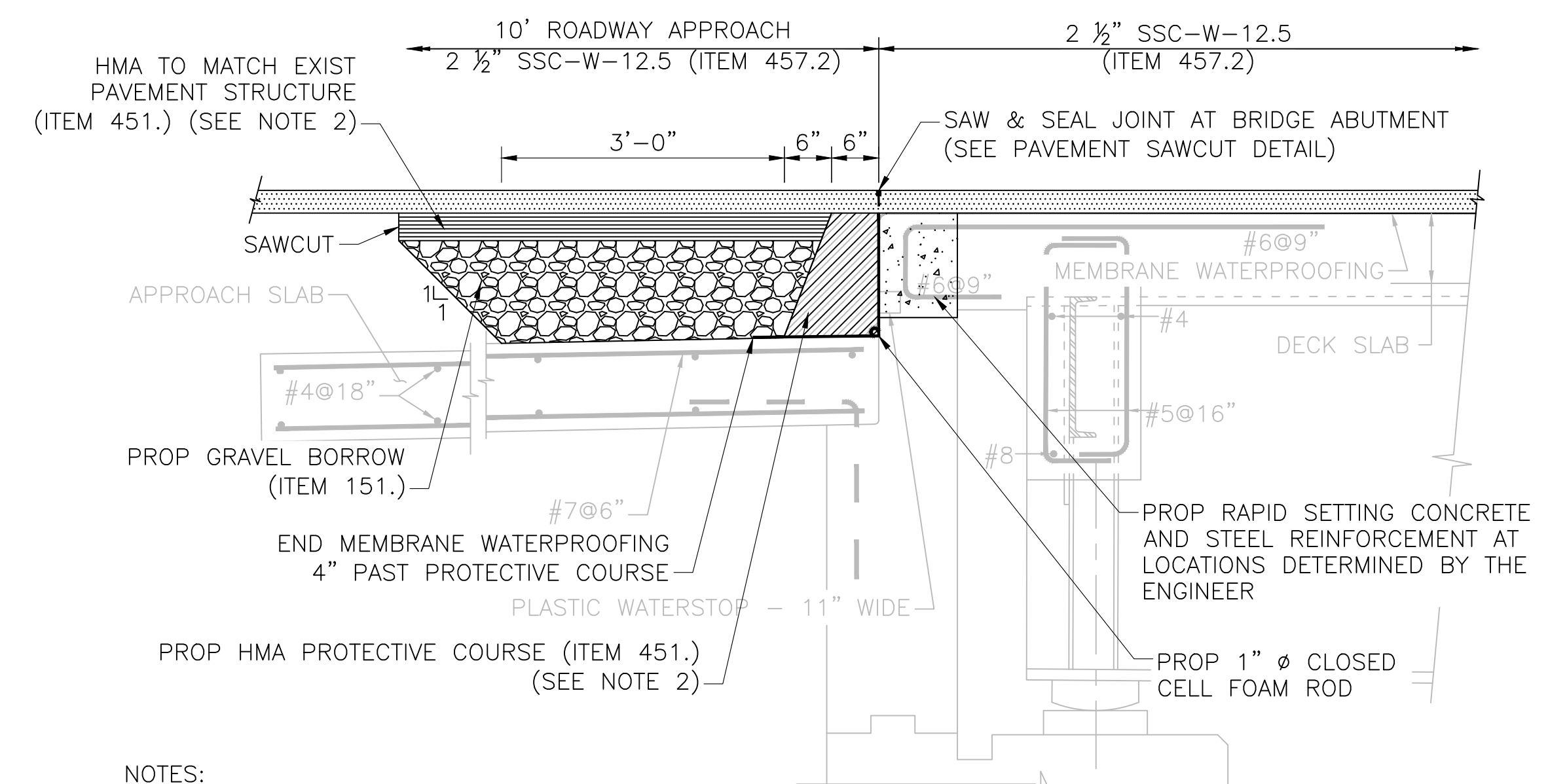


NOTES:

1. THE ABOVE JOINT DETAIL IS A SKETCH. THE CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSION FROM THE EXISTING BRIDGE PLAN AND SITE VISIT FOR EACH BRIDGE LOCATION.
2. FOR FULL DEPTH ROADWAY RECONSTRUCTION WHERE ROADWAY SUBBASE IS FAILING AS DETERMINED BY THE ENGINEER. IF ROADWAY IS IN GOOD CONDITION, DO NOT USE FULL DEPTH RECONSTRUCTION.

EXISTING SAW & SEAL JOINT EXCAVATION FOR FULL DEPTH RECONSTRUCTION

NOT TO SCALE



NOTES:

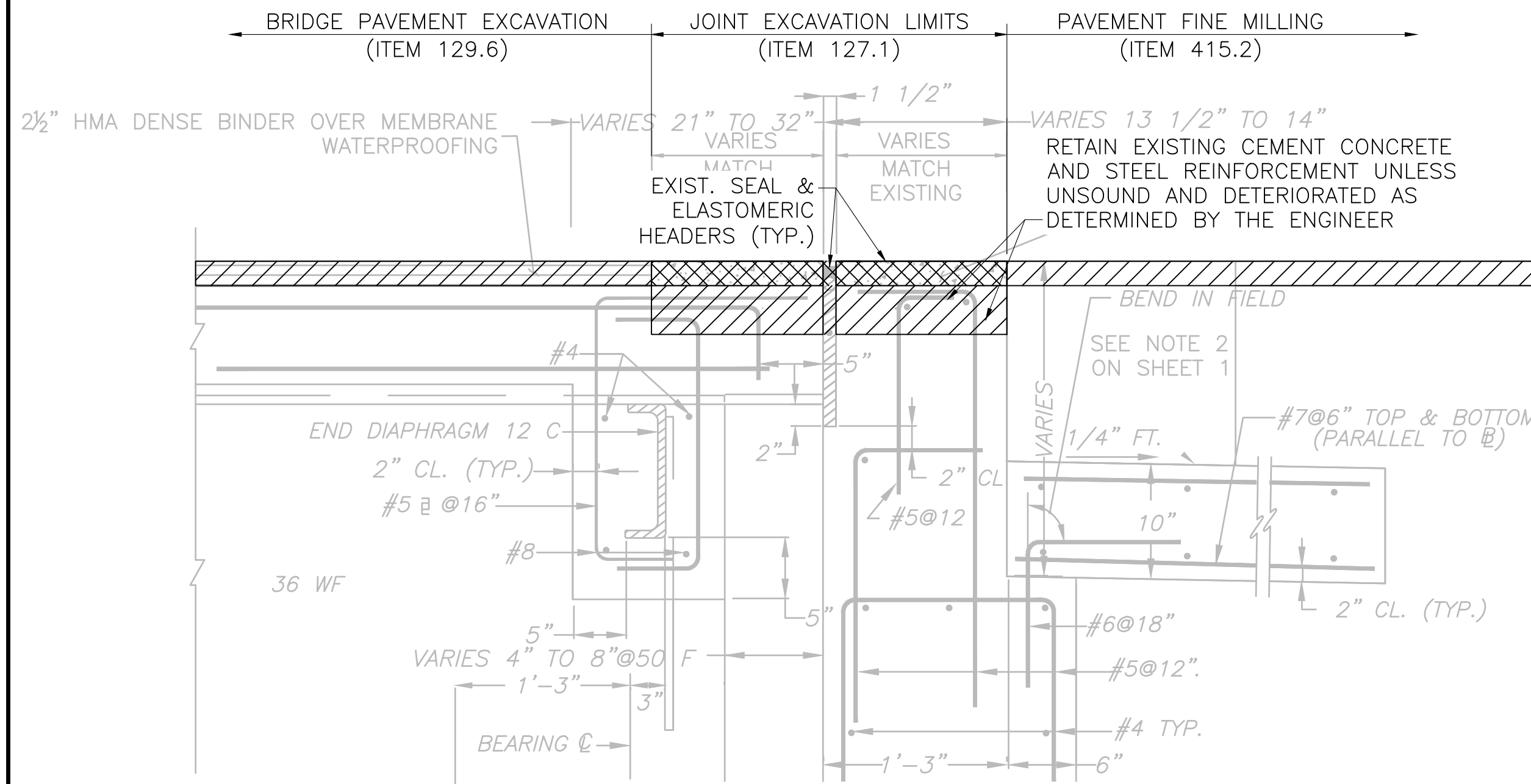
1. THE ABOVE JOINT DETAIL IS A SKETCH. THE CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSION FROM THE EXISTING BRIDGE PLAN AND SITE VISIT FOR EACH BRIDGE LOCATION.
2. PROTECTIVE COURSE TO BE SUPERPAVE BRIDGE PROTECTIVE COURSE, PLACED IN 2" LAYERS AND COMPACTED WITH A MECHANICAL HAND-GUIDED TAMPER AFTER PLACING MEMBRANE WATERPROOFING.
3. FOR FULL DEPTH ROADWAY RECONSTRUCTION WHERE ROADWAY SUBBASE IS FAILING AS DETERMINED BY THE ENGINEER. IF ROADWAY IS IN GOOD CONDITION, DO NOT USE FULL DEPTH RECONSTRUCTION.

PROPOSED SAW & SEAL WITH FULL DEPTH RECONSTRUCTION

NOT TO SCALE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	49	55
PROJECT FILE NO.		612106	

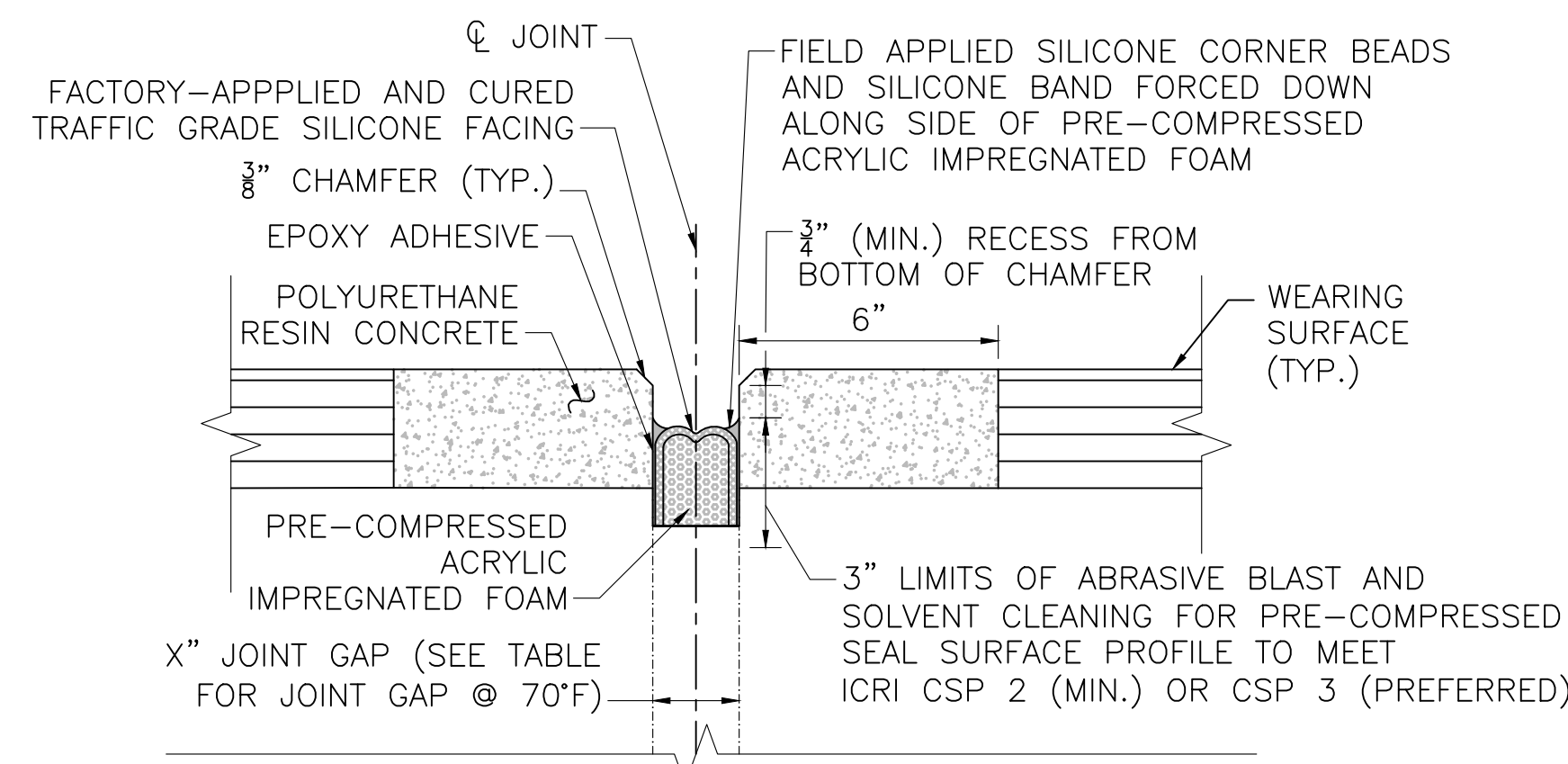
BRIDGE DETAILS
INTERSTATE 391 OVER INTERSTATE 91 RAMP



- NOTES:
- 1). THE ABOVE DETAIL IS A SKETCH. CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSIONS FROM THE EXISTING BRIDGE PLAN AND SITE VISIT.
 - 2). COMPLETE REMOVAL OF THE JOINT, BACKWALL, AND DECK SHOWN FOR CASES WHERE THE JOINT, BACKWALL, AND DECK ARE DETERIORATED. DETERIORATED CONCRETE SHALL BE REMOVED AS DIRECTED BY THE ENGINEER.

LIMITS OF EXCAVATION AT EXISTING ELASTOMERIC CONCRETE HEADERS WITH PRE-COMPRESSED SEAL BRIDGE JOINT SYSTEM AT ABUTMENT

NOT TO SCALE



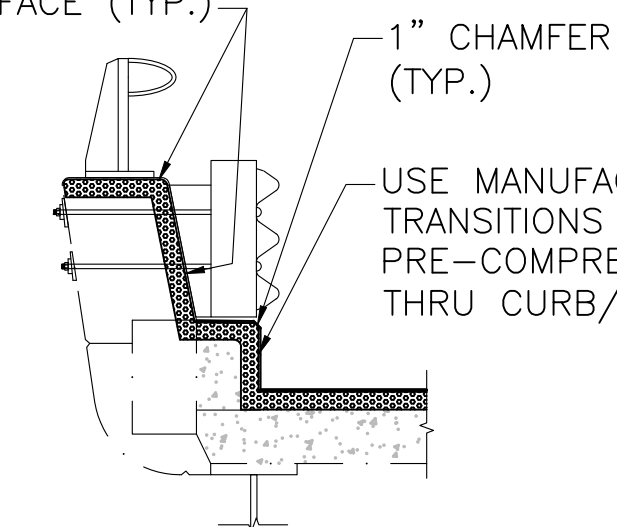
PRE-COMPRESSED SEAL SECTION

SCALE: 3" = 1'-0"

TRIBUTARY THERMAL EXPANSION/CONTRACTION LENGTH (STEEL)	TRIBUTARY THERMAL EXPANSION/CONTRACTION LENGTH (CONC.)	X" JOINT OPENING @ 70°F	NOMINAL JOINT SEAL WIDTH
<128'	<216'	2"	2 1/2"
<160'	<271'	2 1/2"	3"
<192'	<325'	3"	3 1/2"
<224'	<379'	3 1/2"	4"

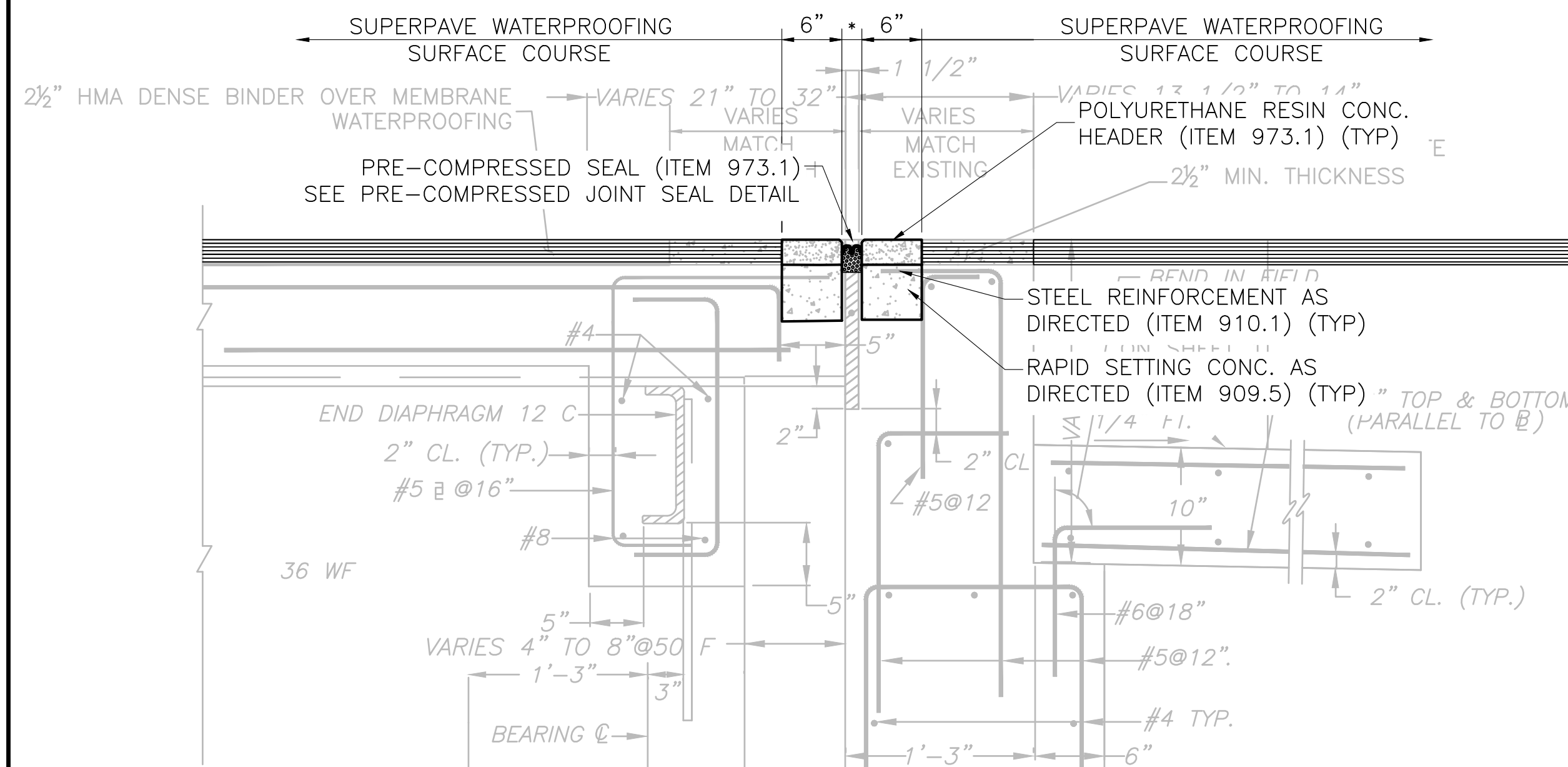
- NOTES:
1. THIS TABLE IS DEVELOPED BASED ON THE EQUATION FOR MAXIMUM ONE-WAY THERMAL MOVEMENT IN SECTION 3.1.8 OF THE BRIDGE MANUAL AND THE ASSOCIATED ASSUMPTIONS FOR TEMPERATURE RISE AND FALL. THE THERMAL MOVEMENT EQUATION IS REARRANGED SO THAT IT YIELDS THE TRIBUTARY THERMAL EXPANSION/CONTRACTION LENGTH ASSOCIATED WITH A 50% VARIATION FROM THE NOMINAL PRE-COMPRESSED SEAL WIDTH.
 2. AN ADDITIONAL 1/2" HAS BEEN ADDED TO THE REQUIRED NOMINAL JOINT SEAL WIDTH TO ENSURE THAT THE SEAL REMAINS IN COMPRESSION WHEN THE JOINT GAP IS AT IT'S MAXIMUM ANTICIPATED OPENING.

SET SEAL JOINT 1/2" MIN. BELOW OR BEHIND CONC. SURFACE (TYP.)



NOTES:

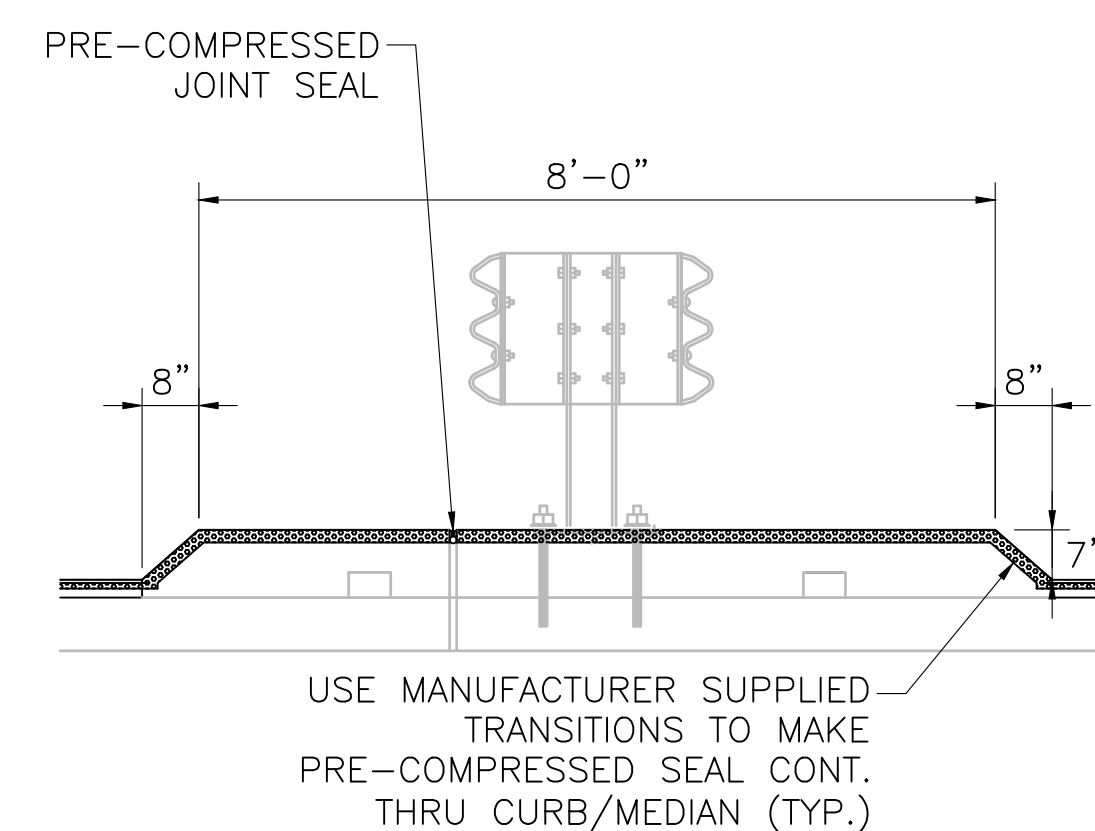
- 1). SEE PRE-COMPRESSED JOINT SEAL DETAIL.
- 2). CLEAN JOINT PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL.
- 3). REPAIR PARAPET PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL AS DIRECTED BY THE ENGINEER.



- NOTES:
- 1). THE ABOVE DETAIL IS A SKETCH. CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSIONS FROM THE EXISTING BRIDGE PLAN AND SITE VISIT.

PROPOSED PRE-COMPRESSED JOINT SEAL WITH POLYURETHANE RESIN CONCRETE HEADERS AT ABUTMENT

NOT TO SCALE



PRE-COMPRESSED SEAL AT MEDIAN

NOT TO SCALE

PRE-COMPRESSED SEAL AT PARAPET

NOT TO SCALE

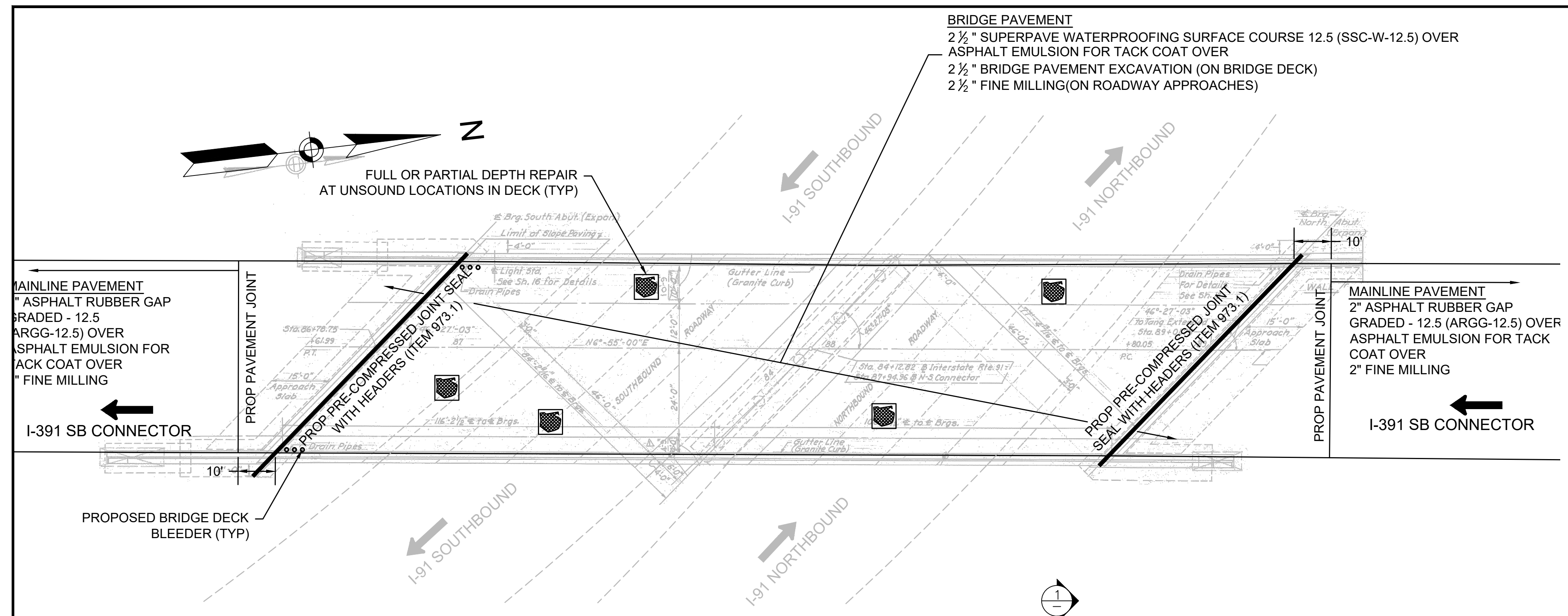
TEMPORARY TRAFFIC CONTROL AND CONSTRUCTION SEQUENCE

1. ALL WORK ON THIS BRIDGE SHALL BE DONE AT NIGHT USING SHORT TERM LANE CLOSURES. TEMPORARY BARRIER WILL NOT BE UTILIZED UNLESS REQUIRED BY THE ENGINEER.
2. ALL WORK SHALL BE DONE BETWEEN THE HOURS OF 7:00 PM AND 5:00 AM.
3. AT LEAST ONE LANE OF TRAFFIC MUST BE KEPT OPEN AT ALL TIMES DURING THE WORK SHIFT. ALL LANES MUST BE OPEN AT THE END OF THE WORK SHIFT IN THEIR ORIGINAL CONFIGURATION.
4. THE CONTRACTOR MAY REMOVE ONLY AS MUCH CONCRETE AS CAN BE PLACED AND CURED IN ONE WORK SHIFT. RAPID SETTING CONCRETE PLACEMENTS SHALL BE COMPLETED NO LATER THAN 2:00 AM FOR NIGHT-TIME OPERATIONS SO THAT THE REQUIRED COMPRESSIVE STRENGTH OF 2000 PSI IS ATTAINED BEFORE THE AREA IS OPENED TO TRAFFIC.
5. TEMPORARY HMA RAMPS SHALL BE USED AT ALL TRANSVERSE AND LONGITUDINAL DROP-OFFS TO TRANSITION TRAFFIC TO THE BRIDGE DECK.
6. FOR THE CONVENIENCE OF THE TRAVELING PUBLIC THE CONTRACTOR IS LIMITED TO WORKING ON NO MORE THAN THREE BRIDGE DECKS AT A TIME. ALL BRIDGE WORK INCLUDING FINAL SURFACE COURSE PAVING MUST BE COMPLETED BEFORE ANY WORK CAN BEGIN ON ADDITIONAL BRIDGES. FOR THIS PURPOSE, A BRIDGE DECK IS DEFINED AS A SINGLE BRIDGE IN A SINGLE DIRECTION, REGARDLESS OF IF THE BRIDGE NUMBER INCLUDES A DECK IN EACH DIRECTION OF TRAVEL.
7. BRIDGE DECKS SHALL NOT BE LEFT EXPOSED TO TRAFFIC WITHOUT SURFACE COURSE PAVEMENT FOR MORE THAN 2 WEEKS.

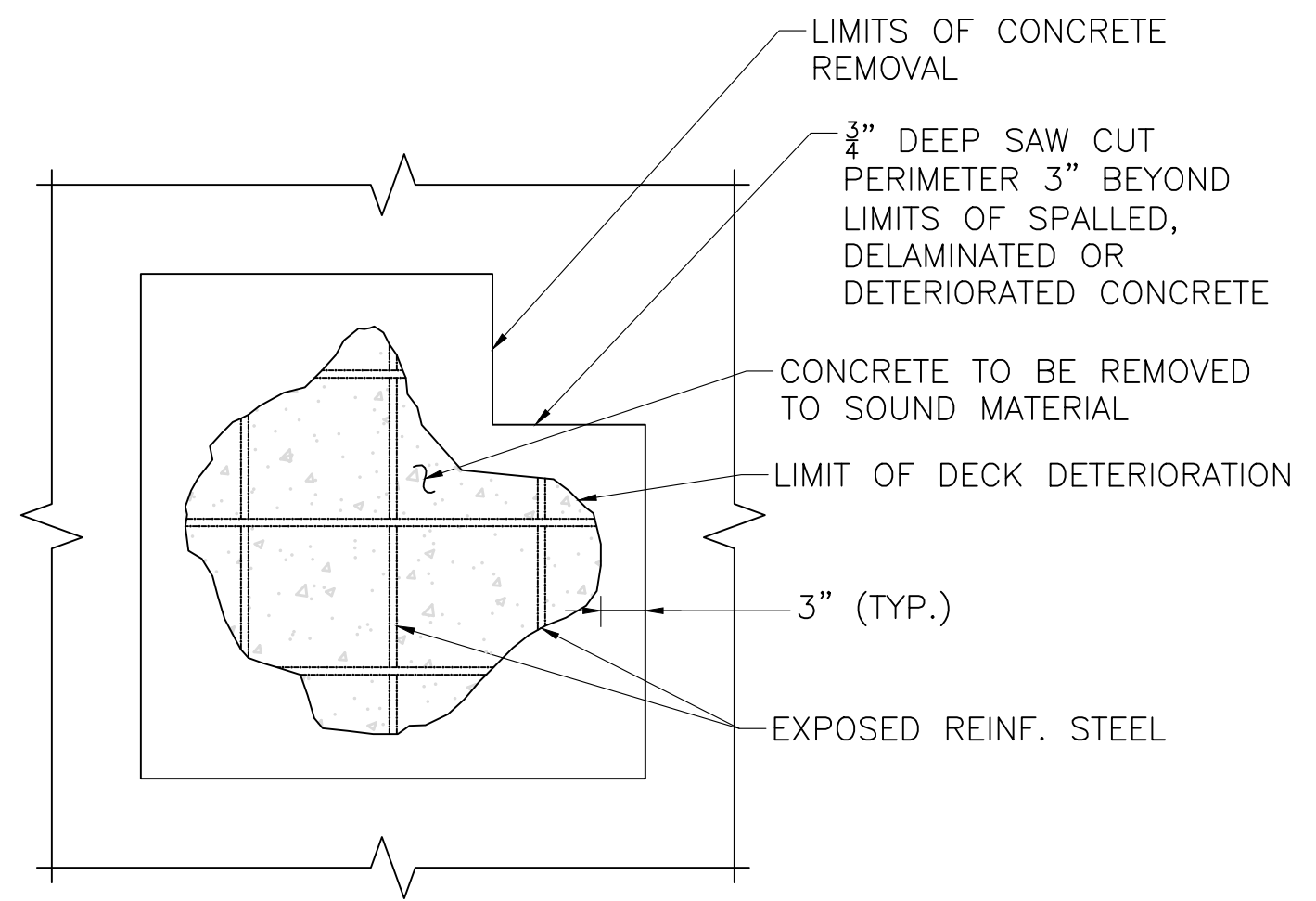
**CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	50	55
PROJECT FILE NO.		612106	

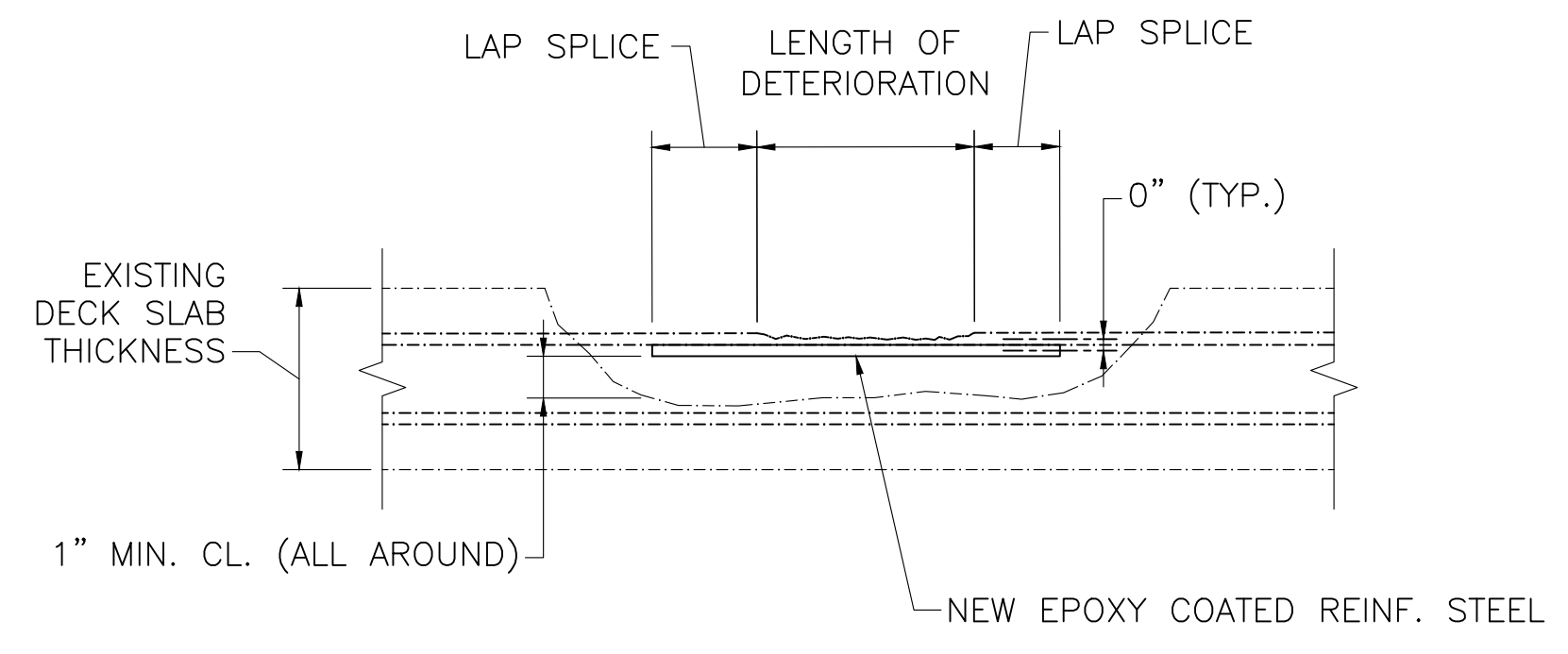
**BRIDGE DETAILS
INTERSTATE 391 OVER INTERSTATE 91**



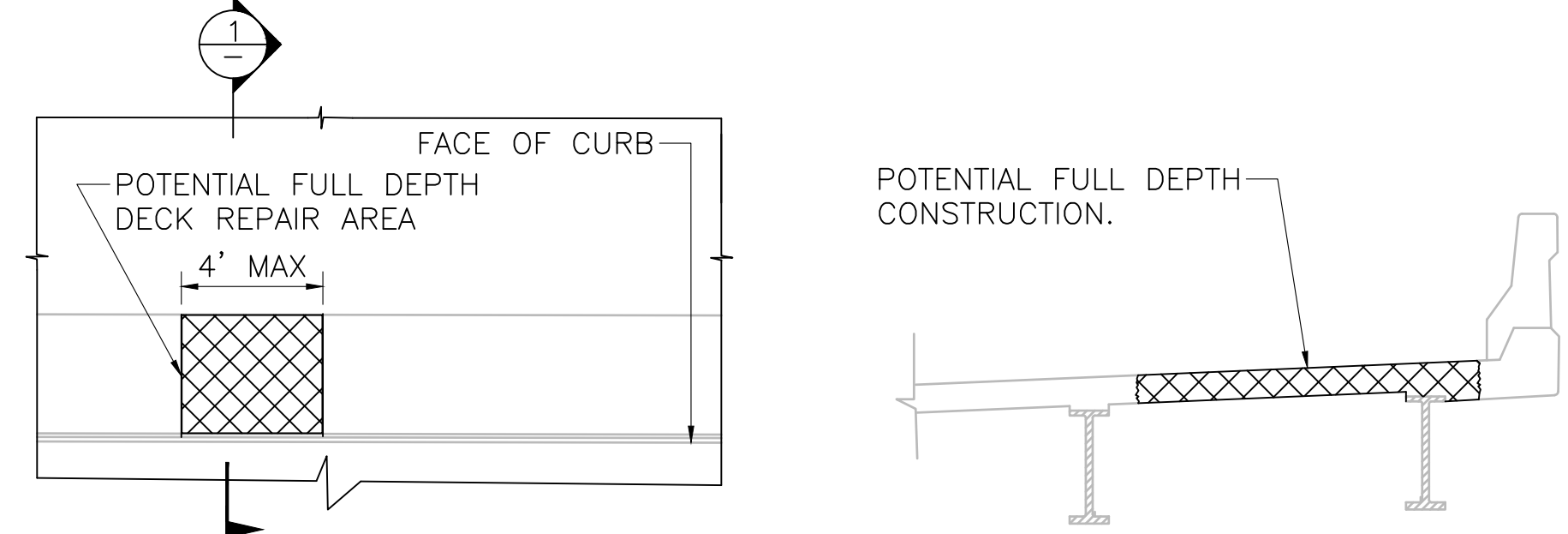
C-13-036 I-391 SB OVER I-91 PLAN VIEW
NOT TO SCALE



LIMITS OF DECK REPAIR AREA
NOT TO SCALE



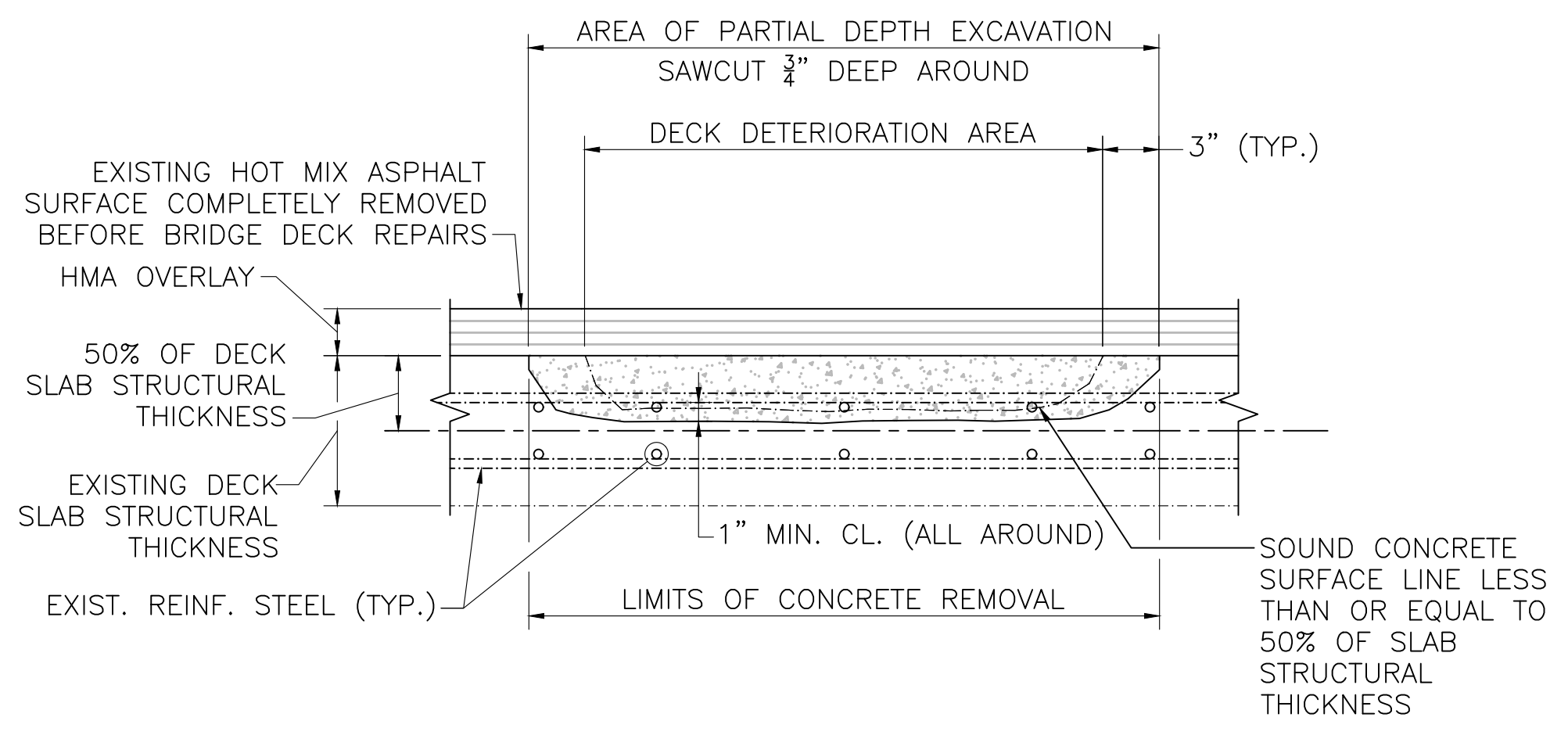
TYPICAL DETERIORATED REINFORCEMENT STEEL REPAIR
SCALE: 1 1/2" = 1'-0"



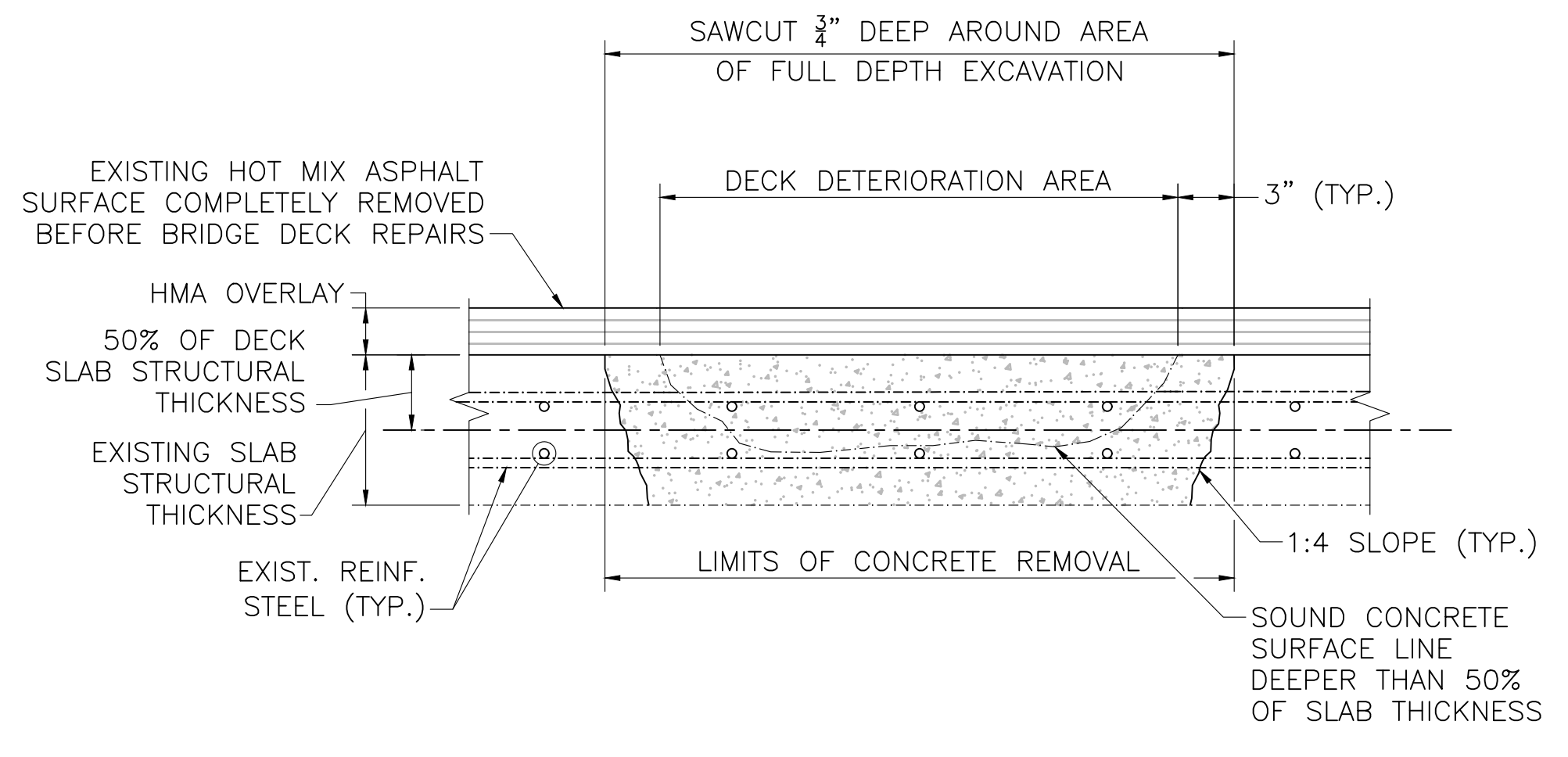
PLAN SECTION 1
FULL DEPTH OVERHANG DECK REPAIR

NOT TO SCALE

NOTE
1. OVERHANG SUPPORT MUST BE PROVIDED WHEN CONSTRUCTION WIDTHS EXCEED 4' (FOUR FEET). IF THE CONTRACTOR EXTENDS THE EXCAVATION BEYOND 4' THEN THEY MUST FURNISH A SHIELDING DESIGN CAPACITY CHECK. THIS CHECK MUST BE DESIGNED AND STAMPED BY A MASSACHUSETTS REGISTERED PROFESSIONAL ENGINEER OF THE APPROPRIATE DISCIPLINE.



TYPICAL PARTIAL DEPTH DECK REPAIR DETAIL
NOT TO SCALE



TYPICAL FULL DEPTH DECK REPAIR DETAIL
NOT TO SCALE

NOTES:
1. DECK FORMS SHALL BE FLUSH WITH EXISTING DECK UNDERSIDE AND SHALL BE REMOVED AFTER CURING IS COMPLETE.

BRIDGE DECK REPAIR SEQUENCE NOTES:

1. ALL EXISTING HOT MIX ASPHALT WEARING SURFACE AND MEMBRANE WATERPROOFING MATERIAL SHALL BE REMOVED PRIOR TO PERFORMING DECK REPAIRS. THE EXPOSED DECK SURFACE SHALL BE INSPECTED BY THE ENGINEER TO DETERMINE APPROXIMATE LIMITS OF REPAIR. IN ADDITION, AREAS OF THE UNDERSIDE WITH EVIDENCE OF DETERIORATION SHALL BE SOUNDED IN THE PRESENCE OF THE CONTRACTOR AND THE ENGINEER TO IDENTIFY AREAS IN NEED OF FULL DEPTH REPAIRS.
2. THE TOP SURFACE OF THE DECK REPAIRS SHALL BE FINISHED FLUSH WITH THE ADJACENT TOP OF DECK SLAB AND SHALL MAINTAIN THE EXISTING GRADES AND CROSS SLOPES.
3. UPON COMPLETION OF EACH STAGE OF DECK REPAIRS, THE DECK SHALL BE ABRASIVELY BLAST CLEANED FOLLOWED BY PLACEMENT OF THE HOT MIX ASPHALT WEARING SURFACE.

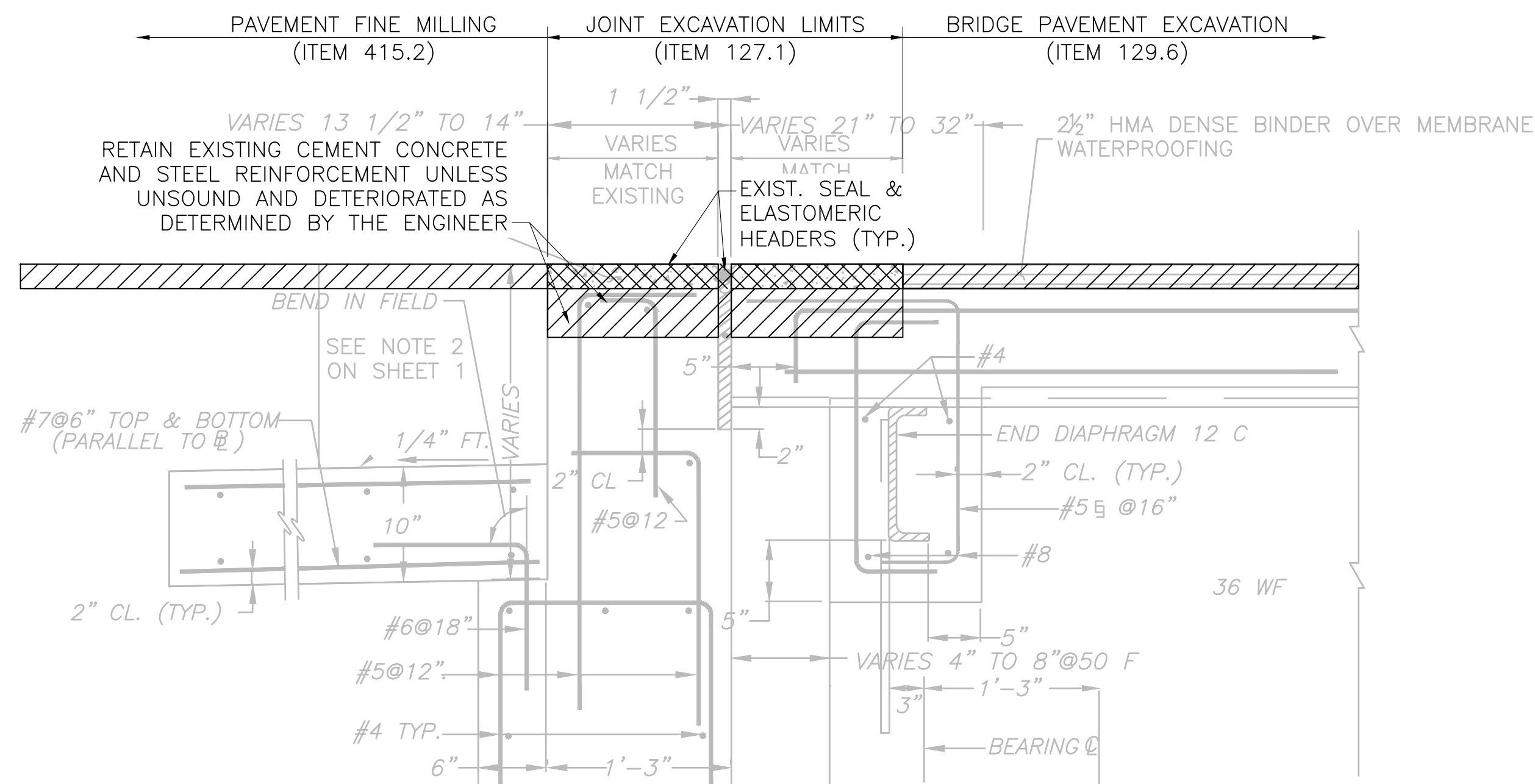
BRIDGE DECK REPAIR NOTES:

1. SPALLED, DELAMINATED, AND DETERIORATED CONCRETE DECK AREAS SHALL BE REPAIRED USING AN APPROVED RAPID SETTING CONCRETE (ITEM 909.5) AS DIRECTED BY THE ENGINEER.
2. PARTIAL DEPTH REPAIRS: ALL DETERIORATED AND DELAMINATED CONCRETE SHALL BE REMOVED TO A MINIMUM DEPTH OF 1" BELOW THE BOTTOM OF THE TOP LAYER OF EXISTING TRANSVERSE REINFORCEMENT STEEL TO A MAXIMUM OF 50% OF THE THICKNESS OF THE EXISTING CONCRETE DECK.
3. FULL DEPTH REPAIRS: ALL DETERIORATED AND DELAMINATED CONCRETE SHALL BE REMOVED, AND IF THE SOUND CONCRETE SURFACE IS LOCATED AT A DEPTH GREATER THAN 50% OF THE DECK THICKNESS WHEN MEASURED FROM THE TOP OF DECK, A FULL DEPTH DECK REPAIR SHALL BE PERFORMED.
4. ALL EXISTING REINFORCING STEEL AND CONCRETE SURFACES THAT ARE TO BE IN CONTACT WITH REPAIR CONCRETE SHALL BE ABRASIVELY BLAST CLEANED IN ORDER TO REMOVE ALL RUST, OIL, AND DEBRIS THAT IS NOT TIGHTLY ADHERED, FOLLOWED BY APPLICATION OF COMPRESSED AIR TO REMOVE ALL DUST. EXISTING CONCRETE REPAIR SURFACES THAT WILL BE IN CONTACT WITH REPAIR CONCRETE SHALL BE PRE-WETTED FOR A MINIMUM OF 15 MINUTES USING POTABLE WATER IN ORDER TO ACHIEVE A SATURATED SURFACE DRY CONDITION IMMEDIATELY PRIOR TO PLACEMENT OF REPAIR CONCRETE.
5. NEW EPOXY COATED STEEL REINFORCEMENT SHALL BE PLACED TO SUPPLEMENT EXISTING REINFORCEMENT THAT HAS A SECTION LOSS OF 25% OR MORE OF THE ORIGINAL CROSS SECTION AREA OR HAS BROKEN, AS DETERMINED BY THE ENGINEER. NEW REINFORCEMENT SHALL EXTEND 30 BAR DIAMETERS IN EACH DIRECTION FROM WHERE THE SECTION LOSS OR BREAK ENDS. THE LIMITS OF THE REPAIR SHALL BE MODIFIED TO MEET THE REINFORCEMENT STEEL LAP SPLICE REQUIREMENTS. NEW REINFORCING STEEL SHALL BE PLACED AT THE SAME LEVEL ALONGSIDE THE EXISTING DETERIORATED OR BROKEN REINFORCING STEEL.

**CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	51	55
PROJECT FILE NO.		612106	

**BRIDGE DETAILS
INTERSTATE 391 OVER INTERSTATE 91**

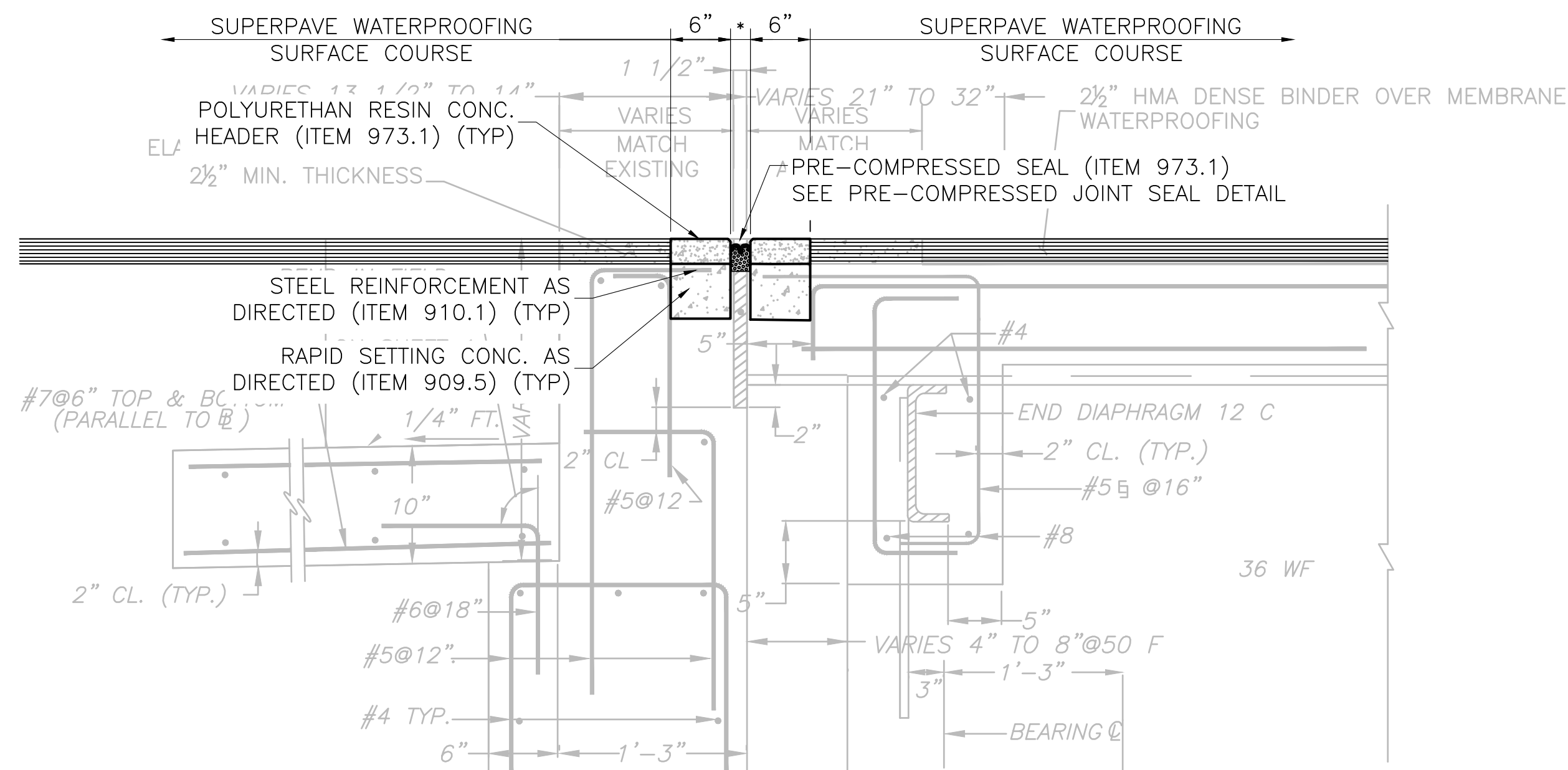


NOTES:

- 1). THE ABOVE DETAIL IS A SKETCH. CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSIONS FROM THE EXISTING BRIDGE PLAN AND SITE VISIT.
- 2). COMPLETE REMOVAL OF THE JOINT, BACKWALL, AND DECK SHOWN FOR CASES WHERE THE JOINT, BACKWALL, AND DECK ARE DETERIORATED. DETERIORATED CONCRETE SHALL BE REMOVED AS DIRECTED BY THE ENGINEER.

LIMITS OF EXCAVATION AT EXISTING ELASTOMERIC CONCRETE HEADERS WITH PRE-COMPRESSED SEAL BRIDGE JOINT SYSTEM AT ABUTMENT

NOT TO SCALE



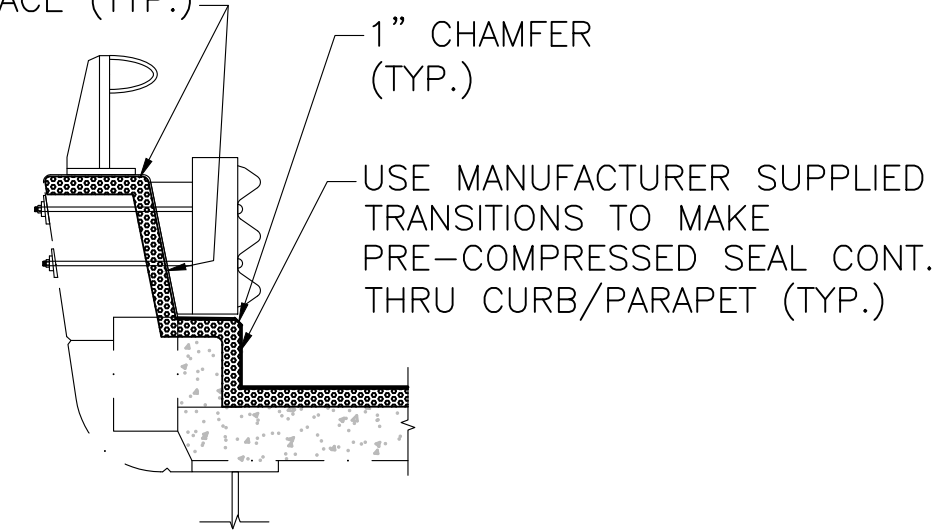
NOTES:

- 1). THE ABOVE DETAIL IS A SKETCH. CONTRACTOR SHALL VERIFY JOINT DETAILS AND DIMENSIONS FROM THE EXISTING BRIDGE PLAN AND SITE VISIT.

PROPOSED PRE-COMPRESSED JOINT SEAL WITH POLYURETHANE RESIN CONCRETE HEADERS AT ABUTMENT

NOT TO SCALE

SET SEAL JOINT 1/4" MIN. BELOW OR BEHIND CONC. SURFACE (TYP.)

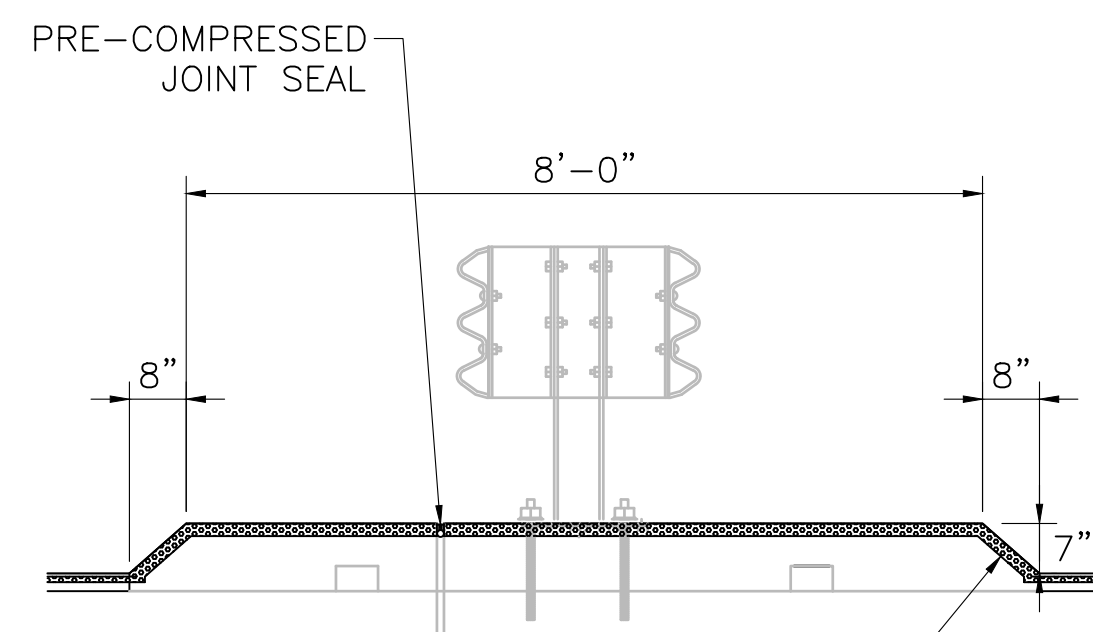


NOTES:

- 1). SEE PRE-COMPRESSED JOINT SEAL DETAIL.
- 2). CLEAN JOINT PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL.
- 3). REPAIR PARAPET PRIOR TO INSTALLATION OF NEW PRE-COMPRESSED JOINT SEAL AS DIRECTED BY THE ENGINEER.

PRE-COMPRESSED SEAL AT PARAPET

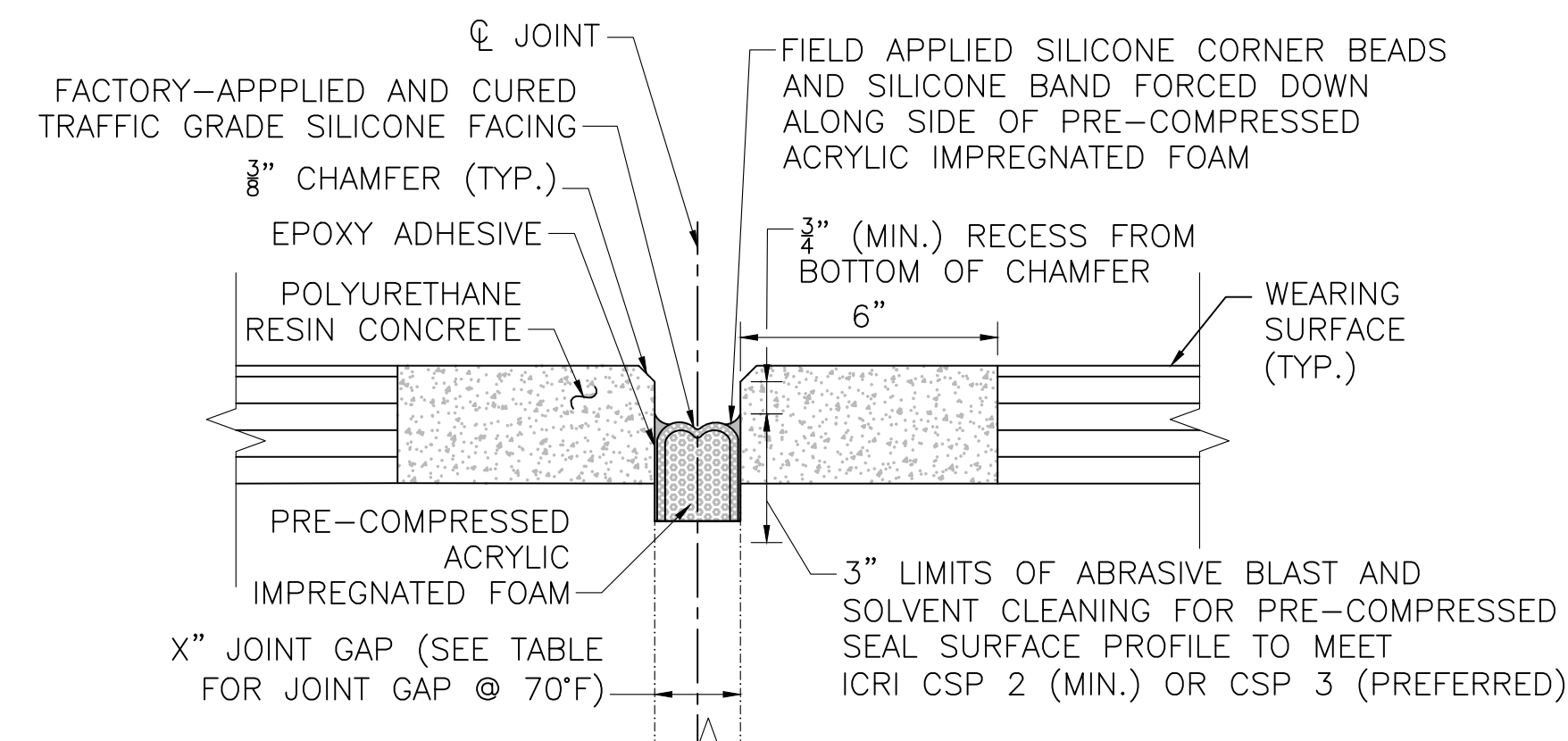
NOT TO SCALE



USE MANUFACTURER SUPPLIED TRANSITIONS TO MAKE PRE-COMPRESSED SEAL CONT. THRU CURB/MEDIAN (TYP.)

PRE-COMPRESSED SEAL AT MEDIAN

NOT TO SCALE



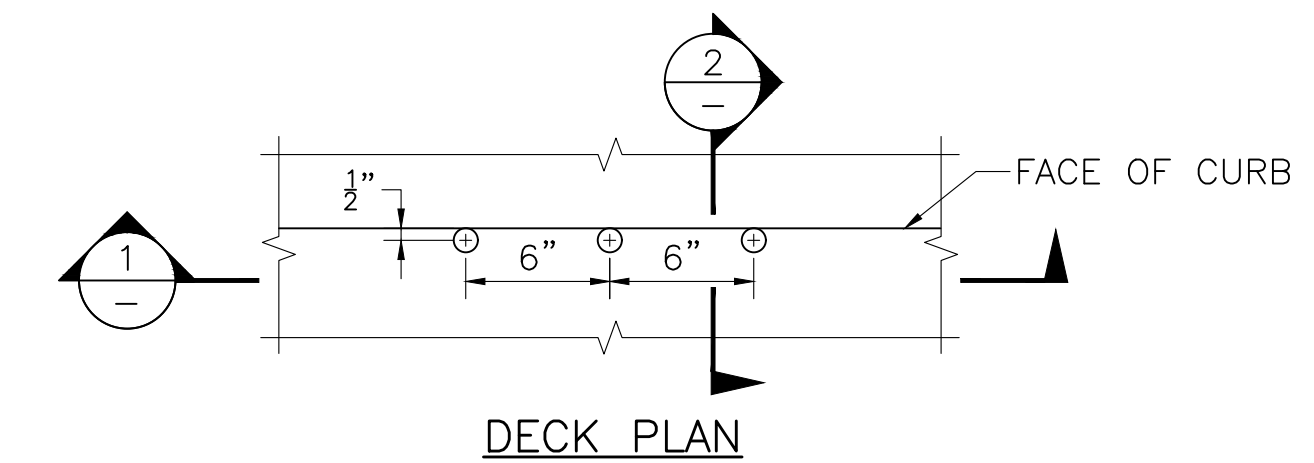
PRE-COMPRESSED SEAL SECTION

SCALE: 3" = 1'-0"

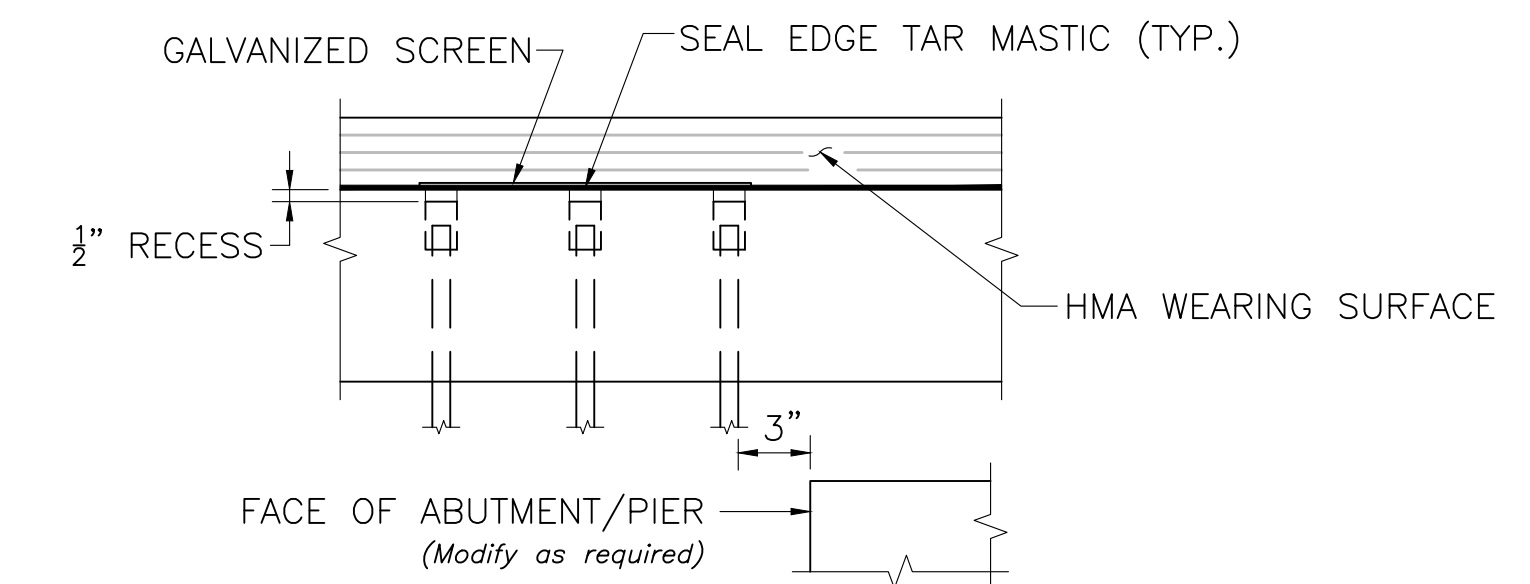
TRIBUTARY THERMAL EXPANSION/CONTRACTION LENGTH (STEEL)	TRIBUTARY THERMAL EXPANSION/CONTRACTION LENGTH (CONC.)	X" JOINT OPENING @ 70°F	NOMINAL JOINT SEAL WIDTH
<128'	<216'	2"	2 1/2"
<160'	<271'	2 1/2"	3"
<192'	<325'	3"	3 1/2"
<224'	<379'	3 1/2"	4"

NOTES:

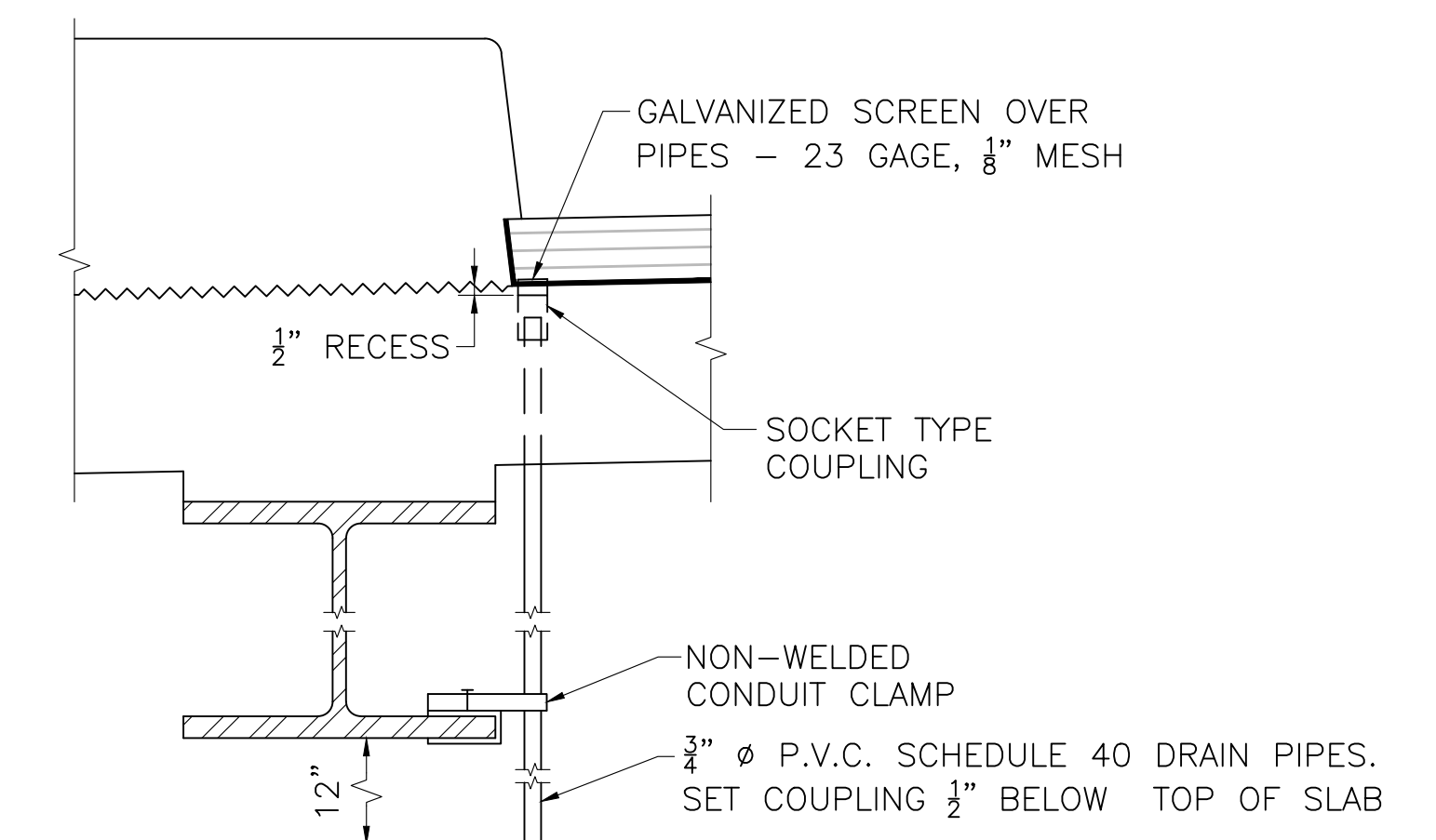
1. THIS TABLE IS DEVELOPED BASED ON THE EQUATION FOR MAXIMUM ONE-WAY THERMAL MOVEMENT IN SECTION 3.1.8 OF THE BRIDGE MANUAL AND THE ASSOCIATED ASSUMPTIONS FOR TEMPERATURE RISE AND FALL. THE THERMAL MOVEMENT EQUATION IS REARRANGED SO THAT IT YIELDS THE TRIBUTARY THERMAL EXPANSION/CONTRACTION LENGTH ASSOCIATED WITH A 50% VARIATION FROM THE NOMINAL PRE-COMPRESSED SEAL WIDTH. AN ADDITIONAL 1/4" HAS BEEN ADDED TO THE REQUIRED NOMINAL JOINT SEAL WIDTH TO ENSURE THAT THE SEAL REMAINS IN COMPRESSION WHEN THE JOINT GAP IS AT IT'S MAXIMUM ANTICIPATED OPENING.



DECK PLAN



SECTION 1



SECTION 2

DECK DRAIN PIPES

SCALE: 1 1/2" = 1'-0"

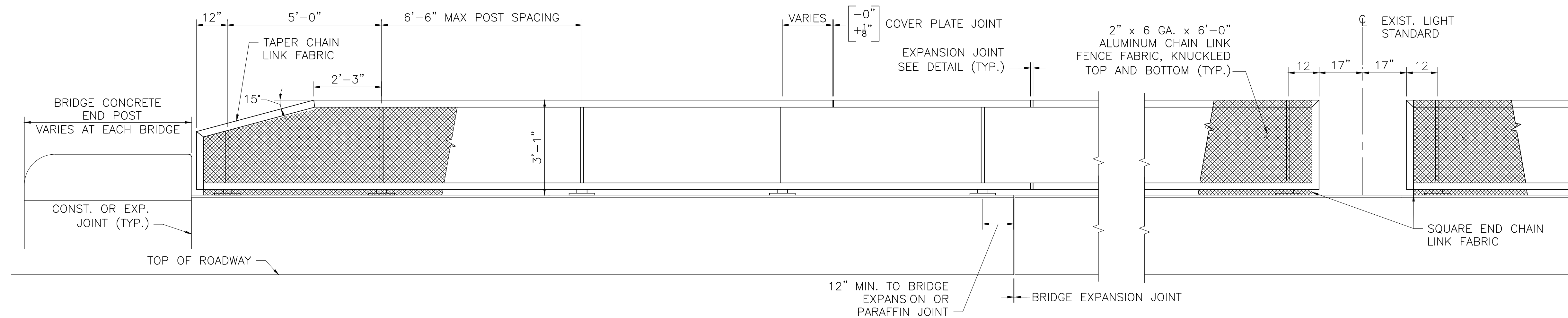
TEMPORARY TRAFFIC CONTROL AND CONSTRUCTION SEQUENCE

1. ALL WORK ON THIS BRIDGE SHALL BE DONE AT NIGHT USING SHORT TERM LANE CLOSURES. TEMPORARY BARRIER WILL NOT BE UTILIZED UNLESS REQUIRED BY THE ENGINEER.
2. ALL WORK SHALL BE DONE BETWEEN THE HOURS OF 7:00 PM AND 5:00 AM.
3. AT LEAST ONE LANE OF TRAFFIC MUST BE KEPT OPEN AT ALL TIMES DURING THE WORK SHIFT. ALL LANES MUST BE OPEN AT THE END OF THE WORK SHIFT IN THEIR ORIGINAL CONFIGURATION.
4. THE CONTRACTOR MAY REMOVE ONLY AS MUCH CONCRETE AS CAN BE PLACED AND CURED IN ONE WORK SHIFT. RAPID SETTING CONCRETE PLACEMENTS SHALL BE COMPLETED NO LATER THAN 2:00 AM FOR NIGHT-TIME OPERATIONS SO THAT THE REQUIRED COMPRESSIVE STRENGTH OF 2000 PSI IS ATTAINED BEFORE THE AREA IS OPENED TO TRAFFIC.
5. TEMPORARY HMA RAMPS SHALL BE USED AT ALL TRANSVERSE AND LONGITUDINAL DROP-OFFS TO TRANSITION TRAFFIC TO THE BRIDGE DECK.
6. FOR THE CONVENIENCE OF THE TRAVELING PUBLIC THE CONTRACTOR IS LIMITED TO WORKING ON NO MORE THAN THREE BRIDGE DECKS AT A TIME. ALL BRIDGE WORK INCLUDING FINAL SURFACE COURSE PAVING MUST BE COMPLETED BEFORE ANY WORK CAN BEGIN ON ADDITIONAL BRIDGES. FOR THIS PURPOSE, A BRIDGE DECK IS DEFINED AS A SINGLE BRIDGE IN A SINGLE DIRECTION, REGARDLESS OF IF THE BRIDGE NUMBER INCLUDES A DECK IN EACH DIRECTION OF TRAVEL.
7. BRIDGE DECKS SHALL NOT BE LEFT EXPOSED TO TRAFFIC WITHOUT SURFACE COURSE PAVEMENT FOR MORE THAN 2 WEEKS.

CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	52	55
PROJECT FILE NO.		612106	

SNOW FENCE ELEVATION & NOTES



SNOW FENCE ELEVATION

SCALE: $\frac{1}{2}$ " = 1'-0"

GENERAL NOTES:

1. CONTRACTOR SHALL FIELD MEASURE EACH LOCATION AND SUBMIT A LAYOUT PLAN FOR APPROVAL MEETING ALL REQUIREMENTS SHOWN IN THE DETAILS.
2. RAILS SHALL BE CONTINUOUS OVER A MINIMUM OF FOUR POSTS, IF POSSIBLE.
3. RAILS SHALL HAVE AN EXPANSION JOINT IN THE PANEL OVER A BRIDGE EXPANSION JOINT, IF ANY, AND AT 30 FOOT MAXIMUM SPACING ELSEWHERE.
4. BOTTOM OF POST BASE PLATE TO BE SET ON A $\frac{1}{8}$ " MOLDED FABRIC BEARING PAD (M9.16.2). THE THICKNESS OF THE PAD SHALL BE IGNORED BY THE DETAILER.
5. THE CHAIN LINK FABRIC SHALL BE SECURED BY KNUCKLING TOGETHER THE CUT ENDS OF THE FABRIC WIRE IN A MANNER SIMILAR TO THE ORIGINALLY MANUFACTURED END.
6. THE SCREEN END TREATMENT TO BE USED IS TAPERED.
7. POST SPACING SHALL BE UNIFORM BETWEEN TAPERED ENDS.
8. SET POSTS PERPENDICULAR TO GRADE FOR GRADES UP TO 1.5%. SET POSTS PLUMB FOR GRADES GREATER THAN 1.5%.

MATERIALS:

- EXTRUSIONS & PLATES _____ ASTM B 221, ALLOY 6061-T6
- CHAIN LINK FABRIC _____ AASHTO M 181 TYPE III (ALLOY 6061-T89 OR T94)
- SELF TAPPING SCREWS _____ TYPE 304 STAINLESS STEEL WITH $\frac{1}{4}$ " THICK EPDM (ETHYLENE PROPYLENE DIENE MONOMER) WASHERS
- ANCHOR BOLTS _____ AASHTO M 164 GALVANIZED (ROTATION CAPACITY TEST NOT REQUIRED)
- TEE BOLTS _____ ASTM A 307 GALVANIZED OR TYPE 304 STAINLESS STEEL
- COVER PLATE BOLTS _____ TYPE 304 STAINLESS STEEL WITH OVERSIZED STAINLESS WASHER AND STAINLESS NUT WITH NYLON INSERT

FINISHES:

1. POSTS, RAILS, COVER PLATES AND SPLICE PLATES SHALL RECEIVE A DARK BRONZE ANODIZED FINISH.
2. CHAIN LINK FABRIC SHALL RECEIVE A 4±1 MIL POLYESTER POWDER COAT FINISH. THE COLOR SHALL BE DARK BRONZE TO MATCH COLOR OF ANODIZED ALUMINUM FRAMEWORK.
3. #17 SELF TAPPING SCREWS AND $\frac{1}{4}$ " ϕ COVER PLATE BOLTS TO BE COLORED TO MATCH THE ANODIZED EXTRUSIONS.

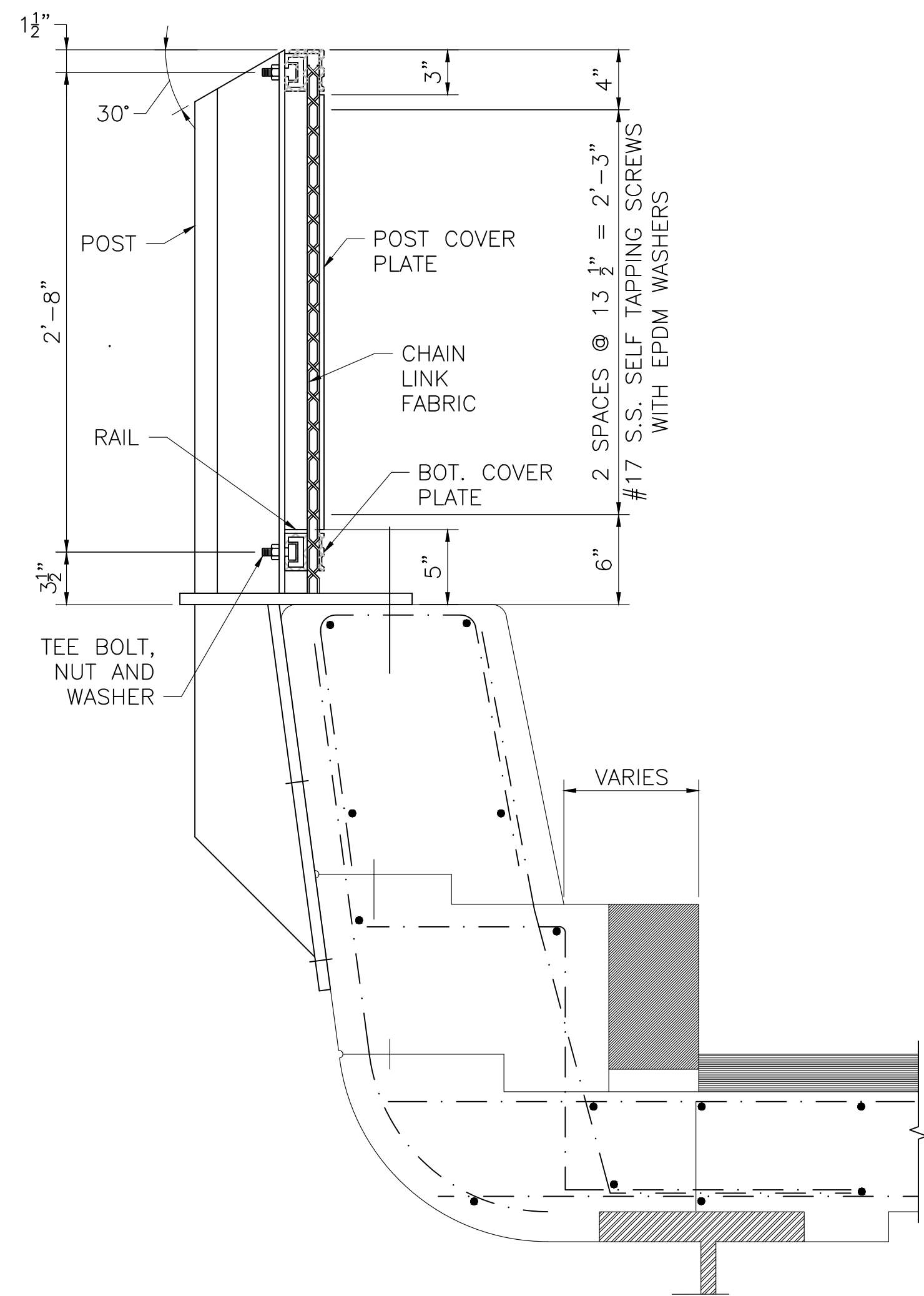
LAYOUT NOTES

1. SNOW FENCE SHALL BEGIN AND END AT EXISTING BRIDGE CONCRETE END POSTS WITH A MAXIMUM POST SPACING OF 6'-6".
2. SNOW FENCE SHALL FOLLOW THE BEND AND CURVES OF THE BARRIER.
3. SNOW FENCE POSTS SHALL BE LAID OUT TO AVOID EXISTING GUARDRAIL RETROFIT BOLTS.
4. SNOW FENCE SHALL BE LAID OUT TO ACCOMMODATE ALL EXISTING LIGHT STANDARDS.

CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	53	55
PROJECT FILE NO.		612106	

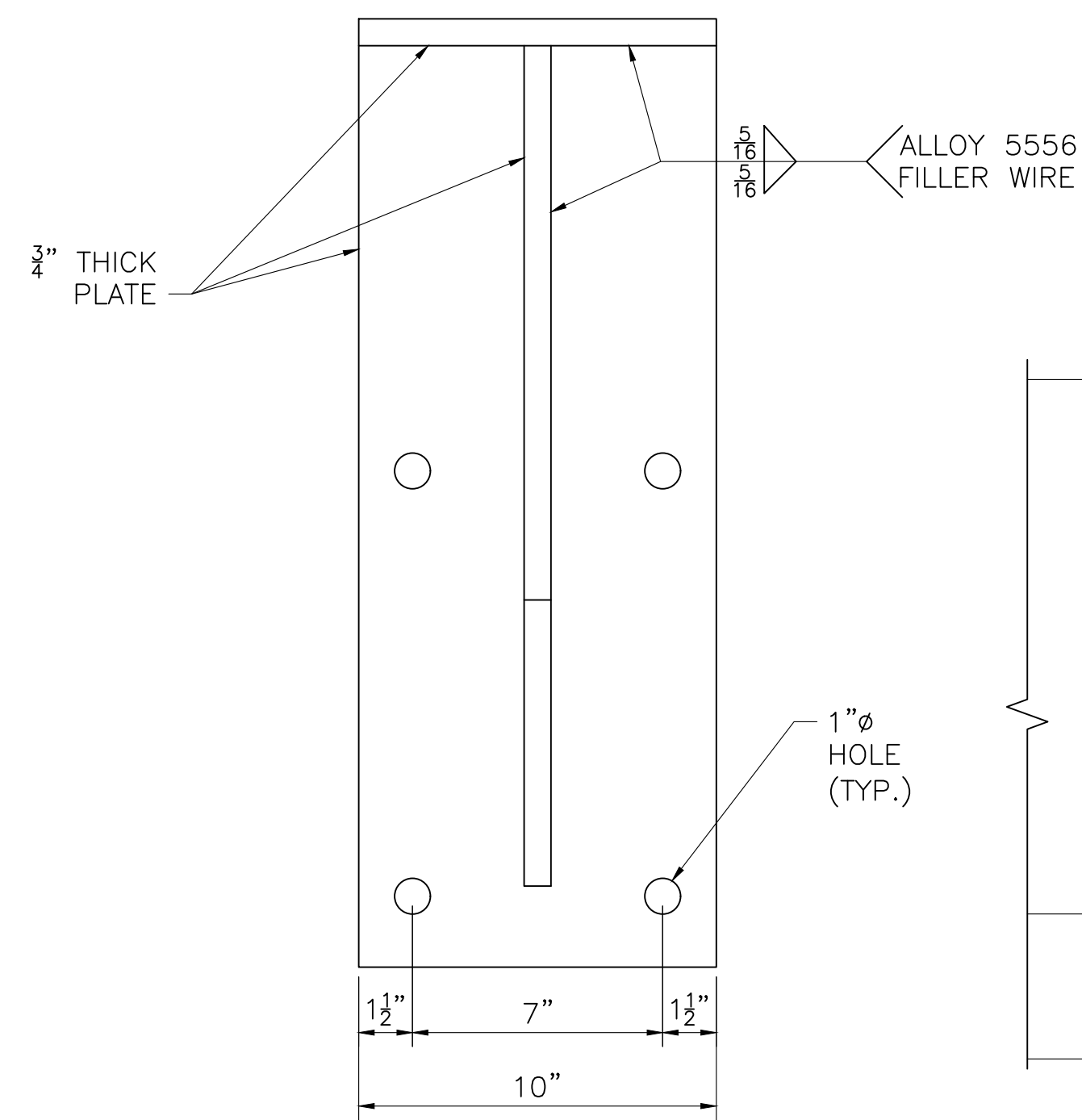
DETAILS AT 7 OF 8 BRIDGES



BRIDGE NO. C-13-035
BRIDGE NO. C-13-036
BRIDGE NO. C-13-037
BRIDGE NO. S-24-078
BRIDGE NO. S-24-079
BRIDGE NO. S-24-080
BRIDGE NO. S-24-085

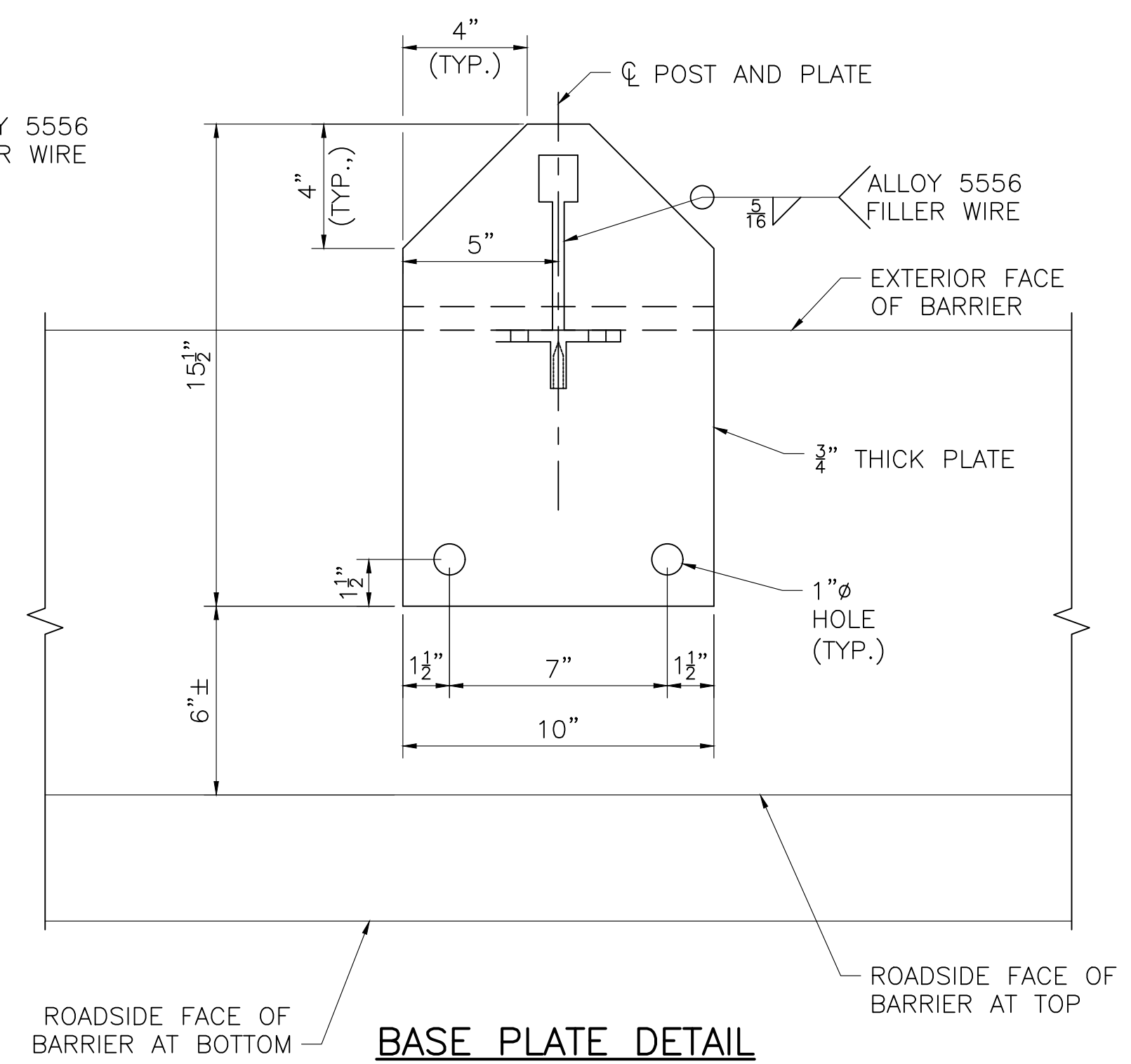
SNOW FENCE CROSS SECTION

SCALE: 1 1/2" = 1'-0"



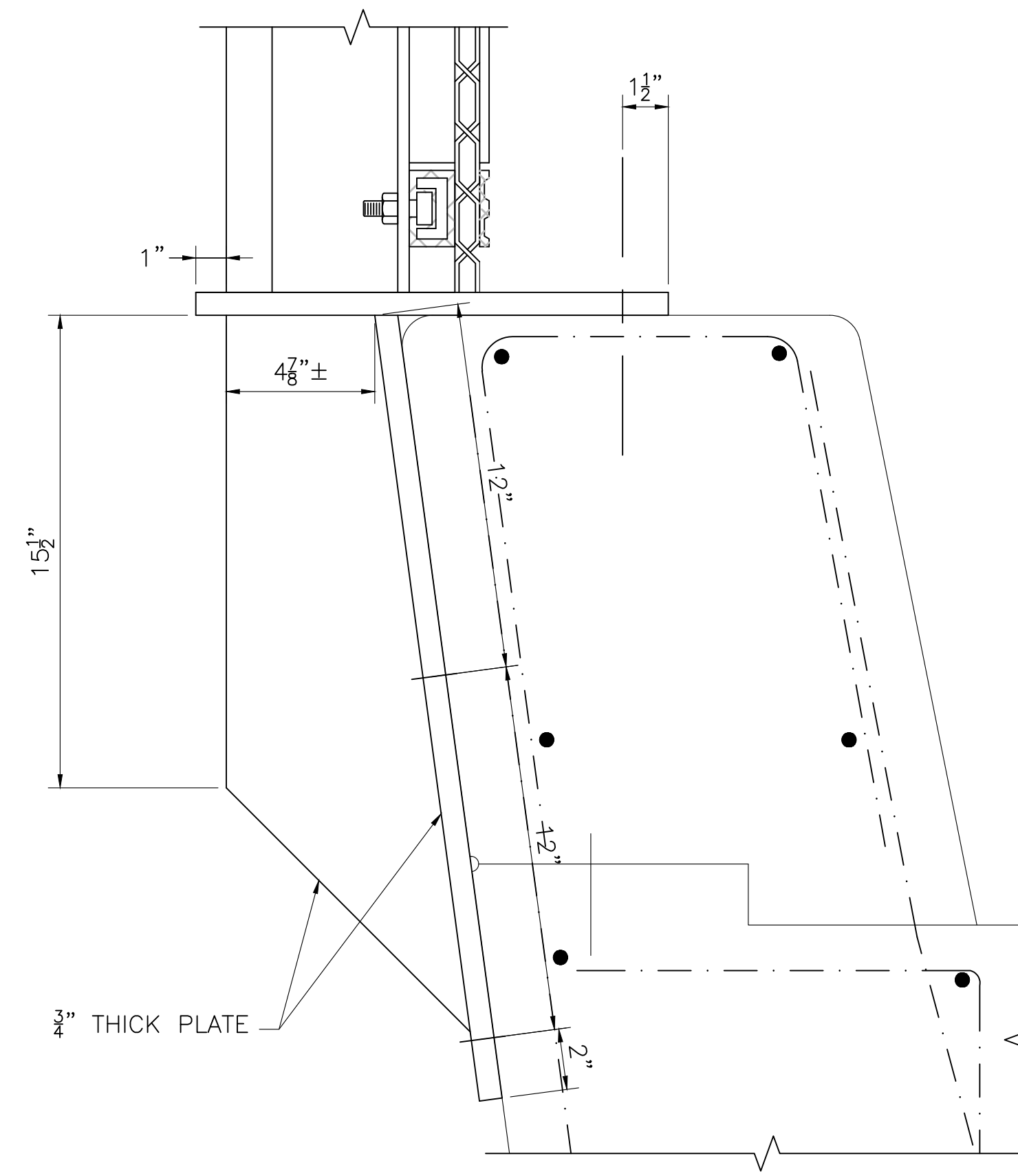
ANCHOR PLATE ELEVATION

SCALE: 3" = 1'-0"



BASE PLATE DETAIL

SCALE: 3" = 1'-0"



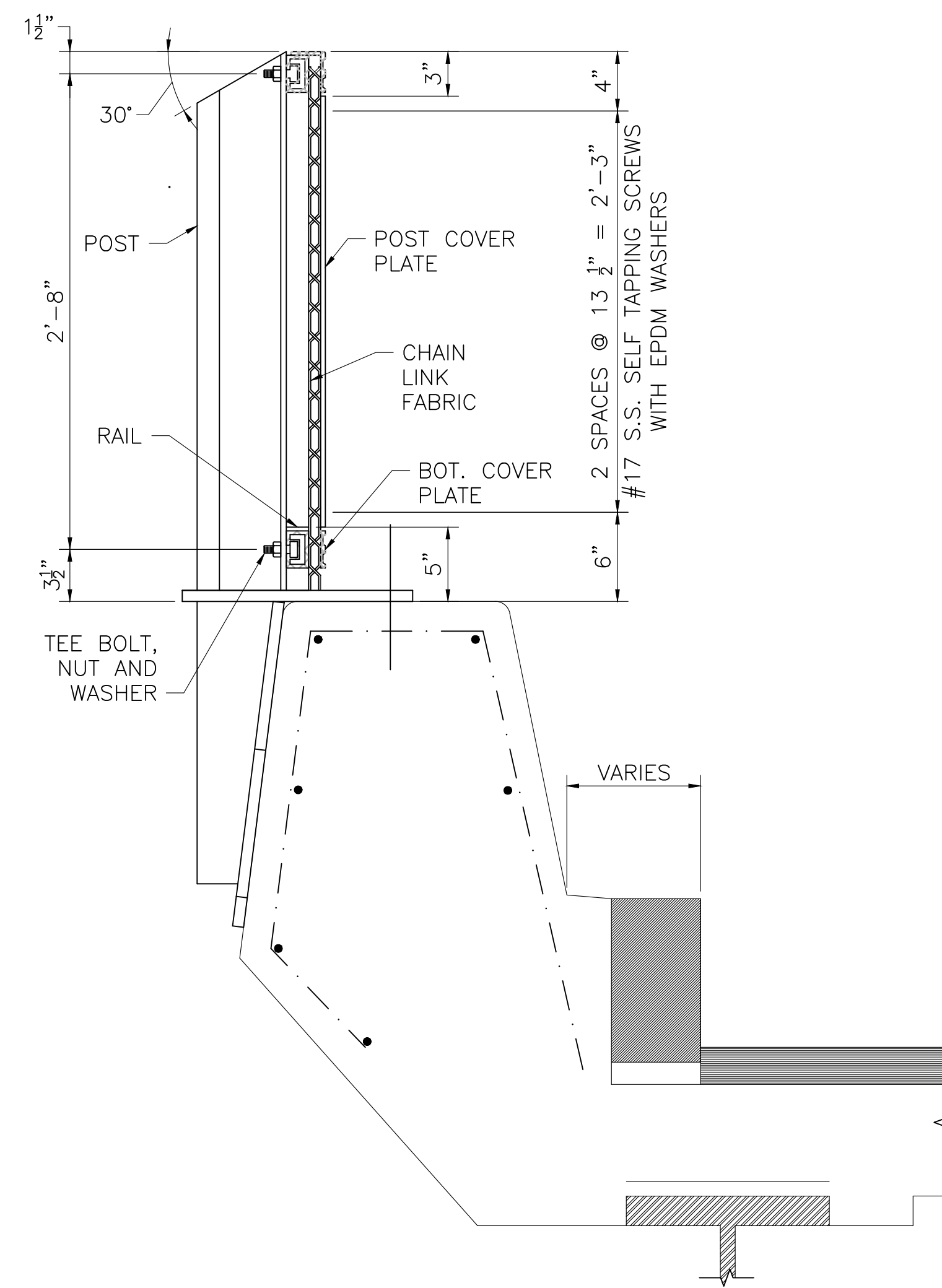
SECTION THROUGH PARAPET

SCALE: 1 1/2" = 1'-0"

CHICOPEE-SPRINGFIELD
INTERSTATE 91 AND INTERSTATE 391

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	54	55
PROJECT FILE NO.		612106	

DETAILS AT BRIDGE S-24-088



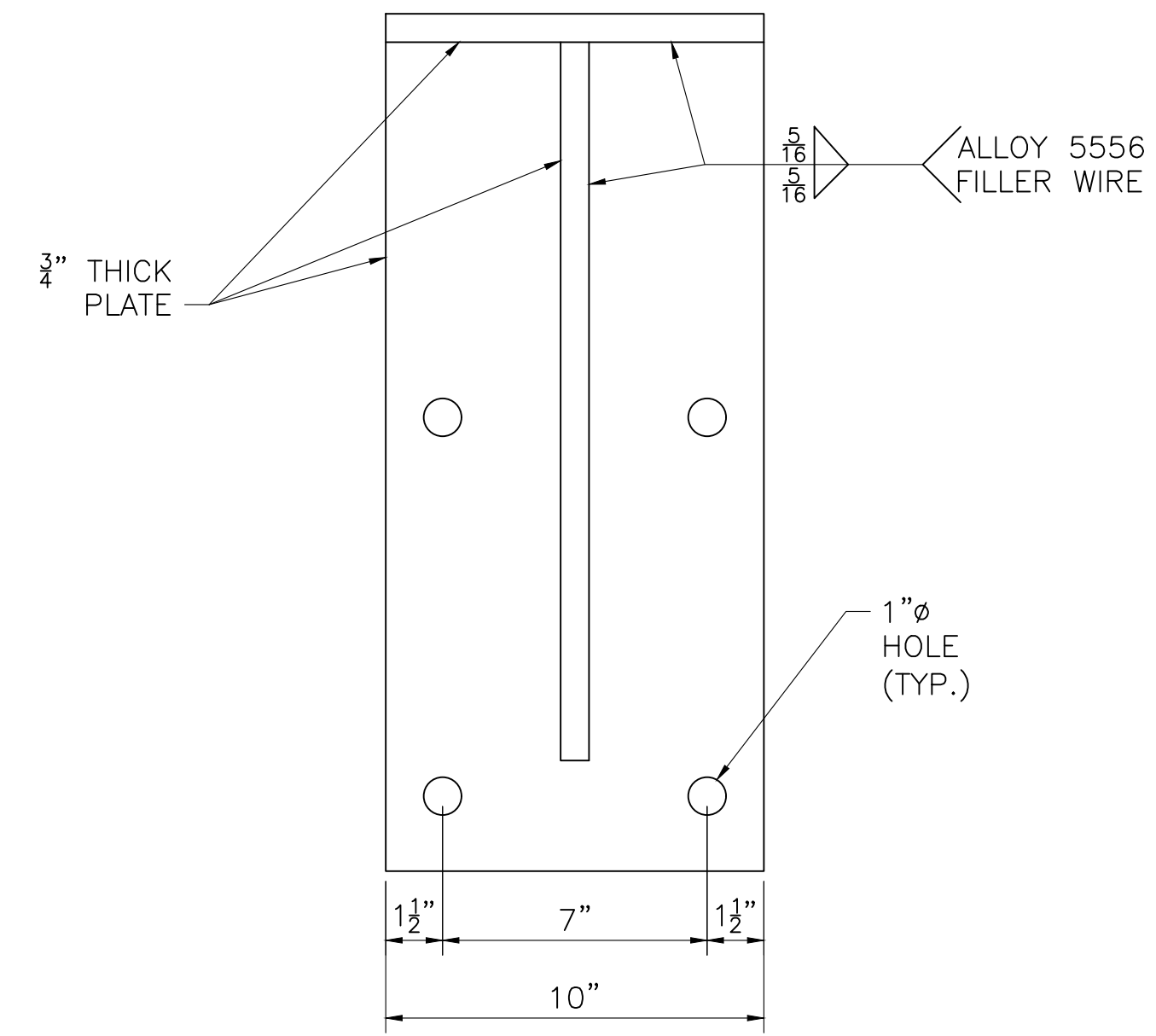
BRIDGE NO. S-24-088

SNOW FENCE CROSS SECTION

SCALE: 1 1/2" = 1'-0"

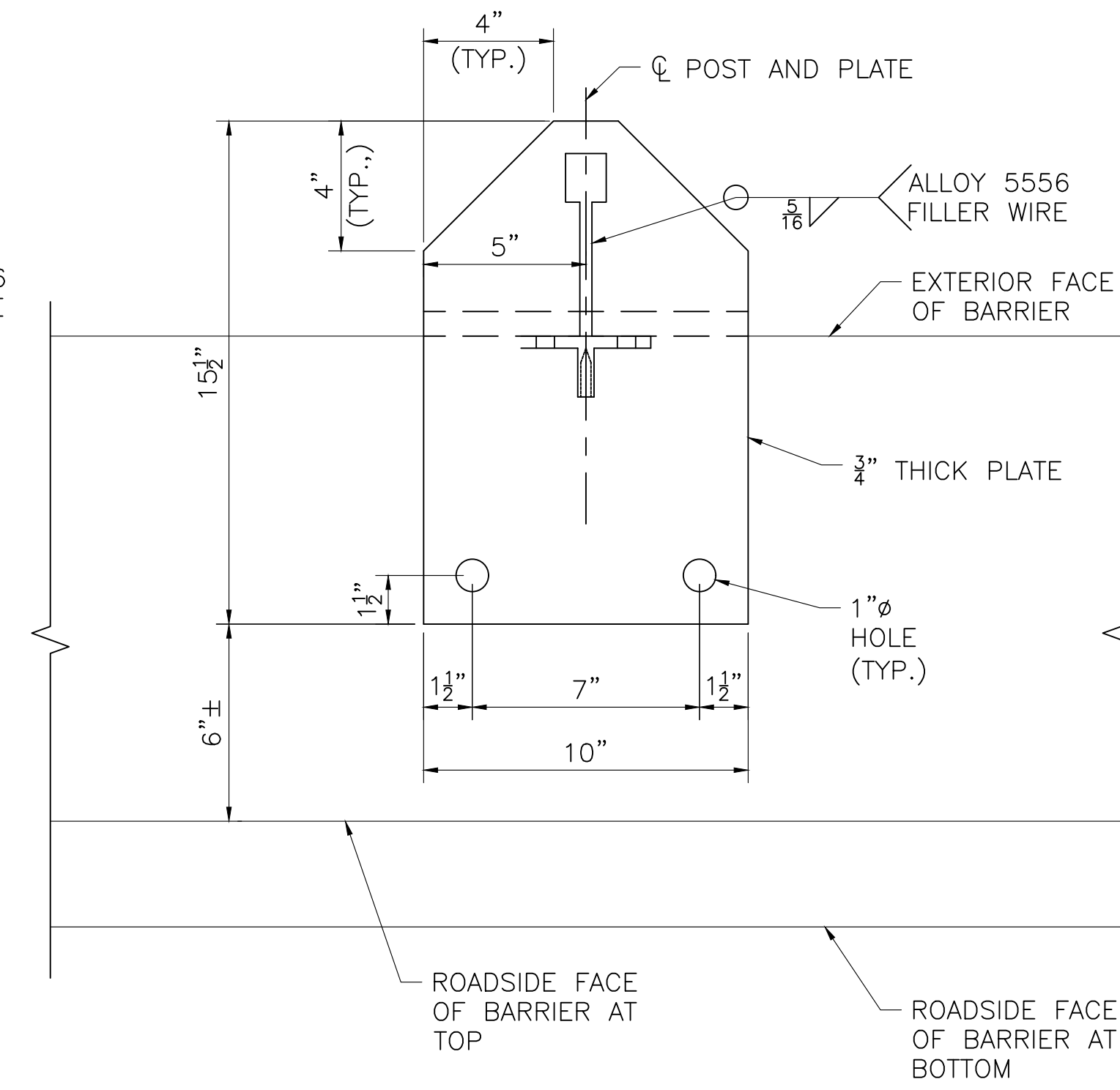
NOTE:

1. ALL REINFORCEMENT NOT SHOWN IN BARRIER CROSS SECTION



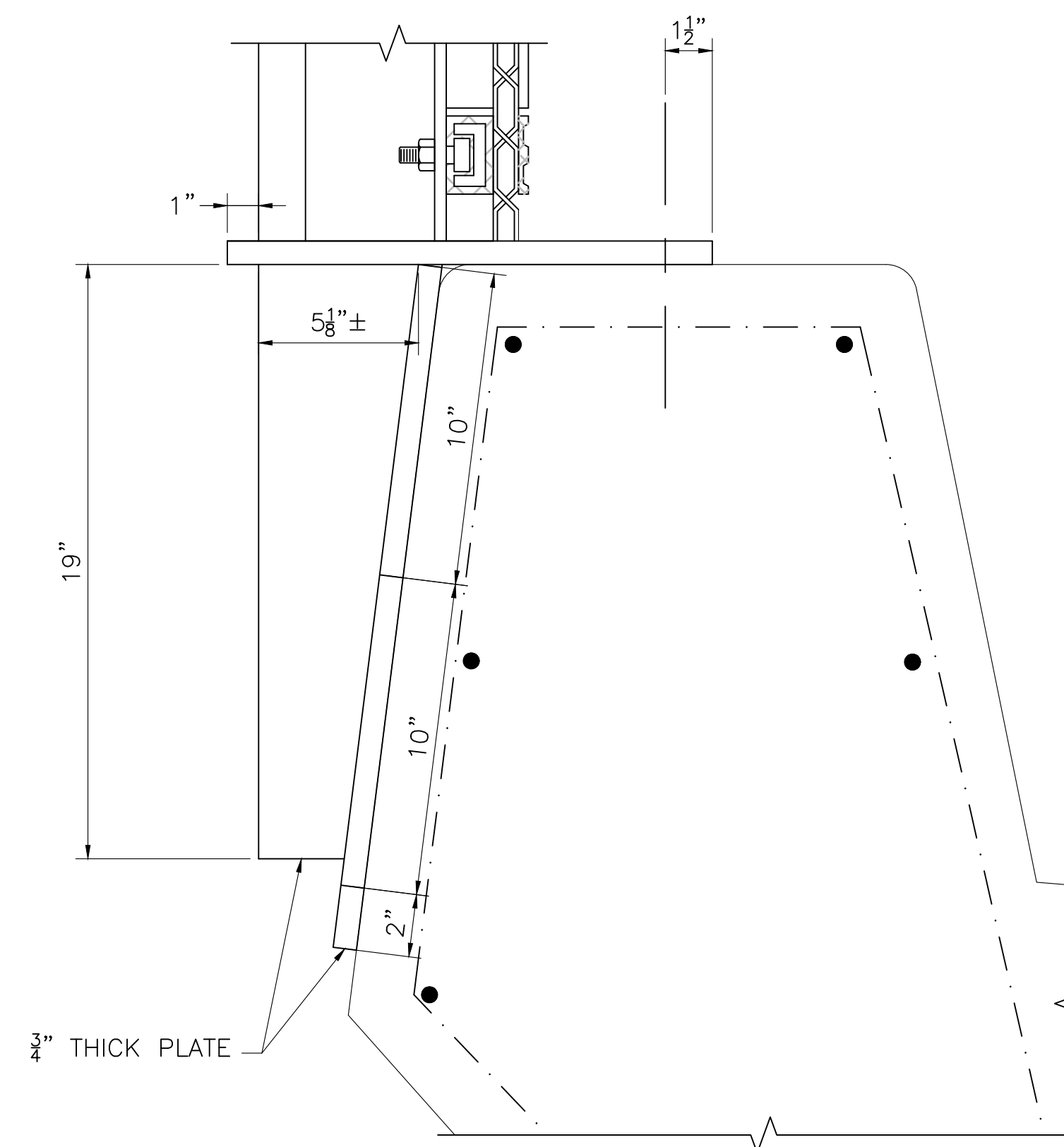
ANCHOR PLATE ELEVATION

SCALE: 3" = 1'-0"



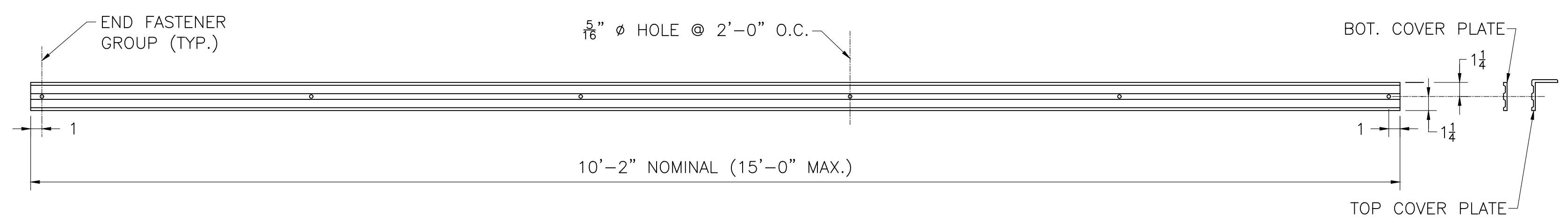
BASE PLATE DETAIL

SCALE: 3" = 1'-0"



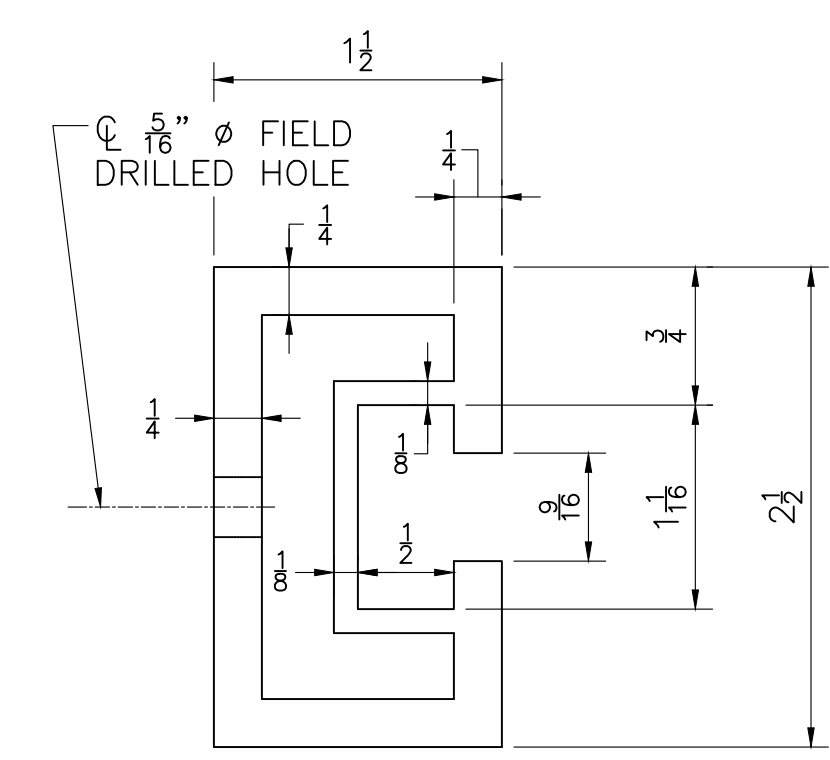
SECTION THROUGH PARAPET

SCALE: 1 1/2" = 1'-0"



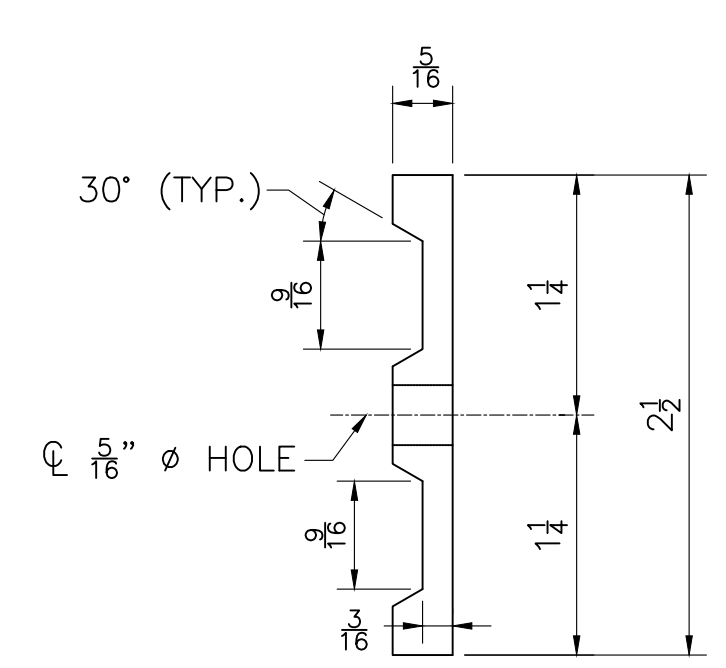
TOP AND BOTTOM COVER PLATE

SCALE: 1 1/2" = 1'-0"



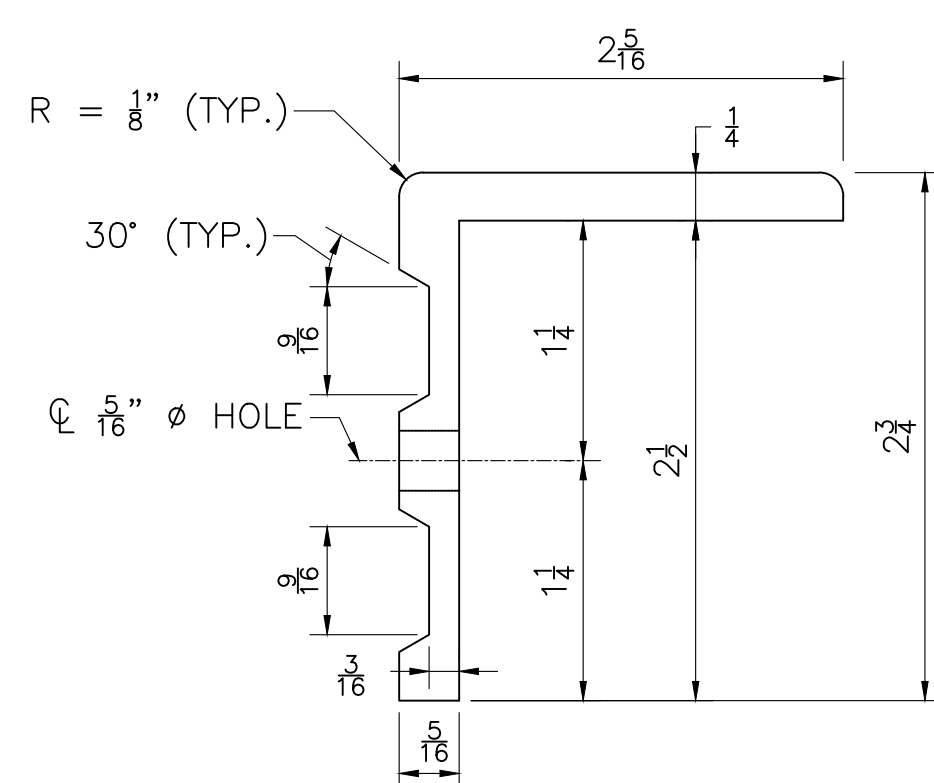
NOTE:
OTHER CONFIGURATIONS OF THE INTERNAL WALLS OF THE RAIL EXTRUSION MAY BE SUBMITTED FOR APPROVAL.

RAIL EXTRUSION
FULL SIZE



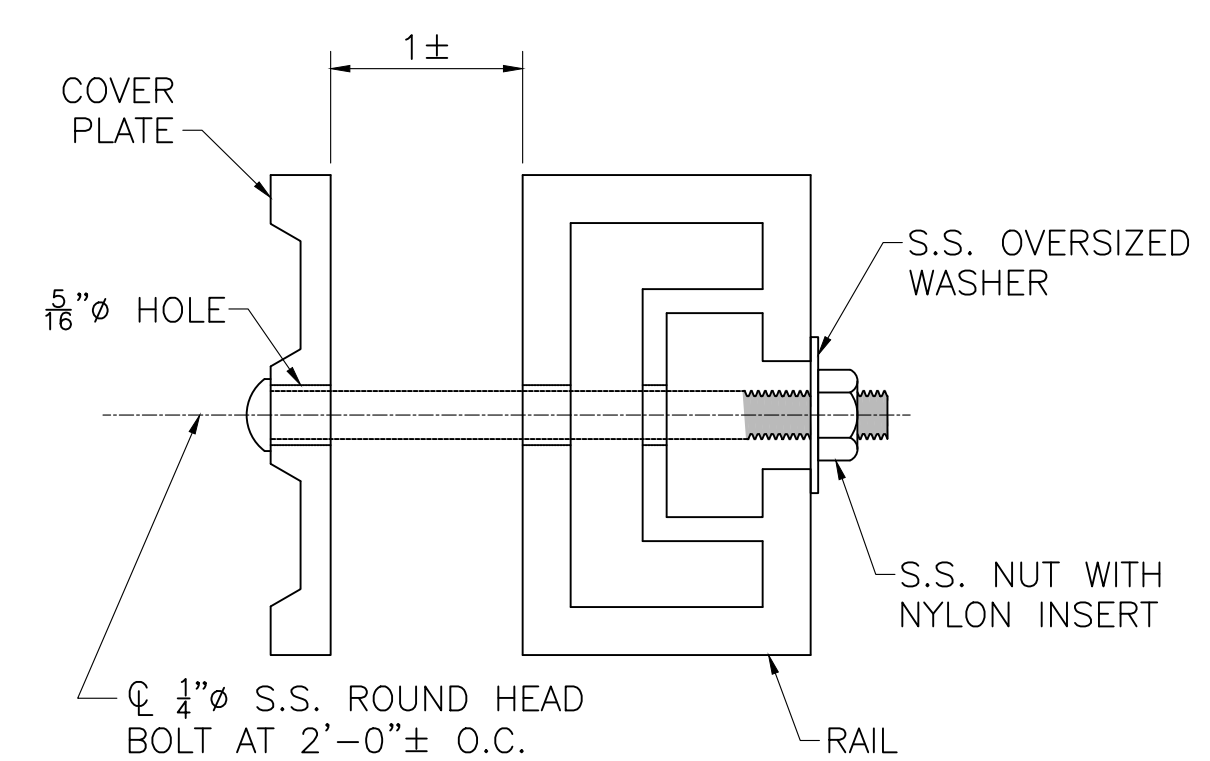
BOTTOM COVER PLATE EXTRUSION

FULL SIZE



TOP COVER PLATE EXTRUSION

FULL SIZE



NOTE:
BOLTS SHALL BE TYPE 304 WITH A DRIVE HEAD TO BE COLORED TO MATCH ANODIZING.

RAIL & COVER PLATE DETAIL

FULL SIZE

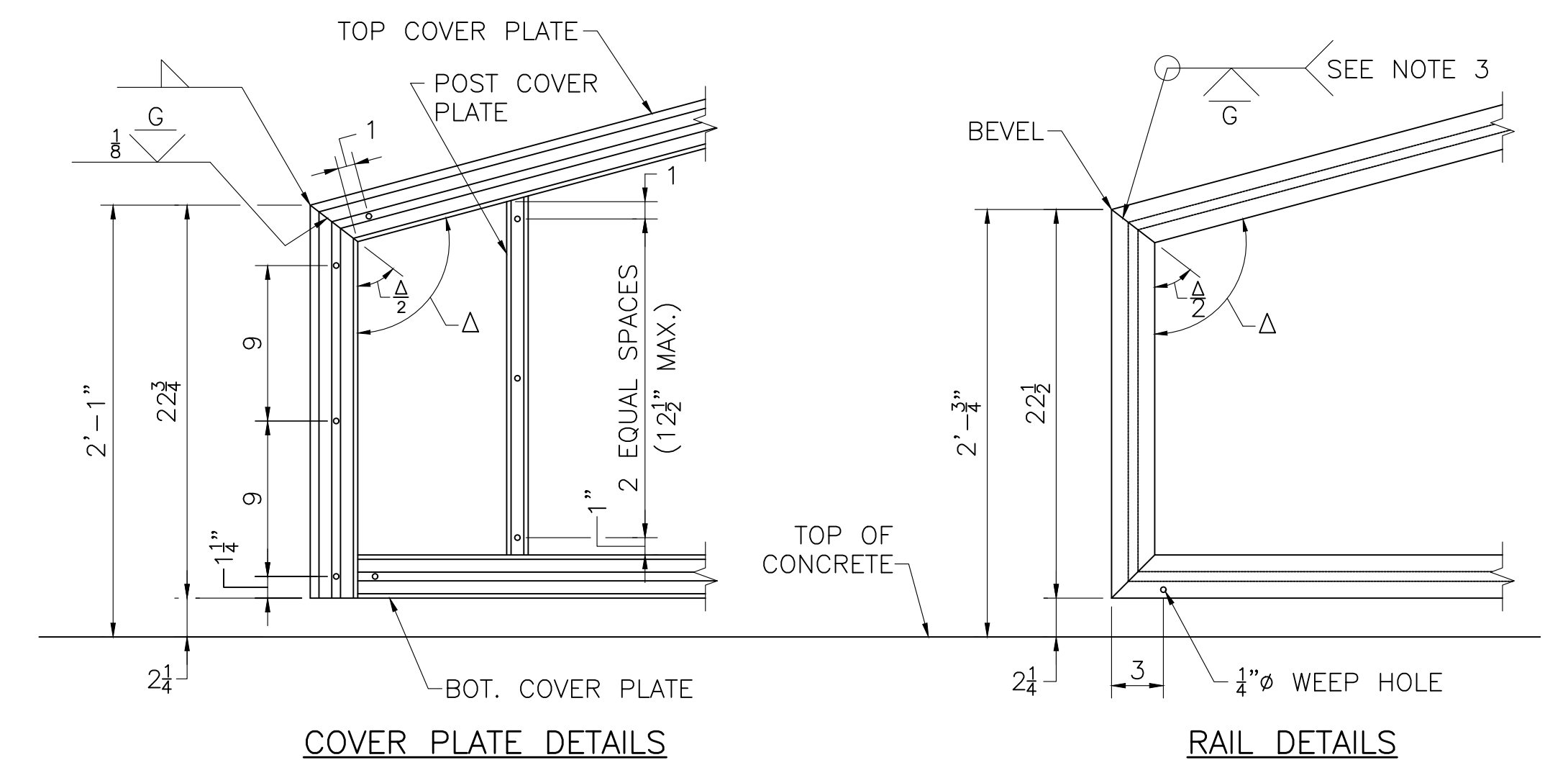
COVER PLATE NOTES:

- COVER PLATES MAY BE CONTINUOUS OVER A RAIL EXPANSION JOINT SPLICE. COVER PLATES SHALL BE FIELD CUT AS REQUIRED TO CLEAR THE EXPANSION JOINT. SEE DETAIL AT EXPANSION JOINT.
- FIELD DRILL 5/16" Ø HOLE 1" FROM THE FIELD CUT END OF A COVER PLATE, UNLESS THERE IS AN EXISTING HOLE WITHIN 6" FROM THE COVER PLATE END.
- FIELD PAINT THE FIELD CUT ENDS OF THE COVER PLATES TO MATCH THE ANODIZED COLOR.

CHICOPEE-SPRINGFIELD INTERSTATE 91 AND INTERSTATE 391

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(IM)-091S(309)X	55	55
PROJECT FILE NO.		612106	

SNOW FENCE DETAILS

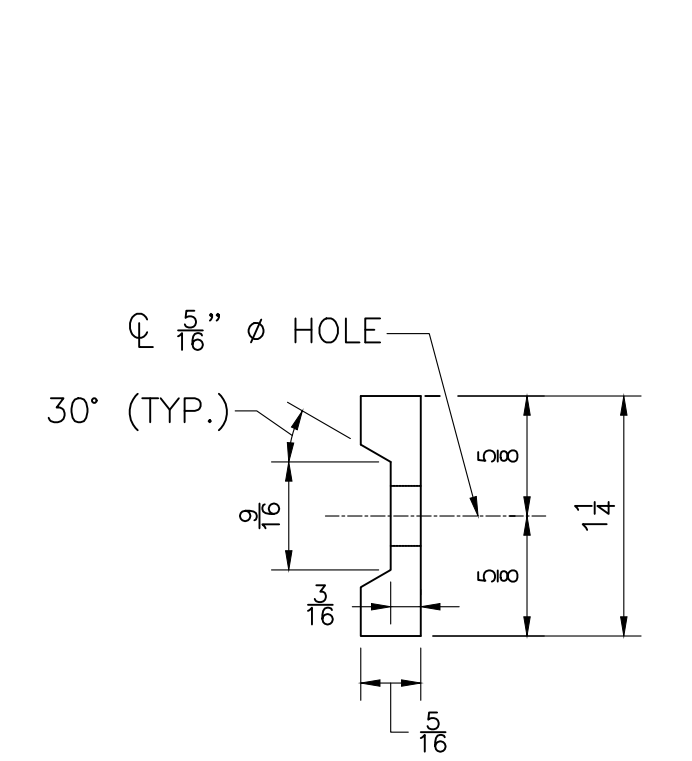


COVER PLATE DETAILS

- NOTES:**
- WELDING OF TOP COVER PLATE AND RAILS OF NON-TAPERED END IS SIMILAR.
 - WELDS AND MITERING TYPICAL FOR ALL ANGLED CORNERS.
 - WELD TYPICAL FOR TOP AND BOTTOM END CORNERS OF RAIL. INTERRUPT WELD AT SLOT IN BACK OF RAIL.

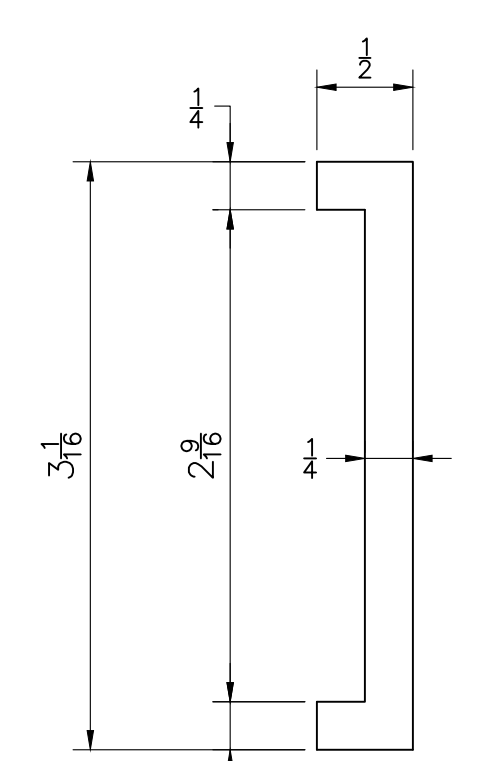
TAPERED END DETAILS

SCALE: 1 1/2" = 1'-0"



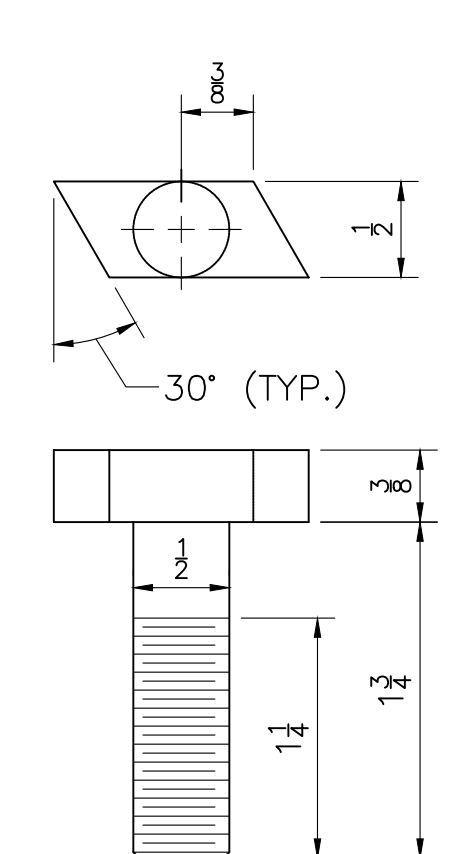
POST COVER PLATE EXTRUSION

FULL SIZE



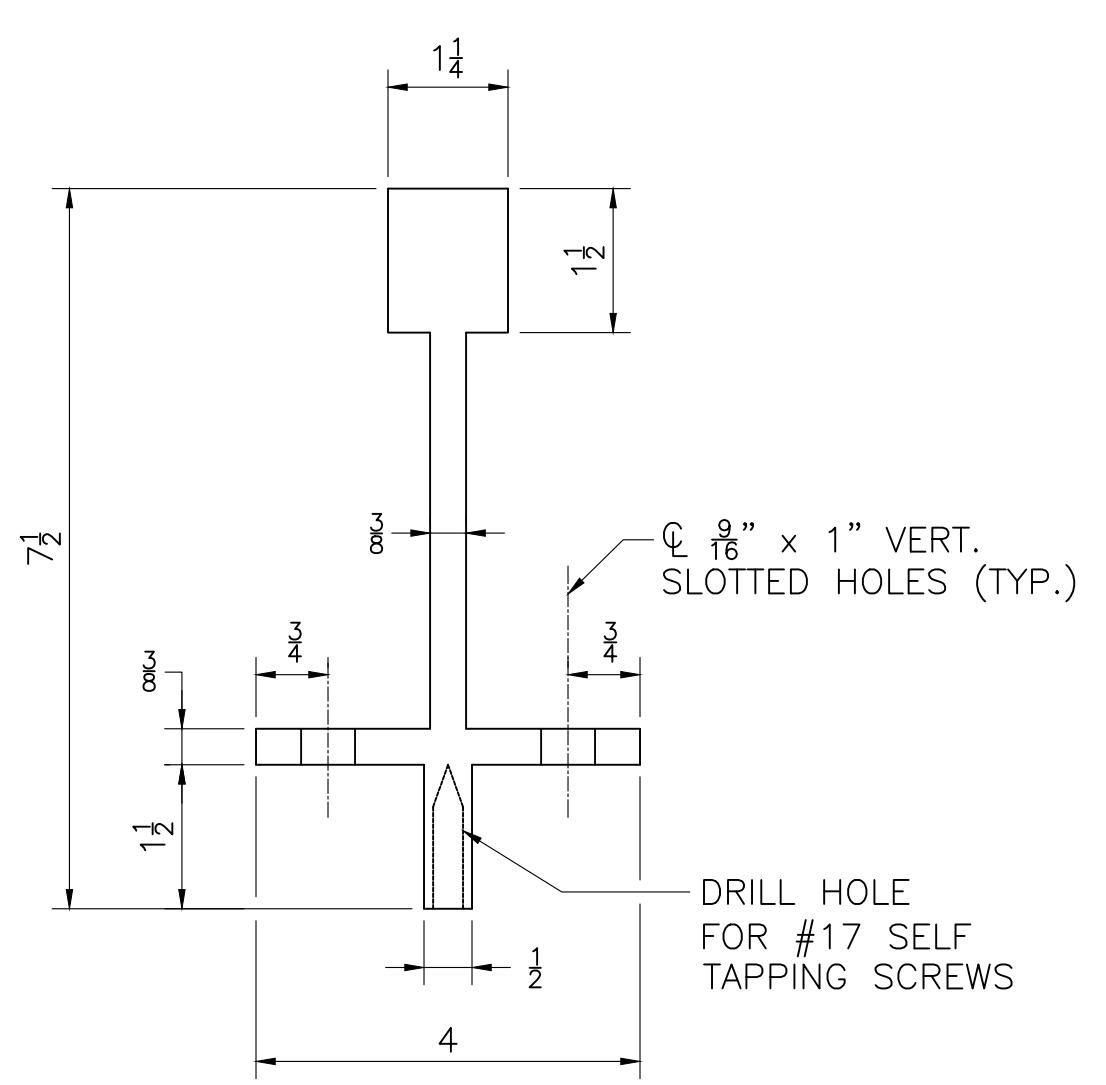
SPLICE PLATE EXTRUSION

FULL SIZE



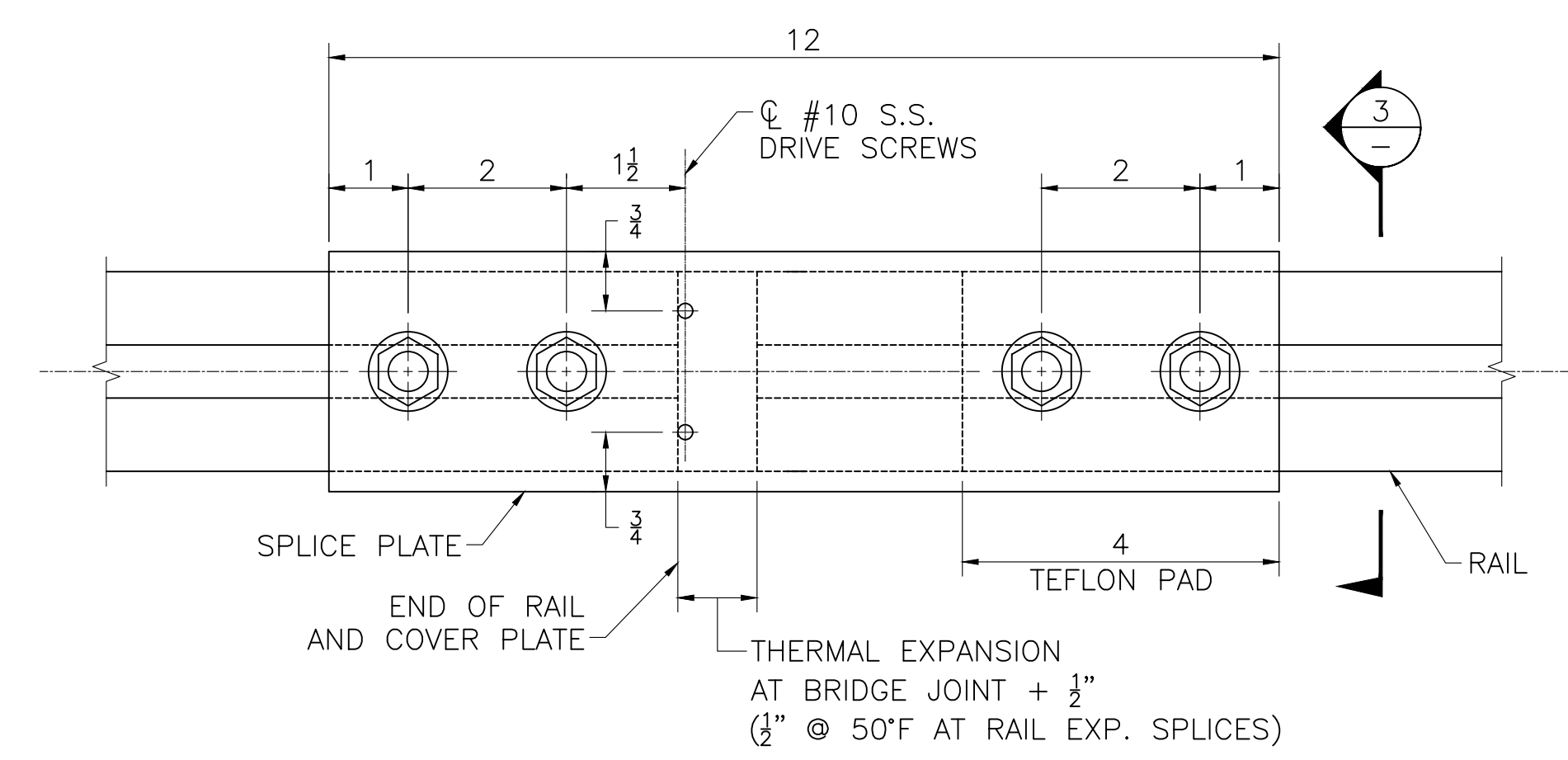
TEE BOLT

FULL SIZE



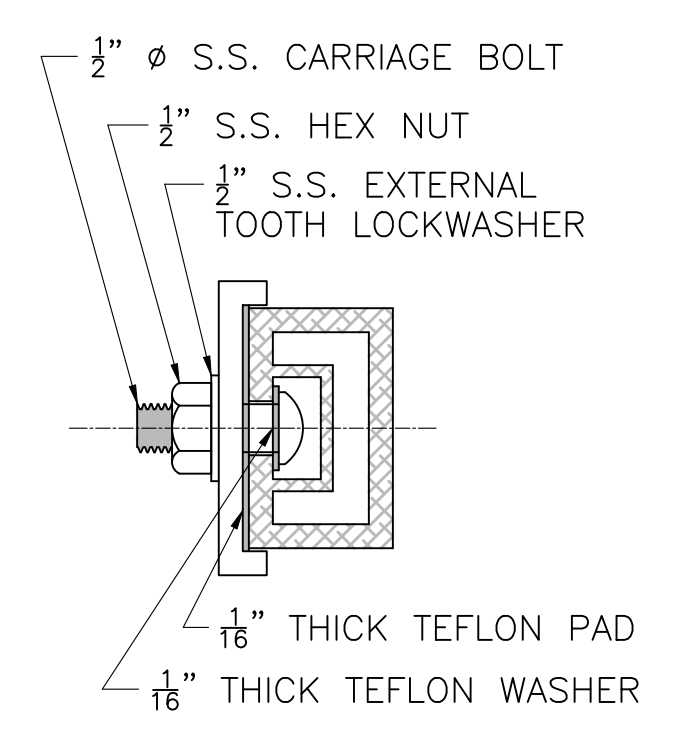
POST EXTRUSION

SCALE: 6" = 1'-0"



DETAIL AT RAIL EXPANSION JOINT SPLICE

SCALE: 6" = 1'-0"



SECTION 3

SCALE: 6" = 1'-0"