MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

PLAN AND PROFILE OF

HARRISON STREET & LAUREL STREET OVER I-290

(BRIDGE NOS. W-44-083 (212) & W-44-093 (213))

IN THE CITY OF

WORCESTER

WORCESTER COUNTY

FEDERAL AID PROJECT NO. STP(BR-OFF)-003S(815)X

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	1	169
PROJECT FILE NO.	609185		

TITLE SHEET & INDEX

609185_HD01 (TITLE SHEET).DWG Plotted on 21-Nov-2024 9:00 AM

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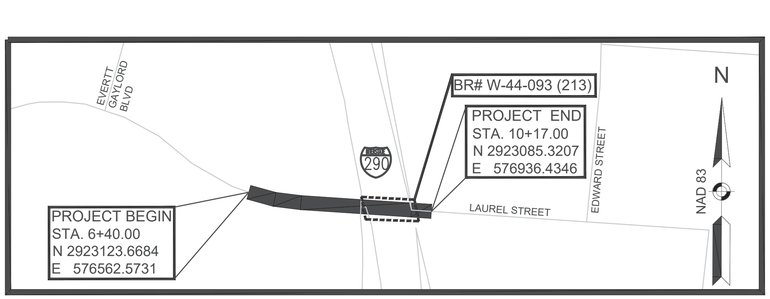

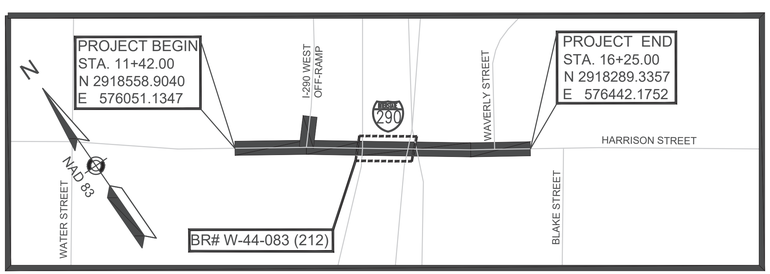

0 100 200 300 400

SCALE: 1" = 100'

LENGTH OF PROJECT (HARRISON STREET) = 483.00 FEET = 0.091 MILES

LENGTH OF PROJECT (LAUREL STREET) = 377.00 FEET = 0.071 MILES

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.

DESIGN DESIGNATION (HARRISON STREET)

DESIGN SPEED	25 MPH
ADT (2021)	9,290
ADT (2041)	10,270
K	8.1%
D	61% EB
T (PEAK HOUR)	1.3%
T (AVERAGE DAY)	1.6%
DHV	830
DDHV	510
FUNCTIONAL CLASSIFICATION	LOCAL

DESIGN DESIGNATION (LAUREL STREET)

DESIGN SPEED	25 MPH
ADT (2021)	2,775
ADT (2041)	3,070
K	10.8%
D	60% WB
T (PEAK HOUR)	1.3%
T (AVERAGE DAY)	2.3%
DHV	330
DDHV	200
FUNCTIONAL CLASSIFICATION	LOCAL

COMMONWEALTH OF MASSACHUSETTS
KO ISHIKURA
CIVIL
No. 36447
PROFESSIONAL ENGINEER

Ko Ishikura
Ko Ishikura 2024.12.27 14:02:48 -05'00'

DATE	DESCRIPTION	REV #

massDOT
Massachusetts Department of Transportation
Highway Division

Green International Affiliates, Inc.
100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

APPROVED

Digitally signed by Carrie Lavallee, P.E.
Date: 2025.01.10 15:25:49 -05'00'

01/10/2025

CHIEF ENGINEER — DATE

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
JB	JB	JERSEY BARRIER
CB	CB	CATCH BASIN
		CATCH BASIN CURB INLET
FP	FP	FLAG POLE
GP	GP	GAS PUMP
MB	MB	MAIL BOX
		POST SQUARE
		POST CIRCULAR
WELL	WELL	WELL
EHH	EHH	ELECTRIC HANDHOLE
		FENCE GATE POST
GG	GG	GAS GATE
BHL #	BHL #	BORING HOLE
MW #	MW #	MONITORING WELL
TP #	TP #	TEST PIT
		HYDRANT
		LIGHT POLE
CO.BD.		COUNTY BOUND
		GPS POINT
C	C	CABLE MANHOLE
D	D	DRAINAGE MANHOLE
E	E	ELECTRIC MANHOLE
G	G	GAS MANHOLE
M	M	MISC MANHOLE
S	S	SEWER MANHOLE
T	T	TELEPHONE MANHOLE
W	W	WATER MANHOLE
MHB	MHB	MASSACHUSETTS HIGHWAY BOUND
MON		MONUMENT
SB		STONE BOUND
TB		TOWN OR CITY BOUND
		TRAVERSE OR TRIANGULATION STATION
TPL or GUY	TPL or GUY	TROLLEY POLE OR GUY POLE
HTP		TRANSMISSION POLE
UFB	UFB	UTILITY POLE W/ FIREBOX
UPDL	UPDL	UTILITY POLE WITH DOUBLE LIGHT
ULT	ULT	UTILITY POLE W / 1 LIGHT
UPL	UPL	UTILITY POLE
		BUSH
SIZE & TYPE		TREE
		STUMP
		SWAMP / MARSH
WG	WG	WATER GATE
PM	PM	PARKING METER
		OVERHEAD CABLE/WIRE
		CURBING
100 99		CONTOURS (ON-THE-GROUND SURVEY DATA)
100 99		CONTOURS (PHOTOGRAMMETRIC DATA)
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)
		BALANCED STONE WALL
		GUARD RAIL - STEEL POSTS
		GUARD RAIL - WOOD POSTS
		GUARD RAIL - DOUBLE FACE - STEEL POSTS
		GUARD RAIL - DOUBLE FACE - WOOD POSTS
		CHAIN LINK OR METAL FENCE
		WOOD FENCE
		SEDIMENT CONTROL BARRIER
		TREE LINE
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		100 FT WETLAND BUFFER
		200 FT RIVERFRONT BUFFER
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT

TRAFFIC SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
1	1	CONTROLLER PHASE ACTUATED
		TRAFFIC SIGNAL HEAD (SIZE AS NOTED)
		WIRE LOOP DETECTOR (6' x 6' TYP UNLESS OTHERWISE SPECIFIED)
		VIDEO DETECTION CAMERA
		MICROWAVE DETECTOR
		PEDESTRIAN PUSH BUTTON, SIGN (DIRECTIONAL ARROW AS SHOWN) AND SADDLE
	*	EMERGENCY PREEMPTION CONFIRMATION STROBE LIGHT
		VEHICULAR SIGNAL HEAD
		VEHICULAR SIGNAL HEAD, OPTICALLY PROGRAMMED
		FLASHING BEACON
		PEDESTRIAN SIGNAL HEAD, (TYPE AS NOTED OR AS SPECIFIED)
RRSG	RRSG	RAILROAD SIGNAL
OR		SIGNAL POST AND BASE (ALPHA-NUMERIC DESIGNATION NOTED)
20'		MAST ARM, SHAFT AND BASE (ARM LENGTH AS NOTED)
		HIGH MAST POLE OR TOWER
		SIGN AND POST
		SIGN AND POST (2 POSTS)
	20'	MAST ARM WITH LUMINAIRE
		OPTICAL PRE-EMPTION DETECTOR
		CONTROL CABINET, GROUND MOUNTED
		CONTROL CABINET, POLE MOUNTED
		FLASHING BEACON CONTROL AND METER PEDESTAL
		LOAD CENTER ASSEMBLY
		PULL BOX 12"x12" (OR AS NOTED)
		ELECTRIC HANDHOLE 12"x24" (OR AS NOTED)
		TRAFFIC SIGNAL CONDUIT

PAVEMENT MARKINGS SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		PAVEMENT ARROW - WHITE
ONLY	ONLY	LEGEND "ONLY" - WHITE
		BIKE LANE MARKINGS AND ARROW
	SL	STOP LINE - 12"
	CW	CROSSWALK
	SWL	SOLID WHITE LINE - 6"
	SYL	SOLID YELLOW LINE - 6"
	BWL	BROKEN WHITE LINE - 6" (10' LINE SEGMENT, 30' GAP)
	BYL	BROKEN YELLOW LINE - 6" (10' LINE SEGMENT , 30' GAP)
	DWL	DOTTED WHITE LINE - 6" (3' LINE SEGMENT, 9' GAP)
	DYL	DOTTED YELLOW LINE - 6" (3" LINE SEGMENT, 9' GAP)
	DWLEx	DOTTED WHITE LINE EXTENSION - 6" (2' LINE SEGMENT, 6' GAP)
	DYLEx	DOTTED YELLOW LINE EXTENSION - 6" (2' LINE SEGMENT, 6' GAP)
	DBWL	DOUBLE WHITE LINE - 6"
	DBYL	DOUBLE YELLOW LINE - 6"

ABBREVIATIONS

GENERAL

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
BO-CHRTR	BY CHARTER
BO-EV	BY EVERSOURCE
BO-NGRID	BY NATIONAL GRID
BO-VZN	BY VERIZON
BOS	BOTTOM OF SLOPE
BR.	BRIDGE
CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CCM	CEMENT CONCRETE MASONRY
CEM CONC	CEMENT CONCRETE
CEM	CEMENT
CI	CURB INLET
CIP	CAST IRON PIPE
CIT	CHANGE IN TYPE
CLF	CHAIN LINK FENCE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CSP	CORRUGATED STEEL PIPE
CSMH	COMBINED SEWER MANHOLE
CO.	COUNTY
CONC	CONCRETE
CONT	CONTINUOUS
CONST	CONSTRUCTION
CR GR	CROWN GRADE
CTE	CONNECT TO EXISTING
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
EMH	ELECTRIC MANHOLE
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

WORCESTER
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MA	STP(BR-OFF)-003S(815)X	2	169
PROJECT FILE NO.	609185		

LEGEND & ABBREVIATIONS

ABBREVIATIONS (cont.)

GENERAL

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
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
RMD	REMODEL
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

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

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STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	3	169
PROJECT FILE NO.	609185		

GENERAL NOTES

GENERAL NOTES

1. THE MINIMUM CLEAR PATH ON THE SIDEWALKS SHALL BE 4'-0" EXCLUDING THE SURFACE OF THE CURB. THE CONTRACTOR SHALL MAINTAIN COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT AND MASSACHUSETTS ARCHITECTURAL ACCESS BOARD AT ALL OBSTRUCTIONS.
2. GRANITE CURB SHALL TRANSITION AT THE PROJECT LIMITS TO MATCH EXISTING CURB REVEAL.
3. THE CONTRACTOR SHALL RETAIN ALL CURBS, FENCES, WALLS, TREES, SHRUBS, POSTS, LANDSCAPE FEATURES, AND OTHER MISCELLANEOUS ITEMS WITHIN ABUTTING PROPERTIES, UNLESS OTHERWISE NOTED. WHEN RETAINING THOSE ITEMS IS NOT PRACTICAL IN THE OPINION OF THE ENGINEER, THE CONTRACTOR SHALL REMOVE, STOCKPILE, PROTECT AND RESET THE ITEMS. THE CONTRACTOR SHALL REPLACE ITEMS DAMAGED DURING REMOVAL, STOCKPILING, OR RESETTING DUE TO NEGLIGENCE, CARELESSNESS, OR MISHANDLING WITH EQUIVALENT NEW ITEMS AT NO COST TO THE OWNER. ITEMS NOTED AS TO BE REMOVED AND STACKED SHALL BE COORDINATED WITH THE RESPECTIVE OWNER.
4. ALL TREES WITHIN THE SLOPE LIMIT SHALL BE RETAINED AND PROTECTED UNLESS OTHERWISE NOTED.
5. CONTRACTOR SHALL PROTECT ALL PROPERTY MARKERS OF ABUTTERS.
6. TREATMENT OF SLOPE AREAS SHALL BE REPLACED IN KIND UNLESS OTHERWISE NOTED.
7. SITE FEATURES OUTSIDE PROPOSED SAWCUT LINES AND PROPOSED LIMITS OF WORK SHALL BE RETAINED UNLESS OTHERWISE NOTED. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
8. THE TERM "PROPOSED" MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS. RE-USE OF EXISTING MATERIALS IS IDENTIFIED AS "REMOVE AND RESET" (R&R).
9. THE CONTRACTOR SHALL REUSE EXISTING MATERIALS IDENTIFIED AS R&R UNLESS THEY ARE DEEMED UNSUITABLE BY THE ENGINEER.
10. ALL PROPOSED RELOCATED UTILITY POLES, HYDRANTS, AND OTHER ABOVE GROUND STRUCTURES TO BE LOCATED WITHIN SIDEWALK AREAS SHALL BE LOCATED SO AS TO CONFORM TO THE ARCHITECTURAL ACCESS BOARD (AAB), AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG), AND PUBLIC RIGHT-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG) CLEARANCE REQUIREMENTS.
11. EXISTING GRAVEL BORROW DETERMINED TO BE SUITABLE BY THE ENGINEER AND MEETING THE REQUIREMENTS OF THE SPECIFICATIONS SHALL REMAIN.
12. CONTRACTOR SHALL MAINTAIN ALL EXISTING UTILITY SERVICES AND HIGHWAY LIGHTING THROUGHOUT CONSTRUCTION.
13. ALL EXISTING CURB CORNERS AND CURB INLETS SHALL BE REMOVED AND DISCARDED AND QUANTIFIED UNDER ITEM 594.
14. TREE TRIMMING TO COMPLY WITH ADA REQUIREMENTS AND EXTEND TO THE BACK OF THE SIDEWALK.
15. THE CONTRACTOR SHALL CONTROL STORMWATER ON SITE AND PREVENT STORMWATER RUNOFF FROM EXITING THE PROJECT LIMITS. THE CONTRACTOR SHALL INSTALL STORMWATER CONTROL MEASURES TO PREVENT RUNOFF FROM ENTERING I-290 BELOW THE BRIDGE AND NO DISCHARGE SHALL BE DIRECTED TO I-290.

UTILITY NOTES:

1. THE LOCATION OF ALL UNDERGROUND UTILITIES ARE SHOWN APPROXIMATE AND WERE COMPILED USING FIELD SURVEY INFORMATION AND AVAILABLE RECORD INFORMATION. THE LOCATION OF EXISTING PIPES OR OTHER UNDERGROUND STRUCTURES OR PROPERTY LINES ARE NOT WARRANTED TO BE EXACT, NOR IS IT WARRANTED THAT ALL UNDERGROUND PIPES OR STRUCTURES ARE SHOWN. THE CONTRACTOR SHALL CALL "DIG SAFE" (1-888-344-7233) 72 HOURS (EXCLUDING SATURDAYS, SUNDAYS AND HOLIDAYS) PRIOR TO ANY EXCAVATION TO OBTAIN ACCURATE UTILITY LOCATIONS.
2. RECORD UTILITY INFORMATION FROM THE VARIOUS UTILITY COMPANIES AND PUBLIC AGENCIES ARE APPROXIMATE ONLY AND ACTUAL LOCATIONS MUST BE DETERMINED IN THE FIELD.
3. THE COMPLETION AND ACCURACY OF LATERAL UTILITY SERVICES IS NOT GUARANTEED AND MUST BE VERIFIED BY THE CONTRACTOR IN THE FIELD.
4. ALL UTILITY COMPANIES, PUBLIC AND PRIVATE MUST BE NOTIFIED, INCLUDING THOSE IN CONTROL OF UTILITIES NOT SHOWN ON THIS PLAN, (SEE CHAPTER 370, ACTS OF 1963, MASSACHUSETTS) PRIOR TO DESIGNING, EXCAVATING, BLASTING, INSTALLING, BACKFILLING, GRADING, PAVEMENT RESTORING OR REPAVING. CONTRACTOR SHALL CONTACT SHELL OIL COMPANY PRIOR TO WORKING IN THE VICINITY OF ALGONQUIN TRAIL.
5. SUBSURFACE UTILITY LOCATIONS HAVE BEEN PLOTTED TO MEET UTILITY QUALITY LEVEL "C" AS DESCRIBED IN ASCE STANDARD 38-02 AND SUMMARIZED ON THIS SHEET. THE UNDERGROUND UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS BASED ON ABOVE-GROUND FIELD OBSERVATION AND EXISTING RECORD INFORMATION RECEIVED FROM UTILITY STAKE-HOLDERS.
6. INVERTS SHOWN ON PLAN ARE NOT GUARANTEED TO BE ACCURATE. DUE TO THE LIMITATIONS OF FIELD OBSERVATION AND SURVEY TECHNIQUES THE INVERTS ARE SHOWN AS APPROXIMATE ONLY AND SHALL NOT BE WARRANTED TO BE CORRECT. ADDITIONAL FIELD INVESTIGATION IS NECESSARY WHERE ACCURATE MEASUREMENTS ARE REQUIRED FOR DESIGN OF CRITICAL AREAS.
7. WHERE AN EXISTING UTILITY IS FOUND TO BE IN CONFLICT WITH THE PROPOSED WORK, THE CONTRACTOR SHALL ACCURATELY DETERMINE THE LOCATION, ELEVATION AND SIZE OF THE UTILITY AND FURNISH THE INFORMATION TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
8. THE CONTRACTOR SHALL EXERCISE EXTREME CARE WHEN EXCAVATING NEAR AND BACKFILLING IN THE VICINITY OF EXISTING UTILITIES. THE CONTRACTOR SHALL USE HAND EXCAVATION WHERE APPROPRIATE TO PROTECT EXISTING UTILITIES.
9. THE CONTRACTOR SHALL MAINTAIN ALL EXISTING UTILITIES IN SERVICE AT ALL TIMES UNLESS NOTED ON THE PLANS OR APPROVED BY THE ENGINEER.
10. THE CONTRACTOR SHALL SUPPORT AND PROTECT EXISTING UTILITIES IN AND AROUND EXCAVATIONS, AND IN PARTICULAR, WHEN CROSSING OVER OR UNDER ANY DUCT OR PIPE. ALL PROTECTIVE MEASURES SHALL BE CONSIDERED INCIDENTAL WORK.
11. IF THE CONTRACTOR DAMAGES ANY UTILITY SYSTEM, HE OR SHE SHALL IMMEDIATELY NOTIFY THE RESPECTIVE UTILITY COMPANY AND SHALL REPAIR/REPLACE THE AFFECTED SYSTEM AT HIS OR HER OWN EXPENSE.
12. THE CONTRACTOR SHALL COORDINATE WITH PRIVATE UTILITY COMPANIES AND MAKE ARRANGEMENTS FOR ADJUSTMENTS, ALTERATIONS AND REPLACEMENT OF PRIVATE UTILITIES.
13. BELOW GROUND STRUCTURES ARE SHOWN SYMBOLIC UNLESS DIMENSIONED.
14. THE EXISTING CONDITIONS PLAN IS TO BE USED FOR THE SPECIFIED PROJECT ONLY AND IS NOT WARRANTED TO BE COMPLETE FOR ANY OTHER FUTURE PROJECTS.

SUMMARY OF UTILITY MAPPING QUALITY LEVELS:

THE FOLLOWING IS A SUMMARY OF THE SURVEY MAPPING LEVELS FOR UTILITIES AS DESCRIBED IN ASCE STANDARD 38-02, "STANDARD GUIDELINE FOR THE DEPICTION OF EXISTING SUBSURFACE UTILITY DATA". THESE GUIDELINES ARE MORE FULLY DESCRIBED IN THE ASCE STANDARD.

UTILITY QUALITY LEVEL A:
PRECISE HORIZONTAL AND VERTICAL LOCATION OF UTILITIES OBTAINED BY THE ACTUAL EXPOSURE (OR VERIFICATION OF PREVIOUSLY EXPOSED AND SURVEYED UTILITIES) AND SUBSEQUENT MEASUREMENT OF SUBSURFACE UTILITIES, USUALLY AT A SPECIFIC POINT. MINIMALLY INTRUSIVE EXCAVATION EQUIPMENT IS TYPICALLY USED TO MINIMIZE THE POTENTIAL FOR UTILITY DAMAGE. A PRECISE HORIZONTAL AND VERTICAL LOCATION, AS WELL AS OTHER UTILITY ATTRIBUTES, IS SHOWN ON PLAN DOCUMENTS. ACCURACY IS TYPICALLY SET TO 15-MM VERTICAL AND TO APPLICABLE HORIZONTAL SURVEY AND MAPPING ACCURACY AS DEFINED OR EXPECTED BY THE PROJECT OWNER.

UTILITY QUALITY LEVEL B:
INFORMATION OBTAINED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHODS TO DETERMINE THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF SUBSURFACE UTILITIES. QUALITY LEVEL B DATA SHOULD BE REPRODUCIBLE BY SURFACE GEOPHYSICS AT ANY POINT OF THEIR DEPICTION. THIS INFORMATION IS SURVEYED TO APPLICABLE TOLERANCES DEFINED BY THE PROJECT AND REDUCED ONTO PLAN DOCUMENTS.

UTILITY QUALITY LEVEL C:
INFORMATION OBTAINED BY SURVEYING AND PLOTTING VISIBLE ABOVE-GROUND UTILITY FEATURES AND BY USING PROFESSIONAL JUDGMENT IN CORRELATING THIS INFORMATION TO QUALITY LEVEL D INFORMATION.

UTILITY QUALITY LEVEL D:
INFORMATION DERIVED FROM EXISTING RECORDS OR ORAL RECOLLECTIONS.

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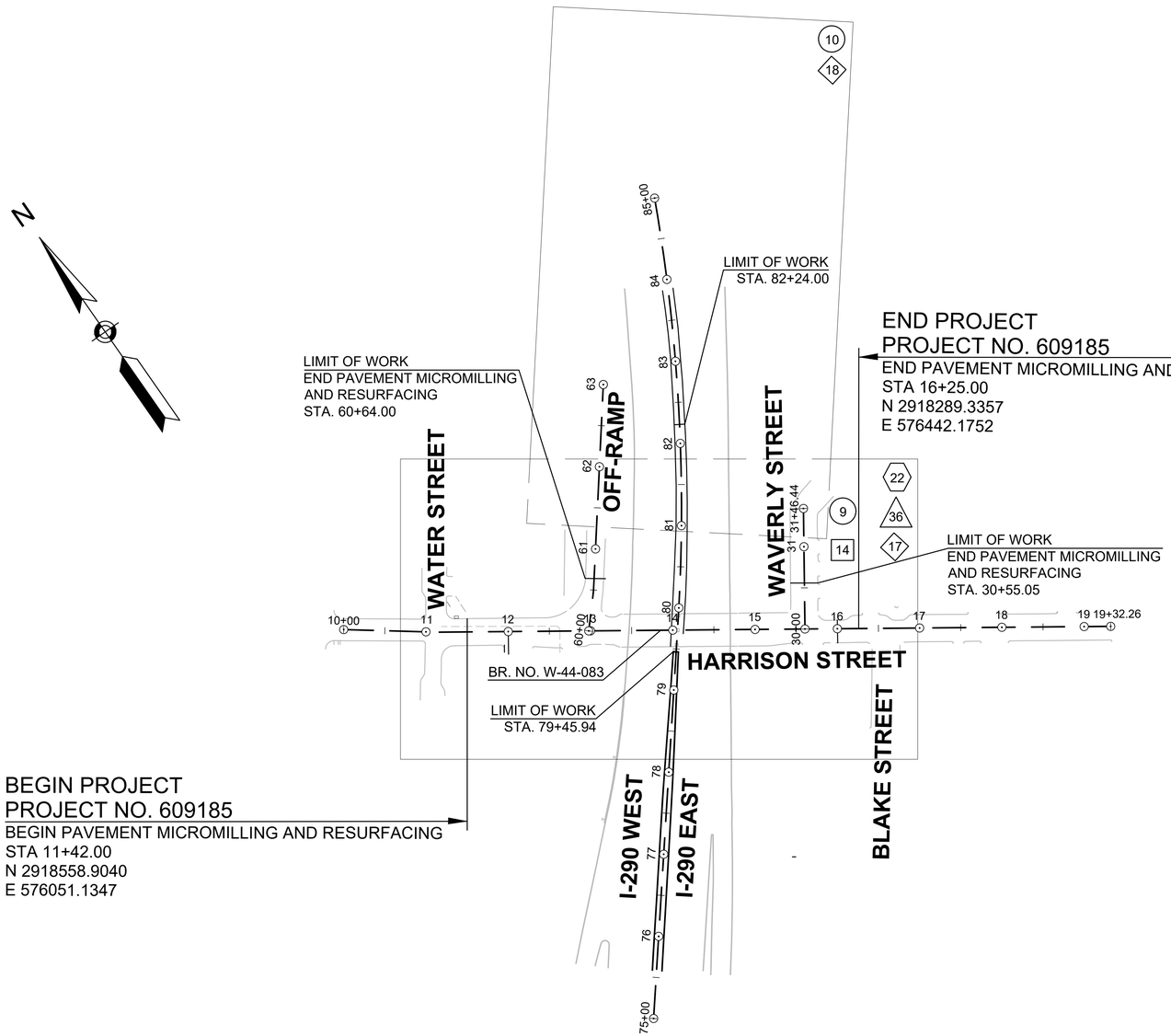
PROJECT FILE NO.	609185		

KEY PLAN - 1



LEGEND

- (X) CONSTRUCTION PLANS
- [X] CONSTRUCTION PROFILES
- ◇X◇ CURB TIE & GRADING PLANS
- ⬡X⬡ DRAINAGE & UTILITY PLANS
- △X△ PAVEMENT MARKING & SIGNING PLANS

0 80 200 300

SCALE: 1" = 80'

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

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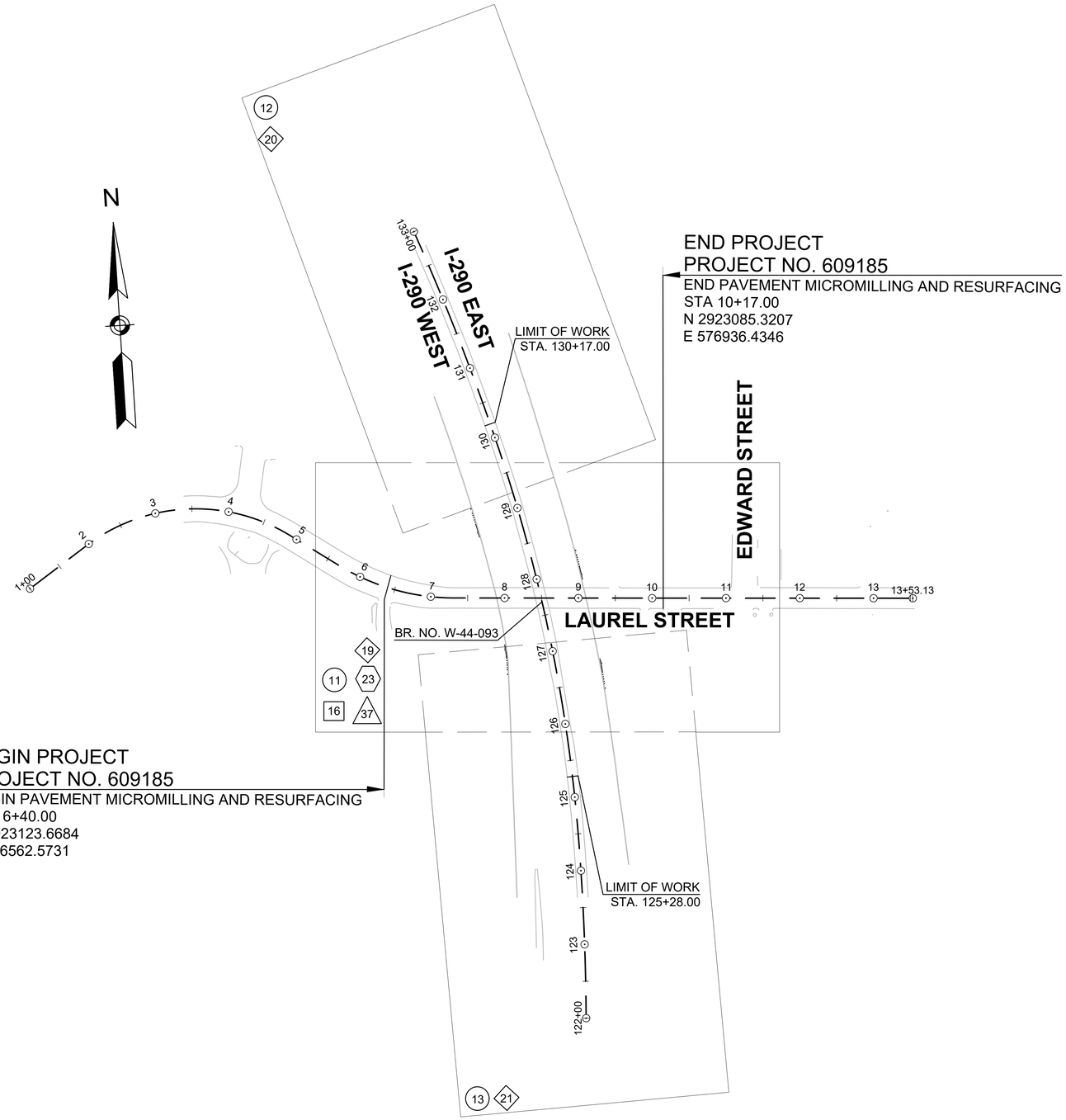
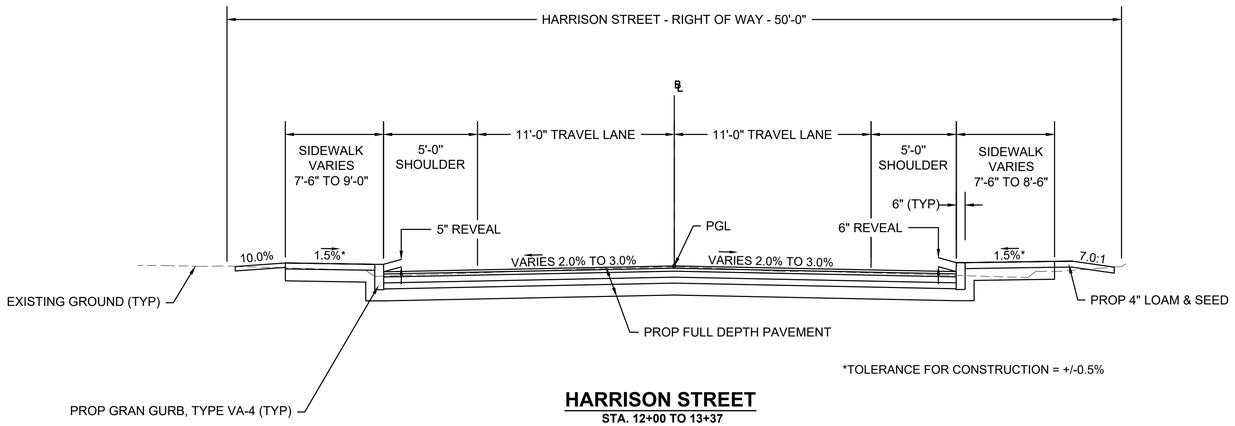
KEY PLAN - 2



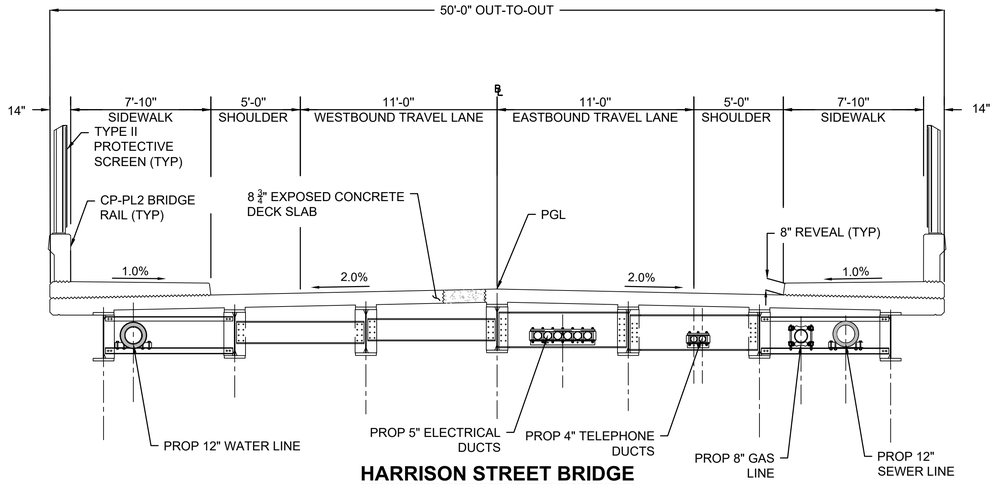
LEGEND

- (X) CONSTRUCTION PLANS
- [X] CONSTRUCTION PROFILES
- ◇X◇ CURB TIE & GRADING PLANS
- ⬡X⬡ DRAINAGE & UTILITY PLANS
- △X△ PAVEMENT MARKING & SIGNING PLANS



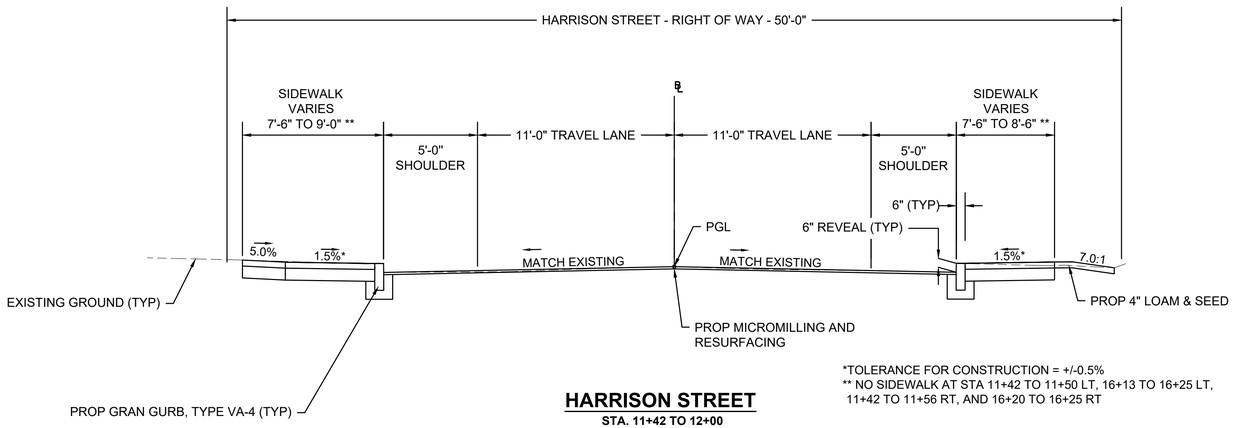
HARRISON STREET

STA. 12+00 TO 13+37
STA. 14+81 TO 16+05
SCALE: 1"=4'



HARRISON STREET BRIDGE

STA. 13+37 TO 14+81
SCALE: 1"=4'



*TOLERANCE FOR CONSTRUCTION = +/-0.5%
** NO SIDEWALK AT STA 11+42 TO 11+50 LT, 16+13 TO 16+25 LT, 11+42 TO 11+56 RT, AND 16+20 TO 16+25 RT

HARRISON STREET

STA. 11+42 TO 12+00
STA. 16+05 TO 16+25
SCALE: 1"=4'

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	6	169
PROJECT FILE NO.	609185		

TYPICAL SECTIONS - 1

PAVEMENT NOTES

PROPOSED FULL DEPTH PAVEMENT

SURFACE:	1.5" SUPERPAVE SURFACE COURSE - 9.5 (SSC-9.5) OVER ASPHALT EMULSION FOR TACK COAT OVER
INTERMEDIATE:	2" SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC-12.5) OVER ASPHALT EMULSION FOR TACK COAT OVER
BASE:	4" SUPERPAVE BASE COURSE - 37.5 (SBC-37.5) OVER
SUB-BASE:	4" DENSE GRADED CRUSHED STONE FOR SUB-BASE OVER 8" GRAVEL BORROW (TYPE B)

PROPOSED FULL DEPTH RECONSTRUCTION LESS THAN 4 FEET WIDE I-290

SURFACE COURSE:	1.5" SUPERPAVE SURFACE COURSE - 9.5 (SSC-9.5) OVER ASPHALT EMULSION FOR TACK COAT OVER
INTERMEDIATE COURSE:	2.5" SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC-12.5) OVER ASPHALT EMULSION FOR TACK COAT OVER
BASE COURSE:	6" HIGH EARLY STRENGTH CEMENT CONCRETE BASE COURSE OVER
SUB-BASE:	8" GRAVEL BORROW (TYPE B)

PROPOSED MEDIAN WITH BARRIER FULL DEPTH RECONSTRUCTION I-290

FRICTION COURSE:	1.5" ASPHALT RUBBER GAP GRADED - 12.5 (ARGG-12.5) OVER
SURFACE COURSE:	2.5" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5) OVER ASPHALT EMULSION FOR TACK COAT OVER
BASE COURSE:	4.25" SUPERPAVE BASE COURSE - 37.5 (SBC-37.5) OVER
SUB-BASE:	4" DENSE GRADED CRUSHED STONE FOR SUB-BASE OVER 8" GRAVEL BORROW (TYPE B)

PROPOSED MEDIAN WITH GUARDRAIL FULL DEPTH CONSTRUCTION I-290

SURFACE COURSE:	1.5" SUPERPAVE SURFACE COURSE - 9.5 (SSC-9.5) OVER ASPHALT EMULSION FOR TACK COAT OVER
INTERMEDIATE COURSE:	2.5" SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC-12.5) OVER ASPHALT EMULSION FOR TACK COAT OVER
BASE COURSE:	8" GRAVEL BORROW (TYPE B)

PROPOSED MICROMILLING & RESURFACING

SURFACE:	1.5" SUPERPAVE SURFACE COURSE - 9.5 (SSC-9.5) OVER ASPHALT EMULSION FOR TACK COAT OVER
MICROMILLING:	1.5" PAVEMENT MICROMILLING

PROPOSED CEMENT CONCRETE SIDEWALK/ PEDESTRIAN CURB RAMPS/ PAVEMENT BEHIND CONCRETE BARRIERS AT ABUTMENTS

SURFACE:	4" CEMENT CONCRETE (4000 PSI, 3/4", 610 CEMENT CONCRETE) OVER
FOUNDATION:	8" GRAVEL BORROW (TYPE B)

PROPOSED CEMENT CONCRETE SIDEWALK AT DRIVEWAYS

SURFACE:	6" CEMENT CONCRETE (4000 PSI, 3/4", 610 CEMENT CONCRETE) OVER
FOUNDATION:	8" GRAVEL BORROW (TYPE B)

PROPOSED HMA DRIVEWAY

SURFACE:	1.5" SUPERPAVE SURFACE COURSE - 9.5 (SSC-9.5) OVER 2.5" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5) OVER
SUB-BASE:	8" GRAVEL BORROW (TYPE B)

PROPOSED HMA SIDEWALK

SURFACE:	1.25" SUPERPAVE SURFACE COURSE - 9.5 (SSC-9.5) OVER 1.75" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5) OVER
SUB-BASE:	8" GRAVEL BORROW (TYPE B)

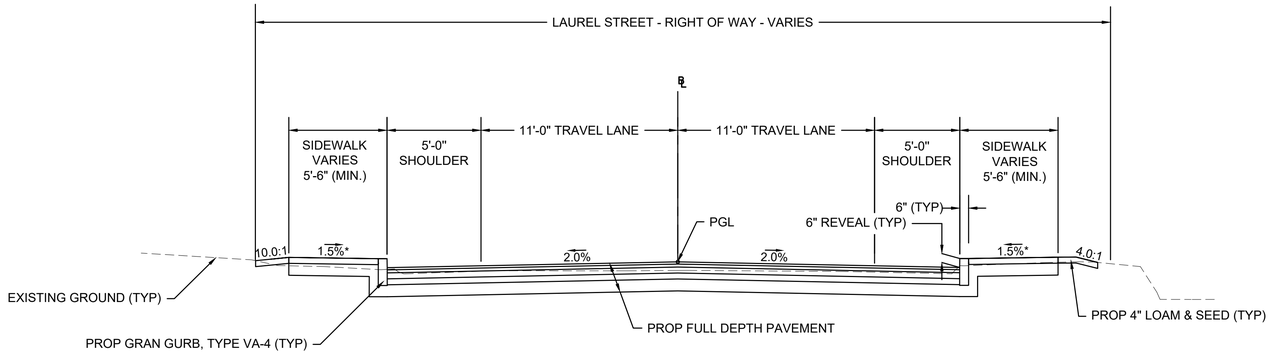
NOTES:

1. TACK COAT SHALL BE APPLIED BETWEEN NEW PAVEMENT LAYERS AT A RATE OF 0.06 TO 0.08 GALLONS PER SQUARE YARD AND ON MILLED SURFACES AT A RATE OF 0.07 TO 0.09 GALLONS PER SQUARE YARD.
2. THE SURFACE COURSE FOR EACH OF THE PAVEMENT SECTIONS SHALL BE PLACED IN ONE CONTINUOUS LAYER UNLESS OTHERWISE SPECIFIED.
3. FOR DRIVEWAY AND PEDESTRIAN CURB RAMP LOCATIONS AND LIMITS SEE CONSTRUCTION PLANS.
4. THE METHOD OF ROUNDING CUT AND FILL SLOPES FOR THE PROPOSED ROADWAY SHALL CONFORM TO MASSDOT STANDARD DETAIL E 103.1.0
5. HMA JOINT SEALANT SHALL BE APPLIED TO ALL PAVEMENT JOINTS AND ALONG ADJOINING EDGES SUCH

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	7	169
PROJECT FILE NO.	609185		

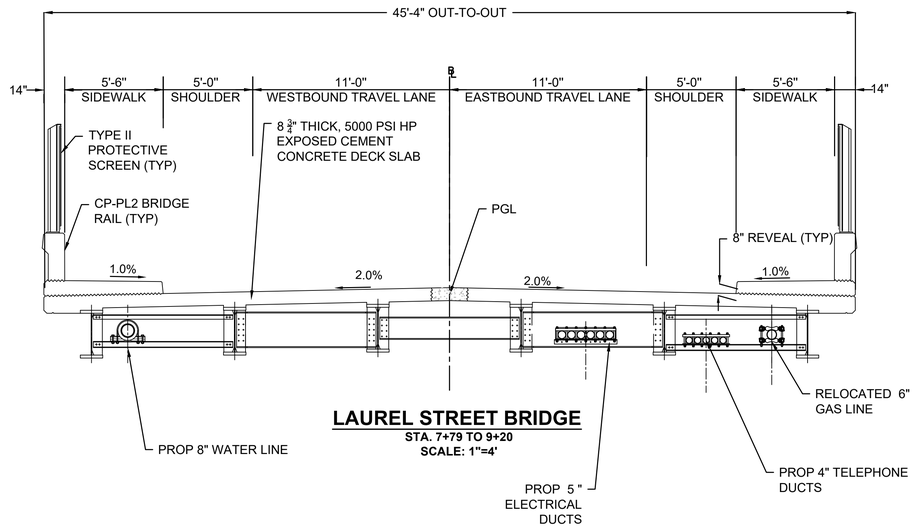
TYPICAL SECTIONS - 2



*TOLERANCE FOR CONSTRUCTION = +/-0.5%

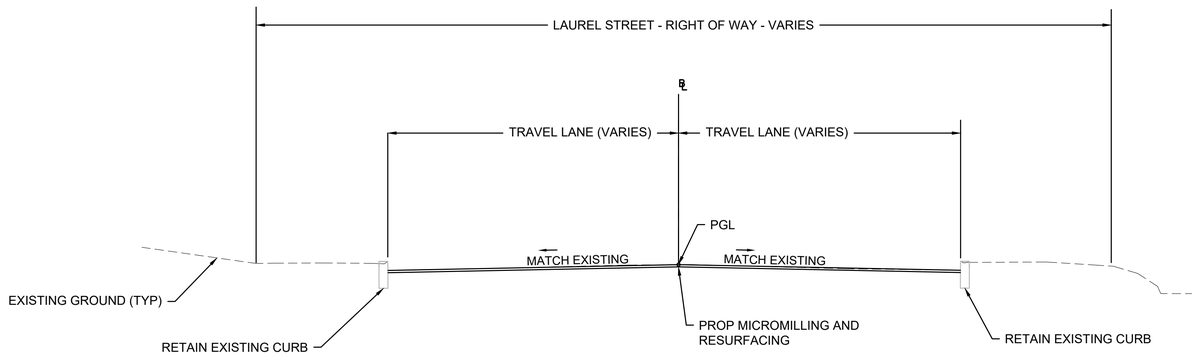
LAUREL STREET

STA. 6+65 TO 7+79
STA. 9+20 TO 9+97
SCALE: 1"=4'



LAUREL STREET BRIDGE

STA. 7+79 TO 9+20
SCALE: 1"=4'



*TOLERANCE FOR CONSTRUCTION = +/-0.5%

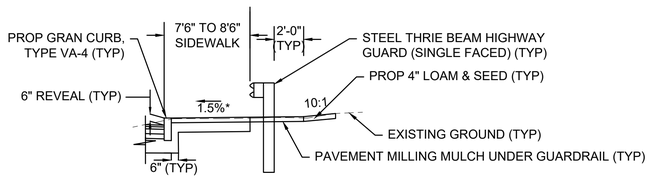
LAUREL STREET

STA. 6+40 TO 6+65
STA. 9+97 TO 10+17
SCALE: 1"=4'

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	8	169
	PROJECT FILE NO. 609185		

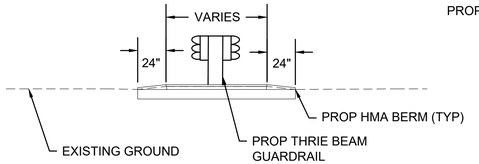
TYPICAL SECTIONS - 3



* TOLERANCE FOR CONSTRUCTION ± 0.5% (TYP)

TYPICAL GUARDRAIL AT THE BACK OF SIDEWALK DETAIL

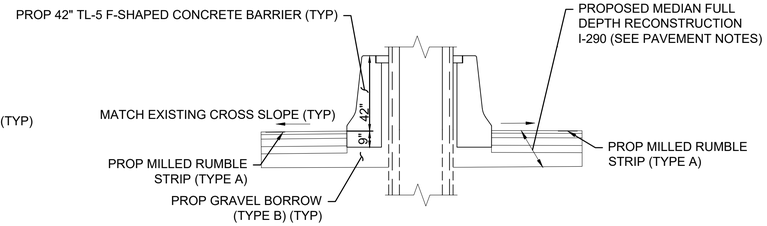
SEE CONSTRUCTION PLANS FOR PROPOSED GUARDRAIL LOCATIONS



MEDIAN WITH GUARDRAIL

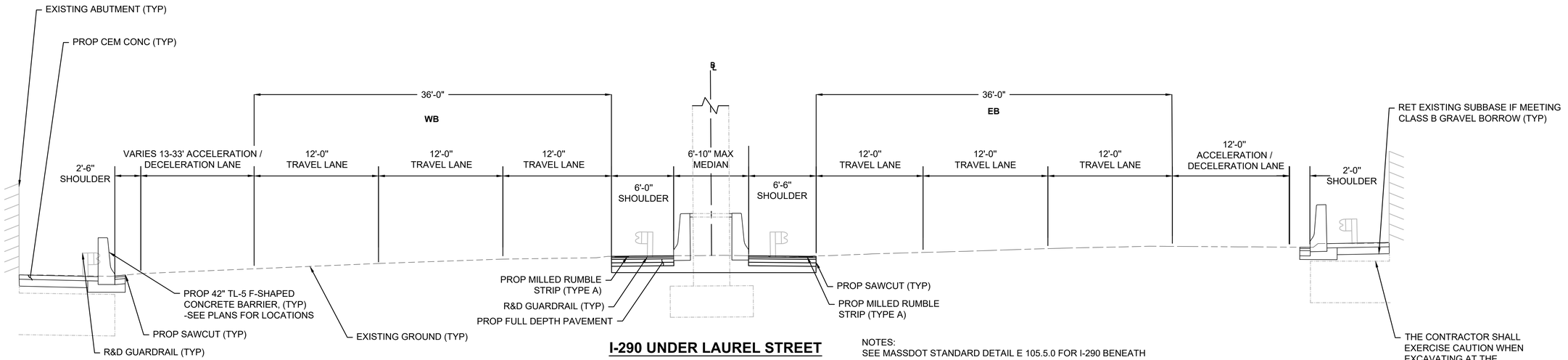
STA. 81+56 TO 82+24
STA. 125+28 TO 125+93
STA. 129+53 TO 130+17
NOT TO SCALE

NOTE:
FRANGIBLE LEAVE-OUTS TO BE INCLUDED WHERE PROPOSED GUARDRAIL POSTS ARE TO BE PLACED THROUGH A PAVED SURFACE AS SHOWN ON CONSTRUCTION STANDARD DETAIL 400.5.1.



MEDIAN BARRIER DETAIL

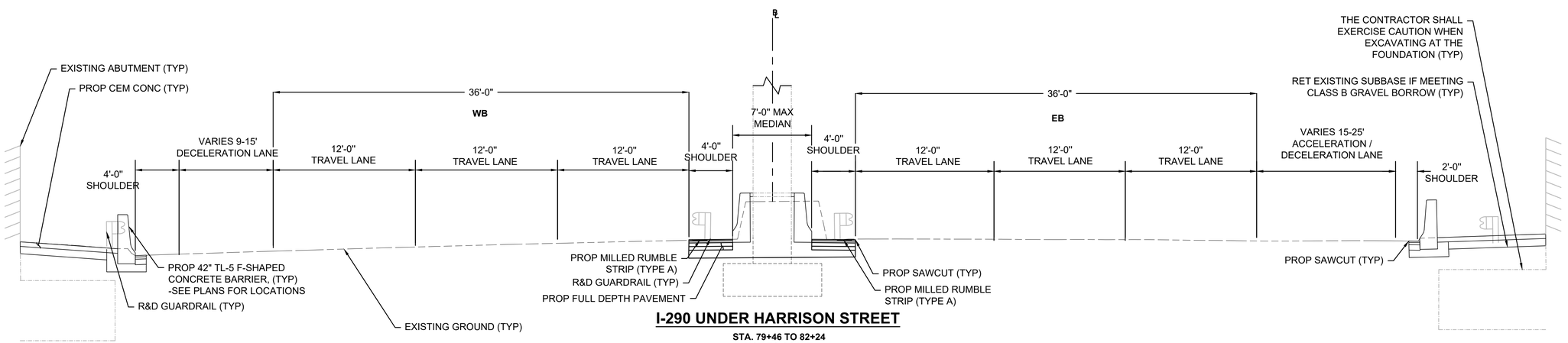
STA. 79+46 TO 81+56
STA. 125+93 TO 129+53
NOT TO SCALE



I-290 UNDER LAUREL STREET

STA. 125+28 TO 130+17
NOT TO SCALE

NOTES:
SEE MASSDOT STANDARD DETAIL E 105.5.0 FOR I-290 BENEATH LAUREL STREET AND RUMBLE STRIP DIMENSIONS



I-290 UNDER HARRISON STREET

STA. 79+46 TO 82+24
NOT TO SCALE

HIGHWAY GUARD DETAILS

STA. 15+18 RT - STA. 15+43 RT TRANSITION TO BRIDGE RAIL
STA. 15+43 RT - STA. 15+54 RT TRAILING ANCHORAGE
STA. 30+30 LT - STA. 30+64 LT TRANSITION TO BRIDGE RAIL
STA. 30+64 LT - STA. 31+12 LT GUARDRAIL, TL-3 (SINGLE FACED)
STA. 31+12 LT - STA. 31+46 LT TRANSITION TO NCHRP 350 GUARDRAIL
STA. 60+41 RT - STA. 60+74 RT TRANSITION TO BRIDGE RAIL
STA. 60+74 RT- STA. 61+09 RT TRANSITION TO NCHRP 350 GUARDRAIL
STA. 78+05 RT - STA. 78+15 RT GUARDRAIL, TL-3 (SINGLE FACED)
STA. 78+15 RT - STA. 78+49 RT TRANSITION TO NCHRP 350 GUARDRAIL
STA. 78+49 RT - STA. 78+92 RT TRANSITION TO RIGID BARRIER (SINGLE FACED)
STA. 79+35 LT - STA. 80+88 LT F-SHAPED BARRIER
STA. 78+92 RT - STA. 80+26 RT F-SHAPED BARRIER
STA. 80+88 LT - STA. 81+28 LT TRANSITION TO RIGID BARRIER (SINGLE FACED)
STA. 80+26 RT - STA. 80+63 RT TRANSITION TO RIGID BARRIER (SINGLE FACED)
STA. 81+28 LT - STA. 81+63 LT TRANSITION TO NCHRP 350 GUARDRAIL
STA. 80+63 RT - STA. 80+97 RT TRANSITION TO NCHRP 350 GUARDRAIL
STA. 81+43 - STA. 81+89 TRANSITION TO RIGID BARRIER (DOUBLE FACED)
STA. 79+47 - STA. 81+56 F-SHAPED BARRIER

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

SEE SHEET 22

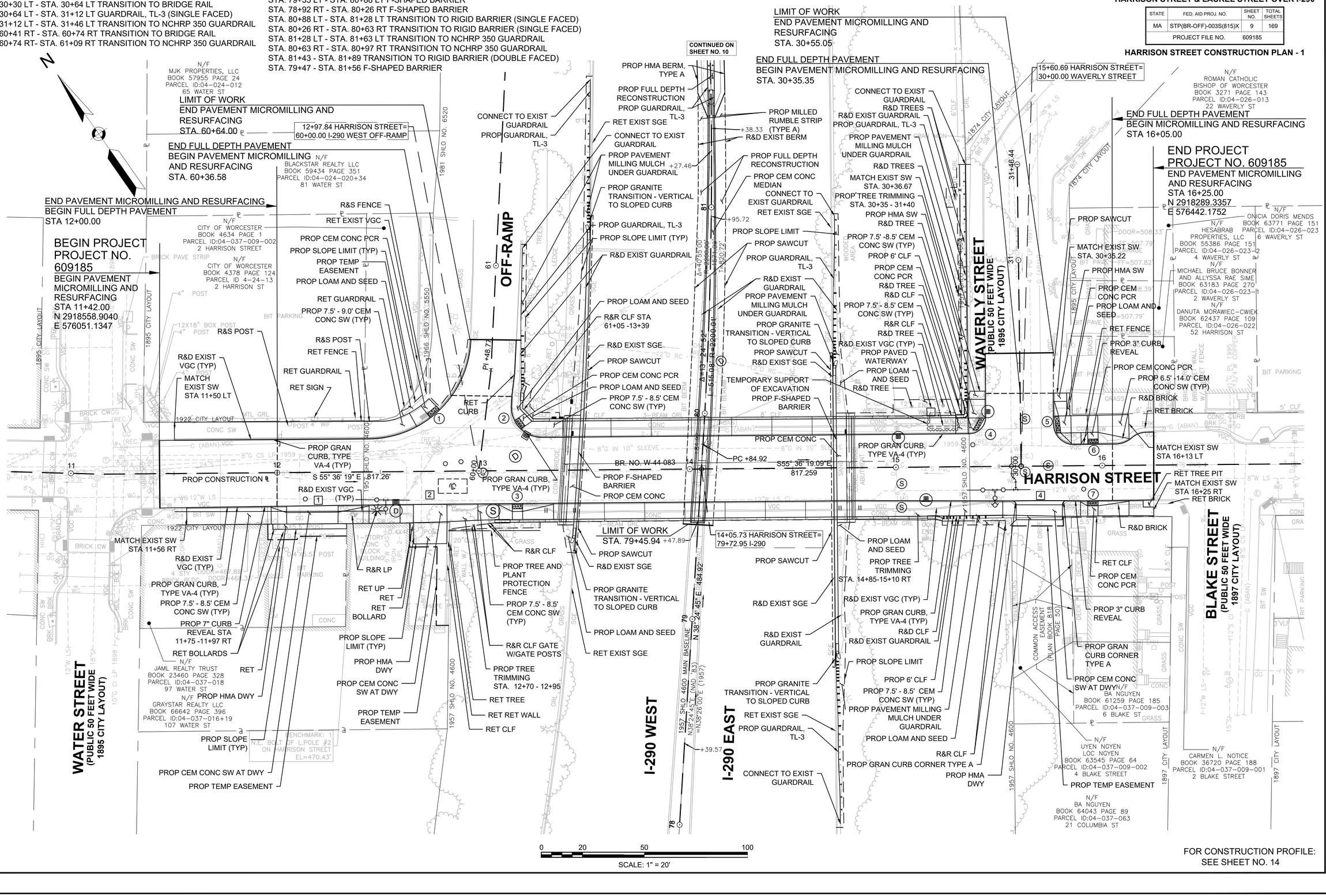
DRAINAGE DETAILS

SEE SHEET 22

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	9	169
	PROJECT FILE NO. 609185		

HARRISON STREET CONSTRUCTION PLAN - 1



FOR CONSTRUCTION PROFILE: SEE SHEET NO. 14

609185_HD08 (CONSTRUCTION PLANS).DWG Plotted on 20-Nov-2024 3:41 PM

HIGHWAY GUARD DETAILS

STA. 81+56 - STA. 81+89 TRANSITION TO RIGID BARRIER (DOUBLE FACED)
STA. 81+89 - STA. 82+24 TRANSITION TO NCHRP 350 GUARDRAIL

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

NONE

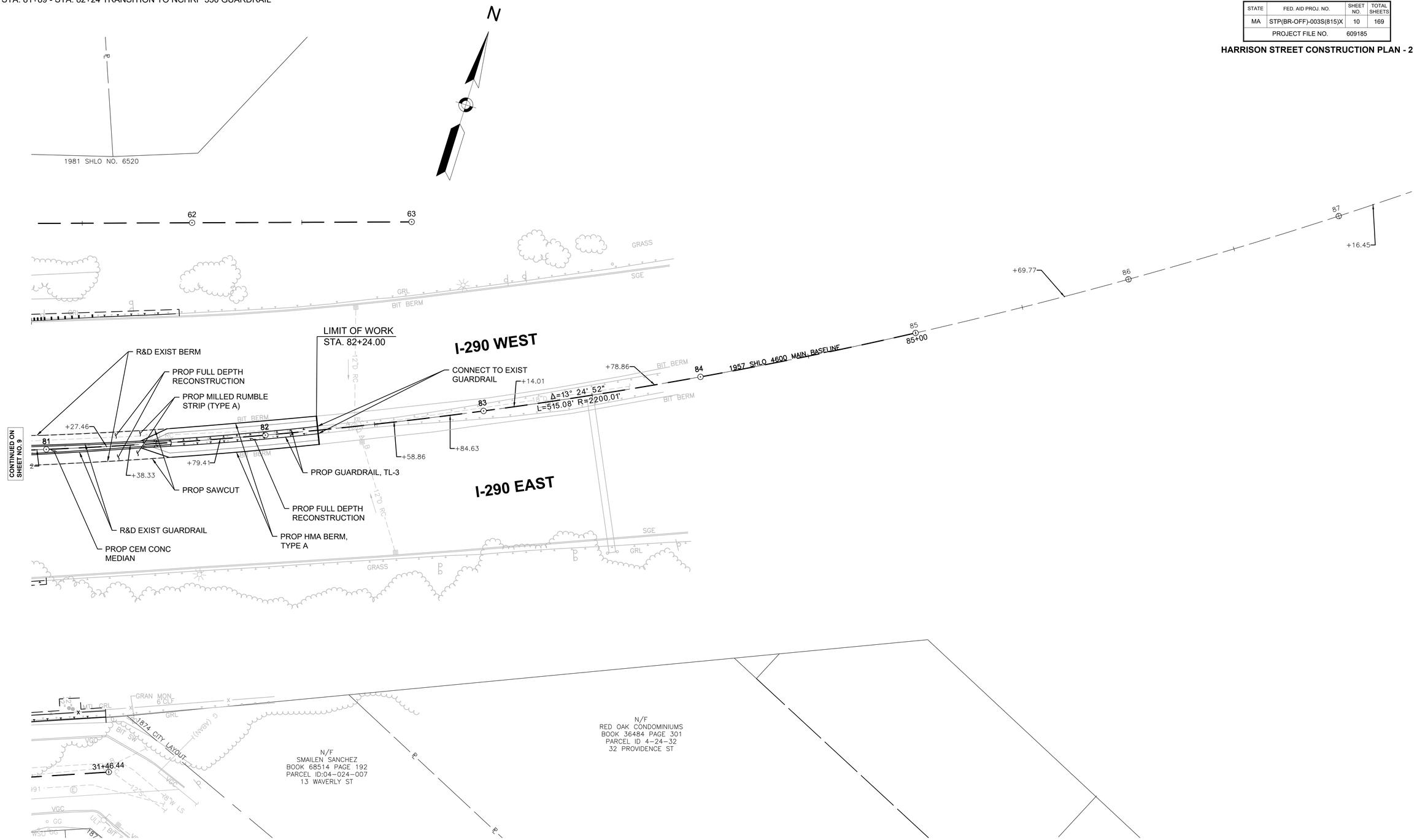
DRAINAGE DETAILS

NONE

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	10	169
	PROJECT FILE NO. 609185		

HARRISON STREET CONSTRUCTION PLAN - 2



HIGHWAY GUARD DETAILS

STA. 125+93 RT - STA. 126+36 RT TRANSITION TO NCHRP 350 GUARDRAIL
STA. 126+42 LT - STA. 126+77 LT TRANSITION TO NCHRP 350 GUARDRAIL
STA. 126+36 RT - STA. 126+75 RT TRANSITION TO RIGID BARRIER (SINGLE FACED)
STA. 126+77 LT - STA. 127+18 LT TRANSITION TO RIGID BARRIER (SINGLE FACED)
STA. 126+75 RT - STA. 127+90 RT F-SHAPED BARRIER

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

SEE SHEET 23

DRAINAGE DETAILS

SEE SHEET 23

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	11	169
PROJECT FILE NO.	609185		

LAUREL STREET CONSTRUCTION PLAN - 3

CONTINUED ON SHEET NO. 12

BEGIN PROJECT
PROJECT NO. 609185
BEGIN PAVEMENT MICROMILLING AND RESURFACING
STA 6+40.00
N 2923123.6684
E 576562.5731

END PAVEMENT MICROMILLING AND RESURFACING
BEGIN FULL DEPTH PAVEMENT
STA 6+65.00

END FULL DEPTH PAVEMENT
BEGIN MICROMILLING AND RESURFACING
STA 9+97.00

END PROJECT
PROJECT NO. 609185
END PAVEMENT MICROMILLING AND RESURFACING
STA 10+17.00
N 2923085.3207
E 576936.4346

N/F
PLUMLEY VILLAGE, LLC
BOOK 35441 PAGE 96
PARCEL ID:01-030-002
16 LAUREL STREET

N/F
THOMAS P. DINTINO
THERESA R. DINTINO
BOOK 8700 PAGE 296
PARCEL ID:01-029-036
16 ELLIOTT STREET

N/F
WADSON AUGUSTIN
PROPHETE AUGUSTIN
BOOK 59040 PAGE 95
PARCEL ID:01-029-015
38 LAUREL STREET

N/F
CARL W. RELLSTAB
BOOK 22614 PAGE 41
PARCEL ID:01-029-035
40 LAUREL STREET

N/F
PARAMJIT SIDHU
BOOK 45961 PAGE 150
PARCEL ID:01-033-005
41 LAUREL STREET

N/F
JESUS MENDOZA
AND JONATHAN MATOS
BOOK 67580 PAGE 132
PARCEL ID:01-033-045
43 LAUREL STREET

N/F
JONATHAN MATOS
BOOK 58763 PAGE 110
PARCEL ID:01-032-053
45 LAUREL STREET

N/F
JULIO M. LUCA
BOOK 23161 PAGE 226
PARCEL ID:01-033-004
5 SHELBY STREET

N/F
STEVEN T. GALLATI
BOOK 65556 PAGE 151
PARCEL ID:01-033-043
17 SHELBY STREET

I-290 EAST
I-290 WEST
1958 SHLO NO. 4713
1854 CITY LAYOUT
1969 CITY LAYOUT
EDWARD STREET
(PUBLIC - 50 FEET WIDE)
LAUREL STREET
S 86° 16' 29" E 624.28'
8+49.62 LAUREL STREET= 127+73.72 I-290
+83.22
+96.85
+59.12
+21.54
PROP CONSTRUCTION ℄
RET EXIST VGC
PROP SAWCUT
PROP GRAN CURB, TYPE VA-4 (TYP)
PROP CEM CONC
PROP F-SHAPED BARRIER
PROP GUARDRAIL, TL-3
PROP FULL DEPTH RECONSTRUCTION
PROP HMA BERM, TYPE A
CONNECT TO EXIST GUARDRAIL
R&D EXIST BERM
RET EXIST SGE
PROP PAVEMENT MILLING MULCH UNDER GUARDRAIL
PROP GRANITE TRANSITION - VERTICAL TO SLOPED CURB
R&D EXIST VGC
PROP SLOPE LIMIT (TYP)
PROP 7.0' CEM CONC SW
RET BUSH
PROP TEMP EASEMENT
PROP LOAM & SEED
MATCH EXIST SW STA 6+65 LT
TREE PROTECTION - ARMORING & PRUNING
RET LP
RET TELEPHONE CABINET
R&R CLF
PROP 5.5' CEM CONC SW
R&D EXIST SGE
R&D EXIST GUARDRAIL
PROP TREE TRIMMING STA. 7+35 - 7+60
R&R CLF GATE W/GATE POSTS
PROP MILLED RUMBLE STRIP (TYPE A)
PROP SAWCUT
PROP CEM CONC MEDIAN
PROP FULL DEPTH RECONSTRUCTION
R&D EXIST GUARDRAIL
MATCH EXIST SW STA 9+90 LT
PROP BIT SW
PROP 7.0' -8.5' CEM CONC SW (TYP)
PROP GRAN CURB, TYPE VA-4 (TYP)
RET RET WALL
R&D EXIST VGC
PROP TEMP EASEMENT
PROP HMA DWY
PROP CEM CONC SW AT DWY
PROP 5' CLF
R&D CLF
PROP. CURB CORNERS
R&R LP
PROP CURB CORNER
MATCH EXIST SW STA 10+16 RT
PROP HMA SW
PROP HMA DWY
PROP CEM CONC SW AT DWY
PROP CURB CORNER
PROP TEMP EASEMENT
PROP 6' CLF
PROP CEM CONC SW
PROP 5.5' - 8.0' CEM CONC SW (TYP)
PROP GRAN CURB, TYPE VA-4 (TYP)
PROP LOAM & SEED
R&D CLF
PROP PAVEMENT MILLING MULCH UNDER GUARDRAIL
PROP TREE AND PLANT PROTECTION FENCE
PROP TREE TRIMMING STA. 9+40 - 9+65
CONTRACTOR TO CONFIRM THERE IS NO CONFLICT BETWEEN THE PROPOSED BARRIER AND THE EXISTING SMH
PROP GRANITE TRANSITION - VERTICAL TO SLOPED CURB
PROP GUARDRAIL, TL-3
RET EXIST SGE
CONNECT TO EXIST GUARDRAIL
PROP MILLED RUMBLE STRIP (TYPE A)
PROP HMA BERM, TYPE A
PROP FULL DEPTH RECONSTRUCTION
PROP GUARDRAIL, TL-3
PROP SAWCUT
PROP LOAM & SEED
R&D EXIST SGE
R&D EXIST GUARDRAIL
PROP GRANITE TRANSITION - VERTICAL TO SLOPED CURB
PROP GRANITE EDGING TYPE SA
PROP SAWCUT
PROP PAVEMENT MILLING MULCH UNDER GUARDRAIL
R&D EXIST BERM
RET EXIST SGE
PROP GUARDRAIL, TL-3
CONNECT TO EXIST GUARDRAIL
R&R CLF
PROP SAWCUT
PROP 7.5' CEM CONC SW
MATCH EXIST SW STA 6+65 RT
PROP SLOPE LIMIT (TYP)
PROP GRAN CURB, TYPE VA-4 (TYP)
R&D EXIST VGC
PROP TREE TRIMMING STA. 7+15 - 7+55
PROP 5.5' CEM CONC SW
TREE PROTECTION - ARMORING & PRUNING
PROP LOAM & SEED
PROP TEMP EASEMENT
RET RET WALL
R&R CLF GATE W/GATE POSTS
PROP F-SHAPED BARRIER
R&D EXIST GUARDRAIL
PROP SAWCUT
R&D EXIST SGE
PROP GRANITE TRANSITION - VERTICAL TO SLOPED CURB
PROP GRANITE EDGING TYPE SA
PROP SAWCUT
PROP PAVEMENT MILLING MULCH UNDER GUARDRAIL
R&D EXIST BERM
RET EXIST SGE
PROP GUARDRAIL, TL-3
CONNECT TO EXIST GUARDRAIL
PROP HMA BERM, TYPE A
PROP FULL DEPTH RECONSTRUCTION
PROP MILLED RUMBLE STRIP (TYPE A)
PROP GUARDRAIL, TL-3
PROP PAVEMENT MILLING MULCH UNDER GUARDRAIL
R&D EXIST VGC
PROP CEM CONC SW
PROP F-SHAPED BARRIER
1 N: 2923120.674' E: 576644.630' EL: 516.38' MDHL GPS2700
2 N: 2923061.924' E: 577058.140' EL: 561.38' MMAG GPS2701
22 N: 2923099.209' E: 576980.584' EL: 554.23' MMAG

CONTINUED ON SHEET NO. 13

HIGHWAY GUARD DETAILS CONTINUED

STA. 127+18 LT - STA. 128+81 LT F-SHAPED BARRIER
STA. 127+90 RT - STA. 128+27 RT TRANSITION TO RIGID BARRIER (SINGLE FACED)
STA. 128+81 LT - STA. 129+20 LT TRANSITION TO RIGID BARRIER (SINGLE FACED)
STA. 128+27 RT - STA. 128+61 RT TRANSITION TO NCHRP 350 GUARDRAIL
STA. 129+20 LT - STA. 129+56 LT TRANSITION TO NCHRP 350 GUARDRAIL
STA. 125+93 - STA. 129+34 F-SHAPED BARRIER
STA. 129+34 - STA. 129+79 TRANSITION TO RIGID BARRIER (DOUBLE FACED)

0 20 50 100
SCALE: 1" = 20'

FOR CONSTRUCTION PROFILE: SEE SHEET NO. 16

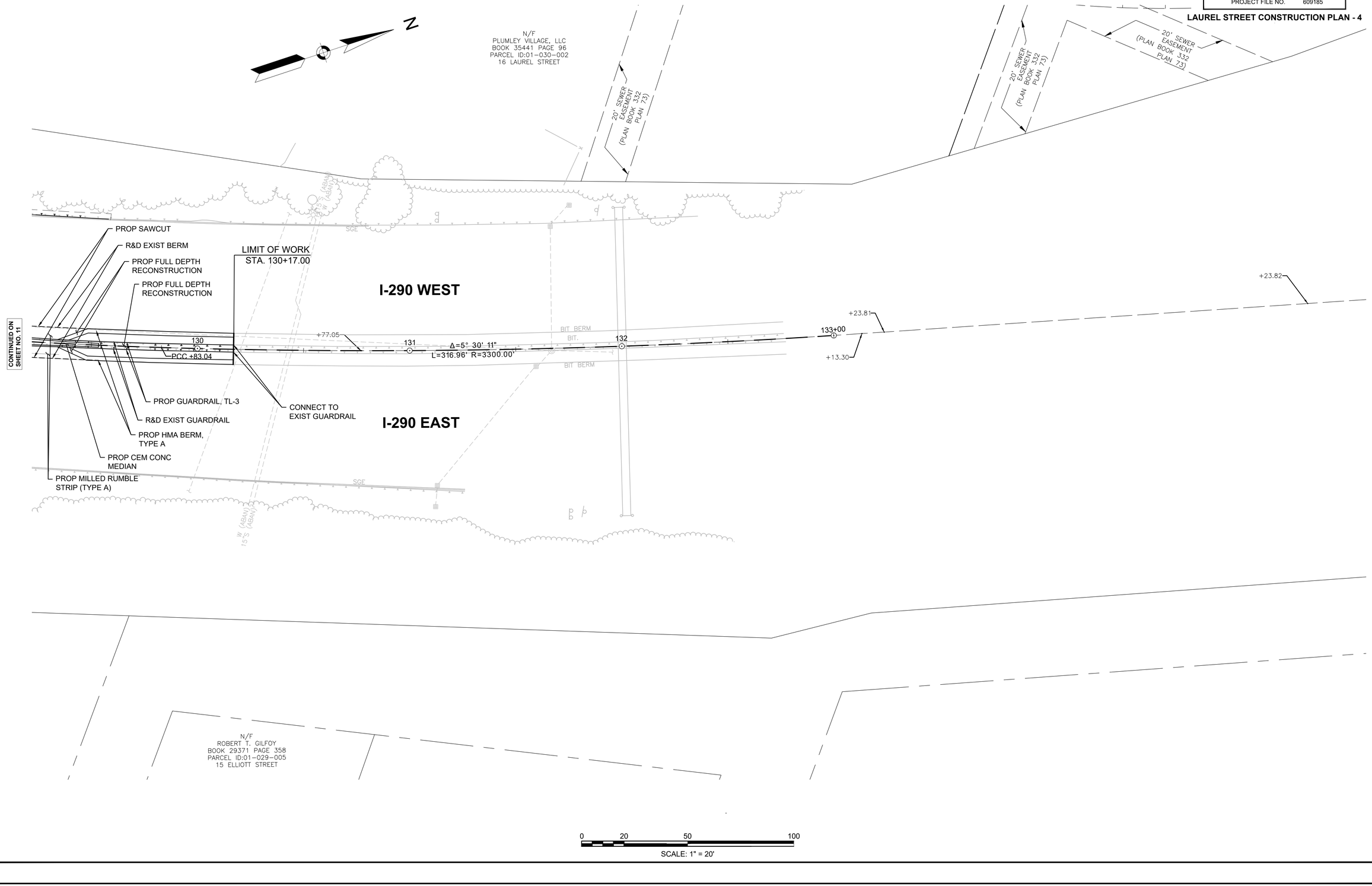
609185_HD08 (CONSTRUCTION PLANS).DWG Plotted on 20-Nov-2024 3:42 PM

HIGHWAY GUARD DETAILS	TRAFFIC SIGNAL CONDUIT	WATER SUPPLY ALTERATIONS	DRAINAGE DETAILS
STA. 129+34 - STA. 129+79 TRANSITION TO RIGID BARRIER (DOUBLE FACED) STA. 129+83 - STA. 130+17 TRANSITION TO NCHRP 350 GUARDRAIL	NONE	NONE	NONE

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	12	169
PROJECT FILE NO.	609185		

LAUREL STREET CONSTRUCTION PLAN - 4



0 20 50 100

SCALE: 1" = 20'

609185_HD08 (CONSTRUCTION PLANS).DWG Plotted on 20-Nov-2024 3:42 PM

HIGHWAY GUARD DETAILS

STA. 125+28 - STA. 125+63 TRANSITION TO NCHRP 350 GUARDRAIL
STA. 125+63 - STA. 125+93 TRANSITION TO RIDGED BARRIER (DOUBLE FACED)

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

NONE

DRAINAGE DETAILS

SEE SHEET 23

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	13	169
	PROJECT FILE NO. 609185		

LAUREL STREET CONSTRUCTION PLAN - 5

609185_HD08 (CONSTRUCTION PLANS).DWG Plotted on 20-Nov-2024 3:43 PM

N/F
PLUMLEY VILLAGE, LLC
BOOK 35441 PAGE 96
PARCEL ID:01-030-002
16 LAUREL STREET

20' SEWER & WATER EASEMENT (PLAN BOOK 332 PLAN 73)

1958 SHLO NO. 4713

LIMIT OF WORK
STA. 125+28.00

I-290 WEST

I-290 EAST

122+00

123
Δ=4° 10' 49"
L=240.76' R=3300.00'

124

PCC +40.76
+09.63
Δ=14° 07' 22"
L=542.28' R=2200.00'

125
+05.33

126
+51.50
+21.54

127
+59.12

PROP GUARDRAIL, TL-3
PROP SAWCUT
PROP FULL DEPTH RECONSTRUCTION
PROP CEM CONC MEDIAN
R&D EXIST GUARDRAIL
R&D EXIST BERM
PROP MILLED RUMBLE STRIP (TYPE A)
CONNECT TO EXIST GUARDRAIL
PROP HMA BERM, TYPE A
PROP FULL DEPTH RECONSTRUCTION
PROP PAVEMENT MILLING MULCH UNDER GUARDRAIL
PROP GUARDRAIL, TL-3
R&D EXIST GUARDRAIL

CONTINUED ON SHEET NO. 11

N/F
KWAKU KANI-ASANTE
MERCY A. KANI
BOOK 39447 PAGE 147
PARCEL ID:01-033-001A
53A PROSPECT STREET

10' SEWER EASEMENT (PLAN BOOK 845 PLAN 23)

N/F
MAXIMUM ASSET MANAGEMENT INC.
BOOK 66465 PAGE 267
PARCEL ID:01-033-002
53 PROSPECT STREET

N/F
SHAUNA LEE REYES
BOOK 59265 PAGE 375
PARCEL ID:01-033-047
20 SHELBY STREET

N/F
JULIO MOJICA
BOOK 23116 PAGE 226
PARCEL ID:01-033-004
15 SHELBY STREET

N/F
STEVEN T. GALLATI
BOOK 65556 PAGE 151
PARCEL ID:01-033-03+43
17 SHELBY STREET

N/F
PARAMJIT SIDHU
BOOK 45961 PAGE 150
PARCEL ID:01-033-005
41 LAUREL STREET

0 20 50 100
SCALE: 1" = 20'

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	14	169
PROJECT FILE NO.	609185		

HARRISON STREET CONSTRUCTION PROFILE - 1

HARRISON STREET OVER I-290

BEGIN PROJECT
PROJECT NO. 609185
BEGIN PAVEMENT MICROMILLING AND RESURFACING
STA 11+42.00
N 2918558.9040
E 576051.1347

END PAVEMENT MICROMILLING AND RESURFACING
BEGIN FULL DEPTH PAVEMENT
STA 12+00.00

END FULL DEPTH PAVEMENT
BEGIN MICROMILLING AND RESURFACING
STA 16+05.00

END PROJECT
PROJECT NO. 609185
END PAVEMENT MICROMILLING AND RESURFACING
STA 16+25.00
N 2918289.3357
E 576442.1752

PVI STA = 12+68.00
PVI ELEV = 471.54
A.D. = 5.44%
K = 25.00
136' VC
154.3' HSD

GRADE BREAK STA = 13+36.00
ELEV = 478.68

PVT: 13+36
ELEV: 478.68

PVC: 12+00
ELEV: 468.10

GRADE BREAK STA = 11+42.00
ELEV = 465.77

GRADE BREAK STA = 15+50.00
ELEV = 501.80

GRADE BREAK STA = 16+25.00
ELEV = 510.44

2.66%
4.45%
10.80%
12.08%
11.35%

BR. NO. W-44-083
I-290 WEST BOUND OFF-RAMP
WAVERLY STREET
PROP BRIDGE
EXISTING BRIDGE
PROP PROFILE GRADE
EXIST PROFILE GRADE
16'-0" PROP. MIN. VERT. CLEARANCE
PROP 42" TL-5 F-SHAPED CONCRETE BARRIER (TYP)
R&D EXISTING GUARDRAIL

520 510 500 490 480 470 460

NAVD 88
BASE ELEV
455.00

455

464.7	466.0 **465.98**	468.1 **468.10**	471.1 **471.13**	474.8 **475.16**	479.6 **480.19**	485.2 **485.59**	490.6 **490.99**	496.2 **496.40**	501.9 **501.80**	507.6 **507.60**	513.4

11+00 12+00 13+00 14+00 15+00 16+00 16+50

BENCHMARK:
N.E. BOLT OF L.POLE #2
ON HARRISON STREET
EL=470.43'
STA. 12+37.06, 20.22 RT

STA. 14+05.73 HARRISON STREET=
STA. 79+72.95 I-290

HOR. SCALE IN FEET
20 0 20 40
VER. SCALE IN FEET
4 0 4 8

FOR CONSTRUCTION PLAN:
SEE SHEET NO. 9

609185_HD12 (CONSTRUCTION PROFILES).DWG Plotted on 20-Nov-2024 3:44 PM

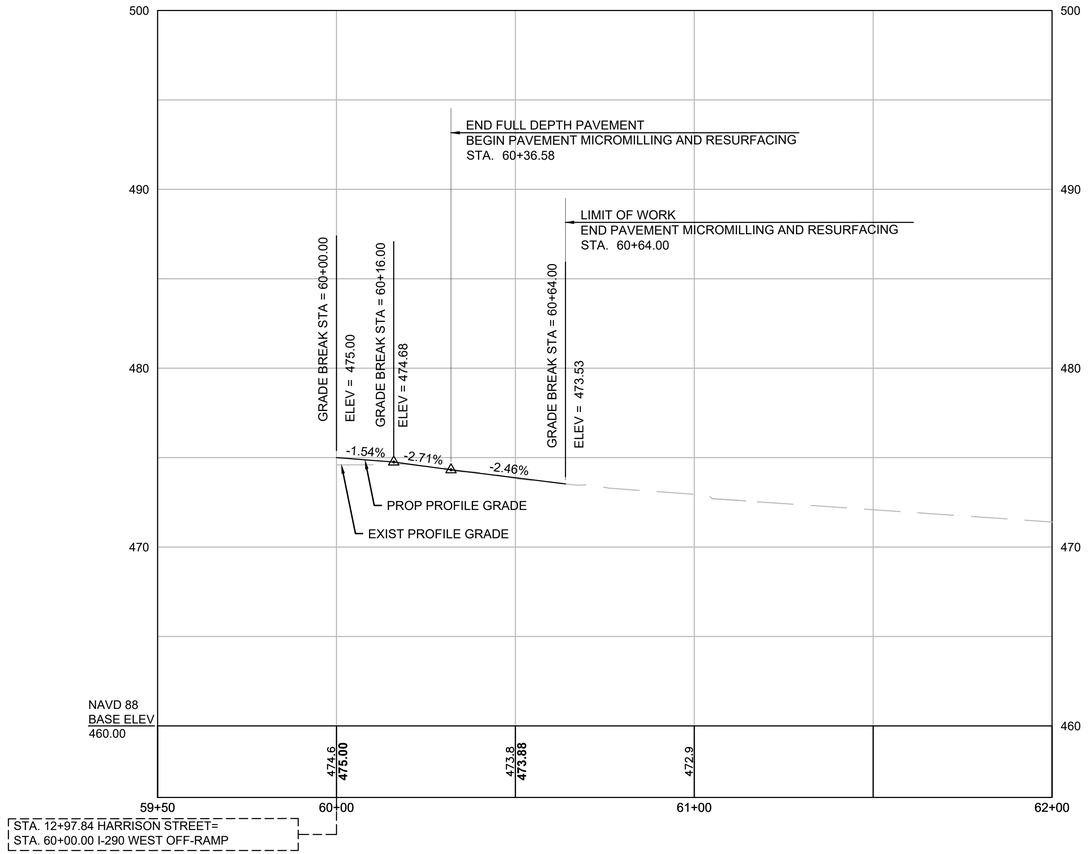
WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	15	169
PROJECT FILE NO. 609185			

I-290 OFF-RAMP CONSTRUCTION PROFILE - 2

609185_HD12 (CONSTRUCTION PROFILES).DWG Plotted on 20-Nov-2024 3:44 PM

I-290 WEST OFF-RAMP



HOR. SCALE IN FEET
20 0 20 40
4 0 4 8
VER. SCALE IN FEET

FOR CONSTRUCTION PLAN:
SEE SHEET NO. 9

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	16	169
PROJECT FILE NO.	609185		

LAUREL STREET CONSTRUCTION PROFILE - 3

LAUREL STREET OVER I-290

END PROJECT
PROJECT NO. 609185
END PAVEMENT MICROMILLING AND RESURFACING
STA 10+17.00
N 2923085.3207
E 576936.4346

END FULL DEPTH PAVEMENT
BEGIN MICROMILLING AND RESURFACING
STA 9+97.00

GRADE BREAK STA = 10+17.00
ELEV = 549.80

GRADE BREAK STA = 9+56.30
ELEV = 544.16

PVI STA = 8+50.00
PVI ELEV = 533.21
A.D. = -2.70%
K = 55.55
150' VC
474.7' SSD

PVT: 9+24.99
ELEV: 540.93

9.31%

10.30%

END PAVEMENT MICROMILLING AND RESURFACING
BEGIN FULL DEPTH PAVEMENT
STA 6+65.00

PVC: 7+75.01
ELEV: 523.46

BR. NO. W-44-093

BEGIN PROJECT
PROJECT NO. 609185
BEGIN PAVEMENT MICROMILLING AND RESURFACING
STA 6+40.00
N 2923123.6684
E 576562.5731

PROP BRIDGE

EXISTING BRIDGE

GRADE BREAK STA = 6+40.00
ELEV = 506.23

13.00%

11.72%

PROP PROFILE GRADE

EXIST PROFILE GRADE

16-6"PROP. MIN. VERT. CLR.

R&D EXISTING GUARDRAIL (TYP)

PROP 42" TL-5 F-SHAPED CONCRETE BARRIER (TYP)

525.8 532.0 538.0 543.5

NAVD 88
BASE ELEV
500.00

493.2	496.9	501.8	507.4 **507.40**	513.3 **513.71**	519.4 **520.21**	525.8 **526.65**	532.0 **532.70**	538.0 **538.30**	543.5 **543.51**	548.2 **548.22**	552.9	557.5

5+00 6+00 7+00 8+00 9+00 10+00 11+00

STA. 8+49.62 LAUREL STREET=
STA. 127+73.72 I-290

HOR. SCALE IN FEET
20 0 20 40
VER. SCALE IN FEET
4 0 4 8

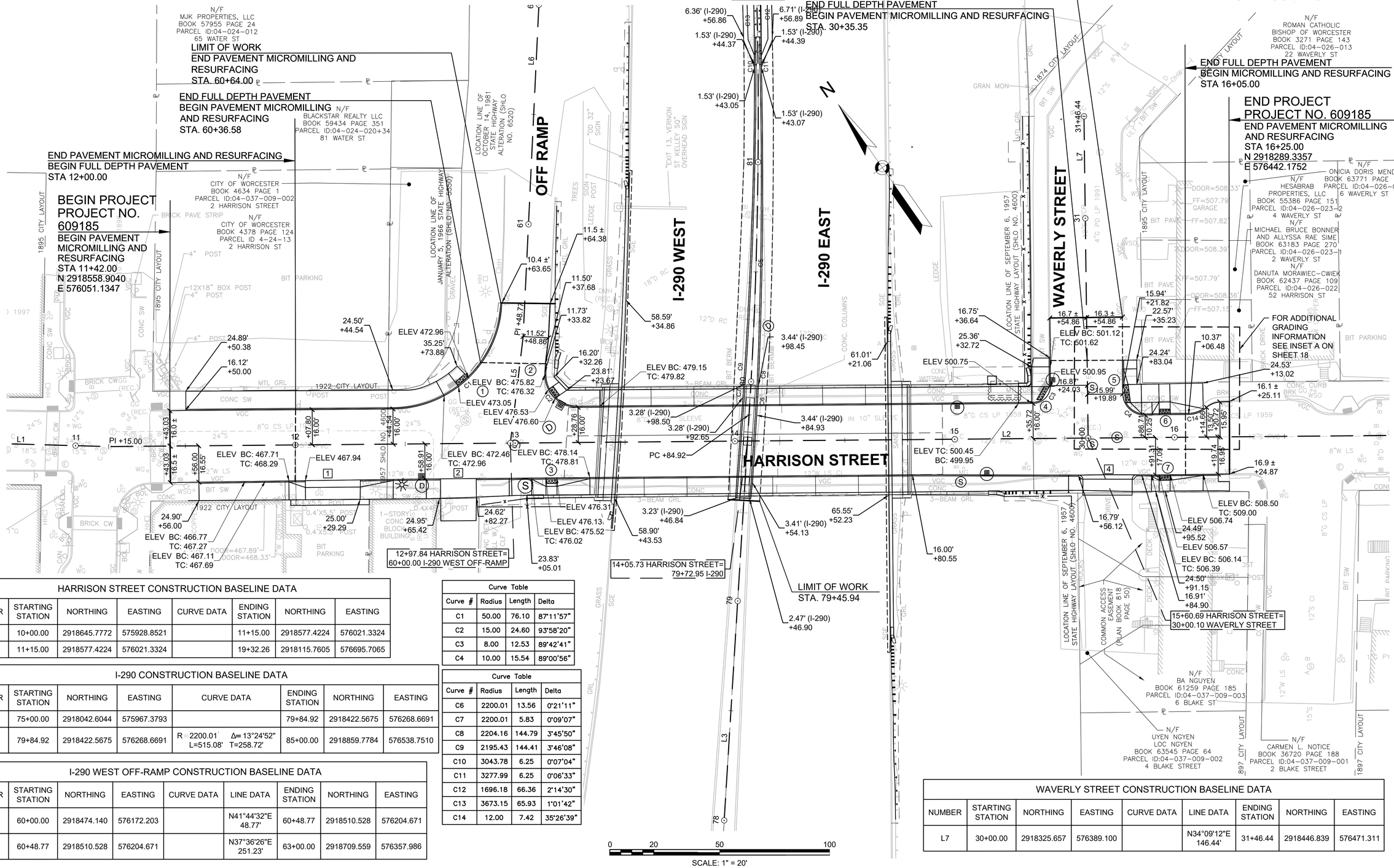
FOR CONSTRUCTION PLAN:
SEE SHEET NO. 11

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	17	169
	PROJECT FILE NO. 609185		

CURB TIE & GRADING PLAN - 1

609185_CURB TIE & GRADING PLANS (HARRISON ST).DWG Plotted on 20-Nov-2024 3:44 PM



HARRISON STREET CONSTRUCTION BASELINE DATA							
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	ENDING STATION	NORTHING	EASTING
L1	10+00.00	2918645.7772	575928.8521		11+15.00	2918577.4224	576021.3324
L2	11+15.00	2918577.4224	576021.3324		19+32.26	2918115.7605	576695.7065

I-290 CONSTRUCTION BASELINE DATA							
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	ENDING STATION	NORTHING	EASTING
L3	75+00.00	2918042.6044	575967.3793		79+84.92	2918422.5675	576268.6691
C5	79+84.92	2918422.5675	576268.6691	R=2200.01' Δ=13°24'52" L=515.08' T=258.72'	85+00.00	2918859.7784	576538.7510

I-290 WEST OFF-RAMP CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L5	60+00.00	2918474.140	576172.203		N41°44'32"E 48.77'	60+48.77	2918510.528	576204.671
L6	60+48.77	2918510.528	576204.671		N37°36'26"E 251.23'	63+00.00	2918709.559	576357.986

Curve Table			
Curve #	Radius	Length	Delta
C1	50.00	76.10	87°11'57"
C2	15.00	24.60	93°58'20"
C3	8.00	12.53	89°42'41"
C4	10.00	15.54	89°00'56"

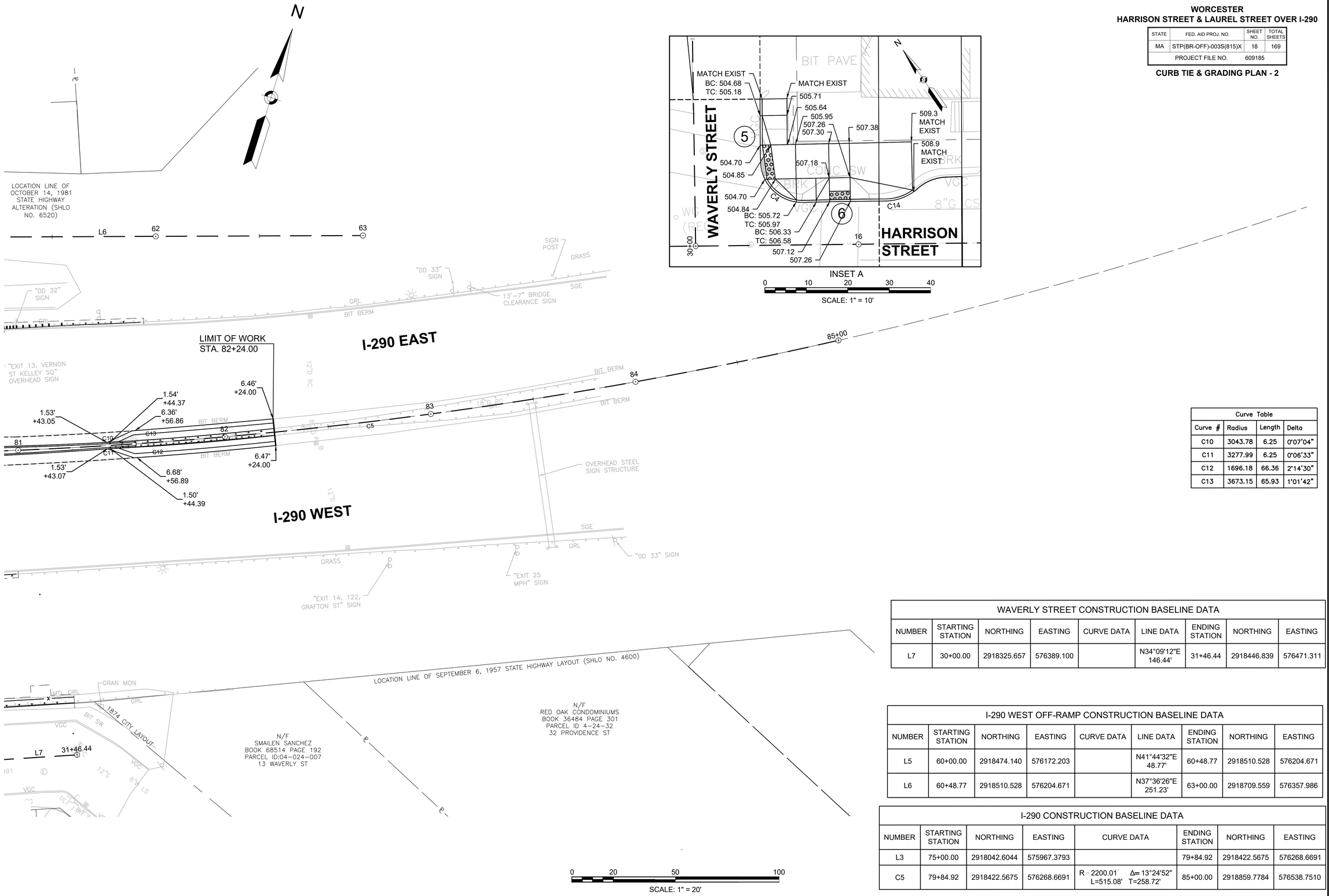
Curve Table			
Curve #	Radius	Length	Delta
C6	2200.01	13.56	0°21'11"
C7	2200.01	5.83	0°09'07"
C8	2204.16	144.79	3°45'50"
C9	2195.43	144.41	3°46'08"
C10	3043.78	6.25	0°07'04"
C11	3277.99	6.25	0°06'33"
C12	1696.18	66.36	2°14'30"
C13	3673.15	65.93	1°01'42"
C14	12.00	7.42	35°26'39"

WAVERLY STREET CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L7	30+00.00	2918325.657	576389.100		N34°09'12"E 146.44'	31+46.44	2918446.839	576471.311

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	18	169
	PROJECT FILE NO. 609185		

CURB TIE & GRADING PLAN - 2



Curve Table			
Curve #	Radius	Length	Delta
C10	3043.78	6.25	0°07'04"
C11	3277.99	6.25	0°06'33"
C12	1696.18	66.36	2°14'30"
C13	3673.15	65.93	1°01'42"

WAVERLY STREET CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L7	30+00.00	2918325.657	576389.100		N34°09'12"E 146.44'	31+46.44	2918446.839	576471.311

I-290 WEST OFF-RAMP CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L5	60+00.00	2918474.140	576172.203		N41°44'32"E 48.77'	60+48.77	2918510.528	576204.671
L6	60+48.77	2918510.528	576204.671		N37°36'26"E 251.23'	63+00.00	2918709.559	576357.986

I-290 CONSTRUCTION BASELINE DATA							
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	ENDING STATION	NORTHING	EASTING
L3	75+00.00	2918042.6044	575967.3793		79+84.92	2918422.5675	576268.6691
C5	79+84.92	2918422.5675	576268.6691	R=2200.01' Δ=13°24'52" L=515.08' T=258.72'	85+00.00	2918859.7784	576538.7510

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	19	169
PROJECT FILE NO.	609185		

CURB TIE & GRADING PLAN - 3

CONTINUED ON SHEET NO. 20

BEGIN PROJECT
PROJECT NO. 609185
BEGIN PAVEMENT MICROMILLING AND RESURFACING
STA 6+40.00
N 2923123.6684
E 576562.5731

END PAVEMENT MICROMILLING AND RESURFACING
BEGIN FULL DEPTH PAVEMENT
STA 6+65.00

END FULL DEPTH PAVEMENT
BEGIN MICROMILLING AND RESURFACING
STA 9+97.00

END PROJECT
PROJECT NO. 609185
END PAVEMENT MICROMILLING AND RESURFACING
STA 10+17.00
N 2923085.3207
E 576936.4346

N/F
PLUMLEY VILLAGE, LLC
BOOK 35441 PAGE 96
PARCEL ID:01-030-002
16 LAUREL STREET

N/F
PLUMLEY VILLAGE, LLC
BOOK 35441 PAGE 96
PARCEL ID:01-030-002
16 LAUREL STREET

I-290 WEST

I-290 EAST

EDWARD STREET

LAUREL STREET

1958 SHLO NO. 4713

8+49.62 LAUREL STREET=
127+73.72 I-290

PC +67.20

PT +28.85

7.58' +53.81
7.14' +53.77
1.62' +39.14
1.64' +38.94
3.48' +50.17
3.39' +50.17
23.11' +18.51
23.61' +65.33
58.96' +14.19
58.83' +85.53
22.76' +90.00
22.50' +15.41
23.68' +64.80
60.60' +21.58
59.68' +96.41
3.48' +97.50
3.39' +97.32
1.58' +08.07
1.58' +08.05
7.18' +93.75
6.47' +93.83

+40.00 17.0 ±
+65.23 16.46'
+64.79 16.25'
+79.90 15.92'
+73.95 16.13'
+17.28 15.68'
+28.94 16.00'
+29.64 16.00'
+41.07 16.00'
+57.33 16.00'
+50.00 16.00'
+81.50 14.00'
+90.00 13.73'
+97.47 14.00'
+17.00 14.0 ±
+17.00 13.8 ±

L2 L3 C2 C7 C8 C16 C17 C15 C14 C16

LAUREL STREET CONSTRUCTION BASELINE DATA							
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	ENDING STATION	NORTHING	EASTING
L2	4+89.43	2923202.8482	576435.0430		5+67.20	2923158.0263	576498.5974
C2	5+67.20	2923158.0263	576498.5974	R=300.00' Δ=30°52'20" L=161.65' T=82.84'	7+28.85	2923104.0422	576648.8946
L3	7+28.85	2923104.0422	576648.8946		13+53.13	2923063.4819	577271.8525

I-290 CONSTRUCTION BASELINE DATA							
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	ENDING STATION	NORTHING	EASTING
C11	122+00.00	2922524.2306	576793.5582	R=3300.00' Δ=4°10'49" L=240.76' T=120.43'	124+40.76	2922764.8742	576799.0652
C12	124+40.76	2922764.8742	576799.0652	R=2200.00' Δ=14°07'22" L=542.28' T=272.52'	129+83.04	2923300.7258	576725.2761
C13	129+83.04	2923300.7258	576725.2761	R=3300.00' Δ=5°30'11" L=316.96' T=158.60'	133+00.00	2923602.6432	576629.1913

Curve Table			
Curve #	Radius	Length	Delta
C7	150.00	35.47	13°33'00"
C8	300.00	58.81	11°13'55"
C14	2200.90	91.78	2°23'22"
C15	2196.05	91.39	2°23'04"
C17	2196.57	152.61	3°58'50"

CONTINUED ON SHEET NO. 21

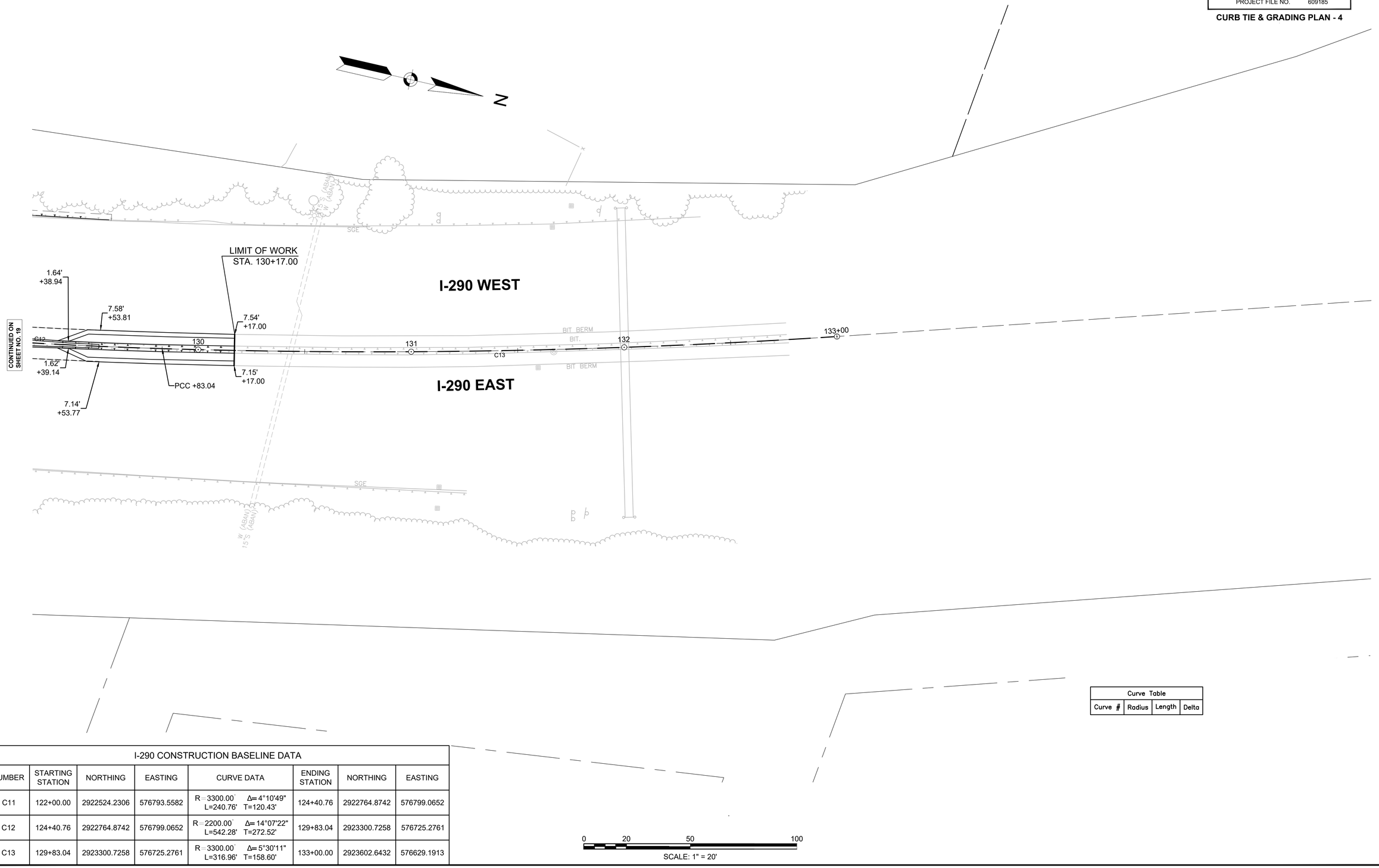
0 20 50 100
SCALE: 1" = 20'

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	20	169
PROJECT FILE NO.	609185		

CURB TIE & GRADING PLAN - 4

609185_CURB TIE & GRADING PLANS (LAUREL ST).DWG Plotted on 20-Nov-2024 3:45 PM



Curve Table			
Curve #	Radius	Length	Delta

I-290 CONSTRUCTION BASELINE DATA							
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	ENDING STATION	NORTHING	EASTING
C11	122+00.00	2922524.2306	576793.5582	R=3300.00' Δ=4°10'49" L=240.76' T=120.43'	124+40.76	2922764.8742	576799.0652
C12	124+40.76	2922764.8742	576799.0652	R=2200.00' Δ=14°07'22" L=542.28' T=272.52'	129+83.04	2923300.7258	576725.2761
C13	129+83.04	2923300.7258	576725.2761	R=3300.00' Δ=5°30'11" L=316.96' T=158.60'	133+00.00	2923602.6432	576629.1913

0 20 50 100
SCALE: 1" = 20'

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	21	169
PROJECT FILE NO.	609185		

CURB TIE & GRADING PLAN - 5

609185_CURB TIE & GRADING PLANS (LAUREL ST).DWG Plotted on 20-Nov-2024 3:45 PM

Curve Table			
Curve #	Radius	Length	Delta
C7	150.00	35.47	13°33'00"
C8	300.00	58.81	11°13'55"
C14	2200.90	91.78	2°23'22"
C15	2196.05	91.39	2°23'04"
C17	2196.57	152.61	3°58'50"

I-290 CONSTRUCTION BASELINE DATA							
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	ENDING STATION	NORTHING	EASTING
C11	122+00.00	2922524.2306	576793.5582	R=3300.00' Δ=4°10'49" L=240.76' T=120.43'	124+40.76	2922764.8742	576799.0652
C12	124+40.76	2922764.8742	576799.0652	R=2200.00' Δ=14°07'22" L=542.28' T=272.52'	129+83.04	2923300.7258	576725.2761
C13	129+83.04	2923300.7258	576725.2761	R=3300.00' Δ=5°30'11" L=316.96' T=158.60'	133+00.00	2923602.6432	576629.1913

0 20 50 100
SCALE: 1" = 20'

LEGEND - UTILITIES

- EXISTING ELECTRIC
- PROPOSED ELECTRICAL
- PROPOSED ELECTRIC BY OTHERS
- EXISTING COMMUNICATION/CATV
- PROPOSED COMMUNICATION/CATV
- PROPOSED COMMUNICATION/CATV BY OTHERS
- EXISTING DRAINAGE
- PROPOSED DRAINAGE
- EXISTING GAS
- PROPOSED GAS
- PROPOSED GAS BY OTHERS
- EXISTING WATER
- PROPOSED WATER
- EXISTING SEWER

NOTES:
1. REFER TO BRIDGE PLANS SHEETS 8 - 9 FOR ADDITIONAL STAGING INFORMATION REGARDING LOCATION AND DURATION OF UTILITY RELOCATION.
2. THE CONTRACTOR SHALL COORDINATE ALL UTILITY WORK WITH THE UTILITY OWNERS PRIOR TO STARTING ANY WORK ON THE PROJECT.
3. THE CONTRACTOR SHALL PROTECT THE TEMPORARY COMBINED SEWER PIPE THROUGHOUT CONSTRUCTION. ANY DAMAGE INCURRED DURING CONSTRUCTION WILL BE IMMEDIATELY REPAIRED AT NO COST TO THE CITY OR MASSDOT.
4. NATIONAL GRID SHALL BE RESPONSIBLE FOR THE INSTALLATION AND LAYOUT OF ALL ELECTRICAL FACILITIES BEYOND THE BRIDGE APPROACH SLABS. THE PROPOSED ELECTRICAL WORK BEYOND THE PROJECT LIMITS SHALL BE THE RESPONSIBILITY OF NATIONAL GRID AND WILL NOT BE INCLUDED IN THIS PROJECT.
5. CHARTER SHALL BE RESPONSIBLE FOR THE INSTALLATION AND LAYOUT OF ALL TELEPHONE FACILITIES BEYOND THE BRIDGE APPROACH SLABS.
6. SEE SHEETS 80 - 82 FOR RELOCATION OF MASSDOT ROADWAY LIGHTING SYSTEM AND REFER TO BRIDGE SHEETS 15,16,19, AND 20 FOR ADDITIONAL STAGING INFORMATION. THE SYSTEM SHALL BE INSTALLED PER MASSDOT'S STANDARDS.
7. THE CONTRACTOR SHALL INSTALL PROPOSED STREET LIGHTING ON HARRISON STREET PER THE CITY OF WORCESTER'S STANDARDS.
8. THE CONTRACTOR SHALL COORDINATE REMOVAL OF THE GUNSHOT DETECTOR PRIOR TO TO REMOVING THE LIGHT POLE AT STA. 12+36.
9. THE CONTRACTOR SHALL PERFORM TEST PITS AT WATER MAIN CONNECTIONS TO VERIFY THE LOCATION, SIZE AND MATERIAL OF THE EXISTING WATER PIPE.
10. THE EXPANSION JOINTS SHALL BE INSTALLED CENTERED BETWEEN THE BRIDGE UTILITY SUPPORTS.
11. THE CONTRACTOR SHALL VERIFY INVERTS IN FIELD FOR PROP. DMH (2-1).
12. REFER TO TRAFFIC MANAGEMENT PLANS FOR STAGING ON I-290.

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	22	169
	PROJECT FILE NO. 609185		

HARRISON ST DRAINAGE & UTILITY PLAN

LIMIT OF WORK
END PAVEMENT MICROMILLING AND RESURFACING
STA. 60+64.00

END FULL DEPTH PAVEMENT
BEGIN PAVEMENT MICROMILLING AND RESURFACING
STA. 60+36.58

END PAVEMENT MICROMILLING AND RESURFACING
BEGIN FULL DEPTH PAVEMENT
STA 12+00.00

BEGIN PROJECT
PROJECT NO. 609185
BEGIN PAVEMENT MICROMILLING AND RESURFACING
STA 11+42.00
N 2918558.9040
E 576051.1347

LIMIT OF WORK
END PAVEMENT MICROMILLING AND RESURFACING
STA. 30+55.05

END FULL DEPTH PAVEMENT
BEGIN PAVEMENT MICROMILLING AND RESURFACING
STA. 30+35.35

END FULL DEPTH PAVEMENT
BEGIN MICROMILLING AND RESURFACING
STA 16+05.00

END PROJECT
PROJECT NO. 609185
END PAVEMENT MICROMILLING AND RESURFACING
STA 16+25.00
N 2918289.3357
E 576442.1752

I-290 WEST

I-290 EAST

WATER STREET
(PUBLIC VARIABLE WIDTH
1895 CITY LAYOUT)

WAVERLY STREET
(PUBLIC 50 FEET WIDE
1895 CITY LAYOUT)

HARRISON STREET

PROP. 12" - 45° BEND AND THRUST BLOCK
PROP. GAS GATE (BO-EV)
PROP. 34 LF - 8" PVC
PROP. CB W/F&C (2-5)
PROP. 7 LF - 8" PVC
PROP. (2) 12"-45° VERTICAL BENDS AND THRUST BLOCKS
CONNECT TO EXIST. CSMH (ADJ-BO-EV)
PROP. CUT & CAP (TYP.)
PROP. 12"-45° BEND AND THRUST BLOCK
PROP. 12" GATE VALVE
CONNECT TO EXISTING 12" WATER MAIN WITH 12" MECHANICAL RESTRAINED INSULATING COUPLING
PROP. 1-4" CONDUIT (BO-CHRTR)
PROP. TEST PIT (TYP.)
PROP. CUT & CAP (BO-EV)
PROP. 6-5" CONDUITS (BO-NGRID)
PROP. 12" INSERTION VALVE
RELOCATE LIGHT POLE
REMOVE EXISTING GATE VALVE
PROP. 12"X6" TEE AND THRUST BLOCK, 6" GATE VALVE, 6" DIP, AND 6" MECHANICAL RESTRAINED INSULATING COUPLING
PROP. ALT CB (2-4)
REMOVE EXISTING CB
PROP. CSMH (1-15)
REMOVE EXISTING SMH
PROP. 15 LF - 12" DIP
PROP. DROP MH (1-9)
PROP. EMH (BO-NGRID)
PROP. DI (2-2)
PROP. 2-4" CONDUITS AND ELECTRICAL EQUIPMENT SEE ELECTRICAL PLANS
PROP. 12" DI EXPANSION JOINT
PROP. DMH (2-1)
PROP. 10 LF - 12" RCP
REMOVE 8" GAS IN 10" SLEEVE
REMOVE 12" WATER
PROP. 12" RESTRAINED MECHANICAL JOINT DICL WATER WITH INSULATION
PROP. 1-4" CONDUITS
PROP. 6-5" CONDUITS (FOR NATIONAL GRID)
PROP. 1-4" CONDUIT
PROP. 12" DI EXPANSION JOINT
PROP. 8" STEEL GAS (BO-EV)
PROP. 12" - 5 5/8° VERTICAL BEND
PROP. 12" - 45° BEND AND THRUST BLOCK
PROP. CBCI (1-6) REMOVE EXISTING CB
PROP. 18 LF - 8" PVC
PROP. (2) 12" - 45° VERTICAL BENDS AND THRUST BLOCKS
PROP. SUPPORT OF EXCAVATION (TYP.)
PROP. 12" DI EXPANSION JOINT
REMOVE ABANDONED GAS
PROP. 6 LF - 12" RCP
PROP. 7 LF - 12" RCP
PROP. 12" RESTRAINED MECHANICAL JOINT DIP SEWER WITH INSULATION
PROP. 12" DI EXPANSION JOINT
PROP. 12" - 5 5/8° VERTICAL BEND
PROP. CSMH (1-7)
PROP. 8 LF - 12" PVC
PROP. CSMH (1-8)
PROP. 8 LF - 8" PVC
REMOVE EXISTING AIR RELEASE VALVE
PROP. CBCI (1-5)
PROP. 56 LF - 12" PVC
PROP. 12" - 45° BEND AND THRUST BLOCK
PROP. CUT & CAP (BO-EV) (TYP.)
PROP. CSMH (1-14) REMOVE EXISTING SMH
PROP. 22 LF - 12" PVC
PROP. CSMH (1-12)
PROP. 14 LF - 8" PVC
PROP. CB (1-11)
PROP. GAS GATE (BO-EV)
PROP. 1-4" CONDUIT (BO-CHRTR)
PROP. 6-5" CONDUITS (BO-NGRID)
PROP. 12" INSERTION VALVE
PROP. CSMH (1-13) REMOVE EXISTING SMH
PROP. 8 LF - 12" PVC
CONNECT TO EXISTING 12" WATER MAIN WITH 12" MECHANICAL RESTRAINED INSULATING COUPLING
PROP. 12"X8" TEE AND THRUST BLOCK, (1) 8" GATE VALVE, 8" DIP, (2) 8" - 45° BENDS AND THRUST BLOCKS CONNECT TO EXISTING WATER MAIN WITH 8" MECHANICAL RESTRAINED INSULATING COUPLING
PROP. 12"X6" TEE AND THRUST BLOCK, (2) 12" GATE VALVES, (1) 6" GATE VALVE, 6" DIP, HYDRANT REMOVE EXISTING HYDRANT, 6" DIP, AND 6" GATE VALVE AFTER INSTALLATION

DRAINAGE STRUCTURE TABLE

NAME/TYPE	STATION	OFFSET	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT
PROP. BEND EAST	14+81.88	19.5 RT	494.66	I=492.10' (PROP. CSMH (1-8))	I=492.10' (PROP. BEND WEST)
PROP. BEND WEST	13+30.67	19.5 RT	478.36	I=474.04' (PROP. BEND EAST)	I=474.04' (PROP. DROP MH (1-9))
PROP. CB (1-11)	15+44.79	26.7 LT	501.10		I=494.38' (PROP. CSMH (1-14))
PROP. CBCI (1-5)	15+14.45	15.9 RT	497.64		I=492.40' (PROP. CSMH (1-8))
PROP. CBCI (1-6)	15+01.29	14.4 LT	496.25		I=492.50' (PROP. CSMH (1-7))
PROP. CSMH (1-7)	15+02.77	8.0 RT	496.54	I=492.40' (PROP. CBCI (1-6)) I=492.64' (PROP. CSMH (1-12))	I=492.45' (PROP. CSMH (1-8))
PROP. CSMH (1-8)	15+02.61	19.5 RT	496.90	I=492.32' (PROP. CSMH (1-7)) I=492.35' (PROP. CBCI (1-5))	I=492.25' (PROP. BEND EAST)

DRAINAGE STRUCTURE TABLE

NAME/TYPE	STATION	OFFSET	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT
PROP. CSMH (1-12)	15+62.62	2.8 RT	503.21	I=493.85' (PROP. CSMH (1-14)) I=493.85' (PROP. CSMH (1-13))	I=493.75' (PROP. CSMH (1-7))
PROP. CSMH (1-13)	15+73.88	0.2 LT	504.63	I=494.61' (EX. CSMH)	I=494.48' (PROP. CSMH (1-12))
PROP. CSMH (1-14)	15+62.77	22.9 LT	503.10	I=494.10' (PROP. CB (1-11))	I=494.10' (PROP. CSMH (1-12))
PROP. CSMH (1-15)	12+99.78	1.0 RT	475.11	I=465.69' (PROP. DROP MH (1-9))	
PROP. DI (2-2)	13+20.83	17.1 LT	477.32		I=474.77' (PROP. CB W/F&C (2-5))
PROP. DMH (2-1)	80+25.68	6.6 RT	462.13	I=456.20' (EX. CB) I=456.20' (EX. CB)	I=456.20' (EX. DMH)
PROP. DROP MH (1-9)	13+04.55	19.5 RT	475.28	I=471.03' (PROP. BEND WEST)	I=465.80' (PROP. CSMH (1-15))

*PROP. DROP MH (1-9) SHALL HAVE AN ADDITIONAL INLET FROM PROP. CSMH (1-15) WITH THE SAME INVERT AS THE OUTLET.

0 20 50 100
SCALE: 1" = 20'

609185_HDXX (DRAINAGE AND UTILITY PLANS).DWG Plotted on 21-Nov-2024 3:45 PM

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	23	169
	PROJECT FILE NO. 609185		

LAUREL ST DRAINAGE & UTILITY PLAN

609185_HDXX (DRAINAGE AND UTILITY PLANS).DWG Plotted on 21-Nov-2024 3:45 PM

BEGIN PROJECT
PROJECT NO. 609185
BEGIN PAVEMENT MICROMILLING AND RESURFACING
STA 6+40.00
N 2923123.6684
E 576562.5731

END PAVEMENT MICROMILLING AND RESURFACING
BEGIN FULL DEPTH PAVEMENT
STA 6+65.00

END FULL DEPTH PAVEMENT
BEGIN MICROMILLING AND RESURFACING
STA 9+97.00

END PROJECT
PROJECT NO. 609185
END PAVEMENT MICROMILLING AND RESURFACING
STA 10+17.00
N 2923085.3207
E 576936.4346

I-290 WEST

I-290 EAST

EDWARD STREET
(PUBLIC - 50 FEET WIDE)

LAUREL STREET

PROP. 6-5" CONDUITS (BO-NGRID)
PROP. 8" INSERTION VALVE
CONNECT TO EXISTING 8"WATER MAIN WITH 8" SOLID SLEEVE
PROP. 1-4" CONDUIT (BO-CHRTR)
PROP. 8" GATE VALVE
PROP. GAS GATE (BO-EV)
PROP. FRAME AND GRADE R&S EXISTING FRAME AND GRADE
(2) PROP. 8" - 45° VERTICAL BENDS AND THRUST BLOCKS
PROP. TEST PIT (TYP.)
PROP. FRAME AND GRADE R&S EXISTING FRAME AND GRADE
RELOCATE 4-4" CONDUITS (BO-VZN)
PROP. 8" DI EXPANSION JOINT
REMOVE 6" GAS IN 8" SLEEVE
PROP. 8"-45° BEND AND THRUST BLOCK
CUT AND CAP ABANDONED GAS (BO-EV)
PROP. 6" STEEL GAS (BO-EV)
PROP. EMH (BO-NGRID)
PROP. 4-4" CONDUITS (BO-VZN)
PROP. 8" - 22 1/2° BEND AND THRUST BLOCK
REMOVE 4-4" CONDUITS
PROP. 6-5" CONDUITS (FOR NATIONAL GRID)
PROP. 1-4" CONDUIT (FOR CHARTER)
PROP. 4-4" CONDUITS (FOR VERIZON)
PROP. 5 LF - 18" RCP
PROP. RISER DMH (5-1) REMOVE EXISTING DMH
PROP. 5 LF - 15" RCP
PROP. EMH (BO-NGRID)
RELOCATE LIGHT POLE FROM STA. 9+69 LT
PROP. 6-5" CONDUITS (BO-NGRID)
PROP. CB (4-1) REMOVE EXISTING CB
PROP. 11 LF - 8" PVC REMOVE EXISTING PIPE
CONNECT TO EXISTING CSMH
PROP. 8" - 45° BEND AND THRUST BLOCK
PROP. SUPPORT OF EXCAVATION (TYP.)
PROP. 8" DI EXPANSION JOINT
PROP. 8" RESTRAINED MECHANICAL JOINT DICL WATER WITH INSULATION
REMOVE ABANDONED GAS
CONTRACTOR TO CONFIRM THERE IS NO CONFLICT BETWEEN THE PROPOSED BARRIER AND THE EXISTING SMH
PROP. 5 LF - 12" RCP
PROP. 5 LF - 12" RCP
PROP. GAS GATE (BO-EV)
PROP. 8" GATE VALVE
PROP. CBCI (4-2) REMOVE EXISTING CB
PROP. 14 LF - 8" PVC REMOVE EXISTING PIPE
CUT AND CAP (BO-EV)
(REM-BO-EV)
PROP. 8"-45° BEND AND THRUST BLOCK
PROP. (2) 8" - 45° VERTICAL BENDS AND THRUST BLOCKS
PROP. 6-5" CONDUITS (BO-NGRID)
PROP. 1-4" CONDUIT (BO-CHRTR)
CONNECT TO EXISTING 8" WATER MAIN WITH 8" SOLID SLEEVE
PROP. 4-4" CONDUITS (BO-VZN)
PROP. 3/4" CORPORATION COCK AND 3/4 " COPPER WATER SERVICE
PROP. 8" GATE VALVE
REMOVE AND RESET HYDRANT
PROP. 6"X8" TEE AND THRUST BLOCK, 6" DIP, 6" GATE VALVE

(ADJ) (RET) (REM-BO-EV) (ADJ-BO-EV) (RMD) (RMD-BO-VZN) (CTE)

LEGEND - UTILITIES

- EXISTING ELECTRIC
- PROPOSED ELECTRICAL
- PROPOSED ELECTRIC BY OTHERS
- EXISTING COMMUNICATION/CATV
- PROPOSED COMMUNICATION/CATV
- PROPOSED COMMUNICATION/CATV BY OTHERS
- EXISTING DRAINAGE
- PROPOSED DRAINAGE
- EXISTING GAS
- PROPOSED GAS
- PROPOSED GAS BY OTHERS
- EXISTING WATER
- PROPOSED WATER
- EXISTING SEWER

NOTES:
1. REFER TO BRIDGE PLANS SHEETS 8 - 9 FOR ADDITIONAL STAGING INFORMATION REGARDING LOCATION AND DURATION OF UTILITY RELOCATION.
2. THE CONTRACTOR SHALL COORDINATE ALL UTILITY WORK WITH THE UTILITY OWNERS PRIOR TO STARTING ANY WORK ON THE PROJECT. THE TEMPORARY TELEPHONE CONDUITS SHALL BE INSTALLED AND CONNECTED PRIOR TO THE REMOVAL OF THE EXISTING TELEPHONE CONDUITS AND
3. THE TEMPORARY CONDUITS SHALL REMAIN IN PLACE UNTIL THE PERMANENT TELEPHONE CONDUITS HAVE BEEN INSTALLED, CONNECTED, AND ACTIVE. THE CONTRACTOR SHALL COORDINATE THE REMOVAL OF THE TEMPORARY CONDUITS WITH VERIZON.
4. VERIZON SHALL BE RESPONSIBLE FOR THE INSTALLATION OF ALL TELEPHONE FACILITIES OWNED BY VERIZON BEYOND THE BRIDGE APPROACH SLABS. THE CONTRACTOR SHALL COORDINATE THE REMOVAL OF EXISTING ACTIVE AND ABANDONED TELEPHONE FACILITIES WITH VERIZON.
5. CHARTER SHALL BE RESPONSIBLE FOR THE INSTALLATION AND LAYOUT OF THE TELEPHONE FACILITIES OWNED BY CHARTER BEYOND THE BRIDGE APPROACH SLABS.
6. NATIONAL GRID SHALL BE RESPONSIBLE FOR THE INSTALLATION AND LAYOUT OF ALL ELECTRICAL FACILITIES BEYOND THE BRIDGE APPROACH SLABS. THE PROPOSED ELECTRICAL WORK BEYOND THE PROJECT LIMITS SHALL BE THE RESPONSIBILITY OF NATIONAL GRID AND WILL NOT BE INCLUDED IN THIS PROJECT.
7. THE CONTRACTOR SHALL INSTALL PROPOSED STREET LIGHTING ON LAUREL STREET PER THE CITY OF WORCESTER'S STANDARDS.
8. THE CONTRACTOR SHALL PERFORM TEST PITS AT WATER MAIN CONNECTIONS TO VERIFY THE LOCATION, SIZE AND MATERIAL OF THE EXISTING WATER PIPE.
9. THE EXPANSION JOINTS SHALL BE INSTALLED CENTERED BETWEEN THE BRIDGE UTILITY SUPPORTS.
10. THE CONTRACTOR SHALL INSTALL A TEMPORARY WATER BYPASS FOR ALL SHUTDOWNS THAT EXCEED 8 HOURS OR AS REQUESTED BY THE ENGINEER.
11. THE CONTRACTOR SHALL VERIFY INVERTS IN FIELD FOR PROP. RISER DMH (5-1).
12. REFER TO TRAFFIC MANAGEMENT PLANS FOR STAGING ON I-290.

SCALE: 1" = 20'

DRAINAGE STRUCTURE TABLE

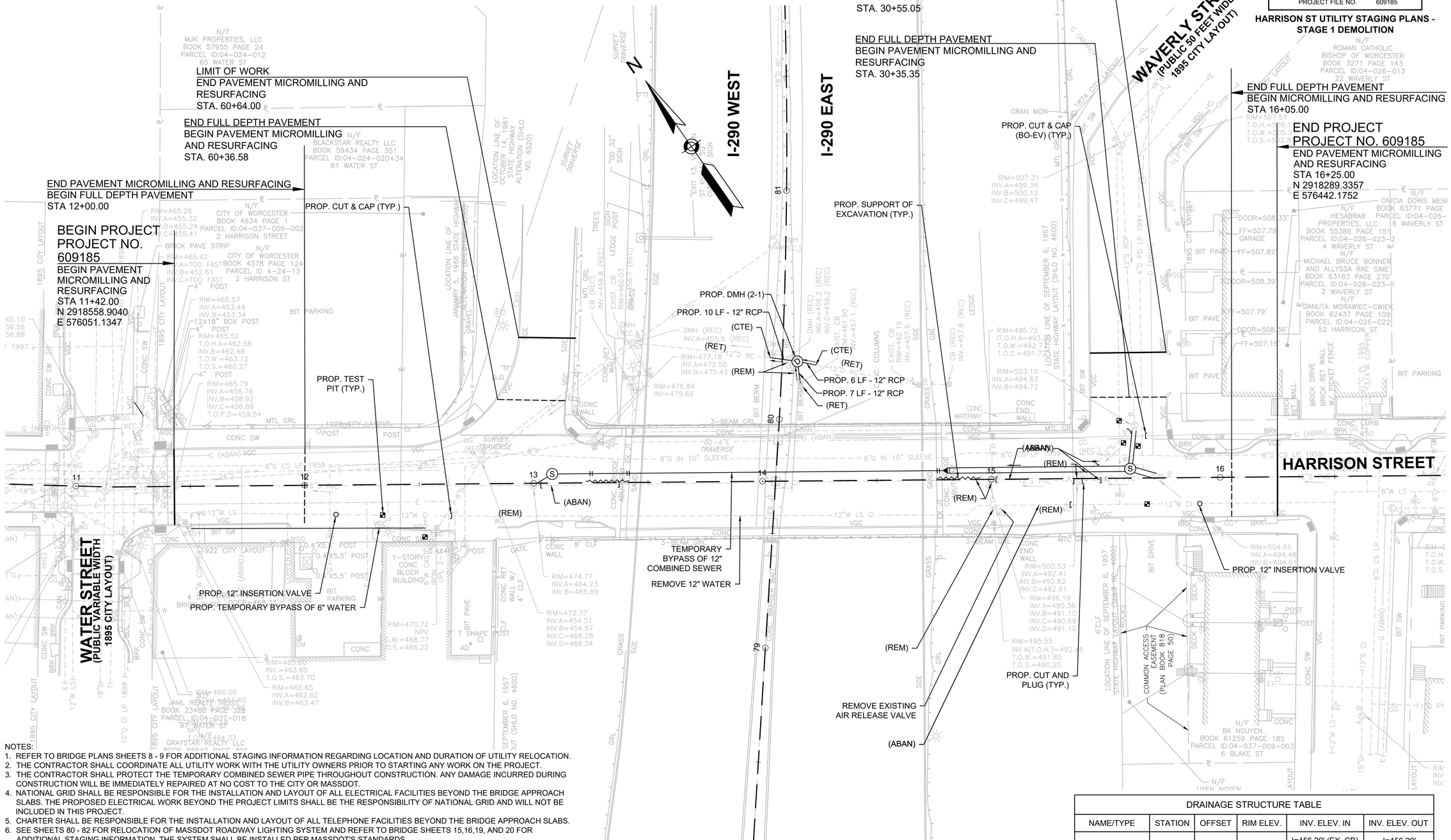
NAME/TYPE	STATION	OFFSET	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT
PROP. CB (4-1)	9+71.40	14.0 LT	545.28		I=540.61' (EX. SMH 9+73)
PROP. CBCI (4-2)	9+61.31	14.2 RT	544.34		I=541.00' (EX. SMH 9+73)
PROP. RISER DMH (5-1)	127+07.87	0.0	510.93	I=503.30' (EX. CB 127+03) I=503.00' (EX. CB-126+99) I=498.80' (EX. DMH 125+08)	I=498.50' (EX. DMH 127+46)

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	24	169
	PROJECT FILE NO. 609185		

HARRISON ST UTILITY STAGING PLANS - STAGE 1 DEMOLITION

609185_HDXX (DRAINAGE AND UTILITY PLANS).DWG Plotted on 21-Nov-2024 3:45 PM



NOTES:

1. REFER TO BRIDGE PLANS SHEETS 8 - 9 FOR ADDITIONAL STAGING INFORMATION REGARDING LOCATION AND DURATION OF UTILITY RELOCATION.
2. THE CONTRACTOR SHALL COORDINATE ALL UTILITY WORK WITH THE UTILITY OWNERS PRIOR TO STARTING ANY WORK ON THE PROJECT.
3. THE CONTRACTOR SHALL PROTECT THE TEMPORARY COMBINED SEWER PIPE THROUGHOUT CONSTRUCTION. ANY DAMAGE INCURRED DURING CONSTRUCTION WILL BE IMMEDIATELY REPAIRED AT NO COST TO THE CITY OR MASSDOT.
4. NATIONAL GRID SHALL BE RESPONSIBLE FOR THE INSTALLATION AND LAYOUT OF ALL ELECTRICAL FACILITIES BEYOND THE BRIDGE APPROACH SLABS. THE PROPOSED ELECTRICAL WORK BEYOND THE PROJECT LIMITS SHALL BE THE RESPONSIBILITY OF NATIONAL GRID AND WILL NOT BE INCLUDED IN THIS PROJECT.
5. CHARTER SHALL BE RESPONSIBLE FOR THE INSTALLATION AND LAYOUT OF ALL TELEPHONE FACILITIES BEYOND THE BRIDGE APPROACH SLABS.
6. SEE SHEETS 80 - 82 FOR RELOCATION OF MASSDOT ROADWAY LIGHTING SYSTEM AND REFER TO BRIDGE SHEETS 15,16,19, AND 20 FOR ADDITIONAL STAGING INFORMATION. THE SYSTEM SHALL BE INSTALLED PER MASSDOT'S STANDARDS.
7. THE CONTRACTOR SHALL INSTALL PROPOSED STREET LIGHTING ON HARRISON STREET PER THE CITY OF WORCESTER'S STANDARDS.
8. THE CONTRACTOR SHALL COORDINATE REMOVAL OF THE GUNSHOT DETECTOR PRIOR TO TO REMOVING THE LIGHT POLE AT STA. 12+36.
9. THE CONTRACTOR SHALL PERFORM TEST PITS AT WATER MAIN CONNECTIONS TO VERIFY THE LOCATION, SIZE AND MATERIAL OF THE EXISTING WATER PIPE.
10. THE EXPANSION JOINTS SHALL BE INSTALLED CENTERED BETWEEN THE BRIDGE UTILITY SUPPORTS.
11. THE CONTRACTOR SHALL VERIFY INVERTS IN FIELD FOR PROP. DMH (2-1).
12. REFER TO TRAFFIC MANAGEMENT PLANS FOR STAGING ON I-290.

STAGING PLAN
STAGE 1 DEMOLITION

0 20 50 100
SCALE: 1" = 20'

DRAINAGE STRUCTURE TABLE

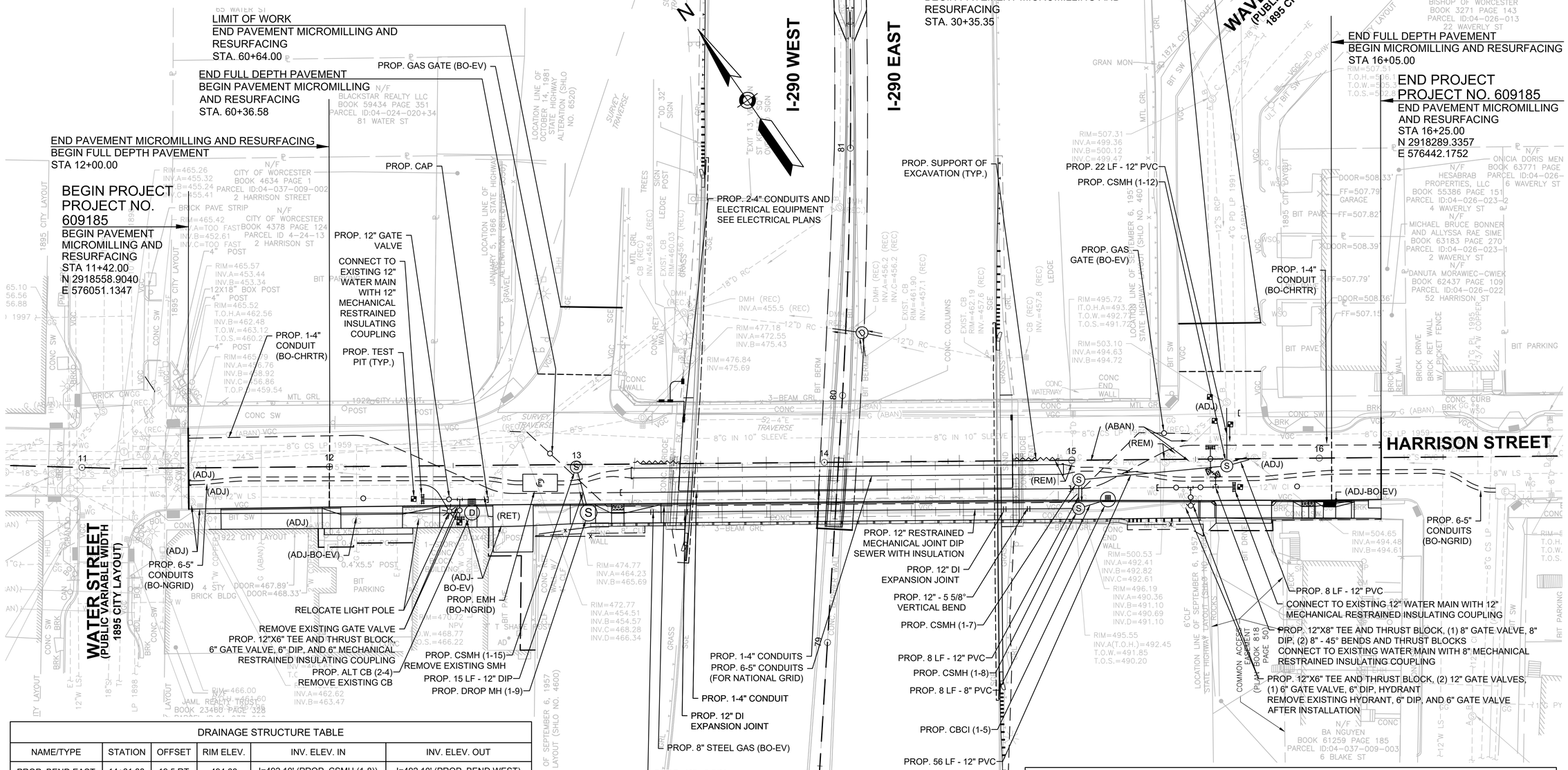
NAME/TYPE	STATION	OFFSET	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT
PROP. DMH (2-1)	80+25.68	6.6 RT	462.13	I=456.20' (EX. CB) I=456.20' (EX. CB)	I=456.20' (EX. DMH)

NOTES:
1. REFER TO BRIDGE PLANS SHEETS 8 - 9 FOR ADDITIONAL STAGING INFORMATION REGARDING LOCATION AND DURATION OF UTILITY RELOCATION.
2. THE CONTRACTOR SHALL COORDINATE ALL UTILITY WORK WITH THE UTILITY OWNERS PRIOR TO STARTING ANY WORK ON THE PROJECT.
3. THE CONTRACTOR SHALL PROTECT THE TEMPORARY COMBINED SEWER PIPE THROUGHOUT CONSTRUCTION. ANY DAMAGE INCURRED DURING CONSTRUCTION WILL BE IMMEDIATELY REPAIRED AT NO COST TO THE CITY OR MASSDOT.
4. NATIONAL GRID SHALL BE RESPONSIBLE FOR THE INSTALLATION AND LAYOUT OF ALL ELECTRICAL FACILITIES BEYOND THE BRIDGE APPROACH SLABS. THE PROPOSED ELECTRICAL WORK BEYOND THE PROJECT LIMITS SHALL BE THE RESPONSIBILITY OF NATIONAL GRID AND WILL NOT BE INCLUDED IN THIS PROJECT.
5. CHARTER SHALL BE RESPONSIBLE FOR THE INSTALLATION AND LAYOUT OF ALL TELEPHONE FACILITIES BEYOND THE BRIDGE APPROACH SLABS.
6. SEE SHEETS 80 - 82 FOR RELOCATION OF MASSDOT ROADWAY LIGHTING SYSTEM AND REFER TO BRIDGE SHEETS 15,16,19, AND 20 FOR ADDITIONAL STAGING INFORMATION. THE SYSTEM SHALL BE INSTALLED PER MASSDOT'S STANDARDS.
7. THE CONTRACTOR SHALL INSTALL PROPOSED STREET LIGHTING ON HARRISON STREET PER THE CITY OF WORCESTER'S STANDARDS.
10. THE CONTRACTOR SHALL COORDINATE REMOVAL OF THE GUNSHOT DETECTOR PRIOR TO TO REMOVING THE LIGHT POLE AT STA. 12+36.
11. THE CONTRACTOR SHALL PERFORM TEST PITS AT WATER MAIN CONNECTIONS TO VERIFY THE LOCATION, SIZE AND MATERIAL OF THE EXISTING WATER PIPE.
12. THE EXPANSION JOINTS SHALL BE INSTALLED CENTERED BETWEEN THE BRIDGE UTILITY SUPPORTS.
13. THE CONTRACTOR SHALL VERIFY INVERTS IN FIELD FOR PROP. DMH (2-1).
14. REFER TO TRAFFIC MANAGEMENT PLANS FOR STAGING ON I-290.

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	25	169
	PROJECT FILE NO. 609185		

HARRISON ST UTILITY STAGING PLANS - STAGE 1 CONSTRUCTION



STAGING PLAN
STAGE 1 CONSTRUCTION

0 20 50 100
SCALE: 1" = 20'

DRAINAGE STRUCTURE TABLE

NAME/TYPE	STATION	OFFSET	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT
PROP. BEND EAST	14+81.88	19.5 RT	494.66	I=492.10' (PROP. CSMH (1-8))	I=492.10' (PROP. BEND WEST)
PROP. BEND WEST	13+30.67	19.5 RT	478.36	I=474.04' (PROP. BEND EAST)	I=474.04' (PROP. DROP MH (1-9))
PROP. CBCI (1-5)	15+14.45	15.9 RT	497.64		I=492.40' (PROP. CSMH (1-8))
PROP. CSMH (1-7)	15+02.77	8.0 RT	496.54	I=492.40' (PROP. CBCI (1-6)) I=492.64' (PROP. CSMH (1-12))	I=492.45' (PROP. CSMH (1-8))
PROP. CSMH (1-8)	15+02.61	19.5 RT	496.90	I=492.32' (PROP. CSMH (1-7)) I=492.35' (PROP. CBCI (1-5))	I=492.25' (PROP. BEND EAST)
PROP. CSMH (1-12)	15+62.62	2.8 RT	503.21	I=493.85' (PROP. CSMH (1-14)) I=493.85' (PROP. CSMH (1-13))	I=493.75' (PROP. CSMH (1-7))

DRAINAGE STRUCTURE TABLE

NAME/TYPE	STATION	OFFSET	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT
PROP. CSMH (1-13)	15+73.88	0.2 LT	504.63	I=494.61' (EX. CSMH)	I=494.48' (PROP. CSMH (1-12))
PROP. CSMH (1-14)	15+62.77	22.9 LT	503.10	I=494.10' (PROP. CB (1-11))	I=494.10' (PROP. CSMH (1-12))
PROP. CSMH (1-15)	12+99.78	1.0 RT	475.11	I=465.69' (PROP. DROP MH (1-9))	
PROP. DROP MH (1-9)	13+04.55	19.5 RT	475.28	I=471.03' (PROP. BEND WEST)	I=465.80' (PROP. CSMH (1-15))

*PROP. DROP MH (1-9) SHALL HAVE AN ADDITIONAL INLET FROM PROP. CSMH (1-15) WITH THE SAME INVERT AS THE OUTLET.

609185_HDXX (DRAINAGE AND UTILITY PLANS).DWG Plotted on 21-Nov-2024 3:46 PM

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	26	169
	PROJECT FILE NO. 609185		

HARRISON ST UTILITY STAGING PLANS - STAGE 2 DEMOLITION

609185_HDXX (DRAINAGE AND UTILITY PLANS).DWG Plotted on 21-Nov-2024 3:46 PM

LIMIT OF WORK
END PAVEMENT MICROMILLING AND RESURFACING
STA. 60+64.00

END FULL DEPTH PAVEMENT
BEGIN PAVEMENT MICROMILLING AND RESURFACING
STA. 60+36.58

END PAVEMENT MICROMILLING AND RESURFACING
BEGIN FULL DEPTH PAVEMENT
STA 12+00.00

BEGIN PROJECT
PROJECT NO. 609185
BEGIN PAVEMENT MICROMILLING AND RESURFACING
STA 11+42.00
N 2918558.9040
E 576051.1347

LIMIT OF WORK
END PAVEMENT MICROMILLING AND RESURFACING
STA. 30+55.05

END FULL DEPTH PAVEMENT
BEGIN PAVEMENT MICROMILLING AND RESURFACING
STA. 30+35.35

END FULL DEPTH PAVEMENT
BEGIN MICROMILLING AND RESURFACING
STA 16+05.00

END PROJECT
PROJECT NO. 609185
END PAVEMENT MICROMILLING AND RESURFACING
STA 16+25.00
N 2918289.3357
E 576442.1752

I-290 WEST

I-290 EAST

WAVERLY STREET
(PUBLIC 50 FEET WIDE
1895 CITY LAYOUT)

WATER STREET
(PUBLIC VARIABLE WIDTH
1895 CITY LAYOUT)

HARRISON STREET

PROP. SUPPORT OF EXCAVATION (TYP.)

REMOVE ABANDONED GAS

PROP. TEST PIT (TYP.)

PROP. CUT & CAP (BO-EV)

REMOVE 8" GAS IN 10" SLEEVE

REMOVE 2-4" CONDUITS AND 4-4" CONDUITS

COMMON ACCESS EASEMENT (PLAN BOOK 818 PAGE 50)

NOTES:
1. REFER TO BRIDGE PLANS SHEETS 8 - 9 FOR ADDITIONAL STAGING INFORMATION REGARDING LOCATION AND DURATION OF UTILITY RELOCATION.
2. THE CONTRACTOR SHALL COORDINATE ALL UTILITY WORK WITH THE UTILITY OWNERS PRIOR TO STARTING ANY WORK ON THE PROJECT.
3. THE CONTRACTOR SHALL PROTECT THE TEMPORARY COMBINED SEWER PIPE THROUGHOUT CONSTRUCTION. ANY DAMAGE INCURRED DURING CONSTRUCTION WILL BE IMMEDIATELY REPAIRED AT NO COST TO THE CITY OR MASSDOT.
4. NATIONAL GRID SHALL BE RESPONSIBLE FOR THE INSTALLATION AND LAYOUT OF ALL ELECTRICAL FACILITIES BEYOND THE BRIDGE APPROACH SLABS. THE PROPOSED ELECTRICAL WORK BEYOND THE PROJECT LIMITS SHALL BE THE RESPONSIBILITY OF NATIONAL GRID AND WILL NOT BE INCLUDED IN THIS PROJECT.
5. CHARTER SHALL BE RESPONSIBLE FOR THE INSTALLATION AND LAYOUT OF ALL TELEPHONE FACILITIES BEYOND THE BRIDGE APPROACH SLABS.
6. SEE SHEETS 80 - 82 FOR RELOCATION OF MASSDOT ROADWAY LIGHTING SYSTEM AND REFER TO BRIDGE SHEETS 15,16,19, AND 20 FOR ADDITIONAL STAGING INFORMATION. THE SYSTEM SHALL BE INSTALLED PER MASSDOT'S STANDARDS.
7. THE CONTRACTOR SHALL INSTALL PROPOSED STREET LIGHTING ON HARRISON STREET PER THE CITY OF WORCESTER'S STANDARDS.
8. THE CONTRACTOR SHALL PERFORM TEST PITS AT WATER MAIN CONNECTIONS TO VERIFY THE LOCATION, SIZE AND MATERIAL OF THE EXISTING WATER PIPE.
9. THE EXPANSION JOINTS SHALL BE INSTALLED CENTERED BETWEEN THE BRIDGE UTILITY SUPPORTS.
10. THE CONTRACTOR SHALL VERIFY INVERTS IN FIELD FOR PROP. DMH (2-1).
11. REFER TO TRAFFIC MANAGEMENT PLANS FOR STAGING ON I-290.

STAGING PLAN
STAGE 2 DEMOLITION

0 20 50 100
SCALE: 1" = 20'

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	27	169
	PROJECT FILE NO. 609185		

HARRISON ST UTILITY STAGING PLANS - STAGE 2 CONSTRUCTION

609185_HDXX (DRAINAGE AND UTILITY PLANS).DWG Plotted on 21-Nov-2024 3:47 PM

LIMIT OF WORK
END PAVEMENT MICROMILLING AND RESURFACING
STA. 60+64.00

END FULL DEPTH PAVEMENT
BEGIN PAVEMENT MICROMILLING AND RESURFACING
STA. 60+36.58

END PAVEMENT MICROMILLING AND RESURFACING
BEGIN FULL DEPTH PAVEMENT
STA 12+00.00

BEGIN PROJECT
PROJECT NO. 609185
BEGIN PAVEMENT MICROMILLING AND RESURFACING
STA 11+42.00
N 2918558.9040
E 576051.1347

LIMIT OF WORK
END PAVEMENT MICROMILLING AND RESURFACING
STA. 30+55.05

END FULL DEPTH PAVEMENT
BEGIN PAVEMENT MICROMILLING AND RESURFACING
STA. 30+35.35

END FULL DEPTH PAVEMENT
BEGIN MICROMILLING AND RESURFACING
STA 16+05.00

END PROJECT
PROJECT NO. 609185
END PAVEMENT MICROMILLING AND RESURFACING
STA 16+25.00
N 2918289.3357
E 576442.1752

I-290 WEST

I-290 EAST

WAVERLY STREET
(PUBLIC 50 FEET WIDE
1895 CITY LAYOUT)

WATER STREET
(PUBLIC VARIABLE WIDTH
1895 CITY LAYOUT)

HARRISON STREET

PROP. 12"-45° BEND AND THRUST BLOCK
PROP. 34 LF - 8" PVC
PROP. CB W/F&C (2-5)
PROP. 7 LF - 8" PVC
CONNECT TO EXIST. CSMH
(ADJ-BO-EV)
PROP. (2) 12"-45° VERTICAL BENDS AND THRUST BLOCKS
PROP. DI (2-2)
PROP. 12" DI EXPANSION JOINT
PROP. TEST PIT (TYP.)
PROP. 12" - 45° BEND AND THRUST BLOCK
PROP. CBCI (1-6) REMOVE EXISTING CB
PROP. 18 LF - 8" PVC
PROP. CSMH (1-14) REMOVE EXISTING SMH
PROP. SUPPORT OF EXCAVATION (TYP.)
PROP. 12" DI EXPANSION JOINT
PROP. 14 LF - 8" PVC
PROP. CB (1-11)
PROP. CSMH (1-13) REMOVE EXISTING SMH
PROP. 12" RESTRAINED MECHANICAL JOINT DICL WATER WITH INSULATION
PROP. 12" - 45° BEND AND THRUST BLOCK

STAGING PLAN
STAGE 2 CONSTRUCTION

0 20 50 100
SCALE: 1" = 20'

NOTES:
1. REFER TO BRIDGE PLANS SHEETS 8 - 9 FOR ADDITIONAL STAGING INFORMATION REGARDING LOCATION AND DURATION OF UTILITY RELOCATION.
2. THE CONTRACTOR SHALL COORDINATE ALL UTILITY WORK WITH THE UTILITY OWNERS PRIOR TO STARTING ANY WORK ON THE PROJECT.
3. THE CONTRACTOR SHALL PROTECT THE TEMPORARY COMBINED SEWER PIPE THROUGHOUT CONSTRUCTION. ANY DAMAGE INCURRED DURING CONSTRUCTION WILL BE IMMEDIATELY REPAIRED AT NO COST TO THE CITY OR MASSDOT.
4. NATIONAL GRID SHALL BE RESPONSIBLE FOR THE INSTALLATION AND LAYOUT OF ALL ELECTRICAL FACILITIES BEYOND THE BRIDGE APPROACH SLABS. THE PROPOSED ELECTRICAL WORK BEYOND THE PROJECT LIMITS SHALL BE THE RESPONSIBILITY OF NATIONAL GRID AND WILL NOT BE INCLUDED IN THIS PROJECT.
5. CHARTER SHALL BE RESPONSIBLE FOR THE INSTALLATION AND LAYOUT OF ALL TELEPHONE FACILITIES BEYOND THE BRIDGE APPROACH SLABS.
6. SEE SHEETS 80 - 82 FOR RELOCATION OF MASSDOT ROADWAY LIGHTING SYSTEM AND REFER TO BRIDGE SHEETS 15,16,19, AND 20 FOR ADDITIONAL STAGING INFORMATION. THE SYSTEM SHALL BE INSTALLED PER MASSDOT'S STANDARDS.
7. THE CONTRACTOR SHALL INSTALL PROPOSED STREET LIGHTING ON HARRISON STREET PER THE CITY OF WORCESTER'S STANDARDS.
8. THE CONTRACTOR SHALL COORDINATE REMOVAL OF THE GUNSHOT DETECTOR PRIOR TO TO REMOVING THE LIGHT POLE AT STA. 12+36.
9. THE CONTRACTOR SHALL VERIFY INVERTS IN FIELD FOR PROP. DMH (2-1).
10. THE CONTRACTOR SHALL PERFORM TEST PITS AT WATER MAIN CONNECTIONS TO VERIFY THE LOCATION, SIZE AND MATERIAL OF THE EXISTING WATER PIPE.
11. THE EXPANSION JOINTS SHALL BE INSTALLED CENTERED BETWEEN THE BRIDGE UTILITY SUPPORTS.
12. REFER TO TRAFFIC MANAGEMENT PLANS FOR STAGING ON I-290.

DRAINAGE STRUCTURE TABLE

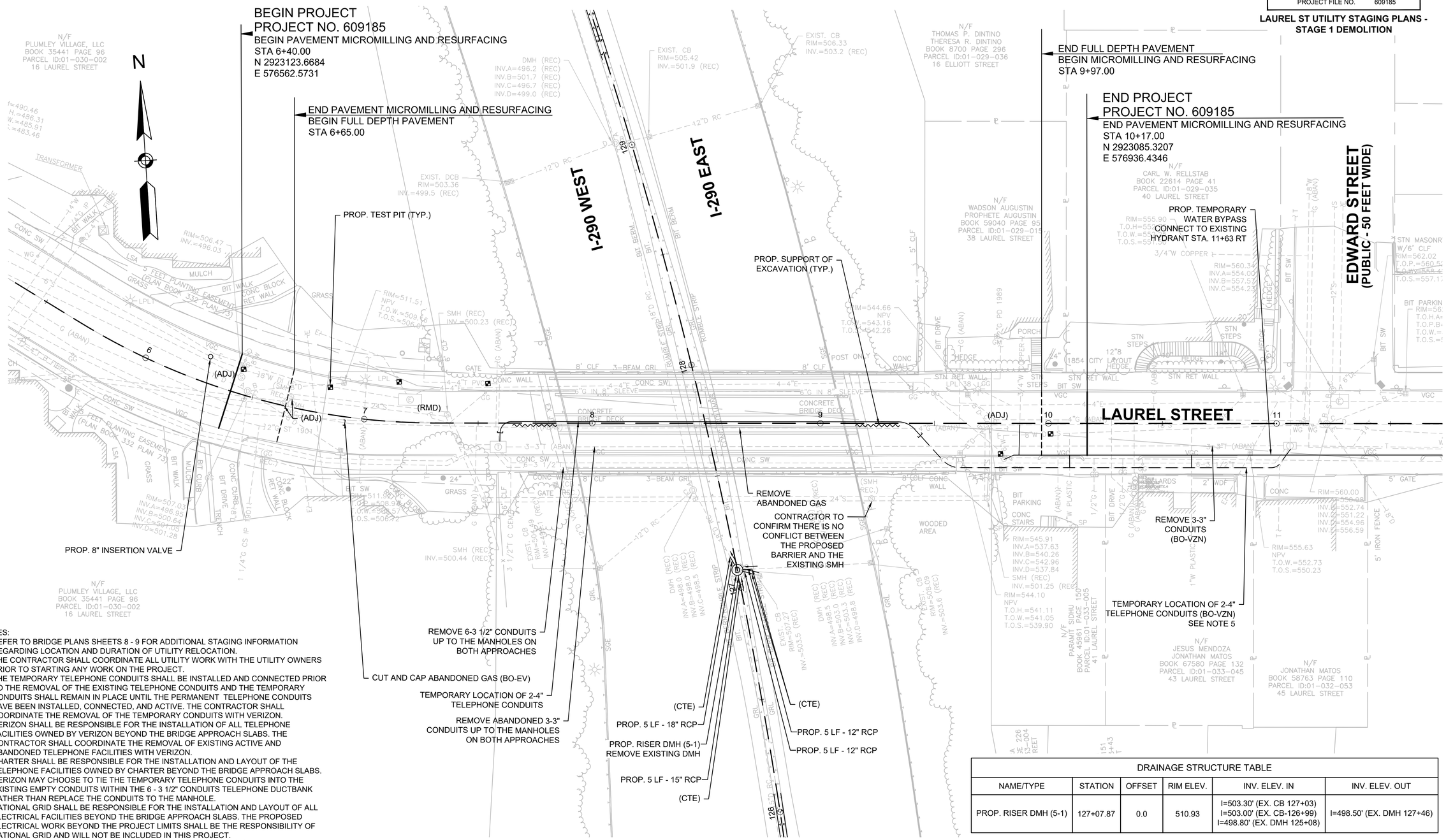
NAME/TYPE	STATION	OFFSET	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT
PROP. CB (1-11)	15+44.79	26.7 LT	501.10		I=494.38' (PROP. CSMH (1-14))
PROP. CBCI (1-6)	15+01.29	14.4 LT	496.25		I=492.50' (PROP. CSMH (1-7))
PROP. CSMH (1-13)	15+73.88	0.2 LT	504.63	I=494.61' (EX. CSMH)	I=494.48' (PROP. CSMH (1-12))
PROP. CSMH (1-14)	15+62.77	22.9 LT	503.10	I=494.10' (PROP. CB (1-11))	I=494.10' (PROP. CSMH (1-12))
PROP. DI (2-2)	13+20.83	17.1 LT	477.32		I=474.77' (PROP. CB W/F&C (2-5))

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	28	169
	PROJECT FILE NO. 609185		

LAUREL ST UTILITY STAGING PLANS - STAGE 1 DEMOLITION

609185_HDXX (DRAINAGE AND UTILITY PLANS).DWG Plotted on 21-Nov-2024 3:47 PM



NOTES:
1. REFER TO BRIDGE PLANS SHEETS 8 - 9 FOR ADDITIONAL STAGING INFORMATION REGARDING LOCATION AND DURATION OF UTILITY RELOCATION.
2. THE CONTRACTOR SHALL COORDINATE ALL UTILITY WORK WITH THE UTILITY OWNERS PRIOR TO STARTING ANY WORK ON THE PROJECT.
3. THE TEMPORARY TELEPHONE CONDUITS SHALL BE INSTALLED AND CONNECTED PRIOR TO THE REMOVAL OF THE EXISTING TELEPHONE CONDUITS AND THE TEMPORARY CONDUITS SHALL REMAIN IN PLACE UNTIL THE PERMANENT TELEPHONE CONDUITS HAVE BEEN INSTALLED, CONNECTED, AND ACTIVE. THE CONTRACTOR SHALL COORDINATE THE REMOVAL OF THE TEMPORARY CONDUITS WITH VERIZON.
4. VERIZON SHALL BE RESPONSIBLE FOR THE INSTALLATION OF ALL TELEPHONE FACILITIES OWNED BY VERIZON BEYOND THE BRIDGE APPROACH SLABS. THE CONTRACTOR SHALL COORDINATE THE REMOVAL OF EXISTING ACTIVE AND ABANDONED TELEPHONE FACILITIES WITH VERIZON.
5. CHARTER SHALL BE RESPONSIBLE FOR THE INSTALLATION AND LAYOUT OF THE TELEPHONE FACILITIES OWNED BY CHARTER BEYOND THE BRIDGE APPROACH SLABS.
6. VERIZON MAY CHOOSE TO TIE THE TEMPORARY TELEPHONE CONDUITS INTO THE EXISTING EMPTY CONDUITS WITHIN THE 6 - 3 1/2" CONDUITS TELEPHONE DUCTBANK RATHER THAN REPLACE THE CONDUITS TO THE MANHOLE.
7. NATIONAL GRID SHALL BE RESPONSIBLE FOR THE INSTALLATION AND LAYOUT OF ALL ELECTRICAL FACILITIES BEYOND THE BRIDGE APPROACH SLABS. THE PROPOSED ELECTRICAL WORK BEYOND THE PROJECT LIMITS SHALL BE THE RESPONSIBILITY OF NATIONAL GRID AND WILL NOT BE INCLUDED IN THIS PROJECT.
8. THE CONTRACTOR SHALL INSTALL PROPOSED STREET LIGHTING ON LAUREL STREET PER THE CITY OF WORCESTER'S STANDARDS.
9. THE CONTRACTOR SHALL PERFORM TEST PITS AT WATER MAIN CONNECTIONS TO VERIFY THE LOCATION, SIZE AND MATERIAL OF THE EXISTING WATER PIPE.
10. THE EXPANSION JOINTS SHALL BE INSTALLED CENTERED BETWEEN THE BRIDGE UTILITY SUPPORTS.
11. THE CONTRACTOR SHALL VERIFY INVERTS IN FIELD FOR PROP. RISER DMH (5-1).
12. REFER TO TRAFFIC MANAGEMENT PLANS FOR STAGING ON I-290.

DRAINAGE STRUCTURE TABLE					
NAME/TYPE	STATION	OFFSET	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT
PROP. RISER DMH (5-1)	127+07.87	0.0	510.93	I=503.30' (EX. CB 127+03) I=503.00' (EX. CB-126+99) I=498.80' (EX. DMH 125+08)	I=498.50' (EX. DMH 127+46)

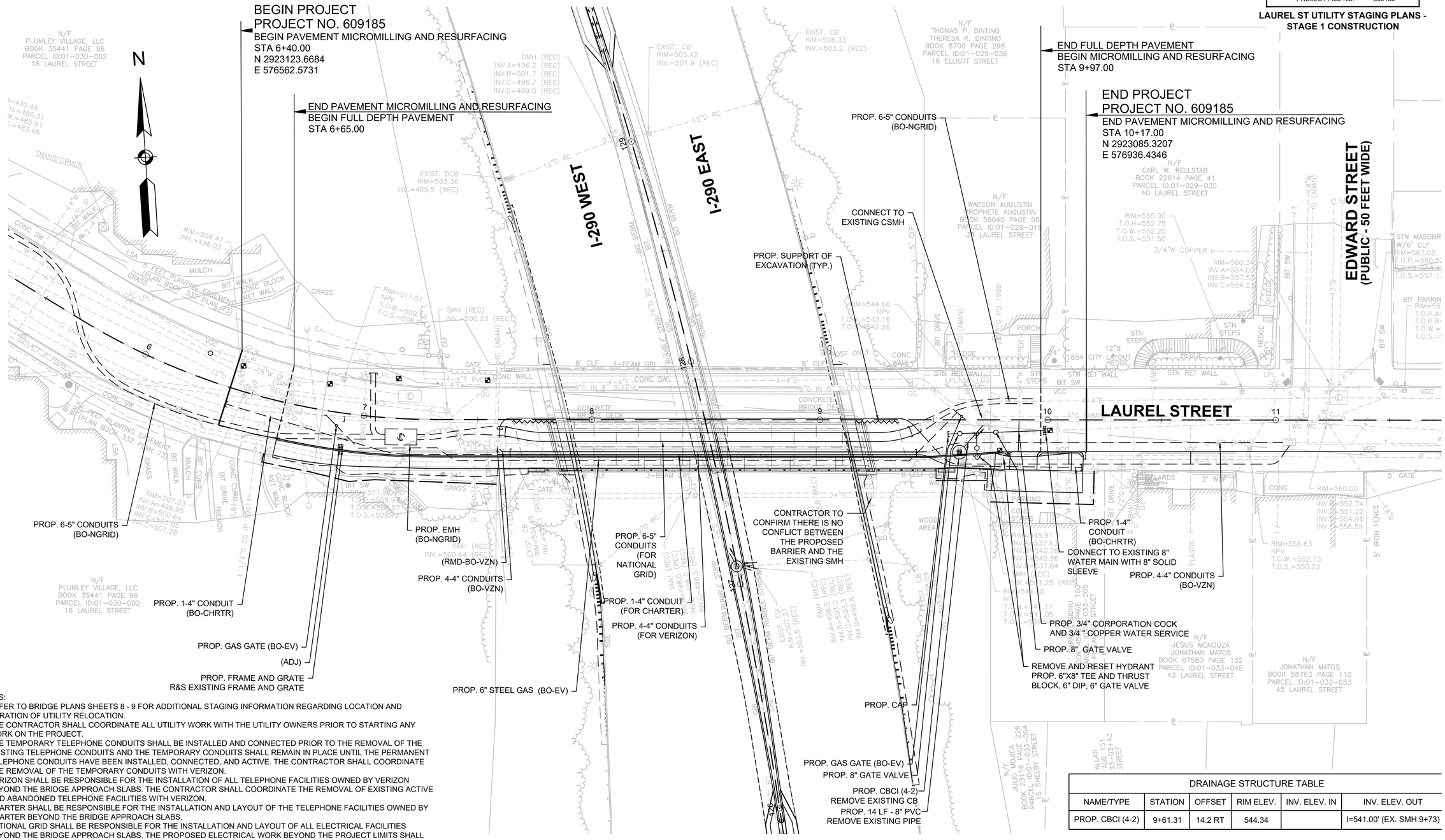
STAGING PLAN
STAGE 1 DEMOLITION

0 20 50 100
SCALE: 1" = 20'

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	29	169
PROJECT FILE NO.	609185		

LAUREL ST UTILITY STAGING PLANS - STAGE 1 CONSTRUCTION



NOTES:
1. REFER TO BRIDGE PLANS SHEETS 8 - 9 FOR ADDITIONAL STAGING INFORMATION REGARDING LOCATION AND DURATION OF UTILITY RELOCATION.
2. THE CONTRACTOR SHALL COORDINATE ALL UTILITY WORK WITH THE UTILITY OWNERS PRIOR TO STARTING ANY WORK ON THE PROJECT.
3. THE TEMPORARY TELEPHONE CONDUITS SHALL BE INSTALLED AND CONNECTED PRIOR TO THE REMOVAL OF THE EXISTING TELEPHONE CONDUITS AND THE TEMPORARY CONDUITS SHALL REMAIN IN PLACE UNTIL THE PERMANENT TELEPHONE CONDUITS HAVE BEEN INSTALLED, CONNECTED, AND ACTIVE. THE CONTRACTOR SHALL COORDINATE THE REMOVAL OF THE TEMPORARY CONDUITS WITH VERIZON.
4. VERIZON SHALL BE RESPONSIBLE FOR THE INSTALLATION OF ALL TELEPHONE FACILITIES OWNED BY VERIZON BEYOND THE BRIDGE APPROACH SLABS. THE CONTRACTOR SHALL COORDINATE THE REMOVAL OF EXISTING ACTIVE AND ABANDONED TELEPHONE FACILITIES WITH VERIZON.
5. CHARTER SHALL BE RESPONSIBLE FOR THE INSTALLATION AND LAYOUT OF THE TELEPHONE FACILITIES OWNED BY CHARTER BEYOND THE BRIDGE APPROACH SLABS.
6. NATIONAL GRID SHALL BE RESPONSIBLE FOR THE INSTALLATION AND LAYOUT OF ALL ELECTRICAL FACILITIES BEYOND THE BRIDGE APPROACH SLABS. THE PROPOSED ELECTRICAL WORK BEYOND THE PROJECT LIMITS SHALL BE THE RESPONSIBILITY OF NATIONAL GRID AND WILL NOT BE INCLUDED IN THIS PROJECT.
7. THE CONTRACTOR SHALL INSTALL PROPOSED STREET LIGHTING ON LAUREL STREET PER THE CITY OF WORCESTER'S STANDARDS.
8. THE CONTRACTOR SHALL PERFORM TEST PITS AT WATER MAIN CONNECTIONS TO VERIFY THE LOCATION, SIZE AND MATERIAL OF THE EXISTING WATER PIPE.
9. THE EXPANSION JOINTS SHALL BE INSTALLED CENTERED BETWEEN THE BRIDGE UTILITY SUPPORTS.
10. THE CONTRACTOR SHALL VERIFY INVERTS IN FIELD FOR PROP. RISER DMH (5-1).
11. REFER TO TRAFFIC MANAGEMENT PLANS FOR STAGING ON I-290.

STAGING PLAN
STAGE 1 CONSTRUCTION

0 20 50 100
SCALE: 1" = 20'

DRAINAGE STRUCTURE TABLE

NAME/TYPE	STATION	OFFSET	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT
PROP. CBCI (4-2)	9+61.31	14.2 RT	544.34		I=541.00' (EX. SMH 9+73)

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	30	169
	PROJECT FILE NO. 609185		

LAUREL ST UTILITY STAGING PLANS - STAGE 2 DEMOLITION

609185_HDXX (DRAINAGE AND UTILITY PLANS).DWG Plotted on 21-Nov-2024 3:47 PM

BEGIN PROJECT
PROJECT NO. 609185
BEGIN PAVEMENT MICROMILLING AND RESURFACING
STA 6+40.00
N 2923123.6684
E 576562.5731

END PAVEMENT MICROMILLING AND RESURFACING
BEGIN FULL DEPTH PAVEMENT
STA 6+65.00

END FULL DEPTH PAVEMENT
BEGIN MICROMILLING AND RESURFACING
STA 9+97.00

END PROJECT
PROJECT NO. 609185
END PAVEMENT MICROMILLING AND RESURFACING
STA 10+17.00
N 2923085.3207
E 576936.4346

N

I-290 WEST

I-290 EAST

LAUREL STREET

EDWARD STREET
(PUBLIC - 50 FEET WIDE)

(REM-BO-EV)

REMOVE TEMPORARY 2-4" TELEPHONE CONDUITS SEE NOTE 4

REMOVE 6" GAS IN 8" SLEEVE

REMOVE 4-4" CONDUITS

PROP. SUPPORT OF EXCAVATION (TYP.)

CUT AND CAP (BO-EV)

(REM-BO-EV)

CONTRACTOR TO CONFIRM THERE IS NO CONFLICT BETWEEN THE PROPOSED BARRIER AND THE EXISTING SMH

N/F
PLUMLEY VILLAGE, LLC
BOOK 35441 PAGE 96
PARCEL ID:01-030-002
16 LAUREL STREET

N/F
THOMAS P. DINTINO
THERESA R. DINTINO
BOOK 8700 PAGE 296
PARCEL ID:01-029-036
16 ELLIOTT STREET

N/F
WADSON AUGUSTIN
PROPHETE AUGUSTIN
BOOK 59040 PAGE 95
PARCEL ID:01-029-015
38 LAUREL STREET

N/F
CARL W. RELLSTAB
BOOK 22614 PAGE 41
PARCEL ID:01-029-035
40 LAUREL STREET

N/F
PARAMIT SIDHU
BOOK 45961 PAGE 150
PARCEL ID:01-033-005
41 LAUREL STREET

N/F
JESUS MENDOZA
JONATHAN MATOS
BOOK 67580 PAGE 132
PARCEL ID:01-033-045
43 LAUREL STREET

N/F
JONATHAN MATOS
BOOK 58763 PAGE 110
PARCEL ID:01-032-053
45 LAUREL STREET

N/F
JULIO MOJICA
BOOK 23516 PAGE 226
PARCEL ID:01-033-004
15 SHELBY STREET

N/F
STEVEN T. GALLATI
BOOK 65556 PAGE 151
PARCEL ID:01-033-003-043
17 SHELBY STREET

NOTES:
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8. THE CONTRACTOR SHALL PERFORM TEST PITS AT WATER MAIN CONNECTIONS TO VERIFY THE LOCATION, SIZE AND MATERIAL OF THE EXISTING WATER PIPE.
9. THE EXPANSION JOINTS SHALL BE INSTALLED CENTERED BETWEEN THE BRIDGE UTILITY SUPPORTS.
10. THE CONTRACTOR SHALL VERIFY INVERTS IN FIELD FOR PROP. RISER DMH (5-1).
11. REFER TO TRAFFIC MANAGEMENT PLANS FOR STAGING ON I-290.

STAGING PLAN
STAGE 2 DEMOLITION

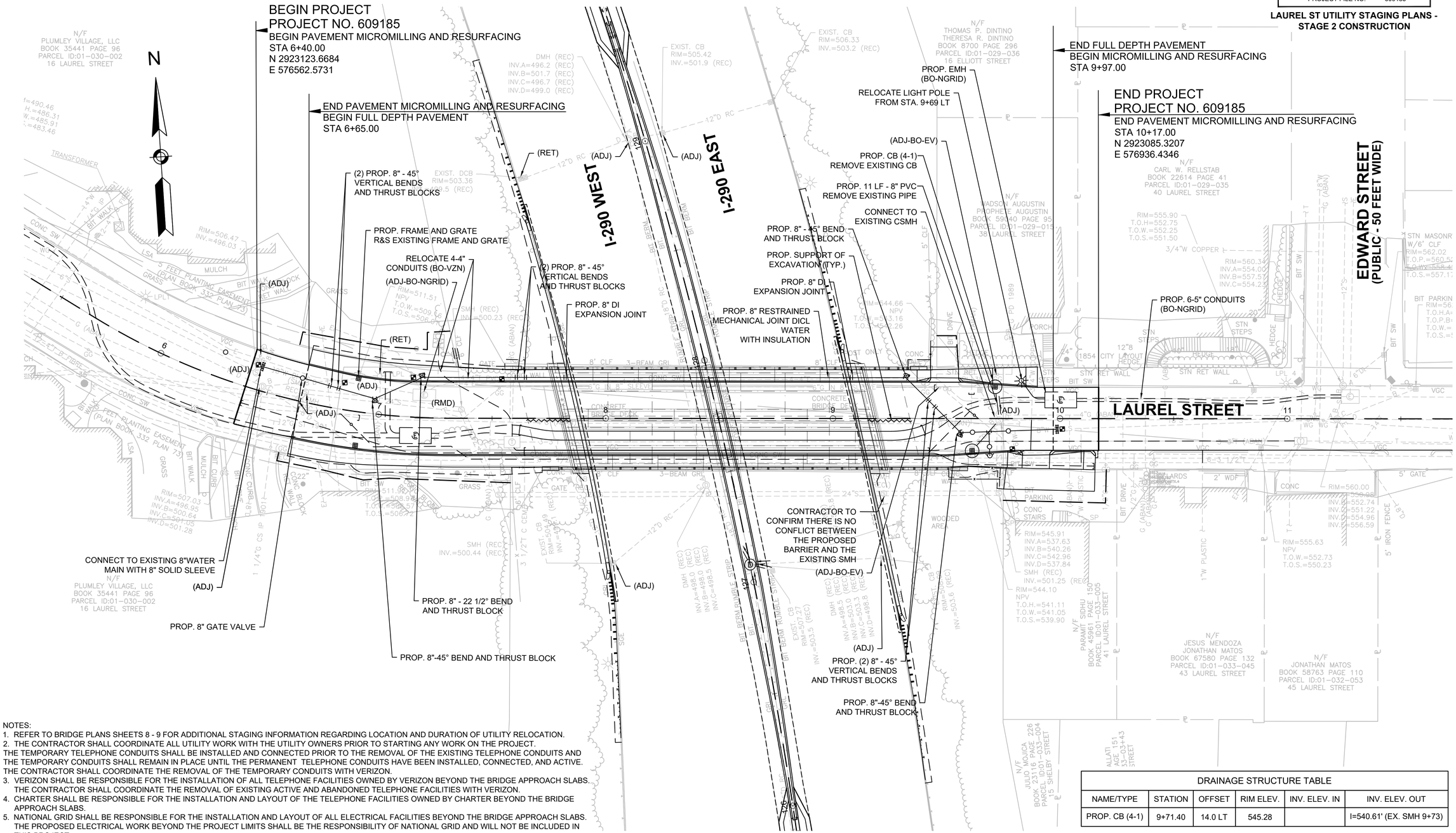
0 20 50 100
SCALE: 1" = 20'

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	31	169
	PROJECT FILE NO. 609185		

LAUREL ST UTILITY STAGING PLANS - STAGE 2 CONSTRUCTION

609185_HDXX (DRAINAGE AND UTILITY PLANS).DWG Plotted on 21-Nov-2024 3:47 PM



NOTES:
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11. THE CONTRACTOR SHALL VERIFY INVERTS IN FIELD FOR PROP. RISER DMH (5-1).
12. REFER TO TRAFFIC MANAGEMENT PLANS FOR STAGING ON I-290.

DRAINAGE STRUCTURE TABLE					
NAME/TYPE	STATION	OFFSET	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT
PROP. CB (4-1)	9+71.40	14.0 LT	545.28		I=540.61' (EX. SMH 9+73)

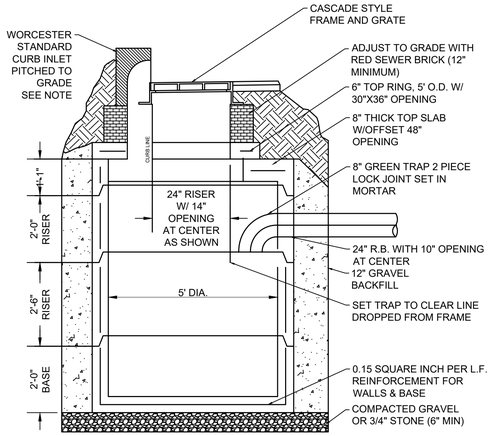
STAGING PLAN
STAGE 2 CONSTRUCTION

0 20 50 100
SCALE: 1" = 20'

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	32	169
	PROJECT FILE NO. 609185		

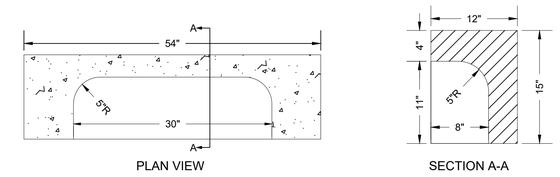
DRAINAGE & UTILITY DETAILS - 1



NOTE:
1. CATCH BASINS SHALL ONLY BE INSTALLED WITH CURB INLETS WHERE SHOWN ON PLANS.

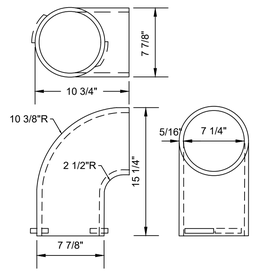
CITY OF WORCESTER - TYPICAL PRECAST CATCH BASIN

NOT TO SCALE



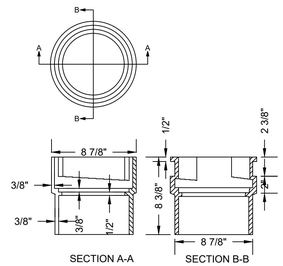
TYPICAL INLET STONE FOR CATCH BASINS

NOT TO SCALE



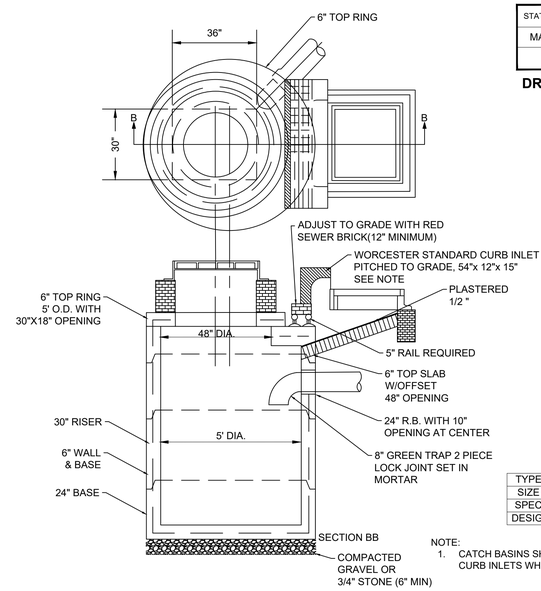
BODY FOR 8" TRAP

NOT TO SCALE



COLLAR FOR 8" TRAP

NOT TO SCALE

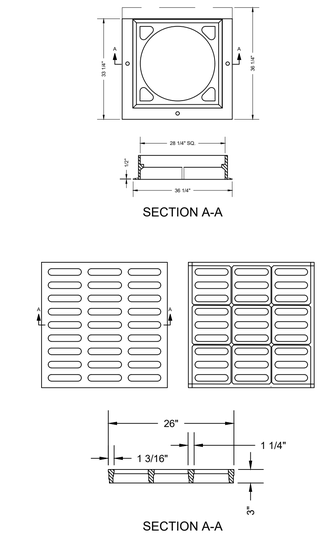


TYPE	STANDARD 5' DIA. C.B.
SIZE	60" I.D. - 6" WALL
SPEC	A.S.T.M. C478
DESIG.	MORTAR JOINT

NOTE:
1. CATCH BASINS SHALL ONLY BE INSTALLED WITH CURB INLETS WHERE SHOWN ON PLANS.

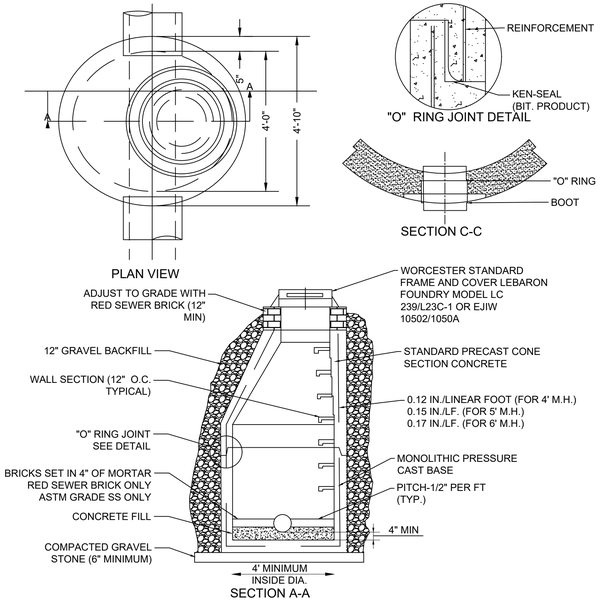
CITY OF WORCESTER - CATCH BASIN ALTERNATE TYPE

NOT TO SCALE



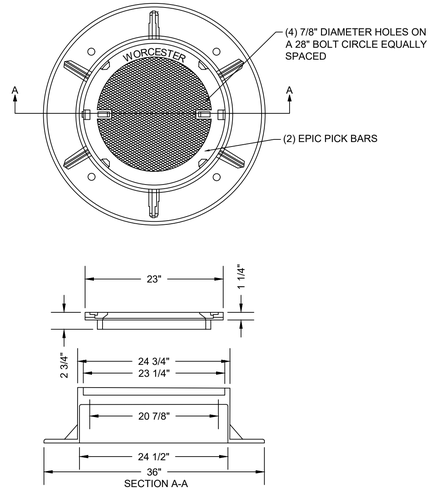
CITY OF WORCESTER - CATCH BASIN FRAME AND GRATE

NOT TO SCALE



CITY OF WORCESTER - TYPICAL MANHOLE

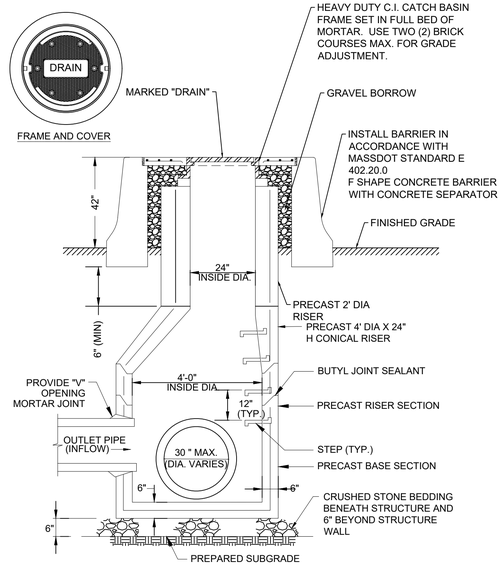
NOT TO SCALE



MANHOLE FRAME & COVER EJIW 1056Z/1056A, LEBARON LC239/L23C-1, OR EQUAL APPROVED BY THE CITY OF WORCESTER

CITY OF WORCESTER - FRAME & COVER

NOT TO SCALE



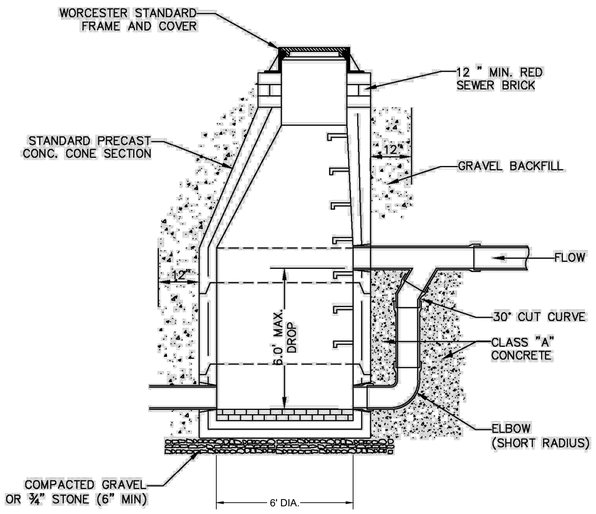
NOTES:
1. PRECAST CONCRETE SECTIONS SHALL CONFORM TO ASTM C-478
2. STEEL REINFORCING SHALL CONFORM TO ASTM A185
3. MANHOLE STEPS SHALL BE 14" WIDE STEEL REINFORCED COPOLYMER POLYPROPYLENE PLASTIC AND SHALL BE CAST INTO MANHOLE SECTIONS BY THE PRECAST MANHOLE MANUFACTURER.

RISER DRAIN MANHOLE

NOT TO SCALE

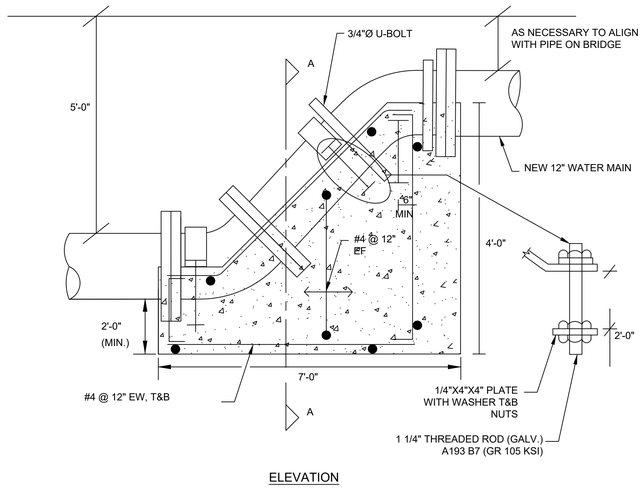
NOTES:

1. REFER TO THE CITY OF WORCESTER SPECIFICATIONS AND DETAILS FOR FURTHER INFORMATION.

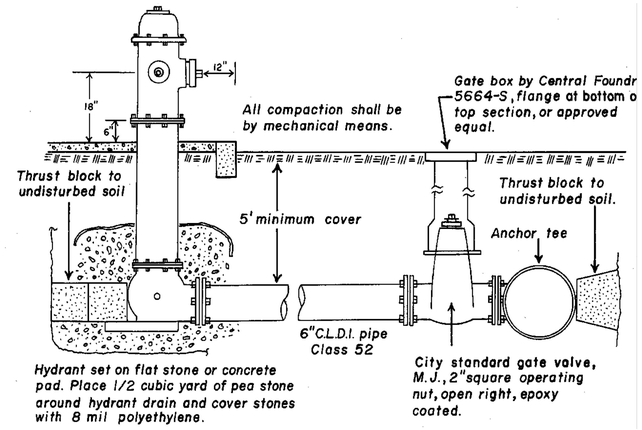


CITY OF WORCESTER - TYPICAL DROP MANHOLE

NOT TO SCALE

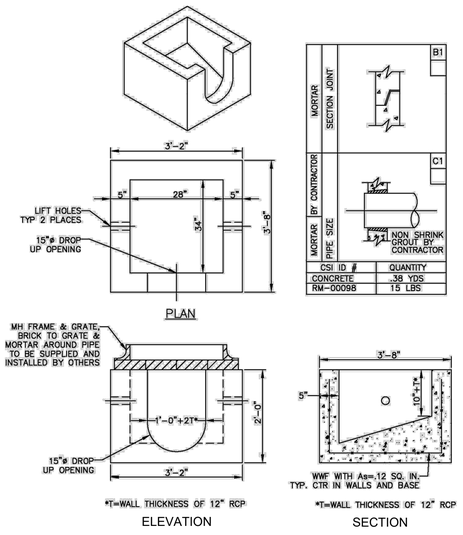


ELEVATION



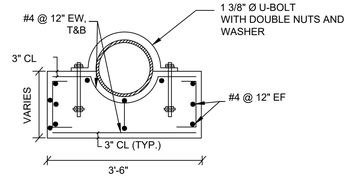
CITY OF WORCESTER - TYPICAL HYDRANT CONNECTION

NOT TO SCALE



CITY OF WORCESTER - DROP INLET

NOT TO SCALE



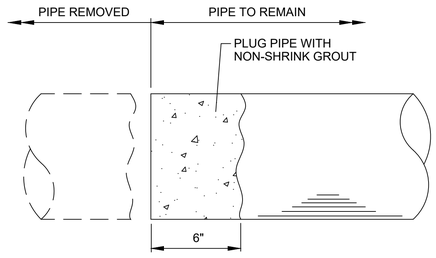
SECTION A-A

NOTE:

1. THRUST BLOCKS: 3000 PSR, 1.5", 470 CEMENT CONCRETE.

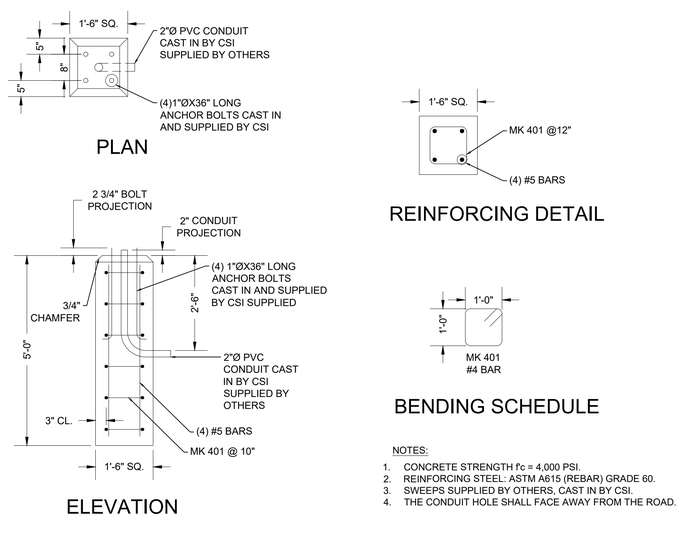
THRUST BLOCK DETAIL - VERTICAL BENDS

NOT TO SCALE



TYPICAL PIPE PLUGGING DETAIL

NOT TO SCALE



NOTES:

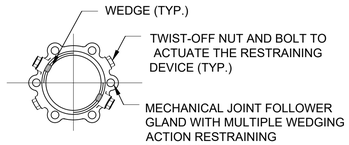
1. CONCRETE STRENGTH f'c = 4,000 PSI.
2. REINFORCING STEEL: ASTM A615 (REBAR) GRADE 60.
3. SWEEPS SUPPLIED BY OTHERS, CAST IN BY CSI.
4. THE CONDUIT HOLE SHALL FACE AWAY FROM THE ROAD.

CITY OF WORCESTER - PRECAST SQUARE CONCRETE LIGHT POLE BASE

NOT TO SCALE

NOTES:

1. REFER TO THE CITY OF WORCESTER SPECIFICATIONS AND DETAILS FOR FURTHER INFORMATION.

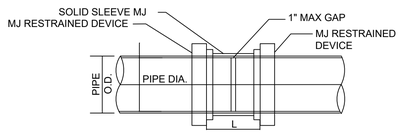


NOTES:

1. GLANDS SHALL BE DUCTILE IRON CONFORMING TO A.S.T.M. A 536-80 STEEL.
2. DIMENSIONS OF THE GLAND SHALL BE SUCH THAT IT CAN BE USED WITH THE STANDARDIZED MECHANICAL JOINT BELL AND TEE-HEAD BOLTS CONFORMING TO A.N.S.I./A.W.W.A. A 21.11 AND A.N.S.I./A.W.W.A. C 153/A 21.53 OF LATEST REVISION.
3. LENGTH OF RESTRAINED PIPE SHALL BE IN ACCORDANCE WITH "THRUST RESTRAINT DESIGN FOR DUCTILE IRON PIPE" AS PUBLISHED BY THE DUCTILE IRON PIPE RESEARCH ASSOCIATION (DIPRA).

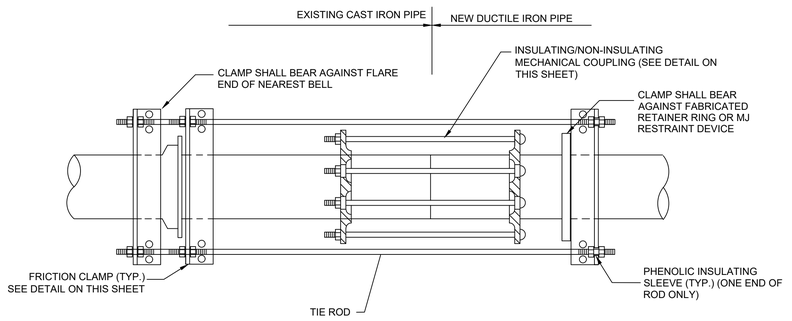
MECHANICAL JOINT RESTRAINT

NOT TO SCALE



SOLID SLEEVE CONNECTION FOR NEW DI PIPE TO EXISTING DI PIPE

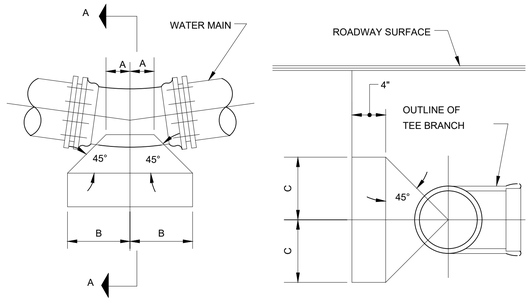
NOT TO SCALE



NOTES:
1. CONTRACTOR TO VERIFY OUTSIDE DIAMETER OF ALL EXISTING AND PROPOSED PIPES FOR SIZING COUPLINGS PRIOR TO ORDERING COUPLINGS.
2. TRANSITION COUPLINGS WITH LARGER GASKETS OR REDUCING MIDDLE RINGS AS REQUIRED BY MANUFACTURER TO SPAN PIPES WITH DIFFERENT SIZE OUTSIDE DIAMETERS. A REDUCING MIDDLE RING SHALL BE USED AT LOCATIONS WHERE OUTSIDE DIAMETERS DIFFER BY 1-INCH OR MORE.
3. MECHANICAL COUPLING AND ALL HARDWARE SHALL BE COMPLETELY WRAPPED WITH WAX-TAPE COATING SYSTEM.
4. MECHANICAL COUPLINGS AND ALL HARDWARE SHALL BE INSTALLED AND TESTED AS PER MANUFACTURER'S STANDARDS AND INSTALLATION GUIDELINES.

RESTRAINED INSULATING/NON-INSULATING MECHANICAL COUPLING FOR NEW DI PIPE TO EXISTING CI PIPE

NOT TO SCALE



PLAN
NOT TO SCALE

SECTION A-A
NOT TO SCALE

HORIZONTAL THRUST BLOCK SCHEDULE
TABLE OF DIMENSIONS IN INCHES

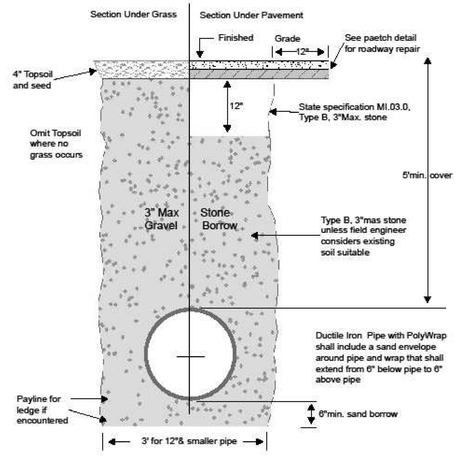
		A	B	C
6", 8" BEND				
	11 1/4°, 22 1/2°	6"	10"	10"
	45°	6"	14"	14"
	90°	9"	19"	19"
10", 12" BEND				
	11 1/4°, 22 1/2°	6"	14"	14"
	45°	6"	20"	20"
	90°	9"	27"	27"
	TEE (BRANCH)/CAP			
	6"	6"	15"	15"
	8"	9"	16"	16"
	10"	9"	19"	19"
	12"	9"	23"	23"

NOTE : REFER TO SPECIFICATIONS FOR MATERIAL REQUIREMENTS

SUBJECT TO FIELD MODIFICATION BY ENGINEER

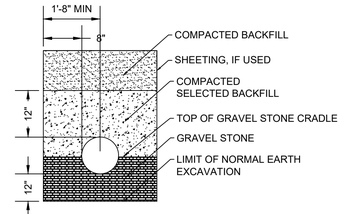
THRUST BLOCK DETAIL

NOT TO SCALE

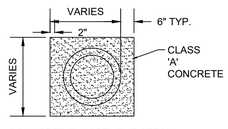


WATER TRENCH SECTION

NOT TO SCALE

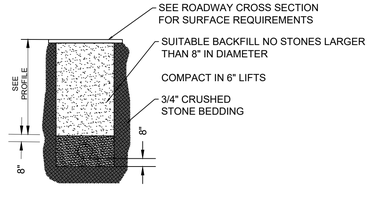


TYPICAL DRAIN MAIN TRENCH



CONCRETE ENCASEMENT DETAIL

NOTES
1. THE PROPOSED SEWER LINES SHALL MAINTAIN A MINIMUM SEPARATION OF 8" TO BEDROCK IN ALL DIRECTIONS
2. ALL TRENCHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH OSHA STANDARDS & OTHER APPLICABLE REGULATIONS.



TYPICAL SEWER MAIN TRENCH

CITY OF WORCESTER - TYPICAL TRENCH DETAIL

NOT TO SCALE

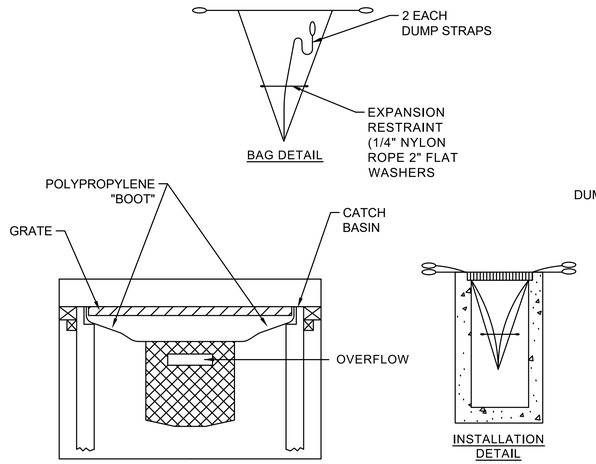
NOTES:

1. REFER TO THE CITY OF WORCESTER SPECIFICATIONS AND DETAILS FOR FURTHER INFORMATION.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	35	169
PROJECT FILE NO.	609185		

CONSTRUCTION DETAILS

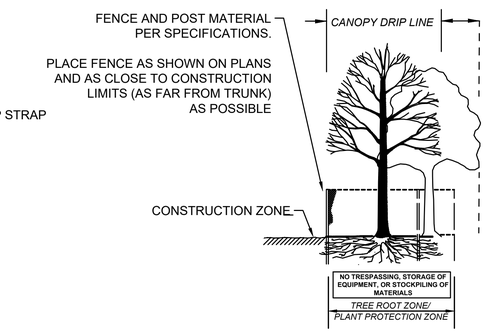
609185_HD06 (TYPICAL SECTIONS).DWG Plotted on 20-Nov-2024 3:50 PM



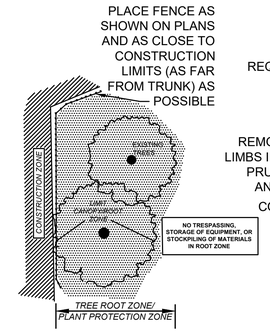
NOTE 1:
TEMPORARY INLET SEDIMENT FILTER TO BE INSTALLED ON ALL PAVED CATCH BASINS OR STORM INLETS.

INLET PROTECTION SILT SACK

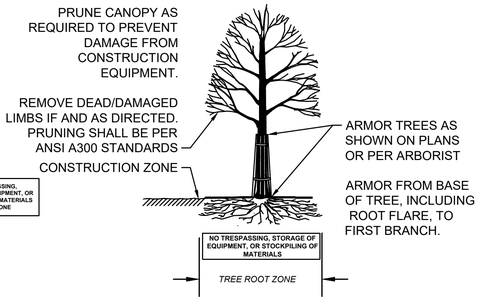
NOT TO SCALE



SECTION - FENCE PROTECTION OF ROOT ZONE



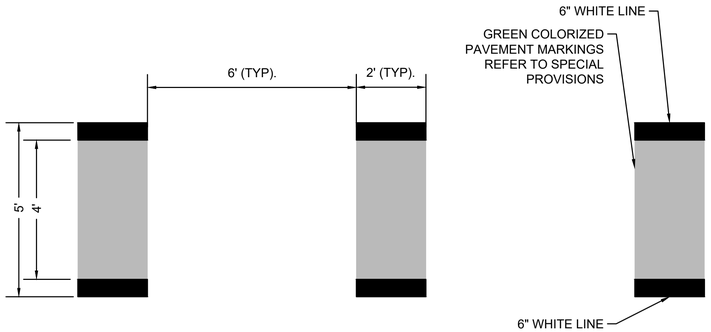
PLAN VIEW - FENCE PROTECTION OF ROOT ZONE



SECTION - TRUNK ARMORING & PRUNING

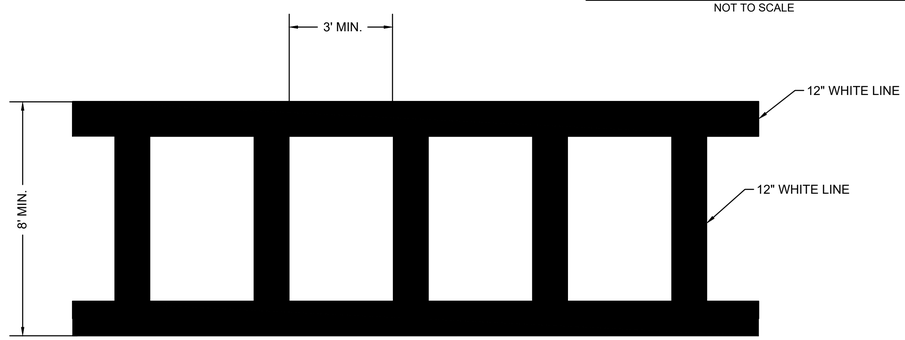
TREE PROTECTION DETAILS

NOT TO SCALE



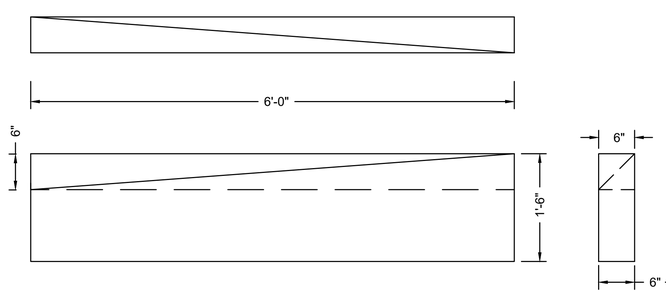
BICYCLE LANE CONFLICT ZONE MARKING DETAIL

NOT TO SCALE



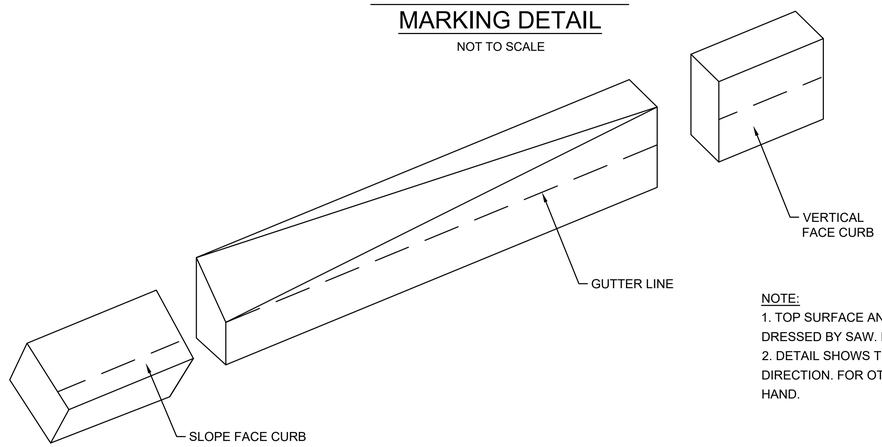
LADDER CROSSWALK MARKING DETAIL

NOT TO SCALE

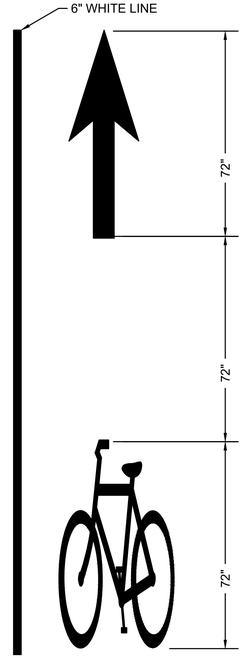


GRANITE TRANSITION - VERTICAL TO SLOPED CURB

NOT TO SCALE



NOTE:
1. TOP SURFACE AND SLOPED SURFACE TO BE DRESSED BY SAW. REMAINDER TO BE QUARRY SPLIT.
2. DETAIL SHOWS TRANSITION CURB FOR ONE DIRECTION. FOR OTHER DIRECTION USE OPPOSITE HAND.



BICYCLE LANE MARKING DETAIL

NOT TO SCALE

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	36	169
	PROJECT FILE NO. 609185		

PAVEMENT MARKING & SIGNING PLANS - 1

609185_HD013 SIGN AND STRIPE.DWG Plotted on 21-Nov-2024 12:44 PM

N

NAD 83

BEGIN PROJECT
PROJECT NO. 609185
BEGIN PAVEMENT MICROMILLING AND RESURFACING
STA 11+42.00
N 2918558.9040
E 576051.1347

END PAVEMENT MICROMILLING AND RESURFACING
BEGIN FULL DEPTH PAVEMENT
STA 12+00.00

LIMIT OF WORK
END PAVEMENT MICROMILLING AND RESURFACING
STA. 60+64.00

END FULL DEPTH PAVEMENT
BEGIN PAVEMENT MICROMILLING AND RESURFACING
STA. 60+36.58

LIMIT OF WORK
END PAVEMENT MICROMILLING AND RESURFACING
STA. 30+55.05

END FULL DEPTH PAVEMENT
BEGIN PAVEMENT MICROMILLING AND RESURFACING
STA. 30+35.35

END FULL DEPTH PAVEMENT
BEGIN MICROMILLING AND RESURFACING
STA 16+05.00

END PROJECT
PROJECT NO. 609185
END PAVEMENT MICROMILLING AND RESURFACING
STA 16+25.00
N 2918289.3357
E 576442.1752

I-290 WESTBOUND OFF-RAMP

I-290 WEST

I-290 EAST

WAVERLY STREET

HARRISON STREET

MATCH EXISTING PAVEMENT MARKINGS

ALL PAVEMENT MARKINGS ON THE EXPOSED CONCRETE BRIDGE DECK SHALL BE PERMANENT 6" TAPE

BIKE LANE CONFLICT ZONE (SEE DETAIL SHEET 35)

N/F MJK PROPERTIES, LLC BOOK 57955 PAGE 24 PARCEL ID:04-024-012 65 WATER ST

N/F BLACKSTAR REALTY LLC BOOK 59434 PAGE 351 PARCEL ID:04-024-020+34 81 WATER ST

N/F CITY OF WORCESTER BOOK 4634 PAGE 1 PARCEL ID:04-037-009-002 2 HARRISON STREET

N/F CITY OF WORCESTER BOOK 4378 PAGE 124 PARCEL ID 4-24-13 2 HARRISON ST

N/F ROMAN CATHOLIC BISHOP OF WORCESTER BOOK 3271 PAGE 143 PARCEL ID:04-026-013 22 WAVERLY ST

N/F ONICIA DORIS MENDS BOOK 63771 PAGE 151 PARCEL ID:04-026-023 6 WAVERLY ST

N/F HESABRAB PROPERTIES, LLC BOOK 55386 PAGE 151 PARCEL ID:04-026-023-2 4 WAVERLY ST

N/F MICHAEL BRUCE BONNER AND ALLYSSA RAE SIME BOOK 63183 PAGE 270 PARCEL ID:04-026-023-1 2 WAVERLY ST

N/F DANUTA MORAWIEC-CWIER BOOK 62437 PAGE 109 PARCEL ID:04-026-022 52 HARRISON ST

N/F JAML REALTY TRUST BOOK 23460 PAGE 328 PARCEL ID:04-037-018 97 WATER ST

N/F GRAYSTAR REALTY LLC BOOK 66642 PAGE 396 PARCEL ID:04-037-016+19 107 WATER ST

N/F BA NGUYEN BOOK 61259 PAGE 185 PARCEL ID:04-037-009-003 6 BLAKE ST

N/F UYEN NGYEN LOC NGYEN BOOK 63545 PAGE 64 PARCEL ID:04-037-009-002 4 BLAKE STREET

N/F CARMEN L NOTICE BOOK 36720 PAGE 188 PARCEL ID:04-037-009-001 2 BLAKE STREET

COMMON ACCESS EASEMENT (PLAN BOOK 818 PAGE 50)

R&S R1-1
R&S R5-1
R&S R5-1a
R&S R6-1L
R&S R6-1R

PROP. R5-1, R5-1a, R6-1L, R6-1R

PROP. R1-1

PROP. R3-17
R3-17bP

R&R R7-1

R&S POST

R&R OM3-R

R&R OM3-L

PROP. W11-2 W16-7PR

PROP. W11-2 W16-7PL

R&S W11-2 W16-17P

R&R "RESIDENT PARKING" SIGN

R&R D3-1(WAVERLY)
R&R D3-1 (HARRISON)
R&R R1-1

PROP. R3-17

R&R D3-17bP

0 20 50 100

SCALE: 1" = 20'

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	37	169
PROJECT FILE NO.	609185		

PAVEMENT MARKING & SIGNING PLANS - 2

609185_HD013 SIGN AND STRIPE.DWG Plotted on 21-Nov-2024 12:44 PM

BEGIN PROJECT
PROJECT NO. 609185
BEGIN PAVEMENT MICROMILLING AND RESURFACING
STA 6+40.00
N 2923123.6684
E 576562.5731

END PAVEMENT MICROMILLING AND RESURFACING
BEGIN FULL DEPTH PAVEMENT
STA 6+65.00

END FULL DEPTH PAVEMENT
BEGIN MICROMILLING AND RESURFACING
STA 9+97.00

END PROJECT
PROJECT NO. 609185
END PAVEMENT MICROMILLING AND RESURFACING
STA 10+17.00
N 2923085.3207
E 576936.4346

N/F
PLUMLEY VILLAGE, LLC
BOOK 35441 PAGE 96
PARCEL ID:01-030-002
16 LAUREL STREET

N/F
THOMAS P. DINTINO
THERESA R. DINTINO
BOOK 8700 PAGE 296
PARCEL ID:01-029-036
16 ELLIOTT STREET

N/F
WADSON AUGUSTIN
PROPHETE AUGUSTIN
BOOK 59040 PAGE 95
PARCEL ID:01-029-015
38 LAUREL STREET

N/F
CARL W. RELLSTAB
BOOK 22614 PAGE 41
PARCEL ID:01-029-035
40 LAUREL STREET

N/F
PARAMJIT SIDHU
BOOK 43961 PAGE 150
PARCEL ID:01-033-005
41 LAUREL STREET

N/F
JESUS MENDOZA
AND JONATHAN MATOS
BOOK 67580 PAGE 132
PARCEL ID:01-033-045
43 LAUREL STREET

N/F
JONATHAN MATOS
BOOK 58763 PAGE 11
PARCEL ID:01-032-05
45 LAUREL STREET

N/F
JULIO MOJICA
BOOK 23116 PAGE 226
PARCEL ID:01-033-004
15 SHELBY STREET

N/F
STEVEN T. GALLATI
BOOK 65556 PAGE 151
PARCEL ID:01-033-03+43
17 SHELBY STREET

I-290 WEST

I-290 EAST

LAUREL STREET

R&R '130' MARKER

R&R R2-1 (50MPH)

R&R '130' MARKER

PROP. R3-17
R3-17bP

R&R OM3-R

R&R OM3-L

R&R PARKING SIGN

R&S POST
PROP. R3-17

MATCH EXISTING PAVEMENT MARKINGS

MATCH EXISTING PAVEMENT MARKINGS

PT +86.43

PC +67.20

PT +28.85

PROP. R3-17

R&R "LEANORA MONROE MEMORIAL BRIDGE" SIGN

"LEANORA MONROE MEMORIAL BRIDGE"

ALL PAVEMENT MARKINGS ON THE EXPOSED CONCRETE BRIDGE DECK SHALL BE PERMANENT 6" TAPE

R&R OM3-L

R&R OM3-R

PROP. R3-17
R3-17bP

R&R GUIDE SIGN

"UMASS MEMORIAL MEDICAL CENTER MEDICAL CAMPUS MEMORIAL EXIT 17" USE

"ATTRACTIONS - EXIT 17" SIGN

5 FEET PLANTING EASEMENT (PLAN BOOK 332 PLAN 73)

DWLEx

SWL

DBYL

0 20 50 100

SCALE: 1" = 20'

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

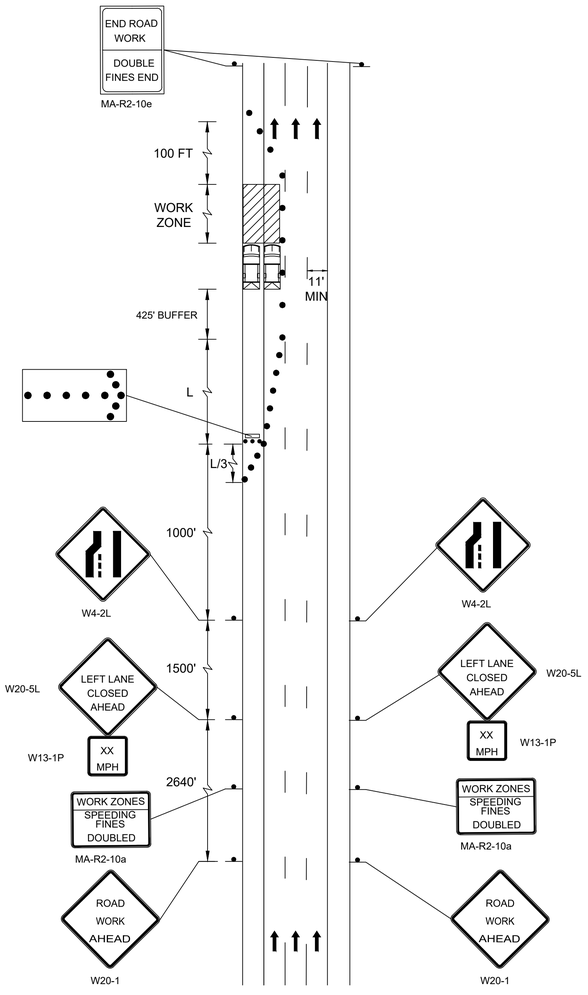
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	38	169
PROJECT FILE NO.	609185		

SIGN SUMMARY SHEET

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA IN SQUARE FEET	TOTAL AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MRK.		BACKGROUND	LEGEND	BORDER			
R1-1	30	30		SEE MUTCD STD. DETAIL			2	RED	WHITE	WHITE	2 MOUNTED ON P-5 POST	6.25	12.50
R3-17	24	18					8	WHITE	BLACK	BLACK	8 MOUNTED ON P-5 POST	3.00	24.00
R3-17bP	24	9					4	WHITE	BLACK	BLACK	4 MOUNTED WITH R3-17	1.50	6.00
R5-1	30	30					2	WHITE	RED	RED	2 MOUNTED ON P-5 POST	6.25	12.50
R5-1a	30	18					2	RED	WHITE	WHITE	2 MOUNTED WITH R5-1	3.75	7.50
R6-1L	36	12					2	BLACK	WHITE	WHITE	2 MOUNTED WITH R5-1	3.00	6.00
R6-1R	36	12					2	BLACK	WHITE	WHTIE	2 MOUNTED WITH R5-1	3.00	6.00
W11-2	30	30					8	FLUORESCENT YELLOW-GREEN	BLACK	BLACK	4 BACK-TO-BACK MOUNTED ON P-5 POST	6.25	50.00
W16-7PL	24	12					4	FLUORESCENT YELLOW-GREEN	BLACK	BLACK	4 MOUNTED WITH W11-2	2.00	8.00
W16-7PR	24	12					4	FLUORESCENT YELLOW-GREEN	BLACK	BLACK	4 MOUNTED WITH W11-2	2.00	8.00
											TOTAL		128.00

NOTES:

1. SIGN SUPPORTS MUST CONFORM TO THE CRITERIA SET FORTH IN THE NCHRP 350 REPORT AND/OR MASH.
2. SEE THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) 2009 EDITION AND ALL REVISIONS, THE 2022 MASSACHUSETTS AMENDMENTS TO THE 2009 MUTCD, THE 2016 MASSACHUSETTS DEPARTMENT OF TRANSPORTATION SIGN BOOK, AND THE STANDARDS MUNICIPAL TRAFFIC CODE FOR THE LATEST SPECIFICATIONS ON TEXT DIMENSIONS AND COLOR. ALSO REFER TO THE MASSDOT 2024 STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
3. UNLESS OTHERWISE NOTED, ALL POSTS SHALL BE P-5.
4. SIGNS SHALL BE MOUNTED SO THAT THE BOTTOM OF THE SIGN IS NO LESS THAN 7'-0" ABOVE ADJACENT ROADWAY SURFACE ELEVATION.
5. RETROREFLECTIVE SHEETING ON ALL TRAFFIC SIGNS SHALL CONFORM TO MASSDOT STANDARD SPECIFICATION M9.30.0



I-290 LEFT LANE CLOSURE FOR WORK ZONE IN MEDIAN

NOT TO SCALE

NOTE:

1. WORK SETUP TO BE IMPLEMENTED DURING 10PM-5AM

LEGEND

- CHANNELIZING DEVICE
- DIRECTION OF TRAFFIC
- SIGN (SHOWN FACING DOWN)
- PROPOSED DIRECTION OF TRAFFIC
- TRUCK-MOUNTED ATTENUATOR

FORMULAS FOR DETERMINING TAPER LENGTHS
SOURCE: TABLE 6C-4 2009 MUTCD

SPEED LIMIT (S)	TAPER LENGTH (L) IN FEET
40 MPH OR LESS	$L = \frac{WS^2}{60}$
45 MPH OR MORE	$L = WS$

L = TAPER LENGTH IN FEET
W = WIDTH OF OFFSET IN FEET
S = POSTED SPEED LIMIT IN MPH

FORMULAS FOR DETERMINING TAPER LENGTHS
SOURCE: TABLE 6H-3 2009 MUTCD

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

FORMULAS FOR DETERMINING TAPER LENGTHS
SOURCE: TABLE 6C-3 2009 MUTCD

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

L = TAPER LENGTH IN FEET

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	39	169
PROJECT FILE NO. 609185			

TEMPORARY TRAFFIC CONTROL DETAILS - 1

TEMPORARY TRAFFIC CONTROL NOTES

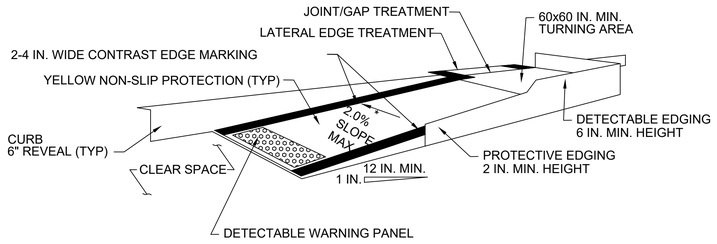
1. ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE 2009 EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD), MASSACHUSETTS AMENDMENTS TO THE MUTCD AND ALL REVISIONS, UNLESS SUPERSEDED BY THESE PLANS.
2. ALL SIGN LEGENDS, BORDERS, AND MOUNTING SHALL BE IN ACCORDANCE WITH THE MUTCD.
3. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE PLACED PRIOR TO THE START OF ANY WORK.
4. 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.
5. SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVEL WAY, CHANNELIZING DEVICES, BARRIERS, AND CRASH ATTENUATORS MUST PASS THE CRITERIA SET FORTH IN "MANUAL FOR ASSESSING SAFETY OF HARDWARE" (MASH).
6. THE ADVISORY SPEED LIMIT, IF REQUIRED IN THE FIELD SHALL BE DETERMINED BY THE ENGINEER.
7. MAXIMUM SPACING OF THE TRAFFIC DEVICES IN THE TAPER (DRUMS OR CONES) IS EQUAL IN FEET TO THE SPEED LIMIT IN MPH.
8. MINIMUM LANE WIDTH IS TO BE 11FT UNLESS OTHERWISE SHOWN. MINIMUM LANE WIDTH TO BE MEASURED FROM THE EDGE OF DRUMS OR MEDIAN BARRIER.
9. ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.
10. THE CONTRACTOR SHALL COORDINATE APPROVAL OF ANY CHANGES TO THE TEMPORARY TRAFFIC CONTROL PLAN WITH MASSACHUSETTS DEPARTMENT OF TRANSPORTATION (MASSDOT) PRIOR TO CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL ALSO NOTIFY MASSDOT AND THE CITY OF WORCESTER THREE (3) WEEKS IN ADVANCE OF PLACING TEMPORARY TRAFFIC CONTROL SIGNS.
11. THESE PLANS ARE NOT INTENDED TO LIMIT THE CONTRACTOR'S APPROACH TO SCHEDULE THE WORK BUT TO OUTLINE ONE WAY OF PROGRESSING. THE CONTRACTOR IS EXPECTED TO USE KNOWLEDGE AND EXPERIENCE TO PERFORM THE WORK IN THE MOST EFFICIENT AND SAFE MANNER IN COMPLIANCE WITH THE DRAWINGS AND SPECIFICATIONS.
12. DISTANCES ARE A GUIDE AND MAY BE ADJUSTED BASED ON FIELD CONDITIONS WITH THE APPROVAL OF THE ENGINEER
13. WHEN EXISTING SIGNS ARE NO LONGER APPLICABLE THEY SHALL BE TEMPORARILY COVERED DURING CONSTRUCTION OR REMOVED AND RESET UPON COMPLETION OF CONSTRUCTION. THE COST SHALL BE INCIDENTAL TO THE CONTRACT.
14. ALL SIGNS SHALL BE REFLECTORIZED, WITH REFLECTIVE SHEETING CONFORMING TO M9.30.0. ALL SIGN COLORS SHALL BE PER THE CONSTRUCTION SIGN SUMMARY TABLE AND THE 2009 MUTCD.
15. WHEN TEMPORARY PAVEMENT MARKINGS ARE NO LONGER APPLICABLE THEY SHALL BE REMOVED. CONTRACTOR SHALL RECORD EXISTING PAVEMENT MARKINGS AND RESTORE ALL MARKINGS TO EXISTING CONDITIONS AT THE CONCLUSION OF CONSTRUCTION AT EACH LOCATION.
16. UNLESS OTHERWISE NOTED, ALL PAVEMENT MARKINGS, SIGNS AND OTHER TRAFFIC EQUIPMENT REMOVED OR DAMAGED AS A RESULT OF THE CONTRACTOR'S OPERATIONS SHALL BE REPLACED IN CONFORMANCE WITH THE CONTRACT DOCUMENTS.
17. CONTRACTOR SHALL INSTALL, RENEW, AND MAINTAIN ALL TRAFFIC CONTROL DEVICES AS SHOWN ON THE DRAWINGS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
18. ACCESS/EGRESS TO ALL ABUTTERS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.
19. THE CONTRACTOR SHALL MAINTAIN ADA COMPLIANT ACCESS AT ALL TIMES INCLUDING PEDESTRIAN GUIDANCE SYSTEMS. ALL PEDESTRIAN DETOURS OR BYPASSES SHALL BE ADA COMPLIANT WITH PROPER BARRICADES, RAILINGS, RAMPS, SIGNS, ETC.
20. CONTRACTOR SHALL MAINTAIN EMERGENCY PASSAGE AT ALL TIMES TO BUILDINGS WITHIN AND ADJACENT TO THE PROJECT LIMITS AS WELL AS A LARGER AREA IF AFFECTED BY CONSTRUCTION CONDITIONS. CONTRACTOR SHALL MAINTAIN 24 HOUR EMERGENCY VEHICLE ACCESS TO CONSTRUCTION AREAS.
21. CONTRACTOR SHALL COORDINATE WITH ABUTTERS FOR THE PROPOSED WORK AND SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF THE WORK THAT WILL REQUIRE TEMPORARY CLOSURE OF ACCESS TO THEIR PROPERTY OR PARKING SPACES.
22. THE CONTRACTOR SHALL COORDINATE THE WORK WITH ALL ABUTTING PROJECTS.
23. THE FIRST TEN DRUMS OF A TAPER SHALL BE MOUNTED WITH SEQUENTIAL FLASHING LIGHTS.
24. THE CONTRACTOR SHALL COORDINATE WITH THE CITY OF WORCESTER REGARDING WORK DURING EVENTS AT POLAR PARK.
25. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEARING SNOW WITHIN THE WORK ZONES.
26. THE CONTRACTOR SHALL COORDINATE WITH POLAR PARK AND THE DCU CENTER REGARDING GAMES OR SPECIAL EVENTS TO DETERMINE IF NIGHT WORK SHALL BEGIN LATER THAN THE TIMES INDICATED IN THESE PLANS.
27. THE CONTRACTOR SHALL COORDINATE WITH MASSDOT REGARDING THE EAST CENTRAL STREET BRIDGE PROJECT.
28. THE CONTRACTOR'S TRAFFIC SIGNAL TECHNICIAN SHALL RESPONSIBLE FOR MONITORING MOTOR VEHICLE TRAFFIC VOLUMES AND INTERSECTIONS USING PORTABLE TRAFFIC DATA COLLECTION DEVICES, AND PROVIDING RECOMMENDATIONS FOR MITIGATIVE RETIMING AND/OR TEMPORARY LANE RECONFIGURATIONS BASED ON THE RESULTS OF THE CONTRACTOR'S REVIEW OF TRAFFIC OPERATIONS DURING CONSTRUCTION. THE CONTRACTOR'S TRAFFIC SIGNAL TECHNICIAN SHALL PROVIDE A TRAFFIC MONITORING PLAN PRIOR TO THE START OF CONSTRUCTION OUTLINING INTENDED STUDY LOCATIONS AND METHODOLOGY.
29. FOLLOWING IMPLEMENTATION OF TEMPORARY STRIPING ON I-290, THE ORIGINAL PAVEMENT MARKING CONFIGURATIONS SHALL BE RESTORED USING REFLECTORIZED POLYUREA RECESSED MARKINGS AND SLOTTED PAVEMENT MARKER TWO-WAY WHITE/RED.

609185_TRF(TMP_TYPICAL DETAILS).DWG Plotted on 21-Nov-2024 12:45 PM

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	40	169
PROJECT FILE NO.	609185		

TEMPORARY TRAFFIC CONTROL DETAILS - 2

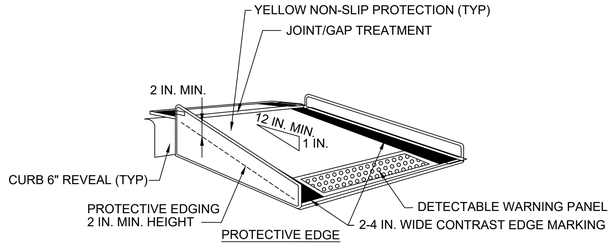


TEMPORARY CURB RAMP - PARALLEL TO CURB

NOT TO SCALE

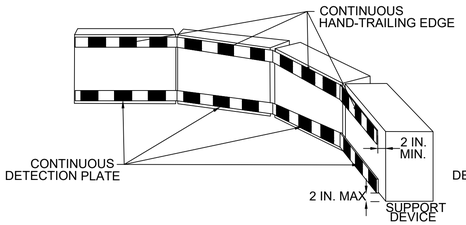
NOTES:

1. CURB RAMPS SHALL BE 60 IN. MINIMUM WIDTH WITH A FIRM, STABLE AND NON-SLIP SURFACE.
2. 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 SLOPE 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.
3. DETECTABLE EDGING WITH 6 IN. MINIMUM HEIGHT AND CONTRASTING COLOR SHALL BE INSTALLED ON ALL CURB RAMP LANDINGS WHERE THE WALKWAY CHANGES DIRECTION (TURNS).
4. CURB RAMPS AND LANDINGS SHOULD HAVE A 1:50 (2%) MAX CROSS-SLOPE.
5. CLEAR SPACE OF 48x48 IN. MINIMUM SHALL BE PROVIDED ABOVE AND BELOW THE CURB RAMP.
6. THE CURB RAMP WALKWAY AND LANDING AREA SURFACE SHALL BE MARKED WITH A CONTRASTING COLOR ABUTTING UP TO THE EXISTING SIDEWALK.
7. WATER FLOW IN THE GUTTER SYSTEM SHALL HAVE MINIMAL RESTRICTION.
8. LATERAL JOINTS OR GAPS BETWEEN SURFACES SHALL BE LESS THAN 0.5 IN. WIDTH.
9. 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.
10. TYPICAL DETAILS ON THIS SHEET MAY NOT BE NEEDED AND ARE PROVIDED FOR REFERENCE PURPOSES.
11. IF A TEMPORARY PEDESTRIAN RAMP LEADS TO A CROSSWALK, THEN A DETECTABLE WARNING PAD MUST BE ADHERED TO THE BASE OF THE RAMP. IF IT LEADS TO A PROTECTED PEDESTRIAN BYPASS THAT DOES NOT CONFLICT WITH VEHICULAR TRAFFIC, THEN A PAD SHALL NOT BE INSTALLED ON THE RAMP.



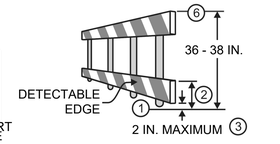
TEMPORARY CURB RAMP - PERPENDICULAR TO CURB

NOT TO SCALE



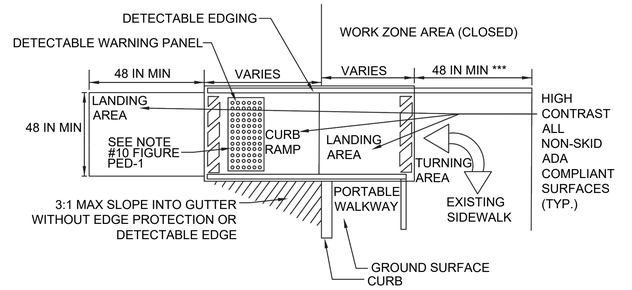
DETECTABLE EDGE

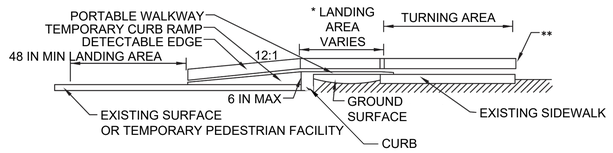
USING A LONGITUDINAL CHANNELIZER



DETECTABLE EDGE

SHOWN ON A RAILING SYSTEM

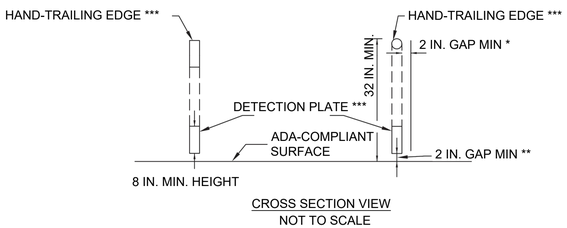




TEMPORARY CURB RAMP

NOT TO SCALE

NOTES:
* - LANDING AREA USED TO OVERLAP NON-ADA COMPLIANT SURFACES.
** - DETECTABLE EDGE REMOVED IF A CONTINUOUS SIDEWALK.
*** - 60 IN. IF AN OBSTRUCTION IS AT BACK OF SIDEWALK.



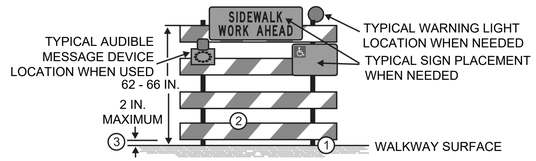
CROSS SECTION VIEW
NOT TO SCALE

PEDESTRIAN CHANNELIZING DEVICE

NOTES:

* THERE SHALL BE A 2 INCH GAP BETWEEN THE HAND-TRAILING EDGE AND ITS SUPPORT.

**A MAXIMUM 2 INCH GAP BETWEEN THE BOTTOM OF THE BOTTOM RAIL AND THE SURFACE MAY BE USED TO PROVIDE DRAINAGE.

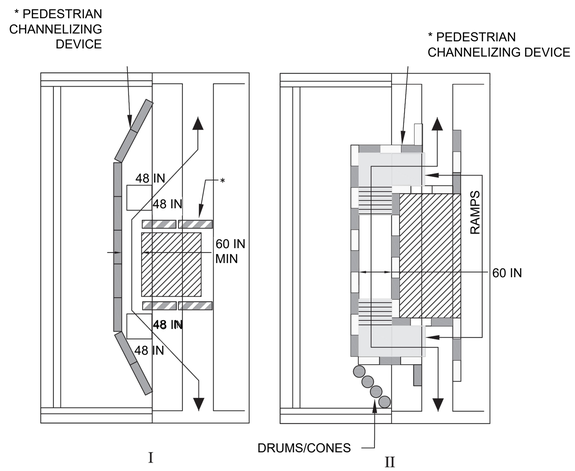


TYPE IV SIDEWALK BARRICADE

NOTES:

1. TO PREVENT ANY TRIPPING HAZARD TO PEDESTRIANS, BALLAST SHALL BE LOCATED BEHIND OR INTERNAL TO THE DEVICE. ANY SUPPORT ON THE FRONT OF THE DEVICE SHALL NOT EXTEND INTO THE 48 IN. MINIMUM WALKWAY CLEAR SPACE AND SHALL HAVE 0.5 IN. MAXIMUM HEIGHT ABOVE THE WALKWAY SURFACE WITH APPROVED BEVELING.
2. DETECTIVE EDGING FOR LONG CANES SHALL BE CONTINUOUS AND 6 IN. MINIMUM HIGH ABOVE THE WALKWAY SURFACE AND HAVE COLOR OR MARKINGS CONTRASTING WITH THE WALKWAY SURFACE.
3. DEVICES SHALL NOT BLOCK WATER DRAINAGE FROM THE WALKWAY. A GAP HEIGHT OR OPENING FROM THE WALKWAY SURFACE UP TO 2 IN. MAXIMUM HEIGHT IS ALLOWED FOR DRAINAGE PURPOSES.
4. RAILINGS OR OTHER OBJECTS MAY PROTRUDE A MAXIMUM OF 4 IN. INTO THE WALKWAY CLEAR SPACE WHEN LOCATED 27 IN. MINIMUM ABOVE THE WALKWAY SURFACE.
5. LONGITUDINAL CHANNELIZING DEVICES FOR PEDESTRIANS SHALL BE 32 IN. HIGH OR GREATER.
6. WHEN HAND GUIDANCE IS REQUIRED, THE TOP RAIL OR TOP SURFACE SHALL:
   - BE IN A VERTICAL PLANE PERPENDICULAR TO THE WALKWAY ABOVE THE DETECTABLE EDGE.
   - BE CONTINUOUS AT A HEIGHT OF 36 TO 38 IN. ABOVE THE WALKWAY SURFACE, AND
   - BE SUPPORTED WITH MINIMAL INTERFERENCE TO THE PEDESTRIAN'S HANDS OR FINGERS.
7. ALL DEVICES SHALL BE FREE OF SHARP OR ROUGH EDGES, AND FASTENERS (BOLTS) SHALL BE ROUNDED TO PREVENT HARM TO HANDS, ARMS OR CLOTHING OF PEDESTRIANS.
8. ALL DEVICES USED TO CHANNELIZE PEDESTRIAN FLOW SHOULD INTERLOCK SUCH THAT GAPS DO NOT ALLOW PEDESTRIANS TO STRAY FROM THE CHANNELIZED PATH.
9. ALL PEDESTRIAN DEVICES USED TO PROVIDE POSITIVE PROTECTION (TRAFFIC OR HAZARD) FOR PEDESTRIANS OR WORKERS SHALL MEET CRASHWORTHY REQUIREMENTS APPROPRIATE FOR THE BARRIERS' APPLICATION.

SOURCE:
MINNESOTA DEPARTMENT OF TRANSPORTATION "TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS FIELD MANUAL 2014"



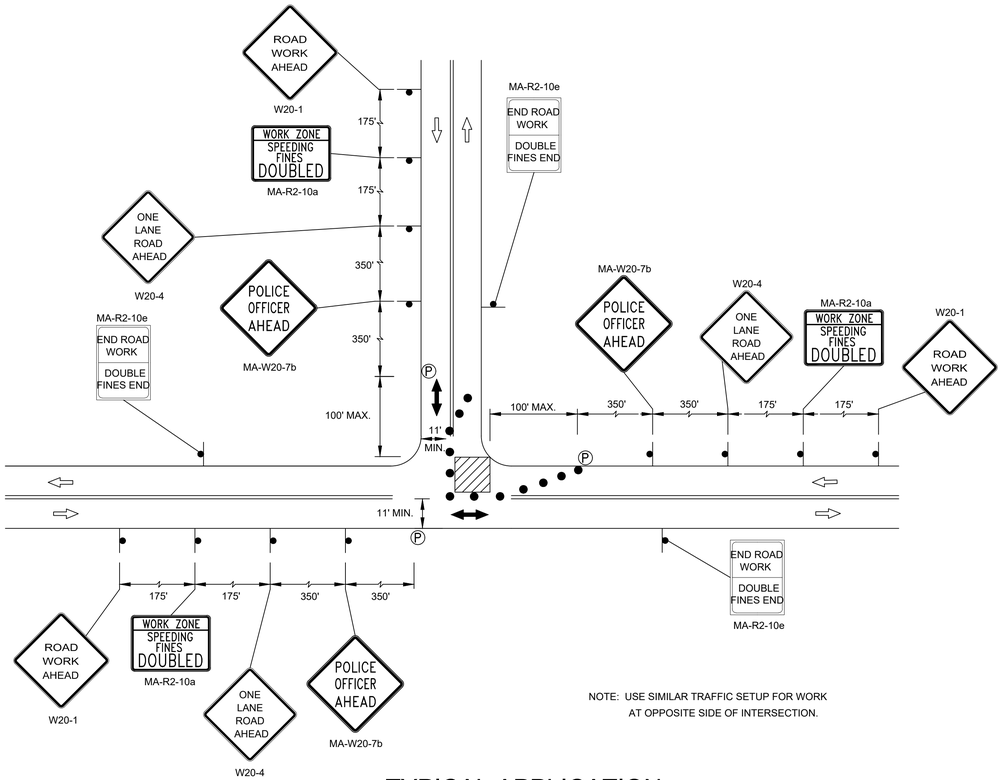
TEMPORARY PEDESTRIAN WALKWAY DETAILS

NOT TO SCALE

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

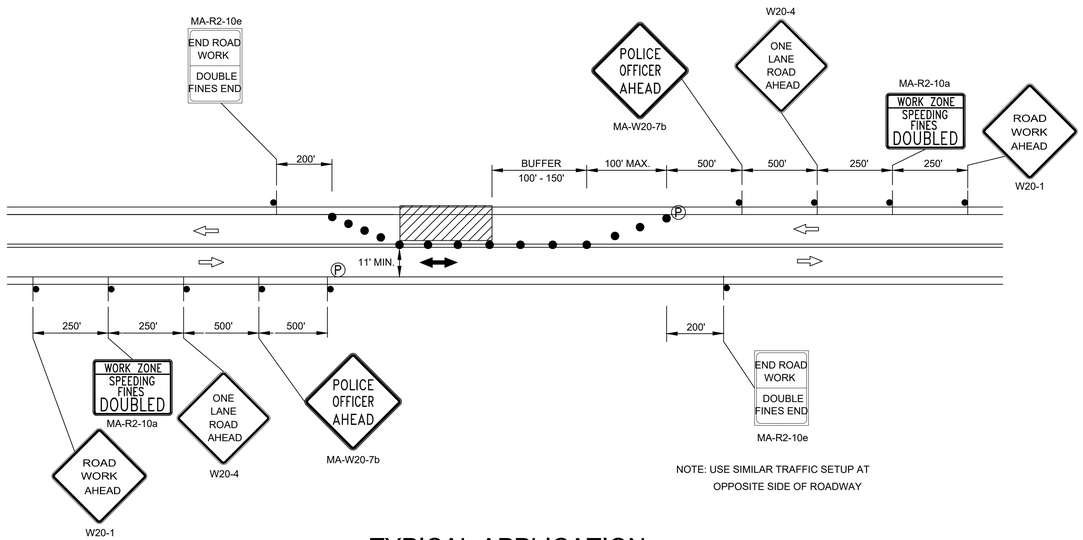
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	41	169
PROJECT FILE NO.	609185		

TEMPORARY TRAFFIC CONTROL DETAILS - 3



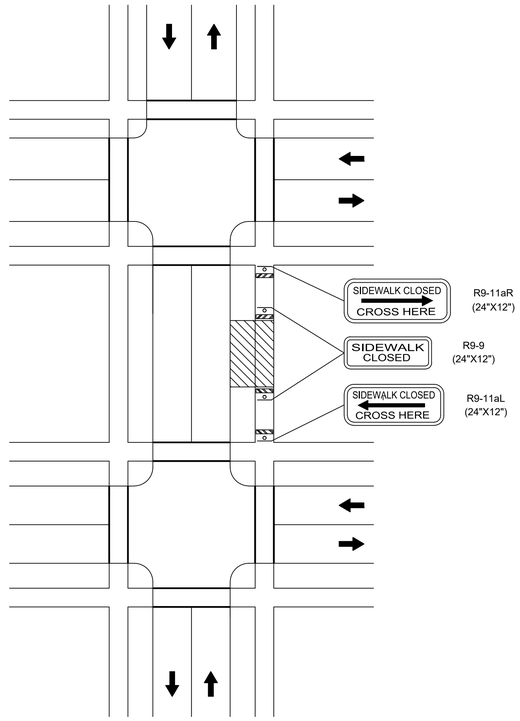
NOTE: USE SIMILAR TRAFFIC SETUP FOR WORK AT OPPOSITE SIDE OF INTERSECTION.

TYPICAL APPLICATION
ONE CORNER CLOSURE (NON-SIGNALIZED)
NOT TO SCALE

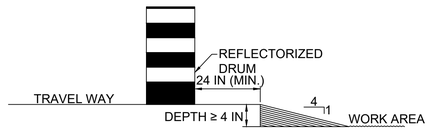


NOTE: USE SIMILAR TRAFFIC SETUP AT OPPOSITE SIDE OF ROADWAY

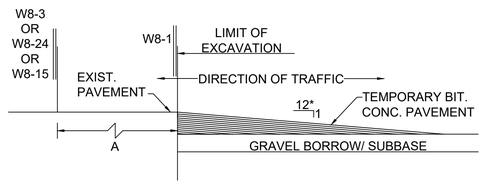
TYPICAL APPLICATION
ONE LANE ALTERNATING TRAFFIC
NOT TO SCALE



SIDEWALK CLOSED WITHOUT DETOUR
NOT TO SCALE



LATERAL DROP-OFF DETAIL
NOT TO SCALE

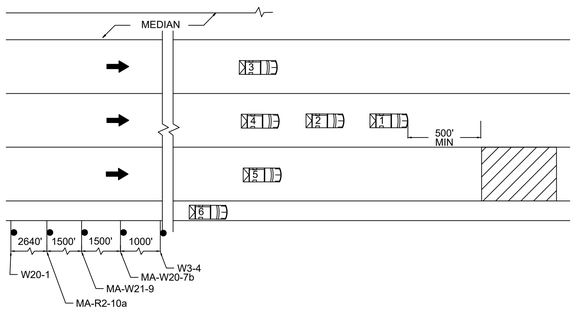


* - INCREASE SLOPE RATIO FOR HIGHER SPEEDS

LONGITUDINAL DROP-OFF DETAIL
NOT TO SCALE

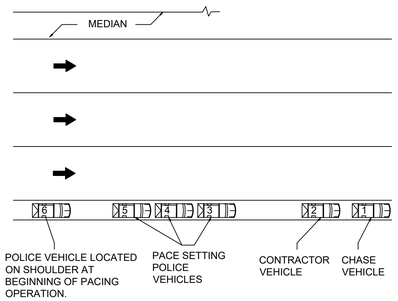
LEGEND

- CHANNELIZING DEVICE
- DIRECTION OF TRAFFIC
- SIGN (SHOWN FACING DOWN)
- PROPOSED DIRECTION OF TRAFFIC
- TRUCK-MOUNTED ATTENUATOR



TYPICAL ROLLING ROAD BLOCK ADVANCE SIGNS

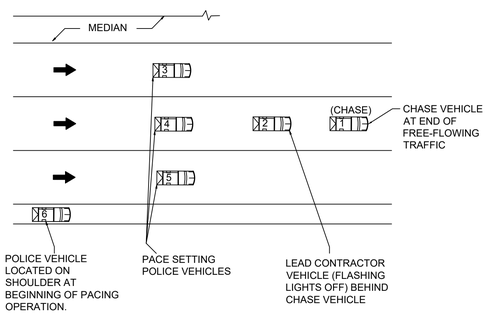
NOT TO SCALE



STAGE ONE ROLLING ROAD BLOCK

NOT TO SCALE

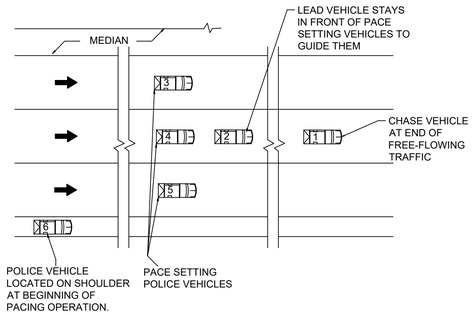
NOTES:
STAGE ONE BEGINS WHEN OPERATION BEGINS WITH ALL VEHICLES IN ROLLING ROADBLOCK OPERATION BEING POSITIONED ON THE SHOULDER OF THE ROAD AT THE TOTAL PACING DISTANCE FROM THE WORK AREA WITH FLASHING LIGHTS OFF.



STAGE TWO ROLLING ROAD BLOCK

NOT TO SCALE

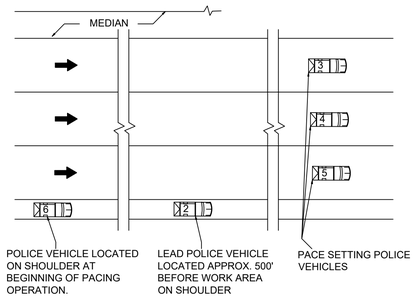
NOTES:
STAGE TWO BEGINS AFTER RECEIVING THE SIGNAL FROM THE LEAD COORDINATOR,THE PACING AND LEAD VEHICLES ENTERING THE TRAFFIC STREAM. DURING THIS STAGE, THE PACING VEHICLES GET INTO SIDE-BY-SIDE POSITIONS IN THE TRAVEL LANES AND ANY DRIVABLE SHOULDERS, SLOWING TRAFFIC BEHIND THEM. ONCE IN POSITION, THE PACING VEHICLES TURN THEIR FLASHING LIGHTS ON AND SLOW TO THE SPECIFIED SPEED.



STAGE THREE ROLLING ROAD BLOCK

NOT TO SCALE

NOTES:
STAGE THREE BEGINS WHEN A GAP LARGE ENOUGH TO ALLOW TIME FOR THE WORK TO BE COMPLETED HAS OPENED UP BETWEEN THE PACING VEHICLES AND THE FREE-FLOWING TRAFFIC IN FRONT OF THEM. CHASE VEHICLE SHALL FOLLOW THE LAST FREE FLOWING VEHICLE AND VERIFY THAT ALL ACCESS POINTS BEFORE THE WORK ZONE HAVE BEEN CLOSED AND NO STOPPED VEHICLES REMAIN ON THE ROADWAY. WHEN THE CHASE VEHICLE PASSES THE WORK ZONE AND CONFIRMS WITH THE TRAFFIC CONTROL SUPERVISOR THAT THE ROADWAY IS CLOSED AND CLEAR, THE PROPOSED WORK CAN BEGIN.



STAGE FOUR ROLLING ROAD BLOCK

NOT TO SCALE

NOTES:
STAGE FOUR BEGINS WHEN THE PACE SETTING VEHICLES ARE WITHIN TWO MILES OF THE WORK AREA AT WHICH POINT THEY MUST NOTIFY THE LEAD COORDINATOR OF THEIR POSITION. IF THE WORK IS COMPLETED AND THE WORK SPACE IS CLEARED, THE PACE SETTING VEHICLES WOULD PROCEED THROUGH THE CLEARED WORK AREA AND IMMEDIATELY MOVE TO THE RIGHT SHOULDER.

TRAFFIC PACING

1. INSTALL MOVING OPERATIONS AHEAD (MA-W21-9) SIGNS APPROXIMATELY 1 MILE PRIOR TO THE WORK IN ADVANCE OF THE PLANNED STARTING POINT FOR THE ROLLING ROAD BLOCK AREA AND INSTALL ROAD CLOSED (W20-3) SIGNS APPROXIMATELY 1000' PRIOR TO THE WORK AREA. THESE SIGNS SHALL REMAIN COVERED UNTIL THE PACING OPERATION BEGINS AND BE COVERED AGAIN WHEN THE PACING OPERATION HAS ENDED.
2. SEE SHEET 39 FOR SUGGESTED WORK ZONE WARNING SIGN SPACING ALONG I-290 DURING ROLLING ROAD BLOCK OPERATIONS.
3. POLICE DETAILS SHALL BLOCK ACCESS POINTS UNTIL THE TRAFFIC CONTROL SUPERVISOR SAYS THE WORK ZONE IS ALL CLEAR AND THE ROLLING QUEUE HAS PASSES THE ACCESS POINT.
4. PRIOR TO REQUESTING THAT THE TRAFFIC CONTROL OFFICER SUPERVISOR INITIATE THE PACING OPERATION, THE CONTRACTOR SHALL ENSURE THAT THE NECESSARY EQUIPMENT IS PROPERLY POSITIONED (OFF THE ROADWAY) FOR THE CONSTRUCTION ACTIVITY REQUIRING THE TRAFFIC PACING OPERATION.
5. TRUCK MOUNTED ATTENUATOR(S) WITH CHANGEABLE MESSAGE SIGN(S) ARE REQUIRED TO PROTECT WORKERS AND/OR EQUIPMENT POSITIONED IN A TRAVEL LANE(S) AT THE WORK AREA DURING THE PACING OPERATION FROM AN ERRANT VEHICLE. IF NO WORKERS AND/OR EQUIPMENT ARE POSITIONED IN A TRAVEL LANE(S) AT THE WORK AREA, TRUCK MOUNTED ATTENUATOR(S) ARE NOT REQUIRED.
6. A TRAFFIC CONTROL OFFICER SUPERVISOR SHALL BE STATIONED AT THE WORK AREA CONTINUOUSLY THROUGHOUT THE PACING OPERATION TO INSURE RADIO COMMUNICATIONS BETWEEN THE CONTRACTOR AND/OR THE PROJECT ADMINISTRATOR, AND ALL THE POLICE VEHICLES INVOLVED IN THE PACING OPERATION.
7. WHEN MORE THAN ONE PACING OPERATION IS REQUIRED IN ONE WORK PERIOD THE CONTRACTOR SHALL ALLOW SUFFICIENT TIME BETWEEN PACING OPERATIONS TO PERMIT TRAFFIC TO RETURN TO NORMAL/SPEEDS AND FLOW. ADDITIONAL TIME MAY BE REQUIRED BETWEEN PACING OPERATIONS TO ALLOW TRAFFIC TO RESUME NORMAL SPEEDS AND FLOW UPSTREAM OF THE WORK AREA AS DETERMINED BY THE PROJECT ADMINISTRATOR OR TRAFFIC CONTROL OFFICER SUPERVISOR.
8. THE MINIMUM SPEED ALLOWED FOR PACING OPERATION IS 10MPH, WITH 20MPH THE PREFERRED SPEED.
9. THE MAXIMUM ALLOWED WORK DURATION IS 12 MINUTES.
10. THE MAXIMUM PRACTICAL OPERATION LENGTH IS 10 MILES.

GENERAL ROLLING ROAD BLOCK NOTES

1. SEE SHEET 39 FOR SUGGESTED WORK ZONE WARNING SIGN SPACING ALONG I-290 DURING ROLLING ROAD BLOCK OPERATIONS.
2. POLICE DETAILS SHALL BLOCK ACCESS POINTS UNTIL THE TRAFFIC CONTROL SUPERVISOR SAYS THE WORK ZONE IS ALL CLEAR AND THE ROLLING QUEUE HAS PASSES THE ACCESS POINT.
3. A DETOUR WILL NOT BE NEEDED FOR CLOSURES FOR THE SHORT DURATION OF THE ROLLING ROAD BLOCK.
4. ROLLING ROAD BLOCK SHALL ONLY BE ALLOWED DURING OFF-PEAK TRAFFIC PERIODS AS STATED IN THE CONTRACT DOCUMENTS OR APPROVED BY THE MASSDOT RESIDENT ENGINEER.
5. CONTRACTOR SHALL COORDINATE WITH LOCAL AND STATE LAW ENFORCEMENT, MUNICIPALITIES AND THE MEDIA AS NEEDED IN PREPARATION FOR THE ROLLING ROAD BLOCK.

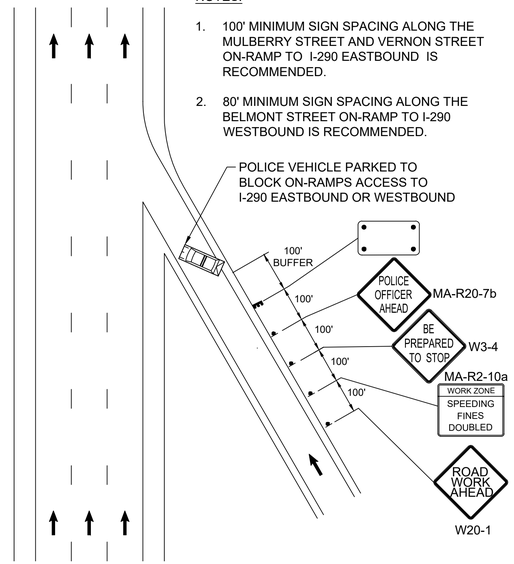
WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	42	169
PROJECT FILE NO.	609185		

TEMPORARY TRAFFIC CONTROL DETAILS - 4

NOTES:

1. 100' MINIMUM SIGN SPACING ALONG THE MULBERRY STREET AND VERNON STREET ON-RAMP TO I-290 EASTBOUND IS RECOMMENDED.
2. 80' MINIMUM SIGN SPACING ALONG THE BELMONT STREET ON-RAMP TO I-290 WESTBOUND IS RECOMMENDED.



SUGGESTED WORK ZONE WARNING SIGN SPACING ALONG I-290 ON-RAMPS DURING ROLLING ROAD BLOCK OPERATION

NOT TO SCALE

	I-290 EASTBOUND	I-290 WESTBOUND
ANTICIPATED RAMP CLOSURE	VERNON STREET ON-RAMP	VERNON STREET ON-RAMP
POINT OF ENTRY: WORK VEHICLES	SOUTHBRIDGE STREET ON-RAMP	SUMMER STREET ON-RAMP
POINT OF ENTRY: GENERAL TRAFFIC	GRAFTON STREET ON-RAMP	EAST CENTRAL STREET ON-RAMP

ANTICIPATED MAINLINE ROLLING ROAD BLOCKS
HARRISON STREET ON-RAMP CLOSURES

	I-290 EASTBOUND	I-290 WESTBOUND
ANTICIPATED RAMP CLOSURE	MULBERRY STREET ON-RAMP	BELMONT STREET ON-RAMP
POINT OF ENTRY: WORK VEHICLES	GRAFTON STREET ON-RAMP	BURNCOAT STREET & NORTH SERVICE ROAD ON-RAMP
POINT OF ENTRY: GENERAL TRAFFIC	LINCOLN STREET ON-RAMP	EAST CENTRAL STREET ON-RAMP

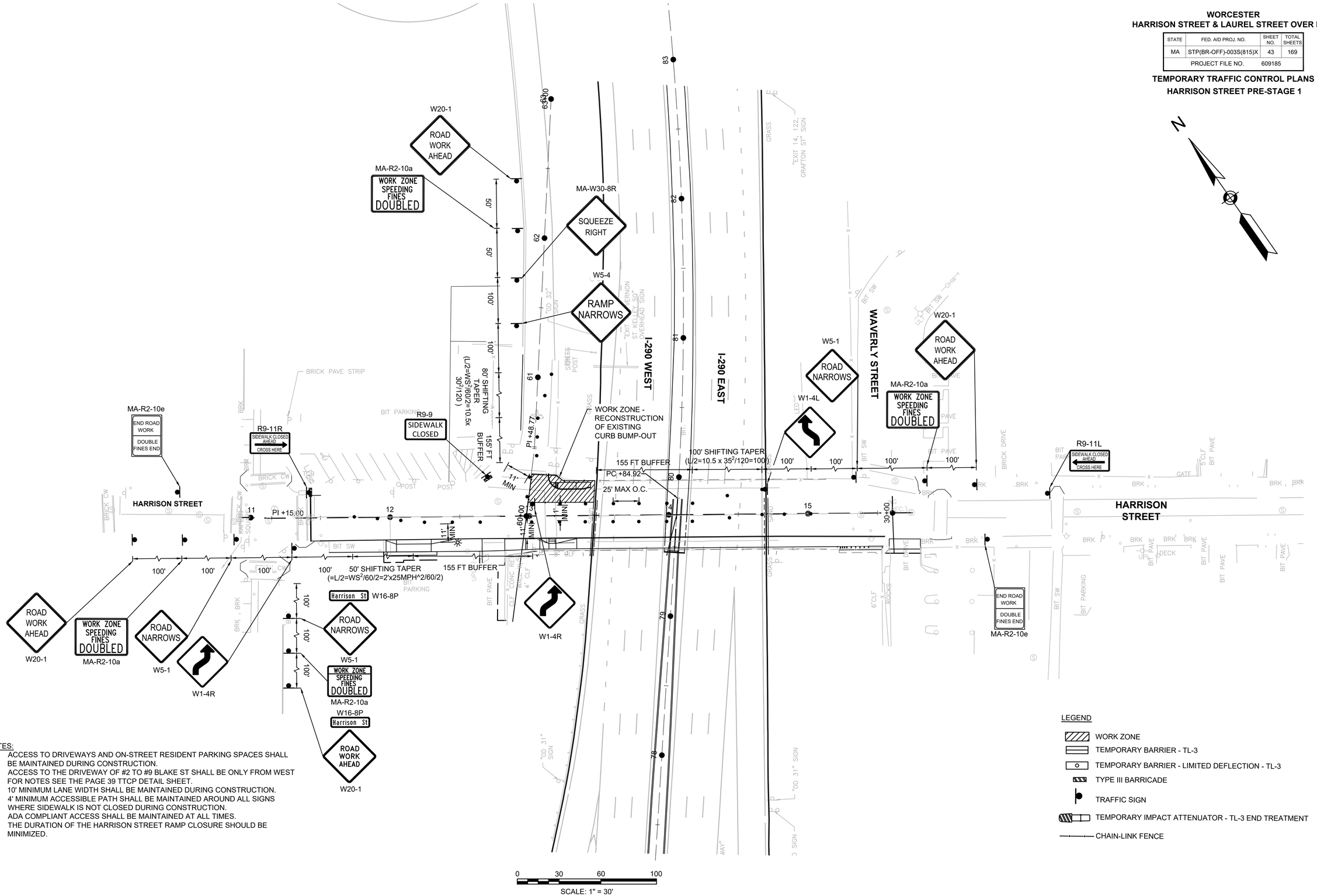
ANTICIPATED MAINLINE ROLLING ROAD BLOCKS
LAUREL STREET ON-RAMP CLOSURES

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	43	169
	PROJECT FILE NO. 609185		

TEMPORARY TRAFFIC CONTROL PLANS
HARRISON STREET PRE-STAGE 1

609185_TRF(TMP PLANS).DWG Plotted on 21-Nov-2024 12:46 PM



NOTES:
1. ACCESS TO DRIVEWAYS AND ON-STREET RESIDENT PARKING SPACES SHALL BE MAINTAINED DURING CONSTRUCTION.
2. ACCESS TO THE DRIVEWAY OF #2 TO #9 BLAKE ST SHALL BE ONLY FROM WEST
3. FOR NOTES SEE THE PAGE 39 TTCP DETAIL SHEET.
4. 10' MINIMUM LANE WIDTH SHALL BE MAINTAINED DURING CONSTRUCTION.
5. 4' MINIMUM ACCESSIBLE PATH SHALL BE MAINTAINED AROUND ALL SIGNS WHERE SIDEWALK IS NOT CLOSED DURING CONSTRUCTION.
6. ADA COMPLIANT ACCESS SHALL BE MAINTAINED AT ALL TIMES.
7. THE DURATION OF THE HARRISON STREET RAMP CLOSURE SHOULD BE MINIMIZED.

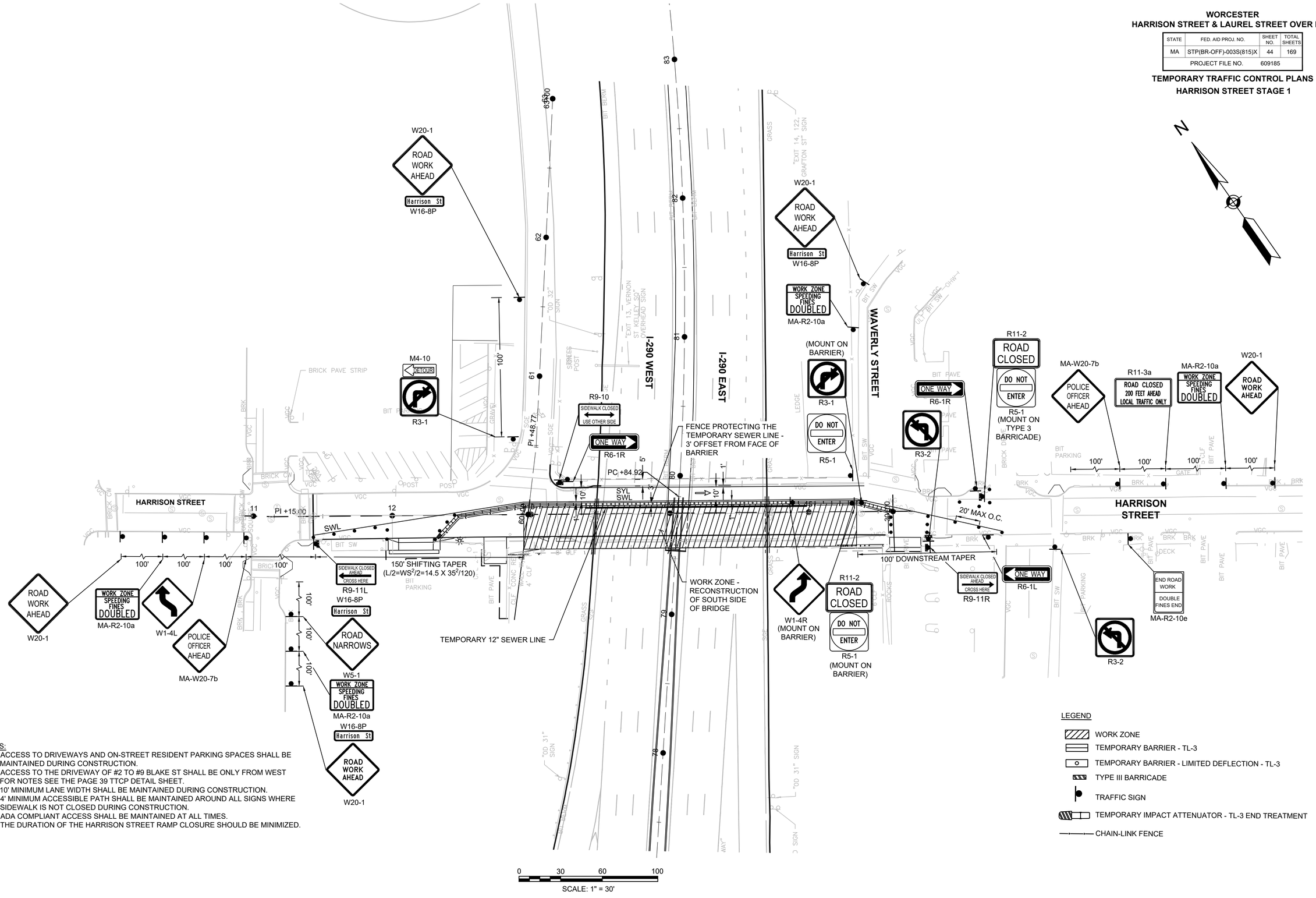
LEGEND
- WORK ZONE
- TEMPORARY BARRIER - TL-3
- TEMPORARY BARRIER - LIMITED DEFLECTION - TL-3
- TYPE III BARRICADE
- TRAFFIC SIGN
- TEMPORARY IMPACT ATTENUATOR - TL-3 END TREATMENT
- CHAIN-LINK FENCE

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	44	169
	PROJECT FILE NO. 609185		

TEMPORARY TRAFFIC CONTROL PLANS
HARRISON STREET STAGE 1

609185_TRF(TMP PLANS).DWG Plotted on 21-Nov-2024 12:46 PM



NOTES:
1. ACCESS TO DRIVEWAYS AND ON-STREET RESIDENT PARKING SPACES SHALL BE MAINTAINED DURING CONSTRUCTION.
2. ACCESS TO THE DRIVEWAY OF #2 TO #9 BLAKE ST SHALL BE ONLY FROM WEST
3. FOR NOTES SEE THE PAGE 39 TTCP DETAIL SHEET.
4. 10' MINIMUM LANE WIDTH SHALL BE MAINTAINED DURING CONSTRUCTION.
5. 4' MINIMUM ACCESSIBLE PATH SHALL BE MAINTAINED AROUND ALL SIGNS WHERE SIDEWALK IS NOT CLOSED DURING CONSTRUCTION.
6. ADA COMPLIANT ACCESS SHALL BE MAINTAINED AT ALL TIMES.
7. THE DURATION OF THE HARRISON STREET RAMP CLOSURE SHOULD BE MINIMIZED.

LEGEND

- WORK ZONE
- TEMPORARY BARRIER - TL-3
- TEMPORARY BARRIER - LIMITED DEFLECTION - TL-3
- TYPE III BARRICADE
- TRAFFIC SIGN
- TEMPORARY IMPACT ATTENUATOR - TL-3 END TREATMENT
- CHAIN-LINK FENCE

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	45	169
	PROJECT FILE NO. 609185		

TEMPORARY TRAFFIC CONTROL PLANS
HARRISON STREET STAGE 2

609185_TRF(TMP PLANS).DWG Plotted on 21-Nov-2024 12:46 PM

ROAD CLOSED
R11-2

TEMPORARY BARRIER

I-290 WEST

I-290 EAST

WORK ZONE - RECONSTRUCTION OF NORTH SIDE OF BRIDGE AND OFF-RAMP INTERSECTION

WAVERLY STREET

HARRISON STREET

W16-8P Harrison St
ROAD WORK AHEAD
W20-1

WORK ZONE SPEEDING FINES DOUBLED
MA-R2-10a

W16-8P Harrison St
ROAD NARROWS
W5-1

R9-11R
SIDEWALK CLOSED AHEAD
CROSS HERE

100'

ROAD CLOSED
R11-2

SIDEWALK CLOSED
R9-9

50' DOWNSTREAM TAPER

R11-2
ROAD CLOSED
DO NOT ENTER
R5-1

SIDEWALK CLOSED AHEAD
CROSS HERE
R9-11L

R6-1R
ONE WAY

MA-R2-10a
WORK ZONE SPEEDING FINES DOUBLED

W20-3
ROAD CLOSED AHEAD

PC +84.92

PI +15.00

TAPER 100' MAX

SIDEWALK CLOSED USE OTHER SIDE
R9-10

ONE WAY
R6-1L

R3-2

FENCE PROTECTING THE TEMPORARY SEWER LINE - 3' OFFSET FROM FACE OF BARRIER

SIDEWALK CLOSED USE OTHER SIDE
R9-10

DO NOT ENTER
R5-1

R3-2

ONE WAY
R6-1L

END ROAD WORK
DOUBLE FINES END
MA-R2-10e

W16-8P Harrison St
ROAD NARROWS
W5-1

WORK ZONE SPEEDING FINES DOUBLED
MA-R2-10a

W16-8P Harrison St
ROAD WORK AHEAD
W20-1

NOTES:
1. ACCESS TO DRIVEWAYS AND ON-STREET RESIDENT PARKING SPACES SHALL BE MAINTAINED DURING CONSTRUCTION.
2. ACCESS TO THE DRIVEWAY OF #2 TO #9 BLAKE ST SHALL BE ONLY FROM WEST
3. FOR NOTES SEE THE PAGE 39 TTCP DETAIL SHEET.
4. 10' MINIMUM LANE WIDTH SHALL BE MAINTAINED DURING CONSTRUCTION.
5. 4' MINIMUM ACCESSIBLE PATH SHALL BE MAINTAINED AROUND ALL SIGNS WHERE SIDEWALK IS NOT CLOSED DURING CONSTRUCTION.
6. ADA COMPLIANT ACCESS SHALL BE MAINTAINED AT ALL TIMES.
7. THE DURATION OF THE HARRISON STREET ON-RAMP CLOSURE SHOULD BE MINIMIZED.

LEGEND
- WORK ZONE
- TEMPORARY BARRIER - TL-3
- TEMPORARY BARRIER - LIMITED DEFLECTION - TL-3
- TYPE III BARRICADE
- TRAFFIC SIGN
- TEMPORARY IMPACT ATTENUATOR - TL-3 END TREATMENT
- CHAIN-LINK FENCE

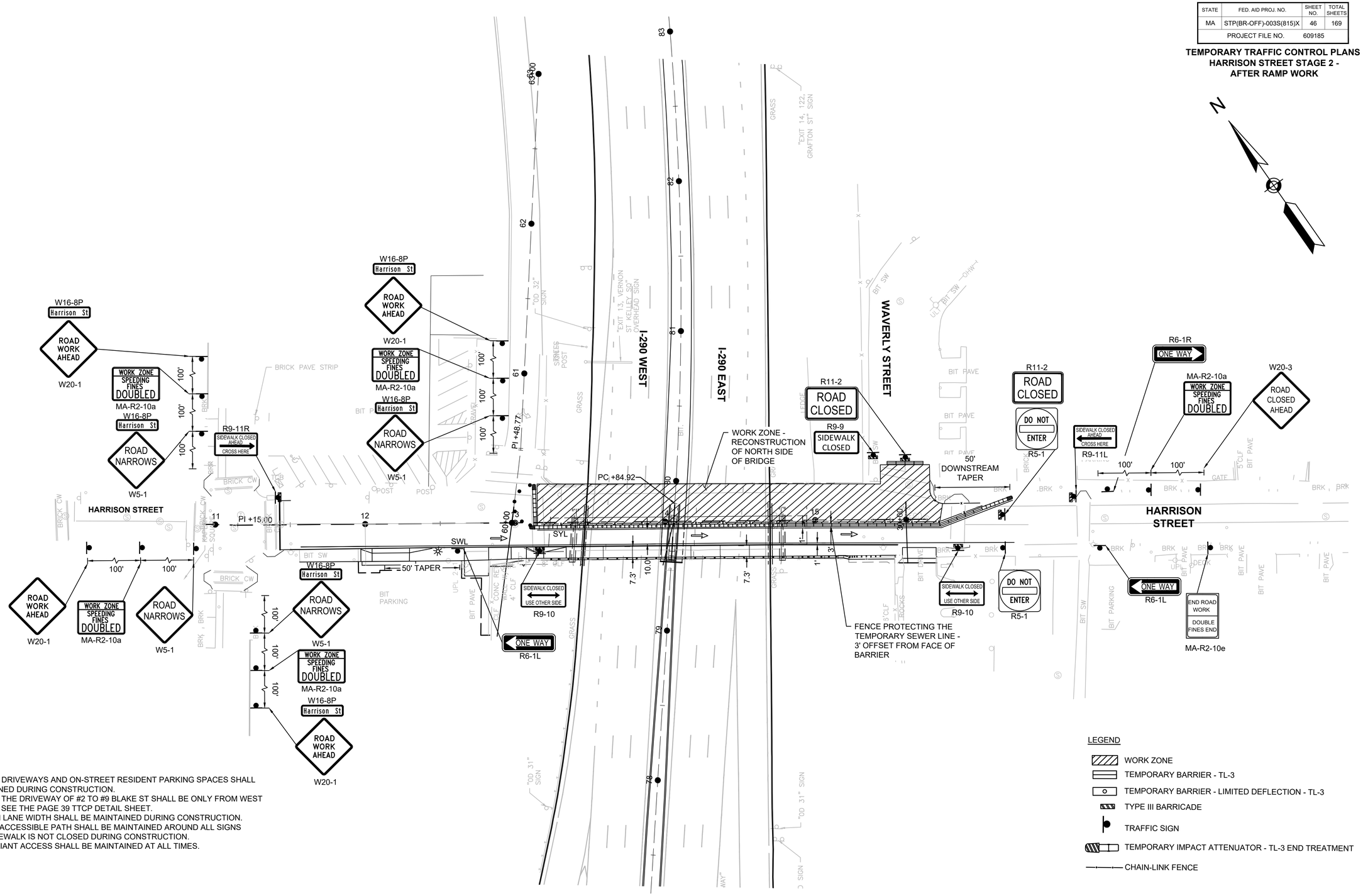
0 30 60 100
SCALE: 1" = 30'

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	46	169
	PROJECT FILE NO. 609185		

TEMPORARY TRAFFIC CONTROL PLANS
HARRISON STREET STAGE 2 - AFTER RAMP WORK

609185_TRF(TMP PLANS).DWG Plotted on 21-Nov-2024 12:46 PM



NOTES:
1. ACCESS TO DRIVEWAYS AND ON-STREET RESIDENT PARKING SPACES SHALL BE MAINTAINED DURING CONSTRUCTION.
2. ACCESS TO THE DRIVEWAY OF #2 TO #9 BLAKE ST SHALL BE ONLY FROM WEST
3. FOR NOTES SEE THE PAGE 39 TTCP DETAIL SHEET.
4. 10' MINIMUM LANE WIDTH SHALL BE MAINTAINED DURING CONSTRUCTION.
5. 4' MINIMUM ACCESSIBLE PATH SHALL BE MAINTAINED AROUND ALL SIGNS WHERE SIDEWALK IS NOT CLOSED DURING CONSTRUCTION.
6. ADA COMPLIANT ACCESS SHALL BE MAINTAINED AT ALL TIMES.

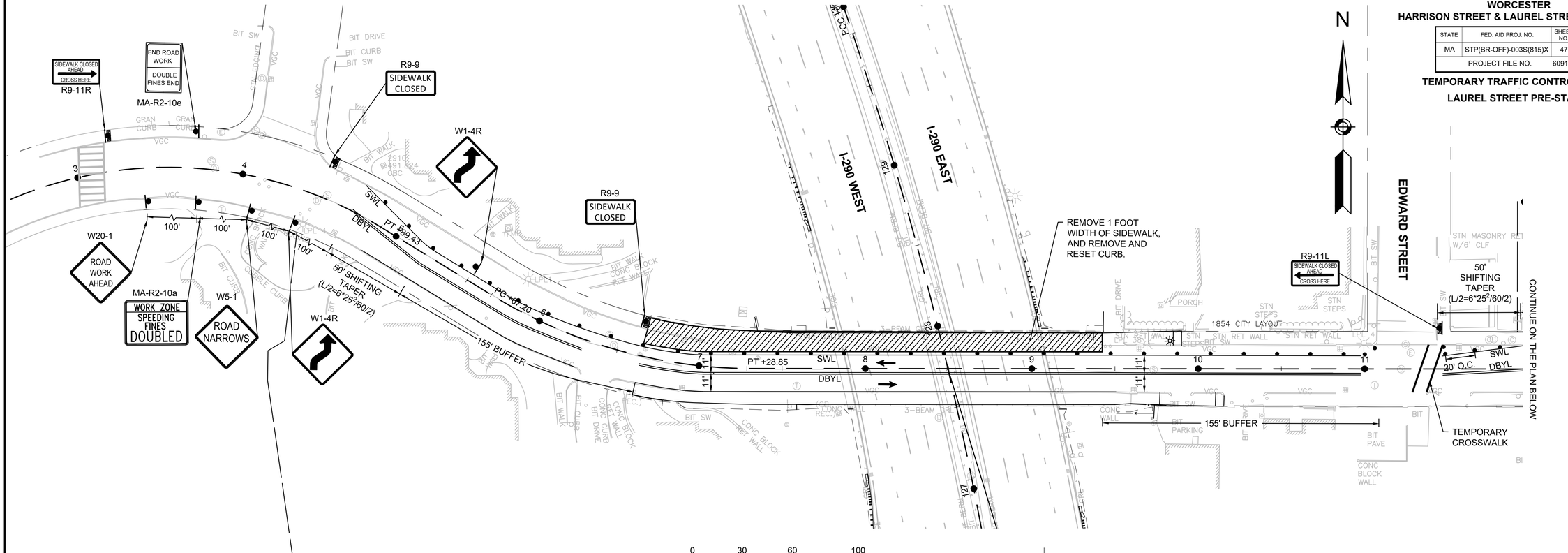
LEGEND
- WORK ZONE
- TEMPORARY BARRIER - TL-3
- TEMPORARY BARRIER - LIMITED DEFLECTION - TL-3
- TYPE III BARRICADE
- TRAFFIC SIGN
- TEMPORARY IMPACT ATTENUATOR - TL-3 END TREATMENT
- CHAIN-LINK FENCE

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	47	169
	PROJECT FILE NO. 609185		

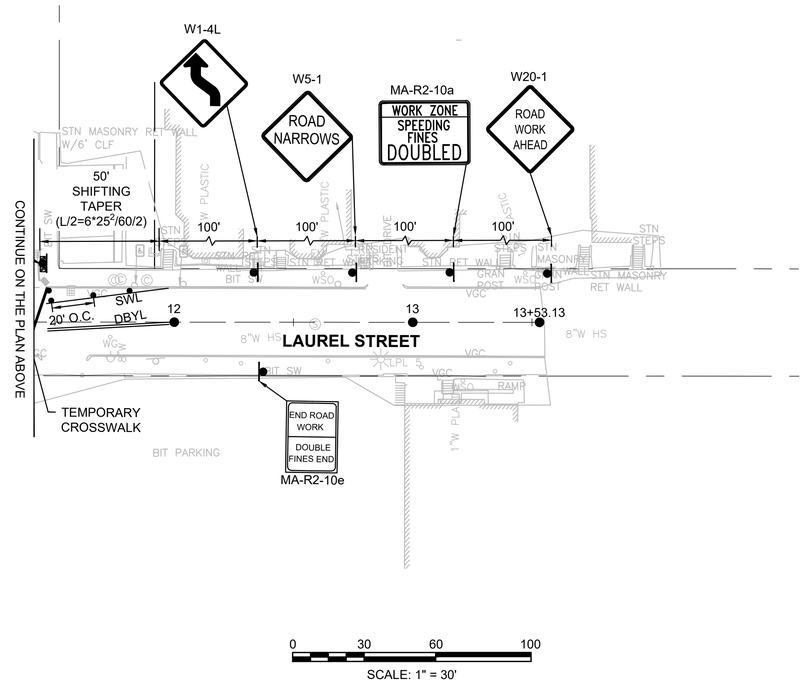
TEMPORARY TRAFFIC CONTROL PLANS
LAUREL STREET PRE-STAGE 1

Plotted on 21-Nov-2024 12:46 PM
609185_TRF(TMP PLANS).DWG



LEGEND

- WORK ZONE
- TEMPORARY BARRIER - TL-3
- TEMPORARY BARRIER - LIMITED DEFLECTION - TL-3
- TYPE III BARRICADE
- TRAFFIC SIGN
- DRUMS
- CHAIN-LINK FENCE



NOTES:

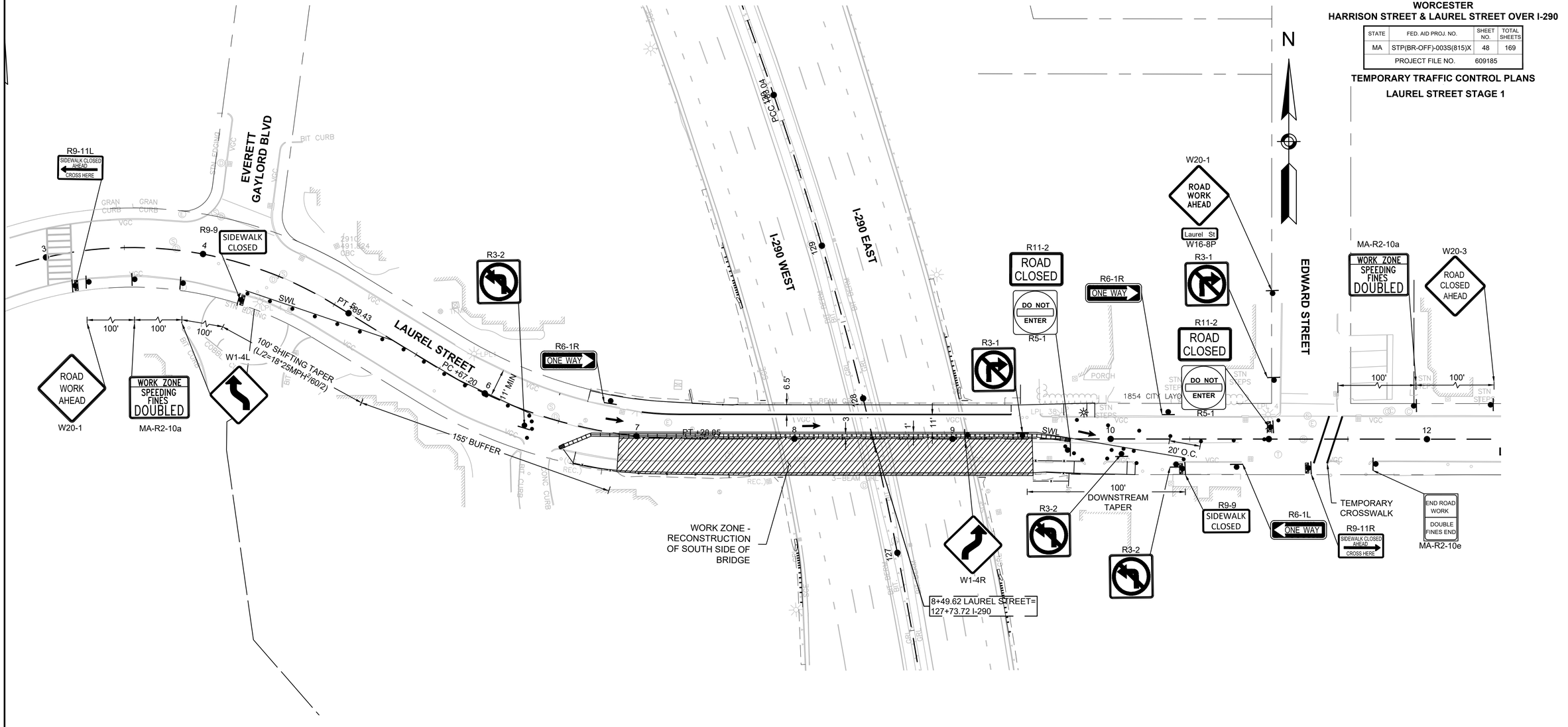
1. ACCESS TO DRIVEWAYS AND ON-STREET RESIDENT PARKING SPACES SHALL BE MAINTAINED DURING CONSTRUCTION.
2. FOR NOTES SEE THE PAGE 39 TTCP DETAIL SHEET.
3. 10' MINIMUM LANE WIDTH SHALL BE MAINTAINED DURING CONSTRUCTION.
4. 4' MINIMUM ACCESSIBLE PATH SHALL BE MAINTAINED AROUND ALL SIGNS WHERE SIDEWALK IS NOT CLOSED DURING CONSTRUCTION.
5. THE LOCATION OF THE TEMPORARY SUPPORT OF EXCAVATION CAN BE ALTERED AS NECESSARY TO ACCOMMODATE SPECIFIC SITE CONDITIONS/CONSTRUCTION OPERATIONS AND APPROVED BY THE ENGINEER.
6. THE PAVEMENT SHALL BE RESTORED TO ITS ORIGINAL CONDITION UPON COMPLETION OF CONSTRUCTION.

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	48	169
	PROJECT FILE NO. 609185		

TEMPORARY TRAFFIC CONTROL PLANS
LAUREL STREET STAGE 1

609185_TRF(TMP PLANS).DWG Plotted on 21-Nov-2024 12:46 PM



NOTES:

1. ACCESS TO DRIVEWAYS AND ON-STREET RESIDENT PARKING SHALL BE MAINTAINED DURING CONSTRUCTION.
2. FOR NOTES SEE THE PAGE 39 TTCP DETAIL SHEET.
3. 10' MINIMUM LANE WIDTH SHALL BE MAINTAINED DURING CONSTRUCTION.
4. 4' MINIMUM ACCESSIBLE PATH SHALL BE MAINTAINED AROUND ALL SIGNS WHERE SIDEWALK IS NOT CLOSED DURING CONSTRUCTION.
5. THE LOCATION OF THE TEMPORARY SUPPORT OF EXCAVATION CAN BE ALTERED AS NECESSARY TO ACCOMMODATE SPECIFIC SITE CONDITIONS/CONSTRUCTION OPERATIONS AND APPROVED BY THE ENGINEER.
6. THE PAVEMENT SHALL BE RESTORED TO ITS ORIGINAL CONDITION UPON COMPLETION OF CONSTRUCTION.

LEGEND

- WORK ZONE
- TEMPORARY BARRIER - TL-3
- TEMPORARY BARRIER - LIMITED DEFLECTION - TL-3
- TYPE III BARRICADE
- TRAFFIC SIGN
- TEMPORARY IMPACT ATTENUATOR - TL-3 END TREATMENT
- CHAIN-LINK FENCE

0 30 60 100

SCALE: 1" = 30'

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	49	169
	PROJECT FILE NO. 609185		

TEMPORARY TRAFFIC CONTROL PLANS
LAUREL STREET STAGE 2

609185_TRF(TMP PLANS).DWG Plotted on 21-Nov-2024 12:46 PM

N

SIDEWALK CLOSED AHEAD CROSS HERE R9-11R

5 FOOT PLANTING EASEMENT (PLAN BOOK 332 PLAN 73)

EVERETT GAYLORD BLVD

100' SHIFTING TAPER (L/2=18*25MPH*60/2)

155' BUFFER

WORK ZONE - RECONSTRUCTION OF NORTH SIDE OF BRIDGE

TEMPORARY DRIVEWAY

I-290 WEST

I-290 EAST

LAUREL STREET PC +67.20

PT +28.66

SYL SWL

ROAD WORK AHEAD W20-1

WORK ZONE SPEEDING FINES DOUBLED MA-R2-10a

ROAD NARROWS W5-1

100' 100' 100'

R3-2

ONE WAY R6-1L

"LEANORA MONROE MEMORIAL BRIDGE"

5.5' 12' 1' 1'

8+49.62 LAUREL STREET= 127+73.72 I-290

R3-1

R3-2

ONE WAY R6-1L

"UMASS MEMORIAL MEDICAL CENTER MEMORIAL CAMPUS EXIT 1"

"ATTRACTIONS – EXIT 1" SIGN

MA-R2-10e END ROAD WORK DOUBLE FINES END

W20-1 ROAD WORK AHEAD

Laurel St W16-8P

R11-2 ROAD CLOSED DO NOT ENTER R5-1

ONE WAY R6-1R

EDWARD STREET

DOWNSTREAM TAPER

R9-11L SIDEWALK CLOSED AHEAD CROSS HERE

MA-R2-10a WORK ZONE SPEEDING FINES DOUBLED

W20-3 ROAD CLOSED AHEAD

TEMPORARY CROSSWALK

R3-1

MA-R2-10e END ROAD WORK DOUBLE FINES END

DO NOT ENTER R5-1

THE CITY OF WORCESTER DEPARTMENT OF PUBLIC WORKS AND PARKS WILL ISSUE A CONSTRUCTION PARKING PERMIT SUCH THAT ON-STREET SPACES WILL BE DESIGNATED FOR USE OF THE RESIDENTS OF #38 AND #40 LAUREL STREET PRIOR TO START OF CONSTRUCTION.

CONTINUE ON THE PLAN BELOW

LEGEND

- WORK ZONE
- TEMPORARY BARRIER - TL-3
- TEMPORARY BARRIER - LIMITED DEFLECTION - TL-3
- TYPE III BARRICADE
- TRAFFIC SIGN
- TEMPORARY IMPACT ATTENUATOR - TL-3 END TREATMENT
- CHAIN-LINK FENCE

NOTES:

1. ACCESS TO DRIVEWAYS AND ON-STREET RESIDENT PARKING SPACES SHALL BE MAINTAINED DURING CONSTRUCTION.
2. FOR NOTES SEE THE PAGE 39 TTCP DETAIL SHEET.
3. 10' MINIMUM LANE WIDTH SHALL BE MAINTAINED DURING CONSTRUCTION.
4. 4' MINIMUM ACCESSIBLE PATH SHALL BE MAINTAINED AROUND ALL SIGNS WHERE CROSSWALK IS NOT CLOSED DURING CONSTRUCTION.
5. THE PAVEMENT SHALL BE RESTORED TO ITS ORIGINAL CONDITION UPON COMPLETION OF CONSTRUCTION.

0 30 60 100

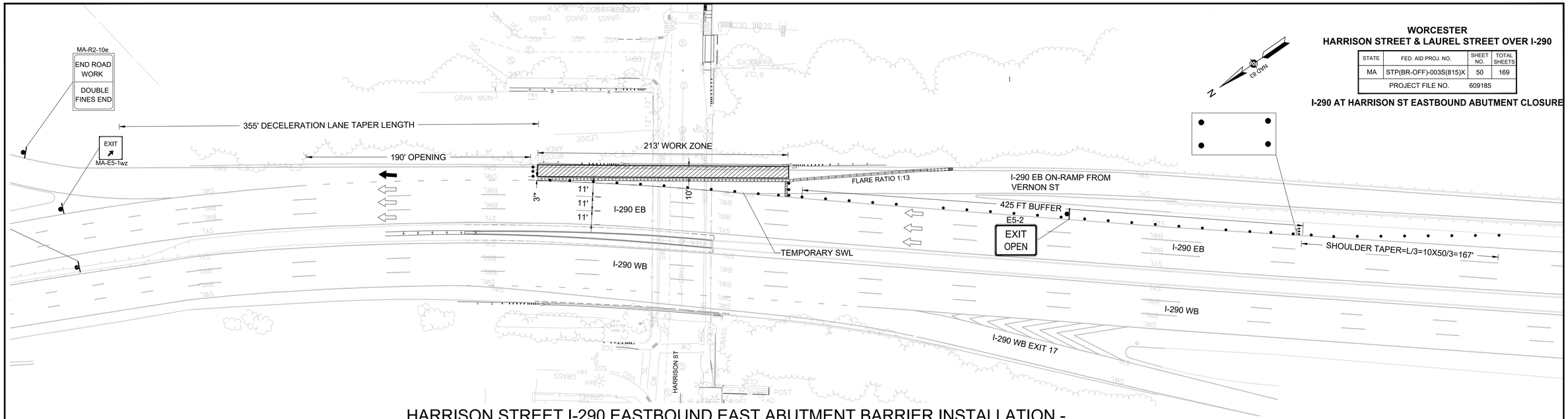
SCALE: 1" = 30'

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	50	169
PROJECT FILE NO.	609185		

I-290 AT HARRISON ST EASTBOUND ABUTMENT CLOSURE

I-290 MEDIAN CLOSURE.DWG Plotted on 21-Nov-2024 12:47 PM



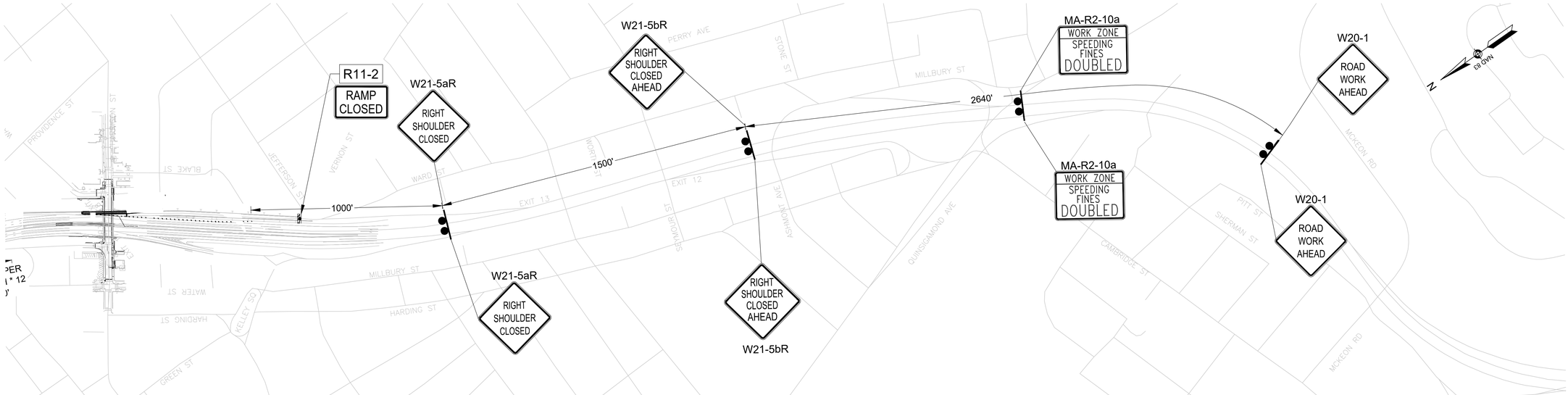
HARRISON STREET I-290 EASTBOUND EAST ABUTMENT BARRIER INSTALLATION - ON-RAMP CLOSURE

SCALE 1"=40'

0 40 100 160

SCALE: 1" = 40'

* 3' MIN FOR TEMPORARY TL-3 BARRIER (LIMITED DEFLECTION) PLUS DYNAMIC DEFLECTION



HARRISON STREET I-290 EASTBOUND EAST ABUTMENT BARRIER INSTALLATION - ADVANCE WARNING SIGNS

SCALE 1"=250'

LEGEND

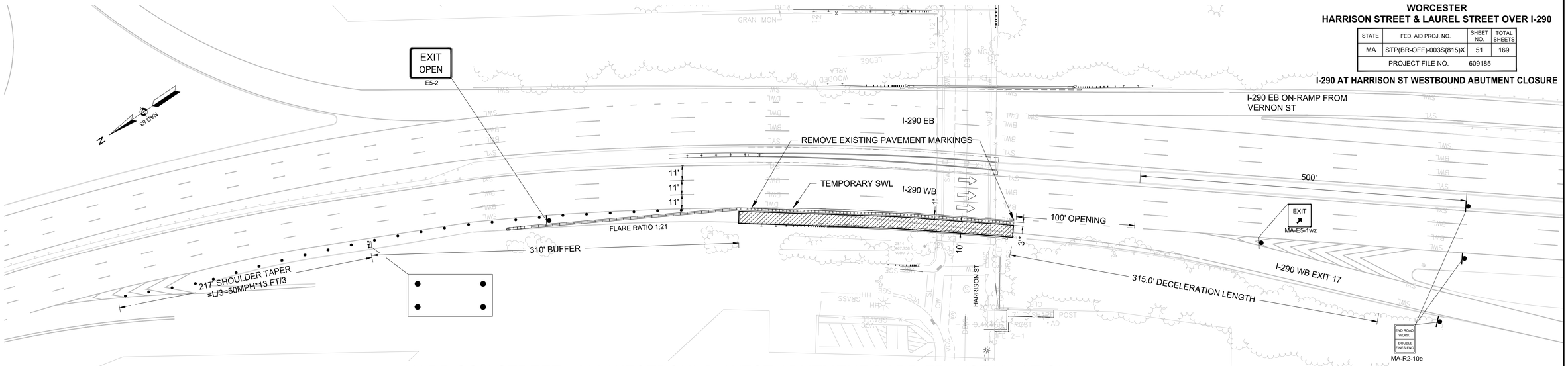
- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- EXISTING DIRECTION OF TRAFFIC
- SIGN
- PROPOSED DIRECTION OF TRAFFIC TRUCK-MOUNTED
- TRUCK MOUNTED ATTENUATOR
- ARROW BOARD
- WORK ZONE
- TEMPORARY BARRIER TL-3, LIMITED DEFLECTION
- TEMPORARY BARRIER TL-3
- TL-3 ATTENUATOR
- TYPE III BARRICADE

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	51	169
PROJECT FILE NO. 609185			

I-290 AT HARRISON ST WESTBOUND ABUTMENT CLOSURE

I-290 MEDIAN CLOSURE.DWG Plotted on 21-Nov-2024 12:47 PM



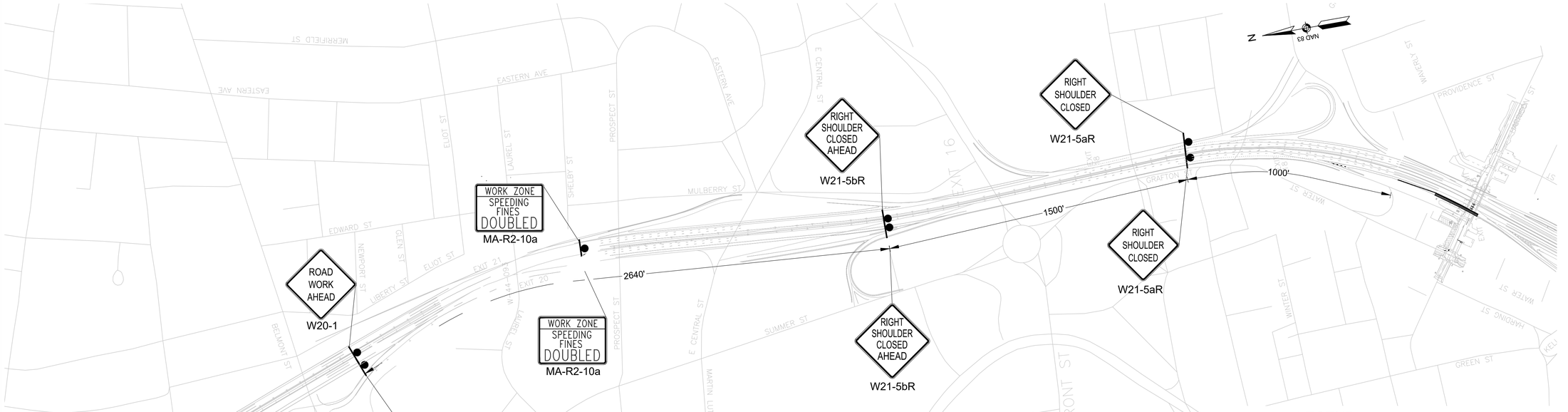
HARRISON STREET I-290 WESTBOUND WEST ABUTMENT BARRIER INSTALLATION - DECELERATION LANE CLOSURE

SCALE 1"=40'

0 40 100 160

SCALE: 1" = 40'

* 3' MIN FOR TEMPORARY TL-3 BARRIER (LIMITED DEFLECTION) PLUS DYNAMIC DEFLECTION



HARRISON STREET I-290 WEST ABUTMENT BARRIER INSTALLATION - ADVANCE WARNING SIGNS

SCALE 1"=250'

LEGEND

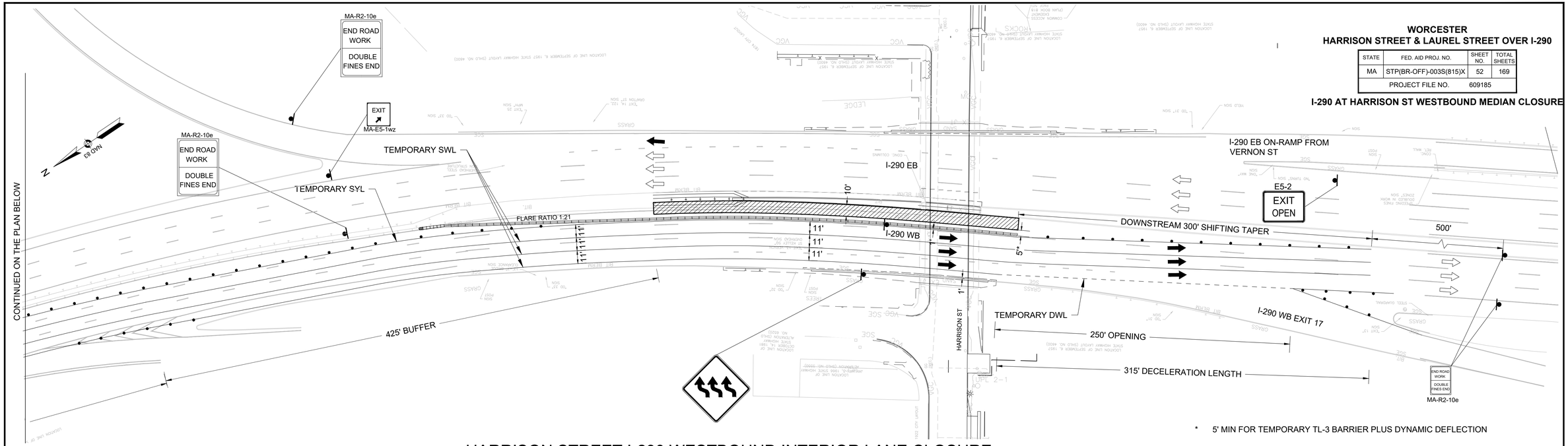
- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- EXISTING DIRECTION OF TRAFFIC
- SIGN
- PROPOSED DIRECTION OF TRAFFIC TRUCK-MOUNTED
- TRUCK MOUNTED ATTENUATOR
- ARROW BOARD
- WORK ZONE
- TEMPORARY BARRIER TL-3, LIMITED DEFLECTION
- TEMPORARY BARRIER TL-3
- TL-3 ATTENUATOR
- TYPE III BARRICADE

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	52	169
PROJECT FILE NO.	609185		

I-290 AT HARRISON ST WESTBOUND MEDIAN CLOSURE

Plotted on 21-Nov-2024 12:47 PM
I-290 MEDIAN CLOSURE.DWG



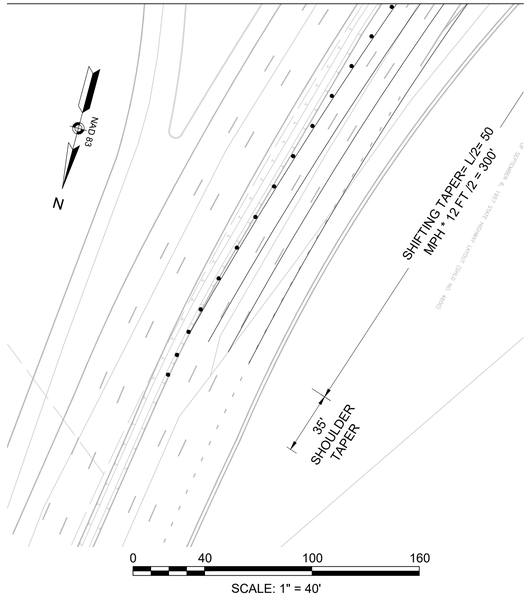
* 5' MIN FOR TEMPORARY TL-3 BARRIER PLUS DYNAMIC DEFLECTION

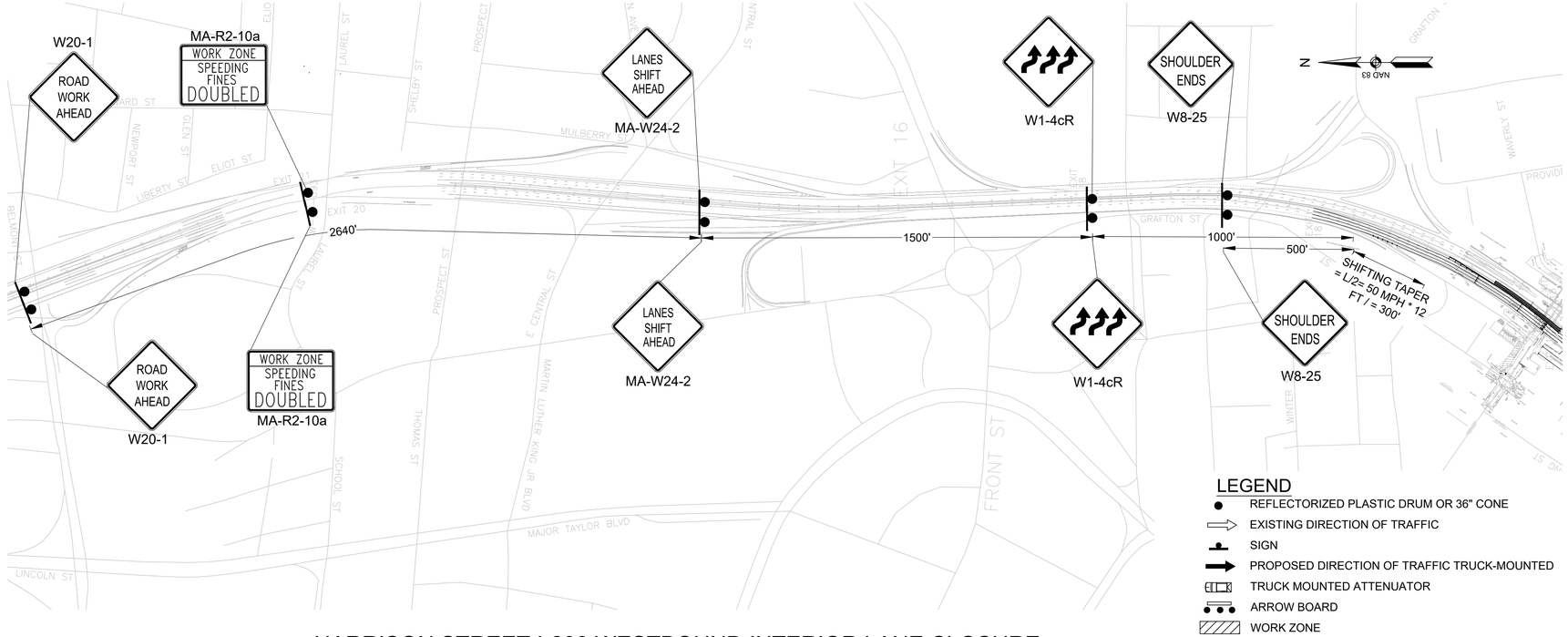
HARRISON STREET I-290 WESTBOUND INTERIOR LANE CLOSURE

SCALE 1"=40'

0 40 100 160

SCALE: 1" = 40'





HARRISON STREET I-290 WESTBOUND INTERIOR LANE CLOSURE - ADVANCE WARNING SIGNS

SCALE 1"=250'

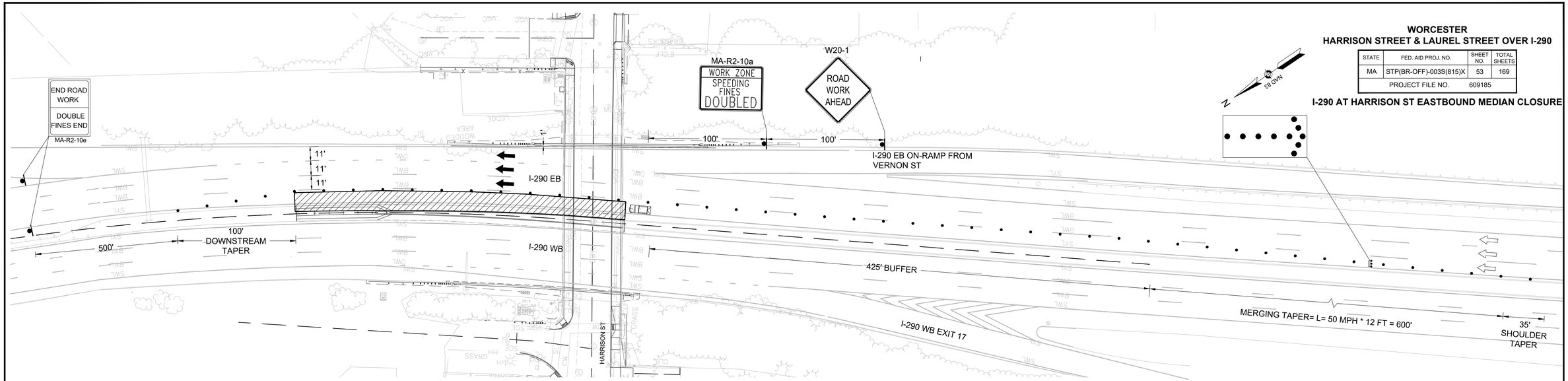
LEGEND

- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- EXISTING DIRECTION OF TRAFFIC
- SIGN
- PROPOSED DIRECTION OF TRAFFIC TRUCK-MOUNTED
- TRUCK MOUNTED ATTENUATOR
- ARROW BOARD
- WORK ZONE
- TEMPORARY BARRIER TL-3, LIMITED DEFLECTION
- TEMPORARY BARRIER TL-3
- TL-3 ATTENUATOR
- TYPE III BARRICADE

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	53	169
PROJECT FILE NO.	609185		

I-290 AT HARRISON ST EASTBOUND MEDIAN CLOSURE



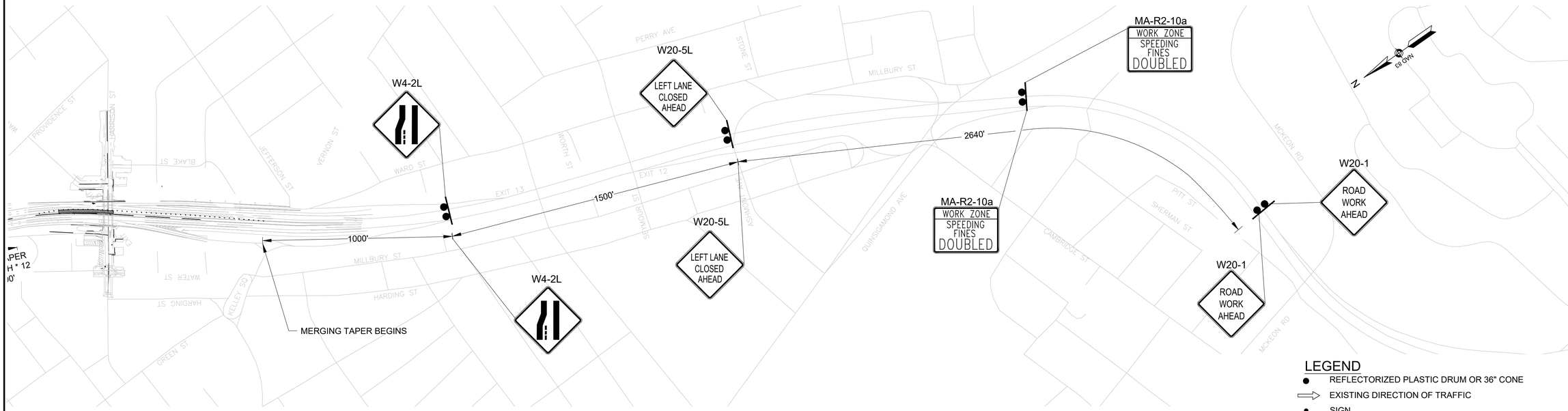
NOTE:
1. TEMPORARY TRAFFIC CONTROL SETUPS INVOLVING LANE CLOSURES ON I-290 SHALL BE RESTRICTED TO 10 PM TO 5 AM.

HARRISON STREET I-290 EASTBOUND INTERIOR LANE CLOSURE- NIGHTTIME ONE LANE CLOSURE

SCALE 1"=40'

0 40 100 160

SCALE: 1" = 40'



HARRISON STREET I-290 EASTBOUND INTERIOR LANE CLOSURE - ADVANCE WARNING SIGNS

SCALE 1"=250'

LEGEND

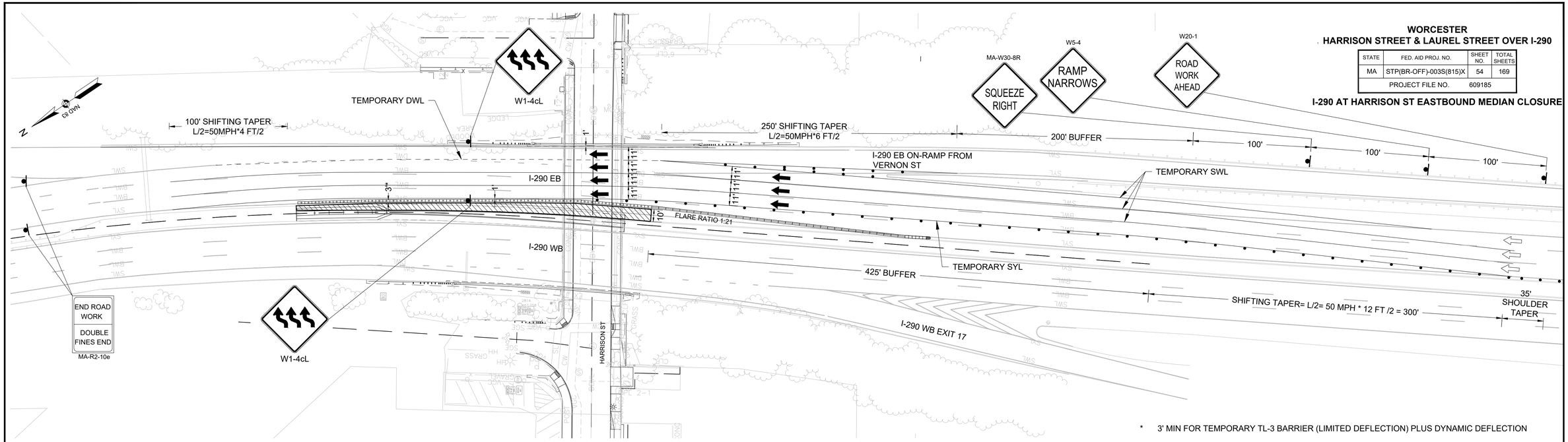
- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- EXISTING DIRECTION OF TRAFFIC
- SIGN
- PROPOSED DIRECTION OF TRAFFIC TRUCK-MOUNTED
- TRUCK MOUNTED ATTENUATOR
- ARROW BOARD
- WORK ZONE
- TEMPORARY BARRIER TL-3, LIMITED DEFLECTION
- TEMPORARY BARRIER TL-3
- TL-3 ATTENUATOR
- TYPE III BARRICADE

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	54	169
PROJECT FILE NO. 609185			

I-290 AT HARRISON ST EASTBOUND MEDIAN CLOSURE

I-290 MEDIAN CLOSURE.DWG Plotted on 21-Nov-2024 12:47 PM



* 3' MIN FOR TEMPORARY TL-3 BARRIER (LIMITED DEFLECTION) PLUS DYNAMIC DEFLECTION

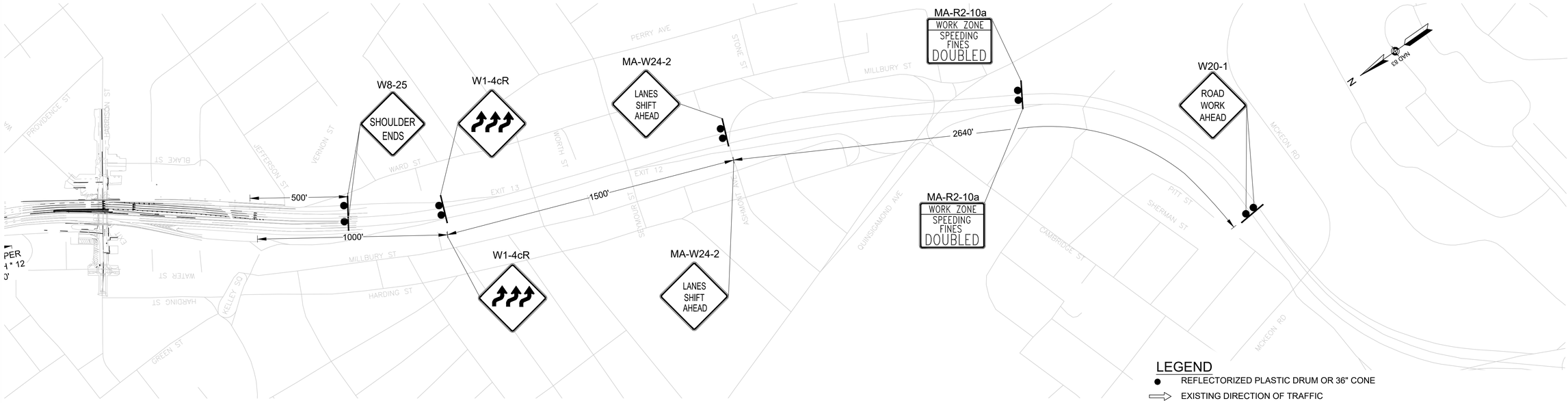
NOTE:
1. TEMPORARY TRAFFIC CONTROL SETUPS INVOLVING LANE CLOSURES ON I-290 SHALL BE RESTRICTED TO 10 PM TO 5 AM.

HARRISON STREET I-290 EASTBOUND INTERIOR LANE CLOSURE

SCALE 1"=40'

0 40 100 160

SCALE: 1" = 40'



HARRISON STREET I-290 EASTBOUND INTERIOR LANE CLOSURE - ADVANCE WARNING SIGNS

SCALE 1"=250'

LEGEND

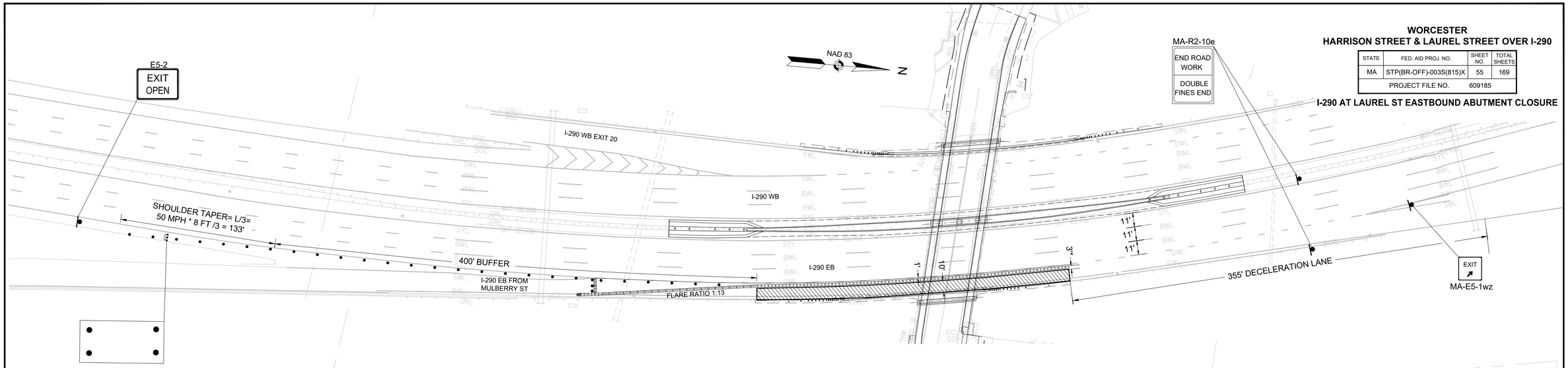
- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- EXISTING DIRECTION OF TRAFFIC
- SIGN
- PROPOSED DIRECTION OF TRAFFIC TRUCK-MOUNTED
- TRUCK MOUNTED ATTENUATOR
- ARROW BOARD
- WORK ZONE
- TEMPORARY BARRIER TL-3, LIMITED DEFLECTION
- TEMPORARY BARRIER TL-3
- TL-3 ATTENUATOR
- TYPE III BARRICADE

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	55	169
PROJECT FILE NO.	609185		

I-290 AT LAUREL ST EASTBOUND ABUTMENT CLOSURE

I-290 MEDIAN CLOSURE.DWG Plotted on 21-Nov-2024 12:47 PM

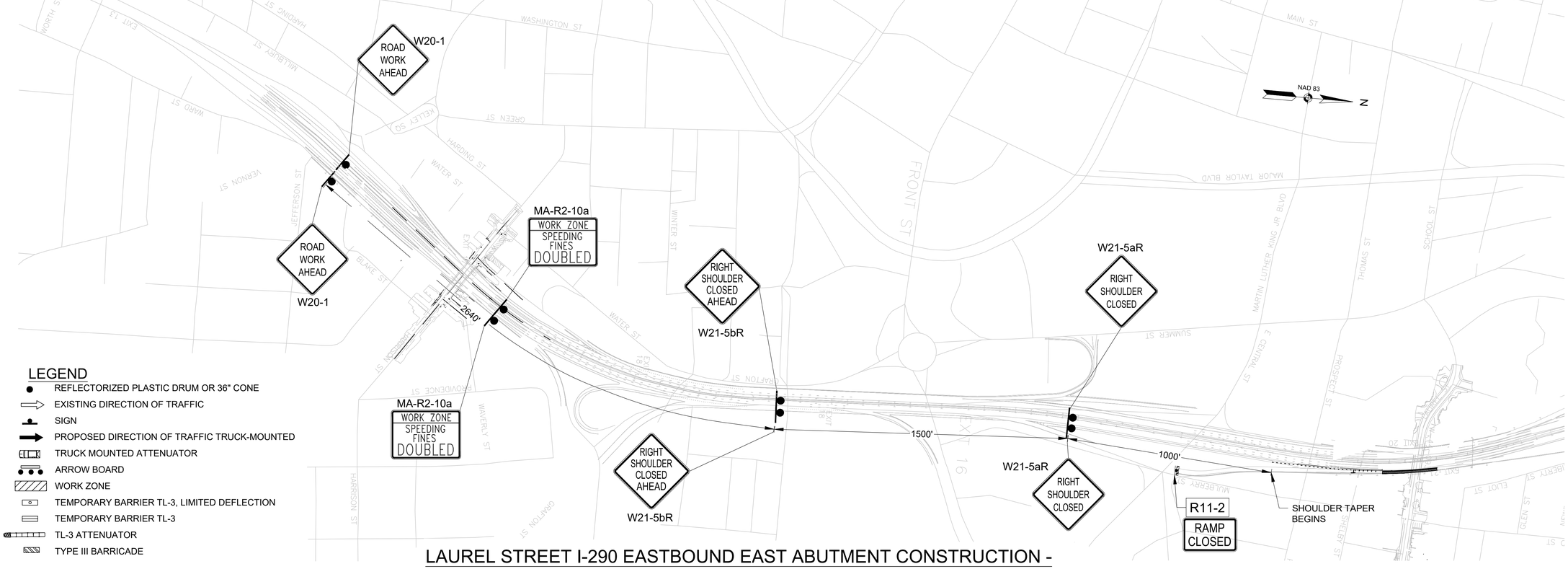


LAUREL STREET I-290 EASTBOUND EAST ABUTMENT CONSTRUCTION - ON-RAMP CLOSURE

0 40 100 160

SCALE: 1" = 40'

* 3' MIN FOR TEMPORARY TL-3 BARRIER (LIMITED DEFLECTION) PLUS DYNAMIC DEFLECTION



LEGEND

- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- EXISTING DIRECTION OF TRAFFIC
- SIGN
- PROPOSED DIRECTION OF TRAFFIC TRUCK-MOUNTED
- TRUCK MOUNTED ATTENUATOR
- ARROW BOARD
- WORK ZONE
- TEMPORARY BARRIER TL-3, LIMITED DEFLECTION
- TEMPORARY BARRIER TL-3
- TL-3 ATTENUATOR
- TYPE III BARRICADE

LAUREL STREET I-290 EASTBOUND EAST ABUTMENT CONSTRUCTION - ADVANCE WARNING SIGNS

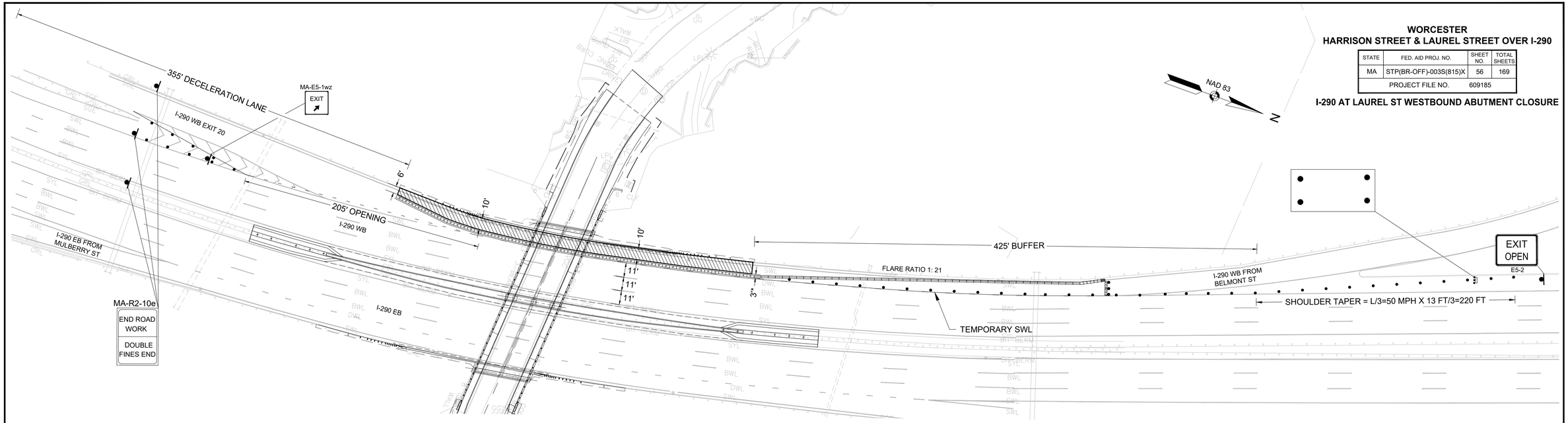
SCALE 1"=250'

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	56	169
PROJECT FILE NO. 609185			

I-290 AT LAUREL ST WESTBOUND ABUTMENT CLOSURE

I-290 MEDIAN CLOSURE.DWG Plotted on 21-Nov-2024 12:47 PM



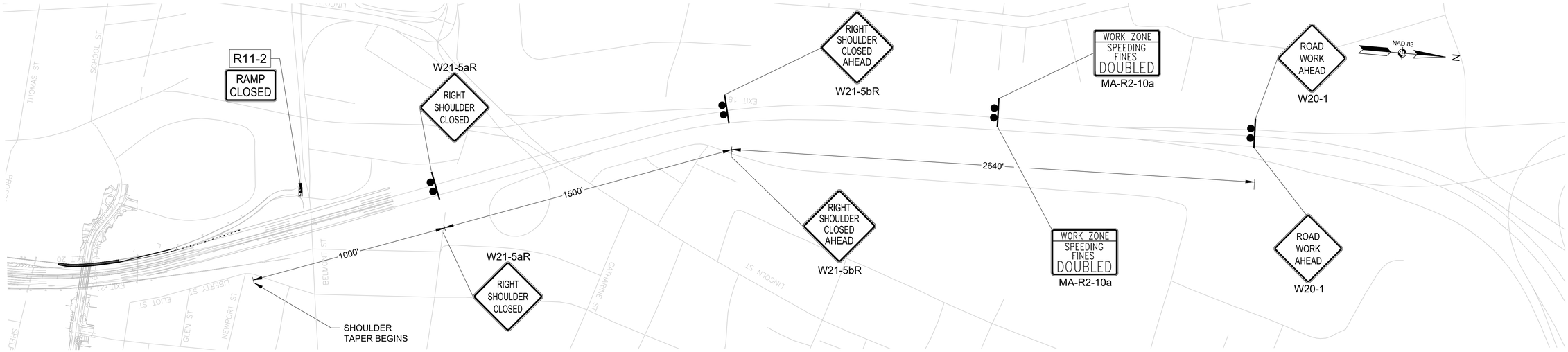
LAUREL STREET I-290 WESTBOUND WEST ABUTMENT CONSTRUCTION - ON-RAMP CLOSURE

SCALE 1"=40'

0 40 100 160

SCALE: 1" = 40'

* 3' MIN FOR TEMPORARY TL-3 BARRIER (LIMITED DEFLECTION) PLUS DYNAMIC DEFLECTION



LAUREL STREET I-290 WESTBOUND WEST ABUTMENT CONSTRUCTION - ADVANCE WARNING SIGNS

SCALE 1"=250'

LEGEND

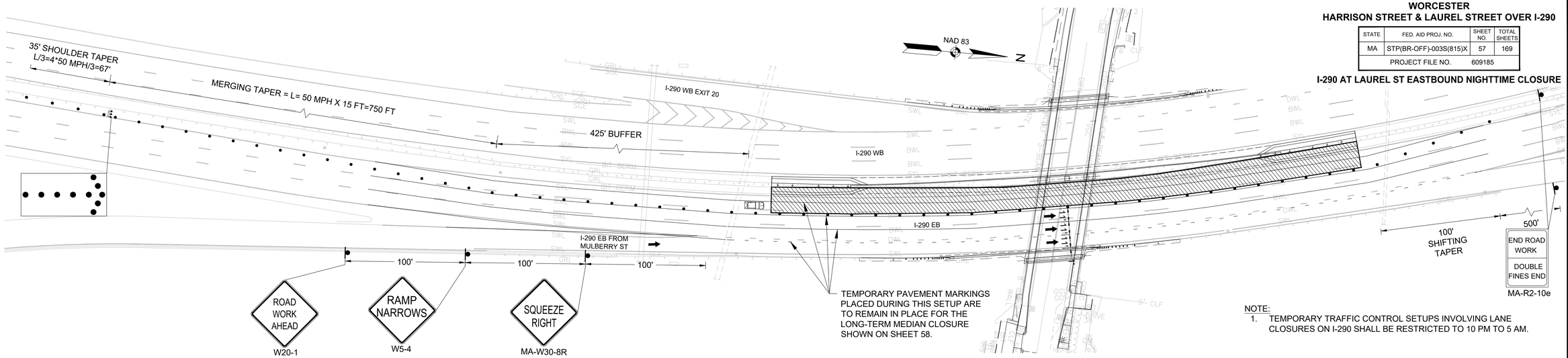
- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- EXISTING DIRECTION OF TRAFFIC
- SIGN
- PROPOSED DIRECTION OF TRAFFIC TRUCK-MOUNTED
- TRUCK MOUNTED ATTENUATOR
- ARROW BOARD
- WORK ZONE
- TEMPORARY BARRIER TL-3, LIMITED DEFLECTION
- TEMPORARY BARRIER TL-3
- TL-3 ATTENUATOR
- TYPE III BARRICADE

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	57	169
PROJECT FILE NO.	609185		

I-290 AT LAUREL ST EASTBOUND NIGHTTIME CLOSURE

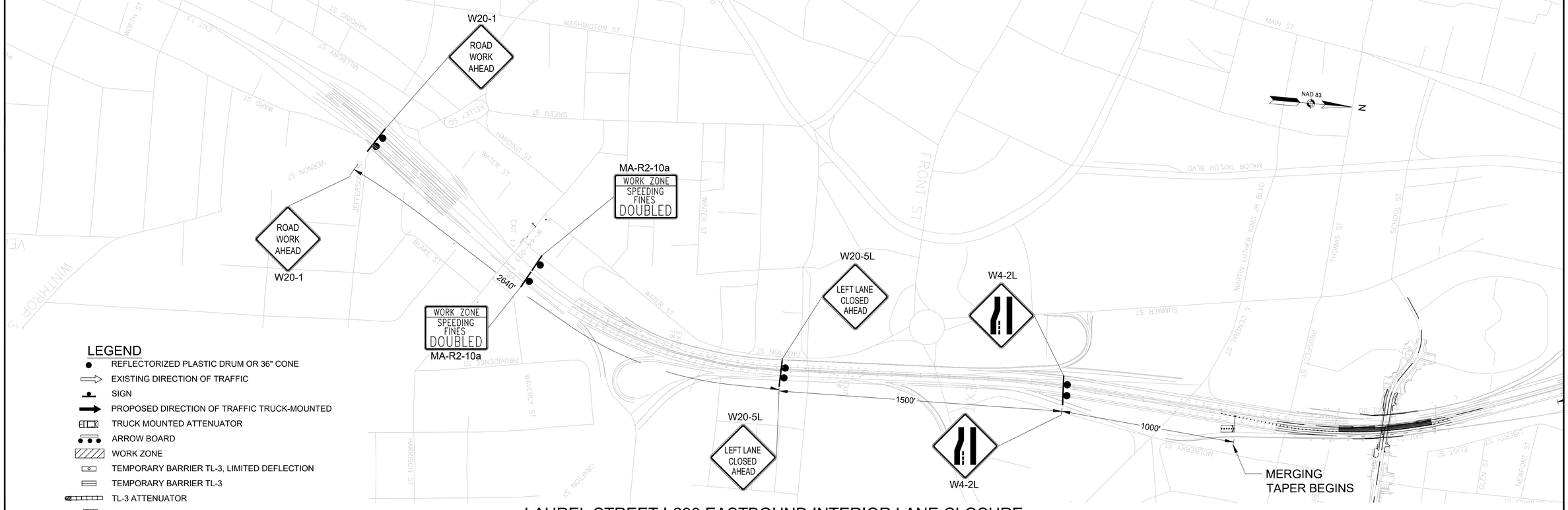
I-290 MEDIAN CLOSURE.DWG Plotted on 21-Nov-2024 12:47 PM



NOTE:
1. TEMPORARY TRAFFIC CONTROL SETUPS INVOLVING LANE CLOSURES ON I-290 SHALL BE RESTRICTED TO 10 PM TO 5 AM.

LAUREL STREET I-290 EASTBOUND INTERIOR LANE CLOSURE- NIGHTTIME ONE LANE CLOSURE

SCALE 1"=40'



LEGEND
- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- EXISTING DIRECTION OF TRAFFIC
- SIGN
- PROPOSED DIRECTION OF TRAFFIC TRUCK-MOUNTED
- TRUCK MOUNTED ATTENUATOR
- ARROW BOARD
- WORK ZONE
- TEMPORARY BARRIER TL-3, LIMITED DEFLECTION
- TEMPORARY BARRIER TL-3
- TL-3 ATTENUATOR
- TYPE III BARRICADE

LAUREL STREET I-290 EASTBOUND INTERIOR LANE CLOSURE - ADVANCE WARNING SIGNS

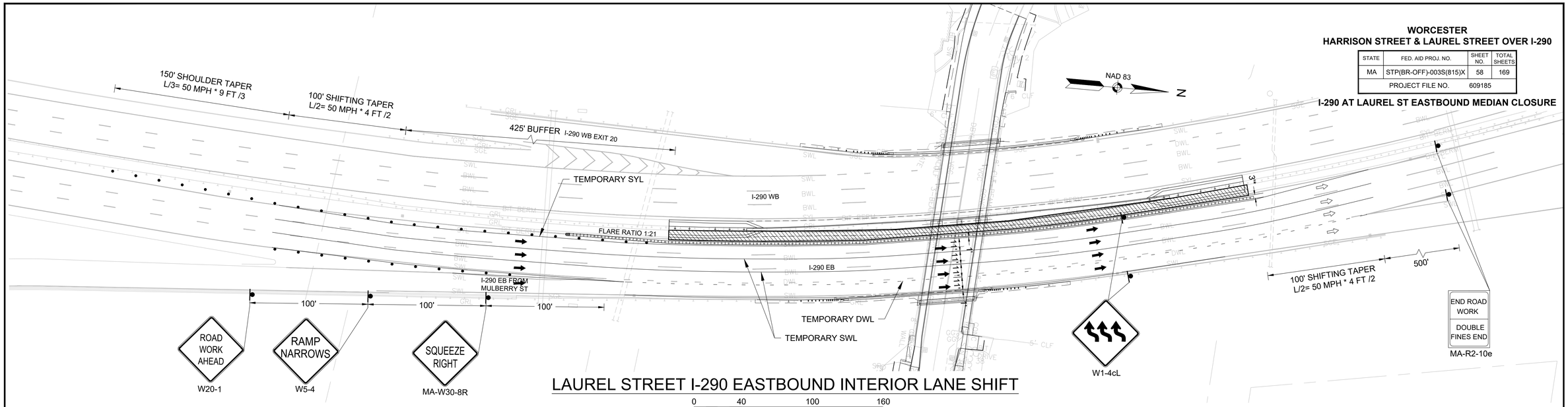
SCALE 1"=250'

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	58	169
PROJECT FILE NO. 609185			

I-290 AT LAUREL ST EASTBOUND MEDIAN CLOSURE

Plotted on 21-Nov-2024 12:47 PM
I-290 MEDIAN CLOSURE.DWG



LAUREL STREET I-290 EASTBOUND INTERIOR LANE SHIFT

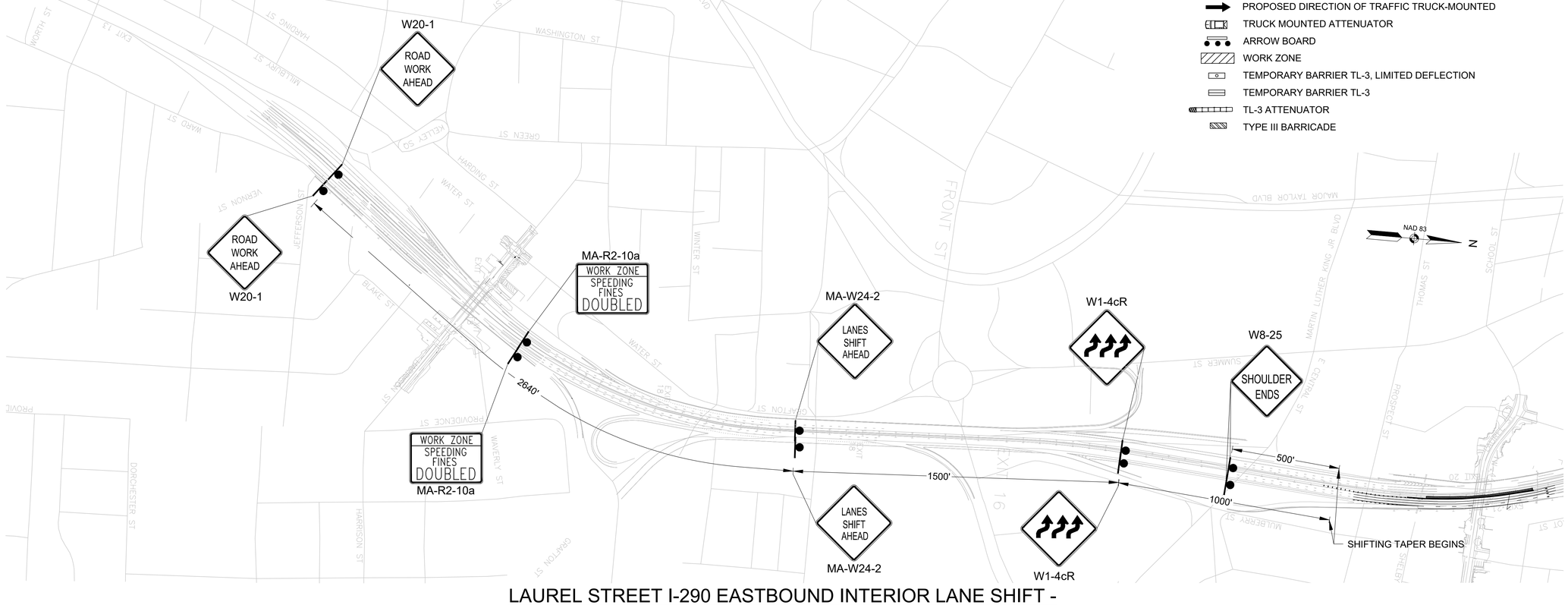
0 40 100 160

SCALE: 1" = 40'

* 3' MIN FOR TEMPORARY TL-3 BARRIER (LIMITED DEFLECTION) PLUS DYNAMIC DEFLECTION

LEGEND

- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- EXISTING DIRECTION OF TRAFFIC
- SIGN
- PROPOSED DIRECTION OF TRAFFIC TRUCK-MOUNTED
- TRUCK MOUNTED ATTENUATOR
- ARROW BOARD
- WORK ZONE
- TEMPORARY BARRIER TL-3, LIMITED DEFLECTION
- TEMPORARY BARRIER TL-3
- TL-3 ATTENUATOR
- TYPE III BARRICADE



LAUREL STREET I-290 EASTBOUND INTERIOR LANE SHIFT - ADVANCE WARNING SIGNS

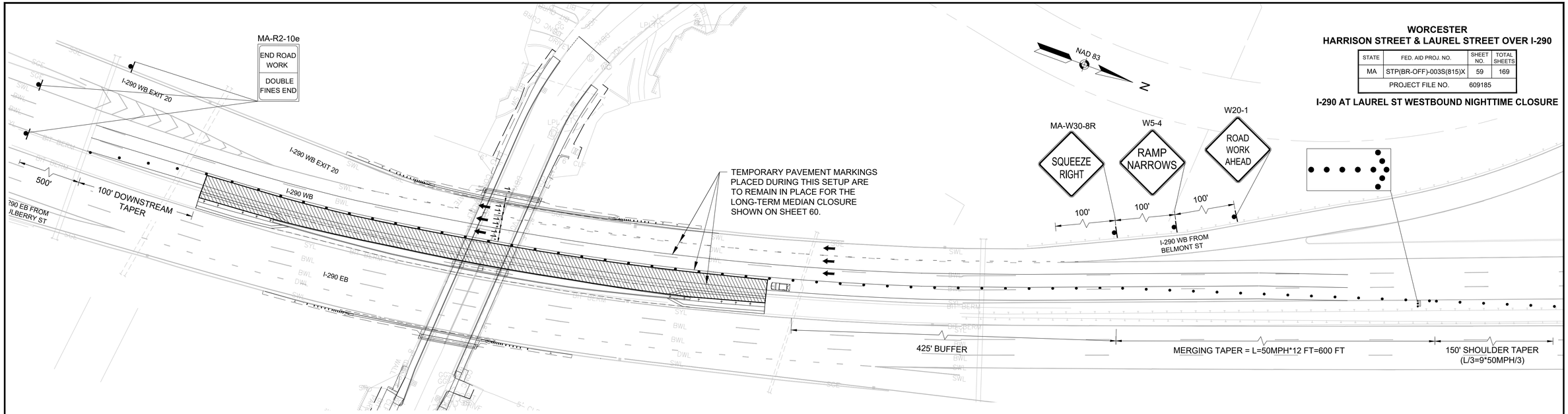
SCALE 1"=250'

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	59	169
PROJECT FILE NO.	609185		

I-290 AT LAUREL ST WESTBOUND NIGHTTIME CLOSURE

Plotted on 21-Nov-2024 12:47 PM
I-290 MEDIAN CLOSURE.DWG



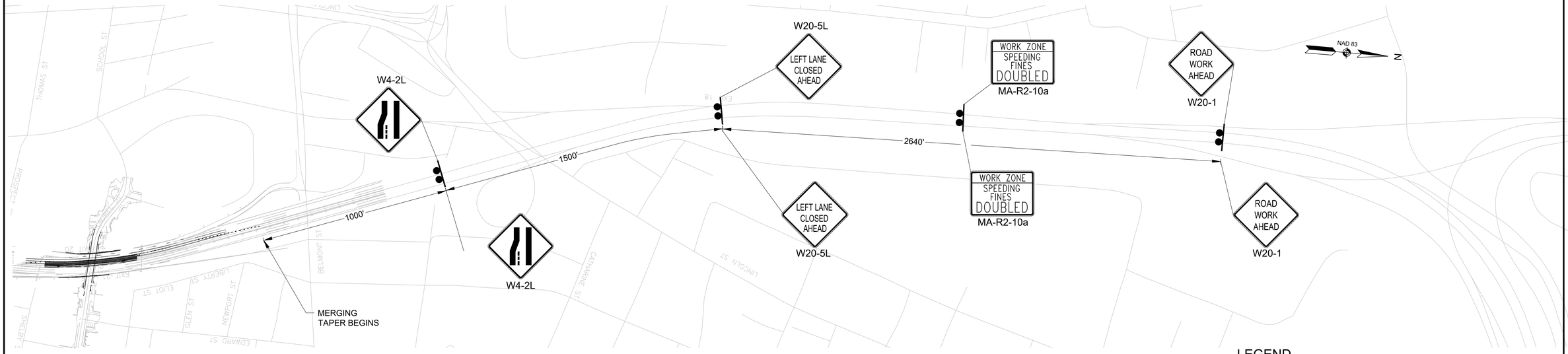
NOTE:
1. TEMPORARY TRAFFIC CONTROL SETUPS INVOLVING LANE CLOSURES ON I-290 SHALL BE RESTRICTED TO 10 PM TO 5 AM.

LAUREL STREET I-290 WESTBOUND INTERIOR LANE CLOSURE- NIGHTTIME ONE LANE CLOSURE

SCALE 1"=40'

0 40 100 160

SCALE: 1" = 40'



LAUREL STREET I-290 WESTBOUND INTERIOR LANE CLOSURE - ADVANCE WARNING SIGNS

SCALE 1"=250'

LEGEND

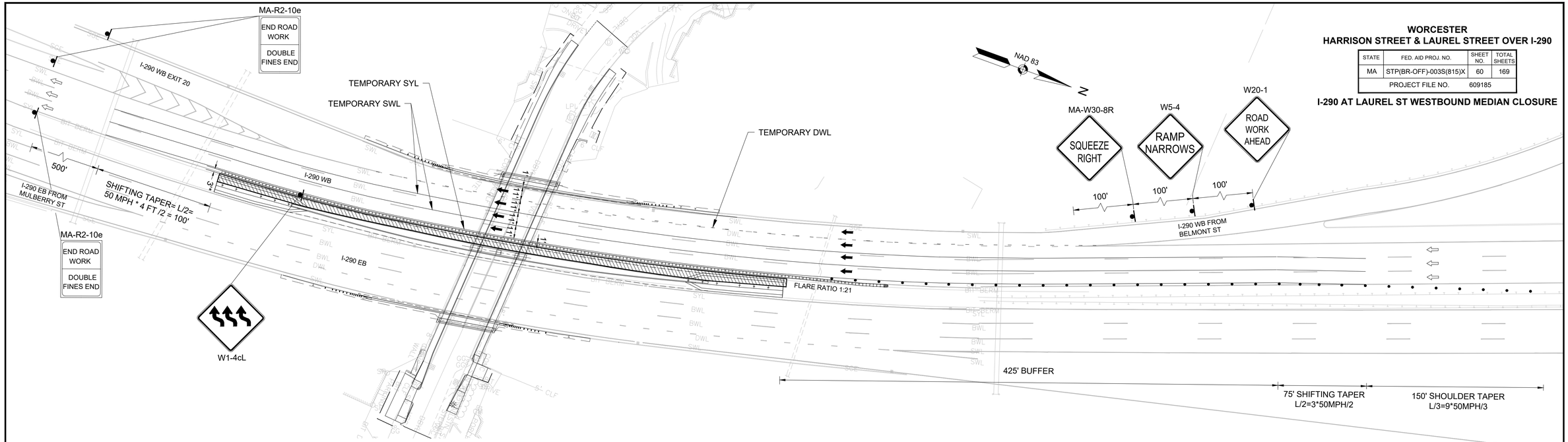
- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- EXISTING DIRECTION OF TRAFFIC
- SIGN
- PROPOSED DIRECTION OF TRAFFIC TRUCK-MOUNTED
- TRUCK MOUNTED ATTENUATOR
- ARROW BOARD
- WORK ZONE
- TEMPORARY BARRIER TL-3, LIMITED DEFLECTION
- TEMPORARY BARRIER TL-3
- TL-3 ATTENUATOR
- TYPE III BARRICADE

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	60	169
PROJECT FILE NO.	609185		

I-290 AT LAUREL ST WESTBOUND MEDIAN CLOSURE

I-290 MEDIAN CLOSURE.DWG Plotted on 21-Nov-2024 12:47 PM



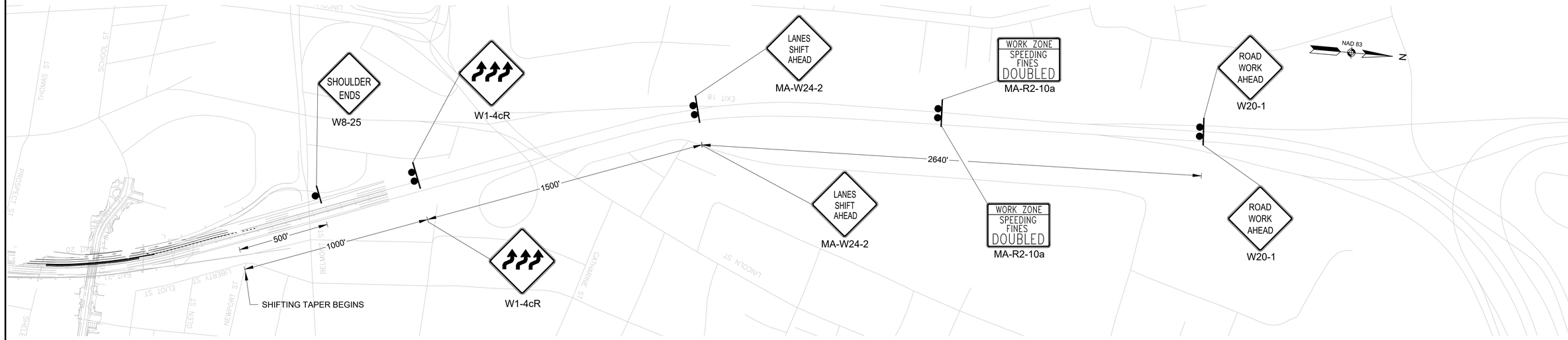
LAUREL STREET I-290 WESTBOUND INTERIOR LANE SHIFT

SCALE 1"=40'

0 40 100 160

SCALE: 1" = 40'

* 3' MIN FOR TEMPORARY TL-3 BARRIER (LIMITED DEFLECTION) PLUS DYNAMIC DEFLECTION

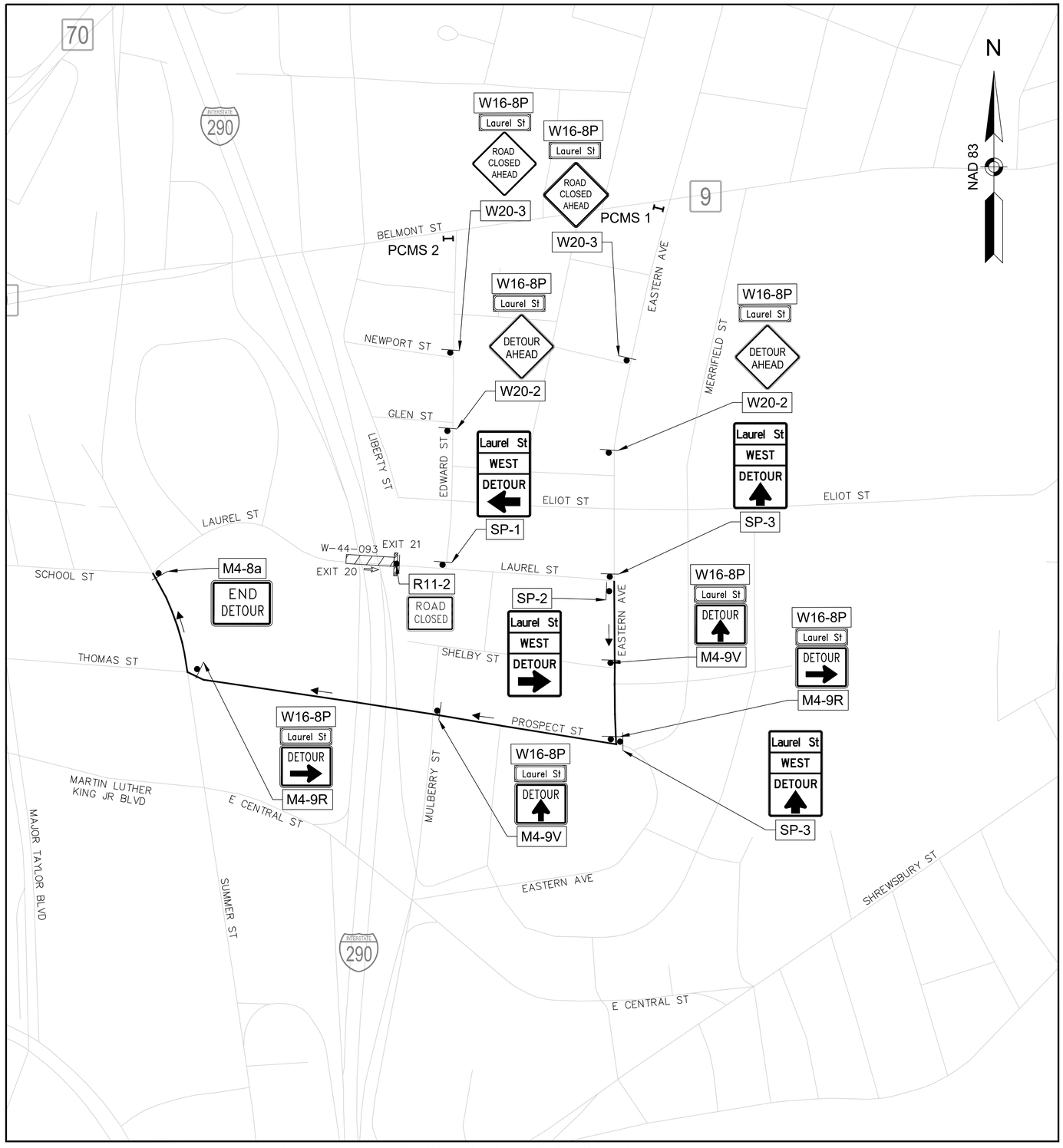


LAUREL STREET I-290 WESTBOUND INTERIOR LANE SHIFT - ADVANCE WARNING SIGNS

SCALE 1"=250'

LEGEND

- REFLECTORIZED PLASTIC DRUM OR 36" CONE
- EXISTING DIRECTION OF TRAFFIC
- SIGN
- PROPOSED DIRECTION OF TRAFFIC TRUCK-MOUNTED
- TRUCK MOUNTED ATTENUATOR
- ARROW BOARD
- WORK ZONE
- TEMPORARY BARRIER TL-3, LIMITED DEFLECTION
- TEMPORARY BARRIER TL-3
- TL-3 ATTENUATOR
- TYPE III BARRICADE



LAUREL STREET WESTBOUND TRAFFIC DETOUR PLAN

NOT TO SCALE

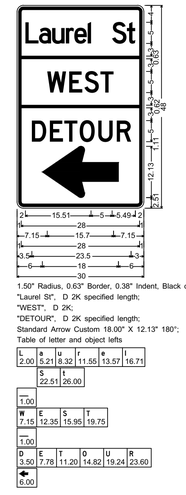
WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	61	169
	PROJECT FILE NO. 609185		

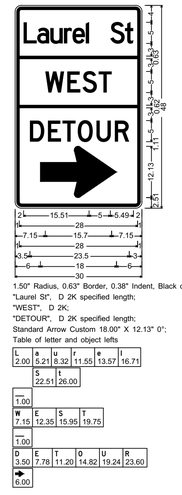
BRIDGE DETOUR - 1

DETOUR NOTES:

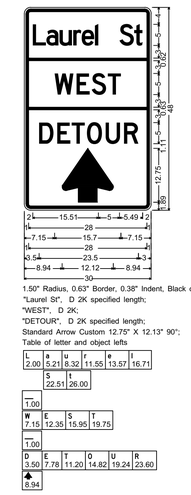
1. THE CONTRACTOR SHALL COORDINATE APPROVAL AND IMPLEMENTATION OF THIS DETOUR PLAN WITH MASSACHUSETTS DEPARTMENT OF TRANSPORTATION PRIOR TO CONSTRUCTION ACTIVITIES.
2. PLACE ALL SAFETY DEVICES AND CONSTRUCTION SIGNING BEFORE ACTUAL CONSTRUCTION WORK BEGINS. DEPLOY ALL PCMS TWO WEEKS IN ADVANCE OF HARRISON STREET BRIDGE CLOSURE. THE CONTRACTOR SHALL NOTIFY APPLICABLE STATE AND LOCAL AGENCIES TWO (2) WEEKS IN ADVANCE OF PLACING TEMPORARY TRAFFIC CONTROL SIGNS.
3. USE FLAGS ON ADVANCED WARNING SIGNS. FLAGS SHALL BE AT LEAST 16" X 16".
4. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER NECESSARY WORK ZONE TRAFFIC DEVICES SHALL BE REMOVED FROM THE ROADWAY WHEN THEY ARE NOT REQUIRED FOR TRAFFIC CONTROL.
5. THE CONTRACTOR SHALL COORDINATE WITH ANY ABUTTING PROJECTS.
6. EXISTING SIGNS NO LONGER APPLICABLE SHALL BE TEMPORARILY COVERED DURING CONSTRUCTION OR REMOVED AND RESET UPON COMPLETION OF CONSTRUCTION.
7. SIGNS AND SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY MUST PASS THE CRITERIA SET FORTH IN THE NCHRP 350 REPORT.
8. SIGN LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED BASED ON FIELD CONDITIONS WITH THE APPROVAL OF THE ENGINEER.
9. SEE SHEETS 47 TO 49 FOR STAGING TMP AT LAUREL STREET BRIDGE DURING THE LAUREL STREET DETOUR.



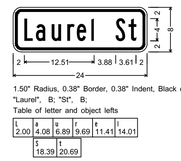
SIGN DETAIL - SP-1
NOT TO SCALE



SIGN DETAIL - SP-2
NOT TO SCALE



SIGN DETAIL - SP-3
NOT TO SCALE



SIGN DETAIL - W16-8P
NOT TO SCALE

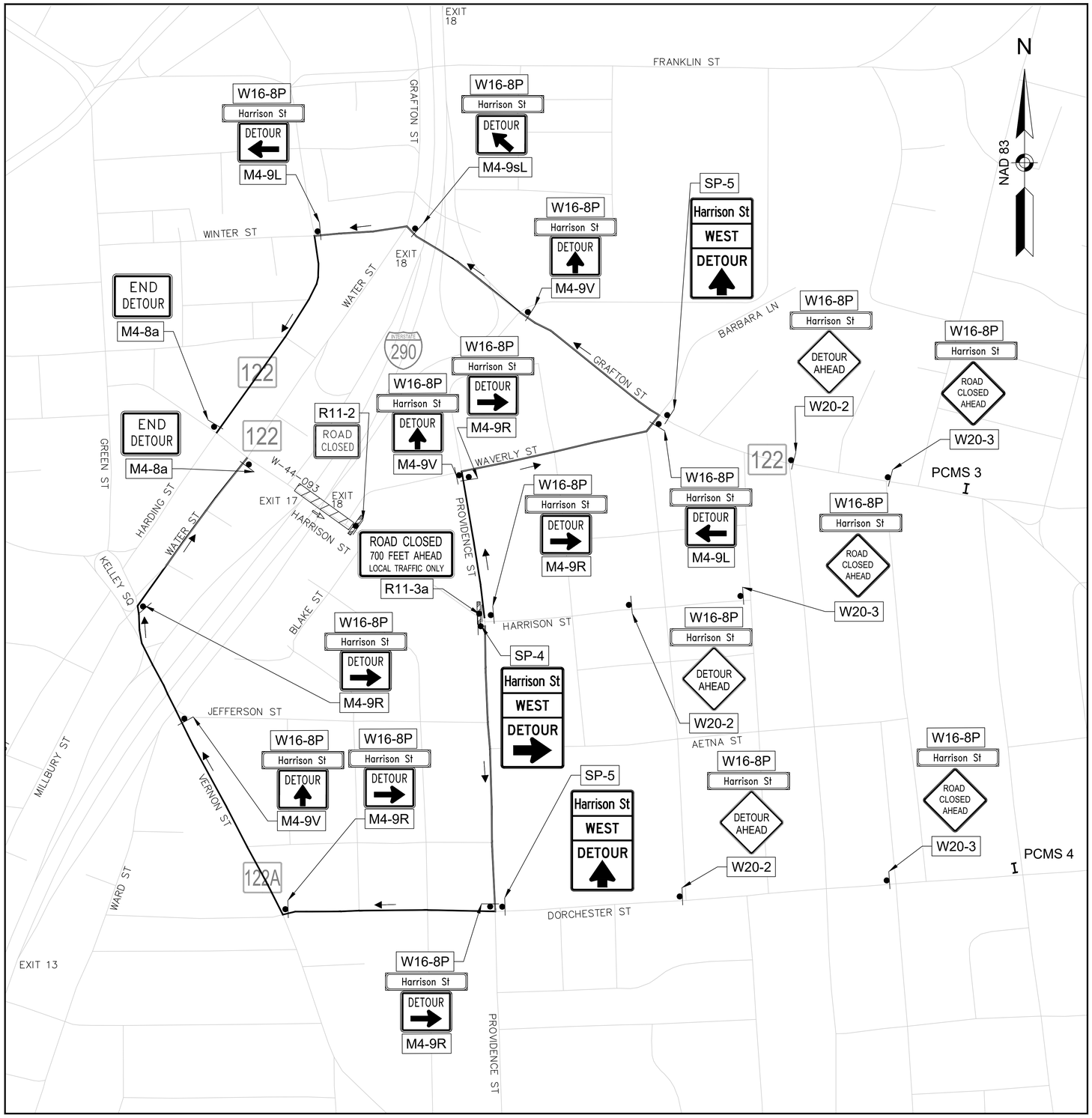
LEGEND

- WORK ZONE
- DIRECTION OF TRAFFIC
- DIRECTION OF PROPOSED DETOUR ROUTE
- PROPOSED DETOUR ROUTE
- SIGN

PCMS UNIT	PCMS ADVANCE NOTIFICATION MESSAGES	
	MESSAGE 1	MESSAGE 2
PCMS 1,2	LAUREL BR W-BND CLOSED	MM/DD TO MM/DD

PCMS UNIT	PCMS MESSAGES DURING DETOUR	
	MESSAGE 1	MESSAGE 2
PCMS 1,2	LAUREL BR W-BND CLOSED	FOLLOW DETOUR AHEAD

BRIDGE DETOUR.DWG Plotted on 21-Nov-2024 12:48 PM



HARRISON STREET WESTBOUND TRAFFIC DETOUR PLAN

NOT TO SCALE

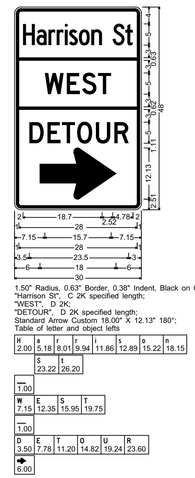
WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	62	169
	PROJECT FILE NO. 609185		

BRIDGE DETOUR - 2

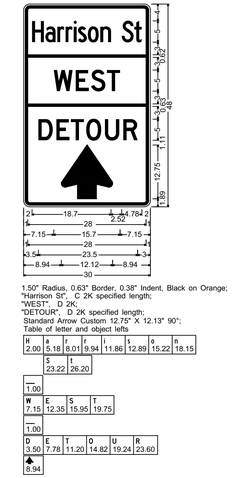
DETOUR NOTES:

1. THIS DETOUR SHALL OCCUR DURING THE DURATION OF THE FULL AND THE HALF CLOSURE OF HARRISON STREET.
2. THE CONTRACTOR SHALL COORDINATE APPROVAL AND IMPLEMENTATION OF THIS DETOUR PLAN WITH MASSACHUSETTS DEPARTMENT OF TRANSPORTATION PRIOR TO CONSTRUCTION ACTIVITIES.
3. PLACE ALL SAFETY DEVICES AND CONSTRUCTION SIGNING BEFORE ACTUAL CONSTRUCTION WORK BEGINS. DEPLOY ALL PCMS TWO WEEKS IN ADVANCE OF HARRISON STREET BRIDGE CLOSURE. THE CONTRACTOR SHALL NOTIFY APPLICABLE STATE AND LOCAL AGENCIES TWO (2) WEEKS IN ADVANCE OF PLACING TEMPORARY TRAFFIC CONTROL SIGNS.
4. USE FLAGS ON ADVANCED WARNING SIGNS. FLAGS SHALL BE AT LEAST 16" X 16".
5. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER NECESSARY WORK ZONE TRAFFIC DEVICES SHALL BE REMOVED FROM THE ROADWAY WHEN THEY ARE NOT REQUIRED FOR TRAFFIC CONTROL.
6. THE CONTRACTOR SHALL COORDINATE WITH ANY ABUTTING PROJECTS.
7. EXISTING SIGNS NO LONGER APPLICABLE SHALL BE TEMPORARILY COVERED DURING CONSTRUCTION OR REMOVED AND RESET UPON COMPLETION OF CONSTRUCTION.
8. SIGNS AND SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY MUST PASS THE CRITERIA SET FORTH IN THE NCHRP 350 REPORT.
9. SIGN LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED BASED ON FIELD CONDITIONS WITH THE APPROVAL OF THE ENGINEER.
10. SEE SHEETS 44 TO 46 FOR STAGING TMP AT HARRISON STREET BRIDGE DURING THE HARRISON STREET WESTBOUND DETOUR.
11. SEE SHEET 63 FOR THE HARRISON STREET BRIDGE EASTBOUND DETOUR SET UP DURING FULL CLOSURE.



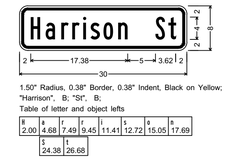
SIGN DETAIL - SP-4

NOT TO SCALE



SIGN DETAIL - SP-5

NOT TO SCALE



SIGN DETAIL - W16-8P

NOT TO SCALE

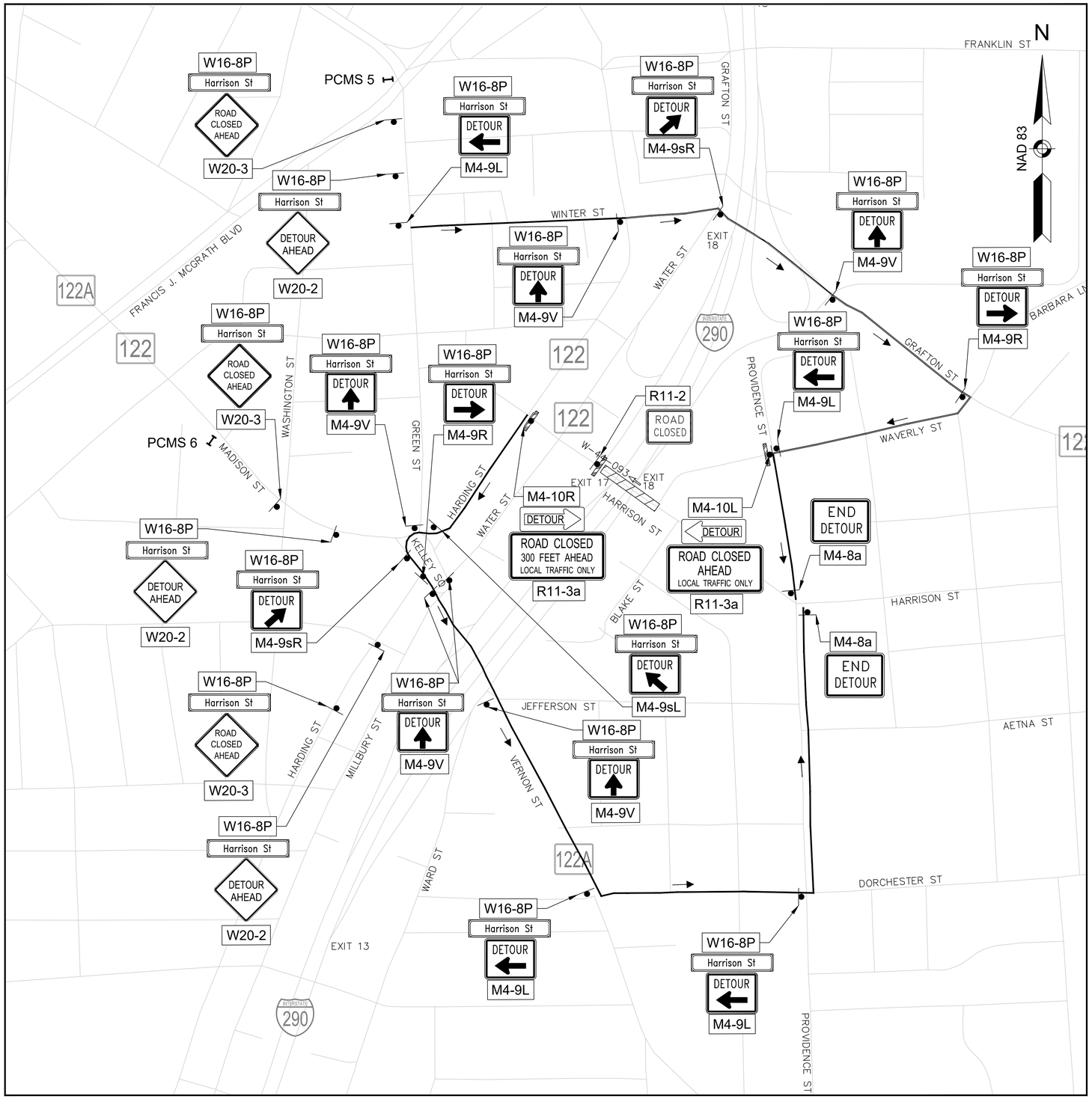
PCMS UNIT	PCMS ADVANCE NOTIFICATION MESSAGES	
	MESSAGE 1	MESSAGE 2
PCMS 3,4	HARRISON BR W-BND CLOSED	MM/DD TO MM/DD

PCMS UNIT	PCMS MESSAGES DURING DETOUR	
	MESSAGE 1	MESSAGE 2
PCMS 3,4	HARRISON BR W-BND CLOSED	FOLLOW DETOUR AHEAD

LEGEND

- WORK ZONE
- DIRECTION OF TRAFFIC
- DIRECTION OF PROPOSED DETOUR ROUTE
- PROPOSED DETOUR ROUTE
- SIGN

BRIDGE DETOUR.DWG Plotted on 21-Nov-2024 12:48 PM



HARRISON STREET EASTBOUND TRAFFIC DETOUR PLAN

NOT TO SCALE

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	63	169
PROJECT FILE NO.	609185		

BRIDGE DETOUR - 3

DETOUR NOTES:

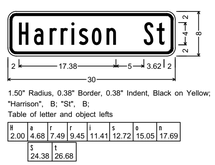
1. THE DURATION OF FULL CLOSURE OF HARRISON STREET AND THE DURATION OF THIS DETOUR SHALL OCCUR DURING THE OFF-PEAK DAYTIME HOURS FOR A PERIOD OF LESS THAN ONE DAY.
2. THE CONTRACTOR SHALL COORDINATE APPROVAL AND IMPLEMENTATION OF THIS DETOUR PLAN WITH MASSACHUSETTS DEPARTMENT OF TRANSPORTATION PRIOR TO CONSTRUCTION ACTIVITIES.
3. PLACE ALL SAFETY DEVICES AND CONSTRUCTION SIGNING BEFORE ACTUAL CONSTRUCTION WORK BEGINS. DEPLOY ALL PCMS TWO WEEKS IN ADVANCE OF HARRISON STREET BRIDGE CLOSURE. THE CONTRACTOR SHALL NOTIFY APPLICABLE STATE AND LOCAL AGENCIES TWO (2) WEEKS IN ADVANCE OF PLACING TEMPORARY TRAFFIC CONTROL SIGNS.
4. USE FLAGS ON ADVANCED WARNING SIGNS. FLAGS SHALL BE AT LEAST 16" X 16".
5. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER NECESSARY WORK ZONE TRAFFIC DEVICES SHALL BE REMOVED FROM THE ROADWAY WHEN THEY ARE NOT REQUIRED FOR TRAFFIC CONTROL.
6. THE CONTRACTOR SHALL COORDINATE WITH ANY ABUTTING PROJECTS.
7. EXISTING SIGNS NO LONGER APPLICABLE SHALL BE TEMPORARILY COVERED DURING CONSTRUCTION OR REMOVED AND RESET UPON COMPLETION OF CONSTRUCTION.
8. SIGNS AND SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY MUST PASS THE CRITERIA SET FORTH IN THE NCHRP 350 REPORT.
9. SIGN LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED BASED ON FIELD CONDITIONS WITH THE APPROVAL OF THE ENGINEER.
10. SEE SHEET 62 FOR THE HARRISON STREET BRIDGE WESTBOUND DETOUR SET UP DURING FULL CLOSURE.

PCMS UNIT	PCMS ADVANCE NOTIFICATION MESSAGES	
	MESSAGE 1	MESSAGE 2
PCMS 5,6	HARRISON BR E-BND CLOSED	MM/DD TO MM/DD 10AM-3PM

PCMS UNIT	PCMS MESSAGES DURING DETOUR	
	MESSAGE 1	MESSAGE 2
PCMS 5,6	HARRISON BR E-BND CLOSED	FOLLOW DETOUR AHEAD

LEGEND

- WORK ZONE
- DIRECTION OF TRAFFIC
- DIRECTION OF PROPOSED DETOUR ROUTE
- PROPOSED DETOUR ROUTE
- SIGN



1.50" Radius, 0.38" Border, 0.38" Indent, Black on Yellow;
"Harrison", B; "St", B;
Table of letter and object lefts

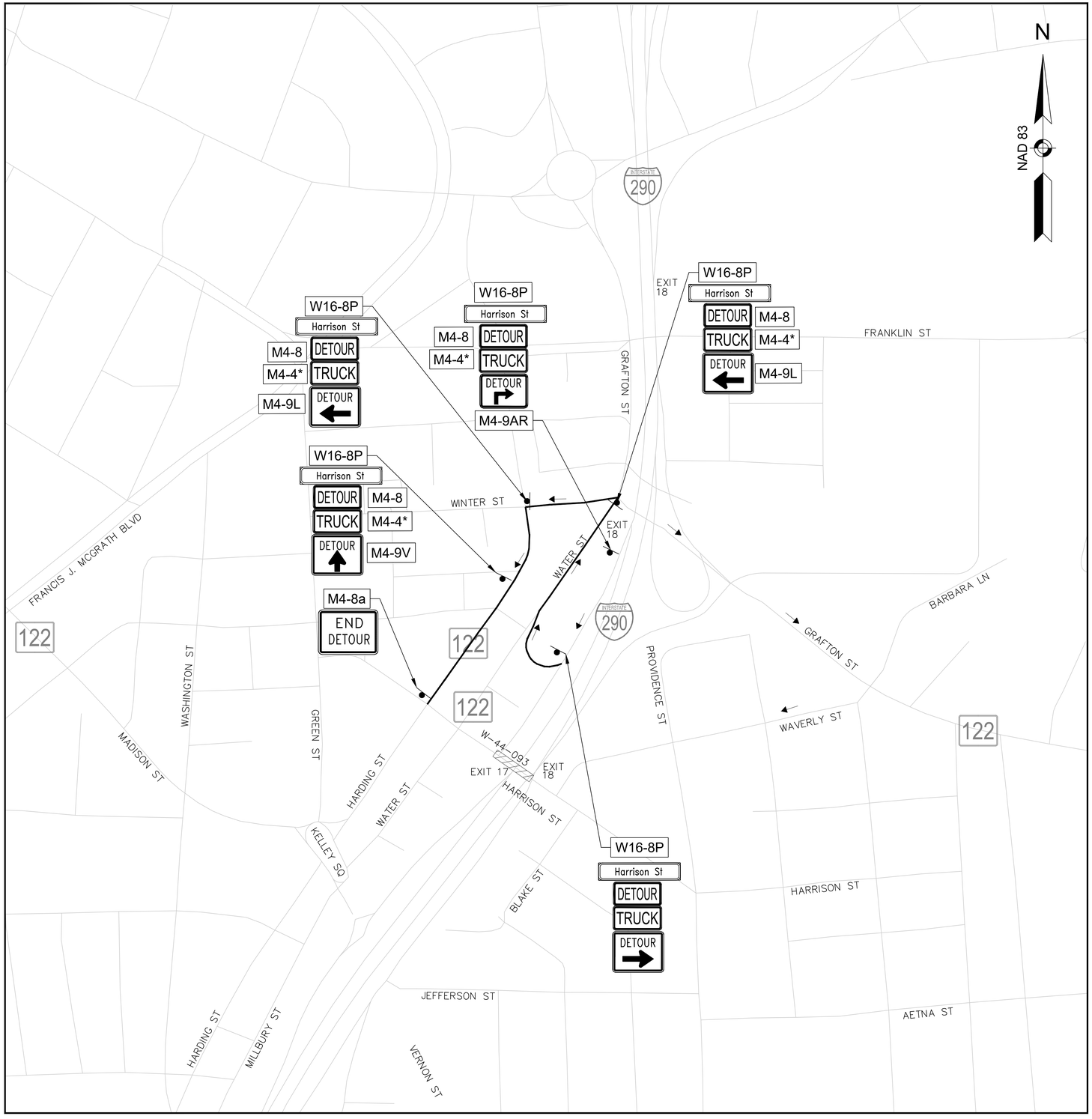
H	a	r	r	i	s	o	n
2.00	4.68	7.49	9.45	11.41	12.72	15.05	17.69

S	t
24.38	26.68

SIGN DETAIL - W16-8P

NOT TO SCALE

BRIDGE DETOUR.DWG Plotted on 21-Nov-2024 12:48 PM



I-290 WESTBOUND HARRISON STREET OFF-RAMP TRUCK DETOUR

NOT TO SCALE

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	64	169
PROJECT FILE NO.	609185		

BRIDGE DETOUR - 4

DETOUR NOTES:

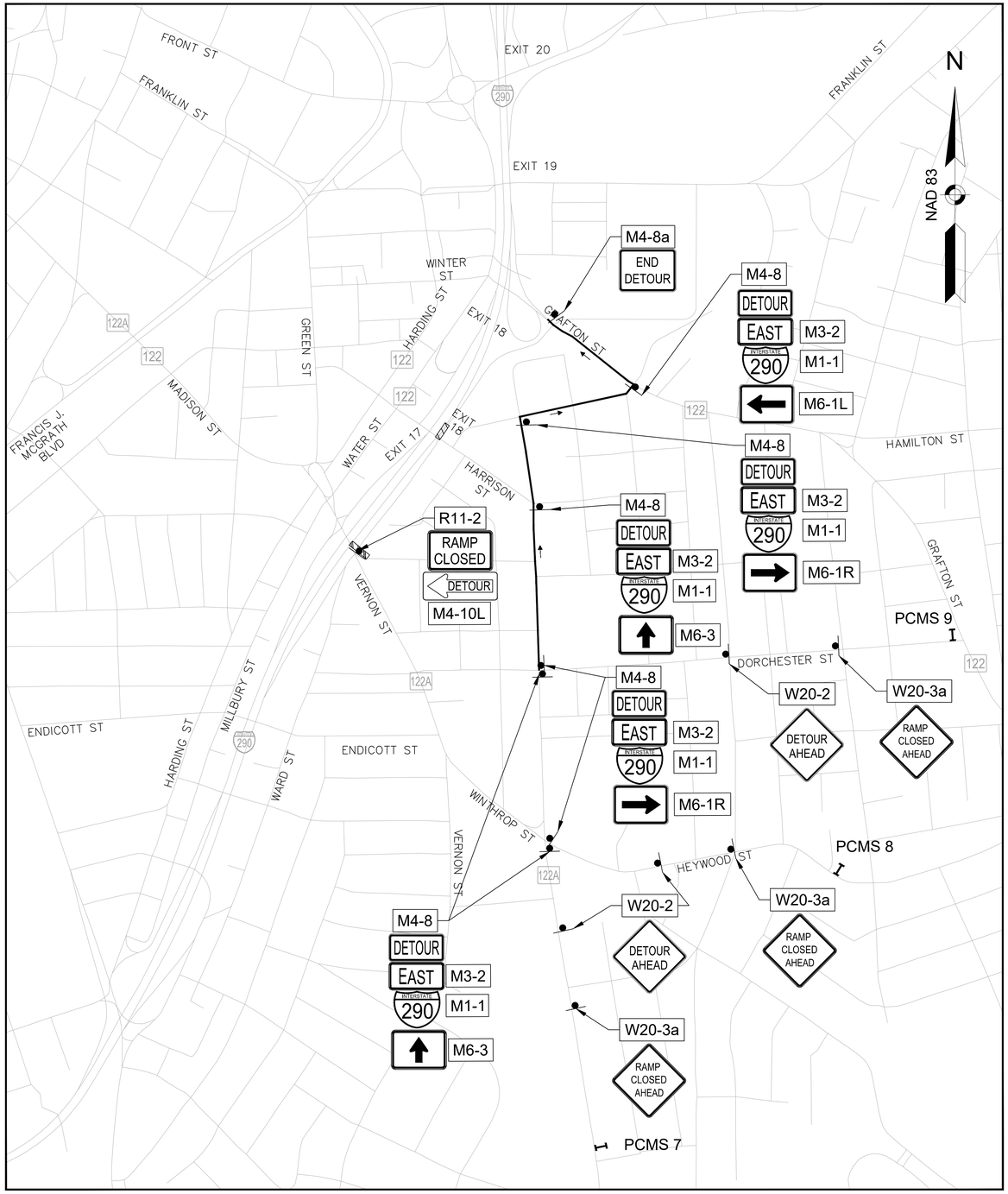
1. THE CONTRACTOR SHALL COORDINATE APPROVAL AND IMPLEMENTATION OF THIS DETOUR PLAN WITH MASSACHUSETTS DEPARTMENT OF TRANSPORTATION PRIOR TO CONSTRUCTION ACTIVITIES.
2. PLACE ALL SAFETY DEVICES AND CONSTRUCTION SIGNING BEFORE ACTUAL CONSTRUCTION WORK BEGINS. DEPLOY ALL PCMS TWO WEEKS IN ADVANCE OF HARRISON STREET BRIDGE CLOSURE. THE CONTRACTOR SHALL NOTIFY APPLICABLE STATE AND LOCAL AGENCIES TWO (2) WEEKS IN ADVANCE OF PLACING TEMPORARY TRAFFIC CONTROL SIGNS.
3. USE FLAGS ON ADVANCED WARNING SIGNS. FLAGS SHALL BE AT LEAST 16" X 16".
4. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER NECESSARY WORK ZONE TRAFFIC DEVICES SHALL BE REMOVED FROM THE ROADWAY WHEN THEY ARE NOT REQUIRED FOR TRAFFIC CONTROL.
5. THE CONTRACTOR SHALL COORDINATE WITH ANY ABUTTING PROJECTS.
6. EXISTING SIGNS NO LONGER APPLICABLE SHALL BE TEMPORARILY COVERED DURING CONSTRUCTION OR REMOVED AND RESET UPON COMPLETION OF CONSTRUCTION.
7. SIGNS AND SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY MUST PASS THE CRITERIA SET FORTH IN THE NCHRP 350 REPORT.
8. SIGN LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED BASED ON FIELD CONDITIONS WITH THE APPROVAL OF THE ENGINEER.
9. ON STREET PARKING ALONG DETOUR ROUTE MAY BE RESTRICTED DURING DETOUR.
10. SEE SHEET 62 FOR THE HARRISON STREET BRIDGE WESTBOUND DETOUR SET UP.

* ALL VEHICLES WILL USE THIS DETOUR DURING STAGE 2. ALL TRUCK SIGNS SHALL BE COVERED DURING STAGE 2, HOWEVER TRUCKS WILL USE THIS ROUTE AND THE M4-4 SIGNAGE SHALL BE SHOWN DURING ALL OTHER STAGES. REFER TO SHEETS 43 TO 46 FOR STAGES WHERE THIS TRUCK DETOUR SHALL BE IMPLEMENTED.

LEGEND

- WORK ZONE
- DIRECTION OF TRAFFIC
- DIRECTION OF PROPOSED DETOUR ROUTE
- PROPOSED DETOUR ROUTE
- SIGN

BRIDGE DETOUR.DWG Plotted on 21-Nov-2024 12:48 PM



I-290 EASTBOUND ON-RAMP FROM VERNON STREET CLOSURE DETOUR DURING HARRISON STREET BRIDGE CONSTRUCTION

NOT TO SCALE

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	65	169
	PROJECT FILE NO. 609185		

I-290 ON-RAMP CLOSURE DETOUR PLAN - 1

DETOUR NOTES:

1. THE CONTRACTOR SHALL COORDINATE APPROVAL AND IMPLEMENTATION OF THIS DETOUR PLAN WITH MASSACHUSETTS DEPARTMENT OF TRANSPORTATION AND CITY OF WORCESTER DEPARTMENT OF TRANSPORTATION AND MOBILITY PRIOR TO CONSTRUCTION ACTIVITIES.
2. PLACE ALL SAFETY DEVICES AND CONSTRUCTION SIGNING BEFORE ACTUAL CONSTRUCTION WORK BEGINS. DEPLOY ALL PCMS TWO WEEKS IN ADVANCE OF HARRISON STREET BRIDGE CLOSURE. THE CONTRACTOR SHALL NOTIFY APPLICABLE STATE AND LOCAL AGENCIES TWO (2) WEEKS IN ADVANCE OF PLACING TEMPORARY TRAFFIC CONTROL SIGNS.
3. USE FLAGS ON ADVANCED WARNING SIGNS. FLAGS SHALL BE AT LEAST 16" X 16".
4. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER NECESSARY WORK ZONE TRAFFIC DEVICES SHALL BE REMOVED FROM THE ROADWAY WHEN THEY ARE NOT REQUIRED FOR TRAFFIC CONTROL.
5. THE CONTRACTOR SHALL COORDINATE WITH EAST CENTRAL STREET BRIDGE AND ANY ABUTTING PROJECTS.
6. EXISTING SIGNS NO LONGER APPLICABLE SHALL BE TEMPORARILY COVERED DURING CONSTRUCTION OR REMOVED AND RESET UPON COMPLETION OF CONSTRUCTION.
7. SIGNS AND SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY MUST PASS THE CRITERIA SET FORTH IN THE NCHRP 350 REPORT.
8. SIGN LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED BASED ON FIELD CONDITIONS WITH THE APPROVAL OF THE ENGINEER.
9. TRAFFIC SIGNAL TIMINGS FOR 2 INTERSECTIONS ALONG DETOUR ROUTE WILL BE PROVIDED TO THE CONTRACTOR BY THE ENGINEER PRIOR TO IMPLEMENTATION OF DETOUR. RETIMING OF TRAFFIC SIGNALS TO BE PAID UNDER ITEM NO. 816.89.
10. THIS SETUP SHALL BE IMPLEMENTED WITH THE DETOUR SHOWN ON SHEET 66.

PCMS UNIT	PCMS ADVANCE NOTIFICATION MESSAGES	
	MESSAGE 1	MESSAGE 2
PCMS 7,8,9	RAMP TO I-290 E CLOSED	MM/DD TO MM/DD

PCMS UNIT	PCMS MESSAGES DURING DETOUR	
	MESSAGE 1	MESSAGE 2
PCMS 7,8,9	RAMP TO I-290 E CLOSED	FOLLOW DETOUR AHEAD

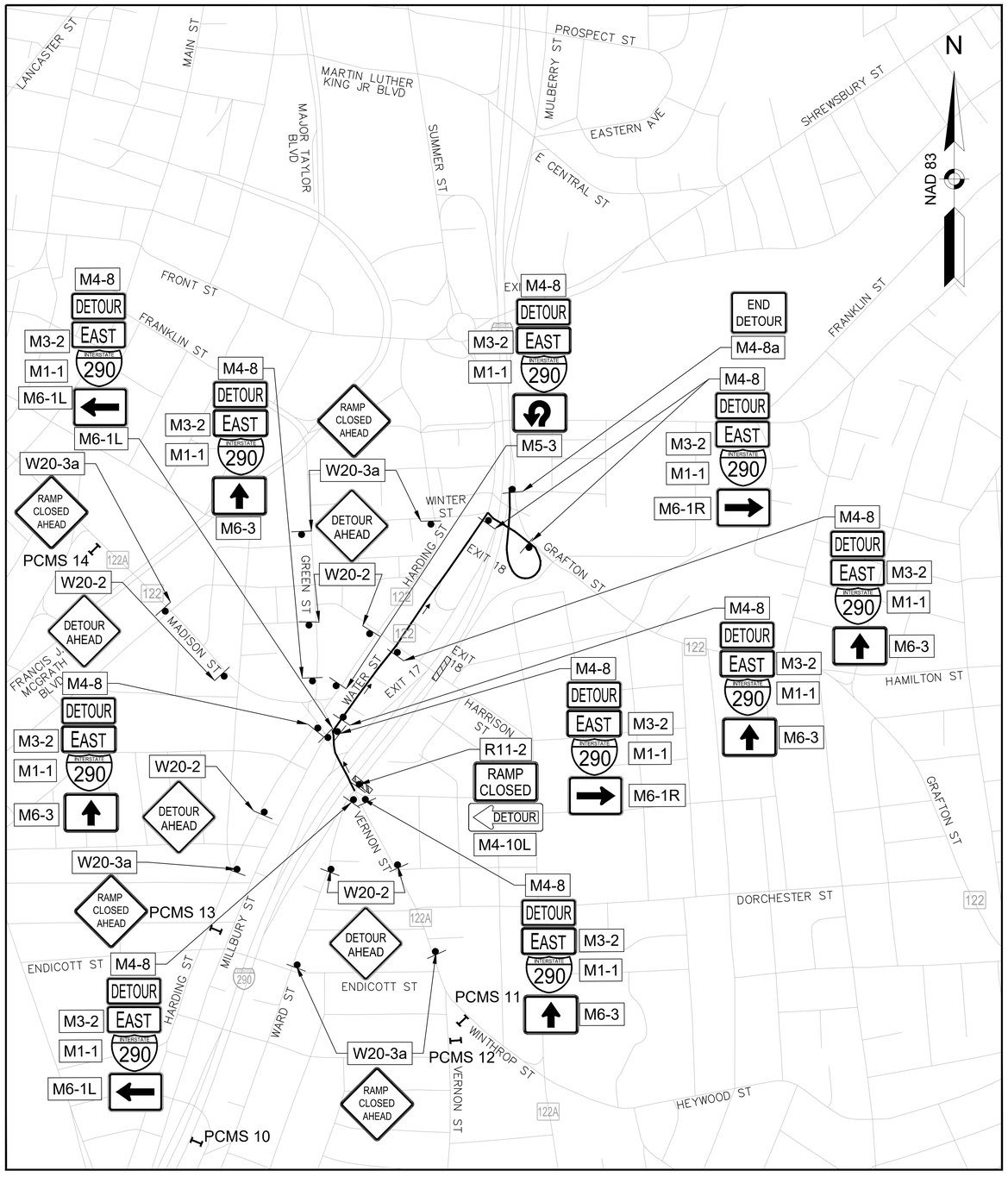
LEGEND

- WORK ZONE
- DIRECTION OF PROPOSED DETOUR ROUTE
- PROPOSED DETOUR ROUTE
- SIGN
- TYPE III BARRICADE
- PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	66	169
	PROJECT FILE NO. 609185		

I-290 ON-RAMP CLOSURE DETOUR PLAN - 2



I-290 EASTBOUND ON-RAMP FROM VERNON STREET CLOSURE DETOUR DURING HARRISON STREET BRIDGE CONSTRUCTION

NOT TO SCALE

DETOUR NOTES:

1. THE CONTRACTOR SHALL COORDINATE APPROVAL AND IMPLEMENTATION OF THIS DETOUR PLAN WITH MASSACHUSETTS DEPARTMENT OF TRANSPORTATION AND CITY OF WORCESTER DEPARTMENT OF TRANSPORTATION AND MOBILITY PRIOR TO CONSTRUCTION ACTIVITIES.
2. PLACE ALL SAFETY DEVICES AND CONSTRUCTION SIGNING BEFORE ACTUAL CONSTRUCTION WORK BEGINS. DEPLOY ALL PCMS TWO WEEKS IN ADVANCE OF HARRISON STREET BRIDGE CLOSURE. THE CONTRACTOR SHALL NOTIFY APPLICABLE STATE AND LOCAL AGENCIES TWO (2) WEEKS IN ADVANCE OF PLACING TEMPORARY TRAFFIC CONTROL SIGNS.
3. USE FLAGS ON ADVANCED WARNING SIGNS. FLAGS SHALL BE AT LEAST 16" X 16".
4. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER NECESSARY WORK ZONE TRAFFIC DEVICES SHALL BE REMOVED FROM THE ROADWAY WHEN THEY ARE NOT REQUIRED FOR TRAFFIC CONTROL.
5. THE CONTRACTOR SHALL COORDINATE WITH EAST CENTRAL STREET BRIDGE AND ANY ABUTTING PROJECTS.
6. EXISTING SIGNS NO LONGER APPLICABLE SHALL BE TEMPORARILY COVERED DURING CONSTRUCTION OR REMOVED AND RESET UPON COMPLETION OF CONSTRUCTION.
7. SIGNS AND SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY MUST PASS THE CRITERIA SET FORTH IN THE NCHRP 350 REPORT.
8. SIGN LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED BASED ON FIELD CONDITIONS WITH THE APPROVAL OF THE ENGINEER.
9. TRAFFIC SIGNAL TIMINGS FOR 3 INTERSECTIONS ALONG DETOUR ROUTE WILL BE PROVIDED TO THE CONTRACTOR BY THE ENGINEER PRIOR TO IMPLEMENTATION OF DETOUR. RETIMING OF TRAFFIC SIGNALS TO BE PAID UNDER ITEM NO. 816.89.
10. THIS SETUP SHALL BE IMPLEMENTED WITH THE DETOUR SHOWN ON SHEET 65.

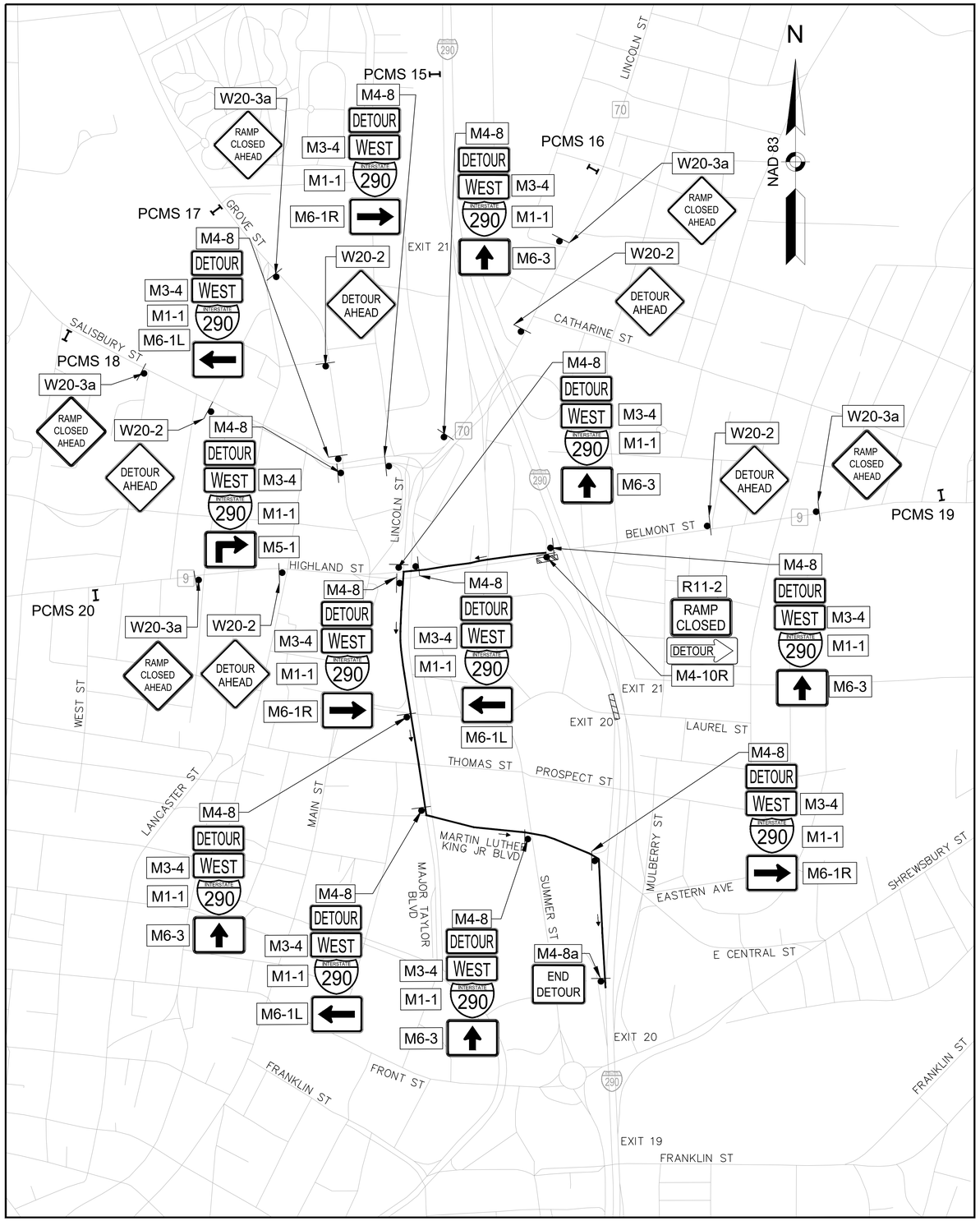
PCMS UNIT	PCMS ADVANCE NOTIFICATION MESSAGES	
	MESSAGE 1	MESSAGE 2
PCMS 10	HARRISON BRIDGE WORK	MM/DD TO MM/DD
PCMS 11-14	RAMP TO I-290 E CLOSED	MM/DD TO MM/DD

PCMS UNIT	PCMS MESSAGES DURING DETOUR	
	MESSAGE 1	MESSAGE 2
PCMS 10	HARRISON BR WORK AHEAD	SLOW DOWN
PCMS 11-14	RAMP TO I-290 E CLOSED	FOLLOW DETOUR AHEAD

LEGEND

- WORK ZONE
- DIRECTION OF PROPOSED DETOUR ROUTE
- PROPOSED DETOUR ROUTE
- SIGN
- TYPE III BARRICADE
- PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

RAMP CLOSURE DETOUR.DWG Plotted on 21-Nov-2024 12:48 PM



I-290 WESTBOUND ON-RAMP FROM BELMONT STREET CLOSURE DETOUR
DURING LAUREL STREET BRIDGE CONSTRUCTION
NOT TO SCALE

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	67	169
	PROJECT FILE NO. 609185		

I-290 ON-RAMP CLOSURE DETOUR PLAN - 3

DETOUR NOTES:

1. THE CONTRACTOR SHALL COORDINATE APPROVAL AND IMPLEMENTATION OF THIS DETOUR PLAN WITH MASSACHUSETTS DEPARTMENT OF TRANSPORTATION AND CITY OF WORCESTER DEPARTMENT OF TRANSPORTATION AND MOBILITY PRIOR TO CONSTRUCTION ACTIVITIES.
2. PLACE ALL SAFETY DEVICES AND CONSTRUCTION SIGNING BEFORE ACTUAL CONSTRUCTION WORK BEGINS. DEPLOY ALL PCMS TWO WEEKS IN ADVANCE OF HARRISON STREET BRIDGE CLOSURE. THE CONTRACTOR SHALL NOTIFY APPLICABLE STATE AND LOCAL AGENCIES TWO (2) WEEKS IN ADVANCE OF PLACING TEMPORARY TRAFFIC CONTROL SIGNS.
3. USE FLAGS ON ADVANCED WARNING SIGNS. FLAGS SHALL BE AT LEAST 16" X 16".
4. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER NECESSARY WORK ZONE TRAFFIC DEVICES SHALL BE REMOVED FROM THE ROADWAY WHEN THEY ARE NOT REQUIRED FOR TRAFFIC CONTROL.
5. THE CONTRACTOR SHALL COORDINATE WITH ANY ABUTTING PROJECTS AND EAST CENTRAL STREET BRIDGE PROJECT.
6. EXISTING SIGNS NO LONGER APPLICABLE SHALL BE TEMPORARILY COVERED DURING CONSTRUCTION OR REMOVED AND RESET UPON COMPLETION OF CONSTRUCTION.
7. SIGNS AND SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY MUST PASS THE CRITERIA SET FORTH IN THE NCHRP 350 REPORT.
8. SIGN LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED BASED ON FIELD CONDITIONS WITH THE APPROVAL OF THE ENGINEER.
9. TRAFFIC SIGNAL TIMINGS FOR 9 INTERSECTIONS ALONG DETOUR ROUTE WILL BE PROVIDED TO THE CONTRACTOR BY THE ENGINEER PRIOR TO IMPLEMENTATION OF DETOUR. RETIMING OF TRAFFIC SIGNALS TO BE PAID UNDER ITEM NO. 816.89.
10. THIS SETUP SHALL BE IMPLEMENTED WITH THE DETOUR SHOWN ON SHEET 68.

PCMS UNIT	PCMS ADVANCE NOTIFICATION MESSAGES	
	MESSAGE 1	MESSAGE 2
PCMS 15	LAUREL BRIDGE WORK	MM/DD TO MM/DD
PCMS 16-20	RAMP TO I-290 W CLOSED	MM/DD TO MM/DD

PCMS UNIT	PCMS MESSAGES DURING DETOUR	
	MESSAGE 1	MESSAGE 2
PCMS 15	LAUREL BR WORK AHEAD	SLOW DOWN
PCMS 16-20	RAMP TO I-290 W CLOSED	FOLLOW DETOUR AHEAD

LEGEND

- WORK ZONE
- DIRECTION OF PROPOSED DETOUR ROUTE
- PROPOSED DETOUR ROUTE
- SIGN
- TYPE III BARRICADE
- PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

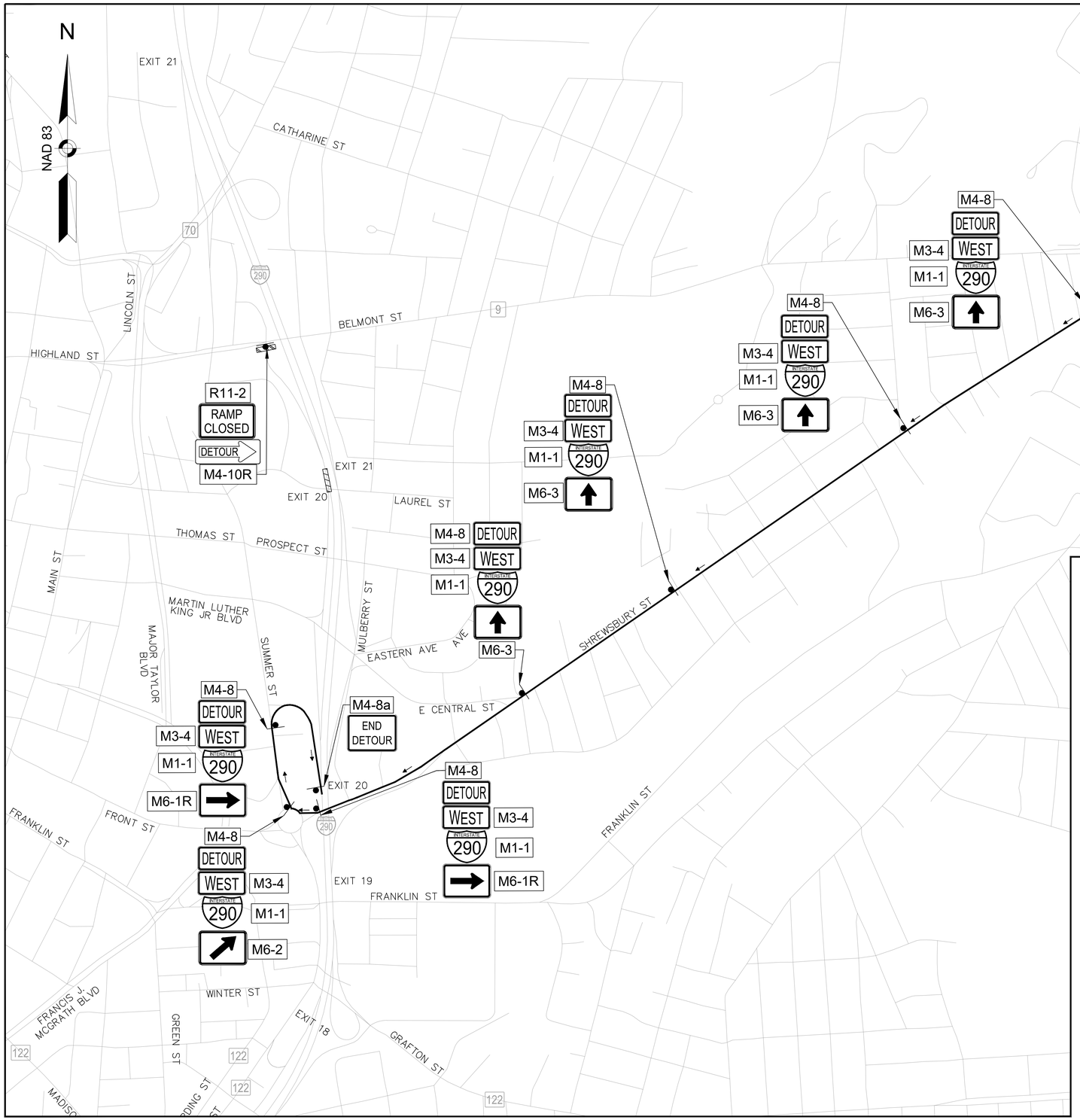
RAMP CLOSURE DETOUR.DWG Plotted on 21-Nov-2024 12:48 PM

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	68	169
	PROJECT FILE NO. 609185		

I-290 ON-RAMP CLOSURE DETOUR PLAN - 4

RAMP CLOSURE DETOUR.DWG Plotted on 21-Nov-2024 12:48 PM



I-290 WESTBOUND ON-RAMP FROM BELMONT STREET CLOSURE DETOUR DURING LAUREL STREET BRIDGE CONSTRUCTION

NOT TO SCALE

DETOUR NOTES:

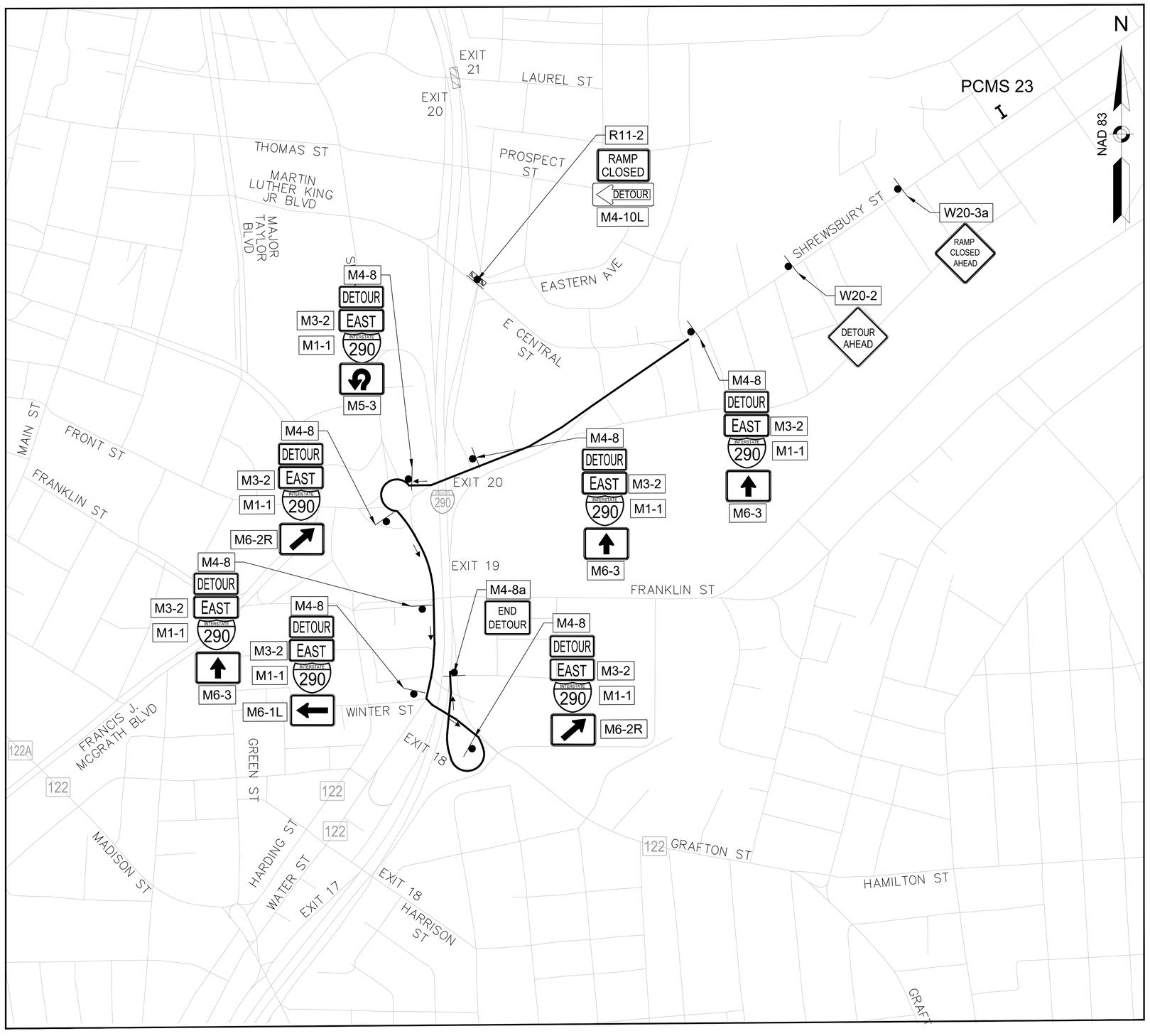
1. THE CONTRACTOR SHALL COORDINATE APPROVAL AND IMPLEMENTATION OF THIS DETOUR PLAN WITH MASSACHUSETTS DEPARTMENT OF TRANSPORTATION AND CITY OF WORCESTER DEPARTMENT OF TRANSPORTATION AND MOBILITY PRIOR TO CONSTRUCTION ACTIVITIES.
2. PLACE ALL SAFETY DEVICES AND CONSTRUCTION SIGNING BEFORE ACTUAL CONSTRUCTION WORK BEGINS. DEPLOY ALL PCMS TWO WEEKS IN ADVANCE OF HARRISON STREET BRIDGE CLOSURE. THE CONTRACTOR SHALL NOTIFY APPLICABLE STATE AND LOCAL AGENCIES TWO (2) WEEKS IN ADVANCE OF PLACING TEMPORARY TRAFFIC CONTROL SIGNS.
3. USE FLAGS ON ADVANCED WARNING SIGNS. FLAGS SHALL BE AT LEAST 16" X 16".
4. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER NECESSARY WORK ZONE TRAFFIC DEVICES SHALL BE REMOVED FROM THE ROADWAY WHEN THEY ARE NOT REQUIRED FOR TRAFFIC CONTROL.
5. THE CONTRACTOR SHALL COORDINATE WITH ANY ABUTTING PROJECTS AND EAST CENTRAL STREET BRIDGE PROJECT.
6. EXISTING SIGNS NO LONGER APPLICABLE SHALL BE TEMPORARILY COVERED DURING CONSTRUCTION OR REMOVED AND RESET UPON COMPLETION OF CONSTRUCTION.
7. SIGNS AND SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY MUST PASS THE CRITERIA SET FORTH IN THE NCHRP 350 REPORT.
8. SIGN LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED BASED ON FIELD CONDITIONS WITH THE APPROVAL OF THE ENGINEER.
9. TRAFFIC SIGNAL TIMINGS FOR 5 INTERSECTIONS ALONG DETOUR ROUTE WILL BE PROVIDED TO THE CONTRACTOR BY THE ENGINEER PRIOR TO IMPLEMENTATION OF DETOUR. RETIMING OF TRAFFIC SIGNALS TO BE PAID UNDER ITEM NO. 816.89.
10. THIS SETUP SHALL BE IMPLEMENTED WITH THE DETOUR SHOWN ON SHEET 67.

PCMS UNIT	PCMS ADVANCE NOTIFICATION MESSAGES	
	MESSAGE 1	MESSAGE 2
PCMS 21,22	RAMP TO I-290 W CLOSED	MM/DD TO MM/DD

PCMS UNIT	PCMS MESSAGES DURING DETOUR	
	MESSAGE 1	MESSAGE 2
PCMS 21,22	RAMP TO I-290 W CLOSED	FOLLOW DETOUR AHEAD

LEGEND

- WORK ZONE
- DIRECTION OF PROPOSED DETOUR ROUTE
- PROPOSED DETOUR ROUTE
- SIGN
- TYPE III BARRICADE
- PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)



I-290 EASTBOUND ON- RAMP FROM MULBERRY STREET CLOSURE DETOUR DURING LAUREL STREET BRIDGE CONSTRUCTION

NOT TO SCALE

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	69	169
	PROJECT FILE NO. 609185		

I-290 ON-RAMP CLOSURE DETOUR PLAN - 5

DETOUR NOTES:

1. THE CONTRACTOR SHALL COORDINATE APPROVAL AND IMPLEMENTATION OF THIS DETOUR PLAN WITH MASSACHUSETTS DEPARTMENT OF TRANSPORTATION AND CITY OF WORCESTER DEPARTMENT OF TRANSPORTATION AND MOBILITY PRIOR TO CONSTRUCTION ACTIVITIES.
2. PLACE ALL SAFETY DEVICES AND CONSTRUCTION SIGNING BEFORE ACTUAL CONSTRUCTION WORK BEGINS. DEPLOY ALL PCMS TWO WEEKS IN ADVANCE OF HARRISON STREET BRIDGE CLOSURE. THE CONTRACTOR SHALL NOTIFY APPLICABLE STATE AND LOCAL AGENCIES TWO (2) WEEKS IN ADVANCE OF PLACING TEMPORARY TRAFFIC CONTROL SIGNS.
3. USE FLAGS ON ADVANCED WARNING SIGNS. FLAGS SHALL BE AT LEAST 16" X 16".
4. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER NECESSARY WORK ZONE TRAFFIC DEVICES SHALL BE REMOVED FROM THE ROADWAY WHEN THEY ARE NOT REQUIRED FOR TRAFFIC CONTROL.
5. THE CONTRACTOR SHALL COORDINATE WITH ANY ABUTTING PROJECTS.
6. EXISTING SIGNS NO LONGER APPLICABLE SHALL BE TEMPORARILY COVERED DURING CONSTRUCTION OR REMOVED AND RESET UPON COMPLETION OF CONSTRUCTION.
7. SIGNS AND SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY MUST PASS THE CRITERIA SET FORTH IN THE NCHRP 350 REPORT.
8. SIGN LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED BASED ON FIELD CONDITIONS WITH THE APPROVAL OF THE ENGINEER.
9. TRAFFIC SIGNAL TIMINGS FOR 5 INTERSECTIONS ALONG DETOUR ROUTE WILL BE PROVIDED TO THE CONTRACTOR BY THE ENGINEER PRIOR TO IMPLEMENTATION OF DETOUR. RETIMING OF TRAFFIC SIGNALS TO BE PAID UNDER ITEM NO. 816.89.
10. THIS SETUP SHALL BE IMPLEMENTED WITH THE DETOUR SHOWN ON SHEET 70.

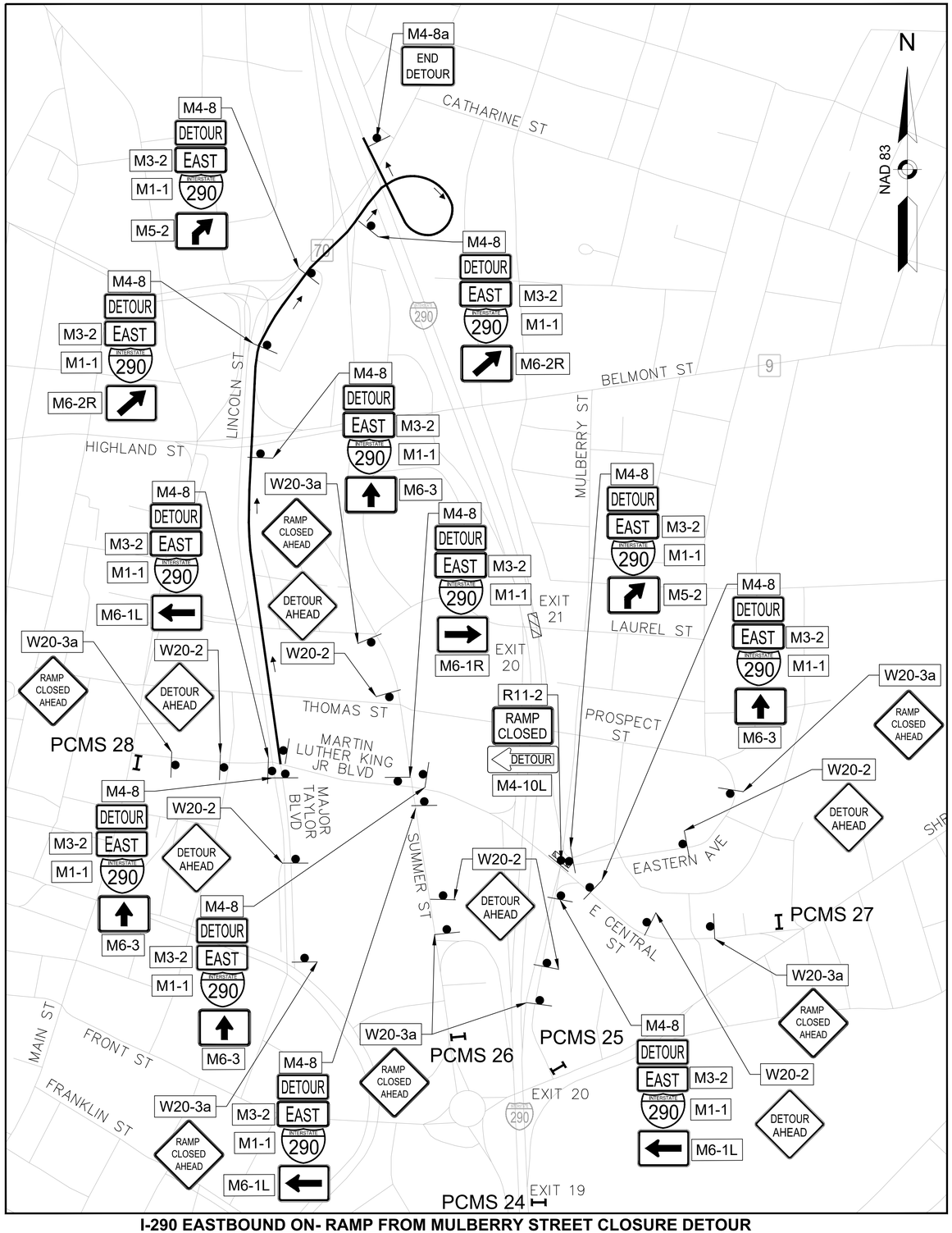
PCMS UNIT	PCMS ADVANCE NOTIFICATION MESSAGES	
	MESSAGE 1	MESSAGE 2
PCMS 23	I-290 EB ON-RAMP CLOSED	MM/DD TO MM/DD

PCMS UNIT	PCMS MESSAGES DURING DETOUR	
	MESSAGE 1	MESSAGE 2
PCMS 23	I-290 EB ON-RAMP CLOSED	FOLLOW DETOUR AHEAD

LEGEND

- WORK ZONE
- DIRECTION OF PROPOSED DETOUR ROUTE
- PROPOSED DETOUR ROUTE
- SIGN
- TYPE III BARRICADE
- PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

RAMP CLOSURE DETOUR.DWG Plotted on 21-Nov-2024 12:48 PM



I-290 EASTBOUND ON- RAMP FROM MULBERRY STREET CLOSURE DETOUR DURING LAUREL STREET BRIDGE CONSTRUCTION

NOT TO SCALE

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	70	169
	PROJECT FILE NO. 609185		

I-290 ON-RAMP CLOSURE DETOUR PLAN - 6

DETOUR NOTES:

1. THE CONTRACTOR SHALL COORDINATE APPROVAL AND IMPLEMENTATION OF THIS DETOUR PLAN WITH MASSACHUSETTS DEPARTMENT OF TRANSPORTATION AND CITY OF WORCESTER DEPARTMENT OF TRANSPORTATION AND MOBILITY PRIOR TO CONSTRUCTION ACTIVITIES.
2. PLACE ALL SAFETY DEVICES AND CONSTRUCTION SIGNING BEFORE ACTUAL CONSTRUCTION WORK BEGINS. DEPLOY ALL PCMS TWO WEEKS IN ADVANCE OF HARRISON STREET BRIDGE CLOSURE. THE CONTRACTOR SHALL NOTIFY APPLICABLE STATE AND LOCAL AGENCIES TWO (2) WEEKS IN ADVANCE OF PLACING TEMPORARY TRAFFIC CONTROL SIGNS.
3. USE FLAGS ON ADVANCED WARNING SIGNS. FLAGS SHALL BE AT LEAST 16" X 16".
4. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER NECESSARY WORK ZONE TRAFFIC DEVICES SHALL BE REMOVED FROM THE ROADWAY WHEN THEY ARE NOT REQUIRED FOR TRAFFIC CONTROL.
5. THE CONTRACTOR SHALL COORDINATE WITH ANY ABUTTING PROJECTS.
6. EXISTING SIGNS NO LONGER APPLICABLE SHALL BE TEMPORARILY COVERED DURING CONSTRUCTION OR REMOVED AND RESET UPON COMPLETION OF CONSTRUCTION.
7. SIGNS AND SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY MUST PASS THE CRITERIA SET FORTH IN THE NCHRP 350 REPORT.
8. SIGN LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED BASED ON FIELD CONDITIONS WITH THE APPROVAL OF THE ENGINEER.
9. TRAFFIC SIGNAL TIMINGS FOR 9 INTERSECTIONS ALONG DETOUR ROUTE WILL BE PROVIDED TO THE CONTRACTOR BY THE ENGINEER PRIOR TO IMPLEMENTATION OF DETOUR. RETIMING OF TRAFFIC SIGNALS TO BE PAID UNDER ITEM NO. 816.89.
10. THIS SETUP SHALL BE IMPLEMENTED WITH THE DETOUR SHOWN ON SHEET 69.

PCMS UNIT	PCMS ADVANCE NOTIFICATION MESSAGES	
	MESSAGE 1	MESSAGE 2
PCMS 24	LAUREL BRIDGE WORK	MM/DD TO MM/DD
PCMS 25-28	RAMP TO I-290 E CLOSED	MM/DD TO MM/DD

PCMS UNIT	PCMS MESSAGES DURING DETOUR	
	MESSAGE 1	MESSAGE 2
PCMS 24	LAUREL BRIDGE WORK	SLOW DOWN
PCMS 25-28	RAMP TO I-290 E CLOSED	FOLLOW DETOUR AHEAD

LEGEND

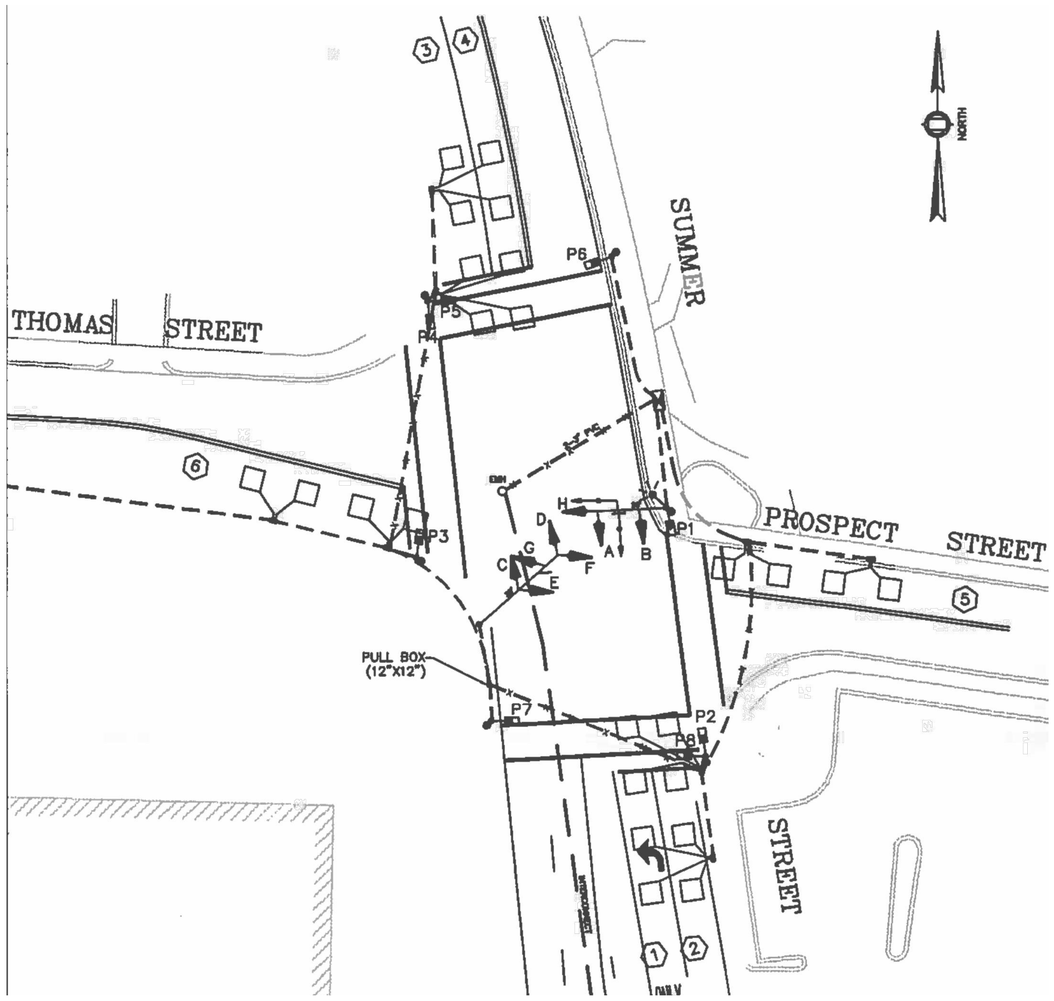
- WORK ZONE
- DIRECTION OF PROPOSED DETOUR ROUTE
- PROPOSED DETOUR ROUTE
- SIGN
- TYPE III BARRICADE
- PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

Plotted on 21-Nov-2024 12:48 PM
RAMP CLOSURE DETOUR.DWG

WORCESTER
HARRISON ST & LAUREL ST BRIDGE

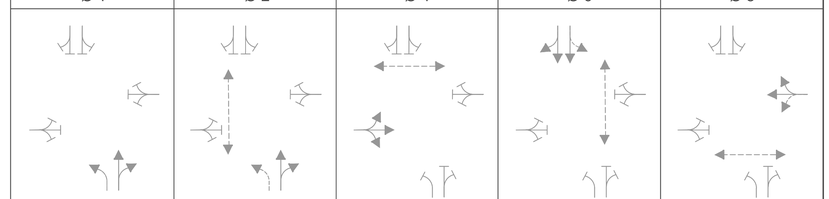
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	71	169
	PROJECT FILE NO. 609185		

TRAFFIC SIGNAL RETIMING PLAN
SUMMER ST AT
THOMAS ST/ PROSPECT ST



SEQUENCE & TIMING
FOR
FULL ACTUATED CONTROL
(COORDINATED)
SUMMER ST
AT
THOMAS ST/ PROSPECT ST

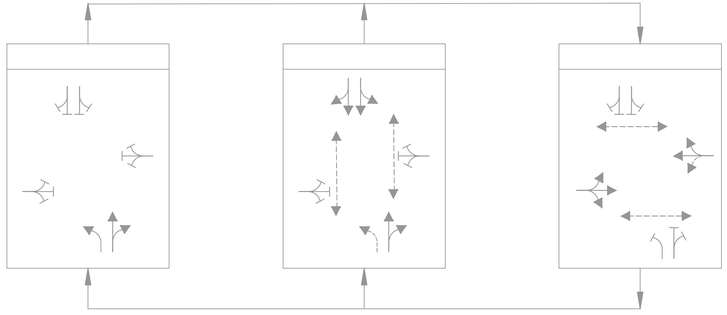
APPROX. NORTH



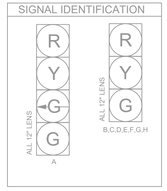
APPROACH	DIRECTION	HOUSINGS	INTERVALS 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	FLASHING OPERATION
SUMMER ST	NB	A	G	Y	R	G	Y	R	R	R	R	R	R	R	R	R	R	FY
SUMMER ST	NBL	B	~~G~~ / G	Y	R	G	Y	R	R	R	R	R	R	R	R	R	R	FR
SUMMER ST	SB	C,D	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	FR
THOMAS ST	EB	E,F	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	FY
PROSPECT ST	WB	G,H	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	FR
PEDESTRIAN		P1-P8	DW	DW	DW	W	FDW	DW	W	FDW	DW	W	FDW	DW	W	FDW	DW	OUT

TIMING IN SECONDS																		EMERGENCY ONLY
MINIMUM INITIAL	6			**10**			**6**			**10**			**6**			
MINIMUM GREEN 1 (AM PEAK AND OFF-PEAK)	**11**			**29**			**20**			**18**			**20**			
MINIMUM GREEN 2 (PM PEAK)	**11**			**30**			**25**			**19**			**25**			
VEHICLE EXTENSION	3			3			3			3			3			
YELLOW CLEARANCE		3.5			3.5			3.5			3.5			3.5		
RED CLEARANCE			1			1			1			1			1	
PED WALK INTERVAL				7	11	4	7	11	4	7	11	4	7	11	4	
RECALL	NONE			MIN			NONE			MIN			NONE			

PREFERENTIAL PHASING SEQUENCE



SIGNAL IDENTIFICATION



NOTES:
1. ALL VEHICLE LENSES SHALL BE LED TYPE.
2. ALL VEHICLE SIGNAL HEADS SHALL BE 12 INCHES.
3. ALL HOUSINGS TO BE PROVIDED WITH TUNNEL VISORS AND 5-INCH LOUVERED BACKPLATES WITH 3-INCH RETROREFLECTIVE BORDER.
4. ALL HOUSINGS TO BE FIXED MOUNTED.

NOTES:
1. CONTRACTOR SHALL RECORD EXISTING TRAFFIC SIGNAL TIMINGS PRIORI TO MAKING CHANGES AND RESTORE EXISTING SIGNAL TIMINGS ONCE DETOUR IS NO LONGER IN EFFECT.
2. CONTRACTOR SHALL MONITOR TRAFFIC CONDITIONS DURING THE DETOUR AND ADJUST AS NEEDED TO MINIMIZE DELAYS IN COORDINATION WITH THE CITY OF WORCESTER AND MASSDOT.
3. TRAFFIC SIGNAL TIMING ADJUSTMENTS TO BE PAID UNDER ITEM NO. 816.84

NOTES:

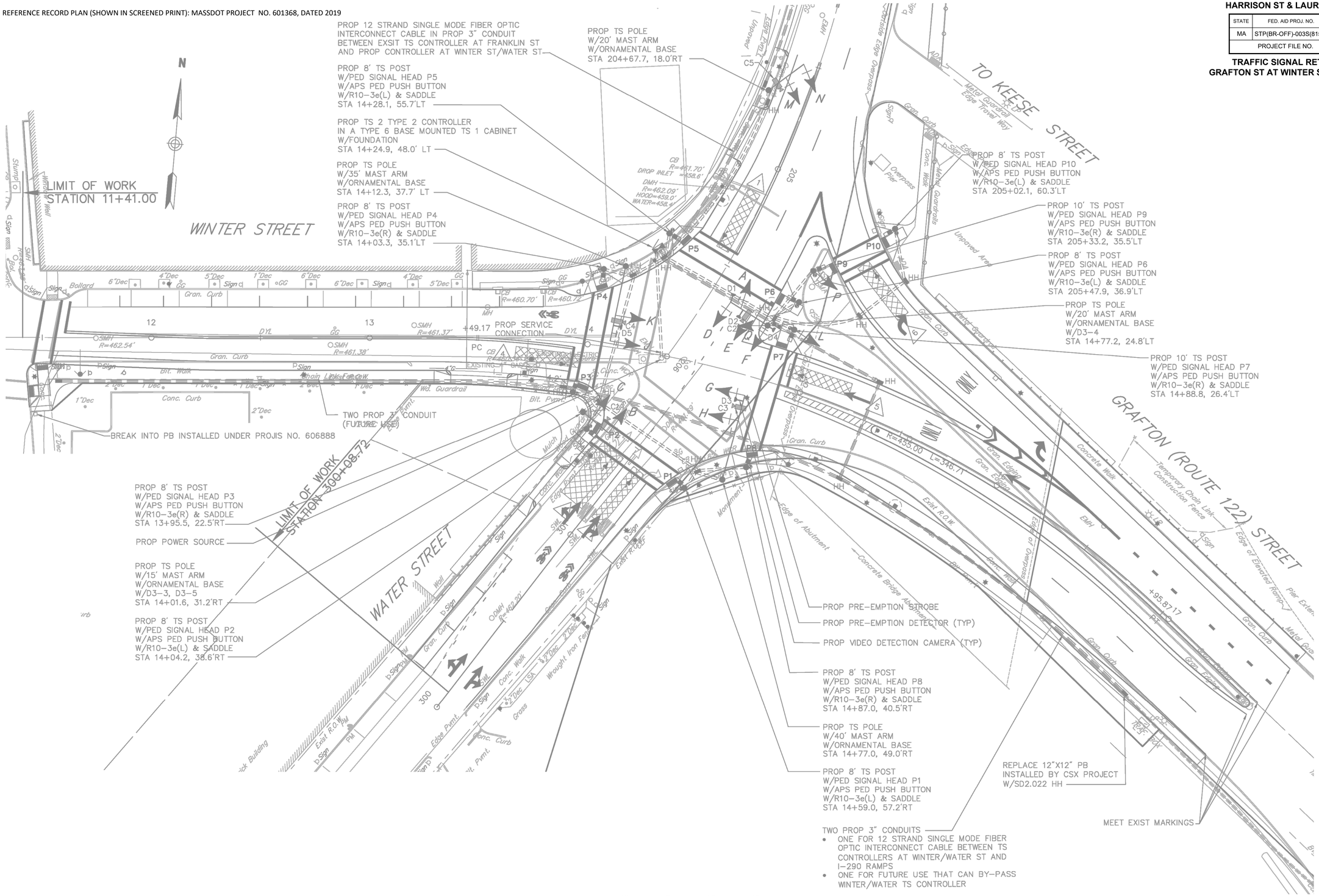
1. REFERENCE RECORD PLAN (SHOWN IN SCREENED PRINT): MASSDOT PROJECT NO. 601368, DATED 2019

WORCESTER
HARRISON ST & LAUREL ST BRIDGE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	72	169
PROJECT FILE NO.	609185		

TRAFFIC SIGNAL RETIMING PLAN
GRAFTON ST AT WINTER ST AND WATER ST

RETIMING PLANS.DWG Plotted on 21-Nov-2024 12:48 PM



NOTES:

1. PROPOSED WORK SHOWN IN DARK BLACK PRINT
2. REFERENCE RECORD PLAN (SHOWN IN SCREENED PRINT): MASSDOT PROJECT NO. 601368, DATED 2019

SEQUENCE AND TIMING																		
APPROACH	DIRECTION	HOUSING	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	FLASHING OPERATION
MINIMUM INTERVAL			10			10			6			6						
VEHICLE EXTENSION			3			3			3			3						
MAXIMUM 1			30			25			**35** 20			**35** 20						
MAXIMUM 2			**30** 30			**18** 25			**26** 35			**26** 35						
YELLOW CLEARANCE				3			3.5			4			4			3		
RED CLEARANCE					2			1.5			2.5			2.5			1	
PEDESTRIAN INTERVAL						7/10									7/11			
GRAFTON STREET	SB	A,B,C	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	FY
WATER STREET	NB	D	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	FR
WATER STREET	NB	E	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	FR
WATER STREET	NB	F	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	FR
WINTER STREET	EB	G,Q	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	FR
WINTER STREET	EB	H	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	FR
GRAFTON STREET	WB	J,K,L	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	FR
GRAFTON STREET	WB	M,N	G	Y	R	R	R	R	R	R	R	G	Y	R	R	R	R	FR
GRAFTON STREET	WB	P	G	Y	R	R	R	R	R	R	R	G	Y	R	R	R	R	FR
PEDESTRIAN X-ING	ALL	P1-P8	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW	OUT
PEDESTRIAN X-ING	NB-SB	P9-P10	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW	OUT
DETECTOR			NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			-			↑
RECALL			MIN			OFF			OFF			OFF			-			NORTH
			ø1			ø2			ø4			ø8			ø9*			
			OL A						PERM									ø3,ø5, ø6&ø7 NOT USED

NOTES:
1. AUTOMATIC FLASHING OPERATION PER M.U.T.C.D.
2. * UPON PEDESTRIAN PUSH BUTTON ACTUATION
3. OL = OVERLAP
4. PERM = PERMISSIVE
5. ø4 & ø8 DUAL ENTRY
6. MAXIMUM 1 = **DURING ALL OTHER TIMES**
7. MAXIMUM 2 = **DURING WEEKDAY PM PEAK (MON - FRI 3PM -7PM)**
8. FLASHING DON'T WALK THROUGH YELLOW SHALL NOT BE IN EFFECT.
9. STOP AND GO OPERATION FOR 24 HOURS PER DAY. FLASHING OPERATION FOR EMERGENCY ONLY.
10. SEE SHEETS 90 AND 91 FOR COORDINATION

SEQUENCE & TIMING NOTES:

1. IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.
2. THE RIGHT OF WAY MAY BE ASSIGNED TO ANY PHASE OR ANY COMBINATION OF NON-CONFLICTING PHASES.
3. IF CALLS EXIST ON ALL PHASES, THE ASSIGNMENT OF RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.
4. IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO CHANGE DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATION FOR THAT MOVEMENT WILL DISPLAY THE APPROPRIATE CLEARANCE INTERVALS.

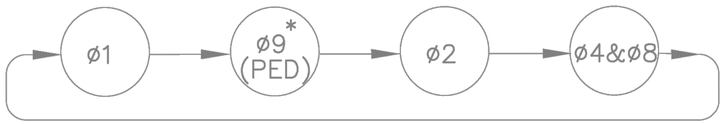
PM PEAK HOUR
GRAFTON STREET AT WATER STREET/WINTER STREET
COORDINATION DATA

	PLAN 2
CYCLE LENGTH	90 SEC
OFFSET	**6** 72
SPLIT ø1	**28** 15 (17) **(35)**
SPLIT ø2	**16** 24 (31) **(23)**
SPLIT ø4	**25** 30 (42) **(32)**
SPLIT ø8	**25** 30 (42) **(32)**
SPLIT ø9 (PED)	23 (0)
COORDINATED PHASE	ø1

AM PEAK HOUR
GRAFTON STREET AT WATER STREET/WINTER STREET
COORDINATION DATA

	PLAN 1
CYCLE LENGTH	90 SEC
OFFSET	58
SPLIT ø1	15 (17)
SPLIT ø2	24 (31)
SPLIT ø4	28 (42)
SPLIT ø8	28 (42)
SPLIT ø9 (PED)	23 (0)
COORDINATED PHASE	ø1

PREFERENTIAL PHASE SEQUENCE



* UPON PEDESTRIAN PUSH BUTTON ACTUATION

EMERGENCY VEHICLE PRE-EMPTION OPERATION.

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT EACH INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH DETECTORS D1, D2, D3 OR D4 ASSIGNED DESCENDING PRIORITIES AS FOLLOWS: (D1 HIGHEST AND D4 LOWEST)
3. IN RESPONSE TO A PRE-EMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL DETECTOR D1 (OR D2, D3, D4) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PRE-EMPTION PHASE #1 (OR #2, #3, #4) GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL PRE-EMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PRE-EMPTION PHASE CLEARANCES FOR THE ASSOCIATED PHASE(S) AS SHOWN IN THE SEQUENCE AND TIMING CHART AND SERVICE SUBSEQUENT EMERGENCY VEHICLE PRE-EMPTION PHASES AS NECESSARY.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. PRE-EMPTION STROBE SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PRE-EMPTION GREEN IS ON.
6. **DURING PRE-EMPT 1, OVERLAP A SHALL NOT BE ON.**
7. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.

PRE-EMPTION PHASING & PRIORITY			
DETECTOR & PRIORITY	PRE-EMPT PHASE ASSIGNMENT	MOVEMENT	VEHICLE PHASE ASSIGNMENT
D1	1		ø1 SEE NOTE 6
D2	2		ø2
D3	3		ø4
D4,D5	4		ø8

NOTES:
1. CONTRACTOR SHALL RECORD EXISTING TRAFFIC SIGNAL TIMINGS PRIOR TO MAKING CHANGES AND RESTORE EXISTING SIGNAL TIMINGS ONCE DETOUR IS NO LONGER IN EFFECT.
2. CONTRACTOR SHALL MONITOR TRAFFIC CONDITIONS DURING THE DETOUR AND ADJUST AS NEEDED TO MINIMIZE DELAYS IN COORDINATION WITH THE CITY OF WORCESTER AND MASSDOT.
3. TRAFFIC SIGNAL TIMING ADJUSTMENTS TO BE PAID UNDER ITEM NO. 816.83

DETECTOR DATA				
DETECTOR NO.	ZONE SIZE	CAMERA	DELAY /EXT	CALL PHASE
1	TO BE FIELD ADJUSTED	C1	0	ø1
2	TO BE FIELD ADJUSTED	C2	0	ø2
3	TO BE FIELD ADJUSTED	C2	0	ø2
4	TO BE FIELD ADJUSTED	C3	0	ø4
5	TO BE FIELD ADJUSTED	C4	0	ø8
6	TO BE FIELD ADJUSTED	C5	0	ø8

NOTE:
DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY

SIGNAL HEAD DATA

A,B,C	D	E,G,J,K,L,M,N,Q	F	H	P	P1-P10
R Y G G	R Y G G	R Y G	R Y G	R Y G	R Y G	HAND/MAN W/COUNTDOWN TIMER (L.E.D.) SINGLE SECTION
ALL 12" LENS						

NOTES: 1. ALL SIGNAL HEADS SHALL BE RIGID MOUNTED.
2. ALL SIGNAL HEADS SHALL BE EQUIPPED WITH 5"± NON-LOUVERED BACKPLATES. ALL BACKPLATES SHALL CONTAIN A 3" WIDE YELLOW REFLECTIVE BORDER.
3. ALL SIGNAL DISPLAYS SHALL BE EQUIPPED WITH L.E.D. MODULES.

WORCESTER
HARRISON ST & LAUREL ST BRIDGE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	73	169
PROJECT FILE NO.	609185		

TRAFFIC SIGNAL RETIMING PLAN
GRAFTON ST AT WINTER ST AND WATER ST

RETIMING PLANS.DWG Plotted on 21-Nov-2024 12:48 PM

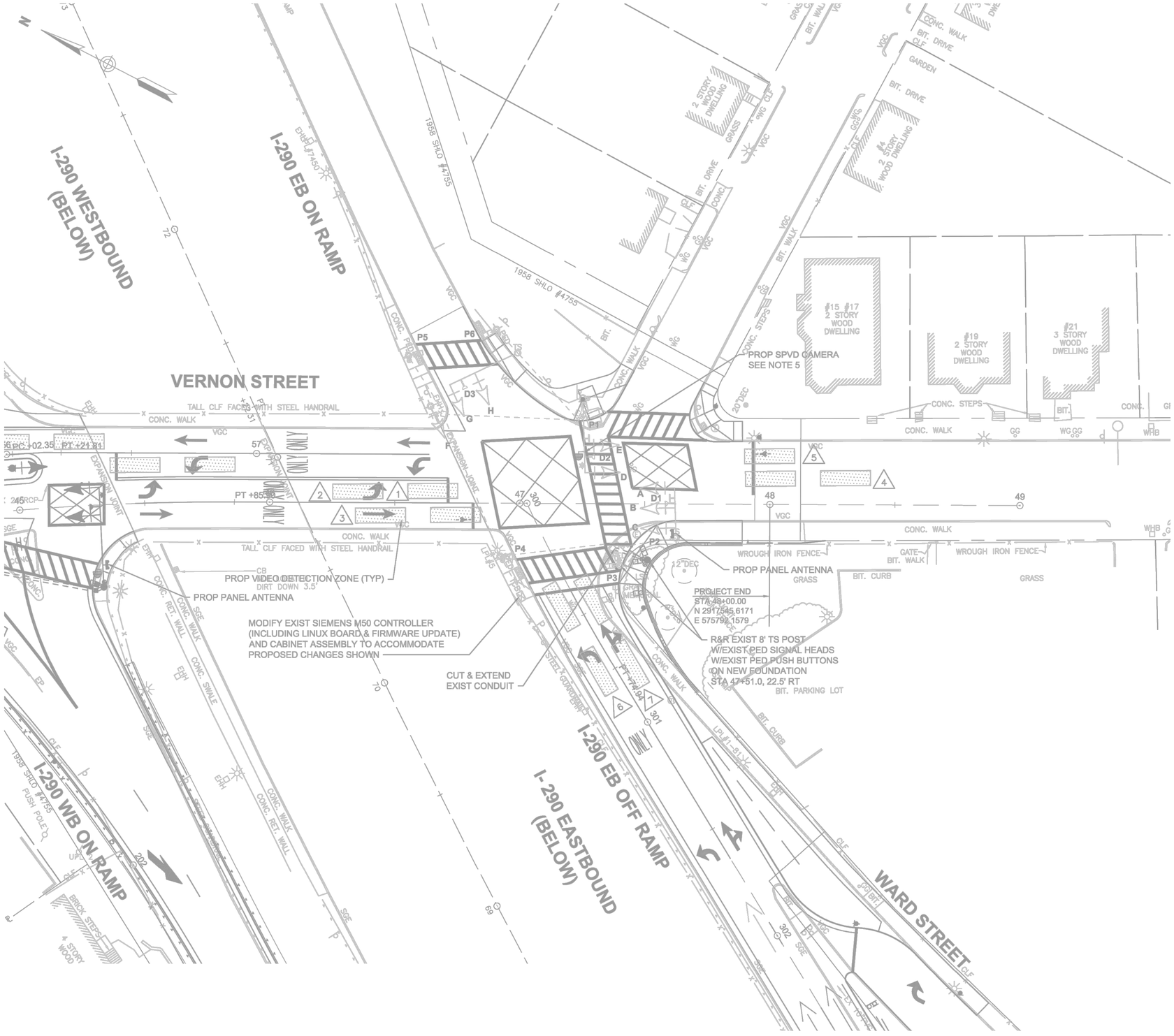
NOTES:

1. REFERENCE RECORD PLAN (SHOWN IN SCREENED PRINT): MASSDOT PROJECT NO. 609226, DATED 2019

WORCESTER
HARRISON ST & LAUREL ST BRIDGE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	74	169
PROJECT FILE NO.	609185		

TRAFFIC SIGNAL RETIMING PLAN
VERNON ST AT I-290 EB RAMP



RETIMING PLANS.DWG Plotted on 21-Nov-2024 12:49 PM

NOTES:

1. PROPOSED WORK SHOWN IN DARK BLACK PRINT
2. REFERENCE RECORD PLAN (SHOWN IN SCREENED PRINT): MASSDOT PROJECT NO. 609226, DATED 2019

ø1	ø2	ø3(PED)*	ø4	ø6
				PERM

EXISTING/PROPOSED SEQUENCE AND TIMING FOR FULLY ACTUATED CONTROL (CONTROLLER LOGIC)

APPROACH	DIRECTION	HOUSING	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	FLASH
VERNON STREET	SB	A	G	Y	R	R	R	R	R	R	R	R	R	R	FY	Y	R	FY
VERNON STREET	SB	B,C	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	FY
VERNON STREET	NB	D,E	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	FY
I-290 EB OFF-RAMP	EB	F,G,H	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	FR
PEDESTRIAN X-ING	ALL	P1-P6	DW	DW	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	OUT
TIMING IN SECONDS																		
MINIMUM GREEN (INITIAL)			8			12						10			12			CONFLICT FLASH OPERATION ONLY
PASSAGE TIME (VEHICLE)			3			3						3			3			
MAXIMUM 1			14 20			52 40						18 35			70 40			
MAXIMUM 2			21 20			40 40						13 35			65 40			
YELLOW CLEARANCE				3			3						3			3		
RED CLEARANCE					1			2			1			2			2	
PEDESTRIAN WALK									7									
PEDESTRIAN CLEARANCE										14								
DETECTOR MEMORY			NON-LOCK			NON-LOCK			LOCK			NON-LOCK			NON-LOCK			
RECALL			OFF			MIN			OFF			OFF			MIN			

BACK-UP COORDINATION DATA			BACK-UP COORDINATION PHASE SPLIT TIMES				
TIMING PLAN	CYCLE	OFFSET	ø1	ø2	ø3	ø4	ø6
1/1/1 M-F 7AM-9AM	120 110	0 0	18 22	57 43	22 22	23 23	75 65
2/1/1 M-F 3PM-7PM	110 110	0 0	25 30	45 40	22 22	18 18	70 70
MODE				COORD ø			COORD ø

NOTES:
1. AUTOMATIC FLASHING OPERATION PER 2009 M.U.T.C.D., AS AMENDED.
2. * UPON PEDESTRIAN PUSH BUTTON ACTUATION
3. PERM = PERMISSIVE
4. MAXIMUM 1 = **DURING ALL OTHER TIMES**
5. MAXIMUM 2 = **DURING WEEKDAY PM PEAK (MON - FRI 3PM -7PM)**
6. STOP AND GO OPERATION FOR 24 HOURS PER DAY. FLASHING OPERATION FOR EMERGENCY ONLY.

SEQUENCE & TIMING NOTES:

1. IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.
2. THE RIGHT OF WAY MAY BE ASSIGNED TO ANY PHASE OR ANY COMBINATION OF NON-CONFLICTING PHASES.
3. IF CALLS EXIST ON ALL PHASES, THE ASSIGNMENT OF RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.
4. IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO CHANGE DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATION FOR THAT MOVEMENT WILL DISPLAY THE APPROPRIATE CLEARANCE INTERVALS.

EXISTING/PROPOSED PRE-EMPTION PHASING & PRIORITY

DETECTOR & PRIORITY	PRE-EMPT PHASE ASSIGNMENT	MOVEMENT	VEHICLE PHASE ASSIGNMENT
D1	1		Ø1 & Ø6
D2	2		Ø2
D3	3		Ø4

WORCESTER
HARRISON ST & LAUREL ST BRIDGE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	75	169
PROJECT FILE NO.	609185		

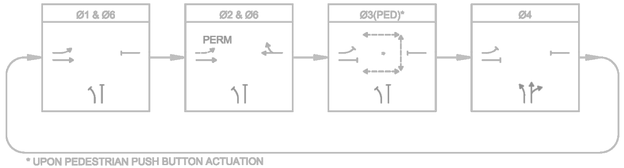
TRAFFIC SIGNAL RETIMING PLAN
VERNON ST AT I-290 EB RAMP

ETHERNET BASED CONTROLLER LOGIC OPERATION:

1. THE TRAFFIC SIGNAL CONTROLLER AT THE VERNON ST/I-290 WESTBOUND RAMP SHALL BE SUPPLIED AND INSTALLED WITH AN ETHERNET BASED CONTROLLER LOGIC SYSTEM WHICH ALLOWS THE CONTROLLER TO SHARE INFORMATION WITH THE CONTROLLER AT THE VERNON ST/I-290 EASTBOUND RAMP AND PROVIDE CONDITIONAL CONTROL STRATEGIES, INDEPENDENT OF A CENTRAL MANAGEMENT SYSTEM OR ON-STREET MASTER CONTROLLER. ALL SETTINGS SHALL BE DOCUMENTED AND INCLUDED WITH THE REQUIRED DATABASE DOCUMENTATION SUPPLIED WITH EACH CABINET.
2. THE I-290 EASTBOUND RAMP INTERSECTION SHALL SERVE CONTROLLER 1. THE I-290 WESTBOUND RAMP INTERSECTION SHALL SERVE AS CONTROLLER 2.
3. THERE ARE THREE LOGIC STRATEGIES:
   - 3.1. CONTROLLER 1 SHALL PLACE A HOLD ON CONTROLLER 2 Ø1. END OF YELLOW OF CONTROLLER 1 Ø4 SHALL RELEASE HOLD ON CONTROLLER 2 TO SERVICE Ø2.
   - 3.2. CONTROLLER 1 Ø1 SHALL OMIT CONTROLLER 2 Ø5.
   - 3.3. QUEUE DETECTOR LOOP GROUP 7 SHALL PLACE A PRE-EMPT ON CONTROLLER 1 Ø1&Ø6 IN ADDITION TO CONTROLLER 2 Ø6.
4. SEE SPECIAL PROVISIONS UNDER ITEM 815.2 FOR MORE INFORMATION.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE CONTROLLER LOGIC PROGRAMMING.

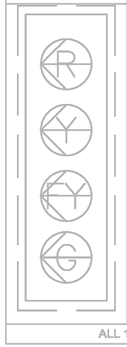
NOTES:
1. CONTRACTOR SHALL RECORD EXISTING TRAFFIC SIGNAL TIMINGS PRIOR TO MAKING CHANGES AND RESTORE EXISTING SIGNAL TIMINGS ONCE DETOUR IS NO LONGER IN EFFECT.
2. CONTRACTOR SHALL MONITOR TRAFFIC CONDITIONS DURING THE DETOUR AND ADJUST AS NEEDED TO MINIMIZE DELAYS IN COORDINATION WITH THE CITY OF WORCESTER AND MASSDOT.
3. TRAFFIC SIGNAL TIMING ADJUSTMENTS TO BE PAID UNDER ITEM NO. 816.82

EXISTING PREFERENTIAL PHASE SEQUENCE



* UPON PEDESTRIAN PUSH BUTTON ACTUATION
PERM = PERMISSIVE

EXISTING/PROPOSED SIGNAL HEAD DATA

A	B,C,D,E,F,G,H	P1-P6
		 W/COUNTDOWN TIMER R&R P1, P2, P4 & P5
ALL 12" LENS		

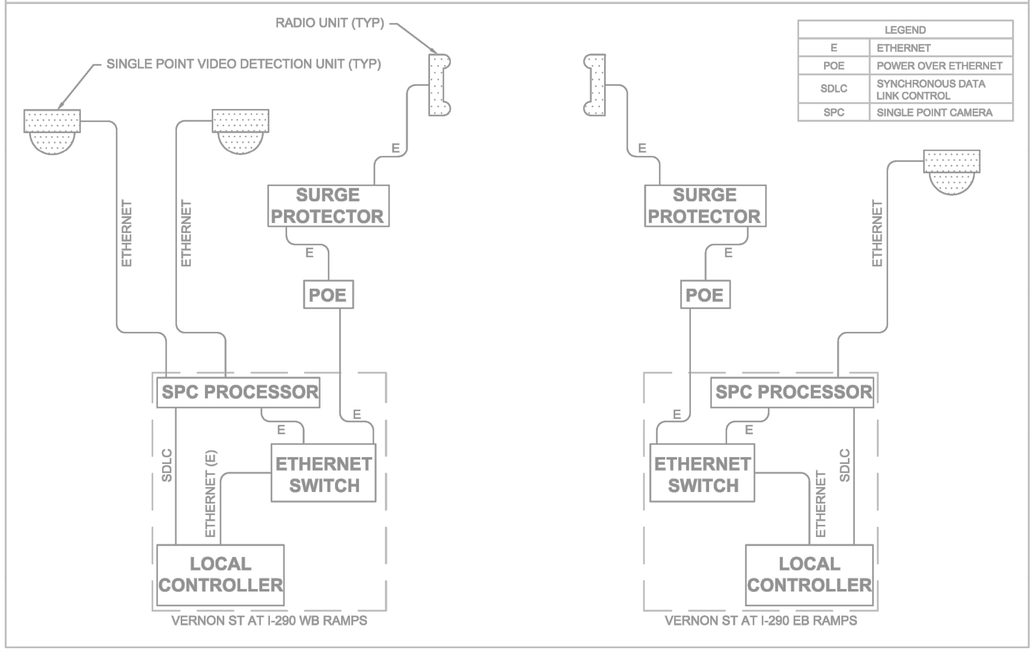
NOTES:
1. ALL SIGNAL HEADS ARE RIGID MOUNTED.
2. ALL SIGNAL HEADS ARE EQUIPPED WITH 5"± NON- LOUVERED BACKPLATES. ALL BACKPLATES CONTAIN A 3" WIDE YELLOW REFLECTIVE BORDER.
3. ALL SIGNAL HEADS ARE EQUIPPED WITH TUNNEL VISORS.
4. ALL SIGNAL DISPLAYS ARE EQUIPPED WITH L.E.D. MODULES.

VIDEO DETECTION DATA

DETECTION ZONE	APPROACH/LANE	CAMERA	DELAY /EXT	CALL PHASE
1	VERNON ST SB LEFT-TURN LANE (FRONT)	C1	0	Ø1
2	VERNON ST SB LEFT-TURN LANE (REAR)	C1	0	Ø6
3	VERNON ST SB THRU LANE	C1	0	Ø6
4	VERNON ST NB MULTI-PURPOSE LANE	C1	0	Ø2
5	VERNON ST NB BUS STOP/AUX LANE	C1	0	Ø2
6	I-290 OFF-RAMP EB LEFT-TURN LANE	C1	0	Ø4
7	I-290 OFF-RAMP EB RIGHT LANE	C1	0	Ø4

NOTE: DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY

NETWORK DIAGRAM



RETIMING PLANS.DWG Plotted on 21-Nov-2024 12:49 PM

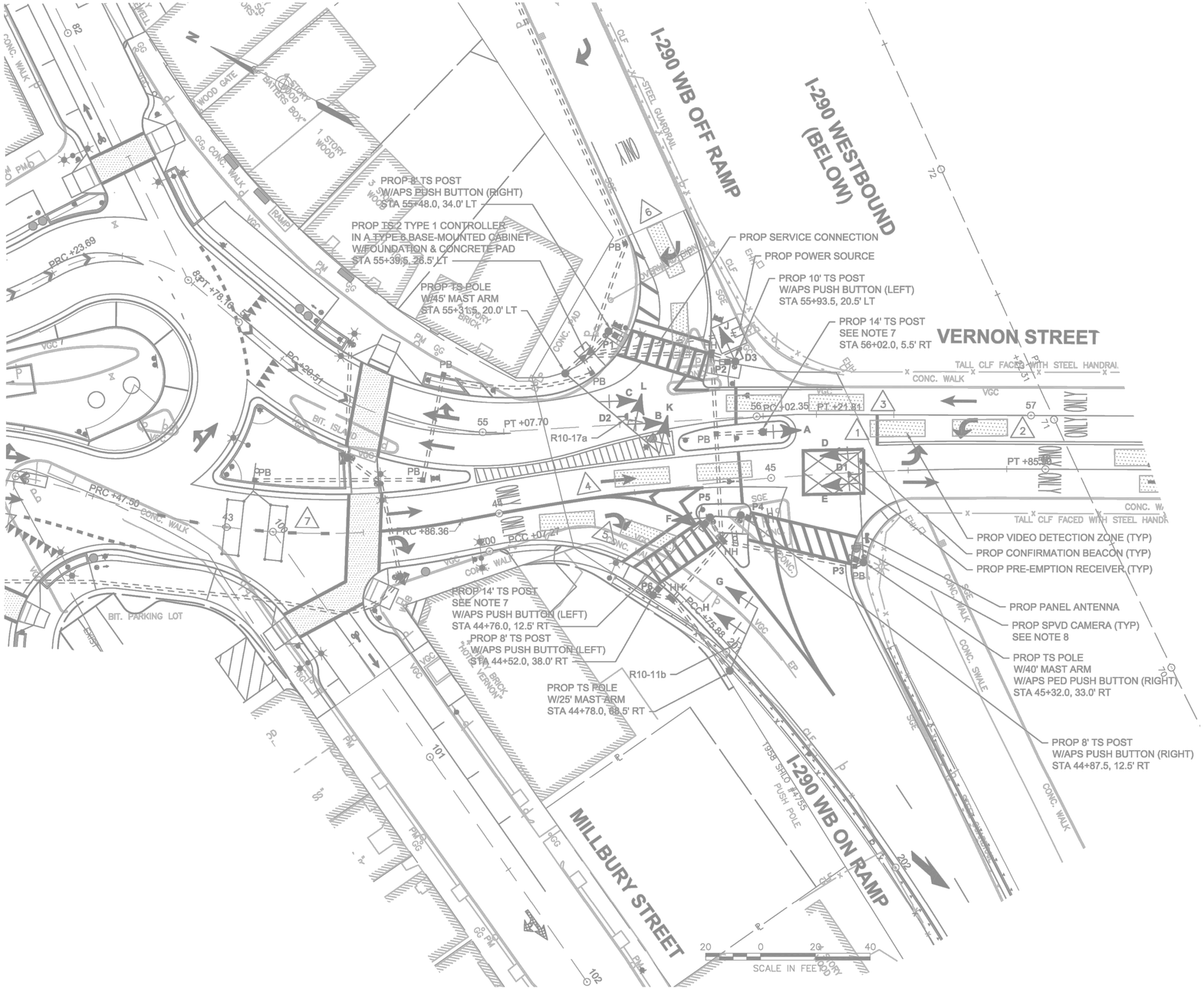
NOTES:

1. REFERENCE RECORD PLAN (SHOWN IN SCREENED PRINT): MASSDOT PROJECT NO. 609226, DATED 2019

WORCESTER
HARRISON ST & LAUREL ST BRIDGE

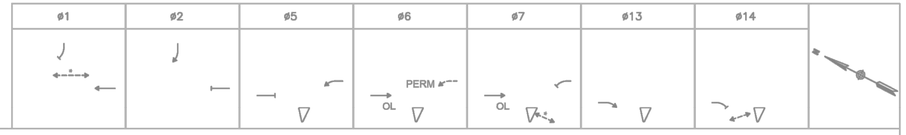
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	76	169
PROJECT FILE NO.	609185		

TRAFFIC SIGNAL RETIMING PLAN
VERNON ST AT I-290 WB RAMP



NOTES:

1. PROPOSED WORK SHOWN IN DARK BLACK PRINT
2. REFERENCE RECORD PLAN (SHOWN IN SCREENED PRINT): MASSDOT PROJECT NO. 609226, DATED 2019



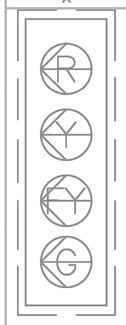
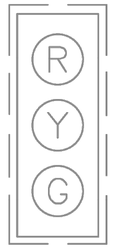
SEQUENCE AND TIMING FOR FULLY ACTUATED CONTROL (ETHERNET BASED CONTROLLER LOGIC)

APPROACH	DIRECTION	HOUSING	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	10	11	12	13	14	15	FLASH
VERNON STREET	NB	A	(R)	(R)	(R)	(R)	(R)	(R)	(G)	(Y)	(R)	(FY)	(Y)	(R)	(R)	(R)	(R)	(R)	(R)	(R)	(R)	(R)	(R)	(FR)
VERNON STREET	NB	B,C	(R)	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	FY
VERNON STREET	SB	D,E	R	R	R	R	R	R	R	R	R	G	Y	R	G	Y	R	R	R	R	R	R	R	FY
VERNON STREET	SB	F	(R)	(R)	(R)	(R)	(R)	(R)	(R)	(R)	(R)	(R)	(R)	(R)	(R)	(R)	(R)	(G)	(Y)	(R)	(R)	(R)	(R)	(FR)
VERNON STREET	SB	G,H	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	FY
I-290 WB OFF-RAMP	WB	J,K,L	(R)	(R)	(R)	(G)	(Y)	(R)	(R)	(R)	(R)	(R)	(R)	(R)	(R)	(R)	(R)	(R)	(R)	(R)	(R)	(R)	(R)	(FR)
PEDESTRIAN X-ING		P1-P2	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	OUT
PEDESTRIAN X-ING		P3-P4	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW	DW	DW	DW	OUT
PEDESTRIAN X-ING		P5-P6	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW	OUT
TIMING IN SECONDS																								
MINIMUM GREEN (INITIAL)			12			8			6			12			4			15			4			CONFLICT FLASH OPERATION ONLY
PASSAGE TIME (VEHICLE)			2			3			2			2			–			2			–			
MAXIMUM 1			**68** 40			**43** 30			**13** 20			**71** 40			**23** 4			**17** 30			4			
MAXIMUM 2			**79** 40			**22** 35			**22** 10			**62** 40			**13** 4			**35** 30			4			
YELLOW CLEARANCE				4.5			3			3.5			3.5			3.5			3			3		
RED CLEARANCE					1			1			1.5			1			1			1			1	
PEDESTRIAN WALK			5												5						5			
PEDESTRIAN CLEARANCE			7												7						7			
DETECTOR MEMORY			NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			LOCK			NON-LOCK			LOCK			
RECALL			OFF			MIN			OFF			MIN			OFF			OFF			OFF			

BACK-UP COORDINATION DATA			BACK-UP COORDINATION PHASE SPLIT TIMES						
TIMING PLAN	CYCLE	OFFSET	ø1	ø2	ø5	ø6	ø7	ø13	ø14
1/1/1 M-F 7AM-9AM	**120**110	**3** 95	**73** 66	**47** 44	**18** 27	**75** 66	**27** 17	**21** 39	16
2/1/1 M-F 3PM-7PM	**110**110	**84** 77	**84** 87	**26** 23	**27** 27	**66** 66	**17** 17	**39** 39	16
MODE			COORD ø			COORD ø			

NOTES:
1. AUTOMATIC FLASHING OPERATION PER 2009 M.U.T.C.D., AS AMENDED.
2. * UPON PEDESTRIAN PUSH BUTTON ACTUATION
3. OL = OVERLAP
4. PERM = PERMISSIVE
5. MAXIMUM 1 = DURING ALL OTHER TIMES
6. MAXIMUM 2 = DURING WEEKDAY PM PEAK (MON - FRI 3PM -7PM)
7. STOP AND GO OPERATION FOR 24 HOURS PER DAY. FLASHING OPERATION FOR EMERGENCY ONLY.
8. DURING PEDESTRIAN INTERVAL, FDW THROUGH YELLOW OPERATION SHALL NOT BE IN EFFECT.

SIGNAL HEAD DATA

A	B,C	D,E,G,H	F,J,K,L	P1-P6
				 W/COUNTDOWN TIMER
ALL 12" LENS				

NOTES:
1. ALL SIGNAL HEADS SHALL BE RIGID MOUNTED.
2. ALL SIGNAL HEADS SHALL BE EQUIPPED WITH 5"± NON- LOUVERED BACKPLATES. ALL BACKPLATES SHALL CONTAIN A 3" WIDE YELLOW REFLECTIVE BORDER.
3. ALL SIGNAL HEADS SHALL BE EQUIPPED WITH TUNNEL VISORS.
4. ALL SIGNAL DISPLAYS SHALL BE EQUIPPED WITH L.E.D. MODULES.

VIDEO DETECTION DATA

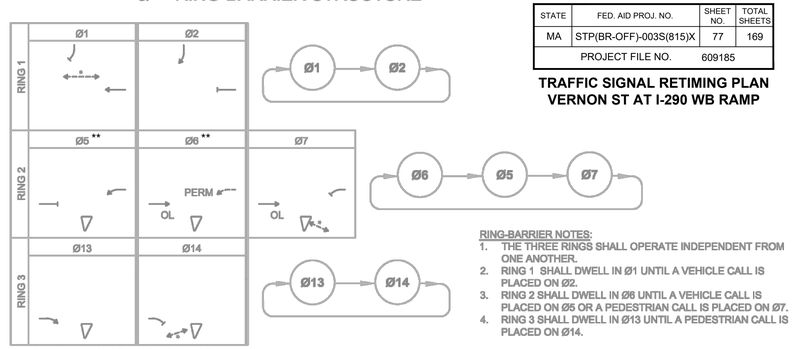
DETECTION ZONE	APPROACH/LANE	CAMERA	DELAY /EXT	CALL PHASE
1	VERNON ST NB LEFT-TURN LANE (FRONT)	C1	10 SEC DELAY	Ø5
2	VERNON ST NB LEFT-TURN LANE (REAR)	C1	0	Ø6
3	VERNON ST NB THRU LANE	C1	0	Ø1
4	VERNON ST SB THRU LANE	C2	0	Ø6
5	VERNON ST SB RIGHT-TURN LANE	C2	0	Ø13
6	I-290 OFF-RAMP WB RIGHT-TURN LANE	C3	10 SEC DELAY	Ø2

NOTE: DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY

PREFERENTIAL PHASE SEQUENCE & RING-BARRIER STRUCTURE

SEQUENCE & TIMING NOTES:

1. IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.
2. THE RIGHT OF WAY MAY BE ASSIGNED TO ANY PHASE OR ANY COMBINATION OF NON-CONFLICTING PHASES.
3. IF CALLS EXIST ON ALL PHASES, THE ASSIGNMENT OF RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.
4. IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO CHANGE DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATION FOR THAT MOVEMENT WILL DISPLAY THE APPROPRIATE CLEARANCE INTERVALS.



* UPON PEDESTRIAN PUSH BUTTON ACTUATION
PERM = PERMISSIVE
OL = OVERLAP
** SWITCH PHASE 5 TO LAGGING LEFT-TURN DURING PM PEAK HOUR

RING-BARRIER NOTES:
1. THE THREE RINGS SHALL OPERATE INDEPENDENT FROM ONE ANOTHER.
2. RING 1 SHALL DWELL IN Ø1 UNTIL A VEHICLE CALL IS PLACED ON Ø2.
3. RING 2 SHALL DWELL IN Ø6 UNTIL A VEHICLE CALL IS PLACED ON Ø5 OR A PEDESTRIAN CALL IS PLACED ON Ø7.
4. RING 3 SHALL DWELL IN Ø13 UNTIL A PEDESTRIAN CALL IS PLACED ON Ø14.

QUEUE LOOP DETECTOR DATA

DETECTOR NO.	APPROACH	NO. SECTION/ SIZE	NO. OF TURNS	OPERATIONS	LOOP CONNECTION	DELAY	CALL PHASE	PRE-EMPT DURATION	RETURN PHASE	RESERVICE TIME
7	VERNON ST SB	2-6'X20'	2	PRESENCE	SERIES	20 SEC	Ø6	30 SEC	Ø5	4 MINUTES
8	I-290 WB OFF-RAMP	2-6'X10'	3	PRESENCE	SERIES	20 SEC	Ø2	30 SEC	Ø1	4 MINUTES

NOTE: DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY

QUEUE DETECTOR OPERATION

1. A PRE-EMPT CALL SHALL BE PLACED INTO THE CONTROLLER AFTER A DELAY TIME ON DETECTOR HAS TIMED OUT
2. QUEUE PRE-EMPT SHALL CAUSE THE CONTROLLER TO FORCE OFF PHASES CURRENTLY IN OPERATION AND SERVICE CALL PHASE.
3. PRE-EMPT DURATION SHALL INITIALLY BE SET FOR 30 SECONDS.
4. UPON TERMINATION OF PRE-EMPTION, THE CONTROLLER SHALL RETURN TO NORMAL OPERATION.
6. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE QUEUE DETECTION PRE-EMPT.
7. THE QUEUE PRE-EMPTION FROM LOOP GROUP 8 SHALL OVERRIDE ALL COORDINATION STRATEGIES (INCLUDING ETHERNET BASED CONTROLLER LOGIC).
8. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.

ETHERNET BASED CONTROLLER LOGIC OPERATION:

1. THE TRAFFIC SIGNAL CONTROLLER AT THE VERNON ST/I-290 WESTBOUND RAMP SHALL BE SUPPLIED AND INSTALLED WITH AN ETHERNET BASED CONTROLLER LOGIC SYSTEM WHICH ALLOWS THE CONTROLLER TO SHARE INFORMATION WITH THE CONTROLLER AT THE VERNON ST/I-290 EASTBOUND RAMP AND PROVIDE CONDITIONAL CONTROL STRATEGIES, INDEPENDENT OF A CENTRAL MANAGEMENT SYSTEM OR ON-STREET MASTER CONTROLLER. ALL SETTINGS SHALL BE DOCUMENTED AND INCLUDED WITH THE REQUIRED DATABASE DOCUMENTATION SUPPLIED WITH EACH CABINET.
2. THE I-290 EASTBOUND RAMP INTERSECTION SHALL SERVE CONTROLLER 1. THE I-290 WESTBOUND RAMP INTERSECTION SHALL SERVE AS CONTROLLER 2.
3. THERE ARE THREE LOGIC STRATEGIES:
   3.1. CONTROLLER 1 SHALL PLACE A HOLD ON CONTROLLER 2 Ø1. END OF YELLOW OF CONTROLLER 1 Ø4 SHALL RELEASE HOLD ON CONTROLLER 2 TO SERVICE Ø2.
   3.2. CONTROLLER 1 Ø1 SHALL OMIT CONTROLLER 2 Ø5.
   3.3. QUEUE DETECTOR LOOP GROUP 7 SHALL PLACE A PRE-EMPT ON CONTROLLER 1 Ø1&Ø6 IN ADDITION TO CONTROLLER 2 Ø6.
4. SEE SPECIAL PROVISIONS UNDER ITEM 815.2 FOR MORE INFORMATION.
5. EMERGENCY VEHICLE PRE-EMPTION AND QUEUE DETECTION SHALL OVERRIDE CONTROLLER LOGIC PROGRAMMING.

PRE-EMPTION PHASING & PRIORITY

DETECTOR & PRIORITY	PRE-EMPT PHASE ASSIGNMENT	MOVEMENT	VEHICLE PHASE ASSIGNMENT
D1	1		Ø6 & Ø13
D2	2		Ø1 & Ø5
D3	3		Ø2

EMERGENCY VEHICLE PRE-EMPTION OPERATION

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT EACH INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH DETECTORS D1, D2 OR D3 ASSIGNED DESCENDING PRIORITIES AS FOLLOWS: (D1 HIGHEST AND D3 LOWEST)
3. IN RESPONSE TO A PRE-EMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL DETECTOR D1 (OR D2, D3) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PRE-EMPTION PHASE #1 (OR #2, #3) GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL PRE-EMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PRE-EMPTION PHASE CLEARANCES FOR THE ASSOCIATED PHASE(S) AS SHOWN IN THE SEQUENCE AND TIMING CHART AND SERVICE SUBSEQUENT EMERGENCY VEHICLE PRE-EMPTION PHASES AS NECESSARY.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. PRE-EMPTION STROBE SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PRE-EMPTION GREEN IS ACTIVE.
6. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION (INCLUDING ETHERNET BASED CONTROLLER LOGIC) AND QUEUE DETECTION.

NOTES:
1. CONTRACTOR SHALL RECORD EXISTING TRAFFIC SIGNAL TIMINGS PRIOR TO MAKING CHANGES AND RESTORE EXISTING SIGNAL TIMINGS ONCE DETOUR IS NO LONGER IN EFFECT.
2. CONTRACTOR SHALL MONITOR TRAFFIC CONDITIONS DURING THE DETOUR AND ADJUST AS NEEDED TO MINIMIZE DELAYS IN COORDINATION WITH THE CITY OF WORCESTER AND MASSDOT.
3. TRAFFIC SIGNAL TIMING ADJUSTMENTS TO BE PAID UNDER ITEM NO. 816.81

WORCESTER
HARRISON ST & LAUREL ST BRIDGE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	77	169
PROJECT FILE NO.	609185		

TRAFFIC SIGNAL RETIMING PLAN
VERNON ST AT I-290 WB RAMP

RETIMING PLANS.DWG Plotted on 21-Nov-2024 12:49 PM

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	78	169
PROJECT FILE NO.	609185		

TEMPORARY TRAFFIC CONTROL SIGN SUMMARY - 1

TRAFFIC SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN (INCHES)		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF REQUIRED SIGNS	COLOR			UNIT AREA IN SQUARE FEET	TOTAL AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RT MARK		BACKGROUND	LEGEND	BORDER		
MA-E5-1wz	48	48	EXIT	SEE MASSDOT STD. SIGN BOOK			1	ORANGE	BLACK	BLACK	16.00	16.00
MA-R2-10a	48	36	WORK ZONE / SPEEDING FINES DOUBLED				4	ORANGE & WHITE	BLACK	BLACK	12.00	48.00
MA-R2-10a (Oversized)	60	48	WORK ZONE / SPEEDING FINES DOUBLED				3	ORANGE & WHITE	BLACK	BLACK	20.00	60.00
MA-R2-10e	36	48	END ROAD WORK / DOUBLE FINES END				3	ORANGE & WHITE	BLACK	BLACK	12.00	36.00
MA-R2-10e (Oversized)	48	60	END ROAD WORK / DOUBLE FINES END				3	ORANGE & WHITE	BLACK	BLACK	20.00	60.00
MA-W20-7b	48	48	POLICE OFFICER AHEAD				3	ORANGE	BLACK	BLACK	16.00	48.00
MA-W21-9 (Oversized)	48	48	MOVING OPERATIONS AHEAD				1	ORANGE	BLACK	BLACK	16.00	16.00
MA-W24-2 (Oversized)	48	48	LANE SHIFT AHEAD				2	ORANGE	BLACK	BLACK	16.00	32.00
MA-W30-8R	36	36	SQUEEZE RIGHT				1	ORANGE	BLACK	BLACK	9.00	9.00
MA-W30-8R (Oversized)	48	48	SQUEEZE RIGHT				1	ORANGE	BLACK	BLACK	16.00	16.00
E5-2	48	36	EXIT OPEN	SEE MUTCD STD. DETAIL			1	ORANGE	BLACK	BLACK	12.00	12.00
M1-1	24	24	INTERSTATE 290				20	BLUE & RED	WHITE	WHITE	4.00	80.00
M3-2	24	12	EAST				19	WHITE	BLACK	BLACK	2.00	38.00
M3-4	24	12	WEST				20	WHITE	BLACK	BLACK	2.00	40.00
M4-4	24	12	TRUCK				5	WHITE	BLACK	BLACK	2.00	10.00
M4-8	24	18	DETOUR				57	ORANGE	BLACK	BLACK	3.00	171.00
M4-8a	24	18	END DETOUR				8	ORANGE	BLACK	BLACK	3.00	24.00
M4-9sL	30	24	DETOUR				1	ORANGE	BLACK	BLACK	5.00	5.00
M4-9sR	30	24	DETOUR				2	ORANGE	BLACK	BLACK	5.00	10.00
M4-9L	30	24	DETOUR	SEE MUTCD STD. DETAIL			7	ORANGE	BLACK	BLACK	5.00	35.00
M4-9R	30	24	DETOUR				10	ORANGE	BLACK	BLACK	5.00	50.00
M4-9aR	30	24	DETOUR				1	ORANGE	BLACK	BLACK	5.00	5.00
M4-9V	30	24	DETOUR				11	ORANGE	BLACK	BLACK	5.00	55.00
M4-10L	48	18	DETOUR				9	ORANGE	BLACK	BLACK	6.00	54.00
M4-10R	48	18	DETOUR				8	ORANGE	BLACK	BLACK	6.00	48.00
M5-1R	21	15					1	ORANGE	BLACK	BLACK	2.19	2.19
M5-2R	21	15					2	ORANGE	BLACK	BLACK	2.19	4.38
M5-3	21	15					2	ORANGE	BLACK	BLACK	2.19	2.19
M6-1L	21	15					11	ORANGE	BLACK	BLACK	2.19	24.06
M6-1R	21	15					11	ORANGE	BLACK	BLACK	2.19	24.06
M6-2L	21	15					1	ORANGE	BLACK	BLACK	2.19	2.19
M6-2R	21	15					5	ORANGE	BLACK	BLACK	2.19	10.94
M6-3	21	15					20	ORANGE	BLACK	BLACK	2.19	43.75
R3-1	30	30					2	WHITE	BLACK	BLACK	6.25	12.50
R3-2	30	30					3	WHITE	BLACK	BLACK	6.25	18.75
R5-1	30	30	DO NOT ENTER				3	WHITE	RED	RED	6.25	18.75
R9-9	24	12	SIDEWALK CLOSED				3	WHITE	BLACK	BLACK	2.00	6.00
R9-10	24	12	SIDEWALK CLOSED / USE OTHER SIDE				2	WHITE	BLACK	BLACK	2.00	4.00
R9-11L	24	18	SIDEWALK CLOSED AHEAD / CROSS HERE				2	WHITE	BLACK	BLACK	3.00	6.00

NOTES:
1. ALL SIGNS ARE TO BE RETROREFLECTIVE UNLESS SPECIFIED OTHERWISE.
2. SIGN SUPPORTS SHALL BE AS SET FORTH IN THE NCHRP 350 REPORT.
3. SEE THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) 2009 EDITION AND ALL REVISIONS, THE 2022 MASSACHUSETTS AMENDMENTS TO THE 2009 MUTCD, THE 2016 MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD SIGN BOOK, AND THE STANDARD MUNICIPAL TRAFFIC CODE FOR LATEST SPECIFICATION ON TEXT DIMENSIONS AND COLOR. ALSO REFER TO 2024 MASSDOT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES SUBSECTION M9.30.0.

TRAFFIC SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN (INCHES)		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF REQUIRED SIGNS	COLOR			UNIT AREA IN SQUARE FEET	TOTAL AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RT MARK		BACKGROUND	LEGEND	BORDER		
R9-11R	24	18	SIDEWALK CLOSED AHEAD / CROSS HERE	SEE MUTCD STD. DETAIL			2	WHITE	BLACK	BLACK	3.00	6.00
R9-11aL	24	12	SIDEWALK CLOSED / CROSS HERE				1	WHITE	BLACK	BLACK	2.00	2.00
R9-11aR	24	12	SIDEWALK CLOSED / CROSS HERE				1	WHITE	BLACK	BLACK	2.00	2.00
R11-2	48	30	ROAD CLOSED				13	WHITE	BLACK	BLACK	10.00	130.00
R11-3a	60	30	ROAD CLOSED / XXX FEET AHEAD / LOCAL TRAFFIC ONLY				3	WHITE	BLACK	BLACK	12.50	37.50
SP-1	30	48	Laurel St / WEST / DETOUR	SEE SIGN DETAIL ON BRIDGE DETOUR PLANS			1	ORANGE	BLACK	BLACK	10.00	10.00
SP-2	30	48	Laurel St / WEST / DETOUR				1	ORANGE	BLACK	BLACK	10.00	10.00
SP-3	30	48	Laurel St / WEST / DETOUR				2	ORANGE	BLACK	BLACK	10.00	20.00
SP-4	30	48	Harrison St / WEST / DETOUR				1	ORANGE	BLACK	BLACK	10.00	10.00
SP-5	30	48	Harrison St / WEST / DETOUR				2	ORANGE	BLACK	BLACK	10.00	20.00
W1-4L	36	36		SEE MUTCD STD. DETAIL			1	ORANGE	BLACK	BLACK	9.00	9.00
W1-4R	36	36					2	ORANGE	BLACK	BLACK	9.00	18.00
W1-4cL (Oversized)	48	48					2	ORANGE	BLACK	BLACK	16.00	32.00
W1-4cR (Oversized)	48	48					2	ORANGE	BLACK	BLACK	16.00	32.00
W3-4	36	36	BE PREPARED TO STOP				1	ORANGE	BLACK	BLACK	9.00	9.00
W3-4 (OVERSIZED)	48	48	BE PREPARED TO STOP				1	ORANGE	BLACK	BLACK	16.00	16.00
W4-2L (Oversized)	48	48					2	ORANGE	BLACK	BLACK	16.00	32.00
W5-1	36	36	ROAD NARROWS				4	ORANGE	BLACK	BLACK	9.00	36.00
W5-4	36	36	RAMP NARROWS				1	ORANGE	BLACK	BLACK	9.00	9.00
W5-4 (Oversized)	48	48	RAMP NARROWS				1	ORANGE	BLACK	BLACK	16.00	16.00

NOTES:
1. ALL SIGNS ARE TO BE RETROREFLECTIVE UNLESS SPECIFIED OTHERWISE.
2. SIGN SUPPORTS SHALL BE AS SET FORTH IN THE NCHRP 350 REPORT.
3. SEE THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) 2009 EDITION AND ALL REVISIONS, THE 2022 MASSACHUSETTS AMENDMENTS TO THE 2009 MUTCD, THE 2016 MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD SIGN BOOK, AND THE STANDARD MUNICIPAL TRAFFIC CODE FOR LATEST SPECIFICATION ON TEXT DIMENSIONS AND COLOR. ALSO REFER TO 2024 MASSDOT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES SUBSECTION M9.30.0.

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	79	169
PROJECT FILE NO.	609185		

TEMPORARY TRAFFIC CONTROL SIGN SUMMARY - 2

TRAFFIC SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN (INCHES)		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF REQUIRED SIGNS	COLOR			UNIT AREA IN SQUARE FEET	TOTAL AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RT MARK		BACKGROUND	LEGEND	BORDER		
W8-1	36	36	BUMP	SEE MUTCD STD. DETAIL			2	ORANGE	BLACK	BLACK	9.00	18.00
W8-3	36	36	PAVEMENT ENDS				2	ORANGE	BLACK	BLACK	9.00	18.00
W8-15	36	36	GROOVED PAVEMENT				2	ORANGE	BLACK	BLACK	9.00	18.00
W8-24	36	36	STEEL PLATE AHEAD				2	ORANGE	BLACK	BLACK	9.00	18.00
W8-25 (Oversized)	48	48	SHOULDER ENDS				2	ORANGE	BLACK	BLACK	16.00	32.00
W13-1P	24	24	XX MPH				2	ORANGE	BLACK	BLACK	4.00	8.00
W16-8P (Harrison St)	30	8	Harrison St	SEE SIGN DETAIL ON BRIDGE DETOUR PLANS			46	ORANGE	BLACK	BLACK	1.67	76.67
W16-8P (Laurel St)	24	8	Laurel St				8	ORANGE	BLACK	BLACK	1.33	10.67
W20-1	36	36	ROAD WORK AHEAD	SEE MUTCD STD. DETAIL			8	ORANGE	BLACK	BLACK	9.00	72.00
W20-1 (Oversized)	48	48	ROAD WORK AHEAD				3	ORANGE	BLACK	BLACK	16.00	48.00
W20-2	36	36	DETOUR AHEAD				29	ORANGE	BLACK	BLACK	9.00	261.00
W20-3	36	36	ROAD CLOSED AHEAD				9	ORANGE	BLACK	BLACK	9.00	81.00
W20-3a	36	36	RAMP CLOSED AHEAD				21	ORANGE	BLACK	BLACK	9.00	189.00
W20-4	36	36	ONE LANE ROAD AHEAD				4	ORANGE	BLACK	BLACK	9.00	36.00
W20-5L	36	36	LEFT LANE CLOSED AHEAD				2	ORANGE	BLACK	BLACK	9.00	18.00
W20-5L (Oversized)	48	48	LEFT LANE CLOSED AHEAD				2	ORANGE	BLACK	BLACK	16.00	32.00
W20-5aR (Oversized)	48	48	RIGHT LANE CLOSED AHEAD				2	ORANGE	BLACK	BLACK	16.00	32.00
W20-5bR (Oversized)	48	48	RIGHT LANE CLOSED 1/2 MILE				2	ORANGE	BLACK	BLACK	16.00	32.00
											TOTAL	2598.58

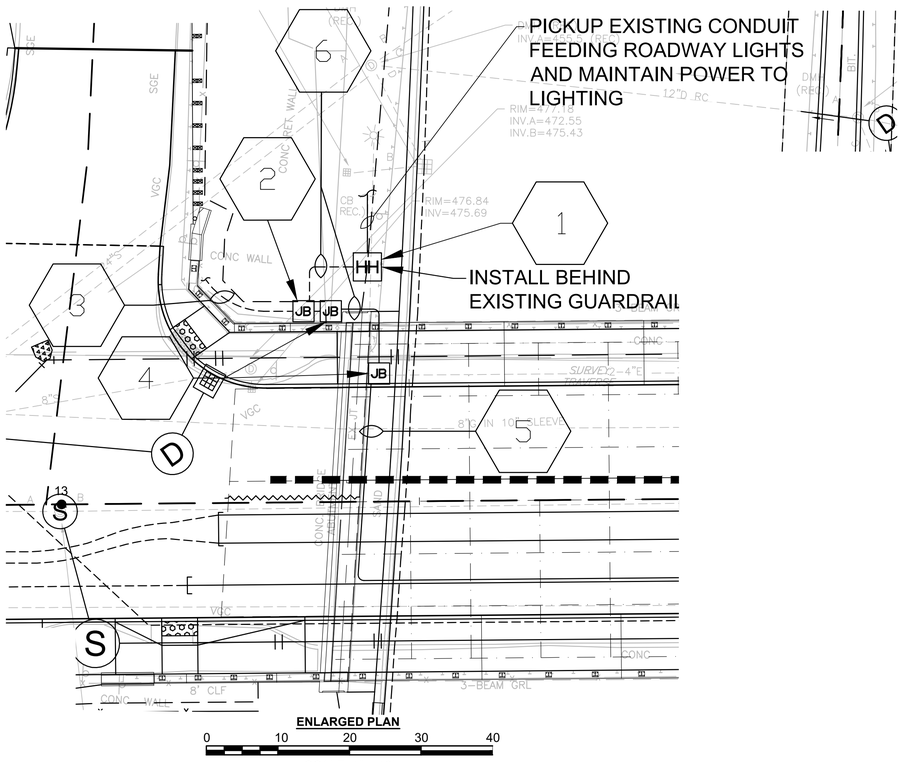
609185_TRF-SIGN SUMMARY.DWG Plotted on 17-Jul-2017 9:52 AM

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	80	161
	PROJECT FILE NO. 609185		

ELECTRICAL PLAN

609185_HDXX (ELECTRICAL PLANS).DWG Plotted on 21-Nov-2024 12:24 PM



NOTES

1. PERMANENT CONDUITS SHALL BE RTRC FIBERGLASS CONDUITS AND FITTINGS. PROVIDE O-RING EXPANSION COUPLINGS AT EXPANSION JOINTS, AND AT VERTICAL RISER/STUB-UPS.
2. JUNCTION BOXES TO BE MOUNTED AS HIGH AS POSSIBLE COORDINATE WITH STRUCTURAL REPAIRS.

KEY NOTES

1. NEW 12'x24'x33" DEEP PRECAST HANDHOLE PER MASS DOT STANDARDS WITH FRAME AND COVER.
2. NEW 24"x24"10"D SS WEATHERPROOF JUNCTION BOX. INSTALL ON END OF EXISTING 4" CONDUIT FROM LIGHTING CABINET #3. CAPTURE EXISTING 4#2, 4#4 & 1#4 GND.
3. EXISTING 4" CONDUIT FROM LC#3.
4. NEW 24"x24"10"D SS WEATHERPROOF JUNCTION BOX. INSTALL ON END OF EXISTING CONDUIT FEEDING LIGHT POLES. REWORK AND MAINTAIN CIRCUITS TO POLES.
5. 4" CONDUIT WITH 4#2, 4#4 & 1#4 GND. STAGE 1. REFEED TO ROADWAY LIGHTS ON EASTBOUND SIDE OF ROAD.
6. 4#2, 4#4 & 1#4 GND. - 4" CONDUIT TO FEED NEW POWER ACROSS BRIDGE TO EASTBOUND SIDE LIGHTING. CONNECT AT PULL BOXES.

THIS DRAWING IS ISSUED FOR INFORMATION ONLY.
CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE INFORMATION SHOWN ON THE PLAN IF HE CHOOSES TO USE IT.

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	81	161
PROJECT FILE NO.	609185		

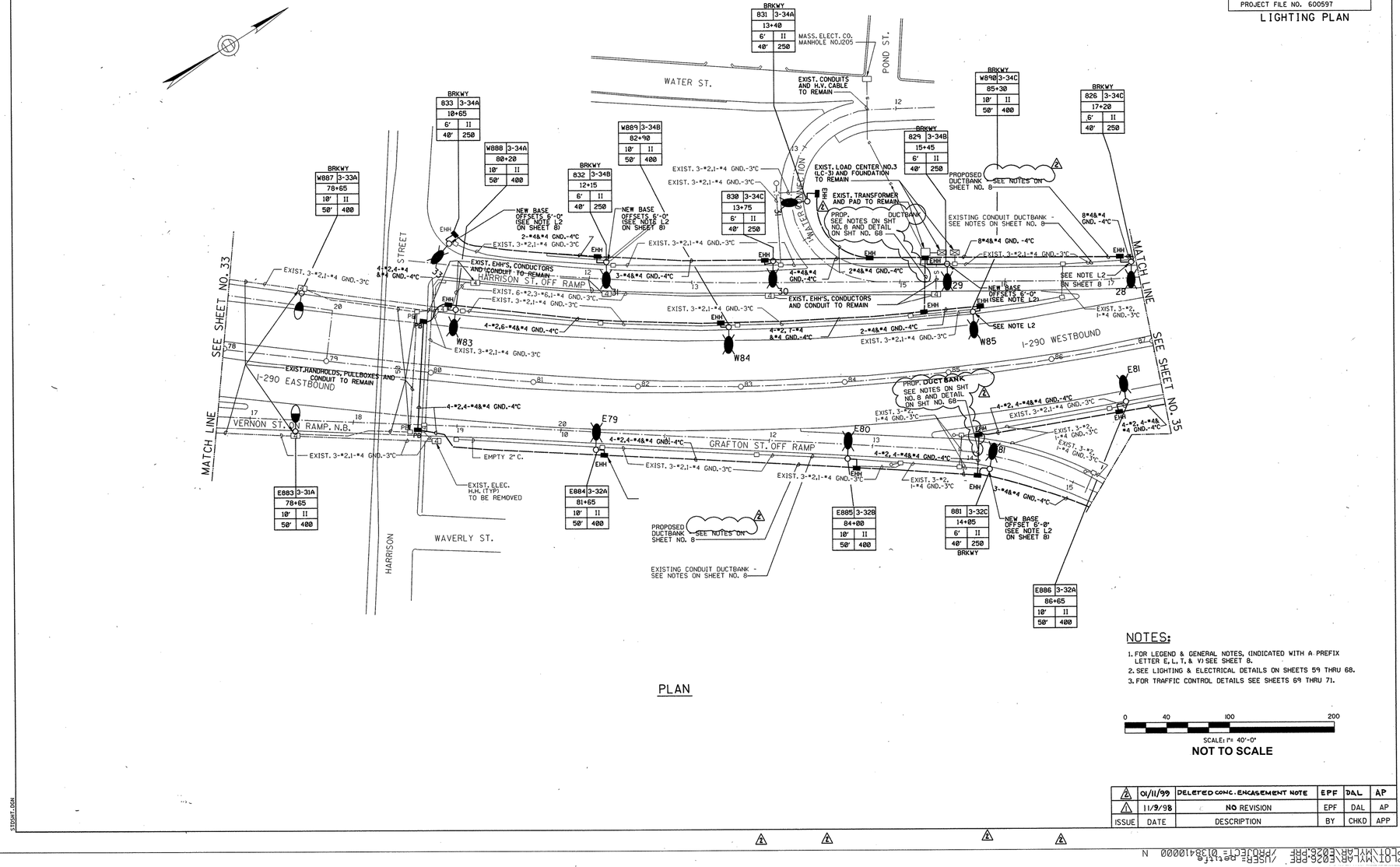
ELECTRICAL PLAN

609185_HDXX (ELECTRICAL PLANS).DWG Plotted on 20-Nov-2024 3:55 PM

WORCESTER/AUBURN
ROUTE I-290

STATE	FED. AID. PROJ.NO	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	N/A	98	34	71
PROJECT FILE NO. 600597				

LIGHTING PLAN



NOTES:

1. FOR LEGEND & GENERAL NOTES, (INDICATED WITH A PREFIX LETTER E, L, T, & V) SEE SHEET 6.
2. SEE LIGHTING & ELECTRICAL DETAILS ON SHEETS 59 THRU 68.
3. FOR TRAFFIC CONTROL DETAILS SEE SHEETS 69 THRU 71.

0 40 100 200
SCALE: 1"= 40'-0"
NOT TO SCALE

ISSUE	DATE	DESCRIPTION	BY	CHKD	APP
2	01/11/99	DELETED CONC. ENCASEMENT NOTE	EPF	DAL	AP
1	11/9/98	NO REVISION	EPF	DAL	AP

STDSHT.DGN

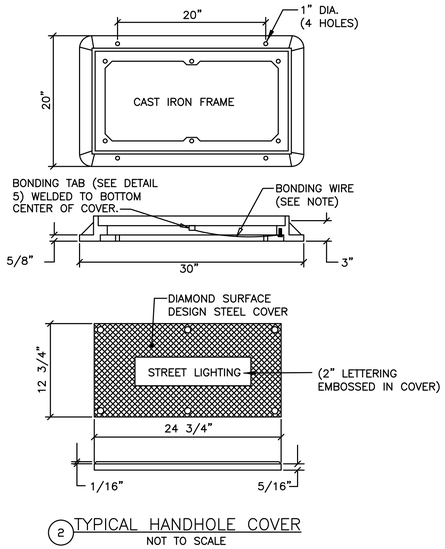
W:\PLOT\MYL_AR\E026.PRF /USER= Pettis
/PROJECT= 0138410000 N

EXISTING CONDITIONS LIGHTING PLAN
NOT TO SCALE

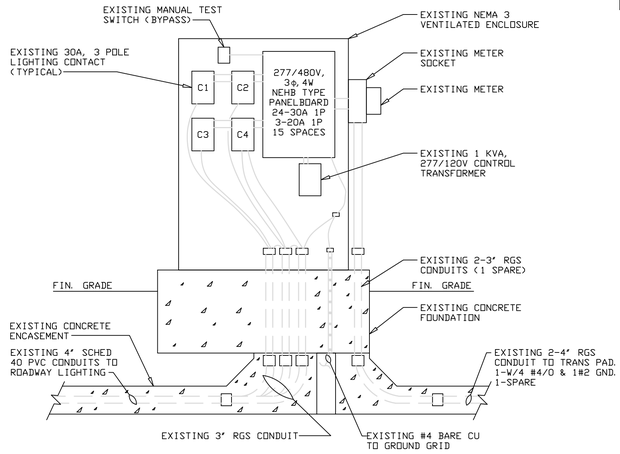
WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	82	161
PROJECT FILE NO.	609185		

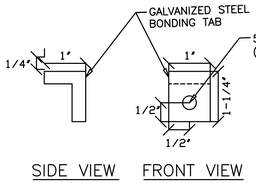
DETAIL PLAN



2 TYPICAL HANDHOLE COVER
NOT TO SCALE



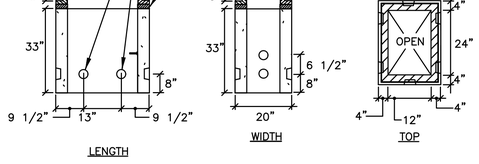
EXISTING LC3 LOAD CENTER
NOT TO SCALE



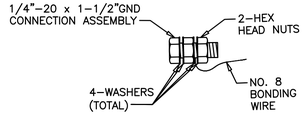
SIDE VIEW FRONT VIEW

NOTES:
1. ATTACH 3 FOOT LENGTH OF NO. 8 BONDING WIRE TO GALVANIZED STEEL BONDING TAB WITH 1/4"-20 x 1-1/2" LONG STAINLESS STEEL HEX HEAD BOLT, STAINLESS STEEL FLAT WASHERS AND 2 HEX NUTS. ATTACH FREE END OF BONDING WIRE TO BONDING WIRE ROUTED THROUGH PULL BOX.

2. BONDING TAB WELDED TO BOTTOM CENTER OF COVER.



4 TYPICAL PRE-CAST CONCRETE HANDHOLE
NOT TO SCALE

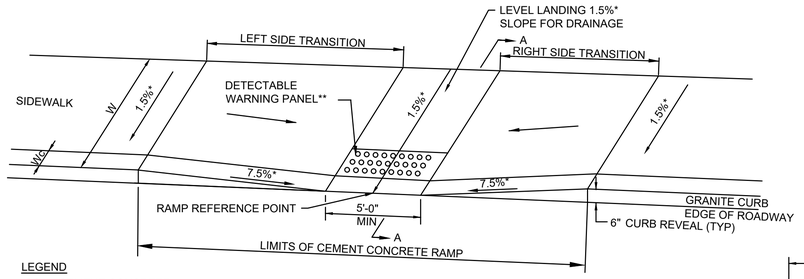


5 GALVANIZED STEEL BONDING TAB
NOT TO SCALE

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

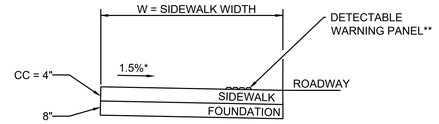
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	83	169
	PROJECT FILE NO. 609185		

PEDESTRIAN CURB RAMP DETAILS



LEGEND
CC = CEMENT CONCRETE
W = SIDEWALK WIDTH
Wc = CURB WIDTH
* = TOLERANCE FOR CONSTRUCTION ±0.5%
USABLE SIDEWALK WIDTH PER AAB = W-Wc

(**) REFER TO MASSDOT CONSTRUCTION STANDARDS DRAWING NO. E 107.6.5 FOR DETECTABLE WARNING PANEL DETAIL. WARNING PANEL SHALL BE CUT AS REQUIRED TO EXTEND ACROSS ENTIRE RAMP OPENING. DETECTABLE WARNING PANELS ARE REQUIRED ON ALL PROPOSED CURB RAMPS AND ARE TO BE INSTALLED IN ACCORDANCE WITH MASSDOT CONSTRUCTION STANDARDS.



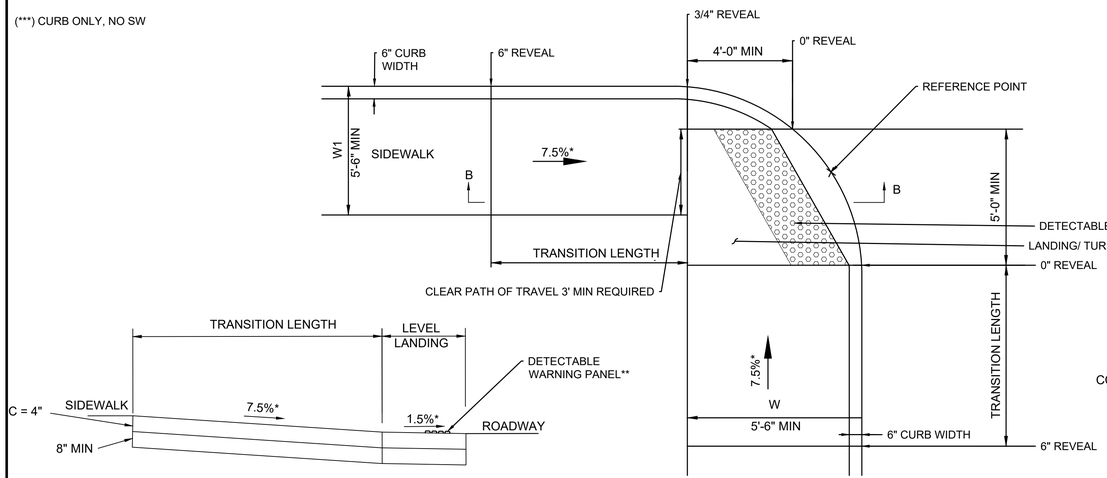
SECTION A-A

HARRISON STREET PEDESTRIAN CURB RAMP WITH LESS THAN 12'-4" SIDEWALK, TYPE 2

NOT TO SCALE

CURB CUT RAMP DETAIL TABLE									
PCR NO.	ASSET ID	STREET	STATION	OFFSET	WIDTH OF SIDEWALK	WIDTH OF RAMP (MIN. 5'-0")	ROADWAY GUTTER SLOPE (%)	LEFT SIDE TRANSITION LENGTH	RIGHT SIDE TRANSITION LENGTH
1	PED-84986	HARRISON	12+76.88	27.76' LT	7'-6"	6'-0"	4.48	6'-6"	6'-6"***
2	PED-15089	HARRISON	13+16.88	22.11' LT	4'-4" - 7'-10"	5'-0"	9.69	6'-6"***	15'-0"

(***) CURB ONLY, NO SW



SECTION B-B

HARRISON STREET "T" INTERSECTION PEDESTRIAN CURB RAMP

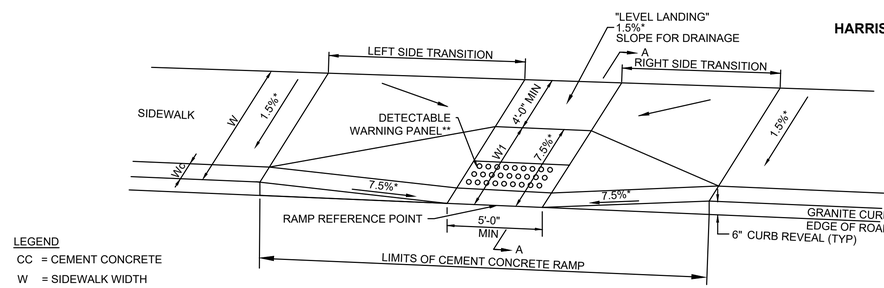
NOT TO SCALE

LEGEND:
W = WIDTH OF SIDEWALK
W1 = WIDTH OF SECOND SIDEWALK
CC = CEMENT CONCRETE
* = TOLERANCE FOR CONSTRUCTION ±0.5%

(**) REFER TO MASSDOT CONSTRUCTION STANDARDS DRAWING NO. E 107.6.5 FOR DETECTABLE WARNING PANEL DETAIL. WARNING PANEL SHALL BE CUT AS REQUIRED TO EXTEND ACROSS ENTIRE RAMP OPENING. DETECTABLE WARNING PANELS ARE REQUIRED ON ALL PROPOSED CURB RAMPS AND ARE TO BE INSTALLED IN ACCORDANCE WITH MASSDOT CONSTRUCTION STANDARDS.

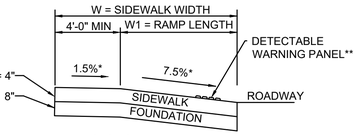
CURB CUT RAMP DETAIL TABLE										
PCR NO.	STREET	ASSET ID	STATION	OFFSET	WIDTH OF SIDEWALK (W)	WIDTH OF SECOND SIDEWALK (W1)	WAVERLY ST ROADWAY GUTTER SLOPE (%)	HARRISON ST ROADWAY GUTTER SLOPE (%)	LEFT SIDE TRANSITION LENGTH	RIGHT SIDE TRANSITION LENGTH
4	HARRISON	PED-44472	15+42.81	20.29' LT	7'-7"	8-6"	1.44	12.85	6'-0" HARRISON ST	9'-0" WAVERLY ST

(****) 3" CURB REVEAL



LEGEND
CC = CEMENT CONCRETE
W = SIDEWALK WIDTH
W_1 = LENGTH OF PRIMARY RAMP
Wc = CURB WIDTH
* = TOLERANCE FOR CONSTRUCTION ±0.5%
USABLE SIDEWALK WIDTH PER AAB = W-Wc
RAMP LENGTH, W1 = W-4'-0" MIN

(**) REFER TO MASSDOT CONSTRUCTION STANDARDS DRAWING NO. E 107.6.5 FOR DETECTABLE WARNING PANEL DETAIL. WARNING PANEL SHALL BE CUT AS REQUIRED TO EXTEND ACROSS ENTIRE RAMP OPENING. DETECTABLE WARNING PANELS ARE REQUIRED ON ALL PROPOSED CURB RAMPS AND ARE TO BE INSTALLED IN ACCORDANCE WITH MASSDOT CONSTRUCTION STANDARDS.



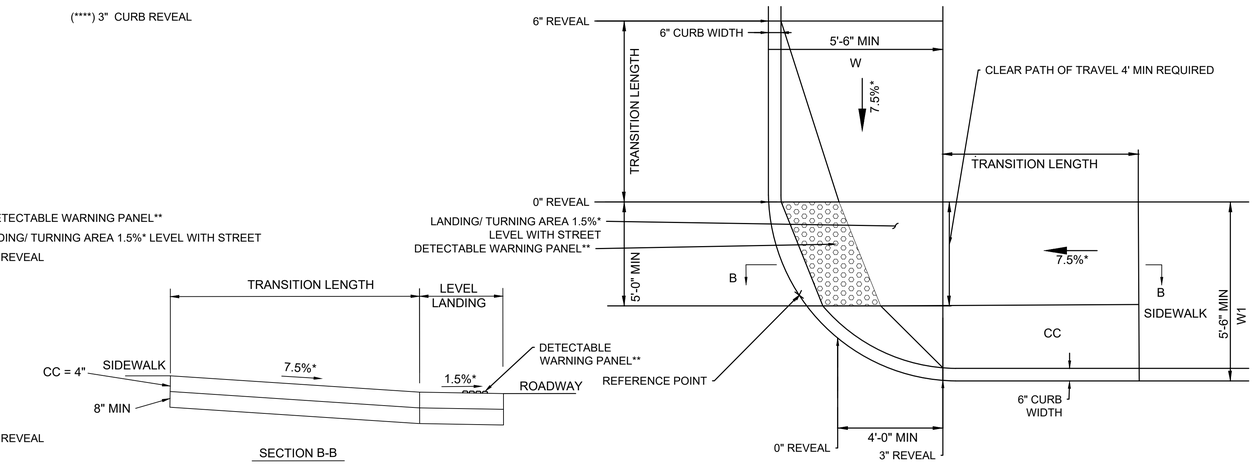
SECTION A-A

HARRISON STREET PEDESTRIAN CURB RAMP WITH LESS THAN 12'-4" SIDEWALK

NOT TO SCALE

CURB CUT RAMP DETAIL TABLE									
PCR NO.	STREET	ASSET ID	STATION	OFFSET	LENGTH OF PRIMARY RAMP (W1)	WIDTH OF SIDEWALK	WIDTH OF RAMP (MIN. 5'-0")	ROADWAY GUTTER SLOPE (%)	LEFT SIDE TRANSITION LENGTH	RIGHT SIDE TRANSITION LENGTH
3	HARRISON	PED 1751	13+16.35	15.99' RT	3'-10"	7'-10"	5'-0"	8.75	15'-0"	6'-6"
6	HARRISON	-	15+95.66	10.32' LT	3'-6"	14'-0"	5'-0"	11.50	3'-3"*****	15'-0"
7	HARRISON	-	15+95.36	17.00' RT	2'-6"	7'-4"	5'-0"	11.67	15'-0"	3'-6"*****

(****) 3" CURB REVEAL



SECTION B-B

HARRISON STREET "T" INTERSECTION PEDESTRIAN CURB RAMP

NOT TO SCALE

CURB CUT RAMP DETAIL TABLE										
PCR NO.	STREET	ASSET ID	STATION	OFFSET	WIDTH OF SIDEWALK (W)	WIDTH OF SECOND SIDEWALK (W1)	WAVERLY ST ROADWAY GUTTER SLOPE (%)	HARRISON ST ROADWAY GUTTER SLOPE (%)	LEFT SIDE TRANSITION LENGTH	RIGHT SIDE TRANSITION LENGTH
5	WAVERLY	-	30+19.89	15.99' RT	6'-0"	13'-6"	0.11	11.50	6'-6" WAVERLY ST	7'-6"***** HARRISON ST

(****) 3" CURB REVEAL

LEGEND:
W = WIDTH OF SIDEWALK
W1 = WIDTH OF SECOND SIDEWALK
CC = CEMENT CONCRETE
* = TOLERANCE FOR CONSTRUCTION ±0.5%

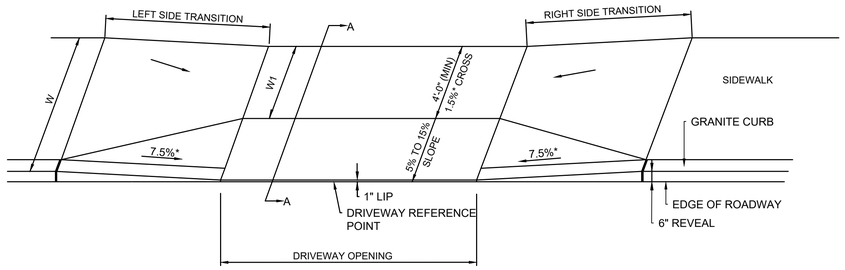
(**) REFER TO MASSDOT CONSTRUCTION STANDARDS DRAWING NO. E 107.6.5 FOR DETECTABLE WARNING PANEL DETAIL. WARNING PANEL SHALL BE CUT AS REQUIRED TO EXTEND ACROSS ENTIRE RAMP OPENING. DETECTABLE WARNING PANELS ARE REQUIRED ON ALL PROPOSED CURB RAMPS AND ARE TO BE INSTALLED IN ACCORDANCE WITH MASSDOT CONSTRUCTION STANDARDS.

609185_HD06 (PCR & DRIVEWAY DETAILS).DWG Plotted on 20-Nov-2024 3:55 PM

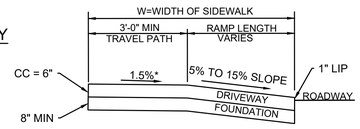
WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	84	169
PROJECT FILE NO.	609185		

DRIVEWAY DETAILS



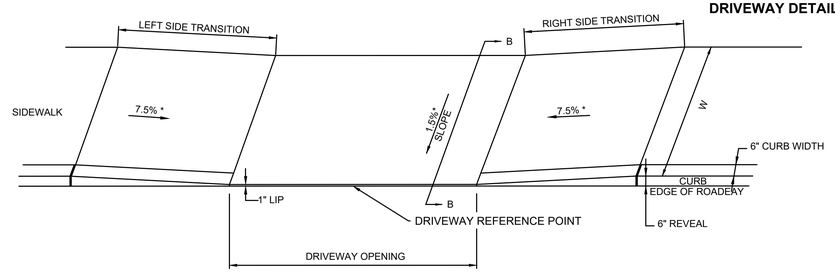
HARRISON STREET SIDEWALK THROUGH DRIVEWAY
NOT TO SCALE



SECTION A–A

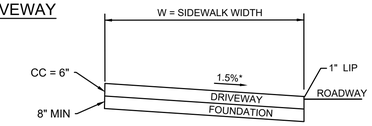
LEGEND
* = TOLERANCE FOR CONSTRUCTION ±0.5%
** = 7" CURB REVEAL
CC = CEMENT CONCRETE
W = WIDTH OF SIDEWALK
W1 = WIDTH OF TRAVEL PATH

CURB CUT DRIVEWAY DETAIL TABLE										
DWY NO.	STREET	STATION	OFFSET	WIDTH OF SIDEWALK (W)	WIDTH OF DRIVEWAY OPENING	WIDTH OF TRAVEL PATH (W1)	ROADWAY GUTTER SLOPE (%)	LEFT SIDE TRANSITION LENGTH	RIGHT SIDE TRANSITION LENGTH	RUN SLOPE
1	HARRISON	12+16.94	16.21' RT	8'-6" - 9'-0"	25'-0"	5'-6"	5.78	15'-0"	7'-6"**	12%



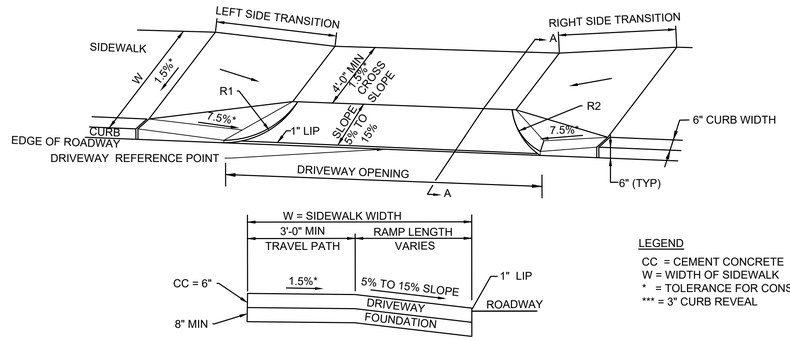
HARRISON STREET SIDEWALK THROUGH DEPRESSED DRIVEWAY
NOT TO SCALE

LEGEND
* = TOLERANCE FOR CONSTRUCTION ±0.5%
CC = CEMENT CONCRETE
W = WIDTH OF SIDEWALK



SECTION B-B

CURB CUT DRIVEWAY DETAIL TABLE								
DWY NO.	STREET	STATION	OFFSET	WIDTH OF SIDEWALK (W)	WIDTH OF DRIVEWAY OPENING	ROADWAY GUTTER SLOPE (%)	LEFT SIDE TRANSITION LENGTH	RIGHT SIDE TRANSITION LENGTH
2	HARRISON	12+74.04	15.98' RT	8'-0" - 9'-0"	16'-3"	8.55	15'-0"	6'-6"



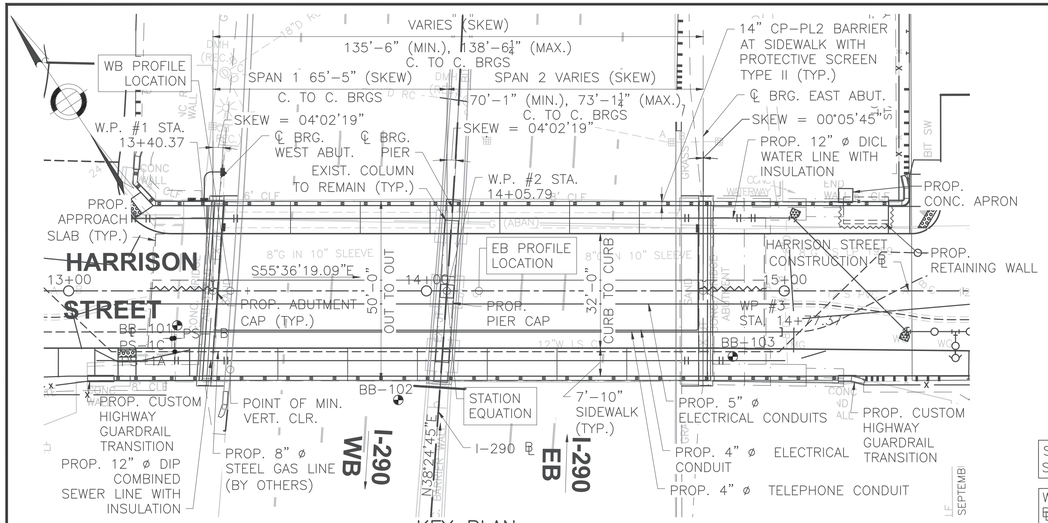
SECTION A-A

LEGEND
CC = CEMENT CONCRETE
W = WIDTH OF SIDEWALK
* = TOLERANCE FOR CONSTRUCTION ±0.5%
*** = 3" CURB REVEAL

HARRISON STREET AND LAUREL STREET SIDEWALK THROUGH DRIVEWAY WITH CURB RETURNS 2' CURB CORNERS
NOT TO SCALE

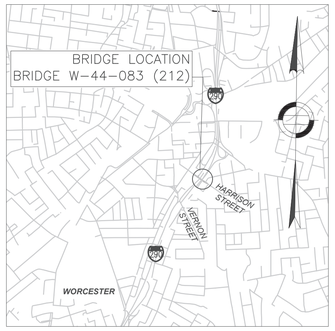
CURB CUT DRIVEWAY DETAIL TABLE											
DWY NO.	STREET	STATION	OFFSET	WIDTH OF DRIVEWAY OPENING	WIDTH OF SIDEWALK (W)	WIDTH OF TRAVEL PATH ACROSS OPENINGS	ROADWAY GUTTER SLOPE (%)	LEFT SIDE TRANSITION LENGTH	RIGHT SIDE TRANSITION LENGTH	RUN SLOPE	RADIUS 1 (R1)	RADIUS 2 (R2)
3	LAUREL	9+49.13	15.94' LT	16'-1"	5'-6" - 7'-0"	3'-0" (MIN)	9.83	6'-6"	15'-0"	VARIES 10-15%	2'-0"	2'-0"
4	HARRISON	15+70.07	16.72' RT	26'-6"	7'-6" - 8'-6"	5'-0" (MIN)	11.69	8'-9"***	6'-6"	VARIES 10-15%	2'-0"	2'-0"
5	LAUREL	9+88.67	14.04' RT	14'-6"	7'-6" - 8'-0"	5'-6" (MIN)	8.65	15'-0"	6'-6"	VARIES 5-10%	2'-0"	2'-0"

NOTE: DWY NO. 3 WILL HAVE A 3'-6" MINIMUM TRAVEL PATH



KEY PLAN

SCALE: 1" = 20'



LOCUS PLAN

SCALE: 1" = 2000'

STATION EQUATION: HARRISON STREET CONSTRUCTION ℄ STA. 14+05.73 = I-290 ℄ STA. 79+72.96

WB PROFILE LOCATION: HARRISON STREET CONSTRUCTION ℄ STA. 13+45.22 = I-290 ℄ STA. 79+68.71 OFFSET 60.36 FEET LEFT (℄ I-290 WB)

EB PROFILE LOCATION: HARRISON STREET CONSTRUCTION ℄ STA. 14+14.70 = I-290 ℄ STA. 79+73.58 OFFSET 8.95 FEET RIGHT (℄ I-290 EB)

WORCESTER
HARRISON STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	85	169
PROJECT FILE NO. 609185			

KEY PLAN, PROFILES AND LOCUS

INDEX OF DRAWINGS

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BORING LOGS 2	4
PROBE LOGS	5
GENERAL PLAN AND ELEVATION	6
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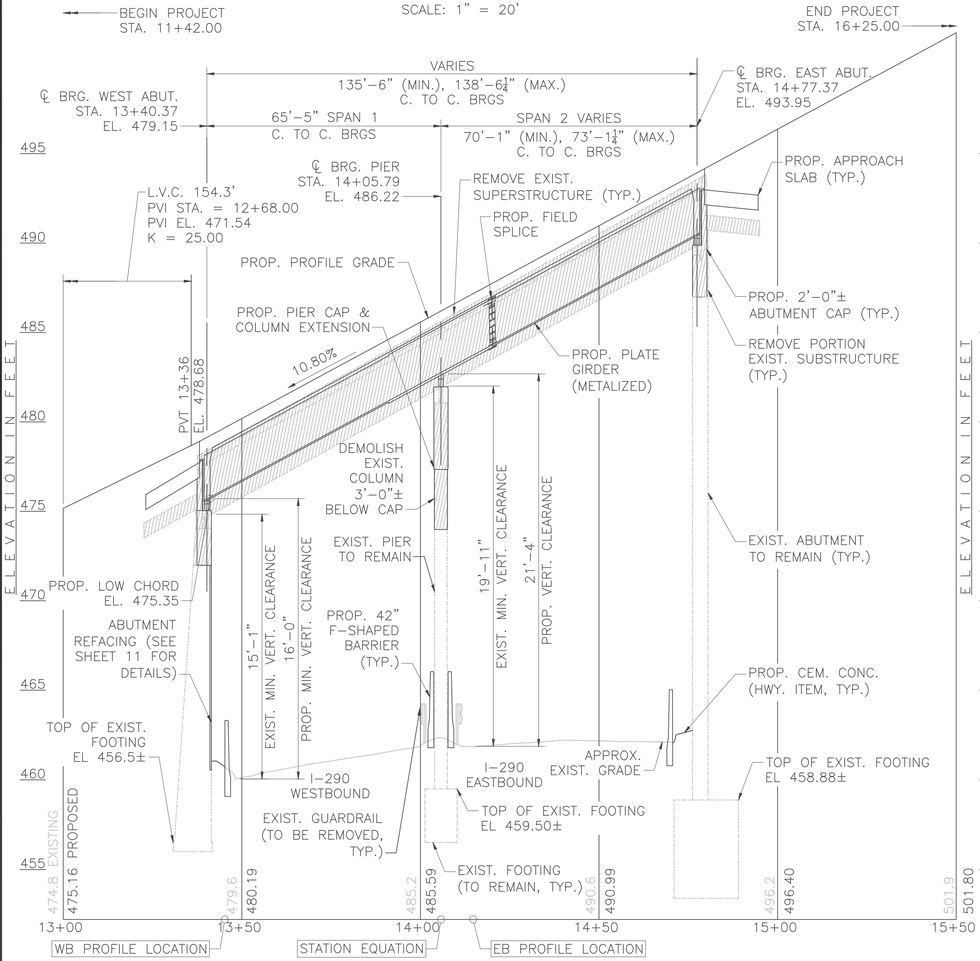
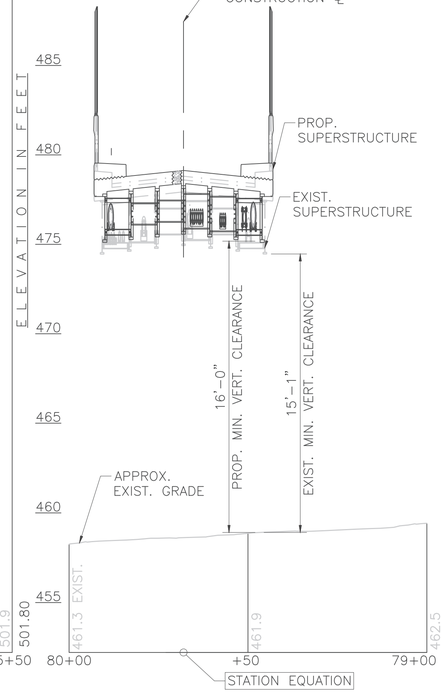
TYPE II PROTECTIVE SCREEN DETAILS 1	38
TYPE II PROTECTIVE SCREEN DETAILS 2	39



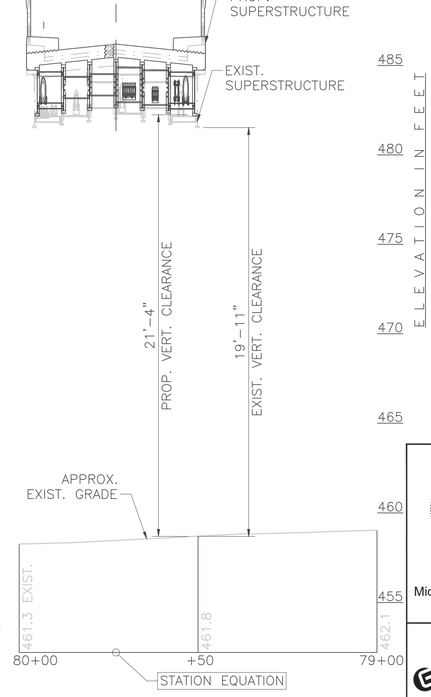
PROFILE – HARRISON STREET

HORIZ SCALE: 1" = 20'
VERT. SCALE: 1" = 8'



PROFILE – I-290 WB

HORIZ SCALE: 1" = 20'
VERT. SCALE: 1" = 8'



PROFILE – I-290 EB

HORIZ SCALE: 1" = 20'
VERT. SCALE: 1" = 8'

COMMONWEALTH OF MASSACHUSETTS
MICHAEL A. CRUZ
STRUCTURAL
No. 41500
REGISTERED PROFESSIONAL ENGINEER

Michael Cruz Digitally signed by Michael Cruz Date: 2024.12.17 12:58:29 -05'00'

Green International Affiliates, Inc.
93 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

Alexander K. Bardow, P.E. Digitally signed by Alexander K. Bardow, P.E. Date: 2024.12.17 16:34:43 -05'00'
STATE BRIDGE ENGINEER

Carrie Lavallee Digitally signed by Carrie Lavallee, P.E. Date: 2024.12.26 10:17:28 -05'00'
CHIEF ENGINEER

12/28/2024 | ISSUED FOR CONSTRUCTION

MassDOT Massachusetts Department of Transportation Highway Division

SUPERSTRUCTURE REPLACEMENT

WORCESTER
HARRISON STREET
OVER I-290

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
10 PARK PLAZA BOSTON, MASS

SHEET 1 OF 39 SHEETS BRIDGE NO. W-44-083 (212)

609185_BR01_H.DWG Plotted on 21-Nov-2024 5:12 PM

21-November-2024 Final Structural Submittal (SF)

Y:\Bsnefengineering\Projects\2013\13033\13033.22x - Worcester Harrison & Laurel Sts\609185\DWG\BRIDGE\current Design\Harrison\609185_BR01_H.dwg

WORCESTER
HARRISON STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	86	169
PROJECT FILE NO.	609185		

GENERAL NOTES AND ESTIMATED QUANTITIES

GENERAL NOTES

DESIGN:
IN ACCORDANCE WITH THE 2020 AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS LRFD BRIDGE DESIGN SPECIFICATIONS WITH CURRENT INTERIM SPECIFICATION THROUGH 2023, FOR HL–93 LOADING.

MASSDOT BENCH MARK:
ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.

BENCHMARK: NE BOLT OF LIGHT POLE #2 ON HARRISON STREET
NORTHING: 2918491.785
EASTING: 576110.62
ELEVATION: 470.43'

BENCHMARK: NW TOP OF BOLT OF LIGHT POLE #1/2–80 ON HARRISON STREET
NORTHING: 2918242.294
EASTING: 576479.365
ELEVATION: 517.32'

DATE:
TO BE PLACED ON THE INSIDE FACE OF THE SOUTHEAST AND NORTHWEST GUARDRAIL TRANSITIONS. A SHEET SHOWING SIZE AND CHARACTER OF NUMERALS WILL BE FURNISHED. THE DATE USED SHALL BE THE LATEST YEAR OF CONTRACT COMPLETION AS OF THE DATE THE FIRST GUARDRAIL TRANSITION IS CONSTRUCTED. BOTH HIGHWAY GUARDRAIL TRANSITIONS SHALL FEATURE THE SAME DATE.

MASSDOT SURVEY NOTEBOOKS:
THE EXISTING CONDITIONS SHOWN ON THE BASEMAP ARE THE RESULT OF AN ON–THE–GROUND INSTRUMENT SURVEY PERFORMED BETWEEN MARCH 26, 2021 AND JULY 5, 2021 BY GREEN INTERNATIONAL AFFILIATES, INC. (GREEN) AND A LASER SCAN SURVEY PERFORMED BY LANDTECH. SEE FIELD NOTES IN MASSDOT DISTRICT FIELD BOOK 411798.

SCALES:
SCALES NOTED ON THE PLANS ARE NOT APPLICABLE TO REDUCED SIZE PRINTS. DIVIDE SCALES BY 2 FOR HALF–SIZE PRINTS (A3).

FOUNDATIONS:
FOUNDATIONS MAY BE ALTERED, IF NECESSARY, TO SUIT CONDITIONS ENCOUNTERED DURING CONSTRUCTION, WITH THE APPROVAL OF THE ENGINEER.

UNSUITABLE MATERIAL:
ALL UNSUITABLE MATERIAL SHALL BE REMOVED WITHIN THE LIMITS OF THE FOUNDATIONS OF THE STRUCTURE, AS DIRECTED BY THE ENGINEER.

GEOTECHNICAL REPORT:
REFER TO GEOTECHNICAL REPORT AND UPDATED MEMORANDUM, DATED MARCH 2023 AND APRIL 2024 RESPECTIVELY, PREPARED BY HNTB CORPORATION.

EXISTING CONDITIONS:
DIMENSIONS OF THE EXISTING STRUCTURE SHOWN ON THESE PLANS ARE FOR GENERAL REFERENCE ONLY. THEY HAVE BEEN TAKEN FROM THE ORIGINAL DESIGN DRAWINGS, AND ARE NOT GUARANTEED.

CONTRACTOR SHALL DETERMINE AND ESTABLISH ALL DIMENSIONS AND DETAILS NECESSARY FOR COMPLETION OF ALL WORK BY FIELD MEASUREMENTS AND SURVEY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ADEQUACY AND ACCURACY THEREOF, AND SHALL NOT ORDER ANY MATERIAL OR COMMENCE ANY FABRICATION UNTIL HE/SHE HAS MADE THE REQUIRED MEASUREMENTS AND THE EXTENT OF THE PROPOSED WORK HAS BEEN APPROVED BY THE ENGINEER.

UTILITIES:
THE CONTRACTOR SHALL LOCATE AND PROTECT FROM DAMAGE OR RELOCATE, AS NECESSARY, ANY EXISTING UTILITIES/POLES. THE CONTRACTOR SHALL COORDINATE WITH THE RESPECTIVE UTILITY OWNERS FOR ALL UTILITIES THAT ARE TO BE TEMPORARILY OR PERMANENTLY RELOCATED FOR BRIDGE REPLACEMENT WORK.

REINFORCEMENT:
REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 31 GRADE 60. ALL REINFORCING STEEL SHALL BE EPOXY COATED. UNLESS OTHERWISE NOTED ON THE CONSTRUCTION DRAWINGS, ALL BARS SHALL BE LAPPED AS FOLLOWS:

MODIFICATION CONDITION	#4 BARS	#5 BARS	#6 BARS
1. NONE	16"	19"	23"
2. 12" OF CONCRETE BELOW BAR	20"	25"	30"
3. COATED BARS, COVER < 3D/B, OR CLEAR SPACING < 6D/B	23"	29"	34"
4. COATED BARS, ALL OTHER CASE	18"	23"	27"
5. CONDITION 2. AND 3.	26"	32"	39"
6. CONDITION 2. AND 4.	24"	30"	36"

ALL OTHER BARS SHALL BE LAPPED AS SHOWN ON THE CONSTRUCTION DRAWINGS.

STRUCTURAL STEEL:
SEE SHEET 26 FOR STRUCTURAL STEEL NOTES.

MISCELLANEOUS STEEL:
UTILITY SLEEVE STEEL SHALL BE STEEL PIPE CONFORMING TO ASTM A–53, TYPE S, GRADE B, STANDARD WEIGHT, PLAIN ENDS, HOT–DIP GALVANIZED, UNLESS OTHERWISE NOTED.

CONCRETE:
UNLESS OTHERWISE SPECIFIED, ALL CONCRETE SHALL BE 5000 HP CONCRETE.

DRILL AND GROUT:
REFER TO SPECIAL PROVISION ITEM NO. 912 FOR DRILL AND GROUT REINFORCING REQUIREMENTS.

ESTIMATED QUANTITIES (NOT GUARANTEED)

PRE AND POST CONSTRUCTION SURVEY AND SETTLEMENT/DISPLACEMENT MONITORING AT BRIDGE NO. W–44–083	1 LS
DEMOLITION OF SUPERSTRUCTURE OF BRIDGE NO. W–44–083	1 LS
REINFORCED CONCRETE EXCAVATION	175 CY
REINFORCED CONCRETE SUBSTRUCTURE EXCAVATION	5 CY
REINFORCED CONCRETE DECK EXCAVATION (FULL DEPTH)	15 SY
REINFORCED CONCRETE DECK EXCAVATION (PARTIAL DEPTH)	5 CY
BRIDGE EXCAVATION	50 CY
CLASS B ROCK EXCAVATION	10 CY
GRAVEL BORROW FOR BRIDGE FOUNDATION	15 CY
GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES	60 CY
EMERGENCY RESPONSE	4 EA
TEMPORARY BARRIER – LIMITED DEFLECTION (TL–3)	150 FT
TEMPORARY BARRIER – LIMITED DEFLECTION (TL–3) REMOVED AND RESET	150 FT
RAPID SET CONCRETE	225 CF
4000 PSI, 3/8 IN., 660 CEMENT CONCRETE	20 CY
CEMENTITIOUS MORTAR FOR PATCHING	225 SF
STEEL REINFORCEMENT FOR STRUCTURES	1400 LB
STEEL REINFORCEMENT FOR STRUCTURES – EPOXY COATED	3000 LB
MECHANICAL REINFORCING BAR SPLICER	25 EA
DRILLING AND GROUTING DOWELS	244 EA
TEMPORARY SUPPORT OF EXCAVATION BRIDGE NO. W–44–083	1 LS
TEMPORARY SUPPORT OF EXCAVATION – LEFT IN PLACE BRIDGE NO. W–44–083	1 LS
ELASTOMERIC PROTECTIVE COATING	4600 SF
TEMPORARY SUPPORT FOR BRIDGE STRUCTURE, BRIDGE NO. W–44–083	1 LS
TEMPORARY PROTECTIVE SHIELDING BRIDGE NO. W–44–083	1 LS
BRIDGE SUPERSTRUCTURE BRIDGE NO. W–44–083	1 LS

TRAFFIC DATA

	ROADWAY OVER	ROADWAY UNDER
DESIGN YEAR	2041	2041
AVERAGE DAILY TRAFFIC – PRESENT	9290	129505
AVERAGE DAILY TRAFFIC – DESIGN YEAR	10625	143090
DESIGN HOURLY VOLUME	830	10590
DIRECTIONAL DISTRIBUTION	61% EB	–
TRUCK PERCENTAGE – AVERAGE DAY	1.6%	8.2%
TRUCK PERCENTAGE – PEAK HOUR	1.3%	10.9%
DESIGN SPEED	25	–
DIRECTIONAL DESIGN HOURLY VOLUME	510	4240

SEISMIC DESIGN CRITERIA

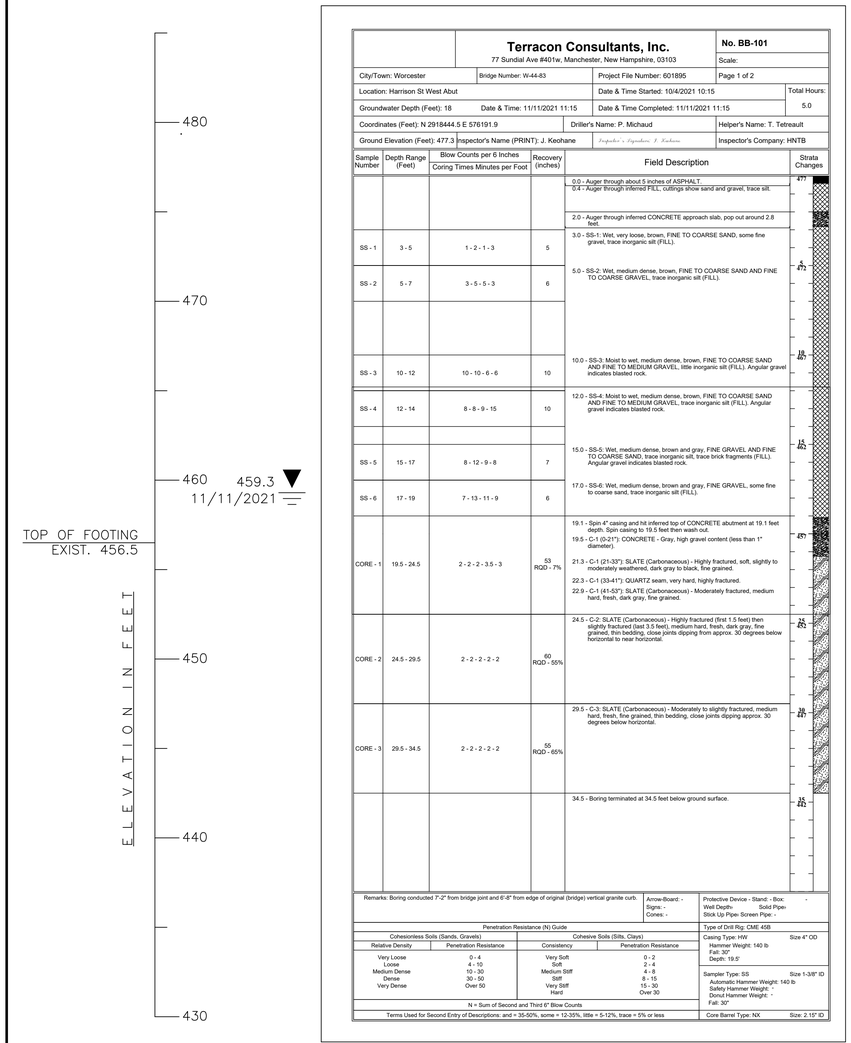
DESIGN RETURN PERIOD:	2500
DESIGN SPECTRA	
As	0.080
SDs	0.138
SD1	0.055
SITE CLASS	B
SEISMIC DESIGN CATEGORY (SDC)	A

12/28/2024	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT AUTHORIZED SIGNATORY:	STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE	

WORCESTER
HARRISON STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	87	169
	PROJECT FILE NO. 609185		

BORING LOGS 1



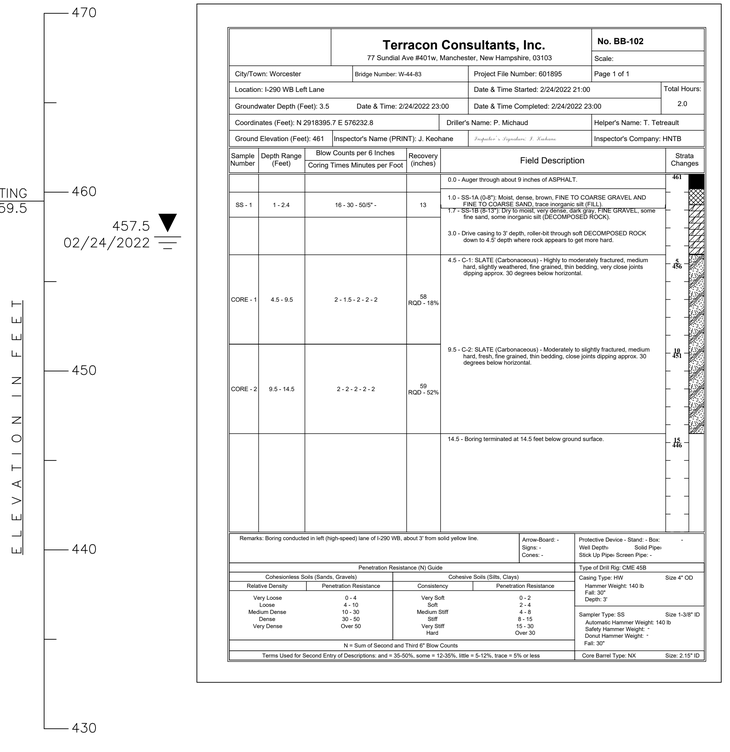
	Terracon Consultants, Inc. 77 Sundial Ave #401w, Manchester, New Hampshire, 03103			No. BB-101 Scale:
City/Town: Worcester	Bridge Number: W-44-83	Project File Number: 601895		Page 1 of 2
Location: Harrison St West Abut		Date & Time Started: 10/4/2021 10:15		Total Hours: 5.0
Groundwater Depth (Feet): 18	Date & Time: 11/11/2021 11:15	Date & Time Completed: 11/11/2021 11:15		
Coordinates (Feet): N 2918444.5 E 576191.9		Driller's Name: P. Michaud		Helper's Name: T. Tetreault
Ground Elevation (Feet): 477.3	Inspector's Name (PRINT): J. Keohane	Inspector's Signature: J. Keohane		Inspector's Company: HNTB

Sample Number	Depth Range (Feet)	Blow Counts per 6 Inches / Coring Times Minutes per Foot	Recovery (inches)	Field Description	Strata Changes
				0.0 - Auger through about 5 inches of ASPHALT.	477
				0.4 - Auger through inferred FILL; cuttings show sand and gravel; trace silt.	
				2.0 - Auger through inferred CONCRETE approach slab, pop out around 2.8 feet.	475
SS - 1	3 - 5	1 - 2 - 1 - 3	5	3.0 - SS-1: Wet, very loose, brown, FINE TO COARSE SAND, some fine gravel, trace inorganic silt (FILL).	
SS - 2	5 - 7	3 - 5 - 5 - 3	6	5.0 - SS-2: Wet, medium dense, brown, FINE TO COARSE SAND AND FINE TO COARSE GRAVEL, trace inorganic silt (FILL).	472
SS - 3	10 - 12	10 - 10 - 6 - 6	10	10.0 - SS-3: Moist to wet, medium dense, brown, FINE TO COARSE SAND AND FINE TO MEDIUM GRAVEL, little inorganic silt (FILL). Angular gravel indicates blasted rock.	18 467
SS - 4	12 - 14	8 - 8 - 9 - 15	10	12.0 - SS-4: Moist to wet, medium dense, brown, FINE TO COARSE SAND AND FINE TO MEDIUM GRAVEL, trace inorganic silt (FILL). Angular gravel indicates blasted rock.	
SS - 5	15 - 17	8 - 12 - 9 - 8	7	15.0 - SS-5: Wet, medium dense, brown and gray, FINE GRAVEL AND FINE TO COARSE SAND, trace inorganic silt, trace brick fragments (FILL). Angular gravel indicates blasted rock.	15 462
SS - 6	17 - 19	7 - 13 - 11 - 9	6	17.0 - SS-6: Wet, medium dense, brown and gray, FINE GRAVEL, some fine to coarse sand, trace inorganic silt (FILL).	
				19.1 - Spin 4" casing and hit inferred top of CONCRETE abutment at 19.1 feet depth. Spin casing to 19.5 feet then wash out.	457
CORE - 1	19.5 - 24.5	2 - 2 - 2 - 3.5 - 3	53 RQD - 7%	19.5 - C-1 (0-21"): CONCRETE - Gray, high gravel content (less than 1" diameter). 21.3 - C-1 (21-33"): SLATE (Carbonaceous) - Highly fractured, soft, slightly to moderately weathered, dark gray to black, fine grained. 22.3 - C-1 (33-41"): QUARTZ seam, very hard, highly fractured. 22.9 - C-1 (41-53"): SLATE (Carbonaceous) - Moderately fractured, medium hard, fresh, dark gray, fine grained.	
CORE - 2	24.5 - 29.5	2 - 2 - 2 - 2 - 2	60 RQD - 55%	24.5 - C-2: SLATE (Carbonaceous) - Highly fractured (first 1.5 feet) then slightly fractured (last 3.5 feet), medium hard, fresh, dark gray, fine grained, thin bedding, close joints dipping from approx. 30 degrees below horizontal to near horizontal.	24 453
CORE - 3	29.5 - 34.5	2 - 2 - 2 - 2 - 2	55 RQD - 65%	29.5 - C-3: SLATE (Carbonaceous) - Moderately to slightly fractured, medium hard, fresh, fine grained, thin bedding, close joints dipping approx. 30 degrees below horizontal.	29 448
				34.5 - Boring terminated at 34.5 feet below ground surface.	34 443

Remarks: Boring conducted 7'-0" from bridge joint and 6'-8" from edge of original (bridge) vertical granite curb.	Arrow-Board: - Signs: - Cones: -	Protective Device - Stand: - Box: - Well Depth: Solid Pipe: Stick Up Pipe: Screen Pipe: -

Penetration Resistance (N) Guide				Type of Drill Rig: CME 45B
Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Silts, Clays)		Casing Type: HW Size 4" OD
Relative Density	Penetration Resistance	Consistency	Penetration Resistance	Hammer Weight: 140 lb Fall: 30" Depth: 19.5'
Very Loose	0 - 4	Very Soft	0 - 2	
Loose	4 - 10	Soft	2 - 4	
Medium Dense	10 - 30	Medium Stiff	4 - 8	
Dense	30 - 50	Stiff	8 - 15	Sampler Type: SS Size 1-3/8" ID
Very Dense	Over 50	Very Stiff	15 - 30	Automatic Hammer Weight: 140 lb
		Hard	Over 30	Safety Hammer Weight: -
				Donut Hammer Weight: -
				Fall: 30"
N = Sum of Second and Third 6" Blow Counts				
Terms Used for Second Entry of Descriptions: and = 35-50%, some = 12-35%, little = 5-12%, trace = 5% or less				Core Barrel Type: NX Size: 2.15" ID

BB–101
SCALE: 1/4" = 1'–0"



	Terracon Consultants, Inc. 77 Sundial Ave #401w, Manchester, New Hampshire, 03103			No. BB-102 Scale:
City/Town: Worcester	Bridge Number: W-44-83	Project File Number: 601895		Page 1 of 1
Location: I-290 WB Left Lane		Date & Time Started: 2/24/2022 21:00		Total Hours: 2.0
Groundwater Depth (Feet): 3.5	Date & Time: 2/24/2022 23:00	Date & Time Completed: 2/24/2022 23:00		
Coordinates (Feet): N 2918395.7 E 576232.8		Driller's Name: P. Michaud		Helper's Name: T. Tetreault
Ground Elevation (Feet): 461	Inspector's Name (PRINT): J. Keohane	Inspector's Signature: J. Keohane		Inspector's Company: HNTB

Sample Number	Depth Range (Feet)	Blow Counts per 6 Inches / Coring Times Minutes per Foot	Recovery (inches)	Field Description	Strata Changes
				0.0 - Auger through about 9 inches of ASPHALT.	461
SS - 1	1 - 2.4	16 - 30 - 50/5" -	13	1.0 - SS-1A (0-4"): Moist, dense, brown, FINE TO COARSE GRAVEL AND FINE TO COARSE SAND, trace inorganic silt (FILL). 1.7 - SS-1B (8-13"): Dry to moist, very dense, dark gray, FINE GRAVEL, some fine sand, some inorganic silt (DECOMPOSED ROCK).	
				3.0 - Drive casing to 3' depth, roller-bit through soft DECOMPOSED ROCK down to 4.5' depth where rock appears to get more hard.	
CORE - 1	4.5 - 9.5	2 - 1.5 - 2 - 2 - 2	58 RQD - 18%	4.5 - C-1: SLATE (Carbonaceous) - Highly to moderately fractured, medium hard, slightly weathered, fine grained, thin bedding, very close joints dipping approx. 30 degrees below horizontal.	5 456
CORE - 2	9.5 - 14.5	2 - 2 - 2 - 2 - 2	59 RQD - 52%	9.5 - C-2: SLATE (Carbonaceous) - Moderately to slightly fractured, medium hard, fresh, fine grained, thin bedding, close joints dipping approx. 30 degrees below horizontal.	10 451
				14.5 - Boring terminated at 14.5 feet below ground surface.	15 446

Remarks: Boring conducted in left (high-speed) lane of I-290 WB, about 3' from solid yellow line.	Arrow-Board: - Signs: - Cones: -	Protective Device - Stand: - Box: - Well Depth: Solid Pipe: Stick Up Pipe: Screen Pipe: -

Penetration Resistance (N) Guide				Type of Drill Rig: CME 45B
Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Silts, Clays)		Casing Type: HW Size 4" OD
Relative Density	Penetration Resistance	Consistency	Penetration Resistance	Hammer Weight: 140 lb Fall: 30" Depth: 3'
Very Loose	0 - 4	Very Soft	0 - 2	
Loose	4 - 10	Soft	2 - 4	
Medium Dense	10 - 30	Medium Stiff	4 - 8	
Dense	30 - 50	Stiff	8 - 15	Sampler Type: SS Size 1-3/8" ID
Very Dense	Over 50	Very Stiff	15 - 30	Automatic Hammer Weight: 140 lb
		Hard	Over 30	Safety Hammer Weight: -
				Donut Hammer Weight: -
				Fall: 30"
N = Sum of Second and Third 6" Blow Counts				
Terms Used for Second Entry of Descriptions: and = 35-50%, some = 12-35%, little = 5-12%, trace = 5% or less				Core Barrel Type: NX Size: 2.15" ID

BB–102
SCALE: 1/4" = 1'–0"

BORING NOTES:

1. LOCATION OF BORINGS SHOWN ON THE PLAN THUS: BB–#
2. BORINGS ARE TAKEN FOR PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF THE MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
3. WATER LEVELS SHOWN ON THE BORING LOGS WERE OBSERVED AT THE TIME OF TAKING BORINGS AND DO NOT NECESSARILY SHOW THE TRUE GROUND WATER LEVEL.
4. FIGURES IN COLUMNS INDICATE NUMBER OF BLOWS REQUIRED TO DRIVE A 1 3/8" I.D. SPLIT SPOON SAMPLER 6" USING A 140 POUND WEIGHT FALLING 30".
5. BORING SAMPLES ARE STORED AT A STORAGE FACILITY LOCATED ON ROUTE 114 (219 WINTHROP AVE.) IN LAWRENCE, MA. THE CONTRACTOR MAY EXAMINE THE SOIL AND ROCK SAMPLES BY CONTACTING THE MASSDOT GEOTECHNICAL SECTION AT 10 PARK PLAZA, BOSTON, MA.
6. ALL BORINGS WERE MADE FROM SEPTEMBER, 2021 TO FEBRUARY, 2022.
7. BORINGS WERE MADE BY TERRACON CONSULTANTS, INC. 77 SUNDIAL AVE #401W, MANCHESTER, NEW HAMPSHIRE, 03103.
8. THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.

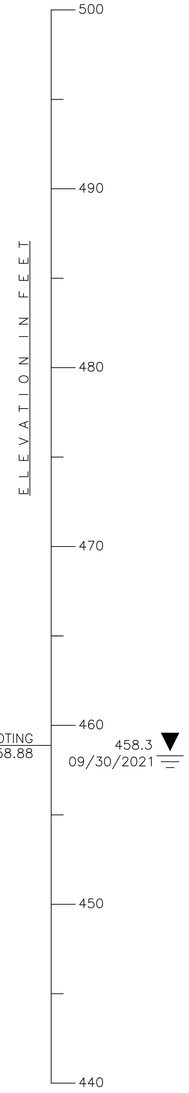
12/28/2024	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

WORCESTER
HARRISON STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	88	169
PROJECT FILE NO.	609185		

BORING LOGS 2



Terracon Consultants, Inc.
77 Sundial Ave #401w, Manchester, New Hampshire, 03103

No. BB-103
Scale:

City/Town: Worcester	Bridge Number: W-44-83	Project File Number: 601895	Page 1 of 3
Location: Harrison St East Abut		Date & Time Started: 9/30/2021 9:00	Total Hours: 4.5
Groundwater Depth (Feet): 36	Date & Time: 9/30/2021 13:30	Date & Time Completed: 9/30/2021 13:30	
Coordinates (Feet): N 2918363.1 E 576321.1		Driller's Name: P. Michaud	Helper's Name: T. Tetreault
Ground Elevation (Feet): 494.3	Inspector's Name (PRINT): J. Keohane	*Inspector's Signature: J. Keohane*	Inspector's Company: HNTB

Sample Number	Depth Range (Feet)	Blow Counts per 6 Inches / Coring Times Minutes per Foot	Recovery (inches)	Field Description	Strata Changes
				0.0 - Auger through 8" of ASPHALT.	494
SS - 1	1 - 1.2	50/2" - - -	2	1.0 - SS-1: Moist, medium dense, black and brown, FINE TO COARSE SAND, some fine gravel, little inorganic silt, trace asphalt (FILL)	
				1.2 - Auger action indicates CONCRETE approach slab, heavy grinding then pop out around 2.2 feet depth. Auger action indicates possible rebar around 2 feet depth.	
SS - 2	3 - 5	4 - 4 - 3 - 3	5	3.0 - SS-2: Moist, loose, brown, FINE TO COARSE SAND AND FINE TO MEDIUM GRAVEL, trace inorganic silt (FILL). Gravel is angular which indicates blasted rock.	5 489
SS - 3	5 - 7	5 - 4 - 7 - 9	8	5.0 - SS-3: Moist, medium dense, light brown, FINE TO COARSE SAND AND FINE TO MEDIUM GRAVEL, little inorganic silt (FILL). Gravel is angular which indicates blasted rock.	
SS - 4	7 - 9	7 - 8 - 5 - 5	6	7.0 - SS-4: Moist, medium dense, brown, FINE TO COARSE SAND AND FINE GRAVEL, trace inorganic silt (FILL). Gravel is angular which indicates blasted rock.	
SS - 5	10 - 12	7 - 5 - 8 - 9	7	10.0 - SS-5: Moist, medium dense, brown, FINE TO COARSE GRAVEL, some fine to coarse sand, trace inorganic silt (FILL). Gravel is angular which indicates blasted rock.	10 484
SS - 6	15 - 17	12 - 9 - 8 - 13	4	15.0 - SS-6: Moist, medium dense, brown, FINE TO COARSE SAND AND FINE TO COARSE GRAVEL, trace inorganic silt (FILL). Gravel is angular which indicates blasted rock. Coarse gravel in tip of spoon led to high blowcounts and low recovery.	15 479
SS - 7	20 - 22	9 - 10 - 12 - 13	3	20.0 - SS-7: Wet, medium dense, brown, COARSE GRAVEL, some fine to coarse sand, trace inorganic silt (FILL). Gravel is angular which indicates blasted rock. Coarse gravel stuck in tip of spoon led to high blowcounts and low recovery.	474
SS - 8	25 - 27	8 - 8 - 18 - 17	7	25.0 - SS-8: Wet, medium dense, brown, FINE TO COARSE SAND, some fine to medium gravel, little inorganic silt (FILL). Gravel is angular which indicates blasted rock.	25 469
SS - 9	30 - 32	5 - 6 - 6 - 6	5	30.0 - SS-9: Wet, medium dense, brown, FINE TO COARSE SAND AND FINE TO COARSE GRAVEL, trace inorganic silt (FILL).	30 464
				35.5 - Casing advance stops at 35.5 feet depth which indicates top of CONCRETE footing. Roller-bit through concrete to 36 feet depth.	
CORE - 1	36 - 41	7 - 3 - 3 - 3 - 4	60 RQD - N/A%	36.0 - C-1: CONCRETE - Good condition, composed of gravel up to 1" diameter, first 18" of recovery has multiple joints but remaining recovery is sound. Rebar (#10) recovered at 6" of recovery. At end of recovery is 1" of dark gray slate bedrock.	15 459

Remarks: Boring conducted 4'-10" from bridge joint and 12'-6" from edge of vertical vertical granite curb.
Arrow-Board: -
Signs: -
Cones: -
Protective Device - Stand: - Box: -
Well Depth- Solid Pipe-
Stick Up Pipe- Screen Pipe: -

Penetration Resistance (N) Guide

Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Silts, Clays)	
Relative Density	Penetration Resistance	Consistency	Penetration Resistance
Very Loose	0 - 4	Very Soft	0 - 2
Loose	4 - 10	Soft	2 - 4
Medium Dense	10 - 30	Medium Stiff	4 - 8
Dense	30 - 50	Stiff	8 - 15
Very Dense	Over 50	Very Stiff	15 - 30
		Hard	Over 30

N = Sum of Second and Third 6" Blow Counts
Terms Used for Second Entry of Descriptions: and = 35-50%, some = 12-35%, little = 5-12%, trace = 5% or less

Type of Drill Rig: CME 45B
Casing Type: HW Size 4" OD
Hammer Weight: 140 lb
Fall: 30"
Depth: 35.5'
Sampler Type: SS Size 1-3/8" ID
Automatic Hammer Weight: 140 lb
Safety Hammer Weight: -
Donut Hammer Weight: -
Fall: 30"
Core Barrel Type: NX Size: 2.15" ID

BB–103
SCALE: 1/4" = 1'–0"

Terracon Consultants, Inc.
77 Sundial Ave #401w, Manchester, New Hampshire, 03103

No. BB-103
Scale:

City/Town: Worcester	Bridge Number: W-44-83	Project File Number: 601895	Page 3 of 3
Location: Harrison St East Abut		Date & Time Started: 9/30/2021 9:00	Total Hours: 4.5
Groundwater Depth (Feet): 36	Date & Time: 9/30/2021 13:30	Date & Time Completed: 9/30/2021 13:30	
Coordinates (Feet): N 2918363.1 E 576321.1		Driller's Name: P. Michaud	Helper's Name: T. Tetreault
Ground Elevation (Feet): 494.3	Inspector's Name (PRINT): J. Keohane	*Inspector's Signature: J. Keohane*	Inspector's Company: HNTB

Sample Number	Depth Range (Feet)	Blow Counts per 6 Inches / Coring Times Minutes per Foot	Recovery (inches)	Field Description	Strata Changes
CORE - 1	36 - 41	7 - 3 - 3 - 3 - 4	60 RQD - N/A%		453
CORE - 2	41 - 46	2 - 2 - 2 - 2 - 2	60 RQD - 58%	41.0 - C-2: SLATE (Carbonaceous) - Moderately fractured, medium hard, slightly weathered to fresh, dark gray, fine grained, thin bedding, close joints dipping from approx. 30 degrees below horizontal to near horizontal.	45 449
CORE - 3	46 - 51	3 - 2 - 2 - 2 - 2	59 RQD - 27%	46.0 - C-3: SLATE (Carbonaceous) - Highly to moderately fractured, medium hard, slightly weathered to fresh, dark gray, fine grained, thin bedding, very close to close joints dipping from approx. 30 degrees below horizontal to near horizontal.	50 444
				51.0 - Boring terminated at 51 feet below ground surface.	55 439

Remarks: Boring conducted 4'-10" from bridge joint and 12'-6" from edge of vertical vertical granite curb.
Arrow-Board: -
Signs: -
Cones: -
Protective Device - Stand: - Box: -
Well Depth- Solid Pipe-
Stick Up Pipe- Screen Pipe: -

Penetration Resistance (N) Guide

Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Silts, Clays)	
Relative Density	Penetration Resistance	Consistency	Penetration Resistance
Very Loose	0 - 4	Very Soft	0 - 2
Loose	4 - 10	Soft	2 - 4
Medium Dense	10 - 30	Medium Stiff	4 - 8
Dense	30 - 50	Stiff	8 - 15
Very Dense	Over 50	Very Stiff	15 - 30
		Hard	Over 30

N = Sum of Second and Third 6" Blow Counts
Terms Used for Second Entry of Descriptions: and = 35-50%, some = 12-35%, little = 5-12%, trace = 5% or less

Type of Drill Rig: CME 45B
Casing Type: HW Size 4" OD
Hammer Weight: 140 lb
Fall: 30"
Depth: 35.5'
Sampler Type: SS Size 1-3/8" ID
Automatic Hammer Weight: 140 lb
Safety Hammer Weight: -
Donut Hammer Weight: -
Fall: 30"
Core Barrel Type: NX Size: 2.15" ID

BB–103 (CONT'D)
SCALE: 1/4" = 1'–0"

BORING NOTE:

SEE SHEET 3 FOR BORING NOTES.

12/28/2024	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

	Terracon Consultants, Inc. 77 Sundial Ave #401w, Manchester, New Hampshire, 03103			No. PS-1A
				Scale:
City/Town: Worcester	Bridge Number: W-44-83		Project File Number: 601895	Page 1 of 1
Location: Harrison St West Abut			Date & Time Started: 10/1/2021 7:20	Total Hours: 0.2
Groundwater Depth (Feet): N/A	Date & Time: 10/1/21 7:30		Date & Time Completed: 10/1/2021 7:30	
Coordinates (Feet): N 2918442.1 E 576188.9		Driller's Name: P. Michaud		Helper's Name: T. Tetreault
Ground Elevation (Feet): 477.3	Inspector's Name (PRINT): J. Keohane	*Inspector's Signature: J. Keohane*		Inspector's Company: HNTB

Sample Number	Depth Range (Feet)	Blow Counts per 6 Inches / Coring Times Minutes per Foot	Recovery (inches)	Field Description	Strata Changes
				0.0 - Auger through approach slab and fill, hit water main at 4.5 feet depth.	477
				4.5 - Exploration terminated at 4.5 feet below ground surface.	5 472
					10 467
					15 462

Remarks: Probe conducted 8'-4" from bridge joint and 3'-4" from edge of original (bridge) vertical granite curb.

Arrow-Board: -
Signs: -
Cones: -

Protective Device - Stand: - Box: -
Well Depth: - Solid Pipe: -
Stick Up Pipe: - Screen Pipe: -

Penetration Resistance (N) Guide

Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Silts, Clays)	
Relative Density	Penetration Resistance	Consistency	Penetration Resistance
Very Loose	0 - 4	Very Soft	0 - 2
Loose	4 - 10	Soft	2 - 4
Medium Dense	10 - 30	Medium Stiff	4 - 8
Dense	30 - 50	Stiff	8 - 15
Very Dense	Over 50	Very Stiff	15 - 30
		Hard	Over 30

N = Sum of Second and Third 6" Blow Counts

Terms Used for Second Entry of Descriptions: and = 35-50%, some = 12-35%, little = 5-12%, trace = 5% or less

Type of Drill Rig: CME 45B

Casing Type: HSA Size 4" OD
Hammer Weight: -
Fall: -
Depth: 4.5'

Sampler Type: - Size: -
Automatic Hammer Weight: -
Safety Hammer Weight: -
Donut Hammer Weight: -
Fall: -

Core Barrel Type: - Size: -

PS–1A

SCALE: $\frac{1}{4}$" = 1'–0"

	Terracon Consultants, Inc. 77 Sundial Ave #401w, Manchester, New Hampshire, 03103			No. PS-1B
				Scale:
City/Town: Worcester	Bridge Number: W-44-83		Project File Number: 601895	Page 1 of 1
Location: Harrison St West Abut			Date & Time Started: 10/4/2021 9:15	Total Hours: 0.3
Groundwater Depth (Feet): N/A	Date & Time: 10/4/21 9:30		Date & Time Completed: 10/4/2021 9:30	
Coordinates (Feet): N 2918445.3 E 576190.9		Driller's Name: P. Michaud		Helper's Name: T. Tetreault
Ground Elevation (Feet): 477.3	Inspector's Name (PRINT): J. Keohane	*Inspector's Signature: J. Keohane*		Inspector's Company: HNTB

Sample Number	Depth Range (Feet)	Blow Counts per 6 Inches / Coring Times Minutes per Foot	Recovery (inches)	Field Description	Strata Changes
				0.0 - Auger through approach slab and fill, hit refusal at 16'-11" (16.9 feet) depth on inferred concrete abutment.	477
					5 472
					10 467
					15 462
				16.9 - Exploration terminated at 16.9 feet below ground surface.	

Remarks: Probe conducted 6'-5" from bridge joint and 6'-8" from original (bridge) vertical granite curb

Arrow-Board: -
Signs: -
Cones: -

Protective Device - Stand: - Box: -
Well Depth: - Solid Pipe: -
Stick Up Pipe: - Screen Pipe: -

Penetration Resistance (N) Guide

Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Silts, Clays)	
Relative Density	Penetration Resistance	Consistency	Penetration Resistance
Very Loose	0 - 4	Very Soft	0 - 2
Loose	4 - 10	Soft	2 - 4
Medium Dense	10 - 30	Medium Stiff	4 - 8
Dense	30 - 50	Stiff	8 - 15
Very Dense	Over 50	Very Stiff	15 - 30
		Hard	Over 30

N = Sum of Second and Third 6" Blow Counts

Terms Used for Second Entry of Descriptions: and = 35-50%, some = 12-35%, little = 5-12%, trace = 5% or less

Type of Drill Rig: CME 45B

Casing Type: HSA Size 4" OD
Hammer Weight: -
Fall: -
Depth: 16.7'

Sampler Type: - Size: -
Automatic Hammer Weight: -
Safety Hammer Weight: -
Donut Hammer Weight: -
Fall: -

Core Barrel Type: - Size: -

PS–1B

SCALE: $\frac{1}{4}$" = 1'–0"

	Terracon Consultants, Inc. 77 Sundial Ave #401w, Manchester, New Hampshire, 03103			No. PS-1C
				Scale:
City/Town: Worcester	Bridge Number: W-44-83		Project File Number: 601895	Page 1 of 2
Location: Harrison St West Abut			Date & Time Started: 10/4/2021 9:40	Total Hours: 0.4
Groundwater Depth (Feet): N/A	Date & Time: 10/4/21 10:00		Date & Time Completed: 10/4/2021 10:00	
Coordinates (Feet): N 2918445.6 E 576190.3		Driller's Name: P. Michaud		Helper's Name: T. Tetreault
Ground Elevation (Feet): 477.2	Inspector's Name (PRINT): J. Keohane	*Inspector's Signature: J. Keohane*		Inspector's Company: HNTB

Sample Number	Depth Range (Feet)	Blow Counts per 6 Inches / Coring Times Minutes per Foot	Recovery (inches)	Field Description	Strata Changes
				0.0 - Auger through approach slab and fill, hit refusal at 21'-3" (21.25 feet) depth on inferred bedrock (missed footing).	477
					5 472
					10 467
					15 462
					20 457
				21.3 - Exploration terminated at 21.25 feet below ground surface.	25 452
					30 447
					35 442

Remarks: Probe conducted 9'-1" from bridge joint and 6'-8" from orginal (bridge) vertical granite curb

Arrow-Board: -
Signs: -
Cones: -

Protective Device - Stand: - Box: -
Well Depth: - Solid Pipe: -
Stick Up Pipe: - Screen Pipe: -

Penetration Resistance (N) Guide

Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Silts, Clays)	
Relative Density	Penetration Resistance	Consistency	Penetration Resistance
Very Loose	0 - 4	Very Soft	0 - 2
Loose	4 - 10	Soft	2 - 4
Medium Dense	10 - 30	Medium Stiff	4 - 8
Dense	30 - 50	Stiff	8 - 15
Very Dense	Over 50	Very Stiff	15 - 30
		Hard	Over 30

N = Sum of Second and Third 6" Blow Counts

Terms Used for Second Entry of Descriptions: and = 35-50%, some = 12-35%, little = 5-12%, trace = 5% or less

Type of Drill Rig: CME 45B

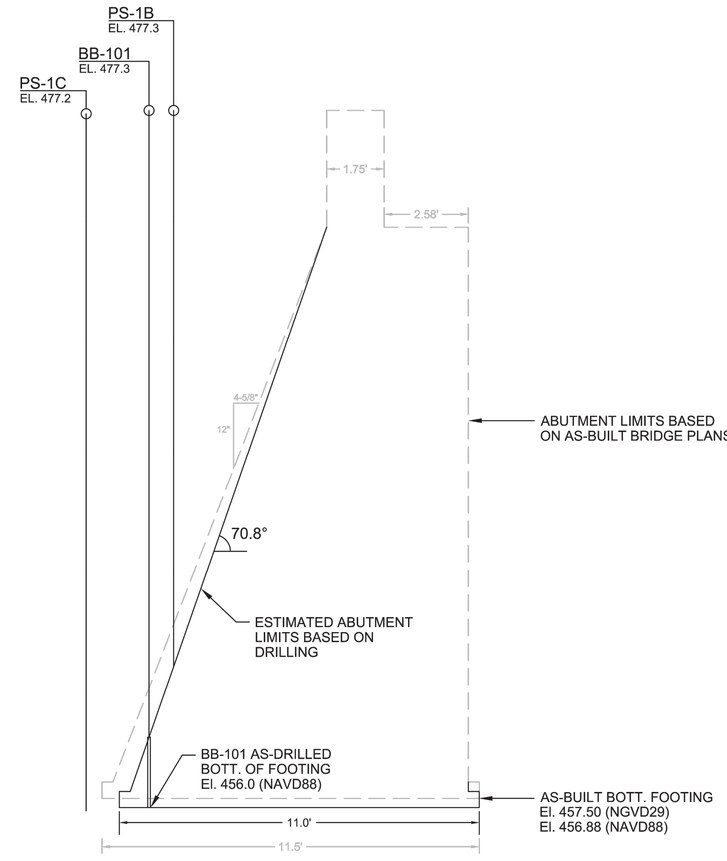
Casing Type: HSA Size 4" OD
Hammer Weight: -
Fall: -
Depth: 22'

Sampler Type: - Size: -
Automatic Hammer Weight: -
Safety Hammer Weight: -
Donut Hammer Weight: -
Fall: -

Core Barrel Type: - Size: -

PS–1C

SCALE: $\frac{1}{4}$" = 1'–0"



PROBING CROSS SECTION

NOT TO SCALE

PROBE NOTES:

1. LOCATION OF PROBES SHOWN ON THE PLAN THUS: PS–# ⊕
2. PROBES ARE TAKEN FOR PURPOSE OF LOCATING EXISTING ELEMENTS ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF THE MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
3. FIGURES IN COLUMNS INDICATE DEPTH TO REFUSAL OF AUGER.
4. ALL PROBES WERE MADE IN OCTOBER, 2021.
5. PROBES WERE MADE BY TERRACON CONSULTANTS, INC. 77 SUNDIAL AVE #401W, MANCHESTER, NEW HAMPSHIRE, 03103.
6. THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.

WORCESTER
HARRISON STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	89	169
PROJECT FILE NO.	609185		

PROBE LOGS

12/28/2024	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

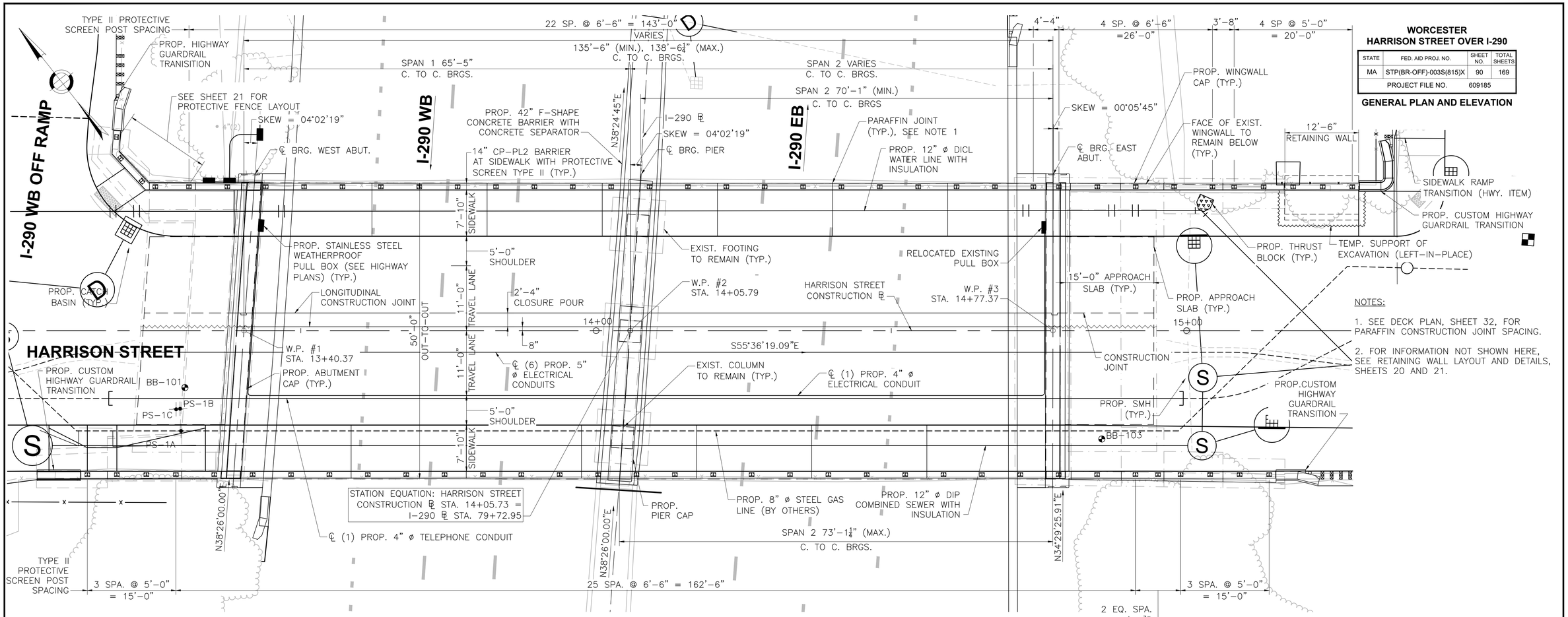
THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER

USE ONLY PRINTS OF LATEST DATE

WORCESTER
HARRISON STREET OVER I-290

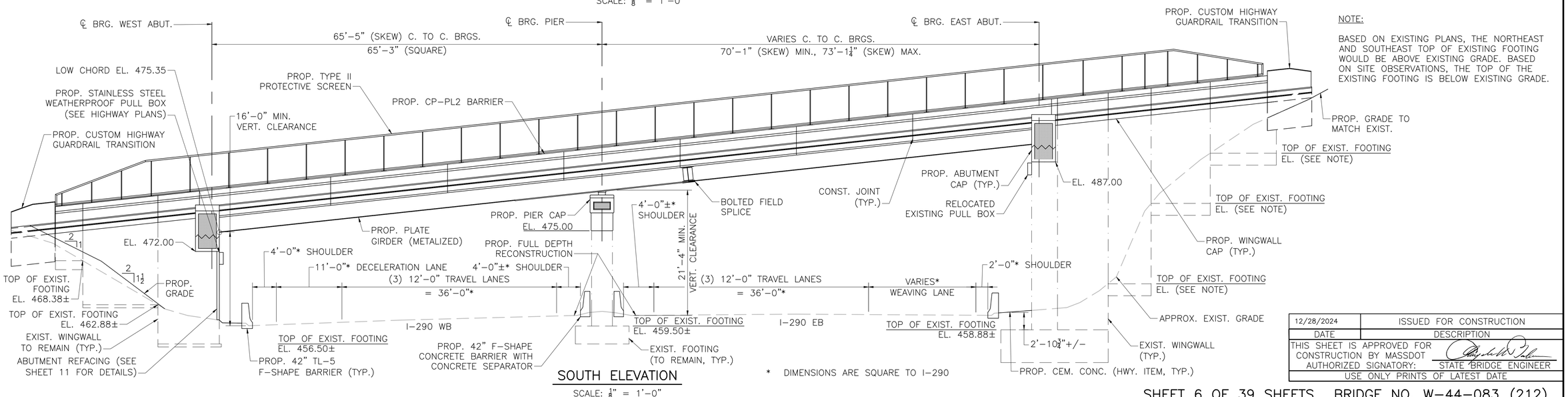
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	90	169
PROJECT FILE NO.	609185		

GENERAL PLAN AND ELEVATION



GENERAL PLAN

SCALE: ⅛" = 1'-0"



SOUTH ELEVATION

SCALE: ⅛" = 1'-0"

* DIMENSIONS ARE SQUARE TO I-290

NOTE:

BASED ON EXISTING PLANS, THE NORTHEAST AND SOUTHEAST TOP OF EXISTING FOOTING WOULD BE ABOVE EXISTING GRADE. BASED ON SITE OBSERVATIONS, THE TOP OF THE EXISTING FOOTING IS BELOW EXISTING GRADE.

12/28/2024	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

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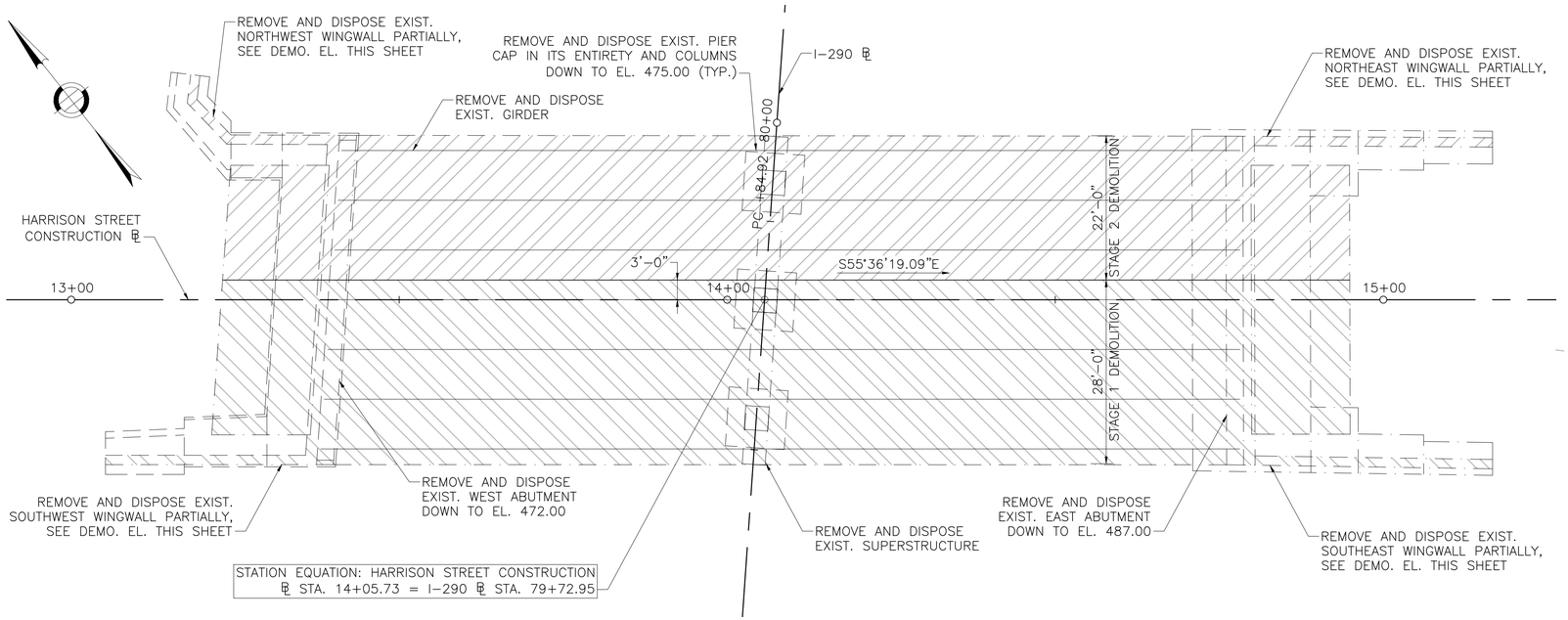
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER

USE ONLY PRINTS OF LATEST DATE

WORCESTER
HARRISON STREET OVER I-290

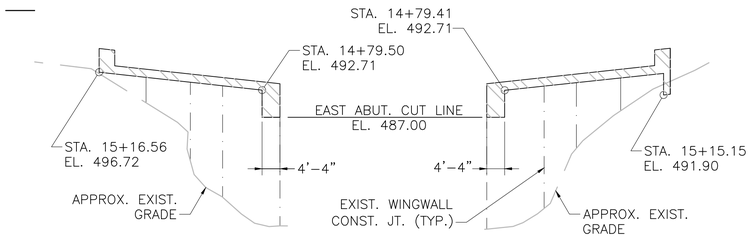
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	91	169
	PROJECT FILE NO. 609185		

DEMOLITION PLAN AND SECTIONS



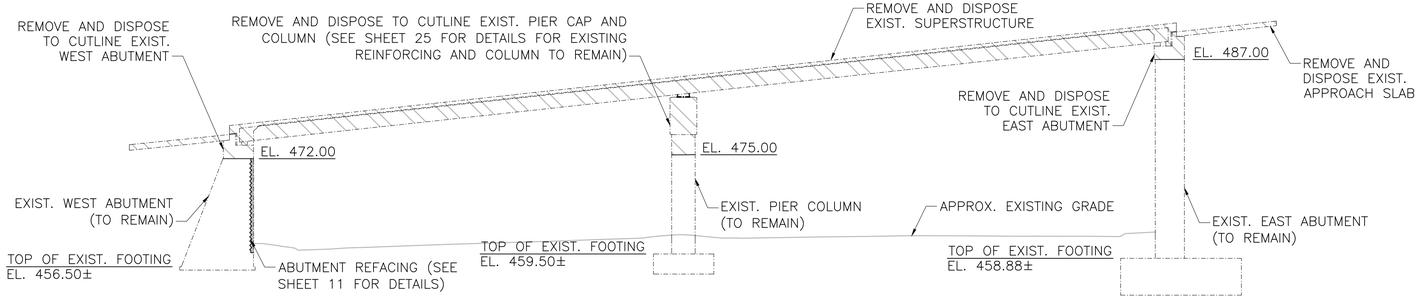
DEMOLITION PLAN

SCALE: $\frac{3}{32}$" = 1'-0"



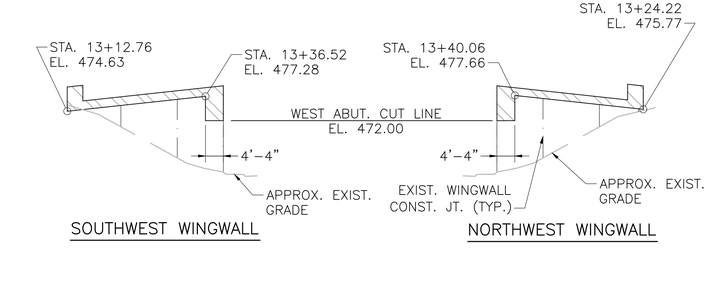
NORTHEAST WINGWALL

SOUTHEAST WINGWALL



EXISTING LONGITUDINAL SECTION

SCALE: $\frac{3}{32}$" = 1'-0"

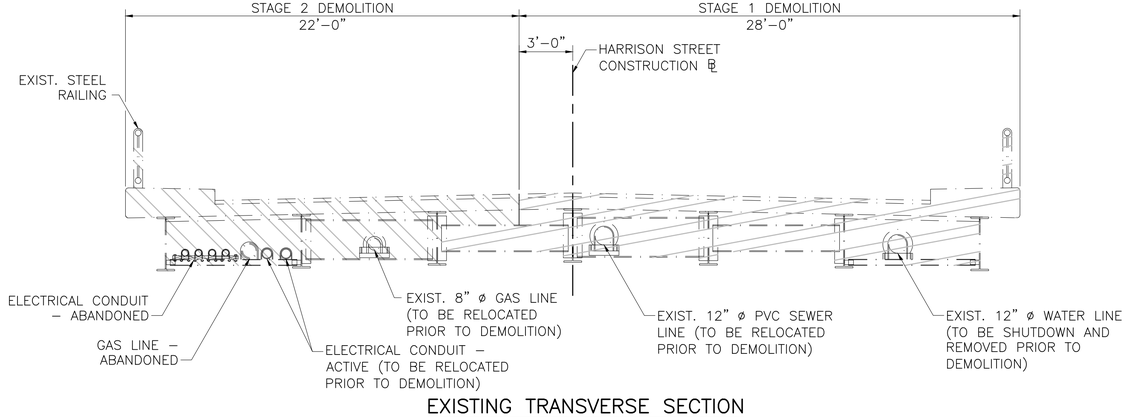


SOUTHWEST WINGWALL

NORTHWEST WINGWALL

EXISTING SUBSTRUCTURE ELEVATIONS

NOT TO SCALE



EXISTING TRANSVERSE SECTION

SCALE: $\frac{1}{4}$" = 1'-0"

NOTES:

1. EXISTING ELEMENTS SHOWN ON THESE PLANS ARE SCHEMATIC ONLY AND MAY NOT ACCURATELY REPRESENT EXISTING CONDITIONS. THE CONTRACTOR SHALL DETERMINE AND ESTABLISH ALL DIMENSIONS AND DETAILS NECESSARY FOR COMPLETION OF ALL WORK BY FIELD MEASUREMENTS AND SURVEY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ADEQUACY AND ACCURACY THEREOF, AND SHALL NOT ORDER ANY MATERIAL OR COMMENCE ANY FABRICATION UNTIL HE/SHE HAS MADE THE REQUIRED MEASUREMENTS AND THE EXTENT OF THE PROPOSED WORK HAS BEEN APPROVED BY THE ENGINEER.
2. THE PROPOSED CUT LINE SHALL BE SAWCUT TO A MINIMUM OF 1" TO PROVIDE A CLEAN EDGE FOR THE PROPOSED CONCRETE.
3. THE SURFACE OF EXISTING CONCRETE SHALL BE LEFT ROUGH, BUT SHALL HAVE A MAXIMUM AMPLITUDE OF ROUGHENED SURFACE OF $\frac{1}{4}$".
4. SEE HIGHWAY PLANS FOR TRAFFIC MANAGEMENT DETAILS.

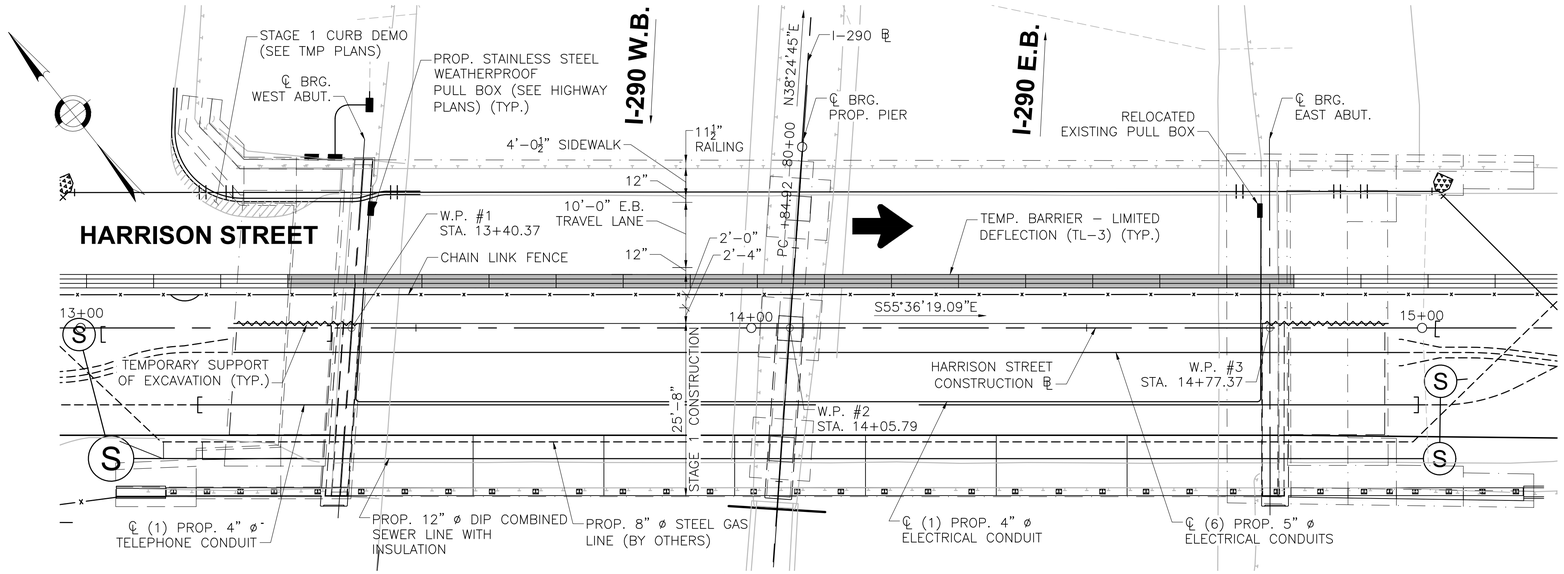
LEGEND

LIMITS OF DEMOLITION

12/28/2024	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

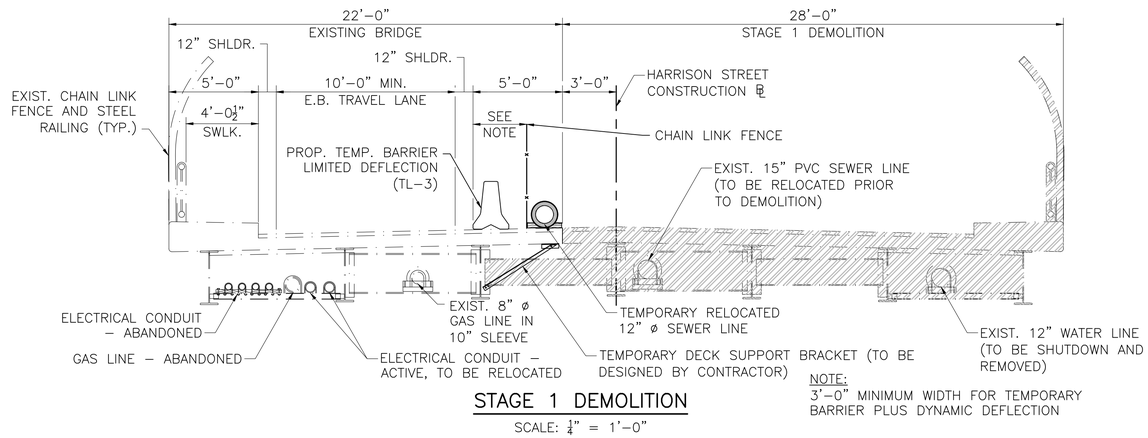
THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER

USE ONLY PRINTS OF LATEST DATE



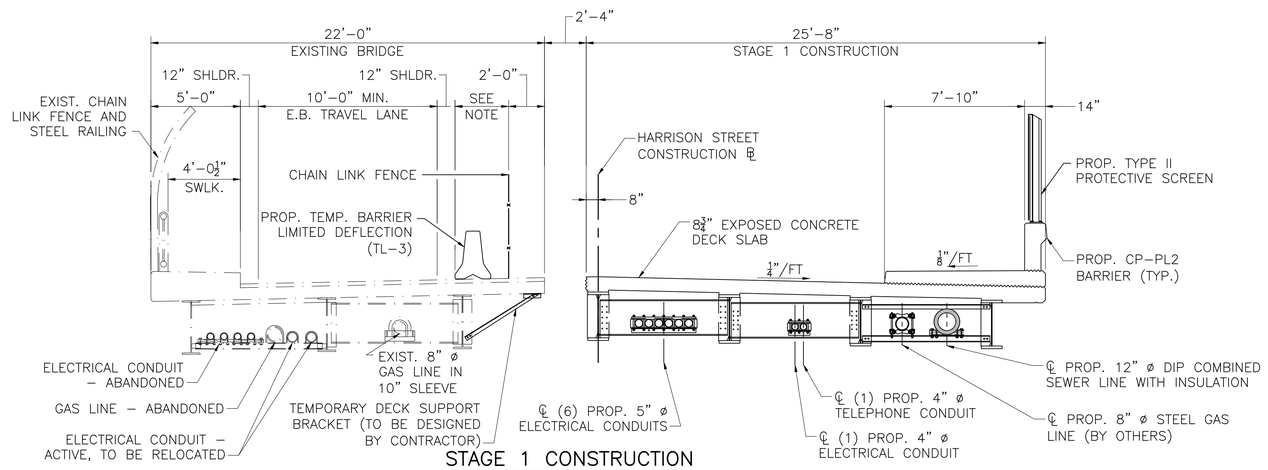
STAGE 1 CONSTRUCTION PLAN

SCALE: $\frac{3}{32}$" = 1'-0"



STAGE 1 DEMOLITION

SCALE: $\frac{1}{4}$" = 1'-0"



STAGE 1 CONSTRUCTION

SCALE: $\frac{1}{4}$" = 1'-0"

WORCESTER
HARRISON STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	92	169
PROJECT FILE NO.	609185		

STAGE 1 CONSTRUCTION PLAN AND SECTION

LEGEND

- DEMOLITION LIMITS
- TEMPORARY BARRIER – LIMITED DEFLECTION (TL-3)
- TEMPORARY BARRIER – (TL-3)

GENERAL STAGE CONSTRUCTION NOTES:

1. CONTRACTOR SHALL INSTALL UTILITY SUPPORTS AND COORDINATE WITH ALL UTILITY COMPANIES FOR UTILITY INSTALLATION.
2. SEE HIGHWAY PLANS FOR ADDITIONAL TRAFFIC MANAGEMENT REQUIREMENTS FOR ANY PROPOSED DETOURS.
3. TEMPORARY SUPPORT OF EXCAVATION SHALL BE DESIGNED BY THE CONTRACTOR IN ACCORDANCE WITH THEIR MEANS AND METHODS FOR DEMOLITION AND CONSTRUCTION AND FOLLOW THE REQUIREMENTS OF THE SPECIAL PROVISIONS.
4. THE CONTRACTOR SHALL REFER TO THE SPECIAL PROVISIONS IF DIRECTED BY THE ENGINEER TO MAKE EMERGENCY REPAIRS TO THE EXISTING DECK DURING CONSTRUCTION.

SUGGESTED SEQUENCE OF CONSTRUCTION – STAGE 1

1. SEE HIGHWAY PLANS SH. 44 FOR PRE-STAGE 1 CURB DEMOLITION LIMITS AND DETAILS.
2. INSTALL TEMPORARY BARRIERS (TL-3) – LIMITED DEFLECTION WHERE SHOWN
3. INSTALL TEMPORARY TRAFFIC BARRIERS AT EITHER END OF WORK LIMITS AND SHIFT TRAFFIC TO THE NORTHERN PORTION OF THE EXISTING BRIDGE (EASTBOUND 10'-0" MIN. TRAVEL LANE AND DETOUR WESTBOUND LANE).
4. REMOVE THE EXISTING WATER LINE AND RELOCATE SEWER LINE TO ITS TEMPORARY LOCATION ON DECK.
5. INSTALL TEMPORARY PROTECTIVE SHIELDING.
6. INSTALL TEMPORARY EARTH SUPPORT BEHIND ABUTMENTS TO STAGE 1 LIMITS.
7. INSTALL TEMPORARY PIER SUPPORT.
8. INSTALL TEMPORARY DECK SUPPORT BRACKET.
9. REMOVE PORTION OF EXISTING SUPERSTRUCTURE TO LIMIT SHOWN.
10. REMOVE PORTION OF EXISTING SUBSTRUCTURE AT THE EAST ABUTMENT, PIER, AND WEST ABUTMENT, RESPECTIVELY.
11. CONSTRUCT PROPOSED ABUTMENT CAPS, APPROACH SLABS, AND PIER CAP WITHIN THE LIMITS SHOWN AND BACKFILL WITH GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES. REMOVE TEMPORARY SUPPORT OF EXCAVATION AS NECESSARY.
12. CONSTRUCT PROPOSED SUPERSTRUCTURE FOR THE STAGE 1 LIMITS SHOWN.
13. INSTALL SEWER LINE AND RELOCATE GAS LINE TO THEIR PROPOSED LOCATIONS. RELOCATE 1-4" ELECTRICAL CONDUIT, 1-4" TELEPHONE CONDUIT AND 6-5" ELECTRICAL CONDUITS TO THEIR FINAL LOCATIONS.
14. CONSTRUCTION WORK FOR THE PROTECTION OF PIERS AND ABUTMENTS WILL OCCUR DURING STAGE 2 OF CONSTRUCTION OF THE HARRISON BRIDGE.

12/28/2024	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

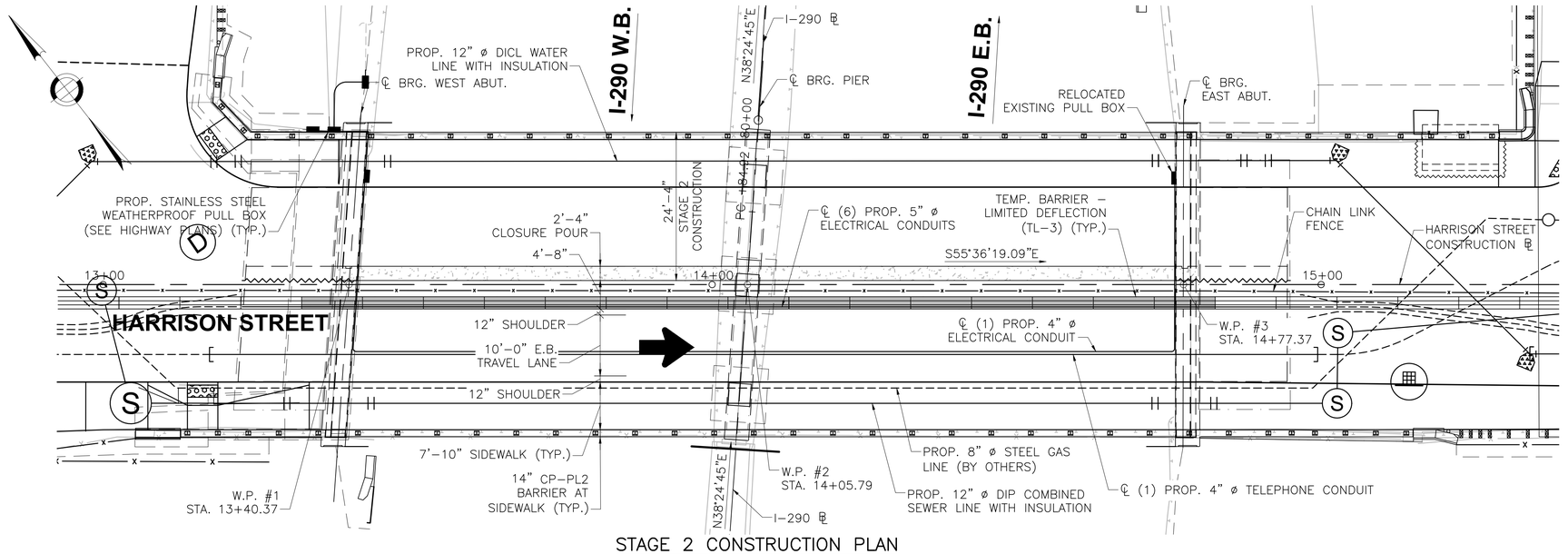
THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER

USE ONLY PRINTS OF LATEST DATE

WORCESTER
HARRISON STREET OVER I-290

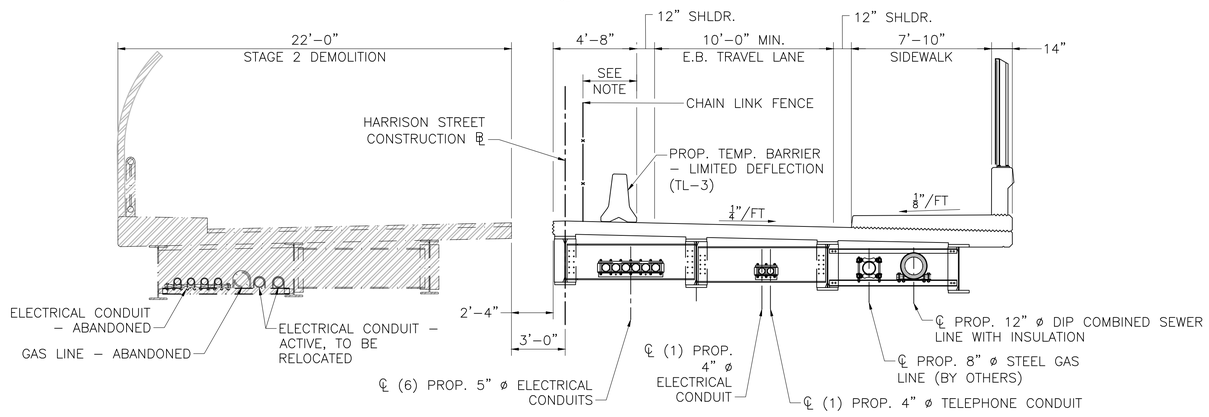
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	93	169
PROJECT FILE NO.	609185		

STAGE 2 CONSTRUCTION PLAN AND SECTION



STAGE 2 CONSTRUCTION PLAN

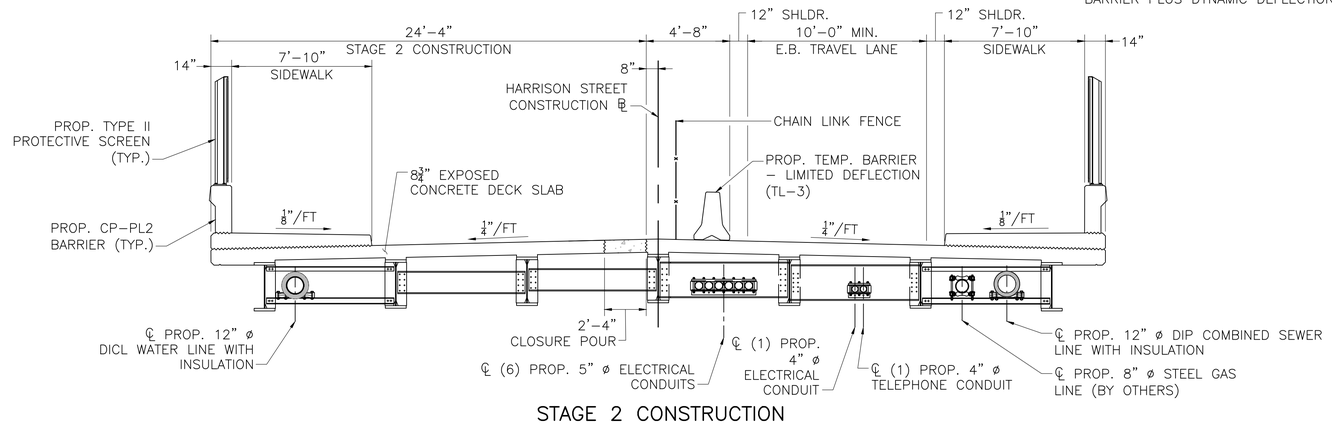
SCALE: $\frac{3}{32}$" = 1'-0"



STAGE 2 DEMOLITION

SCALE: $\frac{1}{4}$" = 1'-0"

NOTE:
3'-0" MINIMUM WIDTH FOR TEMPORARY BARRIER PLUS DYNAMIC DEFLECTION



STAGE 2 CONSTRUCTION

SCALE: $\frac{3}{8}$" = 1'-0"

LEGEND

- DEMOLITION LIMITS
- TEMPORARY BARRIER – LIMITED DEFLECTION (TL-3)
- TEMPORARY BARRIER – (TL-3)
- LIMITS OF TEMPORARY SUPPORT OF EXCAVATION

GENERAL STAGE CONSTRUCTION NOTES:

1. REFER TO SHEET 8 FOR GENERAL STAGED CONSTRUCTION NOTES.

SUGGESTED SEQUENCE OF CONSTRUCTION – STAGE 2

1. INSTALL TEMPORARY BARRIERS – LIMITED DEFLECTION (TL-3) AS SHOWN.
2. RELOCATE TEMPORARY TRAFFIC BARRIERS AND TRAFFIC ON HARRISON STREET TO SOUTHERN PORTION OF CONSTRUCTED BRIDGE (EASTBOUND 10'-0" MIN. TRAFFIC).
3. INSTALL TEMPORARY PROTECTIVE SHIELDING.
4. DEMOLISH REMAINING PORTION OF EXISTING SUPERSTRUCTURE.
5. REMOVE PORTION OF EXISTING SUBSTRUCTURE AT THE EAST ABUTMENT, PIER, AND WEST ABUTMENT, RESPECTIVELY.
6. CONSTRUCT PROPOSED ABUTMENT CAPS, APPROACH SLABS, AND PIER CAP WITHIN THE LIMITS SHOWN AND BACKFILL WITH GRAVEL BORROW FOR BRIDGE FOUNDATIONS. REMOVE TEMPORARY SUPPORT OF EXCAVATION AS NECESSARY.
7. CONSTRUCT PROPOSED SUPERSTRUCTURE FOR STAGE 2 LIMITS SHOWN
8. INSTALL PROPOSED WATER LINE.
9. CONSTRUCT FINAL CLOSURE POUR.

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WORCESTER
HARRISON STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	94	169
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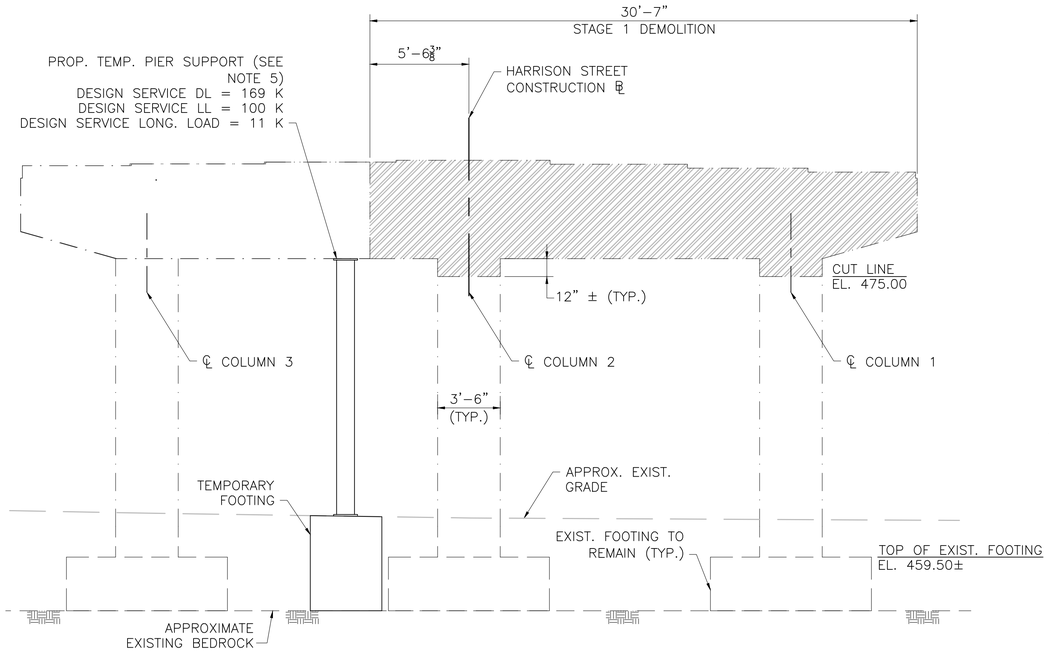
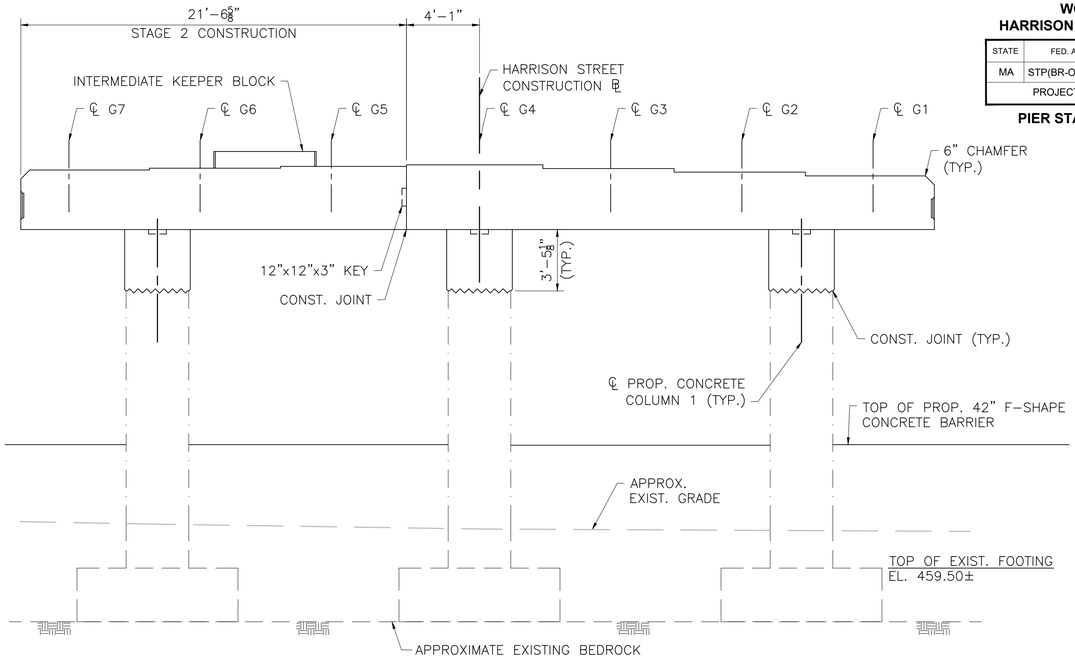
PIER STAGING SECTIONS



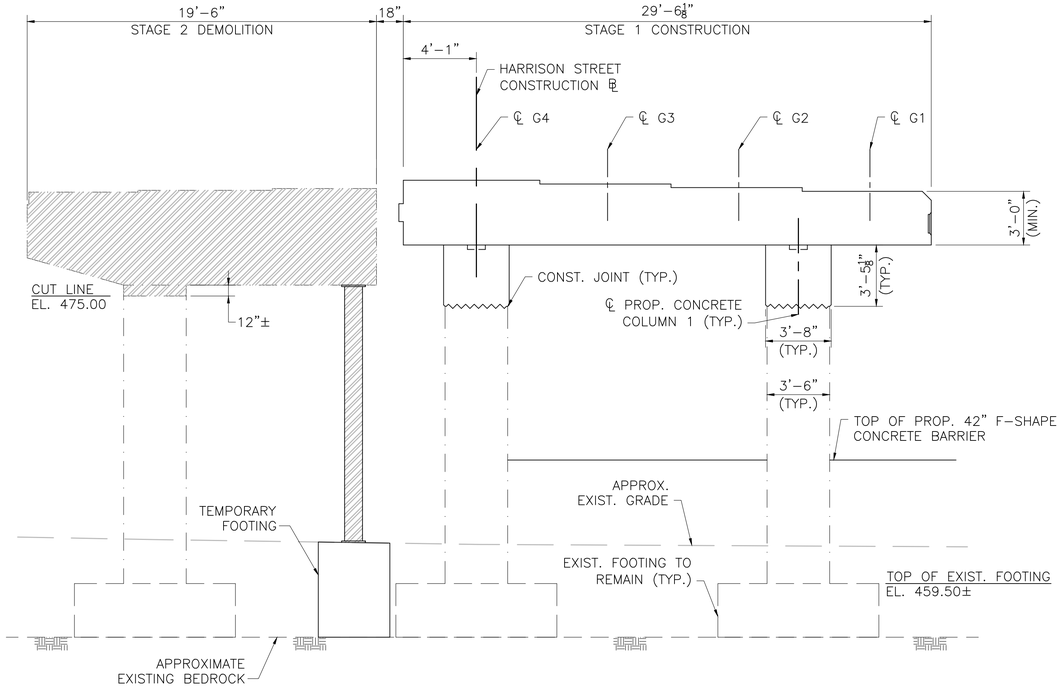
STAGE 1 DEMOLITION

SCALE: 1/4" = 1'-0"



STAGE 2 CONSTRUCTION

SCALE: 1/4" = 1'-0"



STAGE 1 CONSTRUCTION
AND STAGE 2 DEMOLITION

SCALE: 1/4" = 1'-0"

PIER STAGING NOTES:

1. PIER SECTIONS ARE TAKEN AT ℄ OF PIER.
2. ALL DIMENSIONS GIVEN ARE ALONG THE SKEW.
3. COLUMN CONSTRUCTION JOINTS TO HAVE RAKE FINISH.
4. FOR ADDITIONAL STAGING REQUIREMENTS AND SUGGESTED CONSTRUCTION SEQUENCE, SEE SHEETS 8 AND 9.
5. TEMPORARY PIER SUPPORT SHOWN IS CONCEPTUAL. THE CONTRACTOR SHALL DESIGN TEMPORARY SUPPORT TO SAFELY WITHSTAND ALL APPLICABLE DEAD, CONSTRUCTION, AND LIVE LOADS AND SHALL SUBMIT RELEVANT CALCULATIONS FOR THE REVIEW AND APPROVAL OF THE ENGINEER.
6. THE PROPOSED CUT LINE SHALL BE SAW CUT TO A MINIMUM OF 1" TO PROVIDE A CLEAN EDGE FOR THE PROPOSED CONCRETE.
7. THE SURFACE OF EXISTING CONCRETE SHALL BE LEFT ROUGH, BUT SHALL HAVE A MAXIMUM AMPLITUDE OF ROUGHENED SURFACE OF 1/4".

LEGEND

LIMITS OF DEMOLITION

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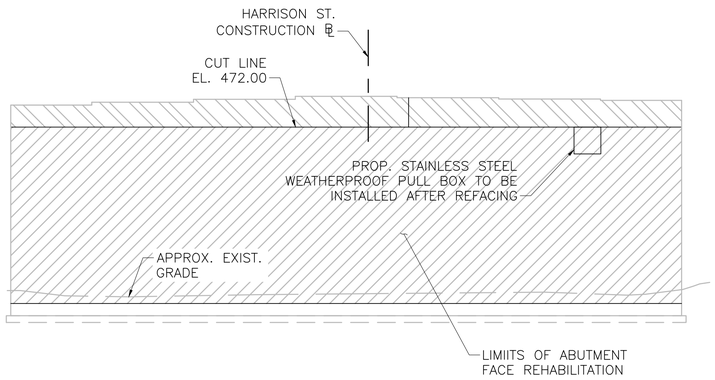
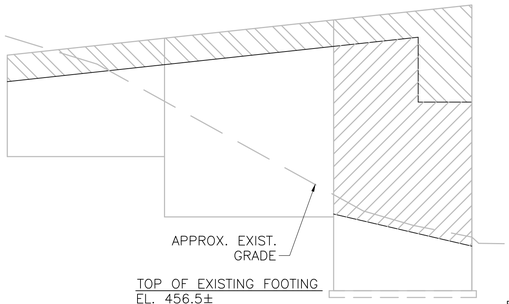
WEST ABUTMENT REFACING DETAILS

WEST ABUTMENT PLAN



WEST ABUTMENT ELEVATION



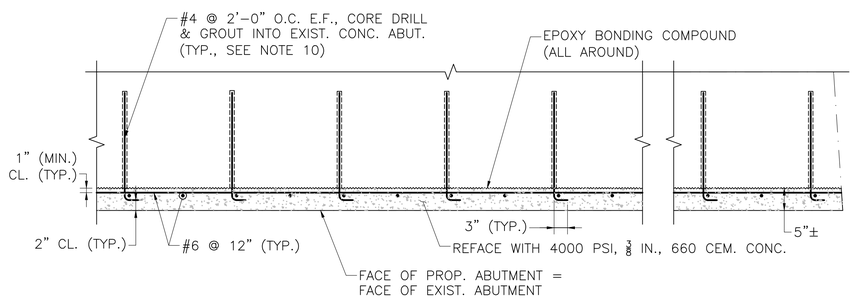
SOUTHWEST WINGWALL ELEVATION

LIMITS OF DEMOLITION

LIMITS OF ABUTMENT AND WINGWALL FACE REHABILITATION

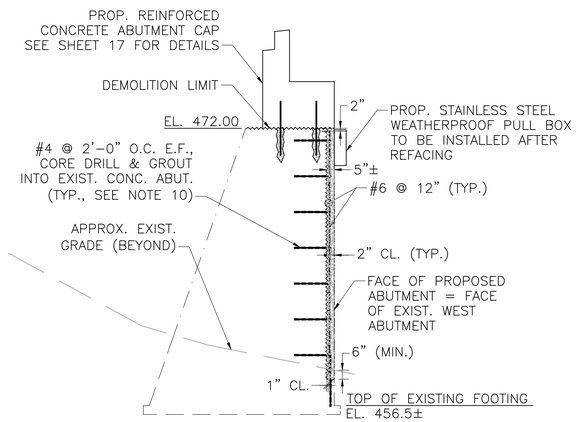
LIMITS OF SUBSTRUCTURE FACE REHABILITATION

SCALE: $\frac{3}{16}$" = 1'–0"



SUBSTRUCTURE FACE REHABILITATION PLAN

SCALE: $\frac{3}{4}$" = 1'–0"



SUBSTRUCTURE FACE REHABILITATION SECTION

SCALE: $\frac{1}{4}$" = 1'–0"

ABUTMENT REFACING NOTES:

1. THE LIMITS OF THE REPAIRS SHALL BE SAWCUT ALONG NEAT LINES TO A DEPTH OF $\frac{1}{2}$" TO PRODUCE A CLEAN EDGE.
2. REMOVE DETERIORATED AND UNSOUND CONCRETE AS WELL AS SOUND CONCRETE WHERE NECESSARY TO A MINIMUM OF 5".
3. PRESOAK CONCRETE SUBSTRATE WITH A WATER HOSE FOR 24 HOURS OR AS LONG AS SITE CONSTRAINTS PERMIT. AT TIME OF REPAIR CONCRETE PLACEMENT, SUBSTRATE SHALL BE SATURATED SURFACE DRY WITH NO STANDING WATER.
4. 4000 PSI, $\frac{3}{8}$", 660 CEMENT CONCRETE SHALL BE USED TO PERFORM THE REPAIRS.
5. ALL SURFACES SHALL BE RUBBED TO PRODUCE A SMOOTH FINISH TO MATCH EXISTING SURFACES
6. CONSOLIDATE REPAIR CONCRETE USING 1" NOMINAL DIAMETER VIBRATORS.
7. AN ELASTOMERIC COATING SHALL BE APPLIED TO THE SURFACE OF THE REHABILITATED CONCRETE FACE. THE REPAIR CONCRETE MUST AGE PER THE MANUFACTURER'S RECOMMENDATIONS/REQUIREMENTS PRIOR TO THE APPLICATION OF THE ELASTOMERIC COATING.
8. DEMOLISH THE EXISTING CONCRETE ABUTMENTS TO THE LIMITS SHOWN ON SHEET 7 OF 39.
9. DRILL 2" DIAMETER, 12" LONG HOLES FOR PLACEMENT OF #4 DOWELS AS SHOWN OR RECOMMENDED BY THE MANUFACTURER. PRIOR TO PLACEMENT OF GROUT AND REINFORCING BARS, THE DRILL HOLES SHALL BE CLEANED AND PREPARED IN ACCORDANCE WITH THE CHOSEN GROUT MANUFACTURER'S WRITTEN SPECIFICATIONS.
10. AFTER REMOVALS, DRILLING AND GROUTING AND EDGE PREPARATIONS ARE COMPLETE, REMOVE BOND INHIBITING MATERIALS (DIRT, GREASE, LOOSELY BONDED AGGREGATE) BY ABRASION BLASTING OR HIGH PRESSURE WATER BLASTING WITH WATER THAT CONTAINS NO DETERGENTS OR BOND INHIBITING CHEMICALS. CHECK THE CONCRETE SURFACE AFTER CLEANING TO ENSURE THAT SURFACE IS FREE FROM ADDITIONAL LOOSE AGGREGATE OR THAT ADDITIONAL DELAMINATIONS ARE NOT PRESENT.
11. INSTALL NEW EPOXY COATED REINFORCING AS SHOWN.
12. WET CONCRETE REPAIR AREA SO THAT SUBSTRATE IS SATURATED SURFACE DRY WITH NO STANDING WATER.
13. PLACE NEW CONCRETE.

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HARRISON STREET OVER I-290

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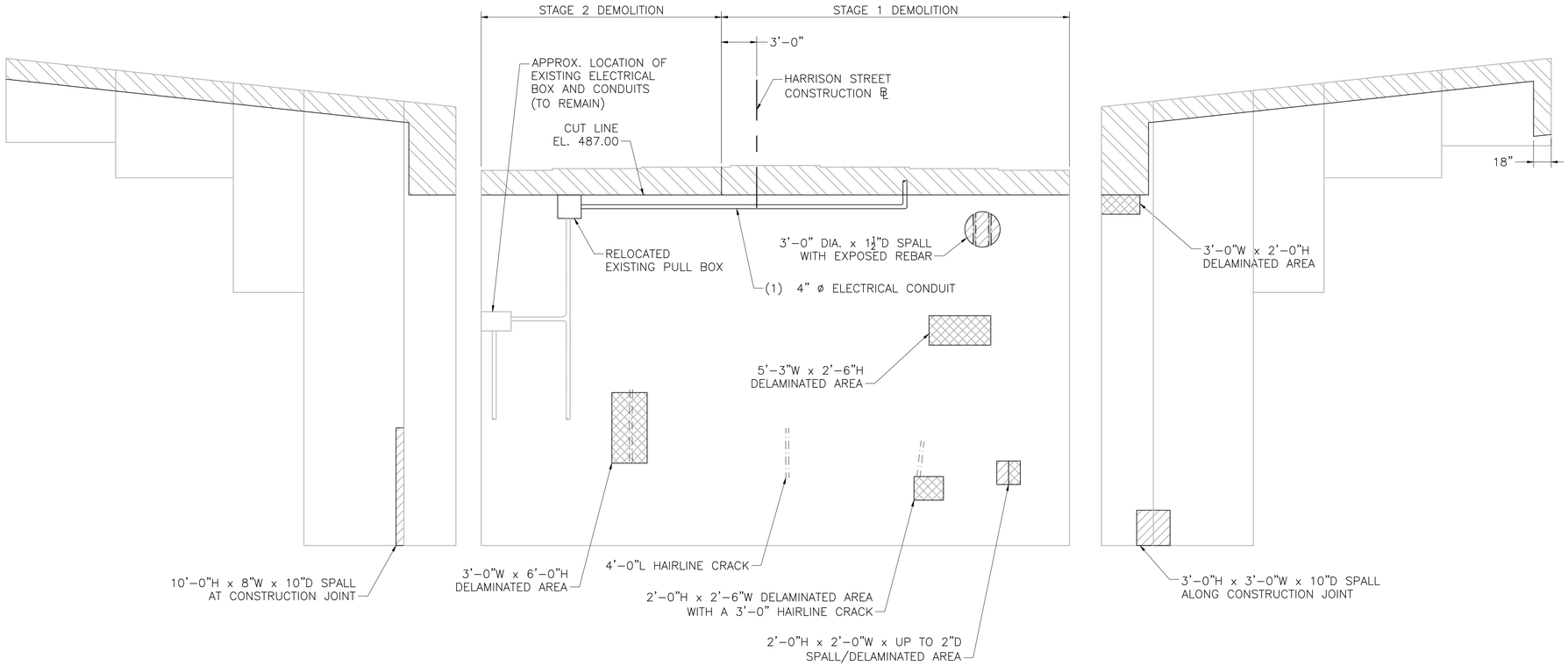
EAST ABUTMENT REPAIR PLAN



NE WINGWALL REPAIR ELEVATION
SCALE: $\frac{3}{16}$" = 1'–0"

EAST ABUTMENT REPAIR ELEVATION
SCALE: $\frac{3}{16}$" = 1'–0"

SE WINGWALL REPAIR ELEVATION
SCALE: $\frac{3}{16}$" = 1'–0"

SPALLED AREA – SEE CONCRETE REPAIR DETAIL ON SHEET 14

DELAMINATED AREA (USE ITEM 909.2 CEMENTITIOUS MORTAR FOR PATCHING FOR REPAIR)

SPALL WITH EXPOSED REBAR – SEE CONCRETE REPAIR DETAIL ON SHEET 14

CRACKS (USE ITEM 909.2 CEMENTITIOUS MORTAR FOR PATCHING FOR REPAIR)

EFFLORESCENCE

LIMITS OF DEMOLITION.

NOTES:

1. AREAS TO BE DEMOLISHED ARE SHOWN HATCHED.
2. CONTRACTOR SHALL REPAIR ALL DEFECTIVE AND DETERIORATED AREAS AS DIRECTED BY THE ENGINEER.
3. THE REINFORCEMENT AT PIER LOCATION SHALL BE RETAINED.
4. CONCRETE REPAIR AREAS THAT ARE COINCIDENT WITH REMOVAL AND RECONSTRUCTION AREAS ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY. THERE WILL BE NO PAYMENT FOR REPAIRS WITHIN THE LIMITS OF CONCRETE REMOVAL AND RECONSTRUCTION. IF ADDITIONAL DETERIORATED AREAS ARE FOUND BEYOND THE LIMITS SHOWN ON THE PLANS, THE ENGINEER SHALL BE NOTIFIED FOR DETERMINATION OF THE EXTENT OF DEMOLITION AND TYPE OF REPAIR TO BE IMPLEMENTED.
5. CONTRACTOR SHALL REPAIR ALL DEFECTIVE, DETERIORATED AND HONEYCOMB AREAS AS DIRECTED BY THE ENGINEER. WHEN DEFECTIVE, DETERIORATED, AND HONEYCOMB AREAS OVERLAP WITH AREAS TO BE DEMOLISHED, REPAIRS MAY BE MADE AFTER THE DEMOLITION.
6. FOR DETAILS OF CONCRETE REPAIRS, REFER TO CONCRETE REPAIR DETAIL SHEET 14 AND AS DESCRIBED IN THE SPECIFICATIONS AND SPECIAL PROVISIONS.
7. LOCATIONS AND EXTENTS OF REPAIRS OF CRACKS AND SPALLED CONCRETE ARE TO BE FIELD IDENTIFIED BY THE ENGINEER DURING CONSTRUCTION.
8. DIMENSIONS AND ELEVATIONS SHOWN WERE TAKEN FROM THE EXISTING DESIGN DRAWINGS. THEY MAY NOT EXACTLY MATCH THE AS BUILT CONDITION. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY ALL EXISTING DIMENSIONS AND ELEVATIONS, TO INSURE THAT IT IS CONSISTENT WITH THE TEMPORARY TRAFFIC CONSTRUCTION PLAN PRIOR TO COMMENCING WORK.
9. PACHOMETER OR SIMILAR MUST BE USED TO LOCATE EXISTING REINFORCEMENT AS REQUIRED PRIOR TO REPAIR.
10. THE CONTRACTOR SHALL NOTIFY ENGINEERS IMMEDIATELY OF ANY DETERIORATIONS THAT EXCEED THE LIMITS SHOWN ON THE PLANS.

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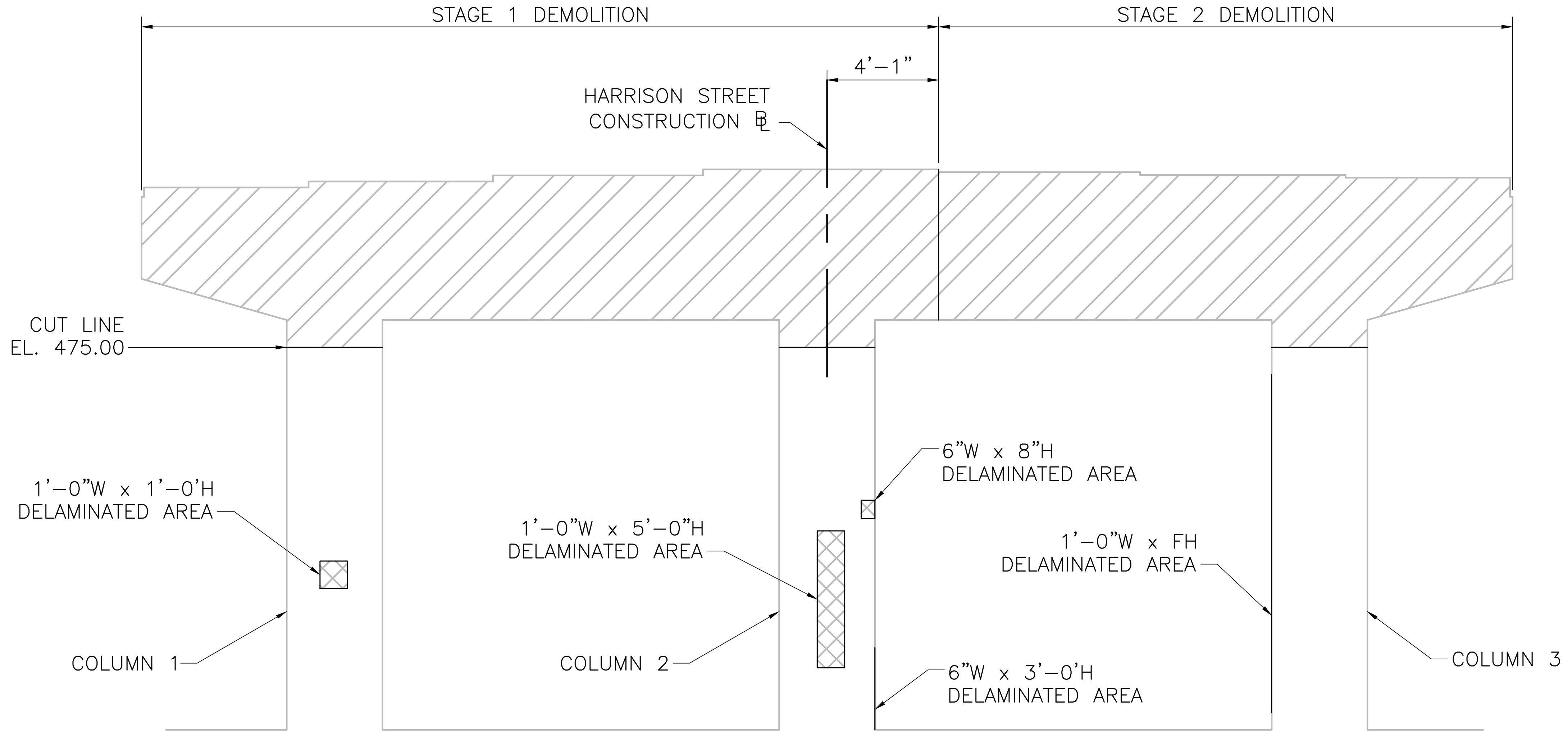


PIER COLUMN REPAIR PLAN (WEST FACE)

SCALE: ¼" = 1'–0"

SPALLED AREA – SEE CONCRETE REPAIR DETAIL ON SHEET 14.

DELAMINATED AREA (USE ITEM 909.2 CEMENTITIOUS MORTAR FOR PATCHING FOR REPAIR)

SPALL WITH EXPOSED REBAR – SEE CONCRETE REPAIR DETAIL

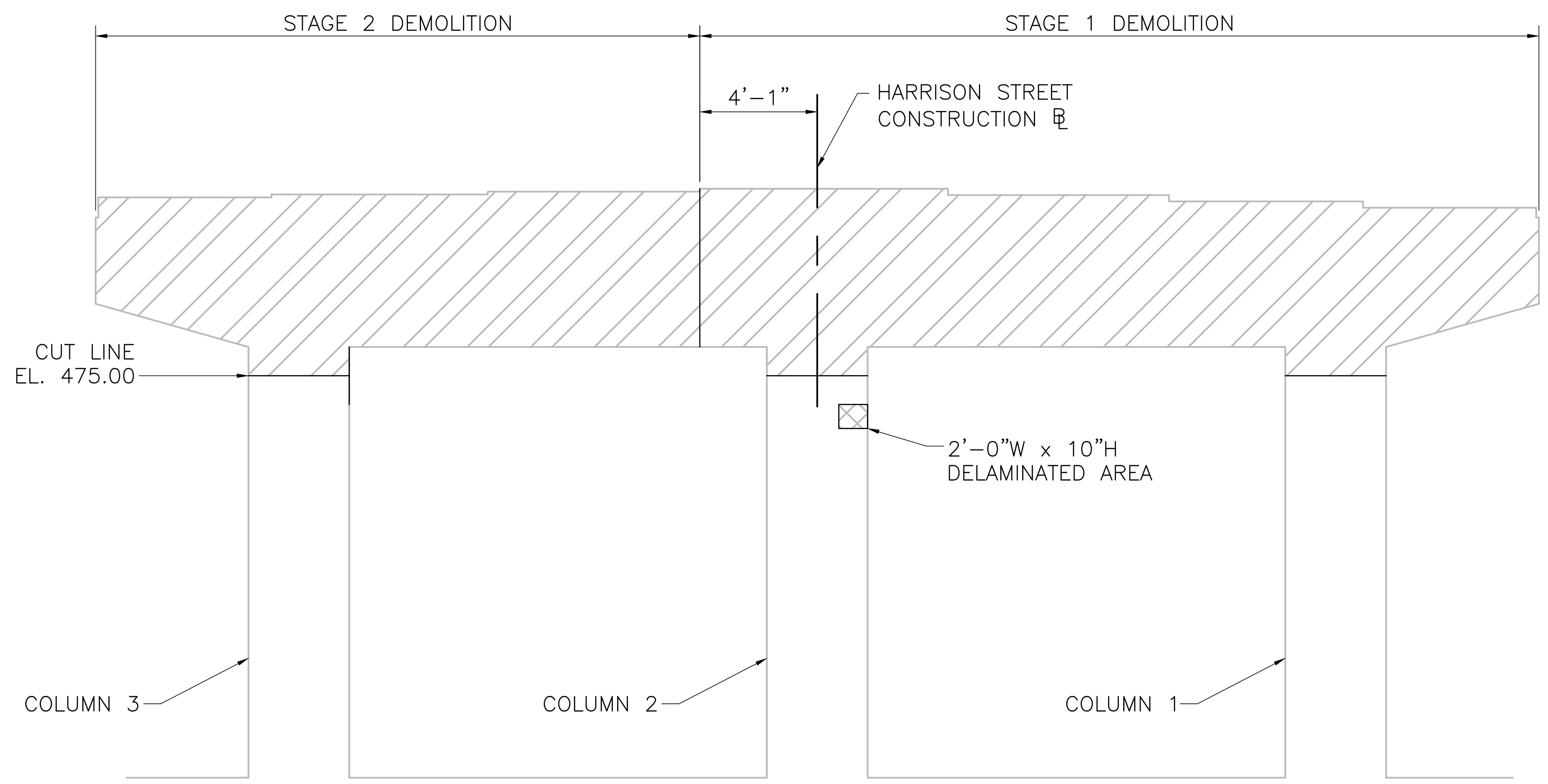
CRACKS (USE ITEM 909.2 CEMENTITIOUS MORTAR FOR PATCHING FOR REPAIR)

EFFLORESCENCE

LIMITS OF DEMOLITION.

NOTES:

1. FOR NOTES SEE SHEET 12.



PIER COLUMN REPAIR PLAN (EAST FACE)

SCALE: ¼" = 1'–0"

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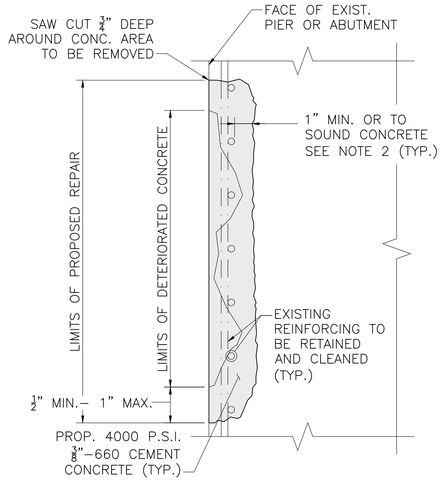

NOTE:

IF THERE IS LESS THAN 1½" CONCRETE COVER, THEN THE CONTRACTOR SHALL BUILD OUT THE FORM TO ENSURE A MINIMUM OF 1½" COVER.

REPAIR PATCH DETAIL

SCALE: 1½" = 1'–0"

EXCAVATION AND SURFACE REPAIR NOTES:

(CONVENTIONAL CONCRETE REPAIR)

1. THE CONTRACTOR SHALL EXERCISE CARE WHEN REMOVING CONCRETE AROUND REINFORCEMENT TO ONLY REMOVE DETERIORATED CONCRETE AND TO LIMIT THE SOUND CONCRETE REMOVED TO THE MINIMUM NECESSARY TO EFFECT A GOOD REPAIR.

2. THE CONTRACTOR SHALL ESTABLISH LIMITS OF VARIOUS REPAIRS AS SHOWN ON THE PLANS AND AT THE DIRECTION OF THE ENGINEER. THE LOCATIONS SHOWN ON THE PLANS ARE BASED UPON RECORDS OF BRIDGE INSPECTIONS AND OBSERVATION FROM THE GROUND AND ARE NOT GUARANTEED. THE LOCATION AND EXTENT OF ALL CONCRETE REPAIRS ARE TO BE FIELD VERIFIED AND APPROVED BY THE ENGINEER AFTER THE CONTRACTOR HAS SOUNDED AND MARKED OUT THE REPAIR AREAS. REPAIR CONFIGURATIONS SHOULD BE KEPT AS SIMPLE AS POSSIBLE, PREFERABLY WITH SQUARE CORNERS.

3. THE LIMITS OF THE REPAIRS SHALL BE SAWCUT ALONG NEAT LINES TO A DEPTH OF ¾" TO PRODUCE A CLEAN EDGE.

4. REMOVE DETERIORATED AND UNSOUND CONCRETE AS WELL AS SOUND CONCRETE WHERE NECESSARY TO A MINIMUM OF 1" BEYOND SURFACE REINFORCEMENT.

5. EXPOSED REINFORCEMENT IS TO BE CLEANED BY MECHANICAL CLEANING AND HIGH PRESSURE WASHING WITH WATER THAT CONTAINS NO DETERGENTS OR BOND INHIBITING CHEMICALS. WHERE ACTIVE CORROSION HAS OCCURRED (THAT WHICH WOULD INHIBIT BONDING) SANDBLAST STEEL TO SSPC–SP5.

6. MISSING OR DETERIORATED REINFORCING STEEL SHALL BE REPLACED AS DIRECTED BY THE ENGINEER. AFTER REMOVAL AND EDGE PREPARATION ARE COMPLETE, REMOVE BOND INHIBITING MATERIALS (DIRT, GREASE, LOOSELY BONDED AGGREGATE) BY ABRASION BLASTING OR HIGH PRESSURE WATER BLASTING WITH WATER THAT CONTAINS NO DETERGENTS OR BOND INHIBITING CHEMICALS. CHECK THE CONCRETE SURFACES AFTER CLEANING TO INSURE THAT THE SURFACE IS FREE FROM ADDITIONAL LOOSE AGGREGATE OR THAT ADDITIONAL DELAMINATIONS ARE NOT PRESENT.

7. 4000 PSI ⅜" 660 CEMENT CONCRETE SHALL BE USED TO PERFORM THE REPAIRS.

8. PRESOAK CONCRETE SUBSTRATE WITH A WATER HOSE FOR 24 HOURS OR AS LONG AS SITE CONSTRAINTS PERMIT. AT TIME OF REPAIR CONCRETE PLACEMENT, SUBSTRATE SHALL BE SATURATED SURFACE DRY WITH NO STANDING WATER.

9. ALL SURFACES SHALL BE RUBBED TO PRODUCE A SMOOTH FINISH TO MATCH EXISTING SURFACES.

10. IF AN EPOXY BONDING COMPOUND IS USED (AS DIRECTED BY THE ENGINEER), THE MATERIALS SHALL MEET AASHTO M235 TYPE V. GRADE AND CLASS SHALL BE SPECIFIED FOR EACH INDIVIDUAL APPLICATION. THE EPOXY COMPOUND SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. IN NO CASE WILL THE EPOXY BONDING COMPOUND BE ALLOWED TO CURE TO A HARDENED STATE PRIOR TO CONCRETE PLACEMENT. IF THIS DOES OCCUR IT MUST BE COMPLETELY REMOVED.

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CONCRETE REPAIR DETAILS

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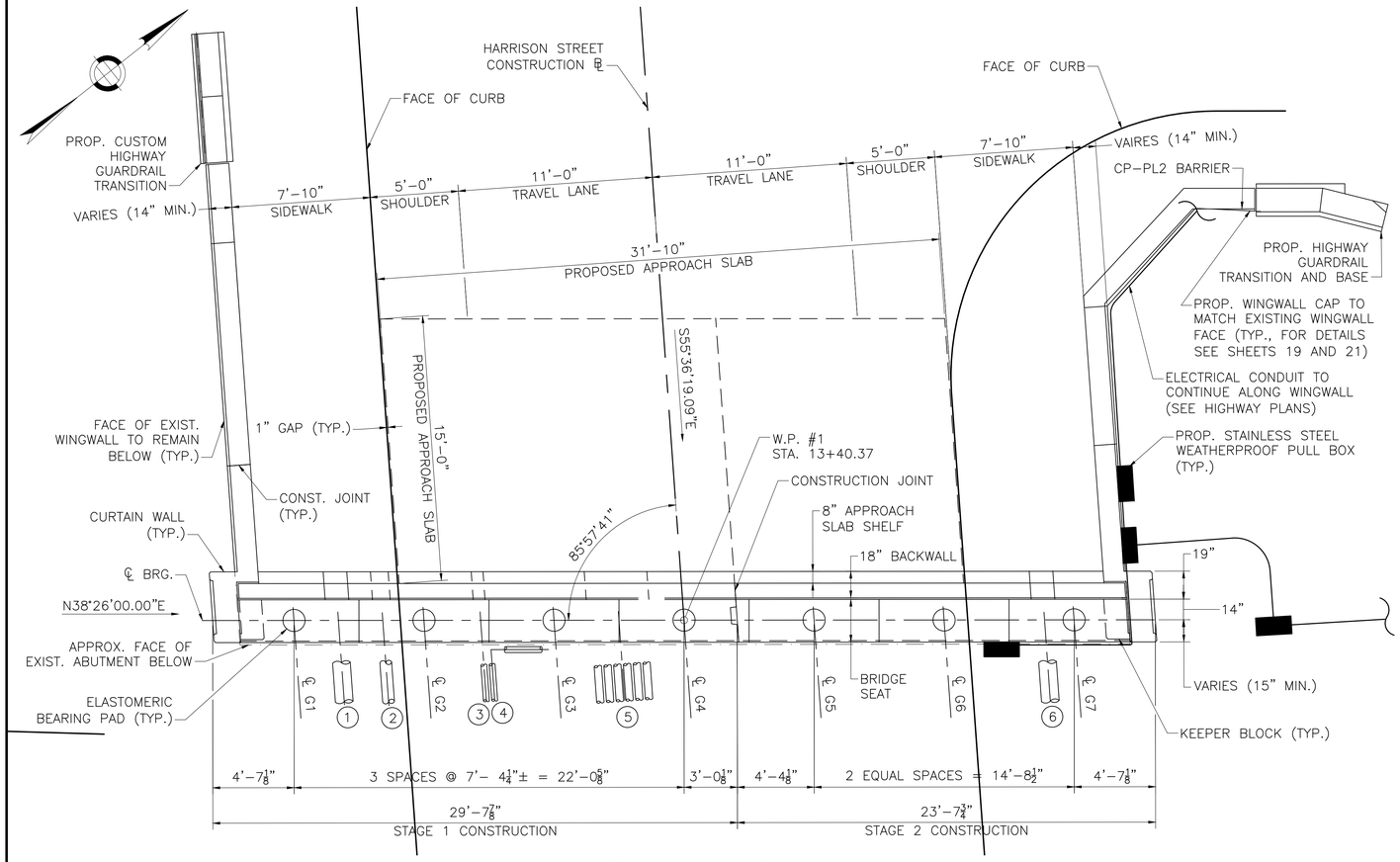
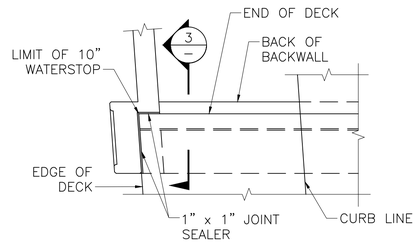


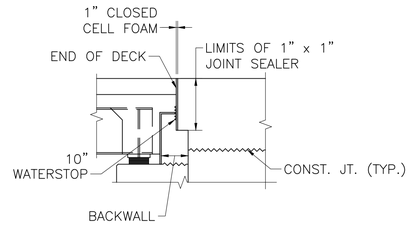
WEST ABUTMENT PLAN

SCALE: ¼" = 1'-0"



END OF DECK PLAN

SCALE: ¼" = 1'-0"



SECTION 3

SCALE: ¼" = 1'-0"

UTILITY DESCRIPTIONS

1. PROP. 12" ø DIP COMBINED SEWER LINE WITH INSULATION IN 16" ø SLEEVE AT ABUTMENT FACE INV. EL. 475.88
2. PROP. 8" ø STEEL GAS LINE (BY OTHERS) IN 12" ø SLEEVE AT ABUTMENT FACE INV. EL. 475.96
3. (1) PROP. 4" ø TELEPHONE CONDUIT INV. EL. 475.97
4. (1) PROP. 4" ø ELECTRICAL CONDUIT
5. (6) PROP. 5" ø ELECTRICAL CONDUITS INV. EL. 476.18
6. PROP. 12" ø DICL WATER LINE WITH INSULATION IN 16" ø SLEEVE AT ABUTMENT FACE INV. EL. 476.11

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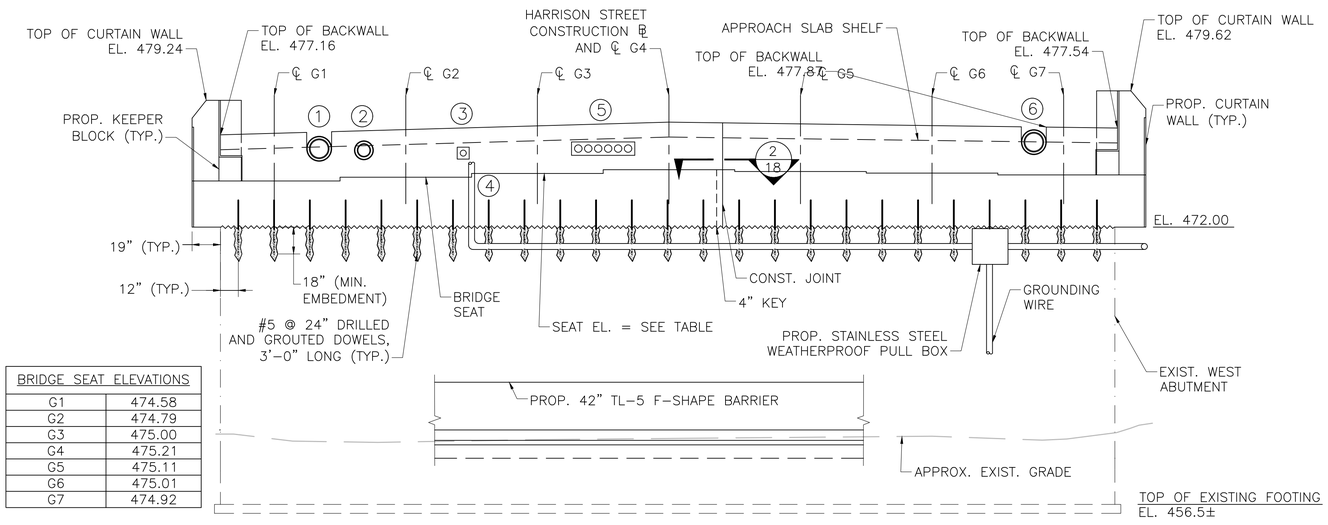
WEST ABUTMENT PLAN AND ELEVATION

NOTES:
1. ALL CONCRETE SHALL BE 5000 HP CONCRETE.
2. THE FACTORED BEARING PRESSURE AT WEST ABUTMENT = 10.51 KSF AND AT EAST ABUTMENT = 10.05 KSF AS PER AASHTO BRIDGE DESIGN SPECIFICATIONS STRENGTH 1 LOAD COMBINATION.

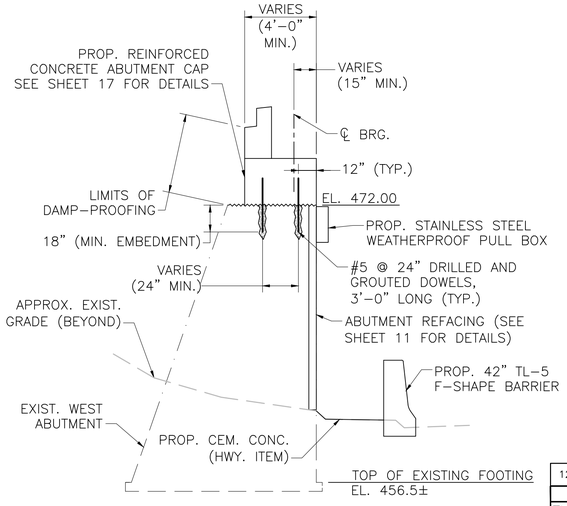
   FACTORED BEARING RESISTANCE AT THE WEST AND EAST ABUTMENT = 14.40 KSF. FACTORED BEARING RESISTANCE IS THE PRODUCT OF THE NOMINAL BEARING RESISTANCE OF 32.0 KSF AND RESISTANCE FACTOR OF 0.45.



BRIDGE SEAT ELEVATIONS	
G1	474.58
G2	474.79
G3	475.00
G4	475.21
G5	475.11
G6	475.01
G7	474.92

WEST ABUTMENT ELEVATION

SCALE: ¼" = 1'-0"



WEST ABUTMENT SECTION

SCALE: ¼" = 1'-0"

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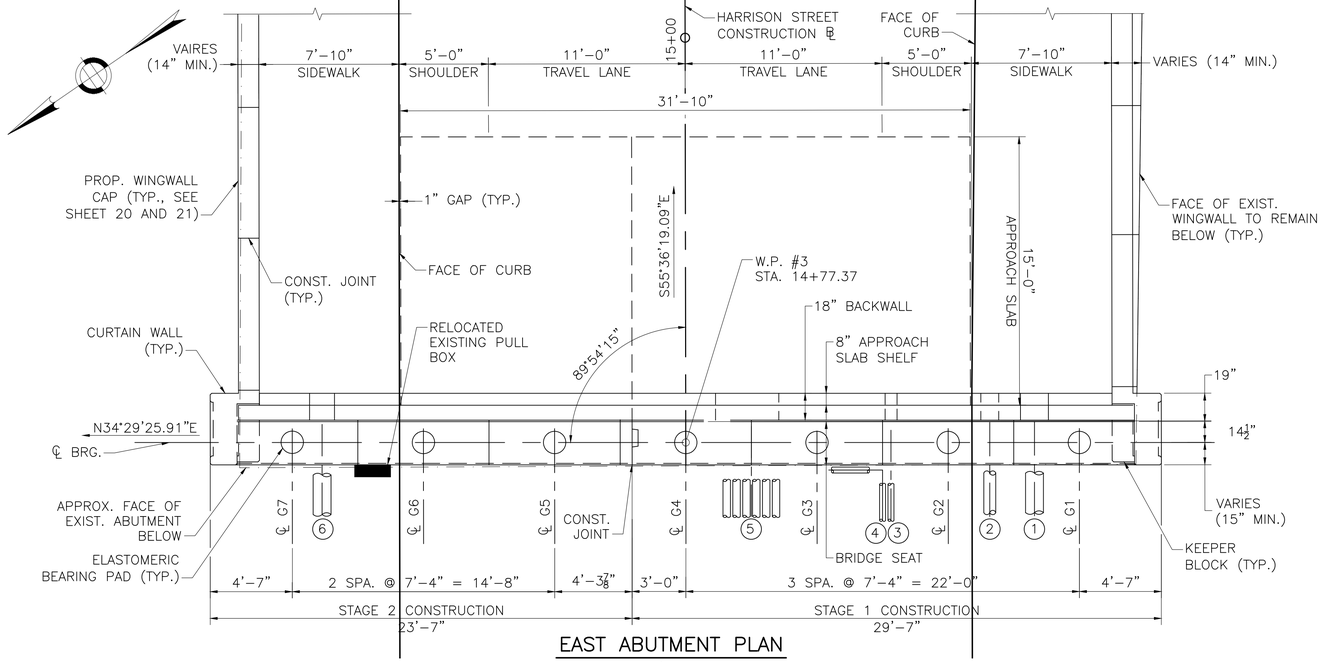
EAST ABUTMENT PLAN AND ELEVATION

NOTES:

SEE SHEET 15 FOR ABUTMENT NOTES.

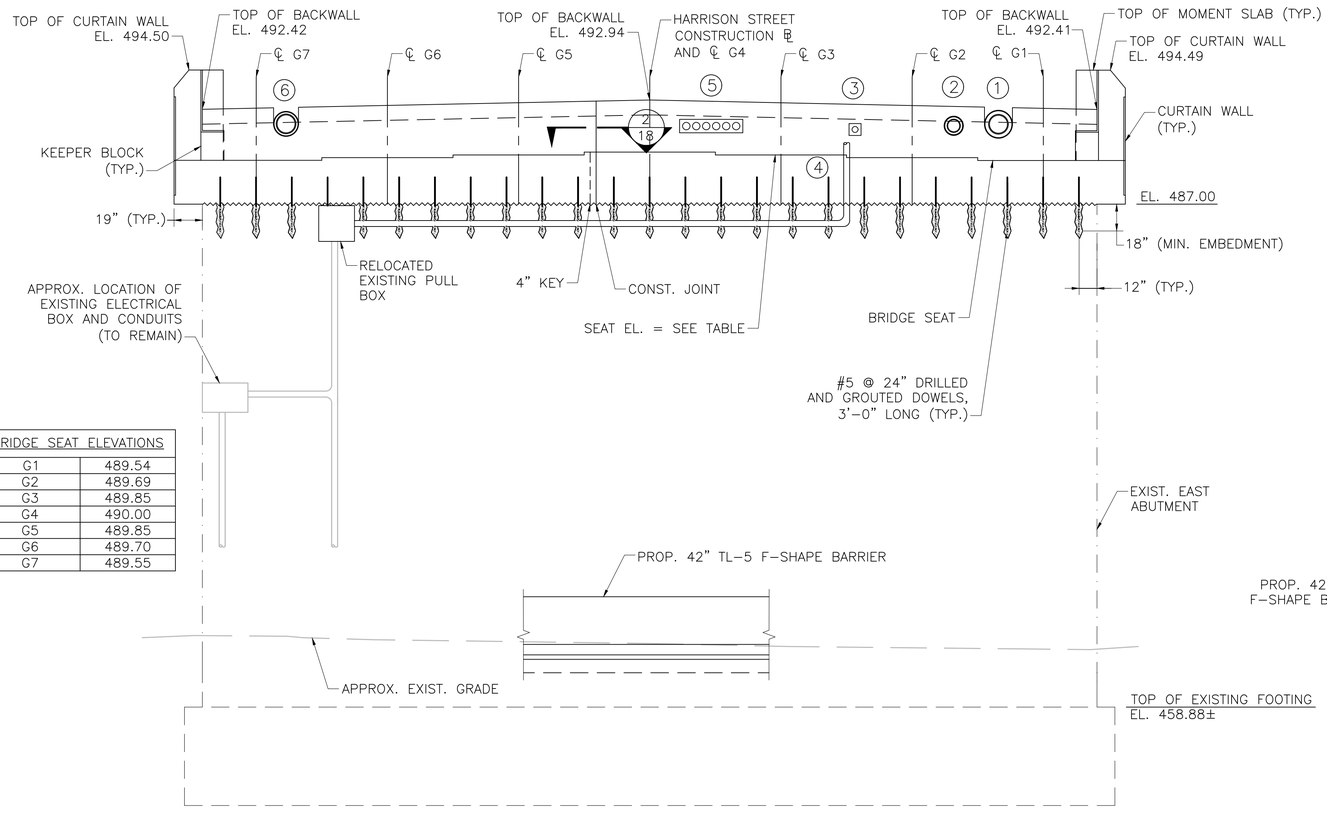


EAST ABUTMENT PLAN

SCALE: ¼" = 1'–0"

UTILITY DESCRIPTIONS

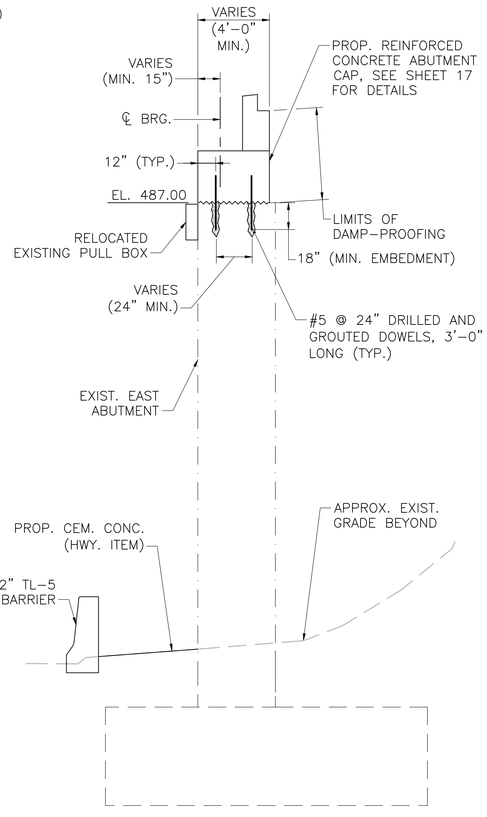
1. PROP. 12" ø DIP COMBINED SEWER LINE WITH INSULATION IN 16" ø SLEEVE AT ABUTMENT FACE INV. EL. 491.05
2. PROP. 8" ø STEEL GAS LINE (BY OTHERS) IN 12" ø SLEEVE AT ABUTMENT FACE INV. EL. 491.13
3. (1) PROP. 4" ø TELEPHONE CONDUIT INV. EL. 491.09
4. (1) PROP. 4" ø ELECTRICAL CONDUIT
5. (6) PROP. 5" ø ELECTRICAL CONDUITS INV. EL. 491.24
6. PROP. 12" ø DICL WATER LINE WITH INSULATION IN 16" ø SLEEVE AT ABUTMENT FACE INV. EL. 491.07



BRIDGE SEAT ELEVATIONS	
G1	489.54
G2	489.69
G3	489.85
G4	490.00
G5	489.85
G6	489.70
G7	489.55

EAST ABUTMENT ELEVATION

SCALE: ¼" = 1'–0"



EAST ABUTMENT SECTION

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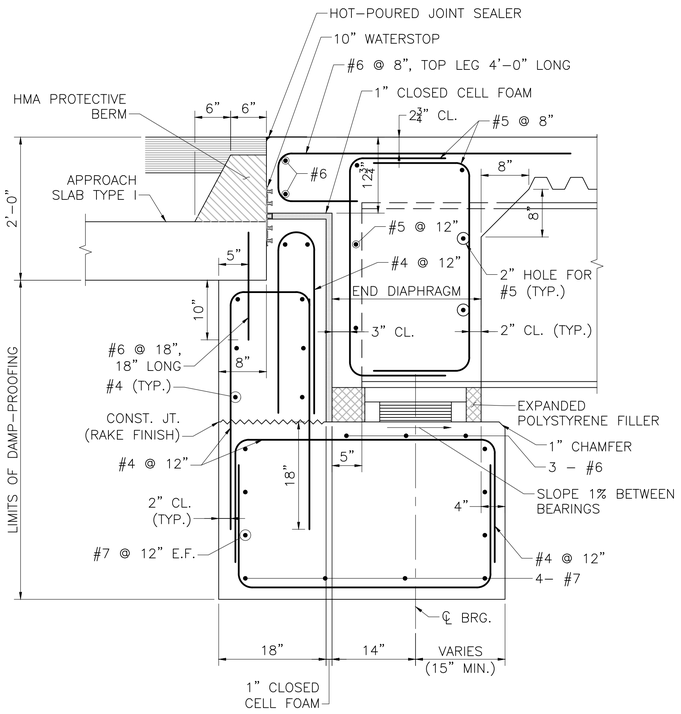
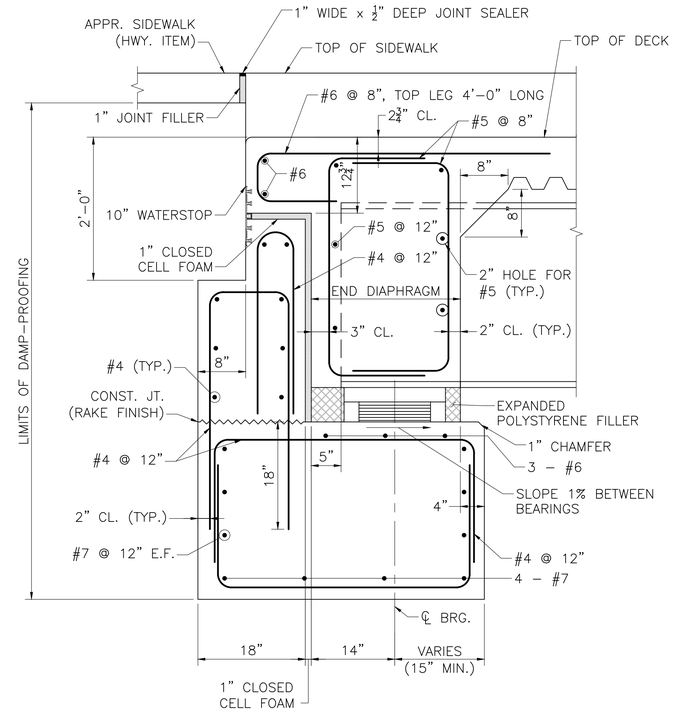


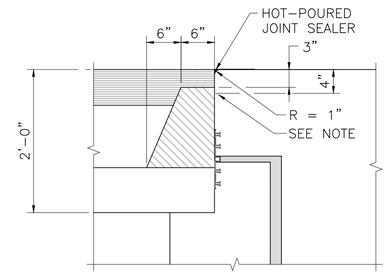
DETAILS AT ABUTMENT – ROADWAY SECTION

SCALE: 1" = 1'–0"



DETAILS AT ABUTMENT – SIDEWALK SECTION

SCALE: 1" = 1'–0"

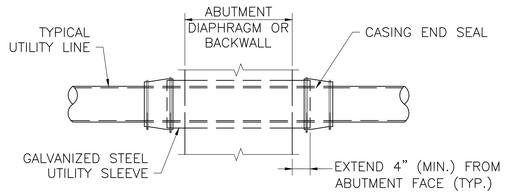


NOTE:

TUCK AND NAIL END OF MEMBRANE WATERPROOFING INTO A TAPERED ½" DEEP x 2" HIGH POCKET. FILL POCKET WITH JOINT SEALER.

DETAILS AT ABUTMENT FOR EXPOSED CONCRETE DECKS

SCALE: 1" = 1'–0"



NOTES:

1. DIMENSIONS ARE SQUARE TO GIRDERS.
2. UTILITY SLEEVES SHALL BE STEEL PIPE CONFORMING TO ASTM A–53, TYPE S, GRADE B, STANDARD WEIGHT, PLAIN ENDS, HOT–DIP GALVANIZED AND SHALL BE SET IN THE FORMS PRIOR TO PLACING ABUTMENT DIAPHRAGM CONCRETE.
3. DETAIL SHALL BE USED FOR ALL UTILITY PENETRATIONS UNLESS OTHERWISE NOTED.

UTILITY PENETRATION DETAIL

SCALE: ½" = 1'–0"

ROADWAY/SIDEWALK SECTION NOTES:

1. ALL REINFORCING STEEL SHALL BE EPOXY COATED. UNLESS OTHERWISE NOTED ON THE CONSTRUCTION DRAWINGS.
2. ALL BACKWALL CONCRETE ABOVE THE CONSTRUCTION JOINT LOCATED AT THE BRIDGE SEAT SHALL BE 5000 PSI HP CONCRETE. THE CONSTRUCTION JOINT SHALL BE GIVEN A RAKE FINISH WITH A ¼" MINIMUM AMPLITUDE.
3. TOP OF BACKWALL SHALL BE TROWELED SMOOTH PARALLEL TO THE PROFILE GRADE.
4. THE BACKWALL, KEEPER BLOCK, AND CURTAIN WALL CONCRETE MUST BE PLACED AND SUFFICIENTLY CURED PRIOR TO PLACING THE END DIAPHRAGM CONCRETE.
5. THE END DIAPHRAGM CONCRETE SHALL BE 5000 PSI HP CEMENT CONCRETE AND SHALL BE PLACED MONOLITHICALLY WITH THE DECK.
6. PRIOR TO PLACING THE END DIAPHRAGM CONCRETE, CLOSED CELL FOAM OF THE SPECIFIED THICKNESSES SHALL BE ATTACHED WITH ADHESIVE TO ALL SURFACES OF THE BACKWALL, KEEPER BLOCKS, AND CURTAIN WALLS AS SHOWN ON THE PLANS. EXPANDED POLYSTYRENE FILLER SHALL BE PLACED UNDER THE BEAM BOTTOM FLANGE AND THE BOTTOM OF THE END DIAPHRAGM SHALL BE FORMED AS SPECIFIED. THE CONTRACTOR SHALL INSURE THAT ALL ABUTMENT CONCRETE IS PROPERLY LINED. END DIAPHRAGM CONCRETE MUST NOT COME IN DIRECT CONTACT WITH ABUTMENT CONCRETE.

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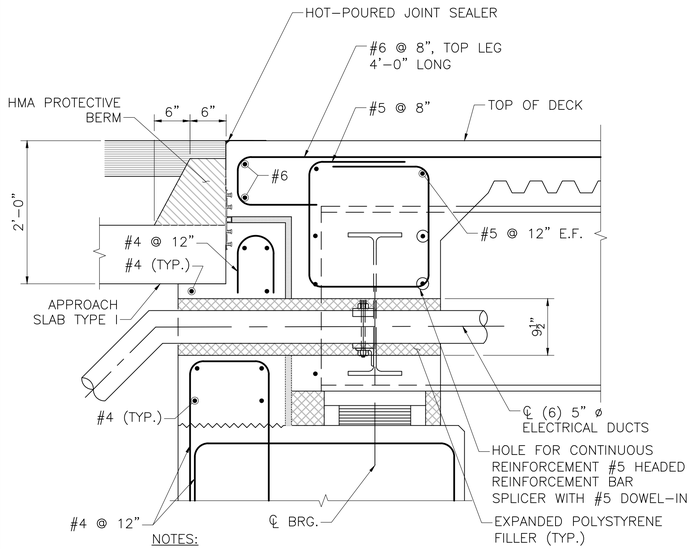
ABUTMENT SECTIONS 1

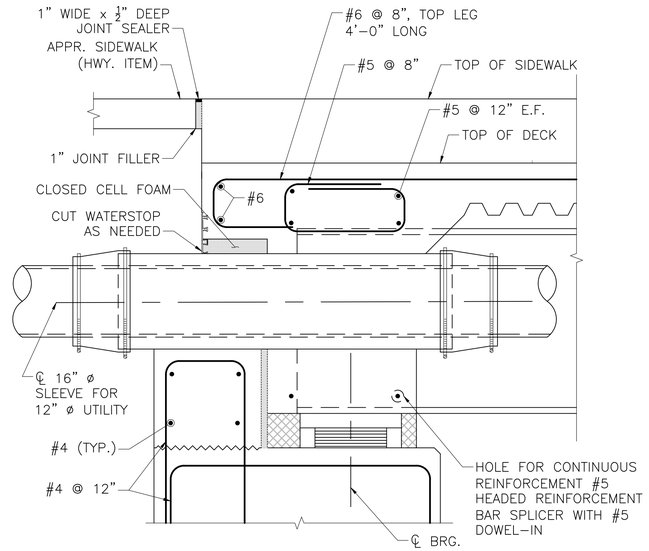


NOTES:

1. EAST ABUTMENT SHOWN. WEST ABUTMENT SIMILAR.
2. 5" DIA. CONDUIT SHOWN, 4" DIA. CONDUIT SIMILAR.

DETAILS AT ABUTMENT UTILITY BAY AT ROADWAY SECTION

SCALE: 1" = 1'–0"



NOTE:

12" ø SEWER LINE AND WATER SHOWN, 8" ø GAS SIMILAR.

DETAILS AT ABUTMENT UTILITY BAY AT SIDEWALK SECTION

SCALE: 1" = 1'–0"

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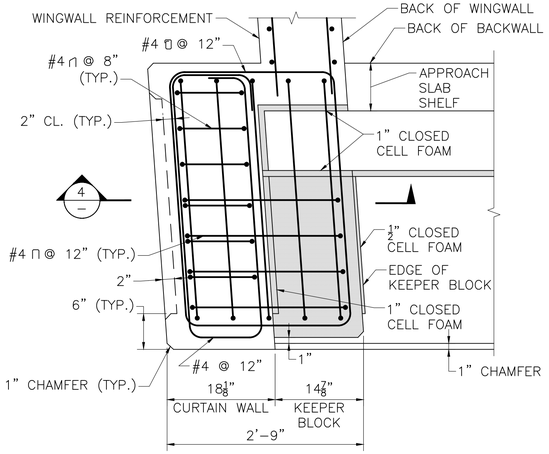
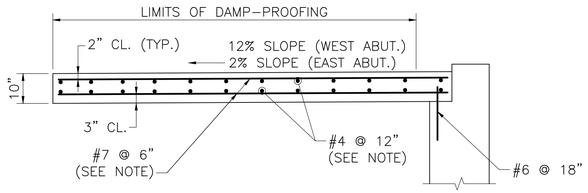
ABUTMENT SECTIONS 2



CURTAIN WALL AND KEEPER BLOCK PLAN

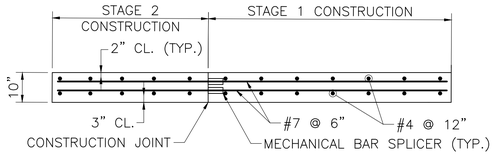
SCALE: 1" = 1'-0"



NOTE:
PLACE LONGITUDINAL REINFORCEMENT PARALLEL TO CENTERLINE OF CONSTRUCTION.
PLACE TRANSVERSE REINFORCEMENT PARALLEL TO ABUTMENT.
ALL REINFORCEMENT SHALL NOT BE COATED.

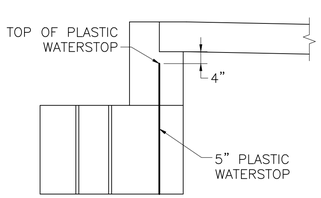
APPROACH SLAB DETAILS

SCALE: ½" = 1'-0"



APPROACH SLAB CONSTRUCTION JOINT DETAIL

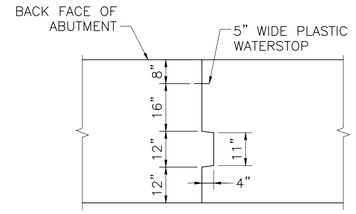
SCALE: ½" = 1'-0"



NOTE:
REINFORCEMENT SHALL BE CONTINUOUS THRU CONSTRUCTION JOINTS.

VERTICAL SECTION THRU CONSTRUCTION JOINT

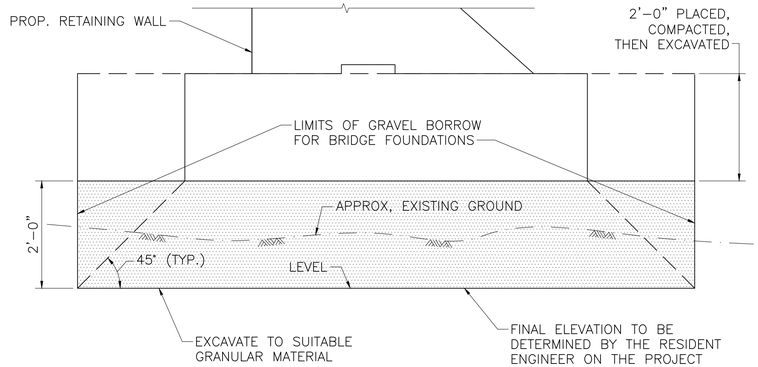
SCALE: ½" = 1'-0"



SECTION 2

SCALE: ½" = 1'-0"

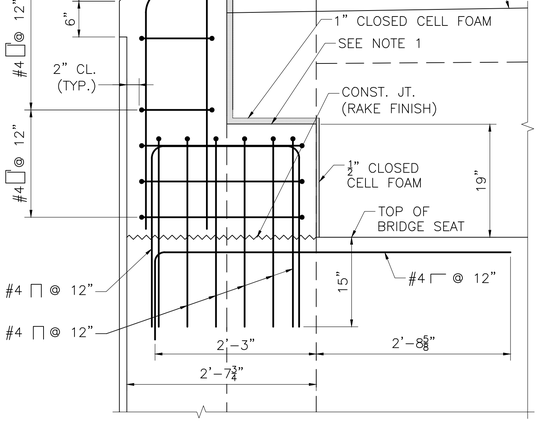
15/16



NOTES:
1. ø = 45° FOR DEPTH OF 5'-0" OR LESS.
   ø = 60° FOR DEPTH OVER 5'-0".
2. SAME TREATMENT IS TO BE USED AT ENDS OF WALLS, PIERS, AND ABUTMENTS.

LIMITS OF GRAVEL BORROW FOR BRIDGE FOUNDATIONS

SCALE: ¾" = 1'-0"

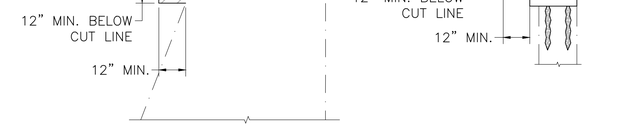


NOTES:
1. TOP OF KEEPER BLOCK SHALL BE TROWELED SMOOTH PARALLEL TO PROFILE GRADE.
2. ABUTMENT REINFORCEMENT BELOW CONSTRUCTION JOINT HAS BEEN OMITTED FOR CLARITY.

SECTION 4

SCALE: 1" = 1'-0"

—

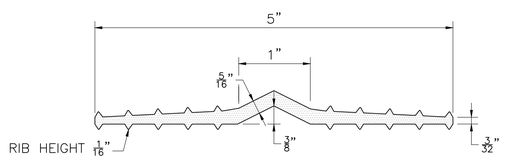


ABUTMENT WINGWALL CAP

NOTE:
HATCHED AREA INDICATES LIMITS OF GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES.

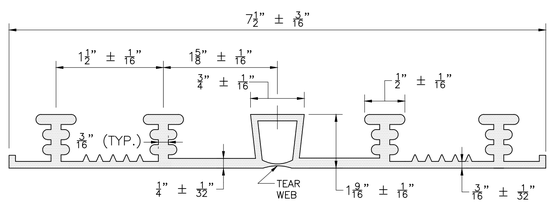
LIMITS OF GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES

SCALE: ⅜" = 1'-0"



5" WATERSTOP

NOT TO SCALE



10" WATERSTOP

NOT TO SCALE

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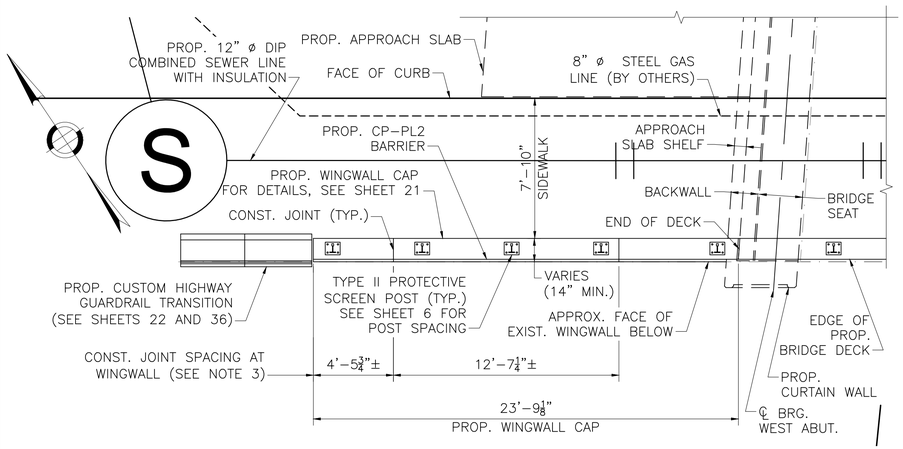
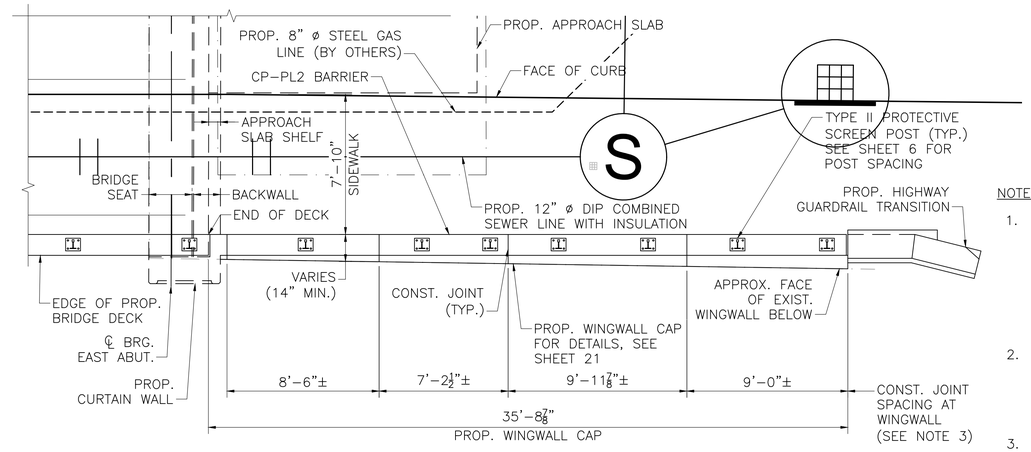


SOUTHWEST WINGWALL PLAN

SCALE: ¼" = 1'-0"



SOUTHEAST WINGWALL PLAN

SCALE: ¼" = 1'-0"

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WINGWALL PLAN AND ELEVATION 1 OF 2

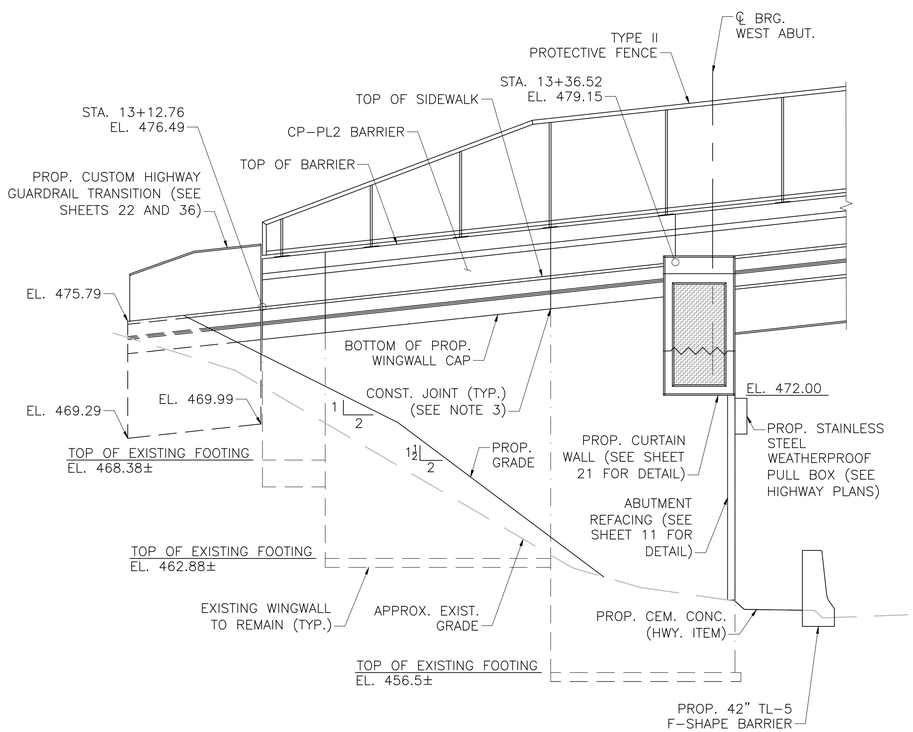
NOTES:

1. THE FACTORED BEARING PRESSURE = 10.08 KSF AS PER AASHTO BRIDGE DESIGN SPECIFICATIONS STRENGTH 1 LOAD COMBINATION.

   FACTORED BEARING RESISTANCE = 17.6 KSF. FACTORED BEARING RESISTANCE IS THE PRODUCT OF THE NOMINAL BEARING RESISTANCE AND RESISTANCE FACTOR OF 0.55.

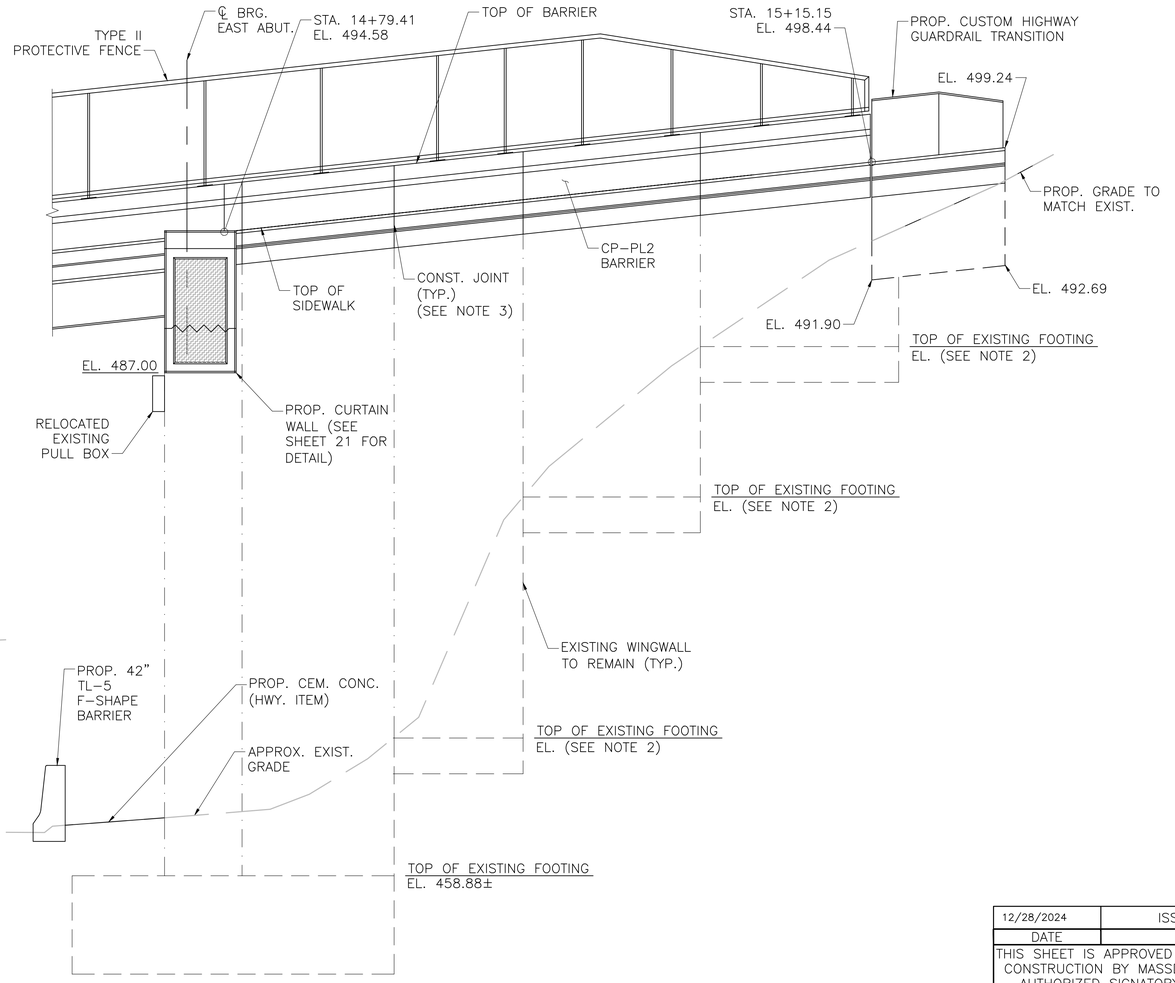
2. BASED ON EXISTING PLANS, THE NORTHEAST AND SOUTHEAST TOP OF EXISTING FOOTING WOULD BE ABOVE EXISTING GRADE. BASED ON SITE OBSERVATIONS, THE TOP OF THE EXISTING FOOTING ARE BELOW EXISTING GRADE.

3. PROPOSED CONSTRUCTION JOINTS SHALL BE AT THE EXISTING CONSTRUCTION JOINTS. DIMENSIONS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED.



SOUTHWEST WINGWALL ELEVATION

SCALE: ¼" = 1'-0"



SOUTHEAST WINGWALL ELEVATION

SCALE: ¼" = 1'-0"

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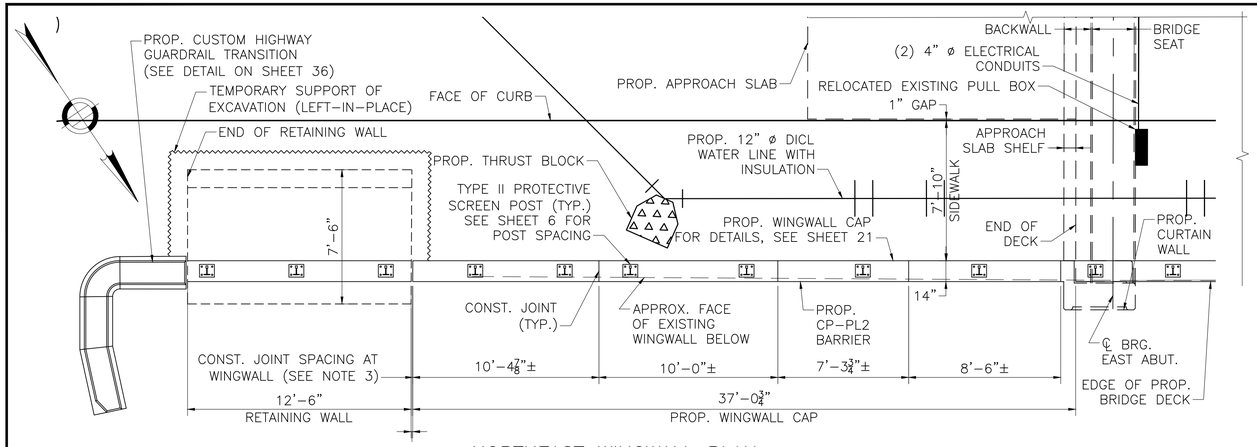
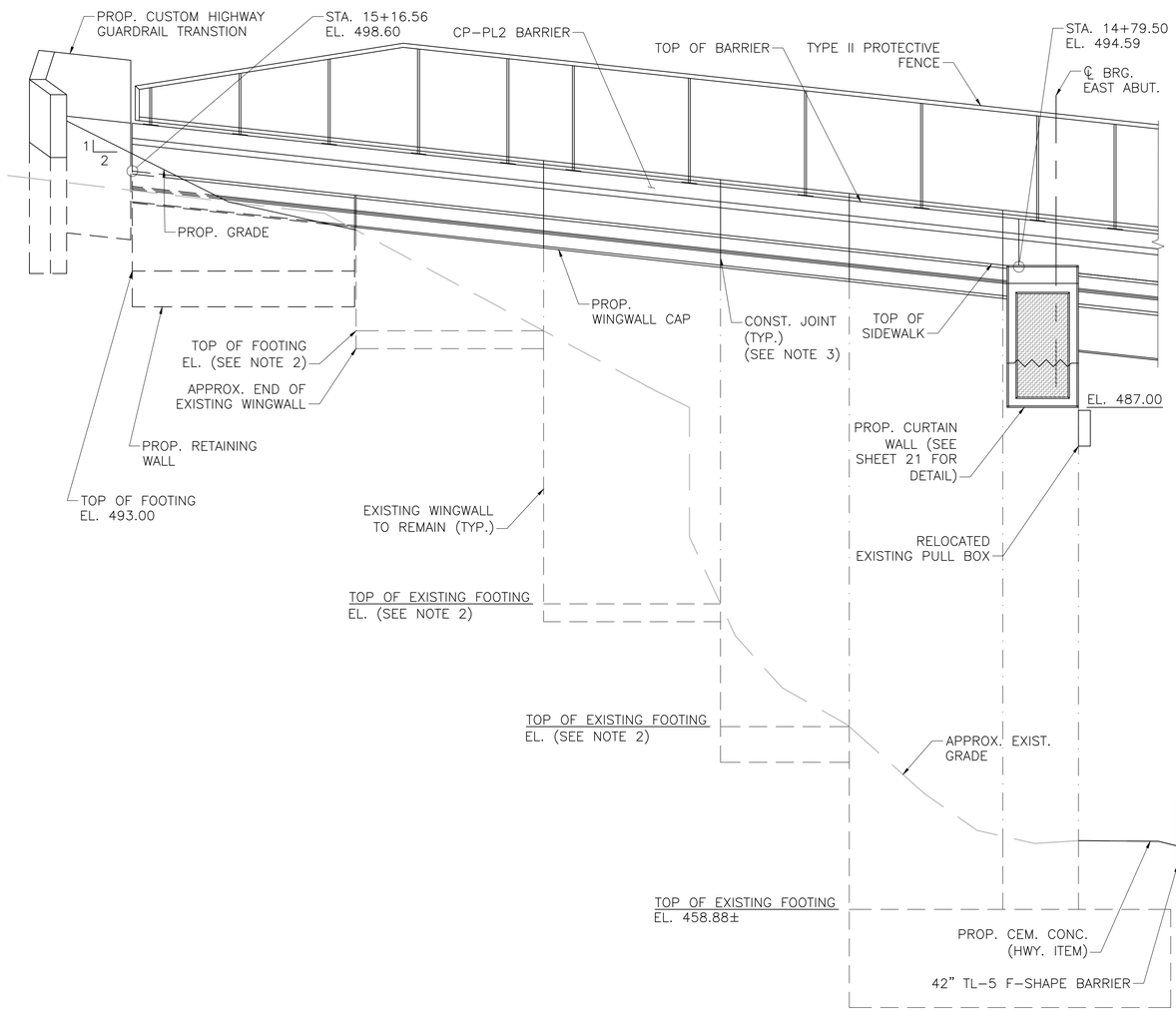


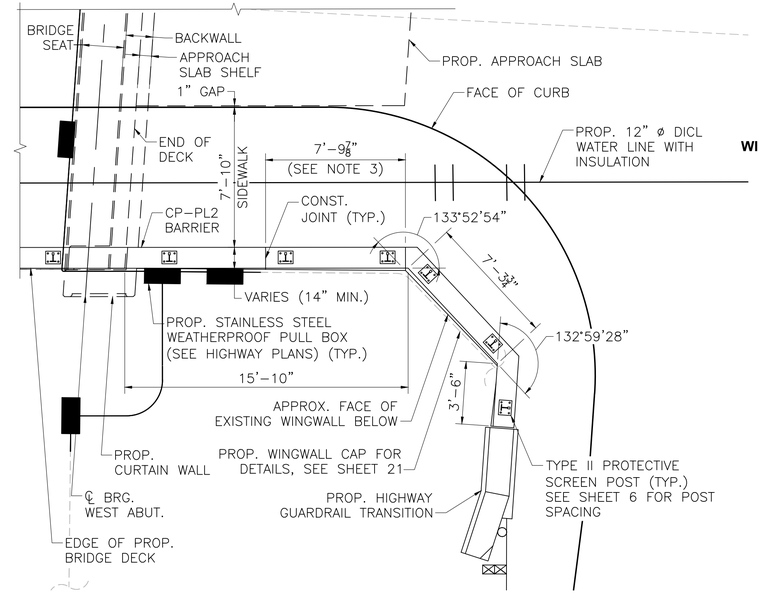
NORTHEAST WINGWALL PLAN

SCALE: 1/4" = 1'-0"



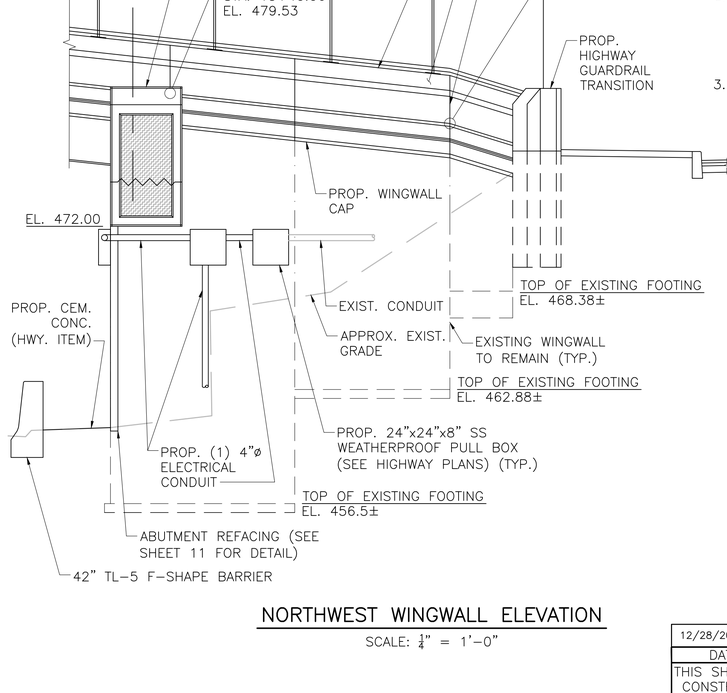
NORTHEAST WINGWALL ELEVATION

SCALE: 1/4" = 1'-0"



NORTHWEST WINGWALL PLAN

SCALE: 1/4" = 1'-0"



NORTHWEST WINGWALL ELEVATION

SCALE: 1/4" = 1'-0"

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WINGWALL PLAN AND ELEVATION 2 OF 2

NOTES:

1. THE FACTORED BEARING PRESSURE = 10.08 KSF AS PER AASHTO BRIDGE DESIGN SPECIFICATIONS STRENGTH 1 LOAD COMBINATION.

   FACTORED BEARING RESISTANCE = 17.6 KSF. FACTORED BEARING RESISTANCE IS THE PRODUCT OF THE NOMINAL BEARING RESISTANCE AND RESISTANCE FACTOR OF 0.55.

2. BASED ON EXISTING PLANS, THE NORTHEAST AND SOUTHEAST TOP OF EXISTING FOOTING WOULD BE ABOVE EXISTING GRADE. BASED ON SITE OBSERVATIONS, THE TOP OF THE EXISTING FOOTING ARE BELOW EXISTING GRADE.

3. PROPOSED CONSTRUCTION JOINTS SHALL BE AT THE EXISTING CONSTRUCTION JOINTS. DIMENSIONS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED.

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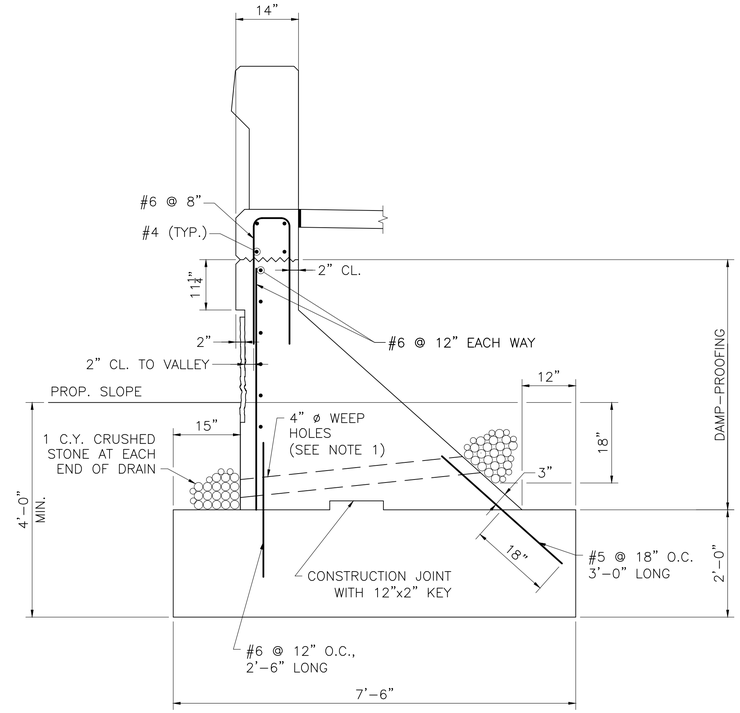
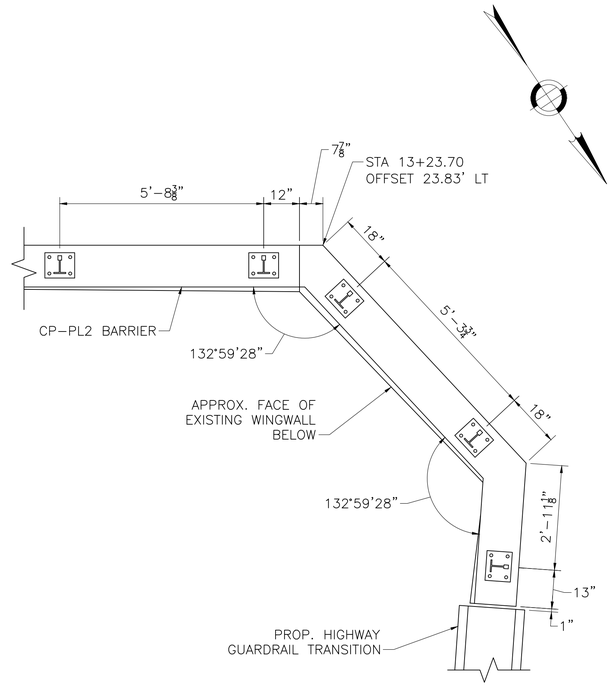
WINGWALL SECTIONS AND DETAILS



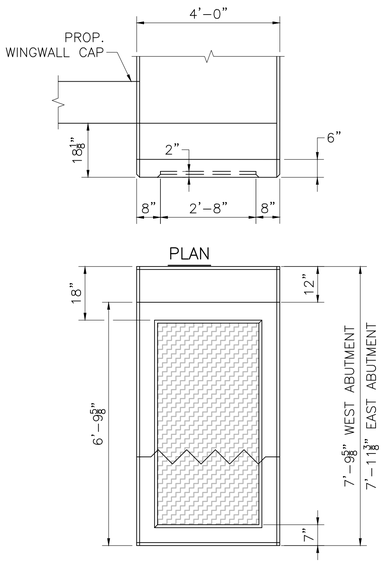
RETAINING WALL CONSTRUCTION NOTES:

1. 4" ø WEEP HOLES 10'-0" O.C. LOCATED 12" ABOVE THE HEEL OF THE FOOTING SLOPING 1" PER FOOT TOWARDS THE FRONT FACE. PROVIDE 1 CUBIC YARD OF CRUSHED STONE AT EACH END OF WEEP HOLE.
2. FACTORED BEARING PRESSURE PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
   - STRENGTH I LIMIT STATE
     FACTORED BEARING PRESSURE = 1.35 KSF.
3. FACTORED BEARING RESISTANCE = 17.60 KSF FOR THE STRENGTH I LIMIT STATE AND IS THE PRODUCT OF THE NOMINAL BEARING RESISTANCE OF 32 KSF AND A RESISTANCE FACTOR OF 0.55.



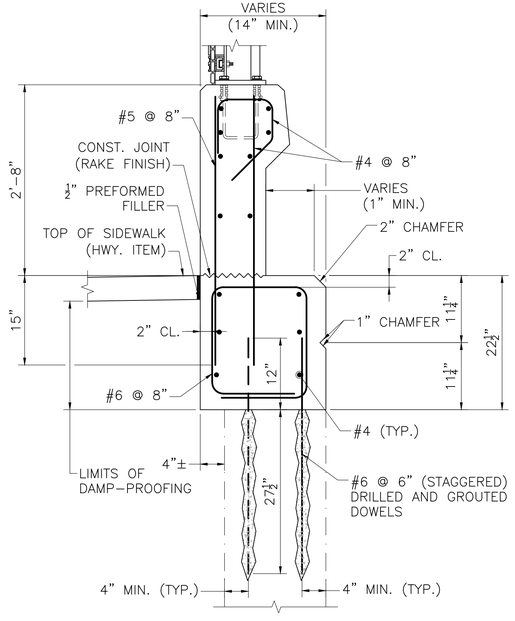
NORTHEAST GRAVITY RETAINING WALL SECTION

SCALE: ¾" = 1'-0"



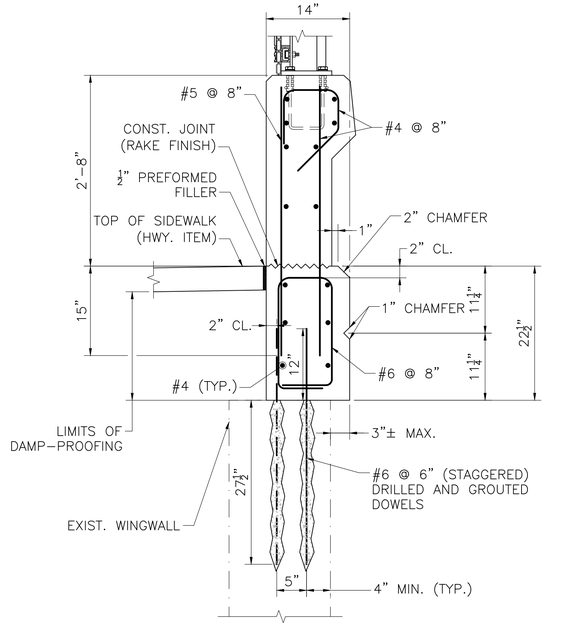
CURTAIN WALL ENDS

SCALE: ½" = 1'-0"



TYPICAL WINGWALL CAP AT CP-PL2 BARRIER

SCALE: 1" = 1'-0"



NORTHEAST WINGWALL CAP AT CP-PL2 BARRIER

SCALE: 1" = 1'-0"

PROTECTIVE FENCE AT NORTHWEST WINGWALL

SCALE: ¾" = 1'-0"

NOTES:

1. PRIOR TO PLACEMENT OF GROUT AND REINFORCEMENT STEEL, THE DRILL HOLES SHALL BE CLEANED AND PREPARED IN ACCORDANCE WITH THE CHOSEN GROUT MANUFACTURER'S WRITTEN SPECIFICATIONS.
2. FIELD CUT ENDS OF BARS SHALL BE TOUCHED UP WITH AN APPROVED EPOXY COATING PAINT.

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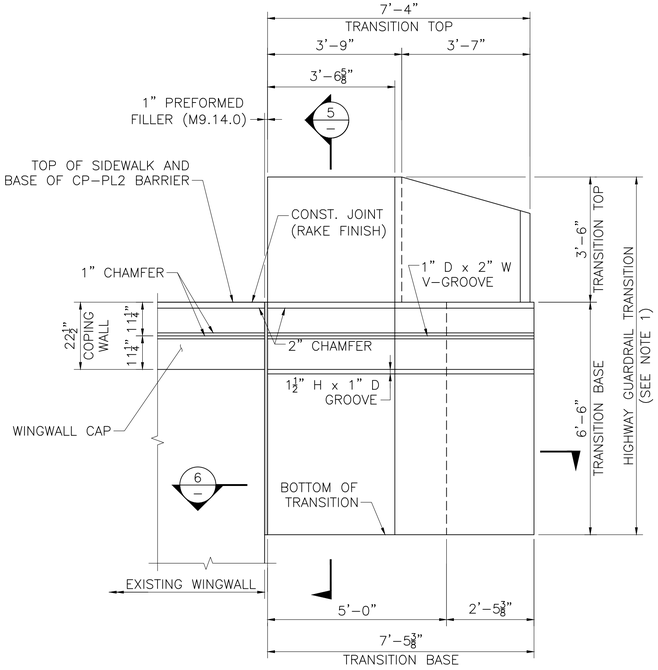
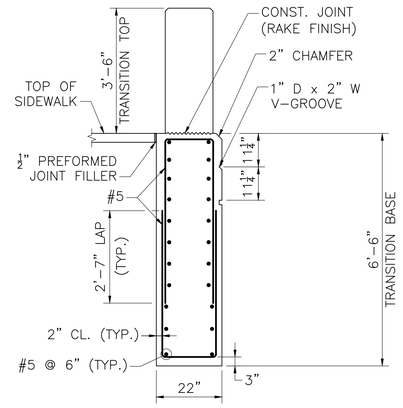
CIP GUARDRAIL TRANSITION BASE DETAILS 1 OF 2



GUARDRAIL TRANSITION ELEVATION AT NORTHWEST CORNER

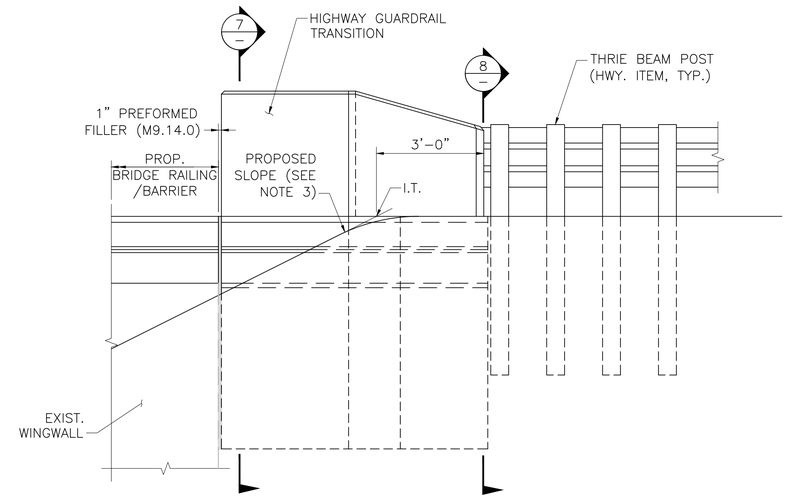
SCALE: ½" = 1'–0"



NOTE:

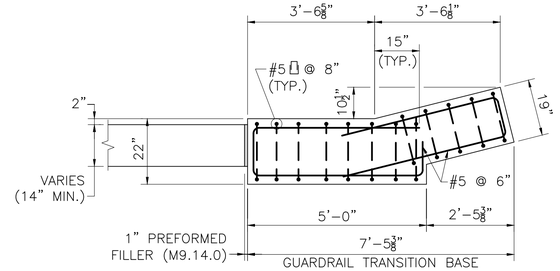
REINFORCEMENT OF THE TRANSITION TOP IS NOT SHOWN FOR CLARITY.

SECTION 5
SCALE: ½" = 1'–0"



GRADING REQUIREMENTS ELEVATION

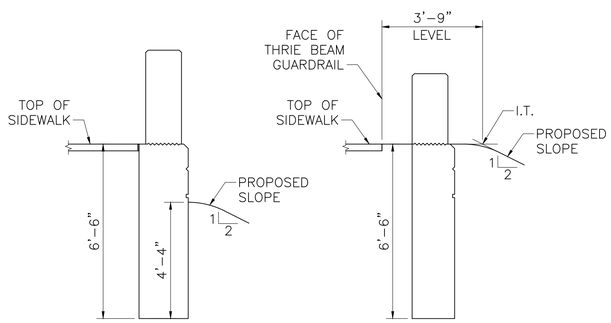
SCALE: ½" = 1'–0"



NOTE:

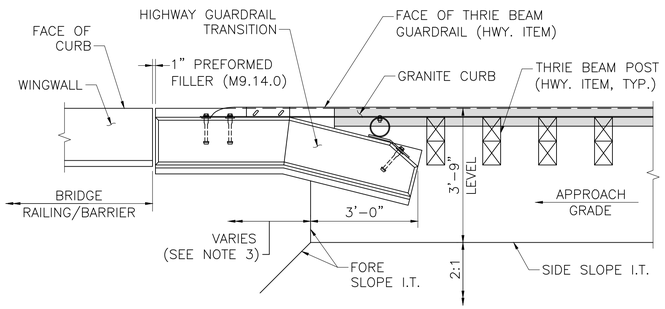
WINGWALL REINFORCEMENT AND STRIATIONS NOT SHOWN FOR CLARITY.

SECTION 6
SCALE: ½" = 1'–0"



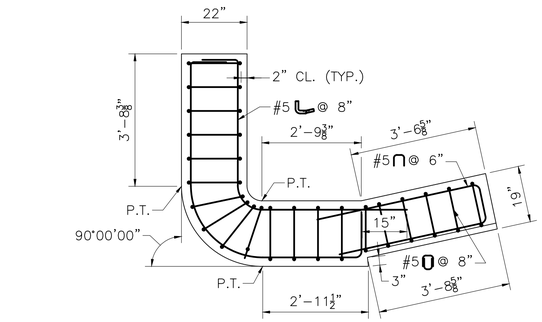
SECTION 7
SCALE: ⅜" = 1'–0"

SECTION 8
SCALE: ⅜" = 1'–0"



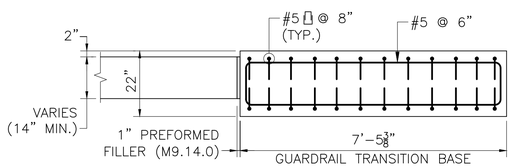
GRADING REQUIREMENTS PLAN

SCALE: ½" = 1'–0"



NORTHEAST GUARDRAIL TRANSITION BASE

SCALE: ½" = 1'–0"



NOTE:

WINGWALL REINFORCEMENT AND STRIATIONS NOT SHOWN FOR CLARITY.

SOUTHWEST GUARDRAIL TRANSITION BASE

SCALE: ½" = 1'–0"

NOTES:

1. CAST–IN–PLACE GUARDRAIL TRANSITION SHALL BE 5000 PSI, ¾ IN, 685 HP CEMENT CONCRETE.
2. THE SOIL SHALL BE EXCAVATED TO THE GRADE OF 3" (MIN.) BELOW THE INTENDED BOTTOM OF THE GUARDRAIL TRANSITION BASE AND TO A HEIGHT OF 2'–0" (MIN.) ON ALL SIDES OF THE TRANSITION BASE TO FORM A TRENCH IN WHICH TO SET THE TRANSITION.
3. FOR PROPOSED SLOPE GRADE AT THE GUARDRAIL TRANSITIONS, SEE SHEETS 19 AND 20.

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THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
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WORCESTER
HARRISON STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	107	169
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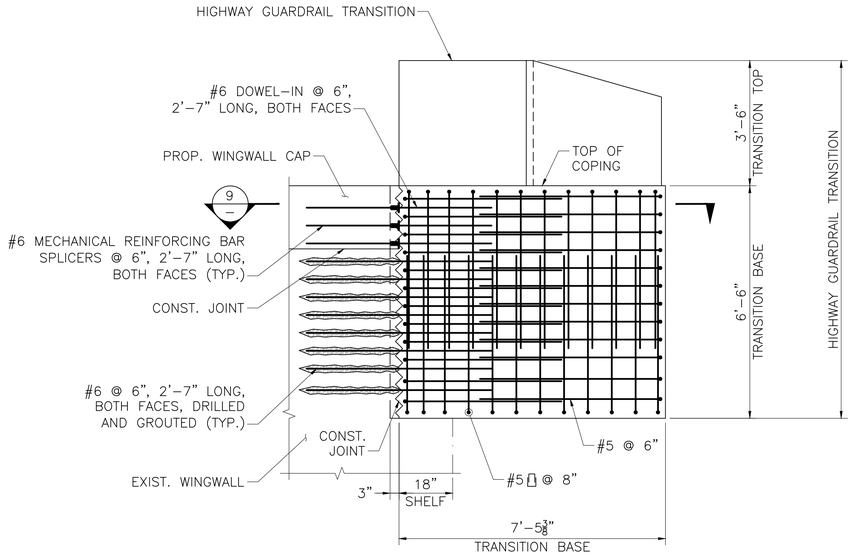
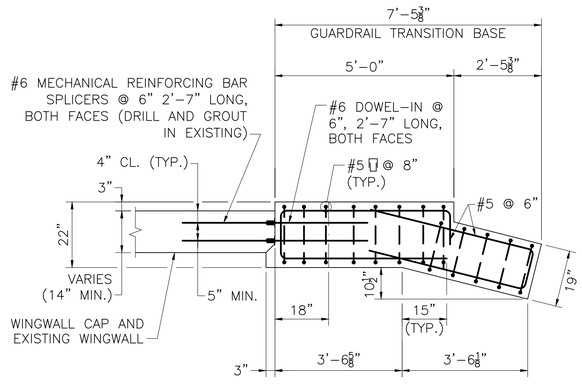
CIP GUARDRAIL TRANSITION BASE DETAILS 2 OF 2



GUARDRAIL TRANSITION ELEVATION
AT SOUTHEAST CORNER
SCALE: ½" = 1'–0"



SECTION 9 –
SCALE: ½" = 1'–0"

NOTES:

1. WINGWALL REINFORCEMENT AND STRIATIONS NOT SHOWN FOR CLARITY.
2. SEE ADDITIONAL NOTES ON SHEET 22.

12/28/2024	ISSUED FOR CONSTRUCTION
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WORCESTER
HARRISON STREET OVER I-290

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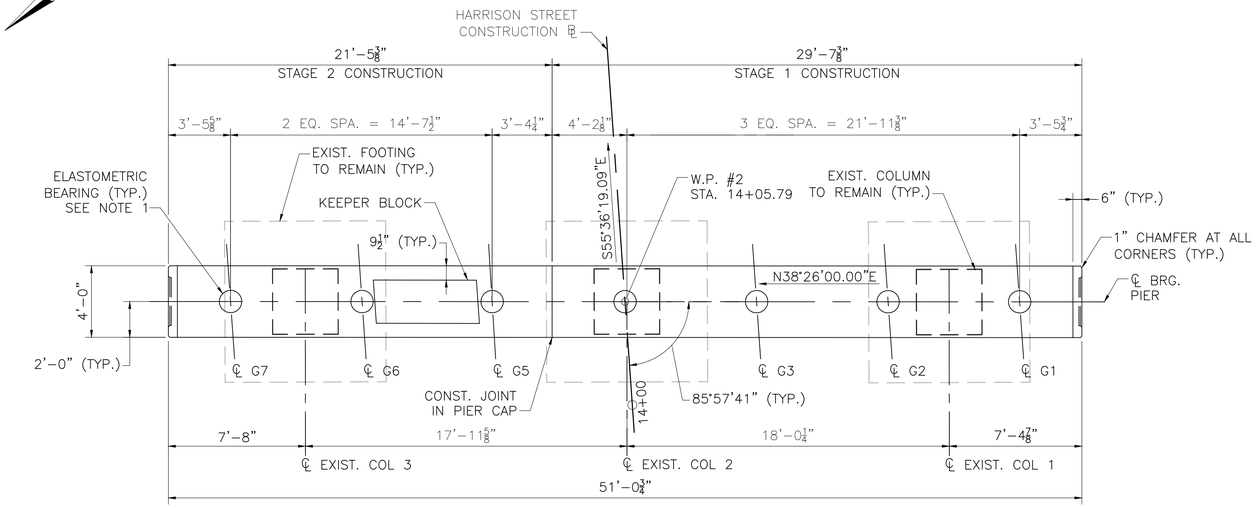
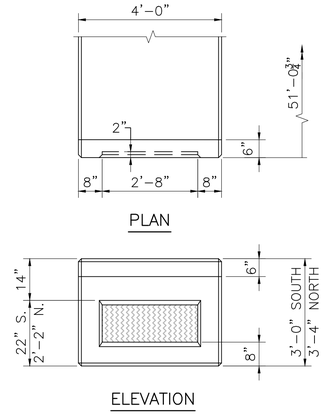
	PROJECT FILE NO. 609185		

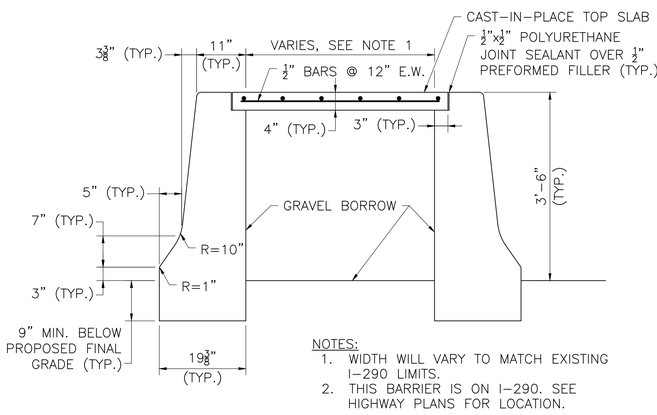
PIER PLAN AND ELEVATION



PLAN OF PIER CAP
SCALE: ¼" = 1'–0"



PIER CAP ENDS
SCALE: ½" = 1'–0"

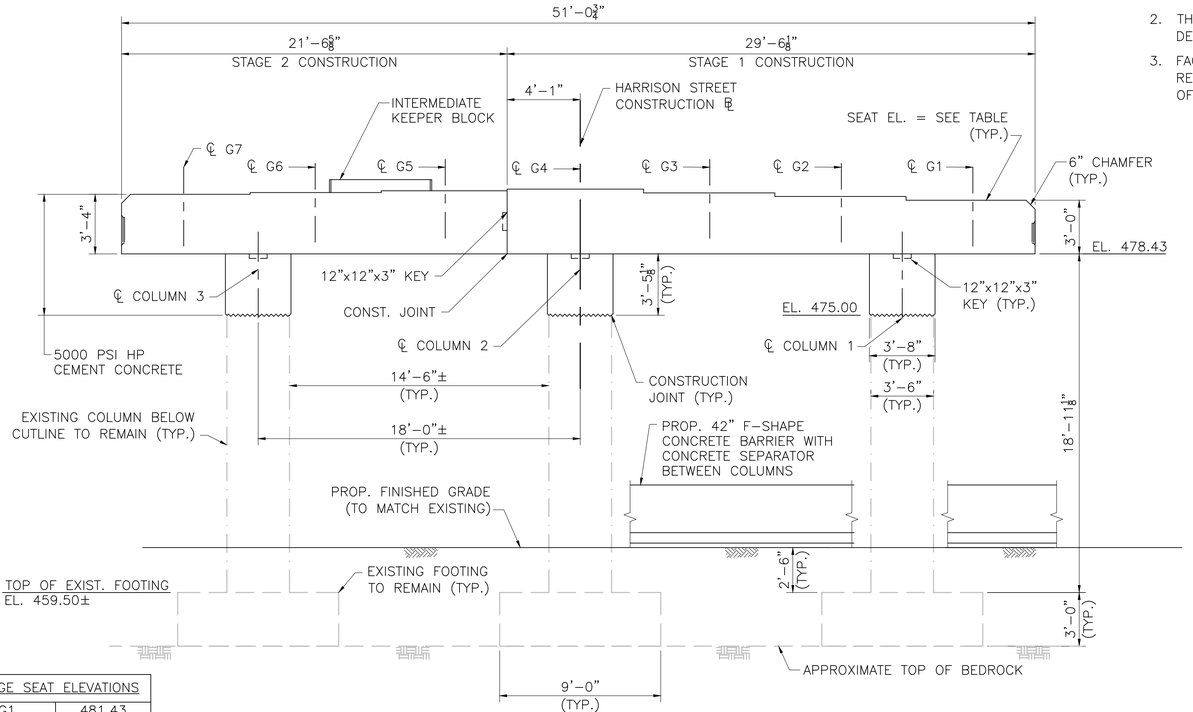


NOTES:
1. WIDTH WILL VARY TO MATCH EXISTING I–290 LIMITS.
2. THIS BARRIER IS ON I–290. SEE HIGHWAY PLANS FOR LOCATION.

TYPICAL SECTION THRU F–SHAPE MEDIAN BARRIER WITH CONCRETE SEPARATOR (HIGHWAY ITEM)
SCALE: ¾" = 1'–0"

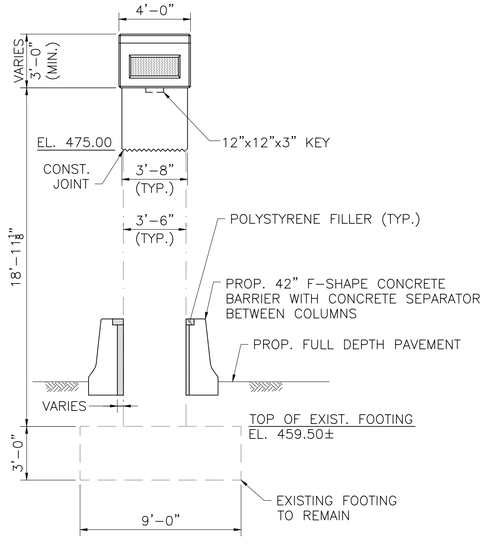
PIER NOTES:

1. FOR BEARING LAYOUT AND DETAILS, SEE SHEET 30.
2. THE FACTORED BEARING PRESSURE IS 16.06 KSF AS PER AASHTO DESIGN SPECIFICATIONS STRENGTH I LOAD COMBINATION.
3. FACTORED BEARING RESISTANCE IS 17.6 KSF. FACTORED BEARING RESISTANCE IS THE PRODUCT OF NOMINAL BEARING RESISTANCE OF 32.00 KSF AND A RESISTANCE FACTOR OF 0.55.

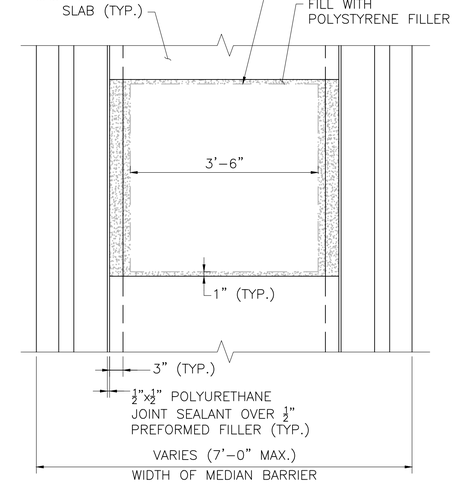


PIER ELEVATION
SCALE: ¼" = 1'–0"

BRIDGE SEAT ELEVATIONS	
G1	481.43
G2	481.64
G3	481.85
G4	482.06
G5	481.97
G6	481.87
G7	481.77



PIER SIDE ELEVATION
SCALE: ¼" = 1'–0"



MEDIAN BARRIER AT PIER COLUMN PLAN
SCALE: ¼" = 1'–0"

12/28/2024	ISSUED FOR CONSTRUCTION
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WORCESTER
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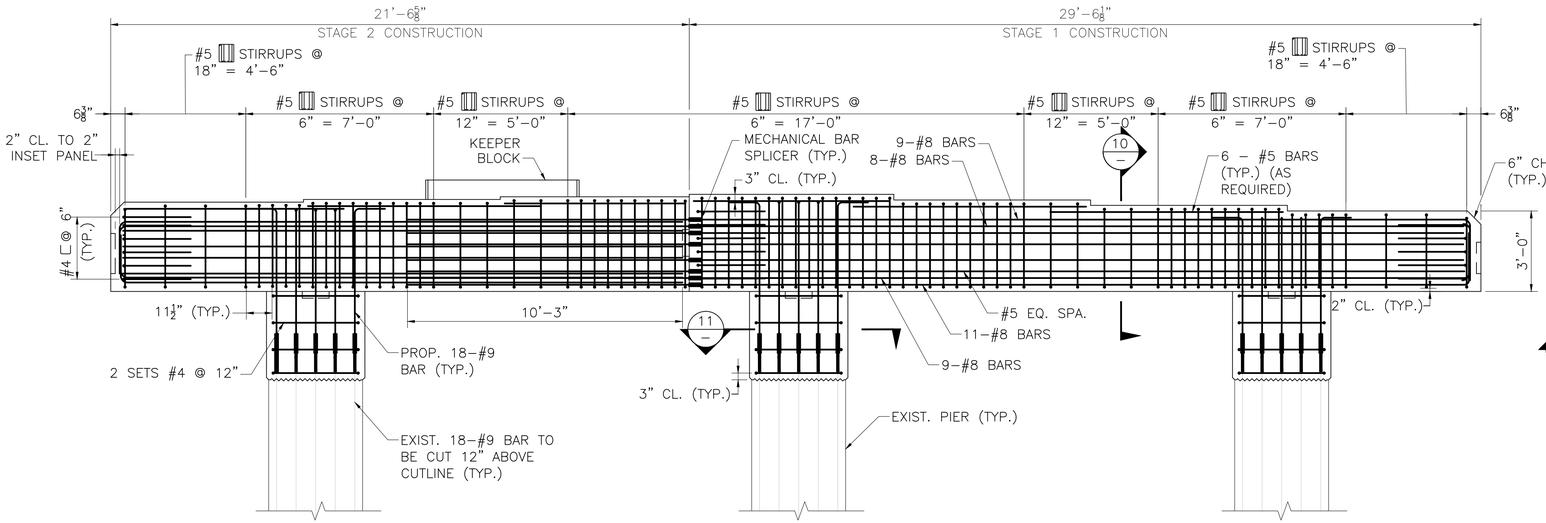
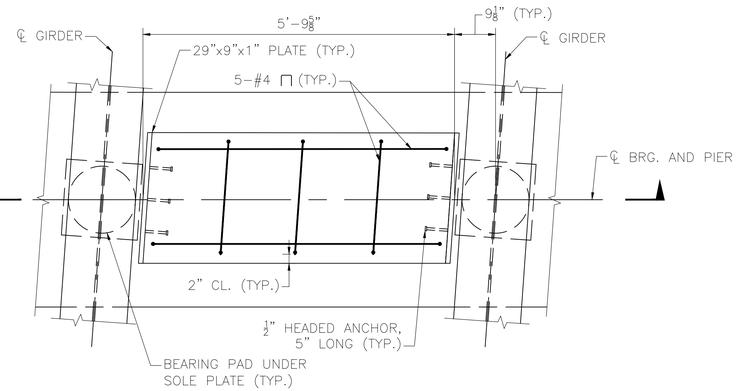
PIER SECTIONS AND DETAILS



PIER CAP AND COLUMN ELEVATION – REINFORCEMENT DETAILS

SCALE: ⅜" = 1'-0"

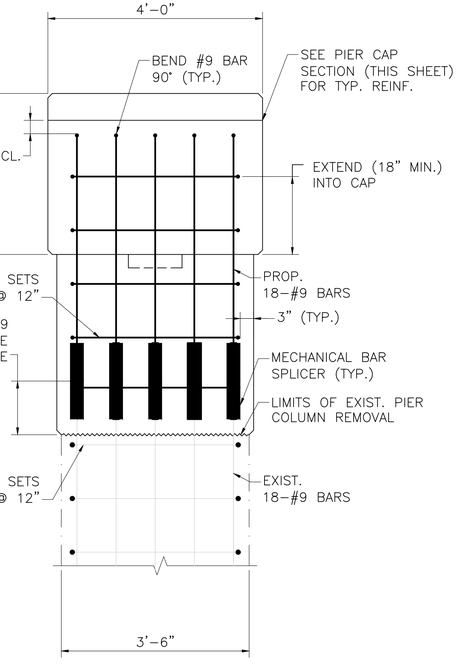


NOTES:

1. KEEPER BLOCKS SHALL BE CAST BEFORE BEAMS ARE SET.
2. STEEL PLATES EMBEDED IN KEEPER BLOCK SHALL BE HOT-DIP GALVANIZED.

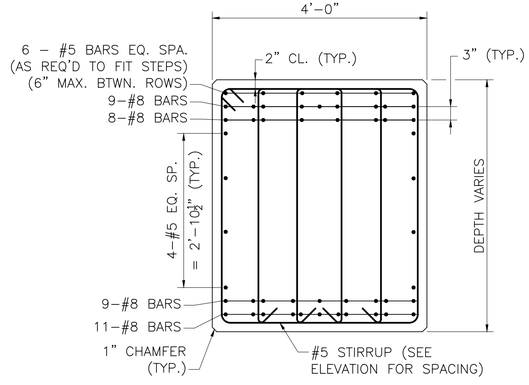
PLAN OF KEEPER BLOCK

SCALE: ¾" = 1'-0"



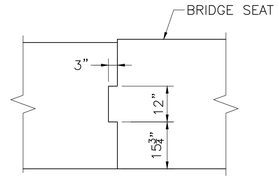
PIER SIDE SECTION

SCALE: ¼" = 1'-0"



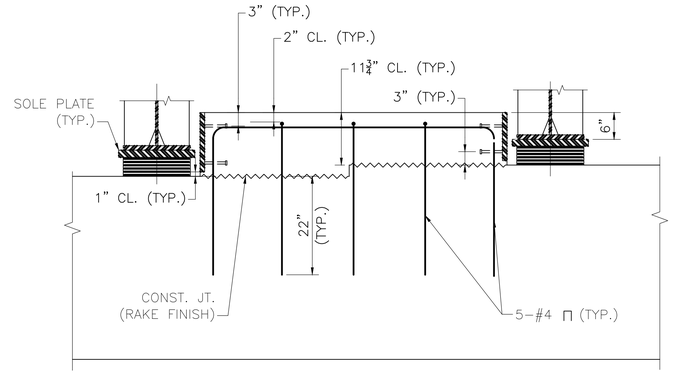
SECTION 10

SCALE: ¾" = 1'-0"



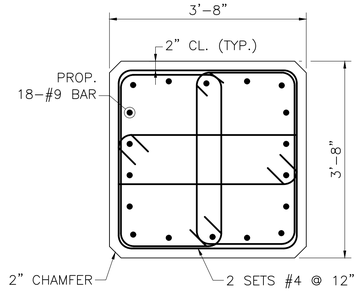
SHEAR KEY DETAIL

SCALE: ½" = 1'-0"



SECTION 12

SCALE: ¾" = 1'-0"



SECTION 11

SCALE: ¾" = 1'-0"

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WORCESTER
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MA	STP(BR-OFF)-003S(815)X	110	169
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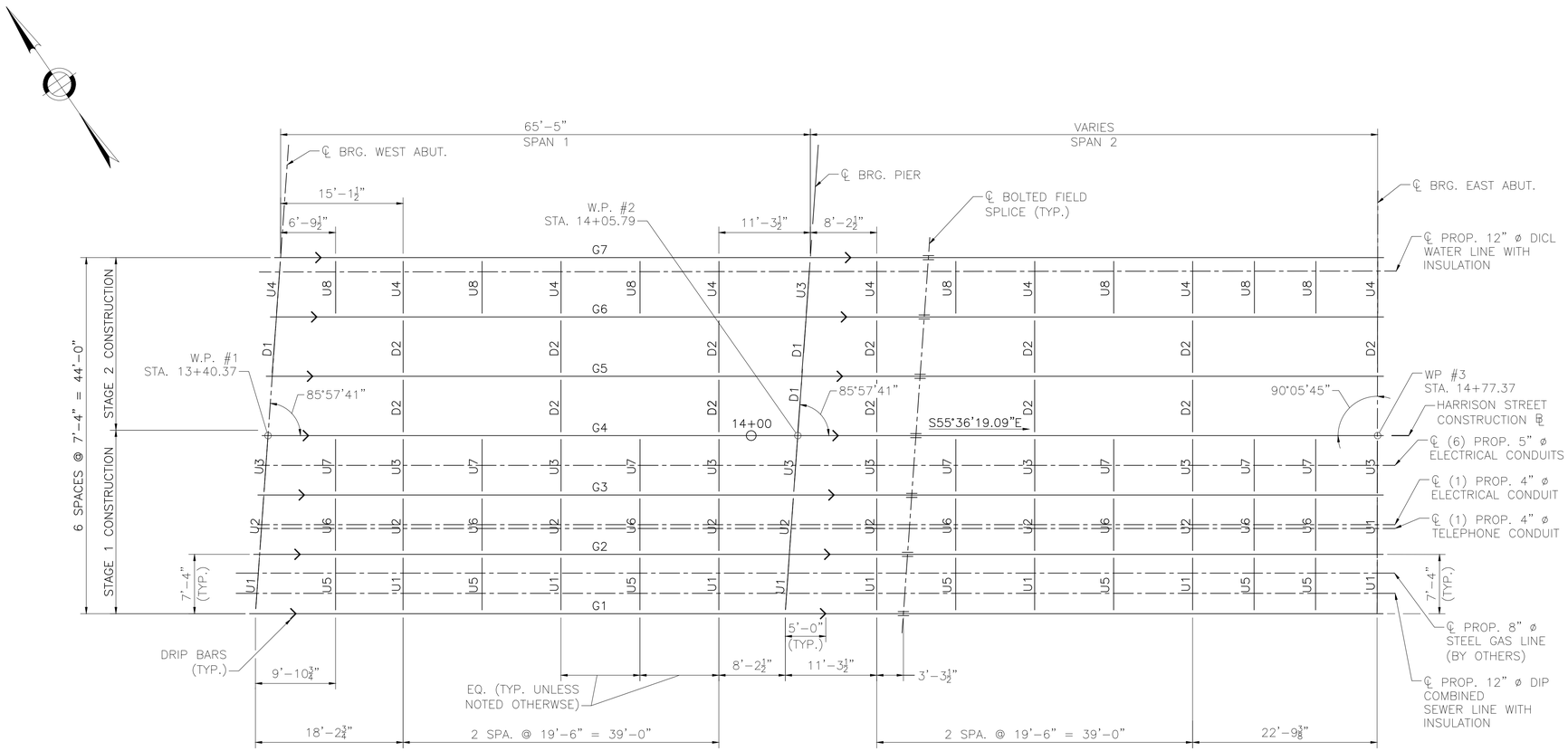
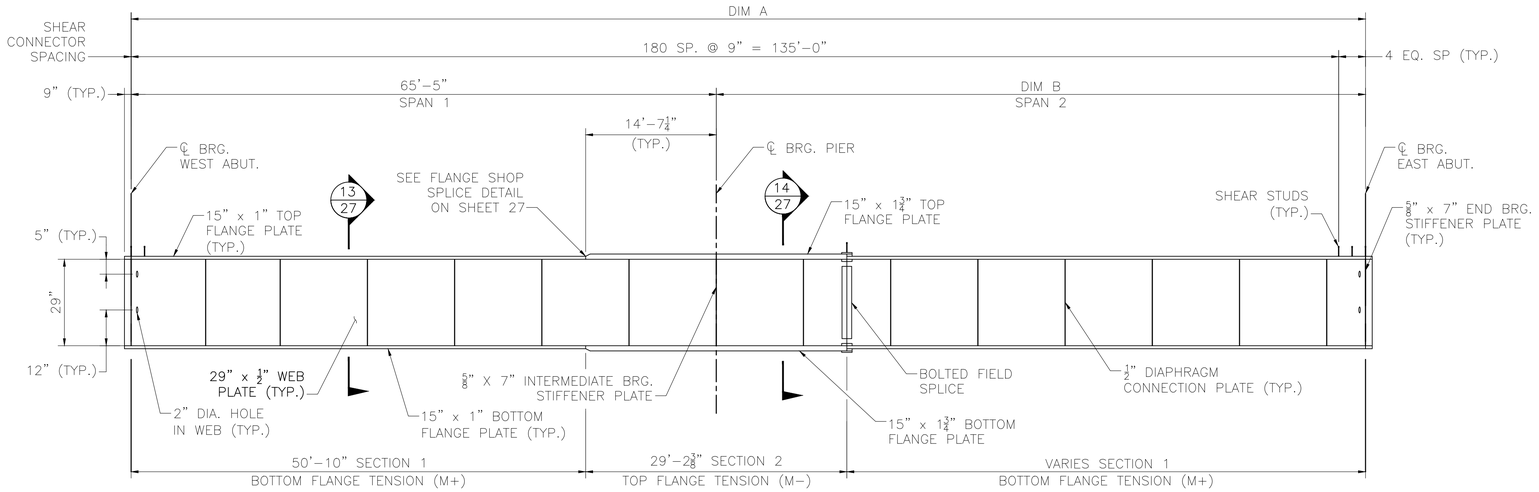
FRAMING PLAN AND TYPICAL GIRDER ELEVATION



FRAMING PLAN
SCALE: ⅛" = 1'-0"



TYPICAL GIRDER ELEVATION
HORZ. SCALE: ⅛" = 1'-0"
VERT. SCALE: ½" = 1'-0"

NOTES:

1. D1 = TYPICAL END DIAPHRAGM
   D2 = TYPICAL INTERMEDIATE DIAPHRAGM
   U1, U4 = TYPICAL UTILITY SUPPORT AT DIAPHRAGMS UNDER SIDEWALK
   U2, U3 = TYPICAL UTILITY SUPPORT AT DIAPHRAGMS UNDER ROADWAY
   U5, U6, U7, U8 = TYPICAL UTILITY SUPPORT BETWEEN DIAPHRAGMS
2. SEE SHEET 29 FOR DIAPHRAGM AND UTILITY SUPPORT DETAILS.
3. THE MAIN LOAD CARRYING MEMBERS ARE PLATE GIRDERS G1 THROUGH G7.
4. ALL STEEL SHALL CONFORM TO AASHTO M 270 GRADE 50.
5. ALL STEEL SHALL BE METALIZED IN ACCORDANCE WITH THE SPECIAL PROVISIONS FOR ENVIRONMENTAL ZONE 3 WITH THE FOLLOWING EXCEPTION:

   DIAPHRAGMS AND UTILITY SUPPORTS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.
6. FASCIA GIRDERS (G1 AND G7) AND ALL ATTACHED PLATES EMBEDDED IN THE END DIAPHRAGM AND WITHIN 12 INCHES OF THE END DIAPHRAGM SHALL BE METALIZED AND PAINTED. ALL PAINTING SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, AND THE FINISH COAT COLOR SHALL BE ASM STANDARD 595A COLOR NUMBER 14223 OF THE FEDERAL STANDARD 595B.
7. HARDWARE FOR STRUCTURAL STEEL CONNECTIONS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M 232. FASTENERS OR OTHER HARDWARE ON THE EXTERIOR FACE OF THE FASCIA GIRDERS SHALL BE GALVANIZED AND PAINTED CONSISTENT WITH THE PROJECT'S COATING AND COLOR REQUIREMENTS FOR FASCIA GIRDERS. SURFACES OF HOT-DIP GALVANIZED COATED STEEL HARDWARE SHALL BE PREPARED FOR PAINTING IN ACCORDANCE WITH ASTM D6386.
8. ALL INTERMEDIATE STIFFENERS SHALL BE PERPENDICULAR TO THE WEB AND TO THE GIRDER FLANGES.
9. ALL BEARING STIFFENERS SHALL BE PLUMB.
10. ENDS OF GIRDERS SHALL BE FABRICATED SO THAT UNDER FULL DEAD LOAD THE ENDS WILL BE PLUMB.

GIRDER	DIM A	DIM B
G1	138'-6¼"	73'-1¼"
G2	138'-0"	72'-7"
G3	137'-6"	72'-1"
G4	137'-0"	71'-7"
G5	136'-6"	71'-1"
G6	135'-11¾"	70'-6¾"
G7	135'-6"	70'-1"

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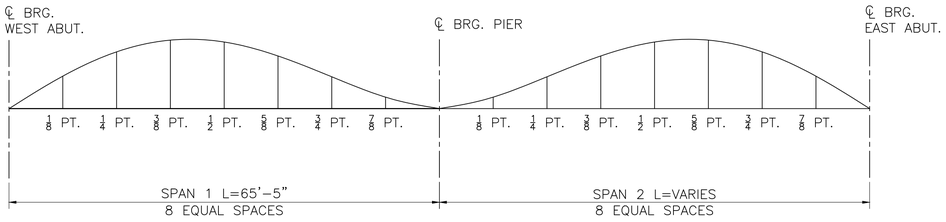
GIRDER DETAILS 1 OF 2

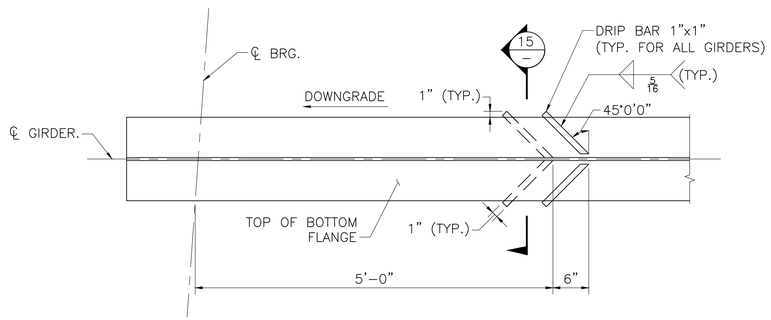
CAMBER TABLE (INCHES)

GIRDER NO.		SPAN 1								SPAN 2							
		℄ BRG. W. ABUT.	1/8 PT.	1/4 PT.	3/8 PT.	1/2 PT.	5/8 PT.	3/4 PT.	7/8 PT.	℄ BRG. PIER	1/8 PT.	1/4 PT.	3/8 PT.	1/2 PT.	5/8 PT.	3/4 PT.	7/8 PT.	℄ BRG. E. ABUT.
G1	STEEL DL DEFLECTION	0	0.055	0.097	0.111	0.100	0.068	0.029	0.002	0	0.046	0.118	0.193	0.244	0.250	0.206	0.116	0
	CONC. DL DEFLECTION	0	0.219	0.374	0.432	0.388	0.263	0.113	0.006	0	0.179	0.464	0.760	0.956	0.979	0.807	0.458	0
	S.D.L. DEFLECTION	0	0.143	0.245	0.286	0.261	0.181	0.083	0.008	0	0.119	0.307	0.496	0.618	0.629	0.516	0.293	0
	VERT. CURVE CAMBER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ADDITIONAL CAMBER	0	0.179	0.307	0.383	0.409	0.383	0.307	0.179	0	0.200	0.343	0.428	0.457	0.428	0.343	0.200	0
	TOTAL CAMBER	0	0.596	1.023	1.212	1.158	0.895	0.532	0.195	0	0.544	1.232	1.877	2.275	2.286	1.872	1.067	0
G2 & G3	STEEL DL DEFLECTION	0	0.063	0.108	0.125	0.114	0.079	0.035	0.003	0	0.050	0.128	0.208	0.262	0.269	0.221	0.126	0
	CONC. DL DEFLECTION	0	0.216	0.370	0.427	0.385	0.264	0.118	0.011	0	0.166	0.432	0.709	0.895	0.918	0.756	0.430	0
	S.D.L. DEFLECTION	0	0.082	0.140	0.164	0.151	0.106	0.050	0.006	0	0.064	0.166	0.270	0.336	0.343	0.281	0.161	0
	VERT. CURVE CAMBER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ADDITIONAL CAMBER	0	0.179	0.307	0.383	0.409	0.383	0.307	0.179	0	0.199	0.340	0.425	0.454	0.425	0.340	0.199	0
	TOTAL CAMBER	0	0.540	0.925	1.099	1.059	0.832	0.510	0.199	0	0.479	1.066	1.612	1.947	1.955	1.598	0.916	0
G4, G5, G6 & G7	STEEL DL DEFLECTION	0	0.061	0.105	0.125	0.112	0.080	0.038	0.006	0	0.042	0.111	0.182	0.231	0.236	0.194	0.111	0
	CONC. DL DEFLECTION	0	0.222	0.381	0.444	0.404	0.282	0.133	0.021	0	0.149	0.397	0.657	0.832	0.855	0.706	0.402	0
	S.D.L. DEFLECTION	0	0.061	0.104	0.124	0.114	0.081	0.040	0.007	0	0.043	0.111	0.182	0.227	0.232	0.192	0.108	0
	VERT. CURVE CAMBER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ADDITIONAL CAMBER	0	0.179	0.307	0.383	0.409	0.383	0.307	0.179	0	0.196	0.336	0.419	0.447	0.419	0.336	0.196	0
	TOTAL CAMBER	0	0.523	0.897	1.076	1.039	0.826	0.518	0.213	0	0.430	0.955	1.440	1.737	1.742	1.428	0.817	0



CAMBER DIAGRAM

NOT TO SCALE

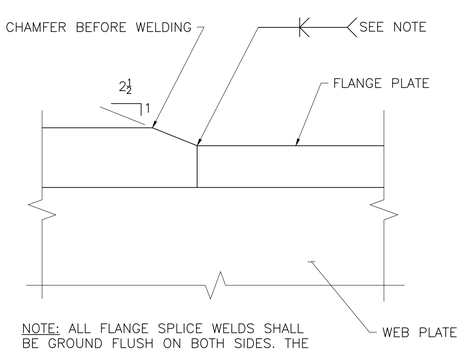


NOTE:

DRIP BARS SHALL BE LOCATED ON THE LOW END OF EACH SPAN FOR ALL GIRDERS.

DRIP BAR DETAIL

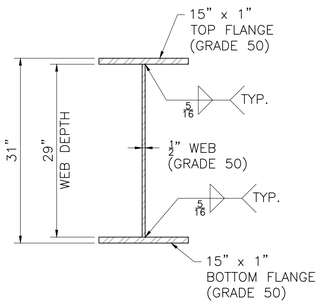
SCALE: 1" = 1'-0"



NOTE: ALL FLANGE SPLICE WELDS SHALL BE GROUND FLUSH ON BOTH SIDES. THE FINISH GRINDING SHALL BE PARALLEL TO THE DIRECTION OF STRESS.

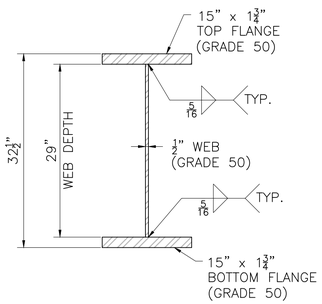
FLANGE SHOP SPLICE

SCALE: 1" = 1'-0"



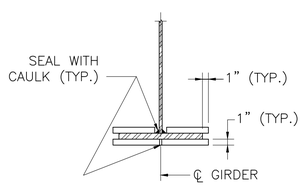
SECTION 13/26

SCALE: 1" = 1'-0"



SECTION 14/26

SCALE: 1" = 1'-0"



SECTION 15/–

SCALE: 1" = 1'-0"

DATE	DESCRIPTION
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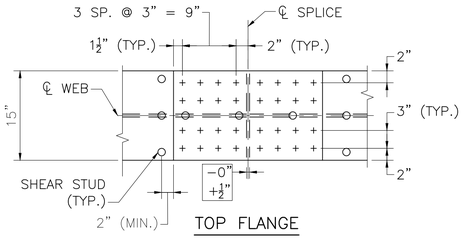
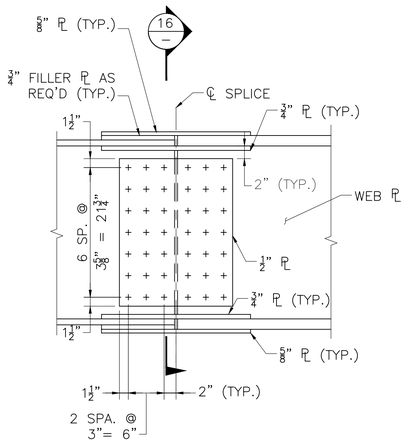
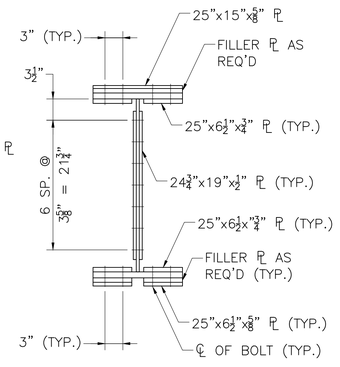


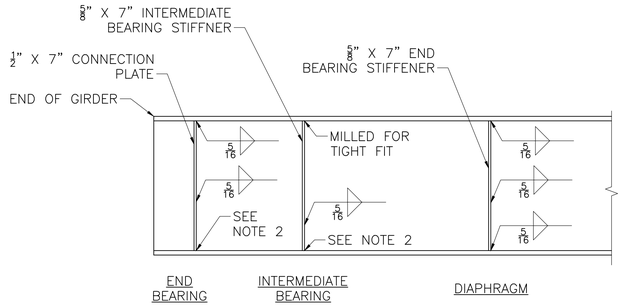
TOP FLANGE



ELEVATION



SECTION 16 –

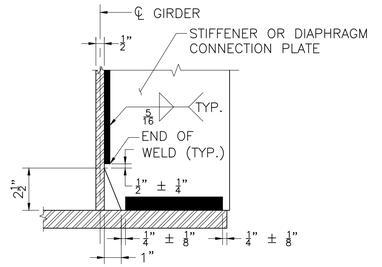


NOTES:

1. SEE CLIP DETAIL ON THIS SHEET.
2. BEARING STIFFENER PLATE AT BOTTOM FLANGE SHALL BE MILLED FOR TIGHT FIT AND WELDED WITH $\frac{5}{16}$" FILLET WELDS BOTH SIDES OF PLATE.

STIFFENER ATTACHMENT DETAILS

SCALE: ¾" = 1'–0"

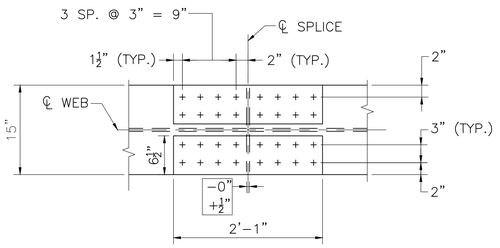


NOTE:

AT STIFFENER LOCATIONS, MODIFY THE PLATE ATTACHMENT TO THE FLANGES AS SHOWN IN THE TYPICAL STIFFENER ATTACHMENTS ON THIS SHEET.

CLIP DETAIL

SCALE: 3" = 1'–0"



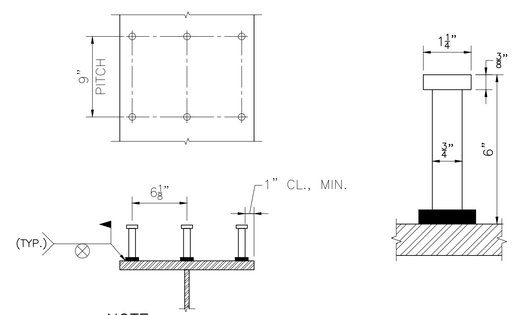
BOTTOM FLANGE

NOTES:

1. BOLTED FIELD SPLICES SHALL BE CONSIDERED SLIP CRITICAL CONNECTIONS WITH CLASS B FAYING SURFACES.
2. + DENOTES $\frac{7}{8}$" ø ASTM A325 HIGH STRENGTH BOLT IN $\frac{15}{16}$" ø HOLE.
3. FILLER PLATES SHALL CONFORM TO AASHTO M 270 GRADE 50 OR ASTM A606.
4. ONE ROW OF STUD SHEAR CONNECTORS, SPACED AT 9", SHALL BE PLACED ALONG THE CENTERLINE OF THE TOP FLANGE SPLICE PLATE.

BOLTED FIELD SPLICE DETAILS

SCALE: 1" = 1'–0"



NOTE:

$\frac{7}{8}$" ø STUDS MAY BE SUBSTITUTED FOR ¾" ø STUDS BY ADJUSTING THE PITCH TO PROVIDE AN EQUIVALENT CROSS–SECTIONAL AREA PER FOOT.

STUD SHEAR CONNECTORS

NOT TO SCALE

12/28/2024	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

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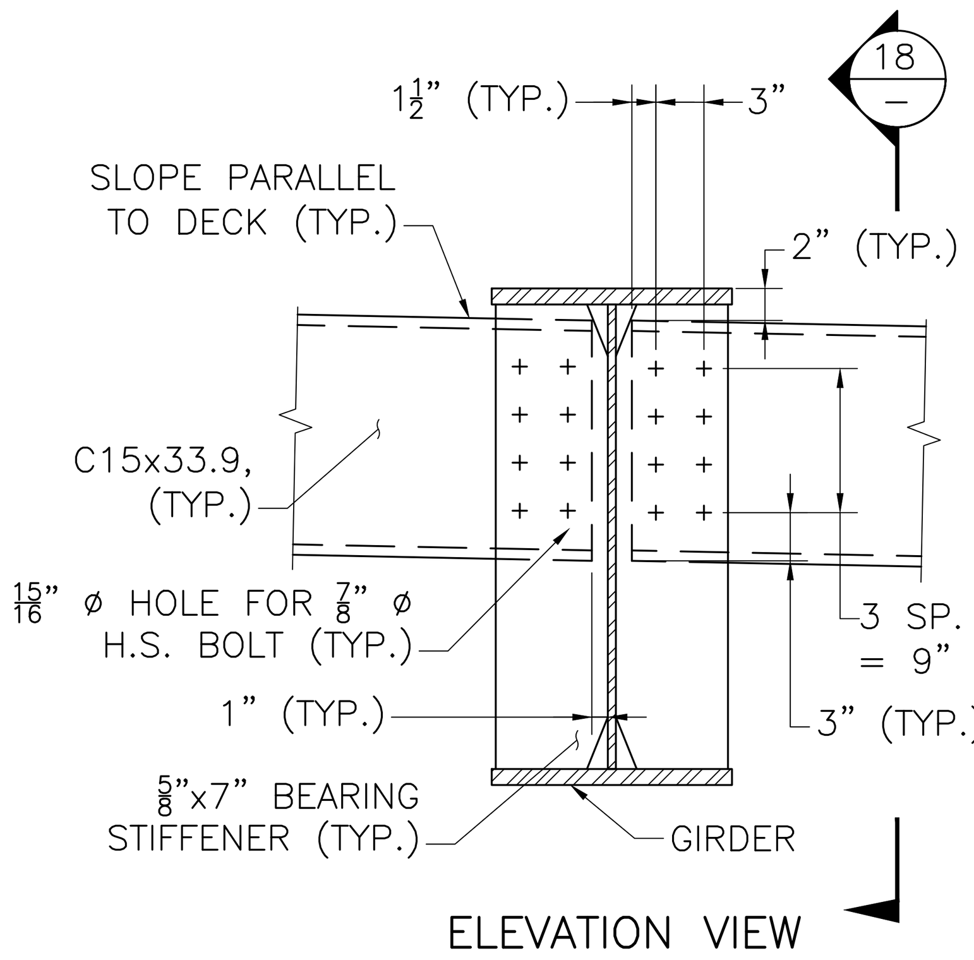
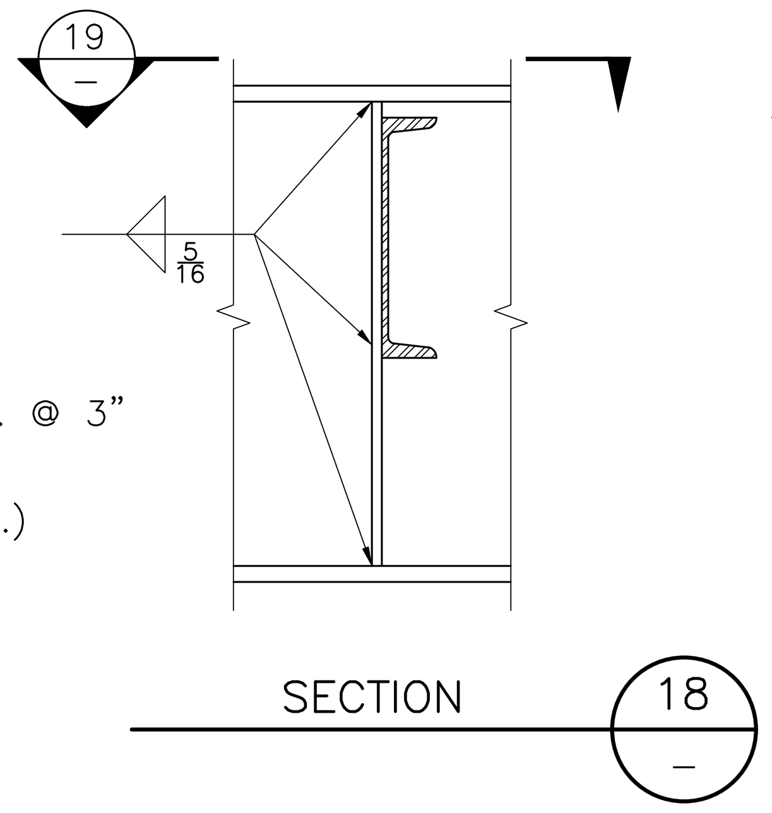
USE ONLY PRINTS OF LATEST DATE

WORCESTER
HARRISON STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	113	169
	PROJECT FILE NO.	609185	

DIAPHRAGM AND UTILITY SUPPORT DETAILS

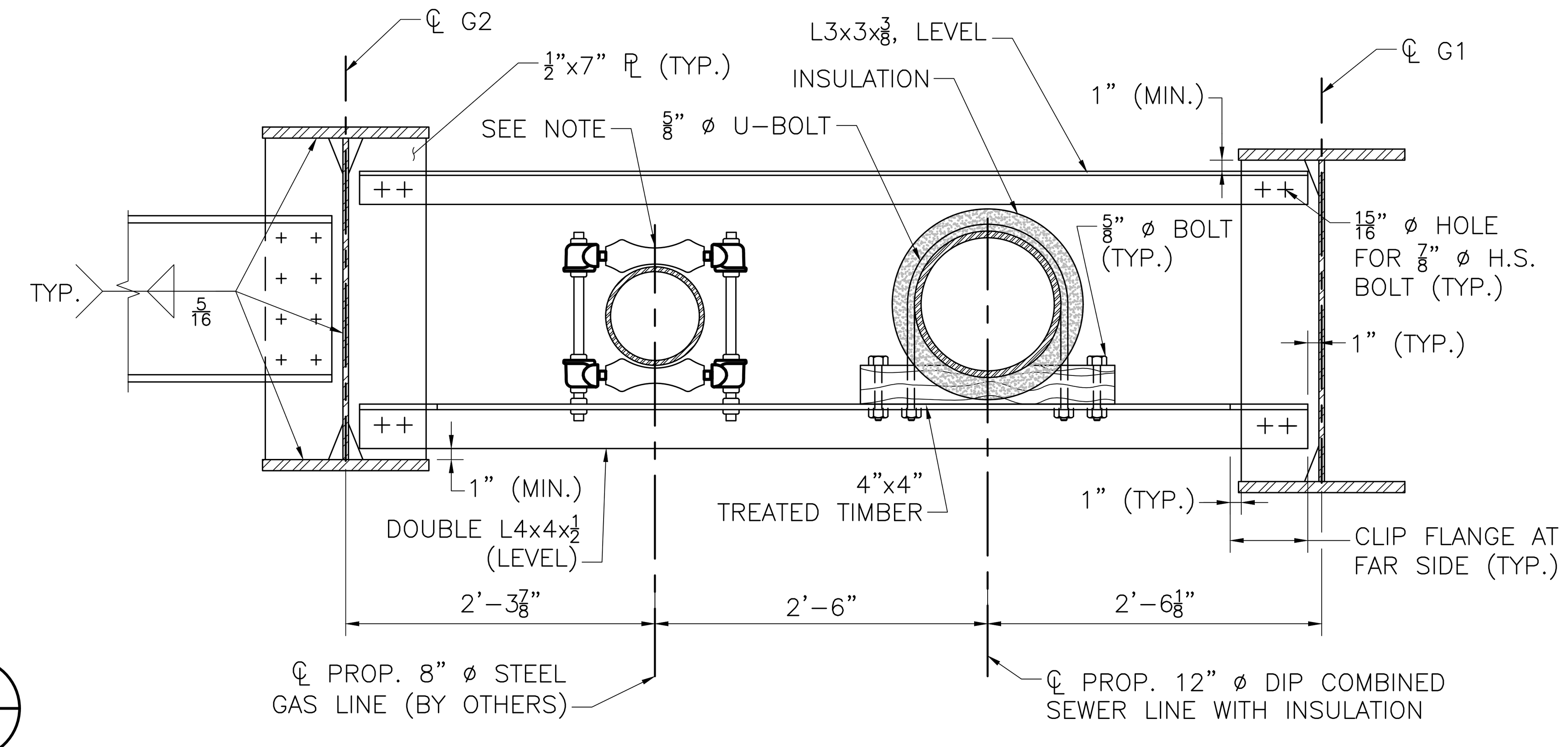




NOTE:
SEE CLIP DETAILS ON SHEET 28.

D1 END DIAPHRAGM DETAILS

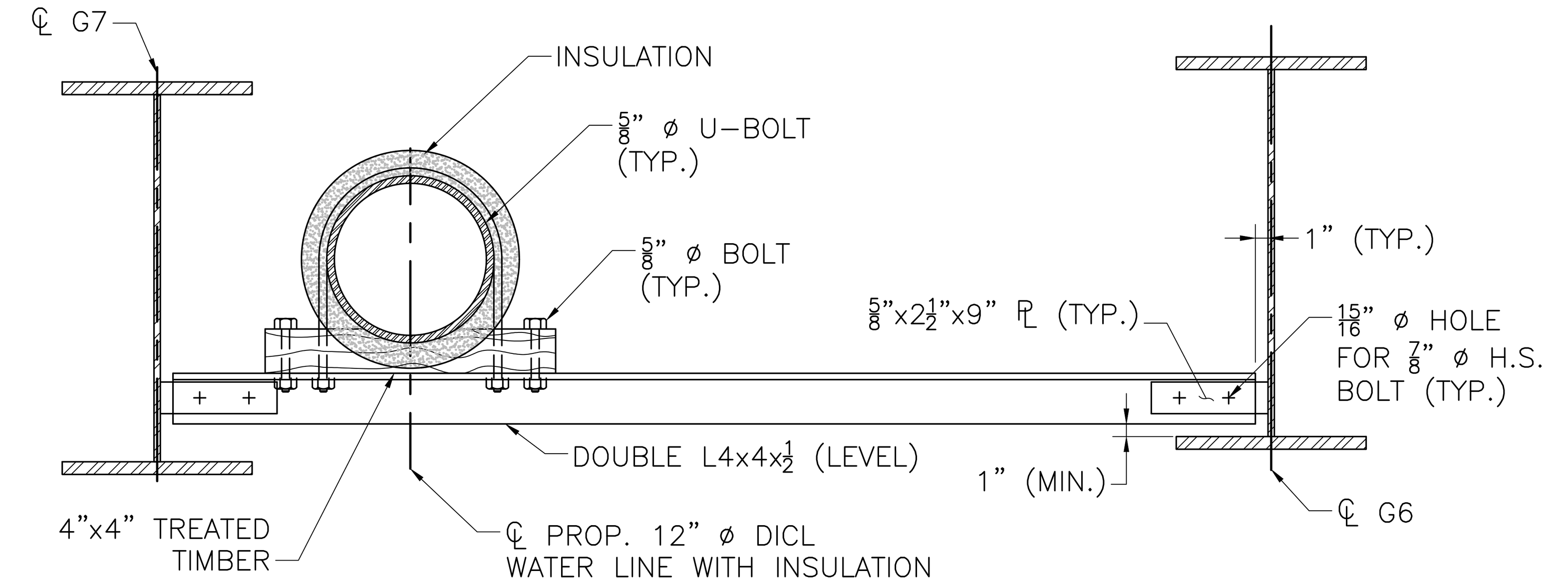
SCALE: 1" = 1'-0"



NOTE:
CONTRACTOR TO INSTALL BRACKETS AND ROLLERS (PER EVERSOURCE SPECIFICATIONS) FOR GAS LINE. EVERSOURCE TO INSTALL PIPE WITH SUPPORT OF MASSDOT CONTRACTOR. EVERSOURCE GAS TO SUPPLY BRACKETS, ROLLERS, PIPE, AND CASING END SEALS.

U1 UTILITY SUPPORT DETAILS AT DIAPHRAGMS

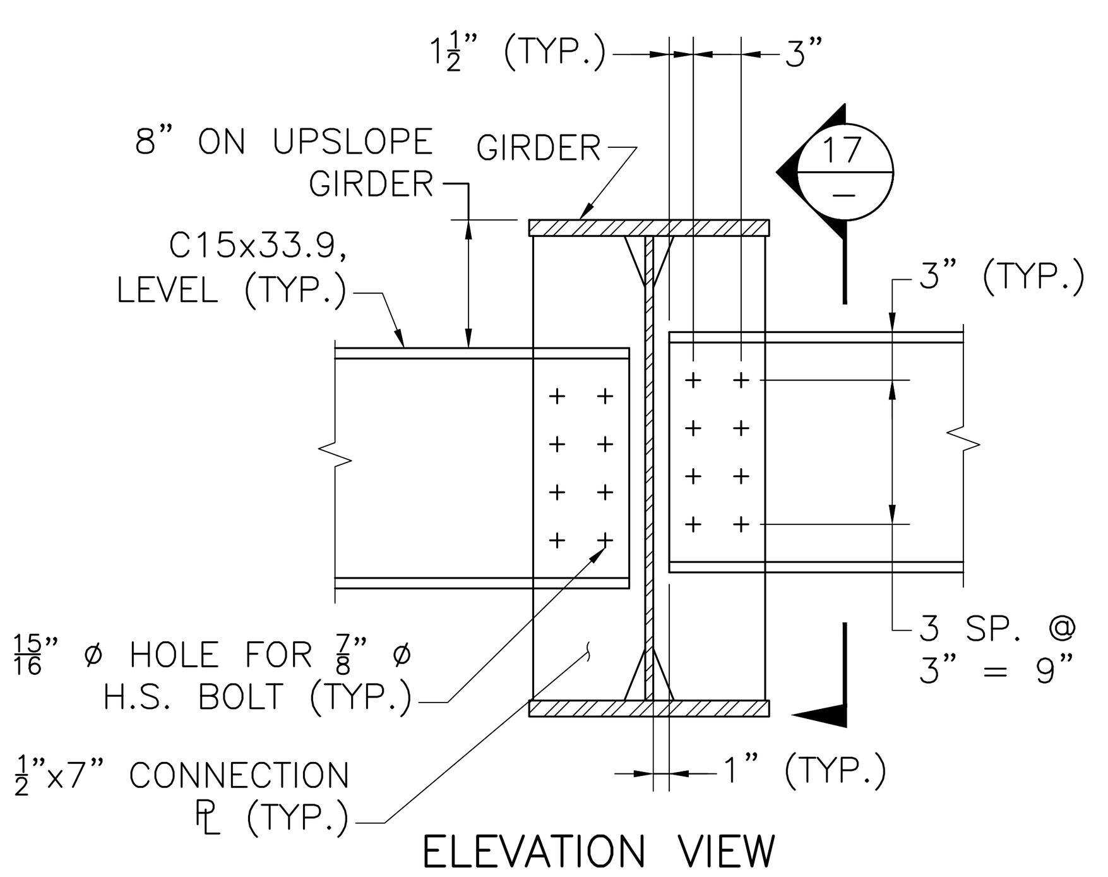
SCALE: 1" = 1'-0"

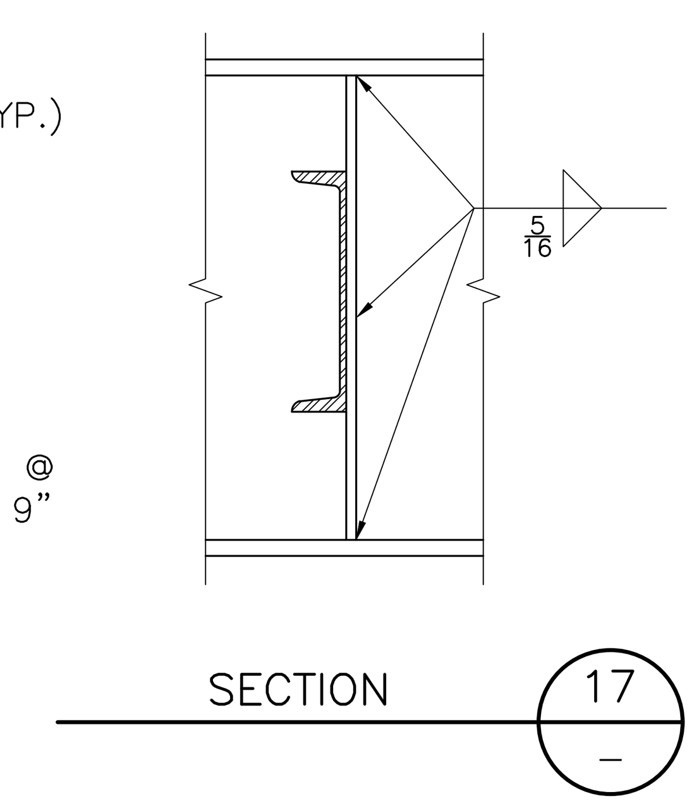


NOTE:
UTILITY SUPPORT BETWEEN DIAPHRAGMS, U3 SHOWN. UTILITY SUPPORT BETWEEN DIAPHRAGMS, U1 AND U2 SIMILAR.

U5, U6, U7, U8 UTILITY SUPPORT DETAILS BETWEEN DIAPHRAGMS

SCALE: 1" = 1'-0"

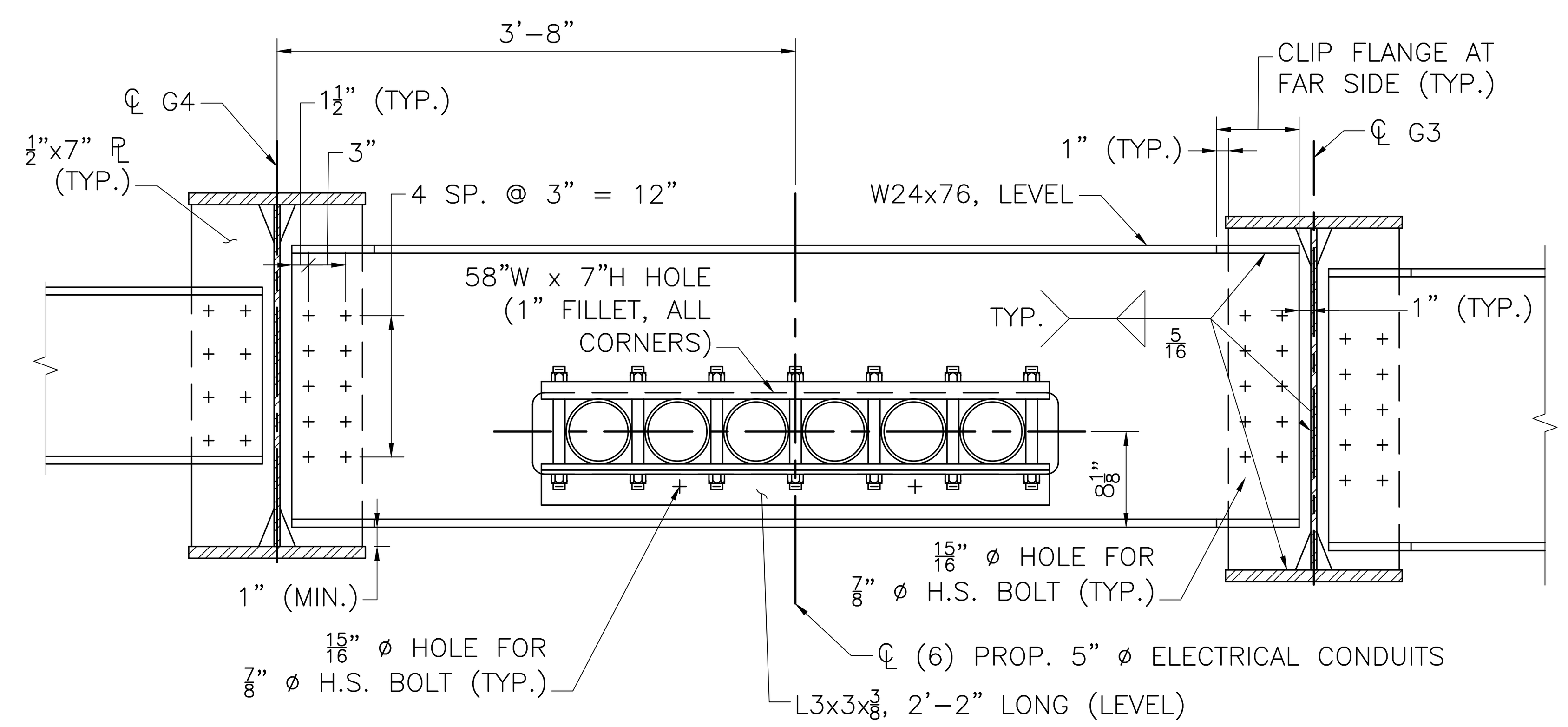




NOTE:
SEE CLIP DETAILS ON SHEET 28.

D2 INTERMEDIATE DIAPHRAGM DETAILS

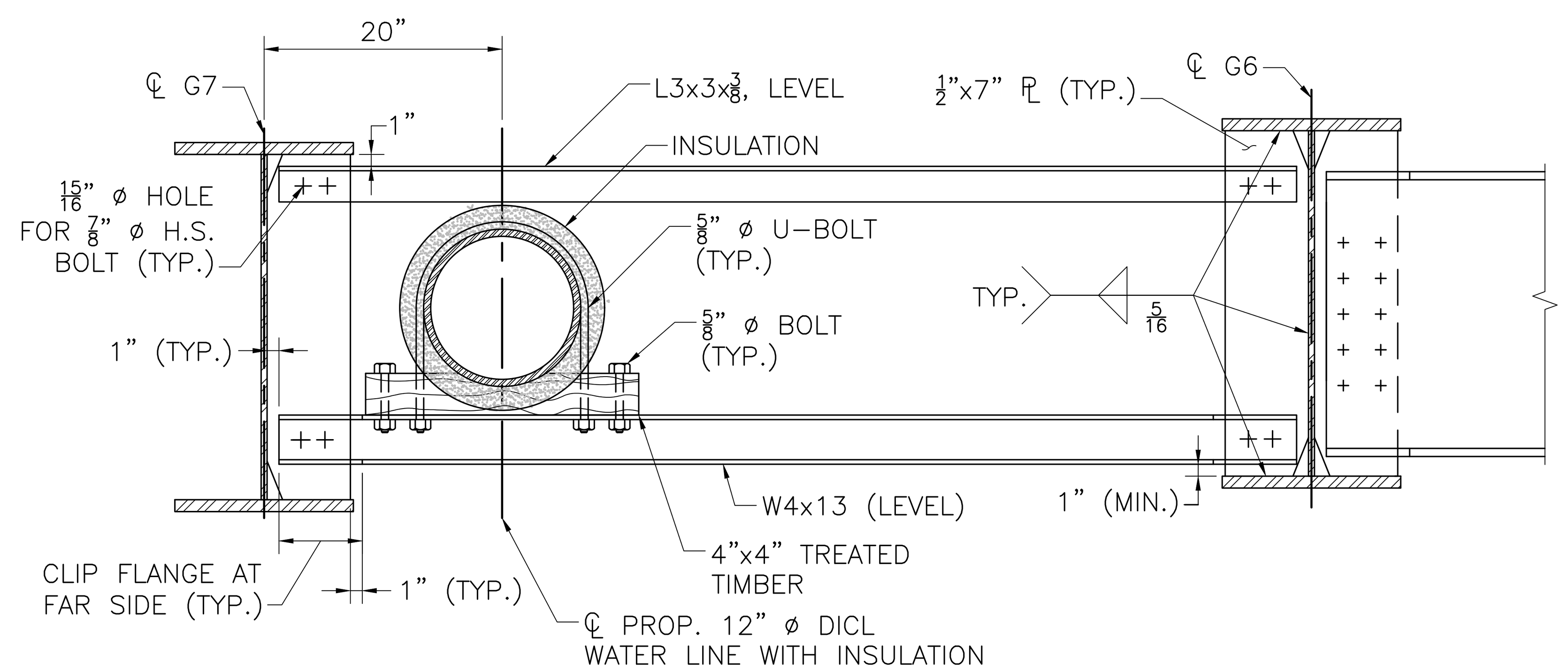
SCALE: 1" = 1'-0"



NOTE:
CONTRACTOR TO COORDINATE WITH UTILITY COMPANY FOR UTILITY HANGER SPECIFICATIONS.

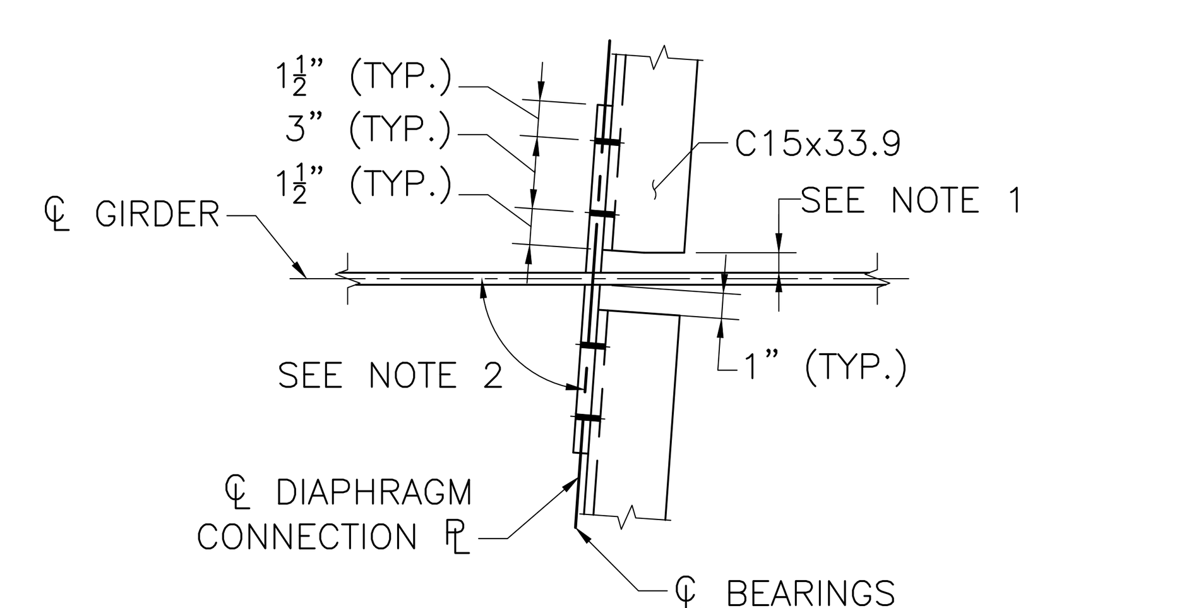
U2 UTILITY SUPPORT DETAILS AT DIAPHRAGMS

SCALE: 1" = 1'-0"



U4 UTILITY SUPPORT DETAILS AT DIAPHRAGMS

SCALE: 1" = 1'-0"

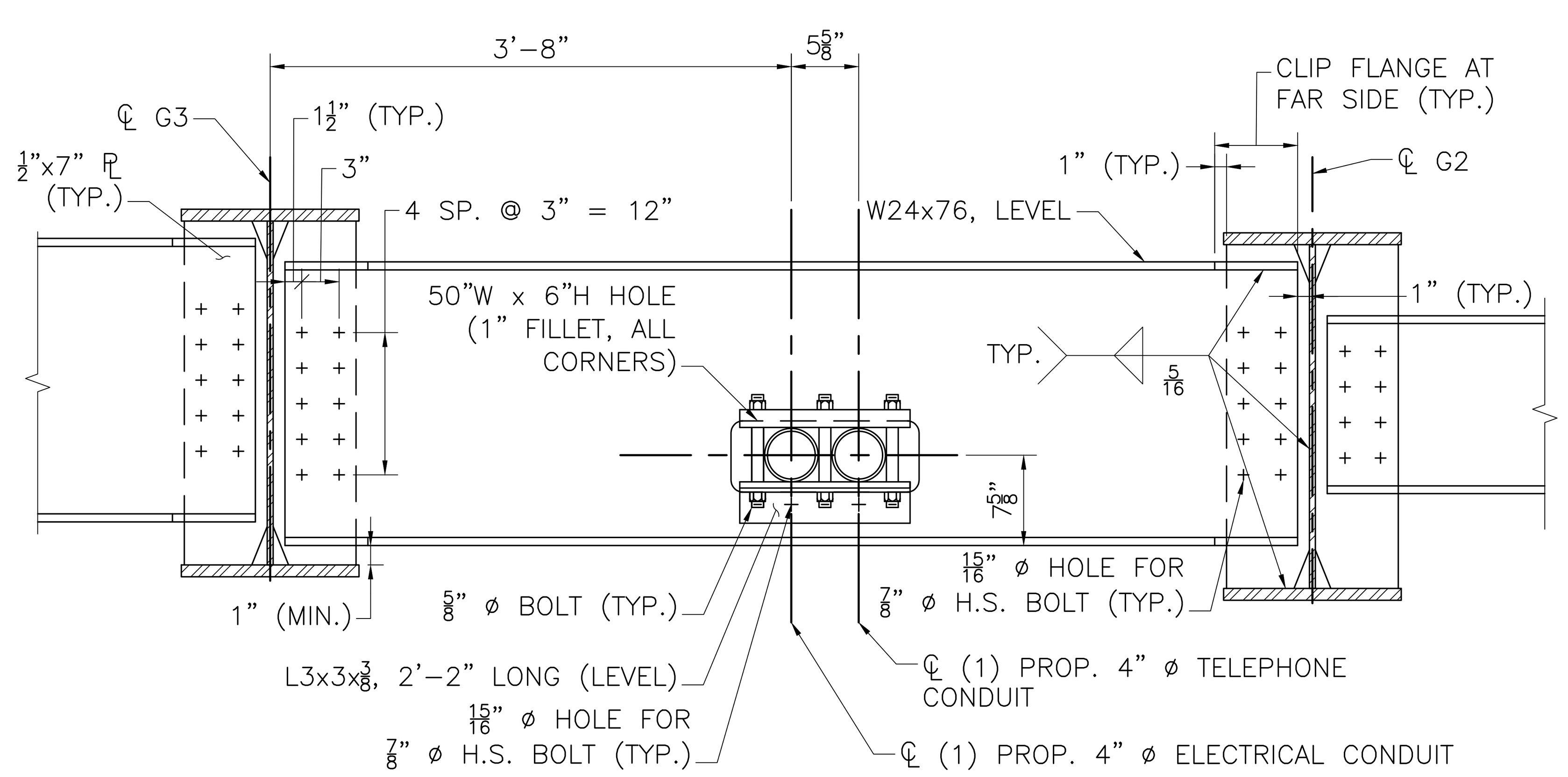


NOTE:

1. FLANGE OF CHANNEL MAY BE CLIPPED TO AVOID INTERFERENCE WITH WEB.
2. 85°57'54" AT WEST ABUT. AND PIER. 89°55'30" AT EAST ABUT.

SECTION 19

SCALE: 1½" = 1'-0"



U3 UTILITY SUPPORT DETAILS AT DIAPHRAGMS

SCALE: 1" = 1'-0"

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USE ONLY PRINTS OF LATEST DATE

SHEET 29 OF 39 SHEETS BRIDGE NO. W-44-083 (212)

609185_BR29_H.DWG Plotted on 21-Nov-2024 5:18 PM

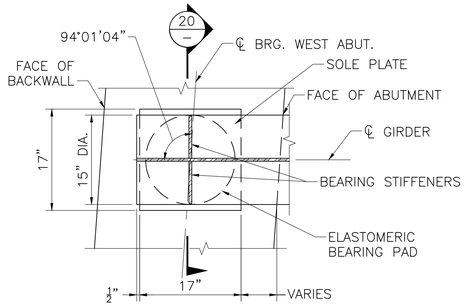
21-November-2024 Final Structural Submittal (SF)

Y:\Shared\engineering\Projects\2013\13033\13033.22x - Worcester Harrison & Laurel Sts\609185\DWG\BRIDGE\current Design\Harrison\609185_BR29_H.dwg

WORCESTER
HARRISON STREET OVER I-290

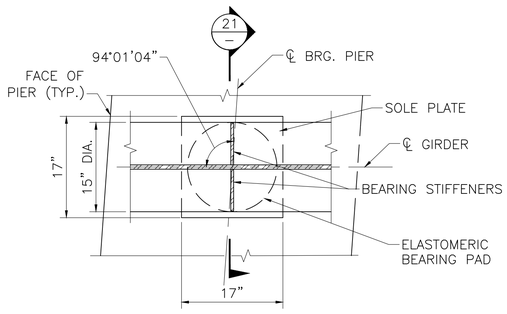
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	114	169
	PROJECT FILE NO. 609185		

BEARING DETAILS



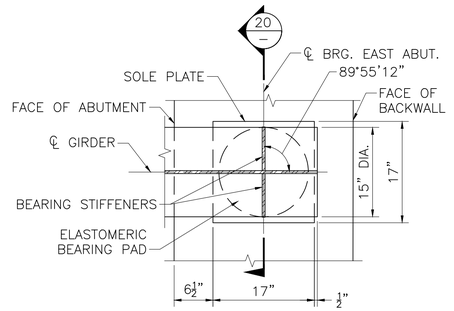
PLAN AT WEST ABUTMENT

SCALE: 1" = 1'–0"



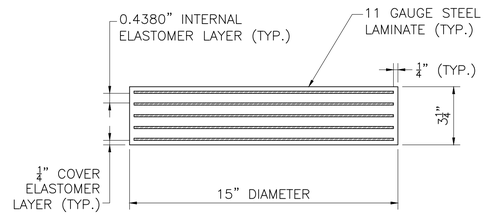
PLAN AT PIER

SCALE: 1" = 1'–0"



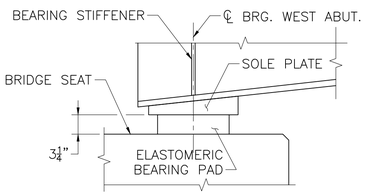
PLAN AT EAST ABUTMENT

SCALE: 1" = 1'–0"



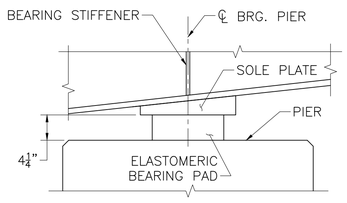
ELASTOMERIC BEARING PAD AT ABUTMENT

SCALE: 3" = 1'–0"



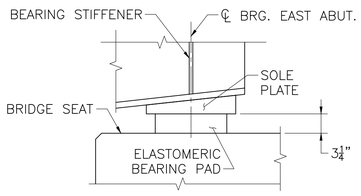
ELEVATION AT WEST ABUTMENT

SCALE: 1" = 1'–0"



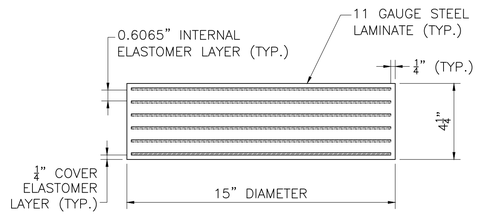
ELEVATION AT PIER

SCALE: 1" = 1'–0"



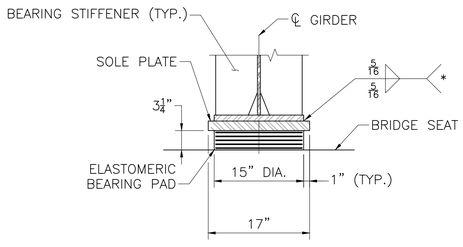
ELEVATION AT EAST ABUTMENT

SCALE: 1" = 1'–0"



ELASTOMERIC BEARING PAD AT PIER

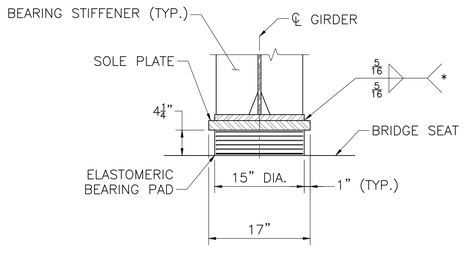
SCALE: 3" = 1'–0"



(*) – WELDS SHALL TERMINATE ¼" FROM EDGE OF PLATE.

SECTION 20 –

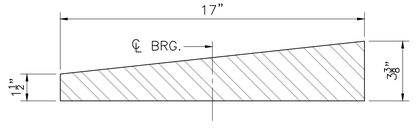
SCALE: 1" = 1'–0"



(*) – WELDS SHALL TERMINATE ¼" FROM EDGE OF PLATE.

SECTION 21 –

SCALE: 1" = 1'–0"



SOLE PLATE DETAIL

SCALE: 3" = 1'–0"

ELASTOMERIC BEARING NOTES:

1. ELASTOMER SHALL HAVE A SHEAR MODULUS OF 0.160 KSI.
2. STEEL LAMINATES SHALL CONFORM TO ASTM A 1011 GRADE 36.
3. THE COMPRESSIVE DESIGN LOAD ON THE PIER BEARING PAD IS 262.24 KIPS. THE COMPRESSIVE DESIGN STRESS IS THE RESULT OF DIVIDING THE COMPRESSIVE DESIGN LOAD BY THE AREA OF THE PAD AND IS EQUAL TO 1.48 KSI.
4. THE COMPRESSIVE DESIGN LOAD ON THE ABUTMENT BEARING PAD IS 110.64 KIPS. THE COMPRESSIVE DESIGN STRESS IS THE RESULT OF DIVIDING THE COMPRESSIVE DESIGN LOAD BY THE AREA OF THE PAD AND IS EQUAL TO 0.63 KSI.
5. ELASTOMERIC BEARING PAD SHALL NOT BE VULCANIZED TO THE SOLE PLATE.
6. STEEL SOLE PLATE SHALL CONFORM TO AASHTO M 270 GRADE 36 AND SHALL BE HOT–DIP GALVANIZED.
7. CENTER THE ELASTOMERIC PAD UNDER THE SOLE PLATE DURING BEAM ERECTION.
8. BEAMS SHALL BE ERECTED WHEN THE AMBIENT TEMPERATURE IS BETWEEN 50 °F AND 77 °F. IF BEAMS ARE ERECTED AT OTHER AMBIENT TEMPERATURES, THEY WILL HAVE TO BE JACKED AND THE ELASTOMERIC BEARINGS RECENTERED WHEN THE TEMPERATURE RETURNS TO THAT RANGE.

DATE	DESCRIPTION
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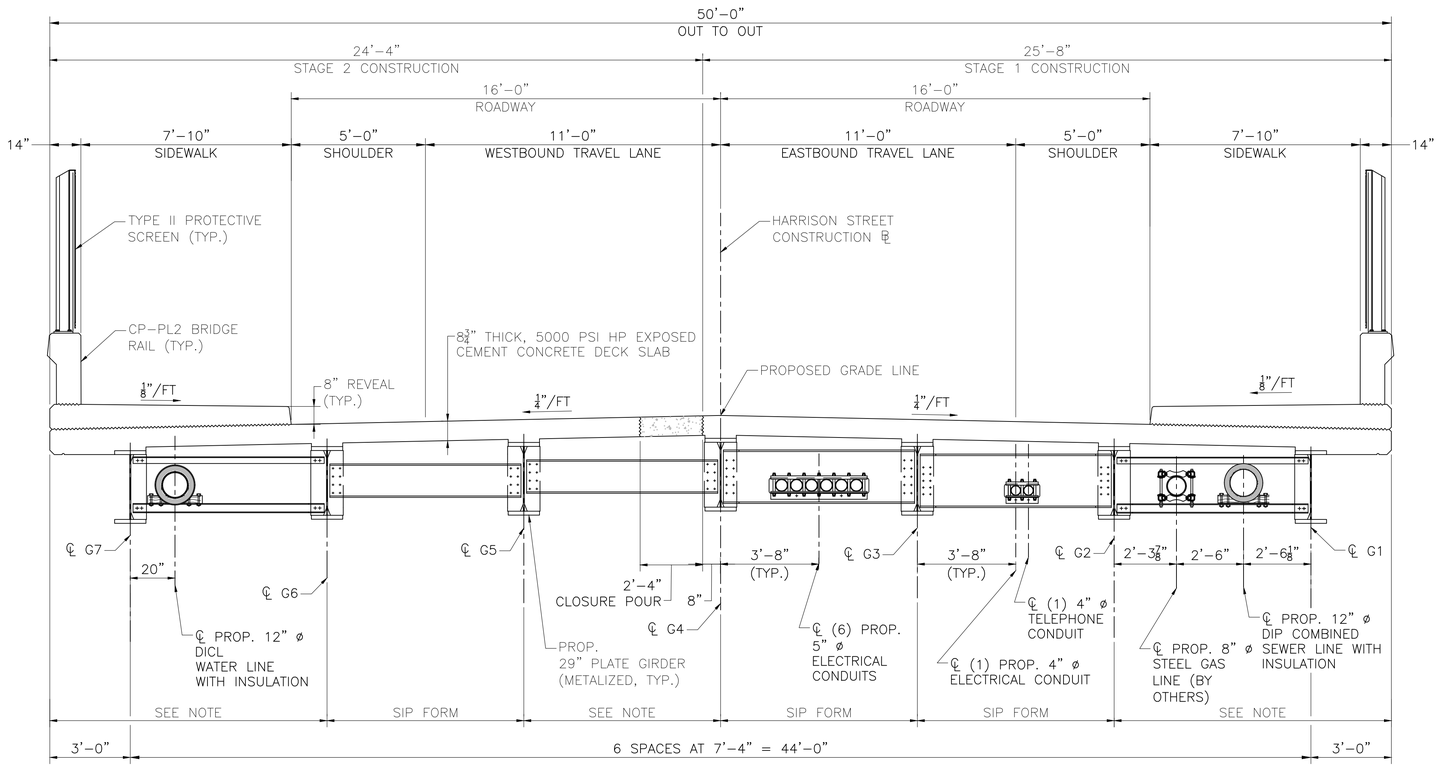
WORCESTER
HARRISON STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	115	169
	PROJECT FILE NO. 609185		

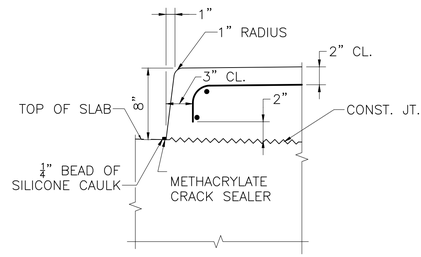
TRANSVERSE BRIDGE AND SIDEWALK SECTIONS



NOTE:
USE REMOVABLE FORMS IN THESE BAYS

TYPICAL TRANSVERSE SECTION

SCALE: ⅜" = 1'-0"

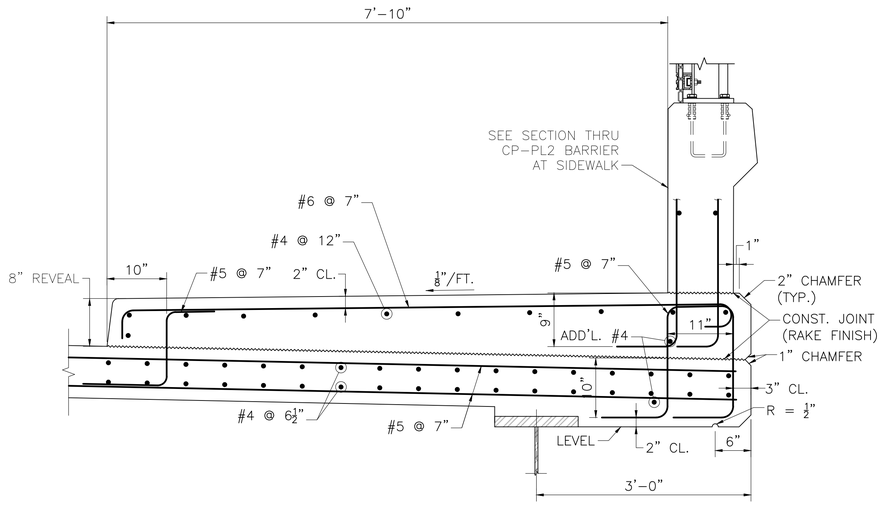


NOTES:

1. METHACRYLATE CRACK SEALER SHALL BE APPLIED AFTER SIDEWALK CURING PERIOD IS COMPLETE AND IN ACCORDANCE WITH REQUIREMENTS OF MANUFACTURER AND THE STANDARD SPECIFICATIONS.
2. BEFORE SEALING, THE CONCRETE AT THE INTERFACE OF DECK AND CURB SHALL BE SWEPT CLEAN AND BLOWN OFF USING OIL FREE COMPRESSED AIR IMMEDIATELY PRIOR TO APPLYING THE SEALER.
3. APPLY ¼" HIGH BEAD OF SILICONE CAULKING COMPOUND ABOUT ¼" FROM THE FACE OF CURB.
4. METHACRYLATE SHALL THEN BE POURED INTO THE ¼" WIDE GAP BETWEEN THE FACE OF CURB AND THE BEAD OF CAULK.

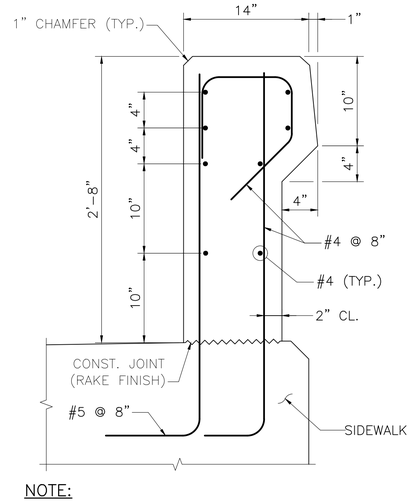
FACE OF CURB DETAILS

SCALE: 1½" = 1'-0"



SECTION THRU SIDEWALK

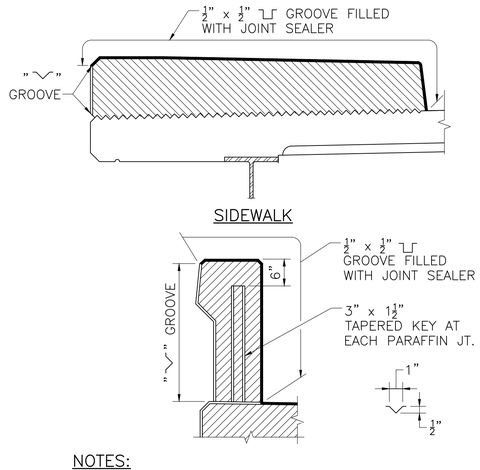
SCALE: 1" = 1'-0"



NOTE:
FOR SIDEWALK REINFORCEMENT SEE SECTION THRU SIDEWALK.

SECTION THRU CP-PL2 BARRIER AT SIDEWALK

SCALE: 1½" = 1'-0"



NOTES:

1. ALL CONCRETE ABOVE SLAB SHALL BE POURED IN ALTERNATING SECTIONS WITH NOT LESS THAN 3 DAYS BETWEEN POURS.
2. DO NOT CARRY LONGITUDINAL BARS THROUGH THE PARAFFIN JOINTS. END THE REINFORCEMENT 2" CLEAR OF JOINT.
3. JOINT SHALL BE SQUARE TO FACE OF CURB.

PARAFFIN JOINT DETAILS

SCALE: ¾" = 1'-0"

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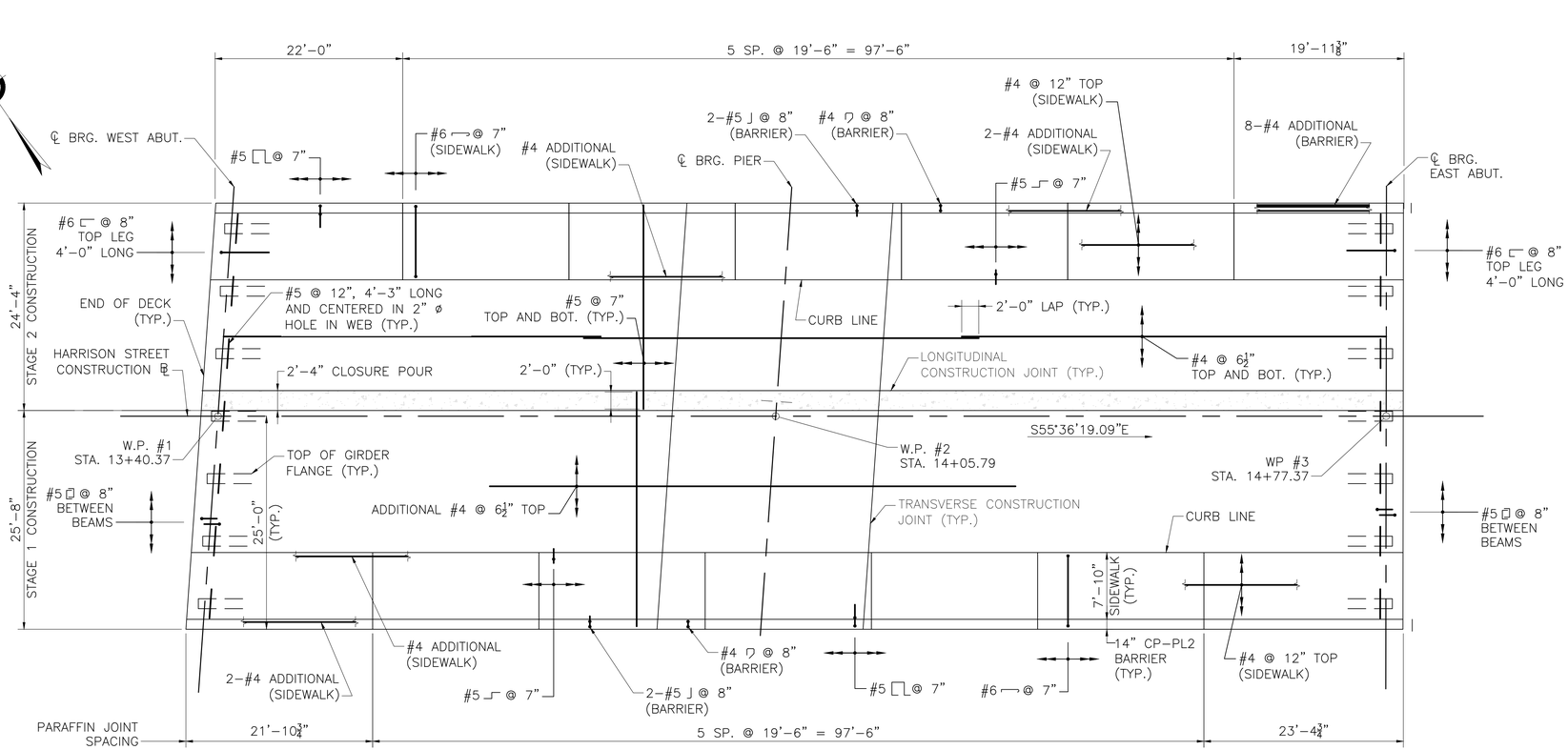
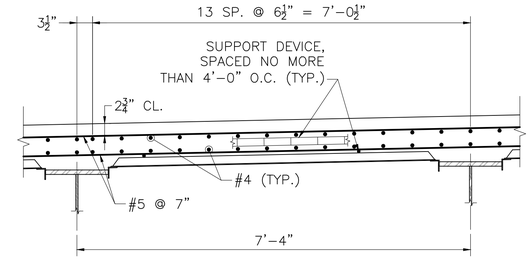
MA	STP(BR-OFF)-003S(815)X	116	169
PROJECT FILE NO.	609185		

DECK PLAN



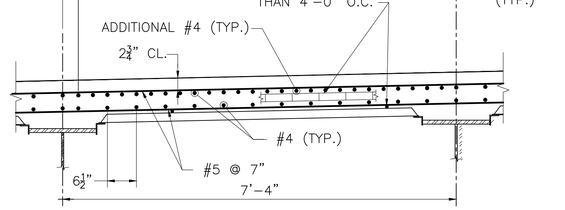
DECK PLAN
SCALE: ⅛" = 1'-0"



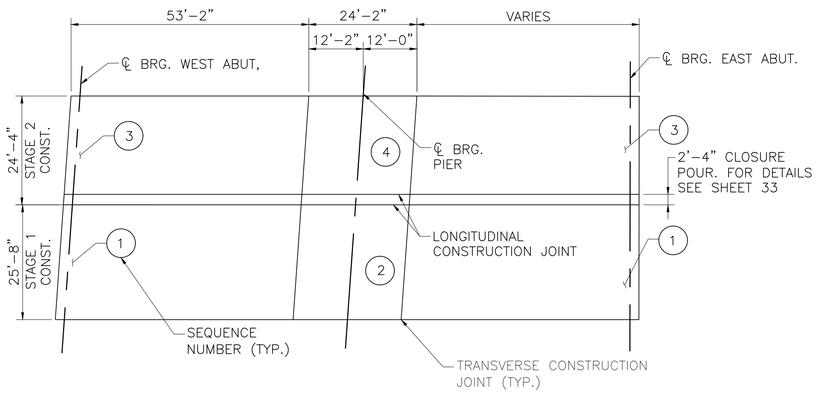
NOTES:

1. ROADWAY DECK SLAB SHALL BE 5000 PSI HP CEMENT CONCRETE.
2. LONGITUDINAL REINFORCEMENT SHALL BE PLACED PARALLEL TO THE ℄ OF CONSTRUCTION. TRANSVERSE (PRIMARY) REINFORCEMENT SHALL BE PLACED PERPENDICULAR TO THE ℄ OF CONSTRUCTION.
3. ALL REINFORCEMENT AND SUPPORT DEVICES SHALL BE COATED.
4. BRIDGE DECK SHALL BE GROOVED TRANSVERSELY USING MULTI-BLADED SELF-PROPELLED SAWCUTTING EQUIPMENT

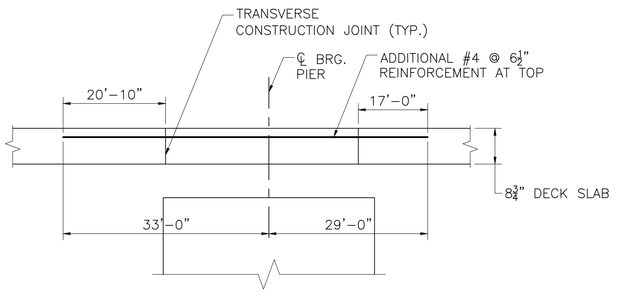
TYPICAL DECK REINFORCEMENT
SCALE: ¾" = 1'-0"



DECK REINFORCEMENT AT PIER
SCALE: ¾" = 1'-0"



SUGGESTED DECK POURING SEQUENCE
SCALE: 1/16" = 1'-0"



SECTION AT PIER
NOT TO SCALE

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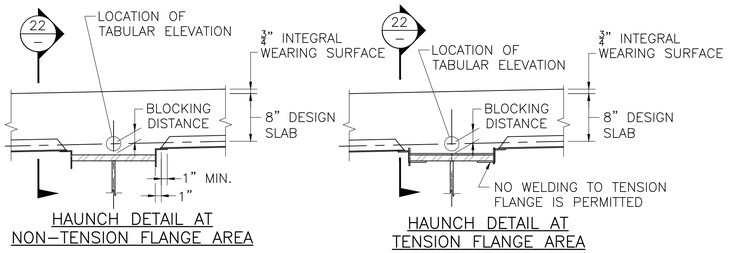
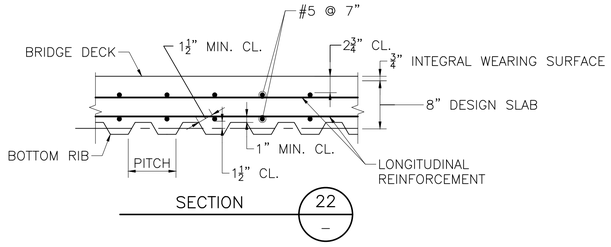


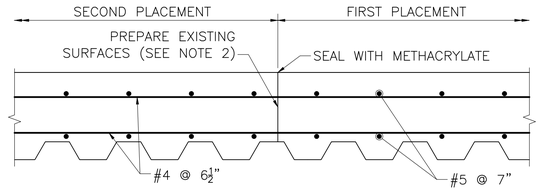
HAUNCH DETAIL AT NON–TENSION FLANGE AREA

HAUNCH DETAIL AT TENSION FLANGE AREA



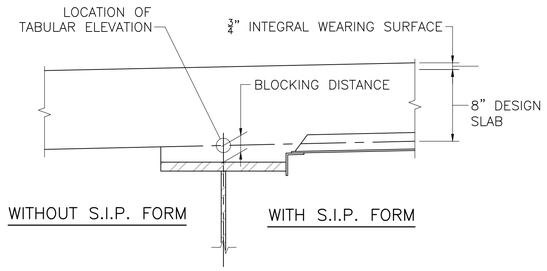
STAY–IN–PLACE FORM DETAILS

SCALE: 1" = 1'–0"



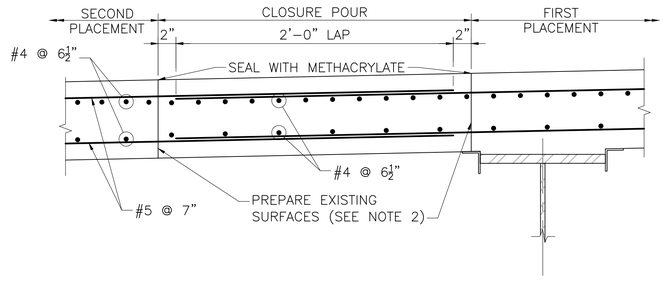
TRANSVERSE CONSTRUCTION JOINT DETAIL IN DECK SLAB

SCALE: 1½" = 1'–0"



TOP OF FORM DETAILS

NOT TO SCALE



LONGITUDINAL CONSTRUCTION JOINT DETAIL IN DECK SLAB

SCALE: 1½" = 1'–0"

GIRDER NO.	TOP OF FORM ELEVATIONS FOR DECK SLAB PRIOR TO PLACEMENT OF CONCRETE																
	SPAN 1 INCREASING STATIONS →									SPAN 2 INCREASING STATIONS →							
	℄ BRGS. W. ABUT.	1/8L	1/4L	3/8L	1/2L	5/8L	3/4L	7/8L	℄ BRGS. PIER	1/8L	1/4L	3/8L	1/2L	5/8L	3/4L	7/8L	℄ BRGS. E. ABUT.
G1	477.81	478.71	479.61	480.50	481.37	482.24	483.11	483.98	484.86	485.86	486.87	487.89	488.91	489.91	490.89	491.85	492.80
G2	478.01	478.91	479.81	480.70	481.58	482.45	483.32	484.19	485.07	486.05	487.05	488.06	489.07	490.07	491.05	492.01	492.96
G3	478.21	479.12	480.02	480.91	481.79	482.66	483.53	484.40	485.28	486.25	487.24	488.24	489.24	490.24	491.21	492.17	493.11
G4	478.42	479.33	480.23	481.12	482.00	482.87	483.74	484.61	485.49	486.45	487.44	488.43	489.42	490.41	491.38	492.33	493.26
G5	478.33	479.23	480.13	481.02	481.90	482.77	483.64	484.51	485.39	486.35	487.33	488.31	489.30	490.34	491.24	492.18	493.11
G6	478.23	479.14	480.04	480.93	481.81	482.68	483.54	484.41	485.29	486.25	487.22	488.19	489.17	490.21	491.10	492.04	492.96
G7	478.13	479.04	479.95	480.84	481.72	482.59	483.45	484.32	485.20	486.14	487.11	488.08	489.05	490.02	490.97	491.90	492.81

NOTE:

AFTER THE BEAMS ARE ERECTED BUT BEFORE THE FORMS ARE BUILT, ELEVATIONS ON TOP OF THE FLANGE OF THE BEAMS ARE TO BE OBTAINED AT THE POINTS INDICATED IN THE TABLE. THE DIFFERENCE BETWEEN THE ELEVATIONS OBTAINED AND THOSE SHOWN IN THE TABLE GIVES THE ACTUAL BLOCKING DISTANCE FROM THE TOP OF BEAM TO THE BOTTOM OF THE SLAB AT CENTER LINE OF BEAM.

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DECK DETAILS

CONSTRUCTION JOINT NOTES:

1. BRIDGE DECK SLAB SHALL BE PLACED IN ACCORDANCE WITH THE PLACEMENT SEQUENCE SHOWN ON THE PLANS. AN APPROVED RETARDED SHALL BE USED, WHEN NECESSARY, TO RETAIN THE WORKABILITY OF THE CONCRETE. WHEN MULTIPLE PLACEMENTS ARE MADE, POSITIVE MOMENT REGIONS SHALL BE PLACED PRIOR TO NEGATIVE MOMENT REGIONS AND A MINIMUM OF 72 HOURS SHALL PASS BETWEEN PLACEMENTS.
2. THE SURFACE OF THE PREVIOUSLY CAST CONCRETE SHALL BE BLAST CLEANED, ROUGHENED, WETTED WITH CLEAN WATER, AND THEN FLUSHED WITH A MORTAR COMPOSED OF EQUAL PARTS OF THE CEMENT AND SAND SPECIFIED FOR THE NEW CONCRETE, BEFORE NEW CONCRETE IS PLACED BEFORE MORTAR HAS TAKEN INITIAL SET.
3. IN LIEU OF THE MORTAR, AN EPOXY ADHESIVE SUITABLE FOR BONDING FRESH CONCRETE TO HARDENED CONCRETE FOR LOAD BEARING APPLICATIONS MAY BE USED. THE EPOXY ADHESIVE SHALL CONFORM TO AASHTO M 235 TYPE V AND SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
4. THE CONTRACTOR MAY SUBMIT A PROPOSAL DETAILING THE ELIMINATION OF THE CLOSURE POUR FOR THE APPROVAL OF THE ENGINEER. THE PROPOSAL SHALL DETAIL THE CONTRACTOR'S MEANS AND METHODS FOR ACCURATELY CONSTRUCTING THE DECK SLAB TO THE LINES, GRADES, AND THICKNESS SHOWN ON THE PLANS WITHOUT LEAKAGE OF CONCRETE.
5. DOWEL BAR SPLICER SHALL BE USED WHERE USE OF LAP SLICES IS NOT FEASIBLE.

STAY–IN–PLACE FORM NOTES:

1. FOR 2" S.I.P. FORM, SET BOTTOM OF FORM 1" BELOW ELEVATION GIVEN IN TABLE. FOR 3" S.I.P. FORM, SET BOTTOM OF FORM 1½" BELOW TABLE ELEVATIONS.
2. FORM ENDS SHALL BE CRIMPED CLOSED IN A TAPERED MANNER. SEPARATE END CLOSURE PIECES WILL NOT BE ALLOWED.
3. SUPPORT ANGLES SHALL BE PLACED IN THE "LEG DOWN" POSITION WHERE POSSIBLE. WHERE "LEG UP" POSITION IS NECESSARY, THE UPPER MOST PORTION OF THE ANGLE SHALL NOT PROJECT MORE THAN 1" ABOVE THE TOP FLANGE OR COVER PLATE. THE CONTRACTOR SHALL HAVE AN ASSORTMENT OF ANGLES OF VARIOUS SIZES AVAILABLE ON THE SITE TO CONFORM TO THIS REQUIREMENT.
4. ALL MAIN STEEL REINFORCEMENT IN THE LOWER MAT SHALL BE CENTERED OVER THE VALLEY OF THE S.I.P. FORM.
5. CONTRACTOR SHALL DESIGN AND DETAIL ALL ELEMENTS OF THE FORMING SYSTEM AND SHALL SUBMIT TO THE ENGINEER FOR APPROVAL.
6. IN CASE WHERE STANDARD 2" OR 3" DEEP S.I.P. FORM DO NOT SATISFY DESIGN REQUIREMENTS AN ALTERNATIVE FORMING SYSTEM CONSISTING OF DEEPER S.I.P. FORMS OR REMOVABLE FORMS SHALL BE DESIGNED AND DETAILED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR APPROVAL. THE DESIGN THICKNESS OF THE SLAB SHALL NOT BE REDUCED.

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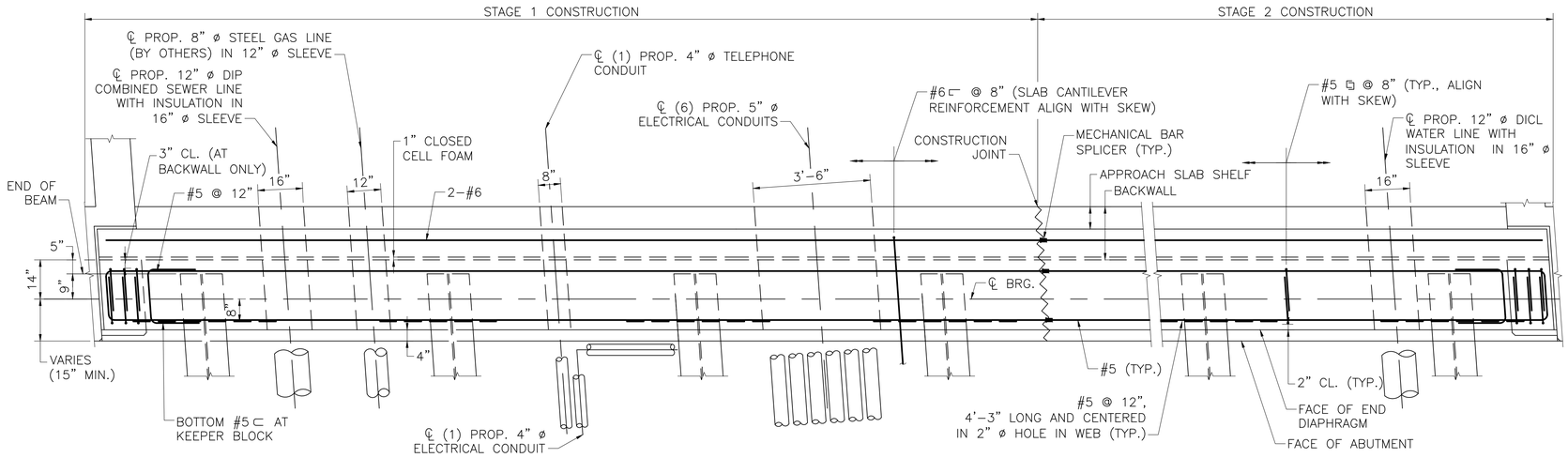
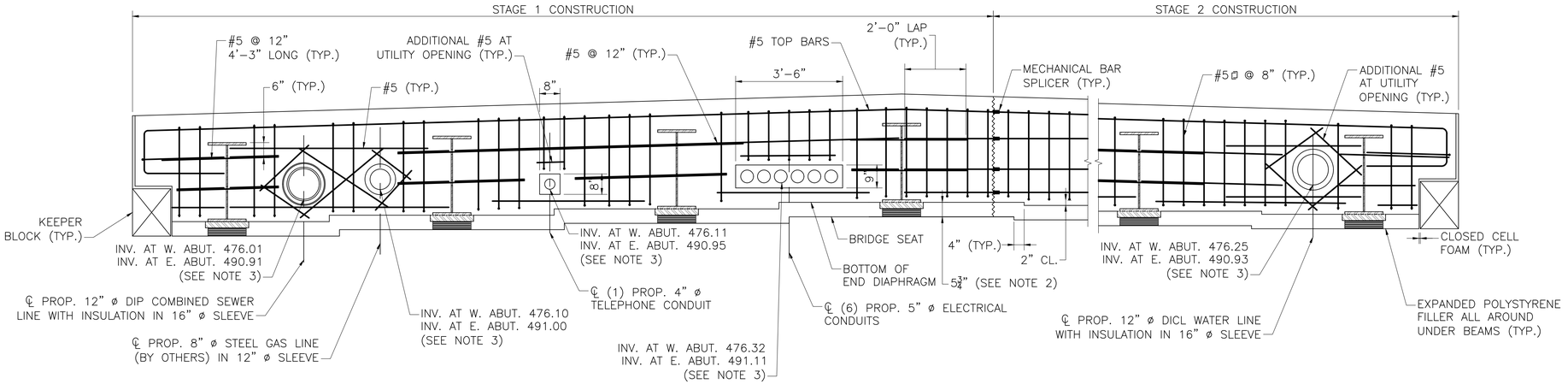
END DIAPHRAGM DETAILS



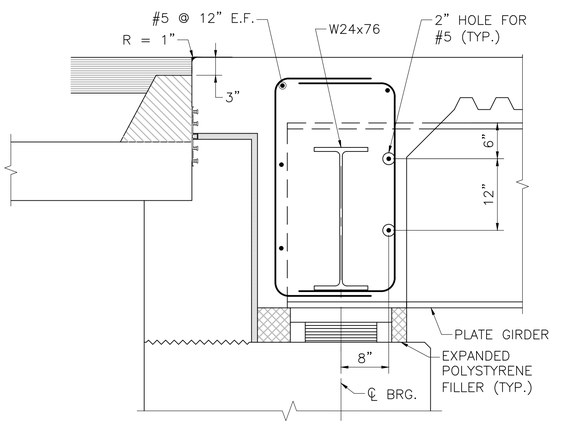
END DIAPHRAGM PLAN

SCALE: ½" = 1'-0"



END DIAPHRAGM ELEVATION

SCALE: ½" = 1'-0"



DETAILS AT ABUTMENT – ROADWAY SECTION

SCALE: 1" = 1'-0"

NOTE:

1. WEST ABUTMENT SHOWN, EAST ABUTMENT SIMILAR.
2. CONTRACTOR MAY USE CLOSED CELL FOAM OR EXPANDED POLYSTYRENE FILLER ALL AROUND THE CONDUITS AND ANY OTHER UTILITY OPENINGS TO PREVENT THE WATER LEAKING BEHIND THE BACKWALL INTO PROPOSED ABUTMENT FACE.
3. INVERT ELEVATIONS ARE TAKEN AT THE CENTERLINE OF BEARING.

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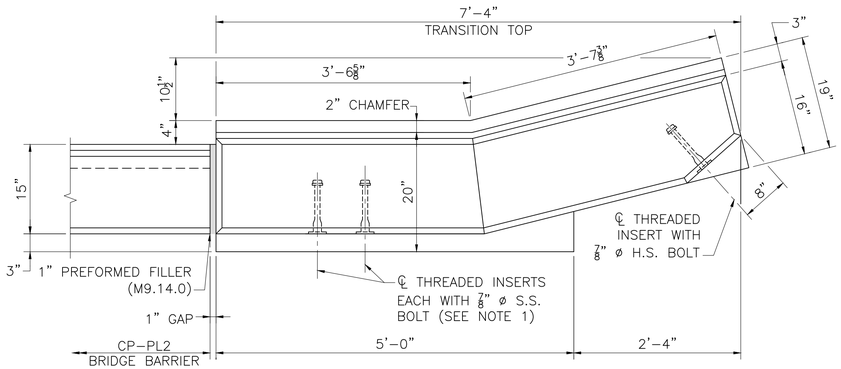
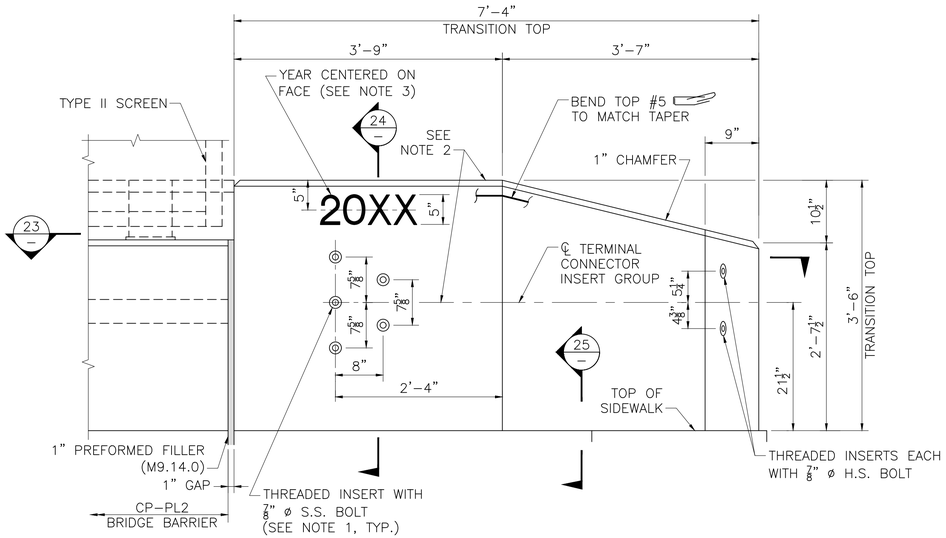


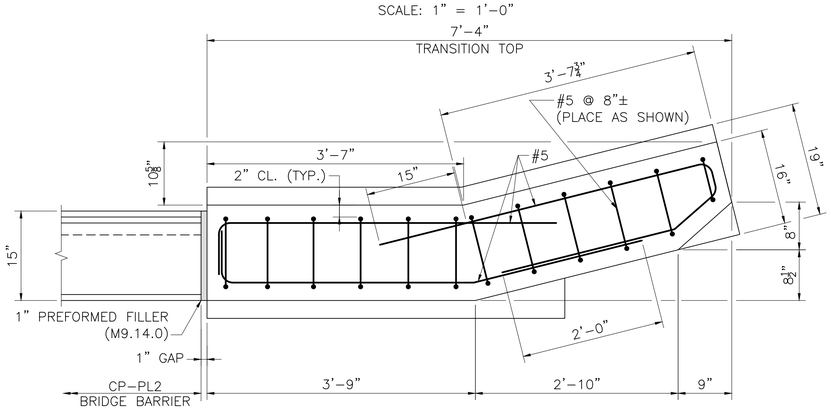
PLAN AT NORTHWEST AND SOUTHEAST CORNER

SCALE: 1" = 1'-0"



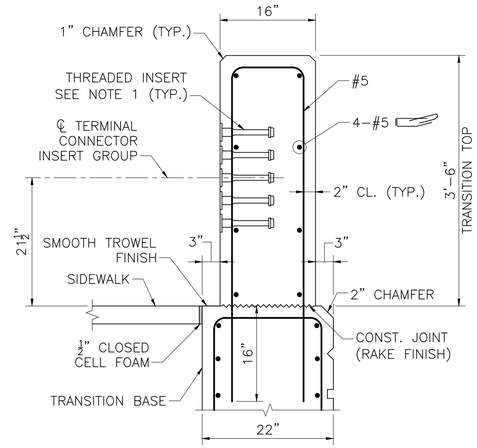
ELEVATION AT NORTHWEST AND SOUTHEAST CORNER

SCALE: 1" = 1'-0"



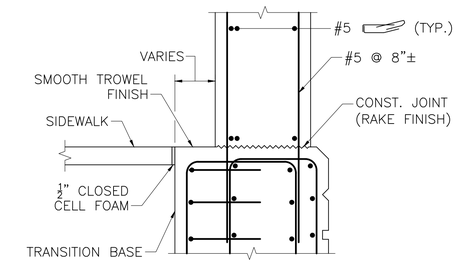
SECTION 23

SCALE: 1" = 1'-0"



SECTION 24

SCALE: 1" = 1'-0"



SECTION 25

SCALE: 1" = 1'-0"

NOTES:

1. THREADED INSERTS SHALL BE PREQUALIFIED BY THE MANUFACTURER AS BEING CAPABLE OF DEVELOPING A NOMINAL SHEAR RESISTANCE OF 20 KIPS PER ⅞" ø S.S. BOLT. S.S. BOLTS SHALL BE ⅞" ø x 1½" LONG FULLY THREADED AISI TYPE 304N STAINLESS STEEL. INSERTS FOR ⅞" S.S. BOLTS SHALL BE GALVANIZED AND CAST INTO THE TRANSITION.
2. FOR AN APPROACH GRADE UP TO 3%, THE TRANSITION MAY BE CAST SQUARE AND SET PLUMB WITH THE MINIMUM EMBEDMENT DEPTH SHOWN. THE TERMINAL CONNECTOR INSERT GROUP SHALL BE SQUARE TO THE POST.

   FOR AN APPROACH GRADE IN EXCESS OF 3%, THE TRANSITION TOP AND THE TOP OF THE BRIDGE BARRIERS SHALL FOLLOW THE APPROACH GRADE. THE HEIGHT OF THE TRANSITION TOP SHALL VARY PROVIDED THAT THE MINIMUM DIMENSIONS SHOWN ON THE CONSTRUCTION DRAWINGS ARE MET. THE BOTTOM OF THE TRANSITION BASE SHALL BE SET LEVEL WITH THE MINIMUM EMBEDMENT DEPTH SHOWN. THE TERMINAL CONNECTOR INSERT GROUP SHALL BE SLOPED TO FOLLOW THE APPROACH GRADE.
3. USE LATEST CONTRACT COMPLETION YEAR IN EFFECT WHEN THE FIRST GUARDRAIL TRANSITION IS CAST. USE THIS YEAR FOR ALL GUARDRAIL TRANSITIONS.
4. ALL CONCRETE FOR THE CAST-IN-PLACE HIGHWAY GUARDRAIL TRANSITION SHALL BE 5000 PSI, ¾", 685 HP CEMENT CONCRETE.

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HIGHWAY GUARDRAIL TRANSITION DETAILS

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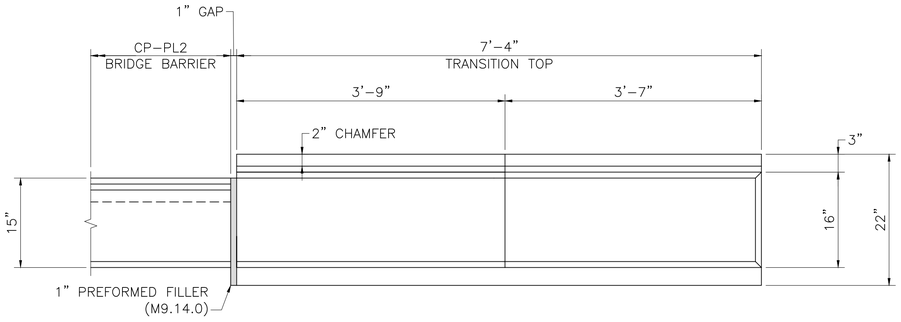
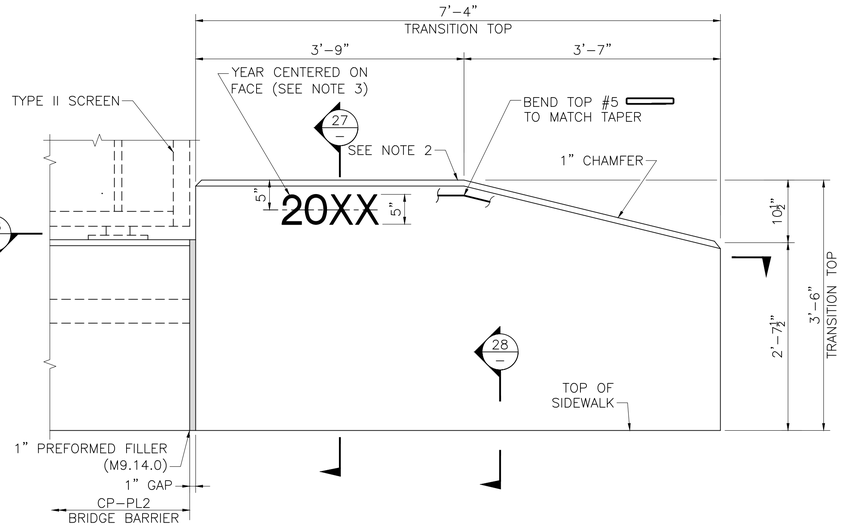
TOP OF HIGHWAY GUARDRAIL TRANSITION FOR CP-PL2 BARRIER



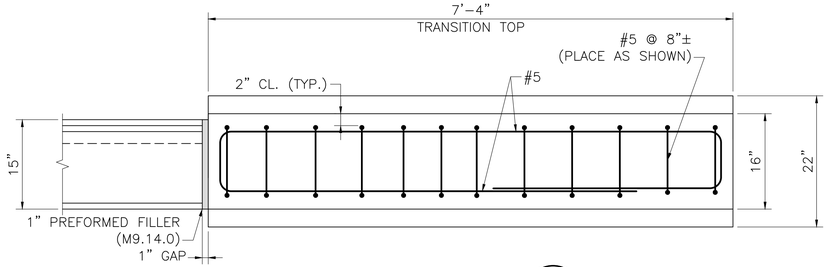
PLAN AT SOUTHWEST CORNER

SCALE: 1" = 1'–0"



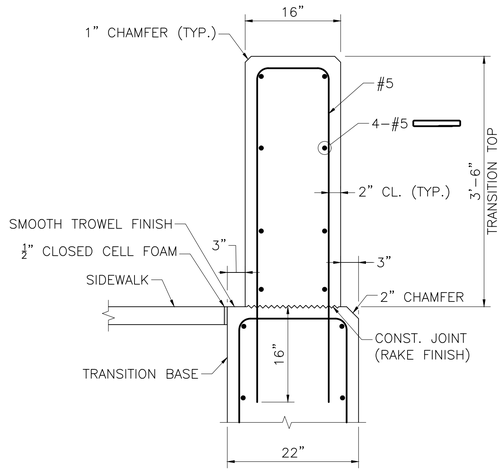
ELEVATION AT SOUTHWEST CORNER

SCALE: 1" = 1'–0"



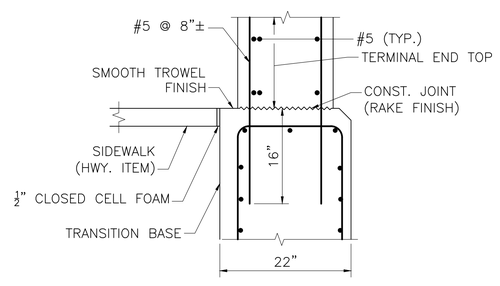
SECTION 26 –

SCALE: 1" = 1'–0"



SECTION 27 –

SCALE: 1" = 1'–0"



SECTION 28 –

SCALE: 1" = 1'–0"

NOTES:

1. PROPOSED SOUTHWEST NON–STANDARD HIGHWAY GUARDRAIL TRANSITION SHOWN.
2. FOR AN APPROACH GRADE IN EXCESS OF 3%, THE TRANSITION TOP AND THE TOP OF THE BRIDGE BARRIERS SHALL FOLLOW THE APPROACH GRADE. THE HEIGHT OF THE TRANSITION TOP SHALL VARY PROVIDED THAT THE MINIMUM DIMENSIONS SHOWN ON THE CONSTRUCTION DRAWINGS ARE MET. THE BOTTOM OF THE TRANSITION BASE SHALL BE SET LEVEL WITH THE MINIMUM EMBEDMENT DEPTH SHOWN.
3. USE LATEST CONTRACT COMPLETION YEAR IN EFFECT WHEN THE FIRST GUARDRAIL TRANSITION IS CAST. USE THIS YEAR FOR ALL GUARDRAIL TRANSITIONS.
4. ALL CONCRETE FOR THE CAST–IN–PLACE HIGHWAY GUARDRAIL TRANSITION SHALL BE 5000 PSI, ¾", 685 HP CEMENT CONCRETE.

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CUSTOM GUARDRAIL TRANSITION DETAILS 1

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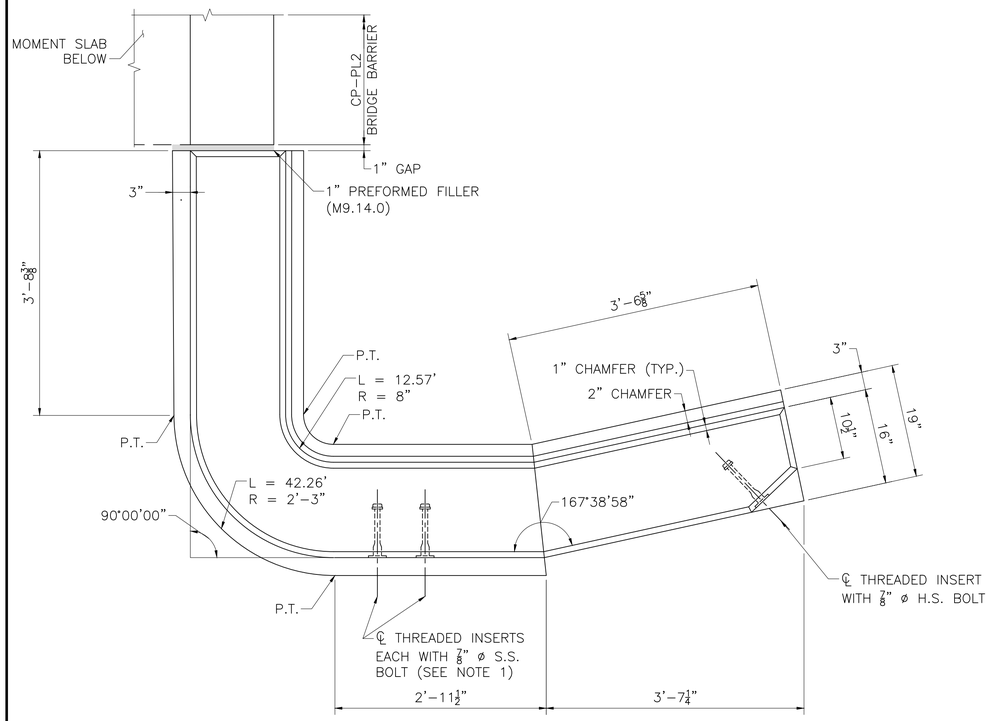
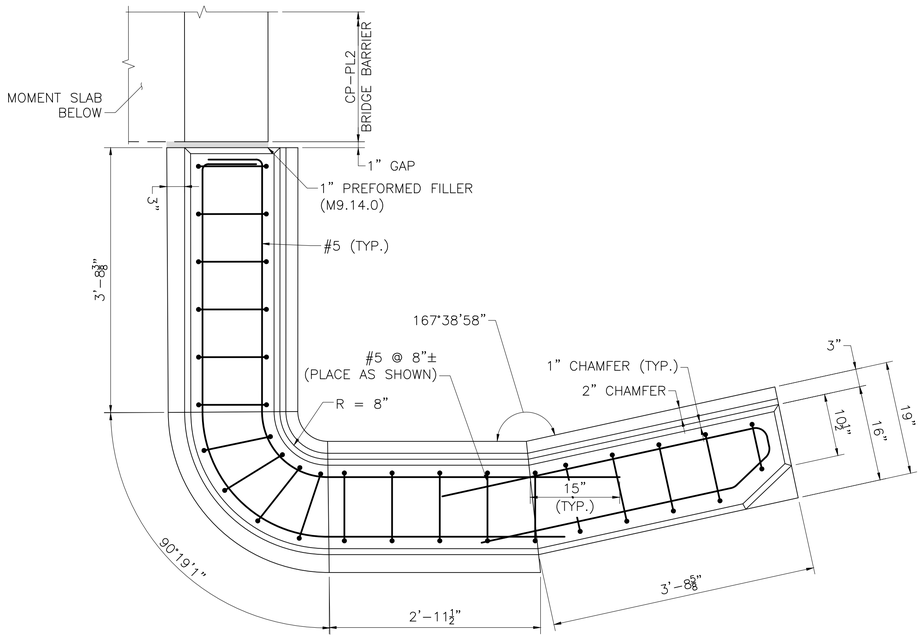
CUSTOM GUARDRAIL TRANSITION DETAILS 2



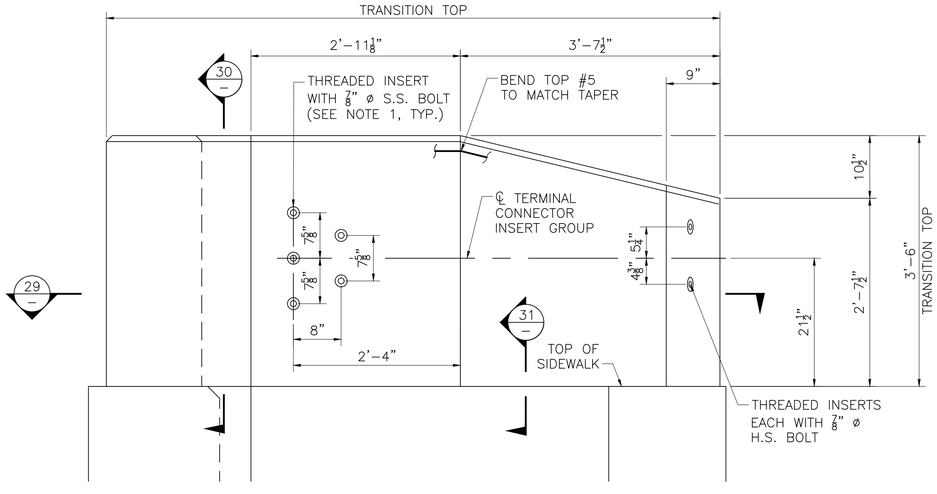
PLAN AT NORTHEAST CORNER

SCALE: 1" = 1'–0"



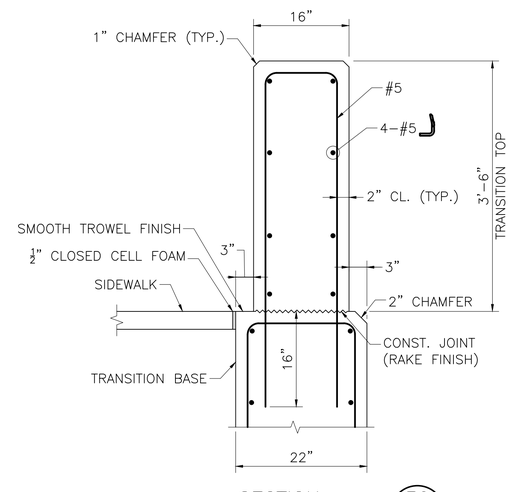
SECTION 29

SCALE: 1" = 1'–0"



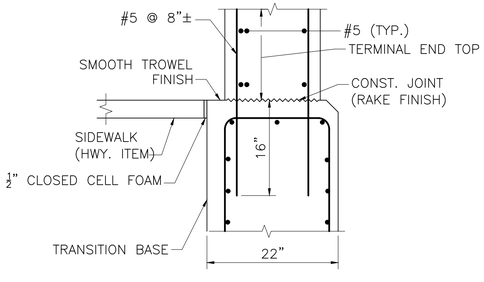
ELEVATION AT NORTHEAST CORNER

SCALE: 1" = 1'–0"



SECTION 30

SCALE: 1" = 1'–0"



SECTION 31

SCALE: 1" = 1'–0"

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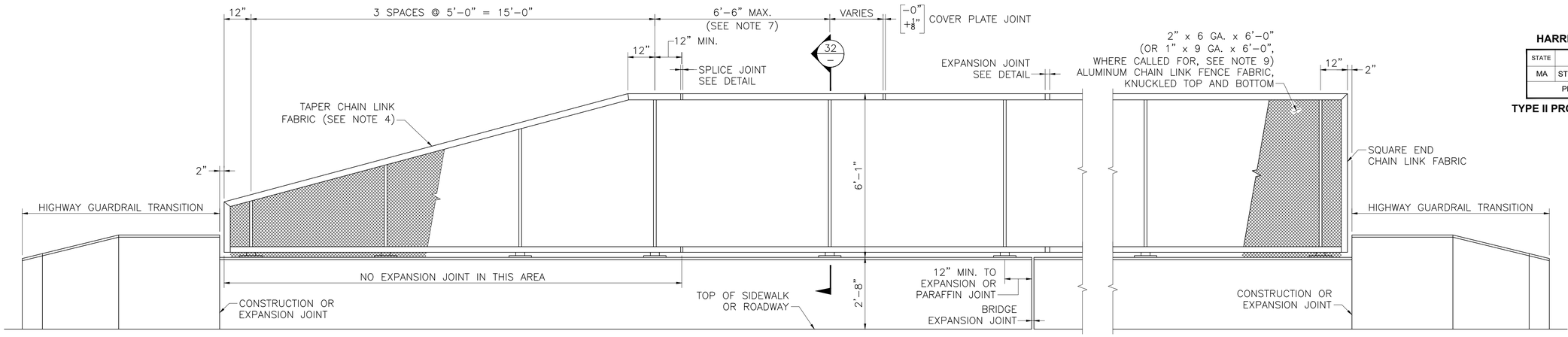
TYPE II PROTECTIVE SCREEN DETAILS 1



PROTECTIVE SCREEN ELEVATION

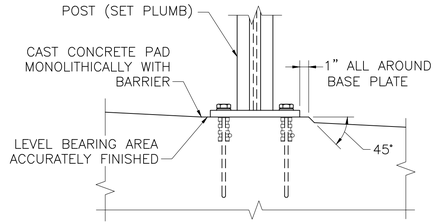
SCALE: 1/2" = 1'–0"

GENERAL NOTES:

1. RAILS SHALL BE CONTINUOUS OVER A MINIMUM OF FOUR POSTS, IF POSSIBLE.
2. RAILS SHALL HAVE AN EXPANSION JOINT IN THE PANEL OVER A BRIDGE EXPANSION JOINT AND AT 30 FOOT MAXIMUM SPACING ELSEWHERE.
3. BOTTOM OF POST BASE PLATE TO BE SET ON A 1/8" MOLDED FABRIC BEARING PAD (M9.16.2). THE THICKNESS OF THE PAD SHALL BE IGNORED BY THE DETAILER.
4. 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.
5. WHERE THE R.O.W. FENCE MUST MEET THE SCREEN, USE THE SQUARE END TO HIGHWAY GUARDRAIL TRANSITION DETAIL.
6. THE SCREEN END TREATMENT TO BE USED (SQUARE OR TAPERED) IS SPECIFIED ELSEWHERE ON THE CONSTRUCTION DRAWINGS.
7. POST SPACING SHALL BE UNIFORM BETWEEN TAPERED ENDS.
8. SET POSTS PERPENDICULAR TO GRADE FOR GRADES UP TO 3%. SET POSTS PLUMB FOR GRADES GREATER THEN 3%.
9. USE 2" x 6 GA. FABRIC EXCEPT OVER MBTA RAPID TRANSIT LINES WHERE 1" x 9 GA. FABRIC SHALL BE USED.

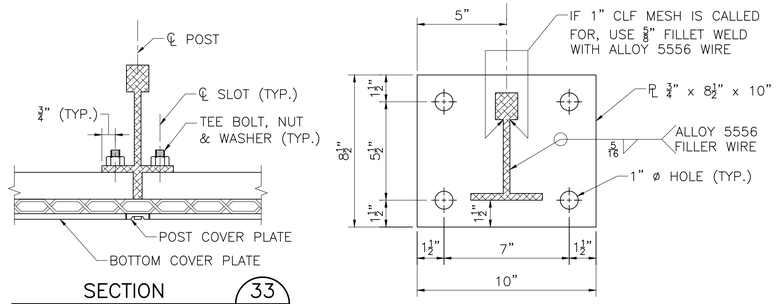
FINISHES:

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 1/4" ø COVER PLATE BOLTS TO BE COLORED TO MATCH THE ANODIZED EXTRUSIONS.



SETTING OF POSTS (PROFILE GRADE OVER 3%)

SCALE: 1 1/2" = 1'–0"



SECTION 33 –

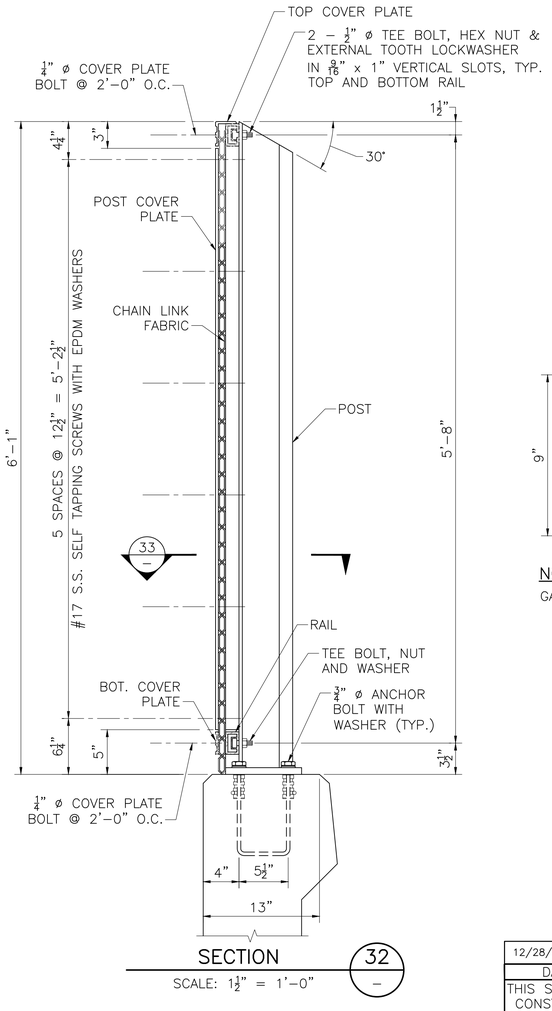
SCALE: 3" = 1'–0"

BASE PLATE DETAIL

SCALE: 3" = 1'–0"

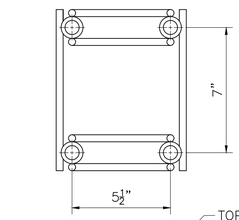
MATERIALS:

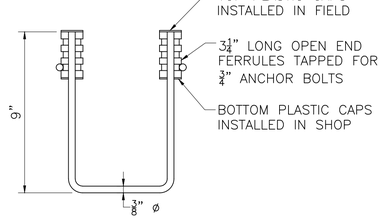
EXTRUSIONS & PLATES	ASTM B 221, ALLOY 6061–T6
CHAIN LINK FABRIC	AASHTO M 181 TYPE III (ALLOY 6061–T89 OR T94)
SELF TAPPING SCREWS	TYPE 304 STAINLESS STEEL WITH 1/4" THICK EPDM (ETHYLENE PROPYLENE DIENE MONOMER) WASHERS
ANCHOR BOLTS	AASHTO M 164 GALVANIZED (ROTATION CAPACITY TEST NOT REQUIRED)
TEE BOLTS	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



SECTION 32 –

SCALE: 1 1/2" = 1'–0"





NOTE:

GALVANIZED OR ELECTROPLATE FINISH.

ANCHOR CAGE

SCALE: 3" = 1'–0"

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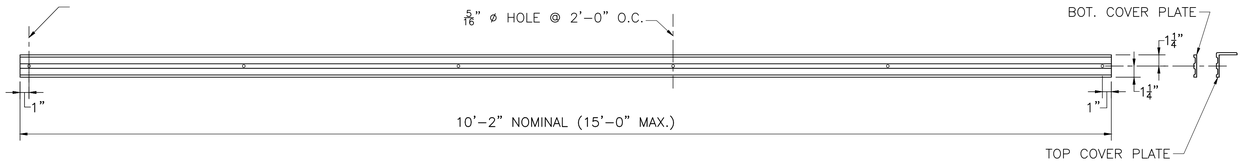
TYPE II PROTECTIVE SCREEN (SHEET 1 OF 2)



TOP AND BOTTOM COVER PLATE

SCALE: 1½" = 1'-0"

COVER PLATE NOTES:

1. COVER PLATES MAY BE CONTINUOUS OVER A RAIL SPLICE. COVER PLATES SHALL BE FIELD CUT AS REQUIRED TO CLEAR THE EXPANSION JOINT. SEE DETAIL AT EXPANSION JOINT.
2. 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.
3. FIELD PAINT THE FIELD CUT ENDS OF THE COVER PLATES TO MATCH THE ANODIZED COLOR.

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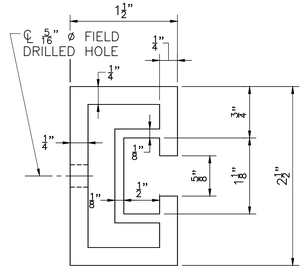
TYPE II PROTECTIVE SCREEN DETAILS 2

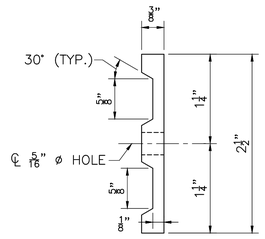


NOTE:

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

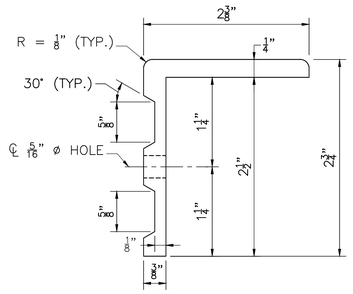
RAIL EXTRUSION

FULL SCALE



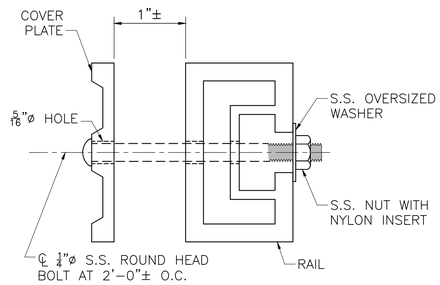
BOTTOM COVER PLATE EXTRUSION

FULL SCALE



TOP COVER PLATE EXTRUSION

FULL SCALE

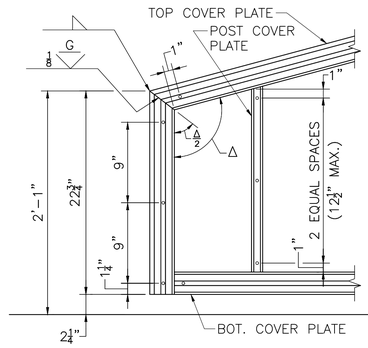


NOTE:

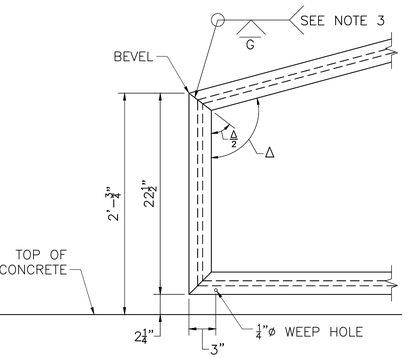
BOLTS SHALL BE TYPE 304 WITH A DRIVE HEAD TO BE COLORED TO MATCH ANODIZING.

RAIL AND COVER PLATE DETAIL

FULL SCALE



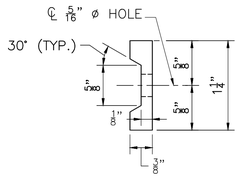
COVER PLATE DETAILS



RAIL DETAILS

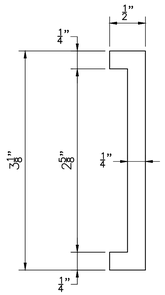
NOTES:

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



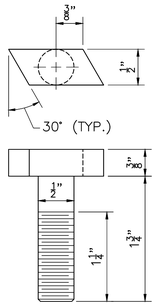
POST COVER PLATE EXTRUSION

FULL SCALE



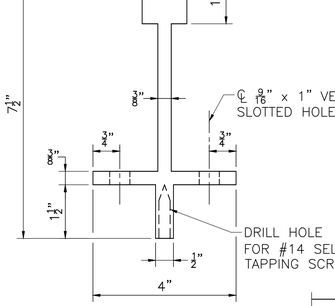
SPLICE PLATE EXTRUSION

FULL SCALE



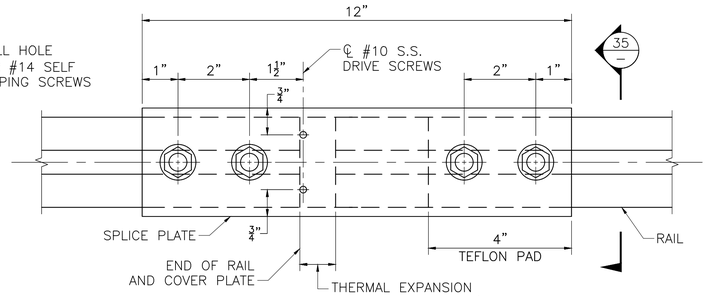
TEE BOLT

FULL SCALE



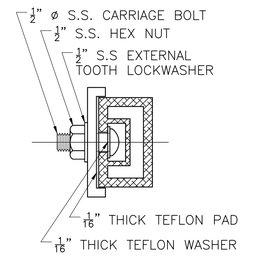
POST EXTRUSION

SCALE: 6" = 1'-0"



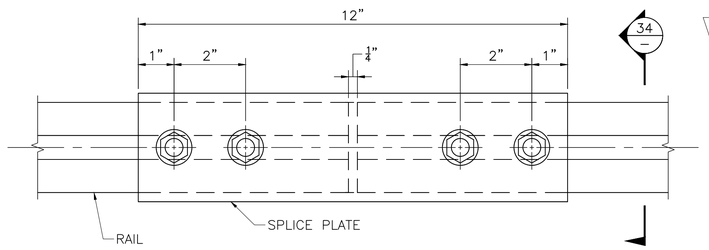
DETAIL AT EXPANSION JOINT

SCALE: 6" = 1'-0"



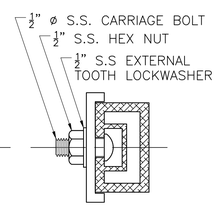
SECTION 35

SCALE: 6" = 1'-0"



DETAIL AT SPLICE JOINT

SCALE: 6" = 1'-0"



SECTION 34

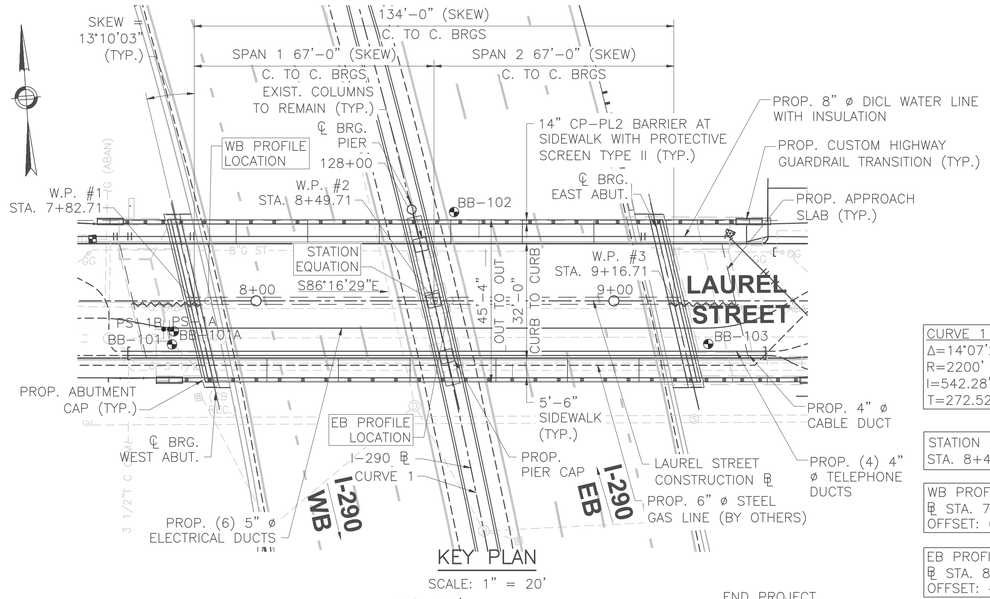
SCALE: 6" = 1'-0"

TYPE II PROTECTIVE SCREEN (SHEET 2 OF 2)

DATE	DESCRIPTION
12/28/2024	ISSUED FOR CONSTRUCTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER

USE ONLY PRINTS OF LATEST DATE



KEY PLAN

SCALE: 1" = 20'

CURVE 1 DATA:
Δ=14°07'22"
R=2200'
l=542.28'
T=272.52'

STATION EQUATION: LAUREL STREET CONSTRUCTION ℄ STA. 8+49.62 = I-290 ℄ STA. 127+73.72

WB PROFILE LOCATION: LAUREL STREET CONSTRUCTION ℄ STA. 7+86.58 = I-290 ℄ STA. 127+88.51
OFFSET: 61.34 FEET LEFT.

EB PROFILE LOCATION: LAUREL STREET CONSTRUCTION ℄ STA. 8+54.15 = I-290 ℄ STA. 127+72.69
OFFSET: 4.41 FEET RIGHT.

LOCUS PLAN

SCALE: 1" = 2000'

WORCESTER
LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	124	169
PROJECT FILE NO.	609185		

KEY PLAN, PROFILES, AND LOCUS

INDEX OF DRAWINGS

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BORING LOGS 1	3
BORING LOGS 2	4
PROBE LOGS	5
GENERAL PLAN AND ELEVATION	6
DEMOLITION PLAN AND SECTIONS	7
STAGE 1 CONSTRUCTION PLAN AND SECTION	8
STAGE 2 CONSTRUCTION PLAN AND SECTION	9
PIER STAGING SECTIONS	10
EAST AND WEST ABUTMENT REPAIR PLAN	11
PIER COLUMN REPAIR PLAN	12
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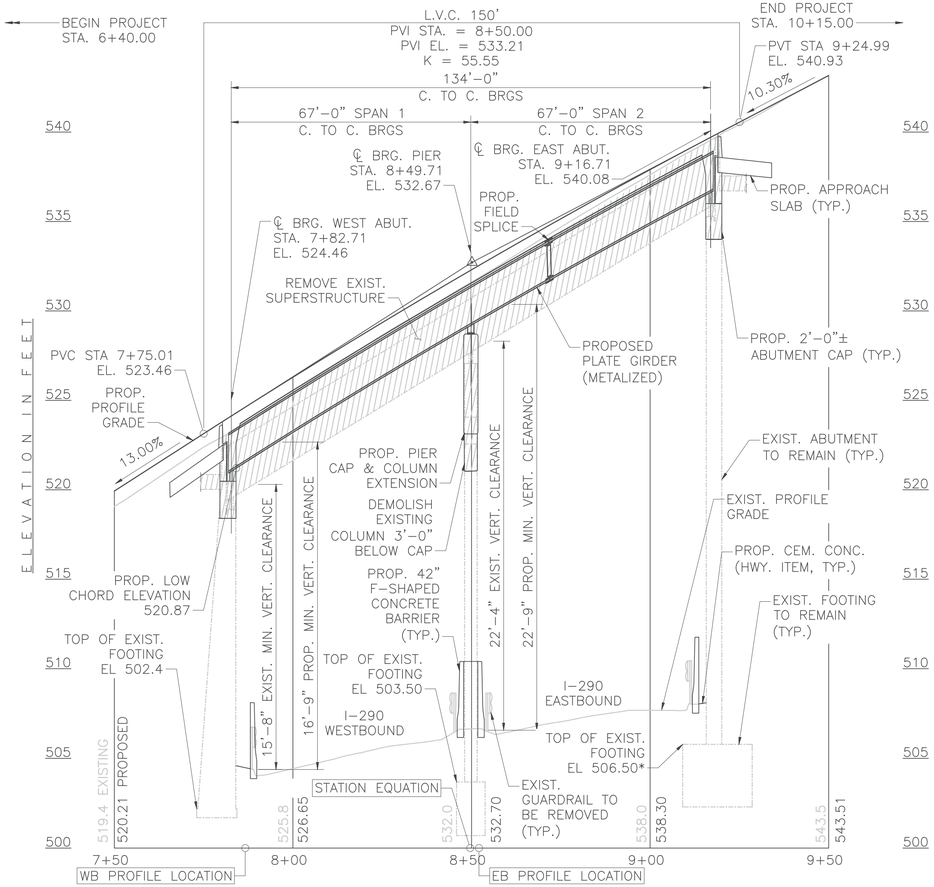
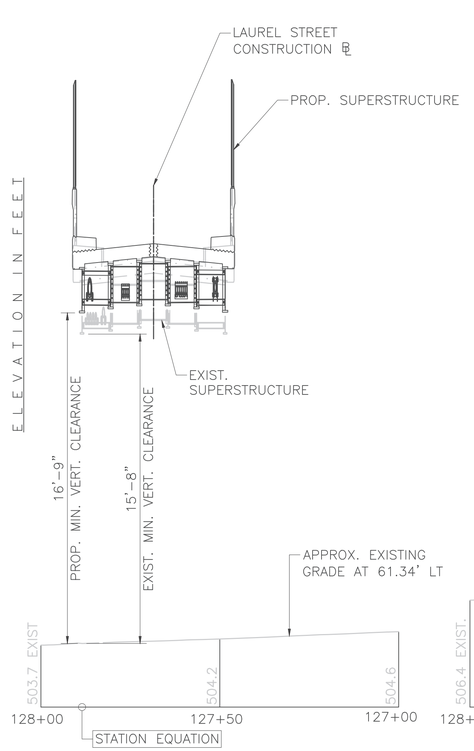


PROFILE – LAUREL STREET

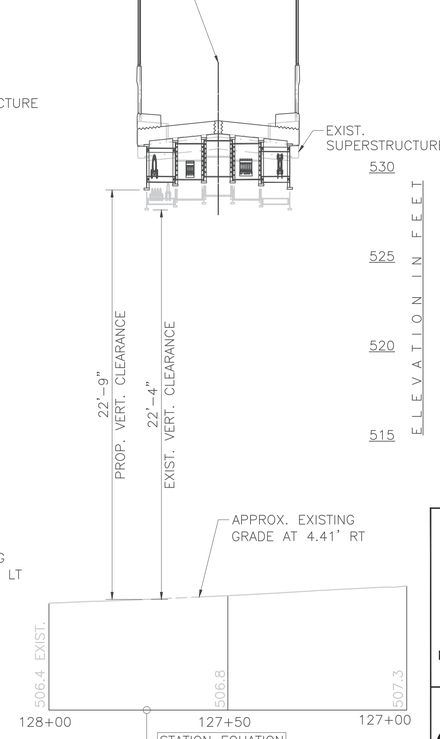
HORIZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 5'

* – TOP OF FOOTING ELEVATION TAKEN FROM 3/9/2023 GEOTECHNICAL REPORT



PROFILE – I-290 WB

HORIZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 5'



PROFILE – I-290 EB

HORIZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 5'

COMMONWEALTH OF MASSACHUSETTS
MICHAEL A. CRUZ
STRUCTURAL
No. 41500
REGISTERED PROFESSIONAL ENGINEER

Michael Cruz Digitally signed by Michael Cruz Date: 2024.12.17 13:00:12 -05'00'

Green International Affiliates, Inc.
100 Ames Pond Drive, Suite 200 Tewksbury, MA 01876

Alexander K. Bardow, P.E. Digitally signed by Alexander K. Bardow, P.E. Date: 2024.12.17 16:36:16 -05'00'
STATE BRIDGE ENGINEER

Carrie Lavallee Digitally signed by Carrie Lavallee, P.E. Date: 2024.12.26 10:18:59 -05'00'
CHIEF ENGINEER

12/28/2024 | ISSUED FOR CONSTRUCTION

MassDOT Massachusetts Department of Transportation Highway Division

SUPERSTRUCTURE REPLACEMENT
WORCESTER
LAUREL STREET OVER I-290

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
10 PARK PLAZA BOSTON, MASS

WORCESTER
LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	125	169
	PROJECT FILE NO. 609185		

GENERAL NOTES AND ESTIMATED QUANTITIES

GENERAL NOTES

DESIGN:
IN ACCORDANCE WITH THE 2020 AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS LRFD BRIDGE DESIGN SPECIFICATIONS WITH CURRENT INTERIM SPECIFICATION THROUGH 2023, FOR HL–93 LOADING.

MASSDOT BENCH MARK:
ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.

BENCHMARK:

MAG NAIL AT NORTHEAST SIDE OF LAUREL ST
STA. 10+60.15, 16.73' LT
EL. 554.23

MAG NAIL AT SOUTHEAST SIDE OF LAUREL ST
STA. 11+39.97, 15.44' RT
EL. 561.38

MDHL AT NORTHWEST SIDE OF LAUREL ST
STA. 07+23.03, 16.21' LT
EL. 516.38

DATE:
TO BE PLACED ON THE INSIDE FACE OF THE SOUTHEAST AND NORTHWEST GUARDRAIL TRANSITIONS. A SHEET SHOWING SIZE AND CHARACTER OF NUMERALS WILL BE FURNISHED. THE DATE USED SHALL BE THE LATEST YEAR OF CONTRACT COMPLETION AS OF THE DATE THE FIRST GUARDRAIL TRANSITION IS CONSTRUCTED. BOTH HIGHWAY GUARDRAIL TRANSITIONS SHALL FEATURE THE SAME DATE.

MASSDOT SURVEY NOTEBOOKS:
THE EXISTING CONDITIONS SHOWN ON THE BASEMAP ARE THE RESULT OF AN ON–THE–GROUND INSTRUMENT SURVEY PERFORMED BETWEEN MARCH 26, 2021 AND JULY 5, 2021 BY GREEN INTERNATIONAL AFFILIATES, INC. (GREEN) AND A LASER SCAN SURVEY PERFORMED BY LANDTECH. SEE FIELD NOTES IN MASSDOT DISTRICT FIELD BOOK 411798.

SCALES:
SCALES NOTED ON THE PLANS ARE NOT APPLICABLE TO REDUCED SIZE PRINTS. DIVIDE SCALES BY 2 FOR HALF–SIZE PRINTS (A3).

FOUNDATIONS:
FOUNDATIONS MAY BE ALTERED, IF NECESSARY, TO SUIT CONDITIONS ENCOUNTERED DURING CONSTRUCTION, WITH THE APPROVAL OF THE ENGINEER.

UNSUITABLE MATERIAL:
ALL UNSUITABLE MATERIAL SHALL BE REMOVED WITHIN THE LIMITS OF THE FOUNDATIONS OF THE STRUCTURE, AS DIRECTED BY THE ENGINEER.

GEOTECHNICAL REPORT:
REFER TO GEOTECHNICAL REPORT AND UPDATED MEMORANDUM, DATED MARCH 2023 AND APRIL 2024 RESPECTIVELY, PREPARED BY HNTB CORPORATION.

EXISTING CONDITIONS:
DIMENSIONS OF THE EXISTING STRUCTURE SHOWN ON THESE PLANS ARE FOR GENERAL REFERENCE ONLY. THEY HAVE BEEN TAKEN FROM THE ORIGINAL DESIGN DRAWINGS, AND ARE NOT GUARANTEED.

CONTRACTOR SHALL DETERMINE AND ESTABLISH ALL DIMENSIONS AND DETAILS NECESSARY FOR COMPLETION OF ALL WORK BY FIELD MEASUREMENTS AND SURVEY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ADEQUACY AND ACCURACY THEREOF, AND SHALL NOT ORDER ANY MATERIAL OR COMMENCE ANY FABRICATION UNTIL HE/SHE HAS MADE THE REQUIRED MEASUREMENTS AND THE EXTENT OF THE PROPOSED WORK HAS BEEN APPROVED BY THE ENGINEER.

UTILITIES:
THE CONTRACTOR SHALL LOCATE AND PROTECT FROM DAMAGE OR RELOCATE, AS NECESSARY, ANY EXISTING UTILITIES/POLES. THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH THE RESPECTIVE UTILITY OWNERS FOR ALL UTILITIES THAT ARE TO BE TEMPORARILY OR PERMANENTLY RELOCATED FOR BRIDGE REPLACEMENT WORK.

REINFORCEMENT:
REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 31 GRADE 60. ALL REINFORCING STEEL SHALL BE EPOXY COATED. UNLESS OTHERWISE NOTED ON THE CONSTRUCTION DRAWINGS, ALL BARS SHALL BE LAPPED AS FOLLOWS:

MODIFICATION CONDITION	#4 BARS	#5 BARS	#6 BARS
1. NONE	16"	19"	23"
2. 12" OF CONCRETE BELOW BAR	20"	25"	30"
3. COATED BARS, COVER < 3D/B, OR CLEAR SPACING < 6D/B	23"	29"	34"
4. COATED BARS, ALL OTHER CASE	18"	23"	27"
5. CONDITION 2. AND 3.	26"	32"	39"
6. CONDITION 2. AND 4.	24"	30"	36"

ALL OTHER BARS SHALL BE LAPPED AS SHOWN ON THE CONSTRUCTION DRAWINGS.

STRUCTURAL STEEL:
SEE SHEET 24 FOR STRUCTURAL STEEL NOTES.

MISCELLANEOUS STEEL:
UTILITY SLEEVE STEEL SHALL BE STEEL PIPE CONFORMING TO ASTM A–53, TYPE S, GRADE B, STANDARD WEIGHT, PLAIN ENDS, HOT–DIP GALVANIZED, UNLESS OTHERWISE NOTED.

CONCRETE:
UNLESS OTHERWISE SPECIFIED, ALL CONCRETE SHALL BE 5000 HP CONCRETE.

DRILL AND GROUT:
REFER TO SPECIAL PROVISION ITEM NO. 912 FOR DRILL AND GROUT REINFORCING REQUIREMENTS.

ESTIMATED QUANTITIES (NOT GUARANTEED)

PRE AND POST CONTRUCTION SURVEY AND SETTLEMENT/DISPLACEMENT MONITORING AT BRIDGE NO. W–44–093	1 LS
DEMOLITION OF SUPERSTRUCTURE OF BRIDGE NO. W–44–093	1 LS
REINFORCED CONCRETE EXCAVATION	50 CY
REINFORCED CONCRETE SUBSTRUCTURE EXCAVATION	5 CY
REINFORCED CONCRETE DECK EXCAVATION (FULL DEPTH)	15 SY
REINFORCED CONCRETE DECK EXCAVATION (PARTIAL DEPTH)	5 CY
BRIDGE EXCAVATION	35 CY
CLASS B ROCK EXCAVATION	10 CY
GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES	40 CY
EMERGENCY RESPONSE	4 EA
TEMPORARY BARRIER – LIMITED DEFLECTION (TL3)	200 FT
TEMPORARY BARRIER – LIMITED DEFLECTION (TL3) REMOVED AND RESET	200 FT
RAPID SET CONCRETE	225 CF
4000 PSI, 3/8 IN., 660 CEMENT CONCRETE	5 CY
CEMENTITIOUS MORTAR FOR PATCHING	500 SF
STEEL REINFORCEMENT FOR STRUCTURES	1340 LB
MECHANICAL REINFORCING BAR SPLICER	25 EA
TEMPORARY SUPPORT OF EXCAVATION BRIDGE NO. W–44–093	1 LS
ELASTOMERIC PROTECTIVE COATING	4100 SF
TEMPORARY SUPPORT FOR BRIDGE STRUCTURE, BRIDGE NO W–44–093	1 LS
TEMPORARY PROTECTIVE SHIELDING, BRIDGE NO W–44–093	1 LS
BRIDGE SUPERSTRUCTURE, BRIDGE NO. W–44–093	1 LS

TRAFFIC DATA

	ROADWAY OVER	ROADWAY UNDER
DESIGN YEAR	2041	2041
AVERAGE DAILY TRAFFIC – PRESENT	2,780	132,160
AVERAGE DAILY TRAFFIC – DESIGN YEAR	3,070	146,025
DESIGN HOURLY VOLUME	330	10,720
DIRECTIONAL DISTRIBUTION	40%	40%
TRUCK PERCENTAGE – AVERAGE DAY	2.2%	8.7%
TRUCK PERCENTAGE – PEAK HOUR	1.3%	11.3%
DESIGN SPEED	25 mph	–
DIRECTIONAL DESIGN HOURLY VOLUME	200	6,440

SEISMIC DESIGN CRITERIA

DESIGN RETURN PERIOD:	2500
DESIGN SPECTRA	
As	0.080
SDs	0.138
SD1	0.055
SITE CLASS	B
SEISMIC DESIGN CATEGORY (SDC)	A

12/28/2024	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT AUTHORIZED SIGNATORY:	STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE	

WORCESTER
LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	126	169
	PROJECT FILE NO. 609185		

BORING LOGS 1

ELEVATION IN FEET

530
520
510
500

massDOT Highway

Terracon Consultants, Inc.
77 Sundial Ave #401w, Manchester, New Hampshire, 03103

No. BB-101
Scale:

City/Town: Worcester	Bridge Number: W-44-93	Project File Number: 601895	Page 1 of 1
Location: Laurel St West Abut		Date & Time Started: 9/29/2021 8:40	Total Hours: 1.5
Groundwater Depth (Feet): NE	Date & Time: 9/29/2021 10:10	Date & Time Completed: 9/29/2021 10:10	
Coordinates (Feet): N 2923088.7 E 576695.6		Driller's Name: P. Michaud	Helper's Name: T. Tetreault
Ground Elevation (Feet): 523	Inspector's Name (PRINT): J. Keohane	Inspector's Signature: J. Keohane	Inspector's Company: HNTB

Sample Number	Depth Range (Feet)	Blow Counts per 6 Inches / Coring Times Minutes per Foot	Recovery (Inches)	Field Description	Strata Changes
				0.0 - Auger through 4" of ASPHALT.	523
SS - 1	0.5 - 1.8	5 - 6 - 50/4" -	8	0.5 - SS-1: Moist, medium dense, grayish brown, FINE TO COARSE SAND, some fine gravel, trace inorganic silt (FILL).	
				1.8 - Auger action indicates CONCRETE approach slab, heavy grinding then pop out around 2.5 feet depth.	521.5
SS - 2	3 - 5	5 - 5 - 6 - 17	10	3.0 - SS-2: Moist, medium dense, brown, FINE TO COARSE SAND AND FINE TO MEDIUM GRAVEL, trace inorganic silt (FILL). Gravel is angular which indicates blasted rock.	
SS - 3	5 - 7	6 - 5 - 5 - 6	4	5.0 - SS-3: Moist, medium dense, brown, FINE TO COARSE SAND, some fine gravel, trace inorganic silt (FILL).	518
SS - 4	7 - 9	5 - 6 - 5 - 5	9	7.0 - SS-4: Moist, medium dense, brown, FINE TO COARSE SAND AND FINE TO MEDIUM GRAVEL, little inorganic silt (FILL). Gravel is angular which indicates blasted rock.	
SS - 5	10 - 12	7 - 9 - 6 - 4	4	10.0 - SS-5: Moist, medium dense, brown, FINE TO COARSE SAND, some fine gravel, trace inorganic silt (FILL). Gravel is angular which indicates blasted rock.	513
SS - 6	12 - 14	4 - 4 - 6 - 7	5	12.0 - SS-6: Moist, medium dense, brown, FINE TO COARSE SAND AND FINE TO MEDIUM GRAVEL, trace inorganic silt (FILL). Gravel is angular which indicates blasted rock.	
					508
SS - 7	15 - 17	4 - 6 - 9 - 18	11	15.0 - SS-7: Moist, medium dense, brown, FINE TO COARSE SAND AND FINE TO COARSE GRAVEL, trace inorganic silt (FILL). Black fabric at 7" of recovery. Gravel is angular which indicates blasted rock.	
				17.0 - Roller-bit action indicates concrete down to 19 feet depth. Likely hit sloped section of wingwall foundation, offset boring (see BB-101A).	
				19.0 - Boring terminated at 19 feet below ground surface.	

Remarks: Boring conducted about 7'-5" perpendicular from bridge joint and approx. 1'-6" from edge of vertical granite curb.

Arrow-Board: -
Signs: -
Cones: -

Protective Device - Stand: - Box: -
Well Depth: Solid Pipe:
Slick Up Pipe: Screen Pipe: -

Penetration Resistance (N) Guide

Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Silts, Clays)	
Relative Density	Penetration Resistance	Consistency	Penetration Resistance
Very Loose	0 - 4	Very Soft	0 - 2
Loose	4 - 10	Soft	2 - 4
Medium Dense	10 - 30	Medium Stiff	4 - 8
Dense	30 - 50	Stiff	8 - 15
Very Dense	Over 50	Very Stiff	15 - 30
		Hard	Over 30

N = Sum of Second and Third 6" Blow Counts

Terms Used for Second Entry of Descriptions: and = 35-50%, some = 12-35%, little = 5-12%, trace = 5% or less

Type of Drill Rig: CME 45B
Casing Type: HW Size 4"
Hammer Weight: 140 lb
Fall: 30"
Depth: 17'
Sampler Type: SS Size 1-3/8" ID
Automatic Hammer Weight: 140 lb
Safety Hammer Weight: -
Donut Hammer Weight: -
Fall: 30"
Core Barrel Type: - Size: -

BB–101
SCALE: 1/4" = 1'–0"

ELEVATION IN FEET

530
520
510
500
490
480

TOP OF FOOTING
EXIST. 502.4
502.00
09/29/2021

massDOT Highway

Terracon Consultants, Inc.
77 Sundial Ave #401w, Manchester, New Hampshire, 03103

No. BB-101A
Scale:

City/Town: Worcester	Bridge Number: W-44-93	Project File Number: 601895	Page 1 of 2
Location: Laurel St West Abut		Date & Time Started: 9/29/2021 10:45	Total Hours: 3.5
Groundwater Depth (Feet): 21	Date & Time: 9/29/2021 14:15	Date & Time Completed: 9/29/2021 14:15	
Coordinates (Feet): N 2923092.4 E 576696.4		Driller's Name: P. Michaud	Helper's Name: T. Tetreault
Ground Elevation (Feet): 523	Inspector's Name (PRINT): J. Keohane	Inspector's Signature: J. Keohane	Inspector's Company: HNTB

Sample Number	Depth Range (Feet)	Blow Counts per 6 Inches / Coring Times Minutes per Foot	Recovery (Inches)	Field Description	Strata Changes
				0.0 - Auger through 4" of ASPHALT. 0.3 - Auger through FILL, see boring BB-101 for soil info.	523
				1.8 - Auger action indicates CONCRETE approach slab, pop out at 2.5 feet.	521.5
				2.5 - Auger through FILL down to 18.5 feet depth, see boring BB-101 for soil info.	518
					513
					508
CORE - 1	18.5 - 22	3 - 2 - 2 - 2/6" -	41 RQD - %	18.5 - C-1 (First 31" of recovery): CONCRETE - high coarse gravel content, good condition. 21.1 - C-1 (Last 10" of recovery): GRANITE - Moderately fractured, hard, slightly weathered, gray, fine grained, massive, close joints.	503
CORE - 2	22 - 27	3 - 4 - 4 - 4 - 4	60 RQD - 65%	22.0 - C-2: GRANITE - Moderately to slightly fractured, hard, fresh with slightly weathered joints, gray, fine grained, massive, close to moderately close joints dipping from approx. 30 degrees below horizontal to near horizontal.	498
CORE - 3	27 - 32	4 - 4 - 5 - 4 - 5	56 RQD - 77%	27.0 - C-3: GRANITE - Moderately to slightly fractured, hard, fresh, gray, fine grained, massive, close to moderately close joints dipping from approx. 30 degrees below horizontal to near horizontal.	493
				32.0 - Boring terminated at 32 feet below ground surface.	488

Remarks: Boring conducted about 5'-11" perpendicular from bridge joint and 5'-4" from edge of vertical granite curb.

Arrow-Board: -
Signs: -
Cones: -

Protective Device - Stand: - Box: -
Well Depth: Solid Pipe:
Slick Up Pipe: Screen Pipe: -

Penetration Resistance (N) Guide

Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Silts, Clays)	
Relative Density	Penetration Resistance	Consistency	Penetration Resistance
Very Loose	0 - 4	Very Soft	0 - 2
Loose	4 - 10	Soft	2 - 4
Medium Dense	10 - 30	Medium Stiff	4 - 8
Dense	30 - 50	Stiff	8 - 15
Very Dense	Over 50	Very Stiff	15 - 30
		Hard	Over 30

N = Sum of Second and Third 6" Blow Counts

Terms Used for Second Entry of Descriptions: and = 35-50%, some = 12-35%, little = 5-12%, trace = 5% or less

Type of Drill Rig: CME 45B
Casing Type: HW Size 4"
Hammer Weight: 140 lb
Fall: 30"
Depth: 18.5'
Sampler Type: SS Size 1-3/8" ID
Automatic Hammer Weight: 140 lb
Safety Hammer Weight: -
Donut Hammer Weight: -
Fall: 30"
Core Barrel Type: NX Size: 2.15" ID

BB–101A
SCALE: 1/4" = 1'–0"

BORING NOTES:

1. LOCATION OF BORINGS SHOWN ON THE PLAN THUS: BB–# ⊕
2. BORINGS ARE TAKEN FOR PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF THE MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
3. WATER LEVELS SHOWN ON THE BORING LOGS WERE OBSERVED AT THE TIME OF TAKING BORINGS AND DO NOT NECESSARILY SHOW THE TRUE GROUND WATER LEVEL.
4. FIGURES IN COLUMNS INDICATE NUMBER OF BLOWS REQUIRED TO DRIVE A 1 3/8" I.D. SPLIT SPOON SAMPLER 6" USING A 140 POUND WEIGHT FALLING 30".
5. BORING SAMPLES ARE STORED AT A STORAGE FACILITY LOCATED ON ROUTE 114 (219 WINTHROP AVE.) IN LAWRENCE, MA. THE CONTRACTOR MAY EXAMINE THE SOIL AND ROCK SAMPLES BY CONTACTING THE MASSDOT GEOTECHNICAL SECTION AT 10 PARK PLAZA, BOSTON, MA.
6. ALL BORINGS WERE MADE FROM SEPTEMBER, 2021 TO FEBRUARY, 2022.
7. 2021 BORINGS WERE MADE BY TERRACON CONSULTANTS, INC. 77 SUNDIAL AVE #401W, MANCHESTER, NEW HAMPSHIRE, 03103.
8. THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.

12/28/2024	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER

USE ONLY PRINTS OF LATEST DATE

WORCESTER
LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	127	169
	PROJECT FILE NO. 609185		

BORING LOGS 2

BORING NOTE:

SEE SHEET 3 FOR BORING NOTES.

ELEVATION IN FEET

550
540
530
520
510
500
490
480

TOP OF FOOTING EXIST. 503.5

Terracon Consultants, Inc.
77 Sundial Ave #401w, Manchester, New Hampshire, 03103

No. BB-102
Scale:

City/Town: Worcester	Bridge Number: W-44-93	Project File Number: 601895	Page 1 of 1
Location: I-290 WB Left Lane		Date & Time Started: 2/1/2022 9:30	Total Hours: 3.0
Groundwater Depth (Feet): NE	Date & Time: 2/2/2022 00:30	Date & Time Completed: 2/2/2022 00:30	
Coordinates (Feet): N 2923130.2 E 576747.4		Driller's Name: P. Michaud	Helper's Name: T. Tetreault
Ground Elevation (Feet): 506	Inspector's Name (PRINT): J. Keohane	*Inspector's Signature: J. Keohane*	Inspector's Company: HNTB

Sample Number	Depth Range (Feet)	Blow Counts per 6 Inches / Coring Times Minutes per Foot	Recovery (inches)	Field Description	Strata Changes
				0.0 - Auger through about 12" of ASPHALT.	506
				1.0 - Auger action indicates hard subbase with possible concrete down to 1.8 feet depth.	
SS - 1	2 - 3.8	19 - 17 - 20 - 50/3"	16	2.0 - SS-1: Moist, dense, brown, FINE TO COARSE SAND AND FINE TO MEDIUM GRAVEL, trace inorganic silt (FILL). After sample, drive 4" casing and start drive-and-wash.	
					3 503
SS - 2	5 - 5.3	50/4" - - -	2	5.0 - SS-2: Wet, dense, brown, FINE TO COARSE SAND, little fine gravel, trace inorganic silt (FILL)	
				5.5 - Roller bit action indicates top of bedrock, advance to 6 feet.	
CORE - 1	6 - 11	4 - 5 - 3 - 2 - 3	51 RQD - 55%	6.0 - C-1: GRANITE - Moderately fractured, hard, fresh, gray, fine grained, massive, close joints dipping from approx. 60 degrees below horizontal to 30 degrees below horizontal. RQD = 33/60 = 55% *No water return during coring and core bit drops quickly from 2.6 to 3 feet and again from 3.3 to 3.7 feet, which indicates fractured bedrock.*	
					10 496
CORE - 2	11 - 15.1	4 - 4 - 4 - 5 - 2/2"	50 RQD - 92%	11.0 - C-2: GRANITE - Slightly fractured, hard, fresh, gray, fine grained, massive, close joints dipping from approx. 60 degrees below horizontal to near horizontal. RQD = 46/50 = 92% *No water return during coring.*	
					15 491
				15.1 - Boring terminated at 15.1 feet below ground surface, due to losing all water (2 tanks full) during coring.	

Remarks: Probe conducted at center of left-hand high speed lane of I-290 WB.

Arrow-Board: -
Signs: -
Cones: -

Protective Device - Stand: - Box: -
Well Depth: Solid Pipe:
Stick Up Pipe: Screen Pipe: -

Penetration Resistance (N) Guide

Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Silts, Clays)	
Relative Density	Penetration Resistance	Consistency	Penetration Resistance
Very Loose	0 - 4	Very Soft	0 - 2
Loose	4 - 10	Soft	2 - 4
Medium Dense	10 - 30	Medium Stiff	4 - 8
Dense	30 - 50	Stiff	8 - 15
Very Dense	Over 50	Very Stiff	15 - 30
		Hard	Over 30

N = Sum of Second and Third 6" Blow Counts

Terms Used for Second Entry of Descriptions: and = 35-50%, some = 12-35%, little = 5-12%, trace = 5% or less

Type of Drill Rig: CME 45B

Casing Type: HW — Size: 4"
Hammer Weight: 140 lb
Fall: 30"
Depth: 6'

Sampler Type: SS — Size: 1-3/8" ID
Automatic Hammer Weight: 140 lb
Safety Hammer Weight: "
Donut Hammer Weight: "
Fall: 30"

Core Barrel Type: NX — Size: 2.15" ID

BB–102
SCALE: 1/4" = 1'–0"

TOP OF FOOTING EXIST. 506.5

Terracon Consultants, Inc.
77 Sundial Ave #401w, Manchester, New Hampshire, 03103

No. BB-103
Scale:

City/Town: Worcester	Bridge Number: W-44-93	Project File Number: 601895	Page 1 of 3
Location: Laurel St East Abut		Date & Time Started: 9/27/2021 8:45	Total Hours: 9.0
Groundwater Depth (Feet): NE	Date & Time: 9/28/2021 11:30	Date & Time Completed: 9/28/2021 11:30	
Coordinates (Feet): N 2923082.4 E 576845.4		Driller's Name: P. Michaud	Helper's Name: T. Tetreault
Ground Elevation (Feet): 541	Inspector's Name (PRINT): J. Keohane	*Inspector's Signature: J. Keohane*	Inspector's Company: HNTB

Sample Number	Depth Range (Feet)	Blow Counts per 6 Inches / Coring Times Minutes per Foot	Recovery (inches)	Field Description	Strata Changes
				0.0 - Auger action indicates about 1 foot of ASPHALT.	541
				1.0 - Auger through sand and gravel FILL, hit inferred concrete at 2.5 feet depth.	
				2.5 - Auger action indicates CONCRETE approach slab, pop out at about 3.5 feet depth.	
				3.5 - Auger through sand and gravel FILL down to 5 feet depth.	
SS - 1	5 - 7	4 - 4 - 6 - 6	5	5.0 - SS-1: Moist, medium dense, dark brown, FINE TO COARSE SAND AND FINE TO COARSE GRAVEL, trace inorganic silt (FILL). Gravel is angular which indicates blasted rock.	4 536
SS - 2	7 - 9	5 - 3 - 4 - 4	15	7.0 - SS-2: Moist, loose, dark brown, FINE TO MEDIUM GRAVEL AND FINE TO COARSE SAND, trace inorganic silt (FILL). Gravel is angular which indicates blasted rock.	
SS - 3	10 - 12	4 - 3 - 2 - 3	10	10.0 - SS-3: Moist, loose, brown, FINE TO COARSE SAND, some fine gravel, little inorganic silt (FILL)	10 531
SS - 4	15 - 17	4 - 3 - 4 - 5	3	15.0 - SS-4: Moist, loose, brown, FINE TO COARSE SAND AND FINE TO COARSE GRAVEL, trace inorganic silt (FILL).	15 526
SS - 5	20 - 22	5 - 4 - 3 - 4	16	20.0 - SS-5: Moist, loose, brown, FINE TO COARSE SAND, some fine to medium gravel, trace inorganic silt (FILL). After sample, switch from auger to drive-and-wash technique.	521
SS - 6	25 - 27	4 - 6 - 7 - 8	0	25.0 - SS-6: No recovery, inferred gravelly FILL.	25 516
SS - 7	30 - 32	11 - 6 - 4 - 4	5	30.0 - SS-7: Wet, medium dense, brown, FINE TO COARSE SAND, some fine gravel, little inorganic silt (FILL)	30 511
SS - 8	34 - 34.4	50/5" - - -	2	33.0 - Casing advance slows, then speeds up at 33.5 feet depth.	
				34.0 - SS-8: Wet, medium dense, grayish brown, FINE TO COARSE SAND, little fine gravel, little inorganic silt (FILL). After 5 blows hit concrete.	
				34.5 - C-1: CONCRETE - High coarse gravel content (some quartz gravel), good condition.	35 506
CORE - 1	34.5 - 39.5	4 - 4 - 4 - 5 - 2	48 RQD - %	*At 38.5 feet, core bit drops quickly and lose all water return. Assume bottom of abutment at 38.5 feet, and hit possible fracture in bedrock down to 39.5 feet. No recovery of bedrock, may have gotten washed out.*	
CORE - 2	39.5 - 41	8 - 5/6" - - -	10 RQD - 0%	*39.5 - C-2: GRANITE - Highly fractured, hard, fresh to slightly weathered, gray, fine grained, massive, close joints. No water return while coring, advance 3" casing to 41 feet depth.*	40 501
CORE - 3	41 - 45	4 - 5 - 4 - 4 -	47 RQD - 46%	41.0 - C-3: GRANITE - Moderately to highly fractured, hard, fresh, gray, fine grained, massive, close joints dipping from approx. 30 degrees below horizontal to near horizontal. Lose water return again at 43.5 feet depth.	
CORE - 4	45 - 48	4 - 6 - 9 - "	36 RQD - 100%	45.0 - C-4: GRANITE - Sound, hard, fresh, gray, fine grained, massive, moderately close joints. No water return during coring.	45 496
				48.0 - Boring terminated at 48 feet below ground surface.	50 491
					55 486

Remarks: Boring conducted about 6'-6" perpendicular from bridge joints and approx. 5' from edge of vertical granite curb..

Arrow-Board: -
Signs: -
Cones: -

Protective Device - Stand: - Box: -
Well Depth: Solid Pipe:
Stick Up Pipe: Screen Pipe: -

Penetration Resistance (N) Guide

Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Silts, Clays)	
Relative Density	Penetration Resistance	Consistency	Penetration Resistance
Very Loose	0 - 4	Very Soft	0 - 2
Loose	4 - 10	Soft	2 - 4
Medium Dense	10 - 30	Medium Stiff	4 - 8
Dense	30 - 50	Stiff	8 - 15
Very Dense	Over 50	Very Stiff	15 - 30
		Hard	Over 30

N = Sum of Second and Third 6" Blow Counts

Terms Used for Second Entry of Descriptions: and = 35-50%, some = 12-35%, little = 5-12%, trace = 5% or less

Type of Drill Rig: CME 45B

Casing Type: HW & NW — Size: 4" & 3"
Hammer Weight: 140 lb
Fall: 30"
Depth: 34.5' & 41'

Sampler Type: SS — Size: 1-3/8" ID
Automatic Hammer Weight: 140 lb
Safety Hammer Weight: "
Donut Hammer Weight: "
Fall: 30"

Core Barrel Type: NX — Size: 2.15" ID

BB–103
SCALE: 1/4" = 1'–0"

12/28/2024	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER

USE ONLY PRINTS OF LATEST DATE

WORCESTER
LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	128	169
	PROJECT FILE NO. 609185		

PROBE LOGS

Terracon Consultants, Inc.

77 Sundial Ave #401w, Manchester, New Hampshire, 03103

No. PS-1A

Scale:

City/Town: Worcester	Bridge Number: W-44-93	Project File Number: 601895	Page 1 of 2
Location: Laurel St West Abut		Date & Time Started: 9/29/2021 7:15	Total Hours: 0.5
Groundwater Depth (Feet): NE	Date & Time: 9/29/2021 7:45	Date & Time Completed: 9/29/2021 7:45	
Coordinates (Feet): N 2923093.1 E 576695.2		Driller's Name: P. Michaud	Helper's Name: T. Tetreault
Ground Elevation (Feet): 523	Inspector's Name (PRINT): J. Keohane	*Inspector's Signature: J. Keohane*	Inspector's Company: HNTB

Sample Number	Depth Range (Feet)	Blow Counts per 6 Inches / Coring Times Minutes per Foot	Recovery (inches)	Field Description	Strata Changes
				0.0 - Auger through inferred approach slab and FILL. Hit refusal on hard material at 21'-1" (21.08 feet) and can't advance through with auger.	523
				21.1 - Probe terminated at 21.08 feet below ground surface. After pulling out auger, there is soft wood stuck in tip of auger, which is likely old formwork at the edge of abutment footing. May have hit refusal on bedrock.	503

Remarks: Probe conducted about 7'-0" perpendicular from bridge joint, and at an elevation about 6" below that of the joint. Located about 5'-10" from edge of vertical granite curb.

Arrow-Board: - Signs: - Cones: -

Protective Device - Stand: - Box: - Well Depth: Solid Pipe: Stick Up Pipe: Screen Pipe: -

Penetration Resistance (N) Guide

Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Silts, Clays)	
Relative Density	Penetration Resistance	Consistency	Penetration Resistance
Very Loose	0 - 4	Very Soft	0 - 2
Loose	4 - 10	Soft	2 - 4
Medium Dense	10 - 30	Medium Stiff	4 - 8
Dense	30 - 50	Stiff	8 - 15
Very Dense	Over 50	Very Stiff	15 - 30
		Hard	Over 30

N = Sum of Second and Third 6" Blow Counts

Terms Used for Second Entry of Descriptions: and = 35-50%, some = 12-35%, little = 5-12%, trace = 5% or less

Type of Drill Rig: CME 45B

Casing Type: - Size: - Hammer Weight: - Fall: - Depth:

Sampler Type: - Size: - Automatic Hammer Weight: - Safety Hammer Weight: - Donut Hammer Weight: - Fall: -

Core Barrel Type: - Size: -

PS–1A
SCALE: 1/4" = 1'–0"

Terracon Consultants, Inc.

77 Sundial Ave #401w, Manchester, New Hampshire, 03103

No. PS-1B

Scale:

City/Town: Worcester	Bridge Number: W-44-93	Project File Number: 601895	Page 1 of 2
Location: Laurel St West Abut		Date & Time Started: 9/29/2021 7:50	Total Hours: 0.3
Groundwater Depth (Feet): NE	Date & Time: 9/29/2021 8:10	Date & Time Completed: 9/29/2021 8:10	
Coordinates (Feet): N 2923093.2 E 576693.6		Driller's Name: P. Michaud	Helper's Name: T. Tetreault
Ground Elevation (Feet): 522.9	Inspector's Name (PRINT): J. Keohane	*Inspector's Signature: J. Keohane*	Inspector's Company: HNTB

Sample Number	Depth Range (Feet)	Blow Counts per 6 Inches / Coring Times Minutes per Foot	Recovery (inches)	Field Description	Strata Changes
				0.0 - Auger through inferred approach slab and FILL. Hit refusal on hard material at 21'-2" (21.16 feet) and can't advance through with auger. Possible bedrock.	523
				21.2 - Probe terminated at 21.16 feet below ground surface.	503

Remarks: Probe conducted about 8'-6" perpendicular from bridge joint, and at a ground elevation about 0.1 feet below that of PS-1A. Located about 5'-10" from edge of vertical granite curb.

Arrow-Board: - Signs: - Cones: -

Protective Device - Stand: - Box: - Well Depth: Solid Pipe: Stick Up Pipe: Screen Pipe: -

Penetration Resistance (N) Guide

Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Silts, Clays)	
Relative Density	Penetration Resistance	Consistency	Penetration Resistance
Very Loose	0 - 4	Very Soft	0 - 2
Loose	4 - 10	Soft	2 - 4
Medium Dense	10 - 30	Medium Stiff	4 - 8
Dense	30 - 50	Stiff	8 - 15
Very Dense	Over 50	Very Stiff	15 - 30
		Hard	Over 30

N = Sum of Second and Third 6" Blow Counts

Terms Used for Second Entry of Descriptions: and = 35-50%, some = 12-35%, little = 5-12%, trace = 5% or less

Type of Drill Rig: CME 45B

Casing Type: - Size: - Hammer Weight: - Fall: - Depth:

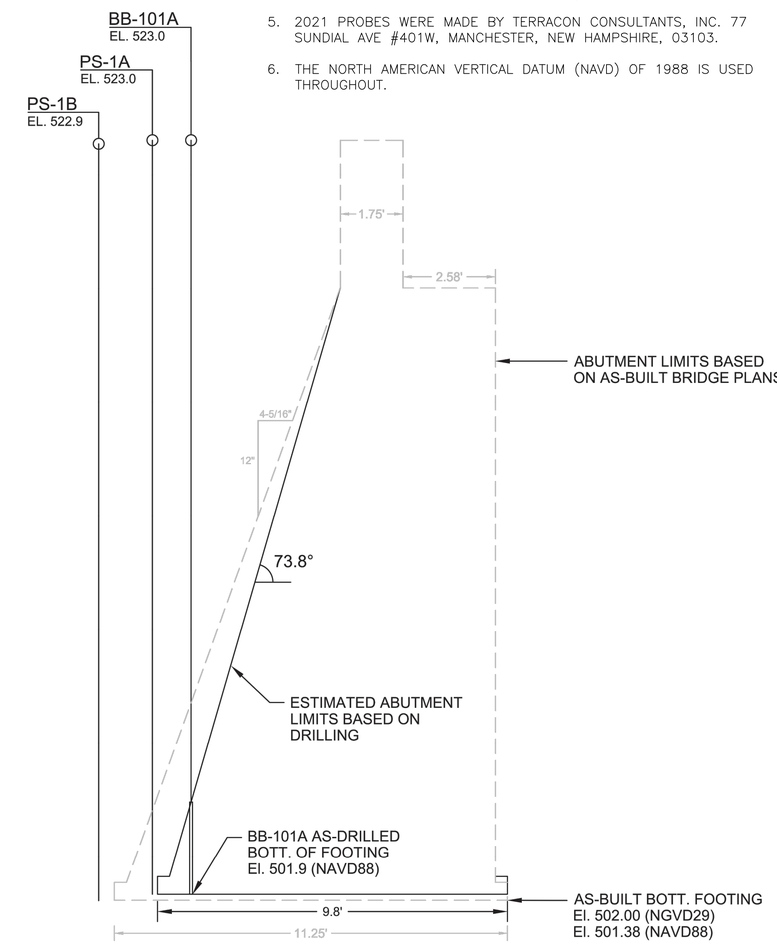
Sampler Type: - Size: - Automatic Hammer Weight: - Safety Hammer Weight: - Donut Hammer Weight: - Fall: -

Core Barrel Type: - Size: -

PS–1B
SCALE: 1/4" = 1'–0"

PROBE NOTES:

1. LOCATION OF PROBES SHOWN ON THE PLAN THUS: PS–# +
2. PROBES ARE TAKEN FOR PURPOSE OF LOCATING EXISTING ELEMENTS ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF THE MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
3. FIGURES IN COLUMNS INDICATE DEPTH TO REFUSAL OF AUGER.
4. ALL PROBES WERE MADE IN SEPTEMBER, 2021.
5. 2021 PROBES WERE MADE BY TERRACON CONSULTANTS, INC. 77 SUNDIAL AVE #401W, MANCHESTER, NEW HAMPSHIRE, 03103.
6. THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.



PROBE CROSS SECTION
NOT TO SCALE

DATE	DESCRIPTION
12/28/2024	ISSUED FOR CONSTRUCTION

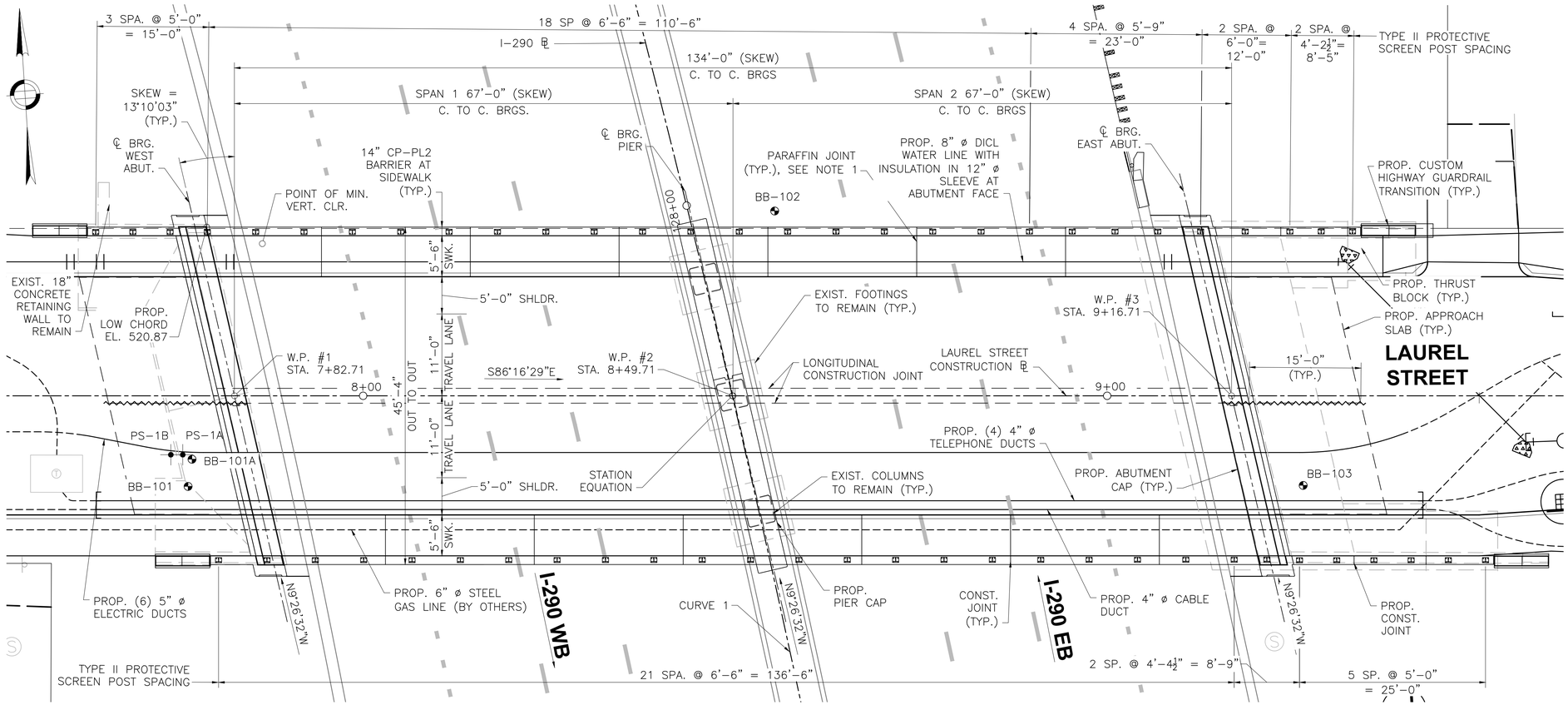
THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER

USE ONLY PRINTS OF LATEST DATE

WORCESTER
LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	129	169
PROJECT FILE NO.	609185		

GENERAL PLAN AND ELEVATION



GENERAL PLAN

SCALE: ⅛" = 1'-0"

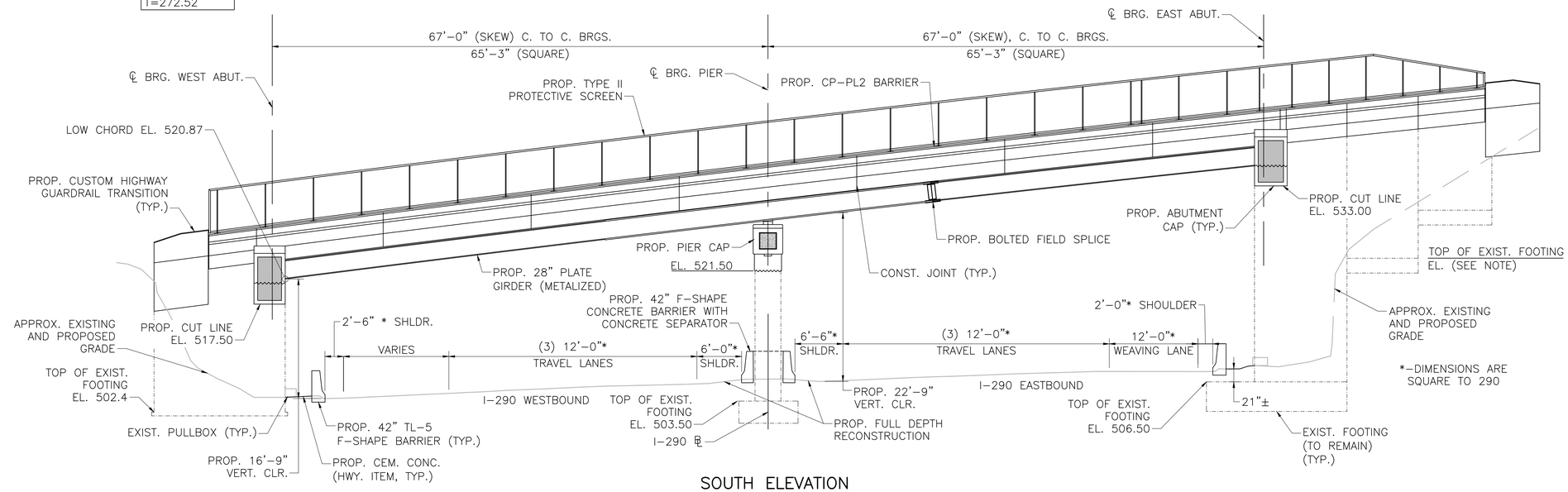
CURVE 1 DATA:
Δ=14°07'22"
R=2200'
l=542.28'
T=272.52'

STATION EQUATION: LAUREL STREET CONSTRUCTION ℄ STA. 8+49.62 = I-290 ℄ STA. 127+73.72

NOTE:

1. SEE DECK PLAN, SHEET 32, FOR PARAFFIN CONSTRUCTION JOINT SPACING.

2. FOR INFORMATION NOT SHOWN HERE, SEE WINGWALL PLAN AND ELEVATION, SHEETS 19, 20, AND 21.



SOUTH ELEVATION

SCALE: ⅛" = 1'-0"

NOTE:

BASED ON EXISTING PLANS, THE NORTHEAST AND SOUTHEAST TOP OF EXISTING FOOTING WOULD BE ABOVE EXISTING GRADE. BASED ON SITE OBSERVATIONS, THE TOP OF THE EXISTING FOOTING IS BELOW EXISTING GRADE.

*-DIMENSIONS ARE SQUARE TO 290

12/28/2024	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

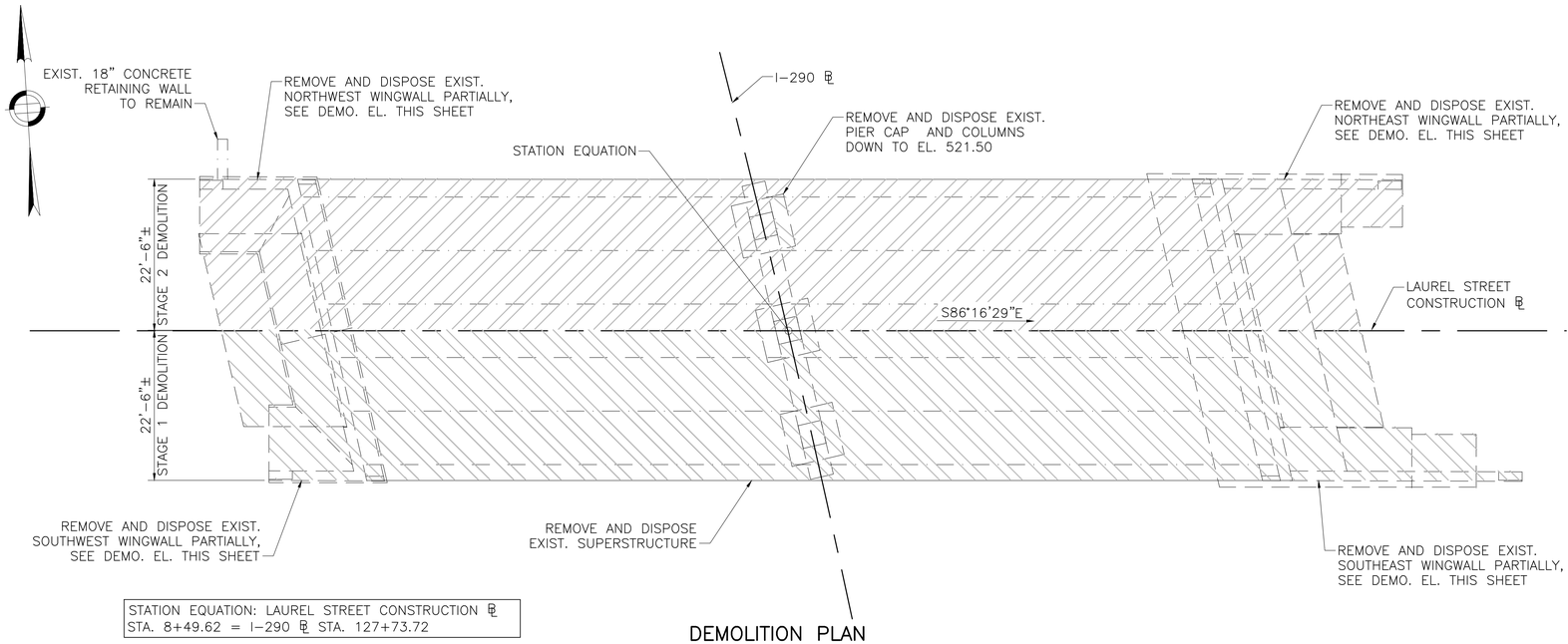
THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER

USE ONLY PRINTS OF LATEST DATE

WORCESTER
LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	130	169
PROJECT FILE NO.	609185		

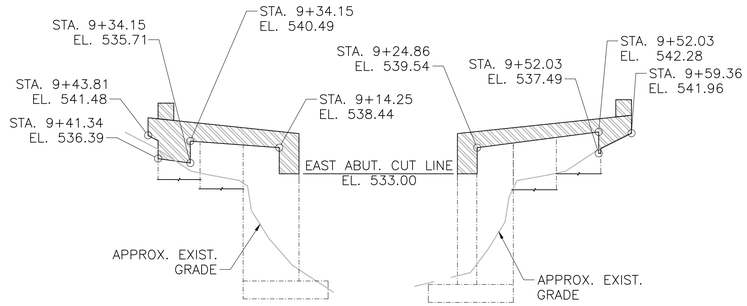
DEMOLITION PLAN AND SECTIONS



STATION EQUATION: LAUREL STREET CONSTRUCTION ℄
STA. 8+49.62 = I-290 ℄ STA. 127+73.72

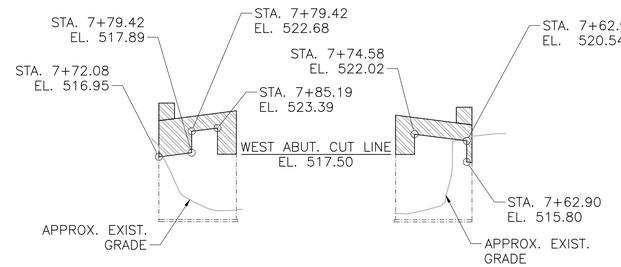
DEMOLITION PLAN

SCALE: $\frac{3}{32}$" = 1'-0"



NORTHEAST WINGWALL

SOUTHEAST WINGWALL

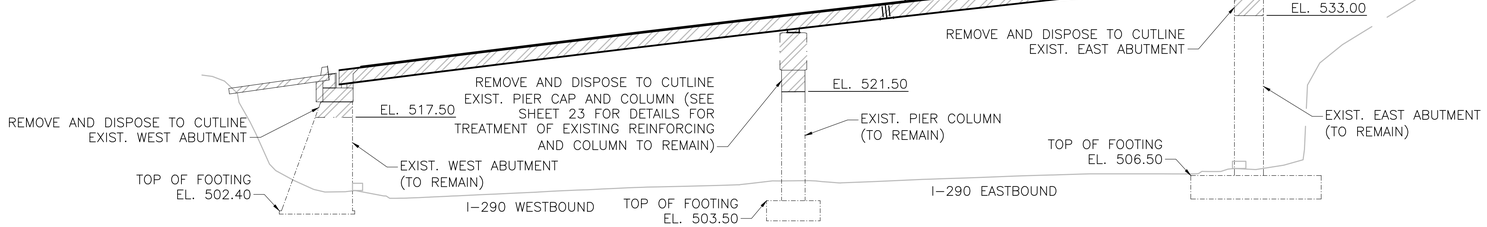


SOUTHWEST WINGWALL

NORTHWEST WINGWALL

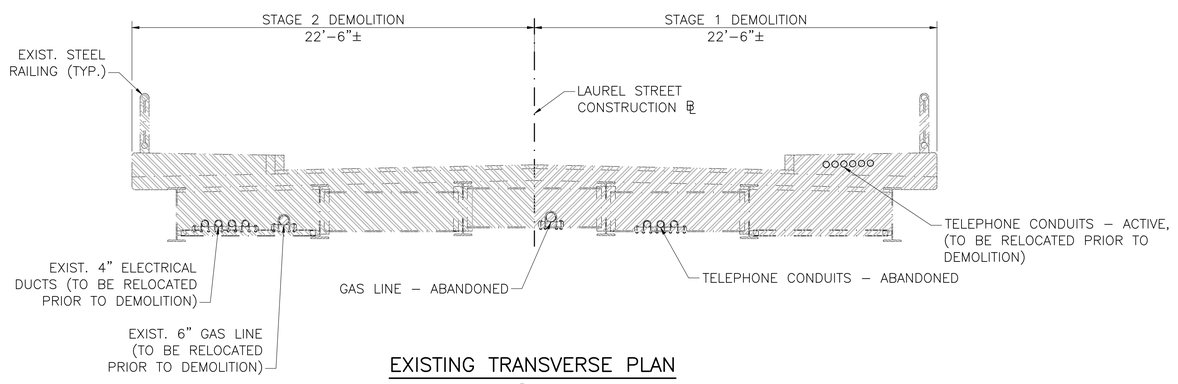
EXISTING SUBSTRUCTURE ELEVATIONS

SCALE: $\frac{3}{32}$" = 1'-0"



EXISTING LONGITUDINAL SECTION

SCALE: $\frac{3}{32}$" = 1'-0"



EXISTING TRANSVERSE PLAN

SCALE: $\frac{3}{32}$" = 1'-0"

NOTES:

1. EXISTING ELEMENTS SHOWN ON THESE PLANS ARE SCHEMATIC ONLY AND MAY NOT ACCURATELY REPRESENT EXISTING CONDITIONS. THE CONTRACTOR SHALL DETERMINE AND ESTABLISH ALL DIMENSIONS AND DETAILS NECESSARY FOR COMPLETION OF ALL WORK BY FIELD MEASUREMENTS AND SURVEY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ADEQUACY AND ACCURACY THEREOF, AND SHALL NOT ORDER ANY MATERIAL OR COMMENCE ANY FABRICATION UNTIL HE/SHE HAS MADE THE REQUIRED MEASUREMENTS AND THE EXTENT OF THE PROPOSED WORK HAS BEEN APPROVED BY THE ENGINEER.
2. THE PROPOSED CUT LINE SHALL BE SAW CUT TO A MINIMUM OF 1" TO PROVIDE A CLEAN EDGE FOR THE PROPOSED CONCRETE.
3. THE SURFACE OF EXISTING CONCRETE SHALL BE LEFT ROUGH, BUT SHALL HAVE A MAXIMUM AMPLITUDE OF ROUGHENED SURFACE OF $\frac{1}{4}$".
4. SEE HIGHWAY PLANS FOR TRAFFIC MANAGEMENT DETAILS.

LEGEND

▨ LIMITS OF DEMOLITION

12/28/2024	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER
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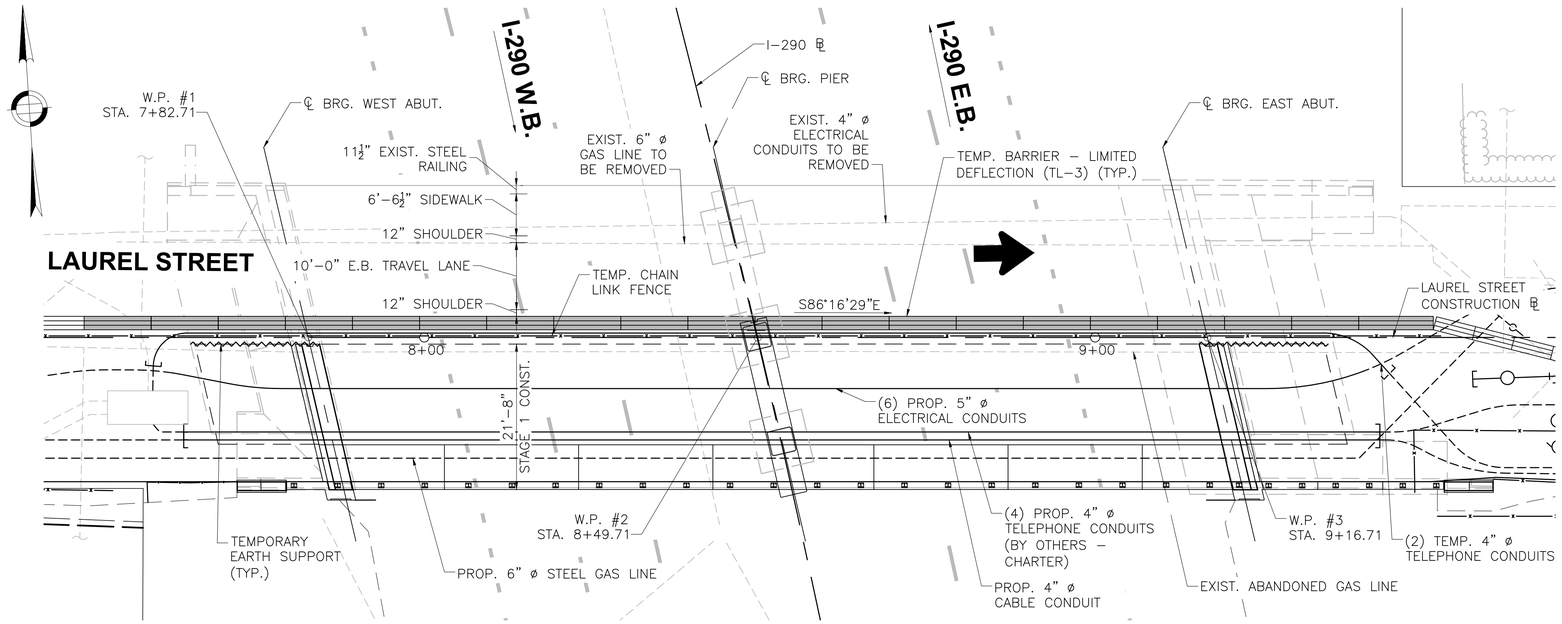
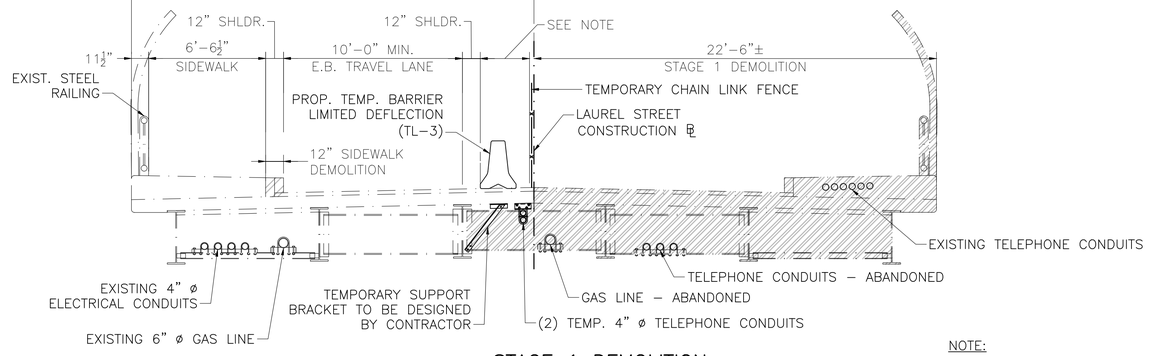


STAGE 1 CONSTRUCTION PLAN

SCALE: $\frac{3}{32}$" = 1'-0"

STATION EQUATION: LAUREL STREET CONSTRUCTION ℄ STA. 8+49.62 = I-290 ℄ STA. 127+73.72

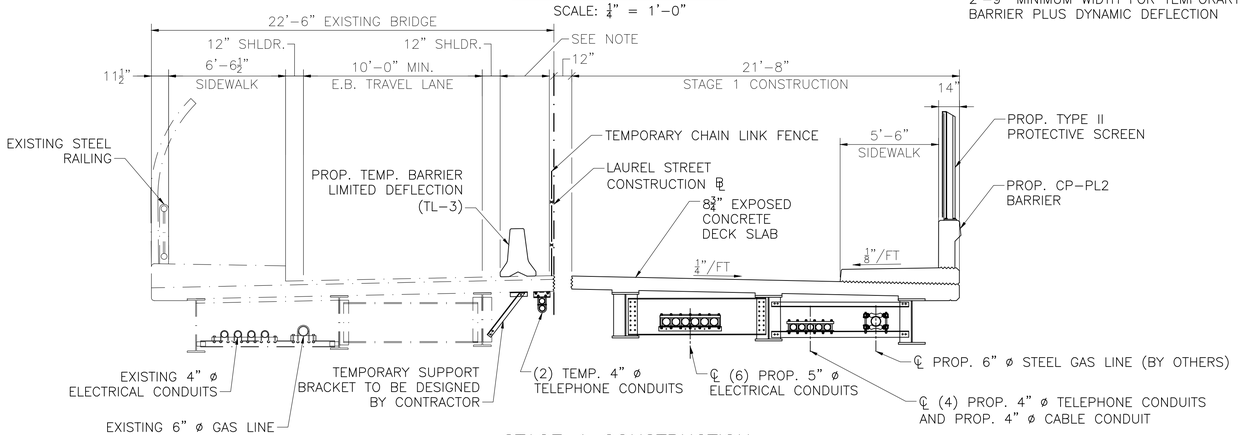


STAGE 1 DEMOLITION

SCALE: $\frac{1}{4}$" = 1'-0"

NOTE:

2'-9" MINIMUM WIDTH FOR TEMPORARY BARRIER PLUS DYNAMIC DEFLECTION



STAGE 1 CONSTRUCTION

SCALE: $\frac{1}{4}$" = 1'-0"

WORCESTER
LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	131	169
PROJECT FILE NO.	609185		

STAGE 1 CONSTRUCTION PLAN AND SECTION

LEGEND

- DEMOLITION LIMITS
- TEMPORARY BARRIER – LIMITED DEFLECTION (TL-3)
- TEMPORARY BARRIER – (TL-3)

GENERAL STAGE CONSTRUCTION NOTES:

1. CONTRACTOR SHALL INSTALL UTILITY SUPPORTS FOR THE DUCT BANK. THE UTILITY COMPANY SHALL INSTALL CONDUIT AND FITTINGS AFTER CONTRACTOR HAS COMPLETED SUPPORT INSTALLATION.
2. SEE HIGHWAY PLANS FOR ADDITIONAL TRAFFIC MANAGEMENT REQUIREMENTS FOR ANY PROPOSED DETOURS.
3. TEMPORARY SUPPORT OF EXCAVATION SHALL BE DESIGNED BY THE CONTRACTOR IN ACCORDANCE WITH THEIR MEANS AND METHODS FOR DEMOLITION AND CONSTRUCTION AND FOLLOW THE REQUIREMENTS OF THE SPECIAL PROVISIONS.
4. THE CONTRACTOR SHALL REFER TO THE SPECIAL PROVISIONS IF DIRECTED BY THE ENGINEER TO MAKE EMERGENCY REPAIRS TO THE EXISTING DECK DURING CONSTRUCTION.

SUGGESTED SEQUENCE OF CONSTRUCTION – STAGE 1

1. SEE SHEET 48 OF HIGHWAY PLANS FOR PRE-STAGE 1 CURB DEMOLITION LIMITS AND DETAILS.
2. INSTALL TEMPORARY BARRIERS (TL-3) – LIMITED DEFLECTION WHERE SHOWN.
3. INSTALL TEMPORARY TRAFFIC BARRIERS AT EITHER END OF WORK LIMITS AND SHIFT TRAFFIC TO THE NORTHERN PORTION OF THE EXISTING BRIDGE (EASTBOUND TRAVEL LANE).
4. INSTALL TEMPORARY PROTECTIVE SHIELDING.
5. INSTALL TEMPORARY EARTH SUPPORT BEHIND ABUTMENTS TO STAGE 1 LIMITS.
6. RELOCATE EXISTING TELEPHONE CONDUITS LOCATED IN SIDEWALK TO THEIR TEMPORARY LOCATIONS ON THE UNDERSIDE OF THE EXISTING DECK.
7. INSTALL TEMPORARY PIER SUPPORT.
8. INSTALL TEMPORARY DECK SUPPORT BRACKET.
9. REMOVE PORTION OF EXISTING SUPERSTRUCTURE TO LIMIT SHOWN.
10. REMOVE PORTION OF EXISTING SUBSTRUCTURE AT THE EAST ABUTMENT, PIER AND WEST ABUTMENT RESPECTIVELY.
11. CONSTRUCT PROPOSED ABUTMENT CAPS, APPROACH SLABS AND PIER CAP WITHIN THE LIMITS SHOWN AND BACKFILL WITH GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES. REMOVE EARTH SUPPORT SYSTEM AS NECESSARY.
12. CONSTRUCT PROPOSED SUPERSTRUCTURE FOR THE STAGE 1 LIMITS SHOWN.
13. INSTALL STEEL GAS LINE, 4-4" TELEPHONE CONDUITS, 4" CABLE CONDUIT AND 6-5" ELECTRICAL CONDUITS TO THEIR FINAL PROPOSED LOCATIONS.
14. CONSTRUCTION WORK FOR THE PROTECTION OF PIERS AND ABUTMENTS WILL OCCUR DURING STAGE 2 OF CONSTRUCTION OF THE LAUREL BRIDGE.

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WORCESTER
LAUREL STREET OVER I-290

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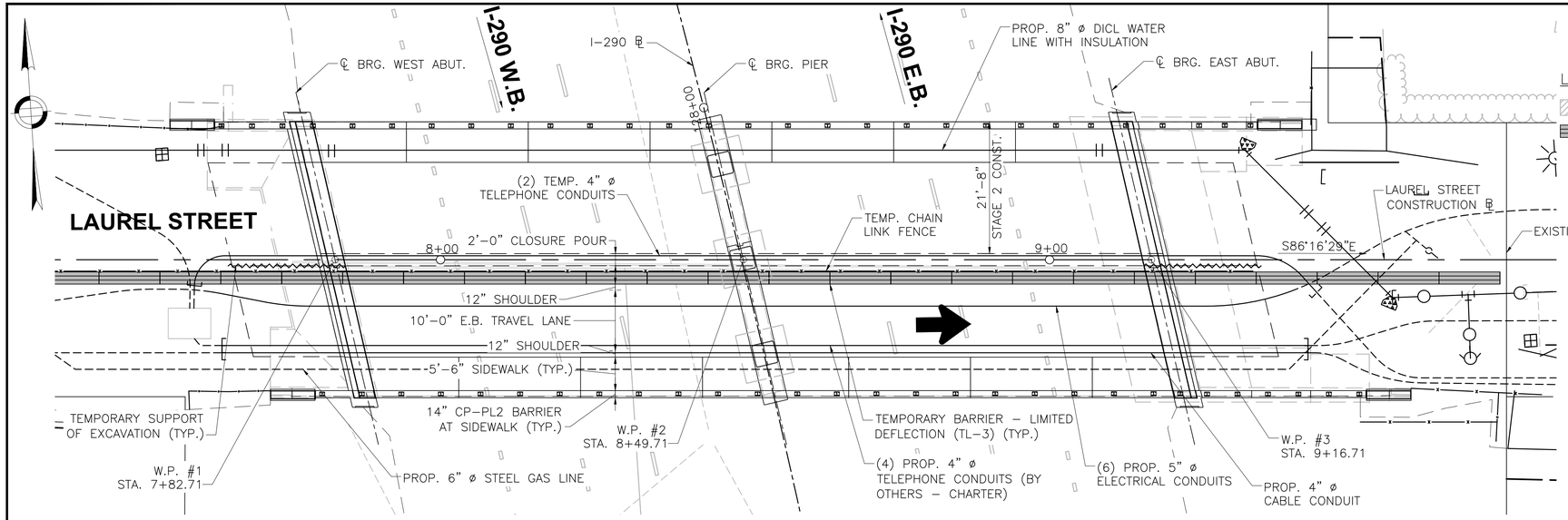
STAGE 2 CONSTRUCTION PLAN AND SECTION



STAGE 2 CONSTRUCTION PLAN

SCALE: $\frac{3}{32}$" = 1'-0"

LEGEND

- DEMOLITION LIMITS
- TEMPORARY BARRIER - LIMITED DEFLECTION (TL-3)

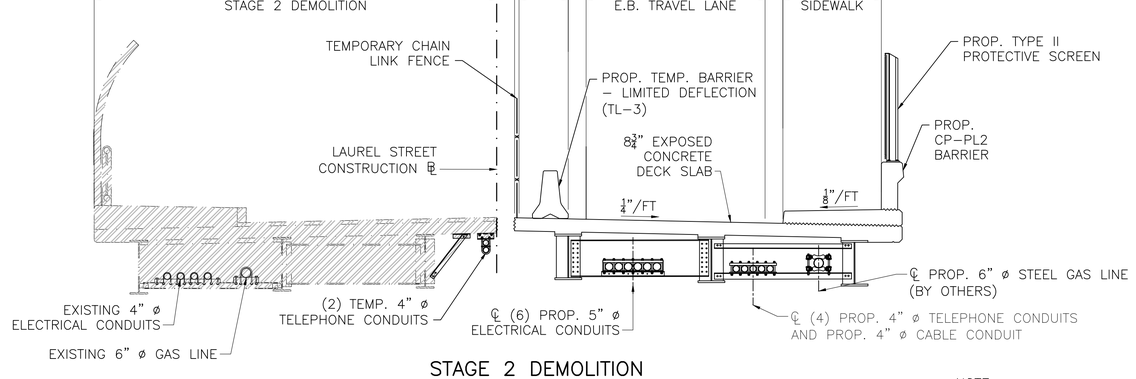
STATION EQUATION: LAUREL STREET CONSTRUCTION ℄ STA. 8+49.62 = I-290 ℄ STA. 127+73.72

GENERAL STAGE CONSTRUCTION NOTES:

REFER TO SHEET 8 FOR GENERAL STAGED CONSTRUCTION NOTES.

SUGGESTED SEQUENCE OF CONSTRUCTION - STAGE 2

1. INSTALL TEMPORARY BARRIERS - LIMITED DEFLECTION (TL-3) AS SHOWN.
2. RELOCATE TEMPORARY TRAFFIC BARRIERS AND TRAFFIC ON LAUREL STREET TO SOUTHERN PORTION OF CONSTRUCTED BRIDGE (EASTBOUND TRAFFIC LANE).
3. REMOVE TEMPORARY TELEPHONE CONDUITS.
4. DEMOLISH REMAINING PORTION OF EXISTING SUPERSTRUCTURE
5. REMOVE PORTION OF EXISTING SUBSTRUCTURE AT THE EAST ABUTMENT, PIER, AND WEST ABUTMENT RESPECTIVELY.
6. CONSTRUCT PROPOSED ABUTMENT CAPS, APPROACH SLABS, AND PIER CAP WITHIN THE LIMITS SHOWN AND BACKFILL WITH GRAVEL BORROW FOR BRIDGE FOUNDATIONS. REMOVE EARTH SUPPORT SYSTEM AS NECESSARY.
7. CONSTRUCT PROPOSED SUPERSTRUCTURE FOR STAGE 2 LIMITS SHOWN.
8. INSTALL PROPOSED WATER LINE.
9. CONSTRUCT FINAL CLOSURE POUR.

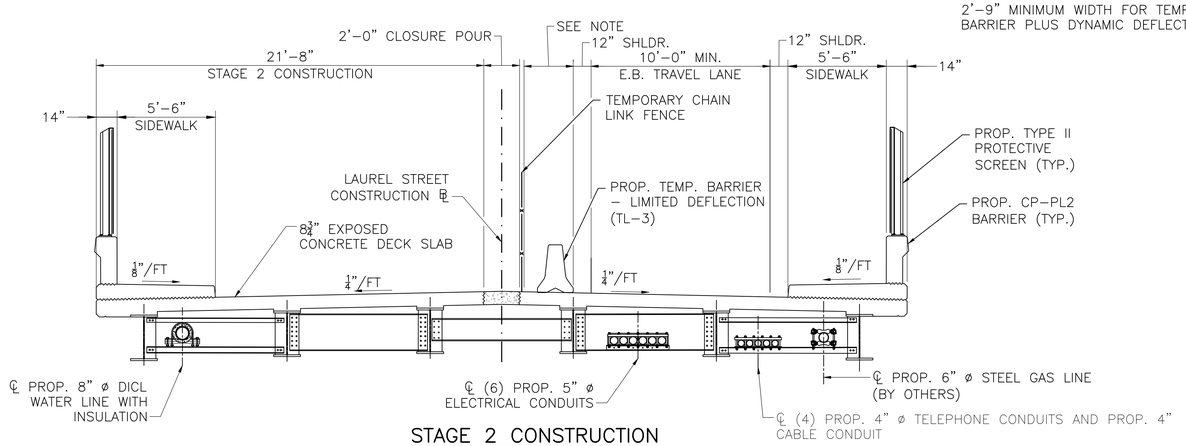


STAGE 2 DEMOLITION

SCALE: ¼" = 1'-0"

NOTE:

2'-9" MINIMUM WIDTH FOR TEMPORARY BARRIER PLUS DYNAMIC DEFLECTION



STAGE 2 CONSTRUCTION

SCALE: ¼" = 1'-0"

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WORCESTER
LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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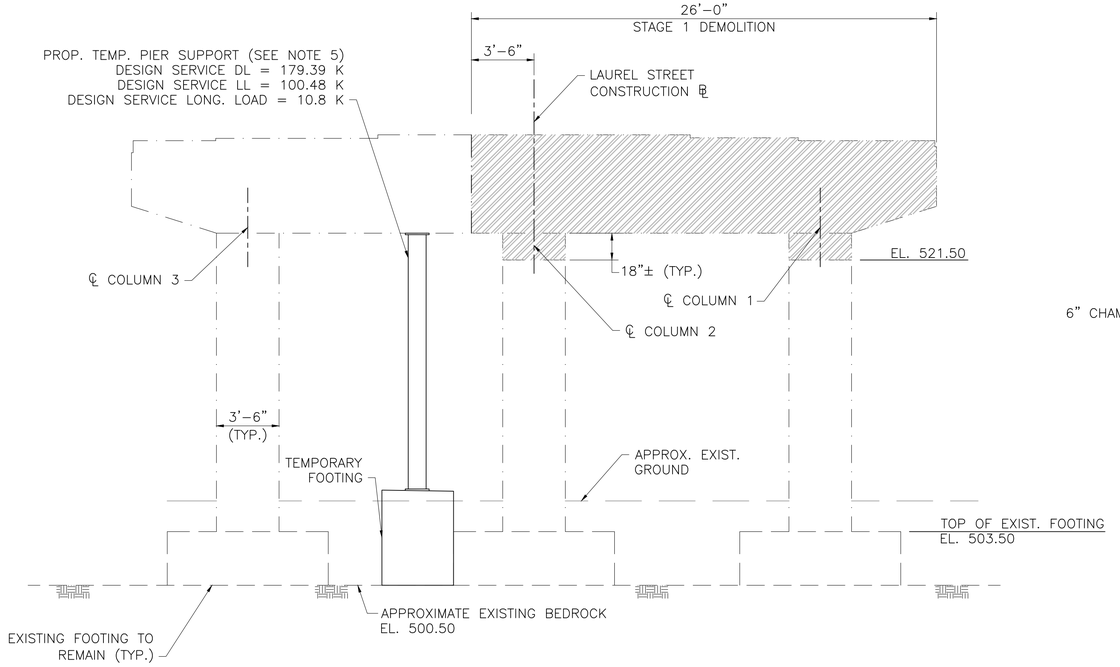
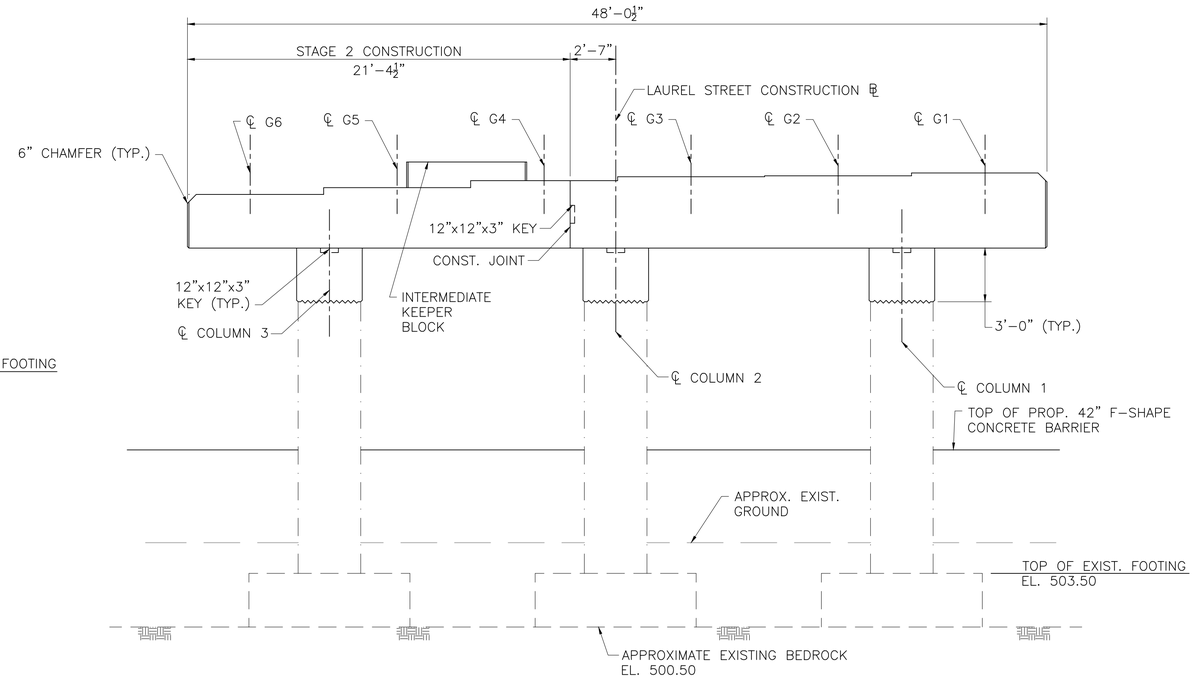
PIER STAGING SECTIONS



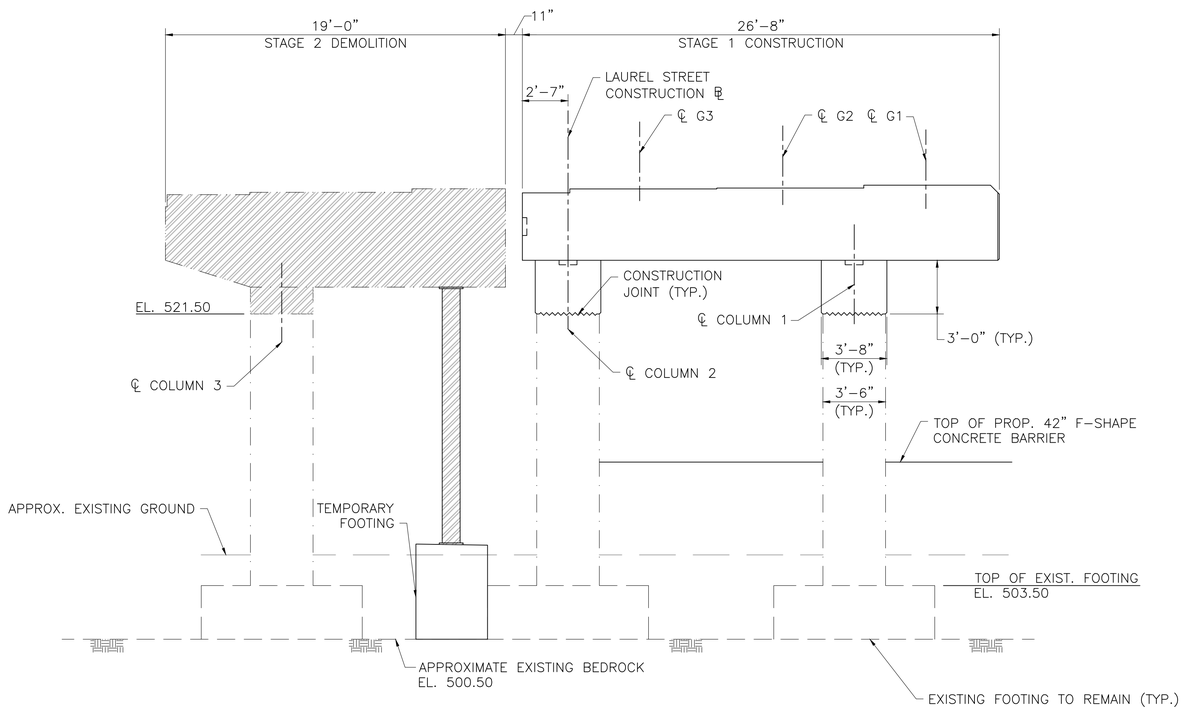
STAGE 1 DEMOLITION

SCALE: ¼" = 1'-0"



STAGE 2 CONSTRUCTION

SCALE: ¼" = 1'-0"



STAGE 1 CONSTRUCTION
AND STAGE 2 DEMOLITION

SCALE: ¼" = 1'-0"

PIER STAGING NOTES:

1. PIER SECTIONS ARE TAKEN AT ℄ OF PIER.
2. ALL DIMENSIONS GIVEN ARE ALONG THE SKEW.
3. COLUMN CONSTRUCTION JOINTS TO HAVE RAKE FINISH.
4. FOR ADDITIONAL STAGING REQUIREMENTS AND SUGGESTED CONSTRUCTION SEQUENCE, SEE SHEETS 8 AND 9.
5. TEMPORARY PIER SUPPORT SHOWN IS CONCEPTUAL. THE CONTRACTOR SHALL DESIGN TEMPORARY SUPPORT TO SAFELY WITHSTAND ALL APPLICABLE DEAD, CONSTRUCTION, AND LIVE LOADS AND SHALL SUBMIT RELEVANT CALCULATIONS FOR THE REVIEW AND APPROVAL OF THE ENGINEER.
6. THE PROPOSED CUT LINE SHALL BE SAW CUT TO A MINIMUM OF 1" TO PROVIDE A CLEAN EDGE FOR THE PROPOSED CONCRETE.
7. THE SURFACE OF EXISTING CONCRETE SHALL BE LEFT ROUGH, BUT SHALL HAVE A MAXIMUM AMPLITUDE OF ROUGHENED SURFACE OF ¼".

LEGEND

LIMITS OF DEMOLITION

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WORCESTER
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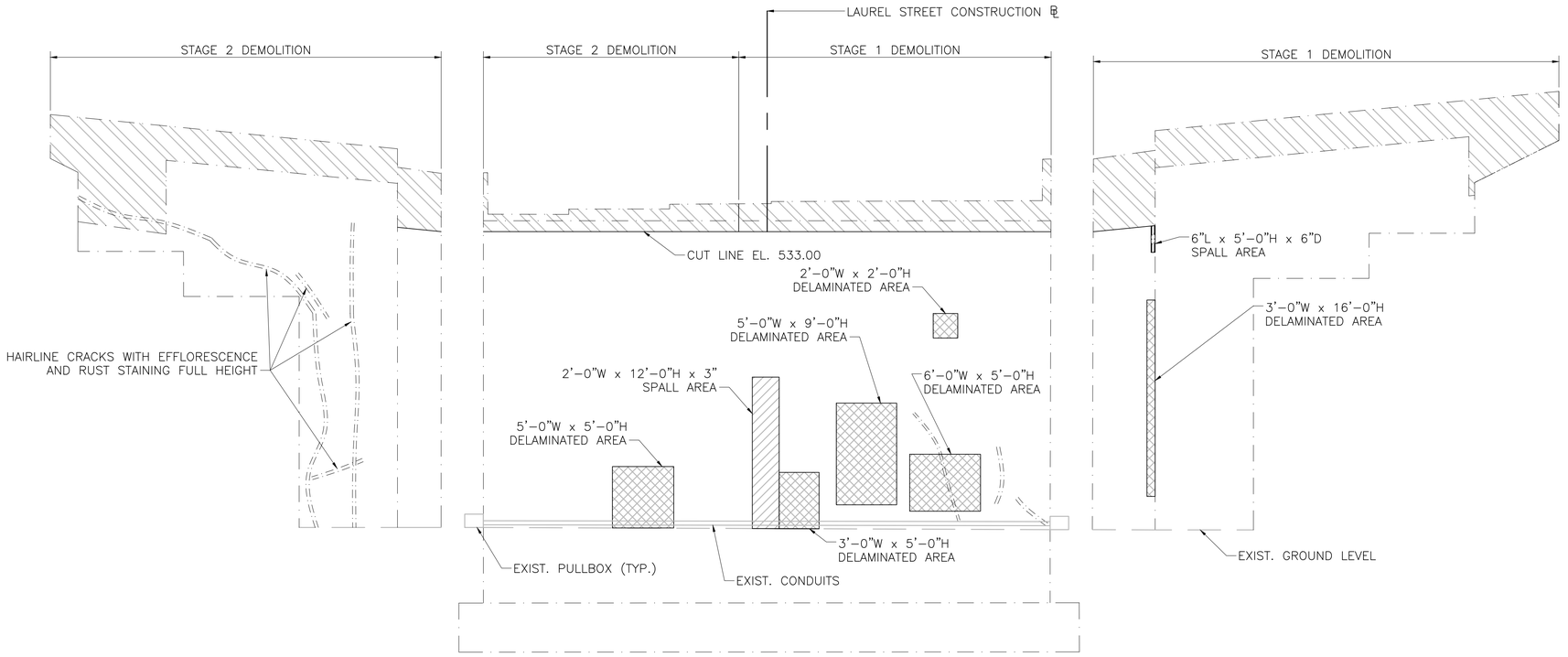
EAST AND WEST ABUTMENT REPAIR PLAN



NORTHEAST WINGWALL REPAIR ELEVATION

SCALE: $\frac{1}{4}$" = 1'–0"

EAST ABUTMENT REPAIR ELEVATION

SCALE: $\frac{1}{4}$" = 1'–0"

SOUTHEAST WINGWALL REPAIR ELEVATION

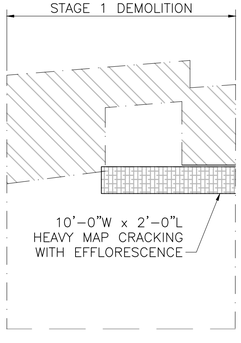
SCALE: $\frac{1}{4}$" = 1'–0"

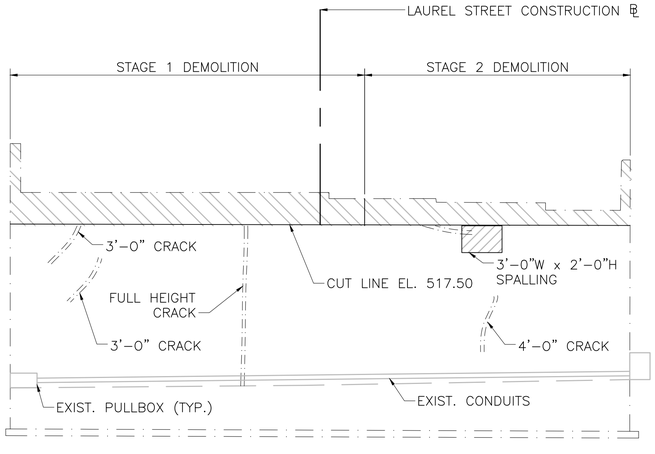
LEGEND

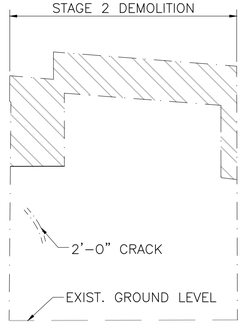
- SPALLED AREA – SEE CONCRETE REPAIR DETAIL ON SHEET 13.
- DELAMINATED AREA (USE ITEM 909.2 CEMENTITIOUS MORTAR FOR PATCHING FOR REPAIR)
- SPALL WITH EXPOSED REBAR – SEE CONCRETE REPAIR DETAIL ON SHEET 13.
- HONEYCOMB – SEE CONCRETE REPAIR DETAIL ON SHEET 13.
- CRACKS (USE ITEM 909.2 CEMENTITIOUS MORTAR FOR PATCHING FOR REPAIR)
- EFFLORESCENCE
- LIMITS OF DEMOLITION.

NOTES:

1. AREAS TO BE DEMOLISHED ARE SHOWN HATCHED.
2. CONTRACTOR SHALL REPAIR ALL DEFECTIVE AND DETERIORATED AREAS AS DIRECTED BY THE ENGINEER.
3. THE REINFORCEMENT AT PIER LOCATION SHALL BE RETAINED.
4. CONCRETE REPAIR AREAS THAT ARE COINCIDENT WITH REMOVAL AND RECONSTRUCTION AREAS ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY. THERE WILL BE NO PAYMENT FOR REPAIRS WITHIN THE LIMITS OF CONCRETE REMOVAL AND RECONSTRUCTION. IF ADDITIONAL DETERIORATED AREAS ARE FOUND BEYOND THE LIMITS SHOWN ON THE PLANS, THE ENGINEER SHALL BE NOTIFIED FOR DETERMINATION OF THE EXTENT OF DEMOLITION AND TYPE OF REPAIR TO BE IMPLEMENTED.
5. CONTRACTOR SHALL REPAIR ALL DEFECTIVE, DETERIORATED AND HONEYCOMB AREAS AS DIRECTED BY THE ENGINEER. WHEN DEFECTIVE, DETERIORATED, AND HONEYCOMB AREAS OVERLAP WITH AREAS TO BE DEMOLISHED, REPAIRS MAY BE MADE AFTER THE DEMOLITION.
6. FOR DETAILS OF CONCRETE REPAIRS, REFER TO CONCRETE REPAIR DETAIL SHEET 13 AND AS DESCRIBED IN THE SPECIFICATIONS AND SPECIAL PROVISIONS.
7. LOCATIONS AND EXTENTS OF REPAIRS OF CRACKS AND SPALLED CONCRETE ARE TO BE FIELD IDENTIFIED BY THE ENGINEER DURING CONSTRUCTION.
8. DIMENSIONS AND ELEVATIONS SHOWN WERE TAKEN FROM THE EXISTING DESIGN DRAWINGS. THEY MAY NOT EXACTLY MATCH THE AS BUILT CONDITION. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY ALL EXISTING DIMENSIONS AND ELEVATIONS, PRIOR TO COMMENCING WORK.
9. PACHOMETER OR SIMILAR MUST BE USED TO LOCATE EXISTING REINFORCEMENT AS REQUIRED PRIOR TO REPAIR.
10. THE CONTRACTOR SHALL NOTIFY ENGINEERS IMMEDIATELY OF ANY DETERIORATIONS THAT EXCEED THE LIMITS SHOWN ON THE PLANS.







NOTE:

USE CAUTION WHEN WORKING NEAR EXISTING LIGHTING CONDUIT.

SOUTHWEST WINGWALL REPAIR ELEVATION

SCALE: $\frac{1}{4}$" = 1'–0"

WEST ABUTMENT REPAIR ELEVATION

SCALE: $\frac{1}{4}$" = 1'–0"

NORTHWEST WINGWALL REPAIR ELEVATION

SCALE: $\frac{1}{4}$" = 1'–0"

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WORCESTER
LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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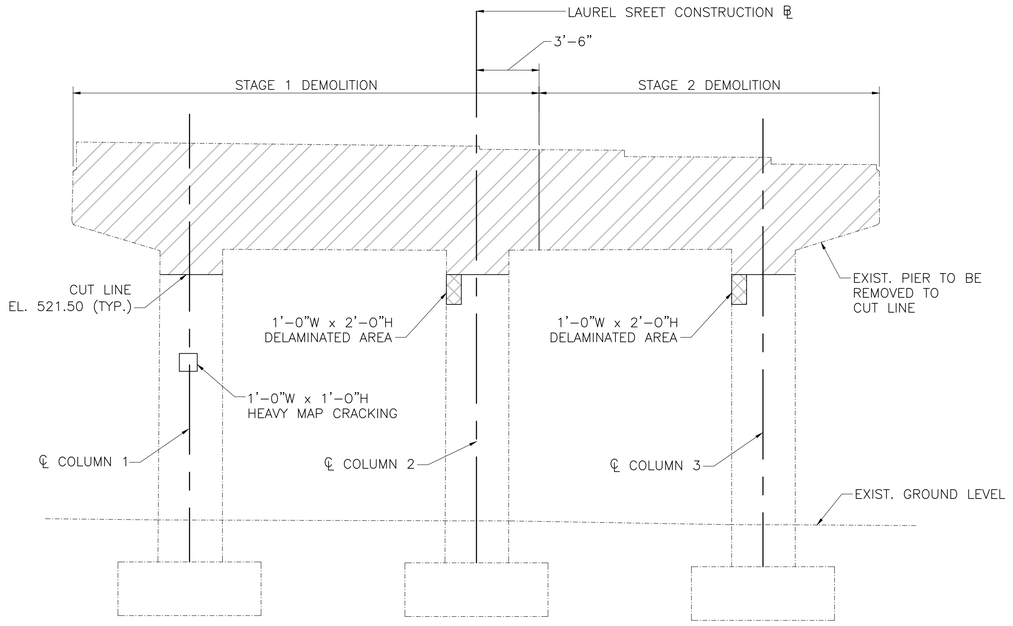
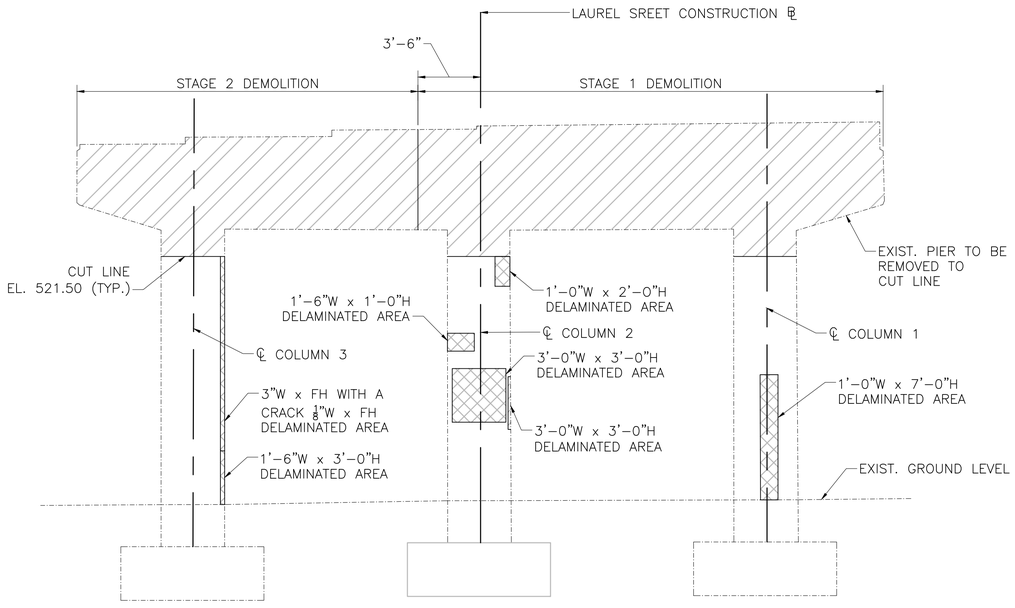
PIER COLUMN REPAIR PLAN



PIER COLUMN REPAIR PLAN (EAST FACE)

SCALE: ¼" = 1'–0"



PIER COLUMN REPAIR PLAN (WEST FACE)

SCALE: ¼" = 1'–0"

SPALLED AREA – SEE CONCRETE REPAIR DETAIL ON SHEET 13.

DELAMINATED AREA (USE ITEM 909.2 CEMENTITIOUS MORTAR FOR PATCHING FOR CONCRETE REPAIR)

SPALL WITH EXPOSED REBAR – SEE CONCRETE REPAIR DETAIL ON SHEET 13.

HONEYCOMB – SEE CONCRETE REPAIR DETAIL ON SHEET 13.

CRACKS (USE ITEM 909.2 CEMENTITIOUS MORTAR FOR PATCHING FOR REPAIR)

EFFLORESCENCE

LIMITS OF DEMOLITION.

NOTES:

1. FOR NOTES SEE SHEET 11

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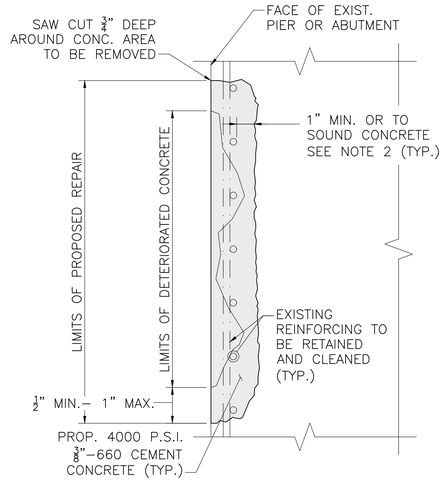

NOTE:

IF THERE IS LESS THAN 1½" CONCRETE COVER, THEN THE CONTRACTOR SHALL BUILD OUT THE FORM TO ENSURE A MINIMUM OF 1½" COVER.

REPAIR PATCH DETAIL

NOT TO SCALE

EXCAVATION AND SURFACE REPAIR NOTES:

(CONVENTIONAL CONCRETE REPAIR)

1. THE CONTRACTOR SHALL EXERCISE CARE WHEN REMOVING CONCRETE AROUND REINFORCEMENT TO ONLY REMOVE DETERIORATED CONCRETE AND TO LIMIT THE SOUND CONCRETE REMOVED TO THE MINIMUM NECESSARY TO EFFECT A GOOD REPAIR.

2. THE CONTRACTOR SHALL ESTABLISH LIMITS OF VARIOUS REPAIRS AS SHOWN ON THE PLANS AND AT THE DIRECTION OF THE ENGINEER. THE LOCATIONS SHOWN ON THE PLANS ARE BASED UPON RECORDS OF BRIDGE INSPECTIONS AND OBSERVATION FROM THE GROUND AND ARE NOT GUARANTEED. THE LOCATION AND EXTENT OF ALL CONCRETE REPAIRS ARE TO BE FIELD VERIFIED AND APPROVED BY THE ENGINEER AFTER THE CONTRACTOR HAS SOUNDED AND MARKED OUT THE REPAIR AREAS. REPAIR CONFIGURATIONS SHOULD BE KEPT AS SIMPLE AS POSSIBLE, PREFERABLY WITH SQUARE CORNERS.

3. THE LIMITS OF THE REPAIRS SHALL BE SAWCUT ALONG NEAT LINES TO A DEPTH OF ¾" TO PRODUCE A CLEAN EDGE.

4. REMOVE DETERIORATED AND UNSOUND CONCRETE AS WELL AS SOUND CONCRETE WHERE NECESSARY TO A MINIMUM OF 1" BEYOND SURFACE REINFORCEMENT.

5. EXPOSED REINFORCEMENT IS TO BE CLEANED BY MECHANICAL CLEANING AND HIGH PRESSURE WASHING WITH WATER THAT CONTAINS NO DETERGENTS OR BOND INHIBITING CHEMICALS. WHERE ACTIVE CORROSION HAS OCCURRED (THAT WHICH WOULD INHIBIT BONDING) SANDBLAST STEEL TO SSPC–SP5.

6. MISSING OR DETERIORATED REINFORCING STEEL SHALL BE REPLACED AS DIRECTED BY THE ENGINEER. AFTER REMOVAL AND EDGE PREPARATION ARE COMPLETE, REMOVE BOND INHIBITING MATERIALS (DIRT, GREASE, LOOSELY BONDED AGGREGATE) BY ABRASION BLASTING OR HIGH PRESSURE WATER BLASTING WITH WATER THAT CONTAINS NO DETERGENTS OR BOND INHIBITING CHEMICALS. CHECK THE CONCRETE SURFACES AFTER CLEANING TO INSURE THAT THE SURFACE IS FREE FROM ADDITIONAL LOOSE AGGREGATE OR THAT ADDITIONAL DELAMINATIONS ARE NOT PRESENT.

7. 4000 PSI ⅜" 660 CEMENT CONCRETE SHALL BE USED TO PERFORM THE REPAIRS.

8. PRESOAK CONCRETE SUBSTRATE WITH A WATER HOSE FOR 24 HOURS OR AS LONG AS SITE CONSTRAINTS PERMIT. AT TIME OF REPAIR CONCRETE PLACEMENT, SUBSTRATE SHALL BE SATURATED SURFACE DRY WITH NO STANDING WATER.

9. ALL SURFACES SHALL BE RUBBED TO PRODUCE A SMOOTH FINISH TO MATCH EXISTING SURFACES.

10. IF AN EPOXY BONDING COMPOUND IS USED (AS DIRECTED BY THE ENGINEER), THE MATERIALS SHALL MEET AASHTO M235 TYPE V. GRADE AND CLASS SHALL BE SPECIFIED FOR EACH INDIVIDUAL APPLICATION. THE EPOXY COMPOUND SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. IN NO CASE WILL THE EPOXY BONDING COMPOUND BE ALLOWED TO CURE TO A HARDENED STATE PRIOR TO CONCRETE PLACEMENT. IF THIS DOES OCCUR IT MUST BE COMPLETELY REMOVED.

WORCESTER
LAUREL STREET OVER I-290

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CONCRETE REPAIR DETAILS

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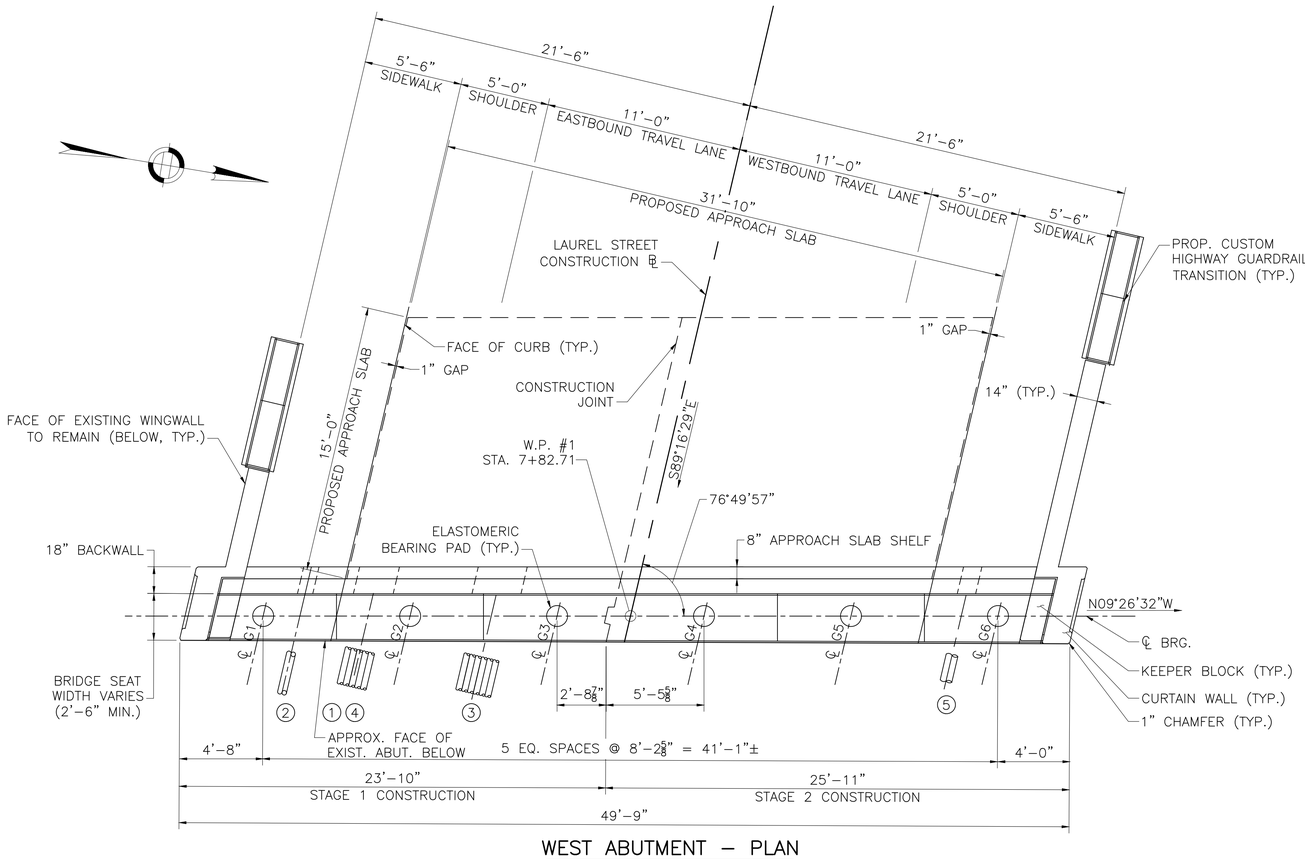
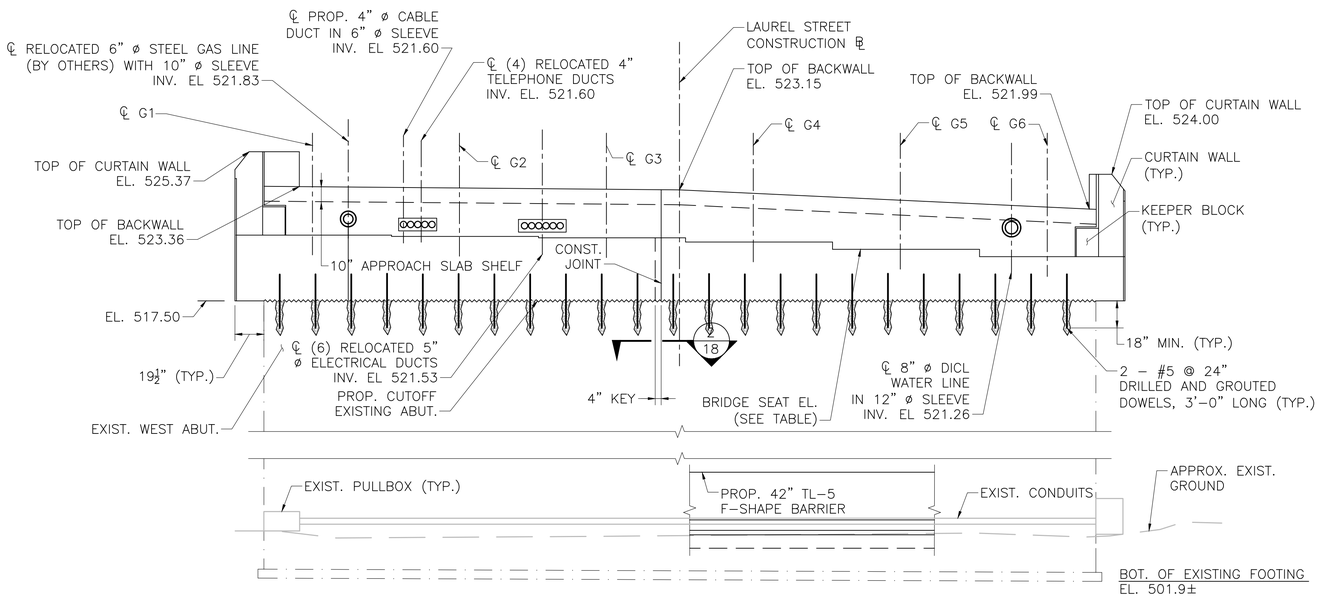
WEST ABUTMENT PLAN AND ELEVATIONS



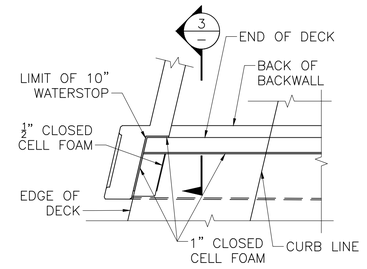
WEST ABUTMENT – PLAN

SCALE: ¼" = 1'–0"



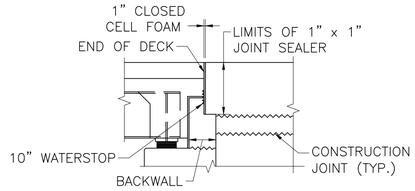
WEST ABUTMENT – ELEVATION

SCALE: ¼" = 1'–0"



END OF DECK PLAN

SCALE: ¼" = 1'–0"



SECTION 3 –

SCALE: ¼" = 1'–0"

NOTES:
1. ALL CONCRETE SHALL BE 5000 HP CONCRETE.
2. THE FACTORED BEARING PRESSURE AT THE WEST ABUTMENT = 8.56 KSF, AND AT THE EAST ABUTMENT = 4.49 KSF AS PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS STRENGTH I LOAD COMBINATION.

   FACTORED BEARING RESISTANCE AT THE WEST AND EAST ABUTMENT = 86.7 KSF. FACTORED BEARING RESISTANCE IS THE PRODUCT OF THE NOMINAL BEARING RESISTANCE OF 192.6 KSF AND A RESISTANCE FACTOR OF 0.45.

UTILITY DESCRIPTIONS

① PROP. 4" ø CABLE DUCT
INV. EL 521.60

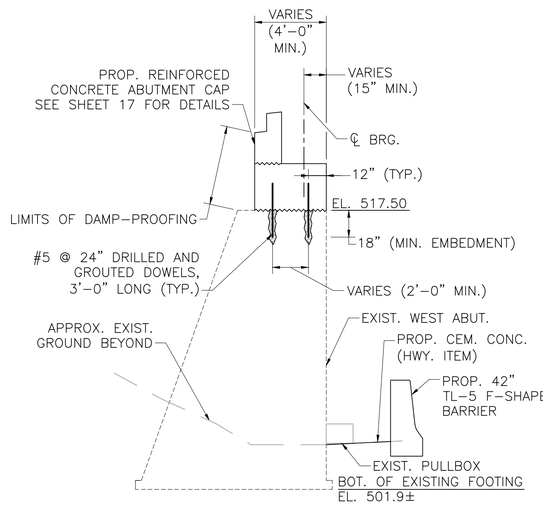
② PROP. 6" ø STEEL GAS LINE (BY OTHERS) IN 10" ø SLEEVE AT ABUTMENT FACE
INV. EL 521.83

③ (6) PROP. 5" ø ELECTRICAL DUCTS
INV. EL. 521.53

④ (4) PROP. 4" ø TELEPHONE DUCTS
INV. EL 521.60

⑤ PROP. 8" ø DICL WATER LINE WITH INSULATION IN 12" ø SLEEVE AT ABUTMENT FACE
INV. EL 521.26

BRIDGE SEAT ELEVATIONS	
G1	520.76
G2	520.68
G3	520.61
G4	520.37
G5	519.96
G6	519.55



WEST ABUTMENT SECTION

SCALE: ¼" = 1'–0"

DATE	DESCRIPTION
12/28/2024	ISSUED FOR CONSTRUCTION

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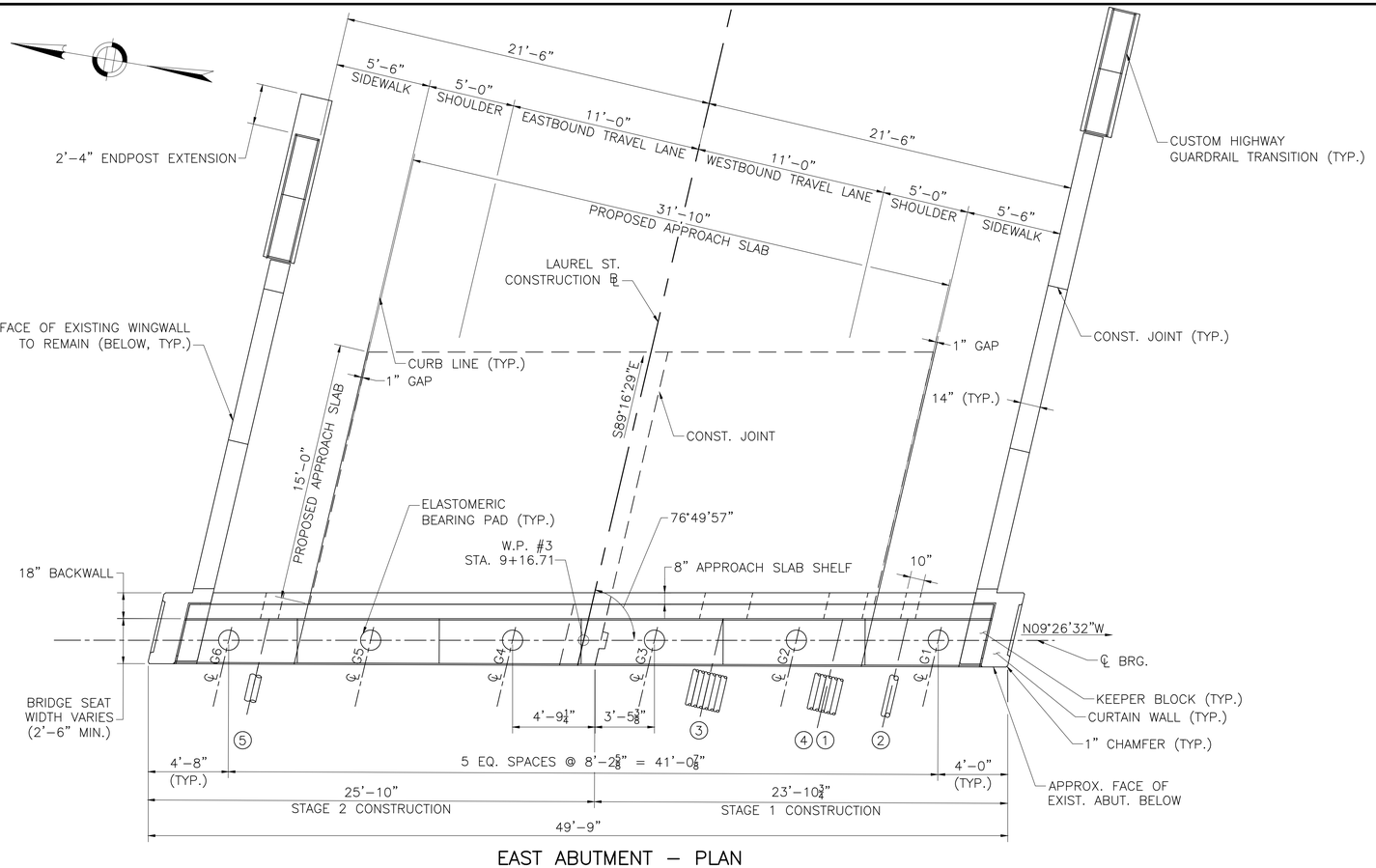
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

WORCESTER
LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	138	169
PROJECT FILE NO.	609185		

EAST ABUTMENT PLAN AND ELEVATIONS



EAST ABUTMENT – PLAN

SCALE: ¼" = 1'-0"

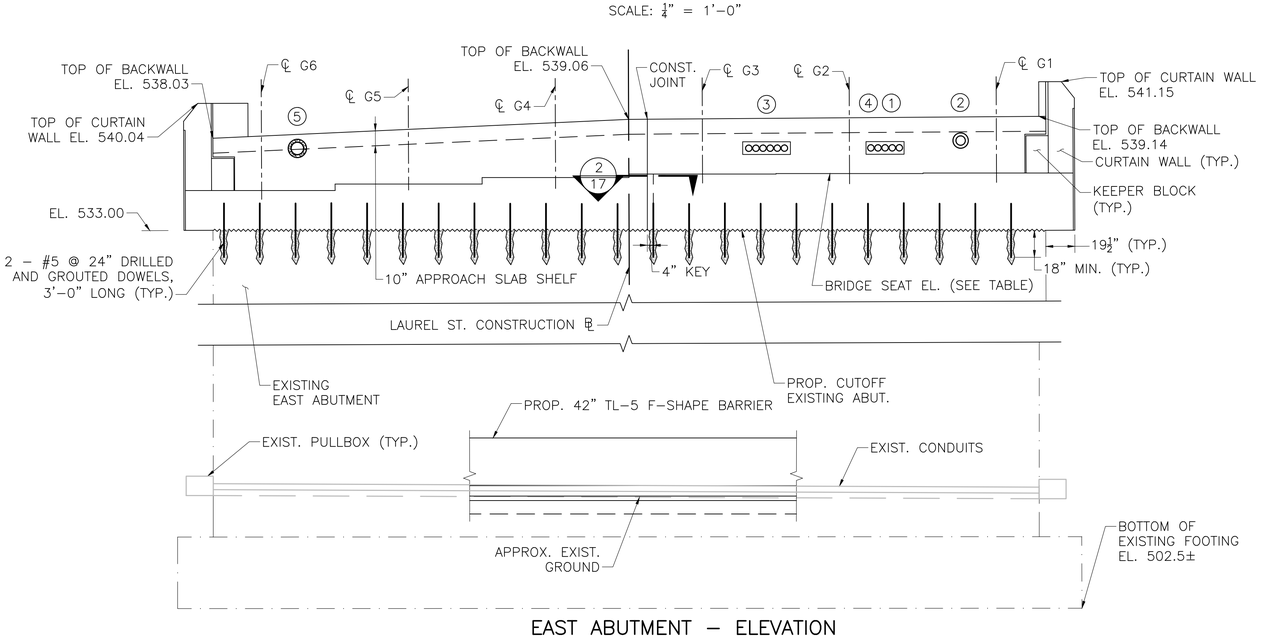
NOTES:

SEE SHEET 14 FOR ABUTMENT NOTES.

UTILITY DESCRIPTIONS

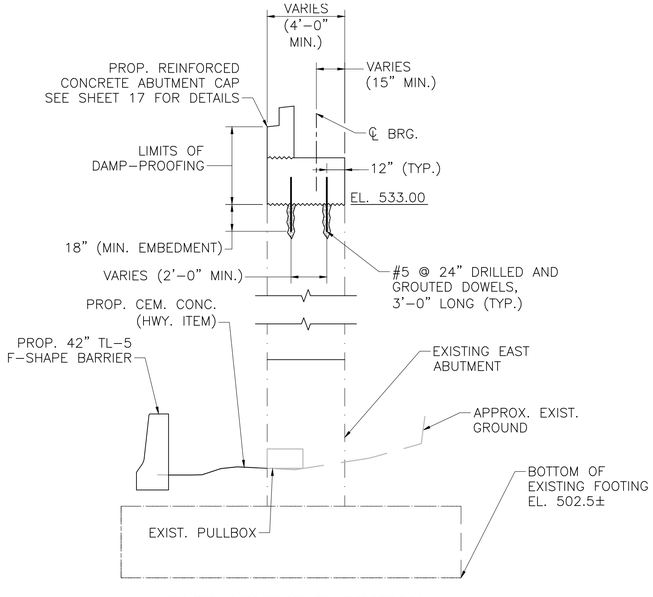
1. PROP. 4" ø CABLE DUCT
   INV. EL 537.44
2. PROP. 6" ø STEEL GAS LINE (BY OTHERS) IN 10" ø SLEEVE AT ABUTMENT FACE
   INV. EL 537.68
3. (6) PROP. 5" ø ELECTRICAL DUCTS
   INV. EL. 537.42
4. (4) PROP. 4" ø TELEPHONE DUCTS
   INV. EL 537.44
5. PROP. 8" ø DICL WATER LINE WITH INSULATION IN 12" ø SLEEVE AT ABUTMENT FACE
   INV. EL 537.24

BRIDGE SEAT ELEVATIONS	
G1	536.28
G2	536.25
G3	536.22
G4	536.03
G5	535.67
G6	535.30



EAST ABUTMENT – ELEVATION

SCALE: ¼" = 1'-0"



EAST ABUTMENT SECTION

SCALE: ¼" = 1'-0"

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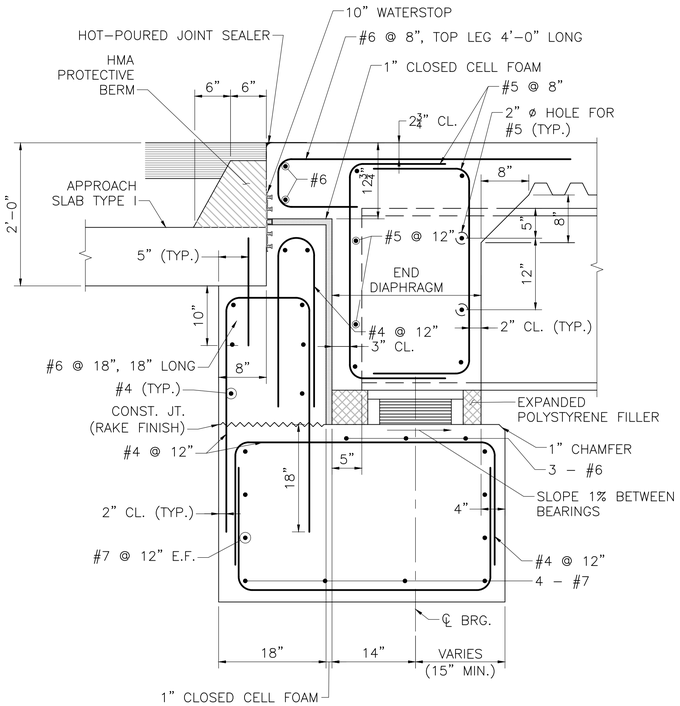
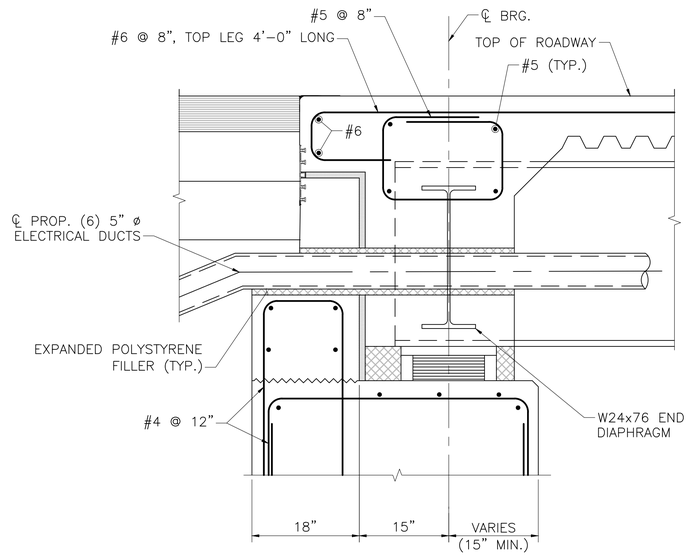


DETAILS AT ABUTMENT – ROADWAY SECTION

SCALE: 1" = 1'–0"

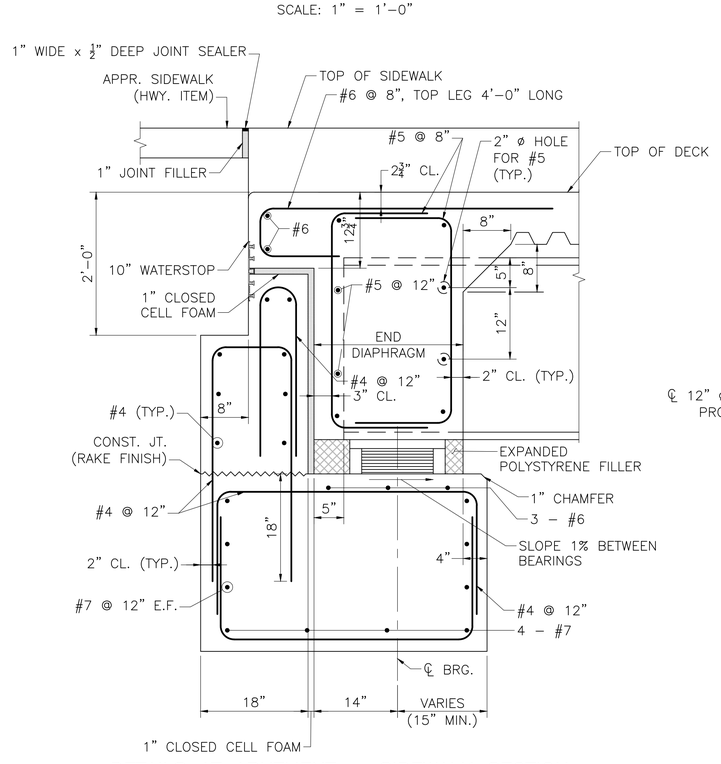


DETAILS AT ABUTMENT UTILITY BAY AT ROADWAY SECTION

SCALE: 1" = 1'–0"

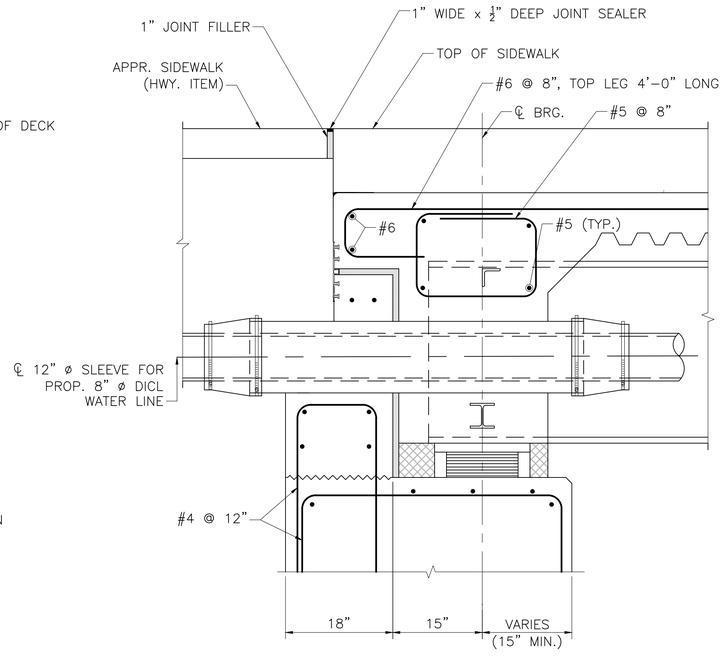
NOTE:

(6) 5" ø ELECTRICAL DUCTS SHOWN, (4) 4" ø TELEPHONE DUCTS AND 4" ø CABLE DUCT SIMILAR.



DETAILS AT ABUTMENT – SIDEWALK SECTION

SCALE: 1" = 1'–0"

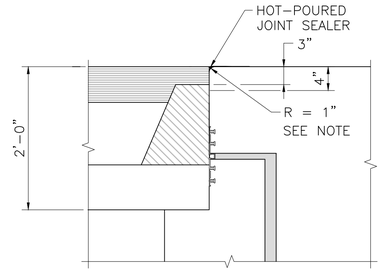


DETAILS AT ABUTMENT UTILITY BAY AT SIDEWALK SECTION

SCALE: 1" = 1'–0"

NOTE:

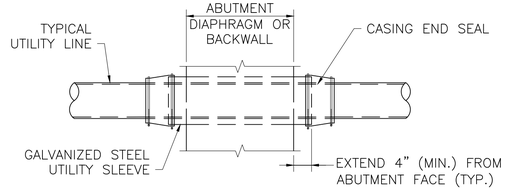
8" ø DICL WATER LINE SHOWN. 6" ø STEEL GAS LINE SIMILAR.



TUCK AND NAIL END OF MEMBRANE WATERPROOFING INTO A TAPERED ½" DEEP x 2" HIGH POCKET. FILL POCKET WITH JOINT SEALER.

DETAILS AT ABUTMENT FOR EXPOSED CONCRETE DECKS

SCALE: 1" = 1'–0"



NOTES:

1. DIMENSIONS ARE SQUARE TO GIRDERS.
2. UTILITY SLEEVES SHALL BE STEEL PIPE CONFORMING TO ASTM A–53, TYPE S, GRADE B, STANDARD WEIGHT, PLAIN ENDS, HOT–DIP GALVANIZED AND SHALL BE SET IN THE FORMS PRIOR TO PLACING ABUTMENT DIAPHRAGM CONCRETE.
3. DETAIL SHALL BE USED FOR ALL UTILITY PENETRATIONS UNLESS OTHERWISE NOTED.

UTILITY PENETRATION DETAIL

SCALE: ½" = 1'–0"

ROADWAY/SIDEWALK SECTION NOTES:

1. ALL REINFORCING SHALL BE EPOXY COATED UNLESS OTHERWISE NOTED ON THE CONSTRUCTION DRAWINGS.
2. ALL BACKWALL CONCRETE ABOVE THE CONSTRUCTION JOINT LOCATED AT THE BRIDGE SEAT SHALL BE 5000 PSI HP CEMENT CONCRETE. THE CONSTRUCTION JOINT SHALL BE GIVEN A RAKE FINISH WITH A 1/4" MINIMUM AMPLITUDE.
3. TOP OF BACKWALL SHALL BE TROWELED SMOOTH PARALLEL TO THE PROFILE GRADE.
4. THE BACKWALL, KEEPER BLOCK, AND CURTAIN WALL CONCRETE MUST BE PLACED AND SUFFICIENTLY CURED PRIOR TO PLACING THE END DIAPHRAGM CONCRETE.
5. THE END DIAPHRAGM CONCRETE SHALL BE 5000 PSI HP CEMENT CONCRETE AND SHALL BE PLACED MONOLITHICALLY WITH THE DECK.
6. PRIOR TO PLACING THE END DIAPHRAGM CONCRETE, CLOSED CELL FOAM OF THE SPECIFIED THICKNESSES SHALL BE ATTACHED WITH ADHESIVE TO ALL SURFACES OF THE BACKWALL, KEEPER BLOCKS, AND CURTAIN WALLS AS SHOWN ON THE PLANS. EXPANDED POLYSTYRENE FILLER SHALL BE PLACED UNDER THE BEAM BOTTOM FLANGE AND THE BOTTOM OF THE END DIAPHRAGM SHALL BE FORMED AS SPECIFIED. THE CONTRACTOR SHALL INSURE THAT ALL ABUTMENT CONCRETE IS PROPERLY LINED. END DIAPHRAGM CONCRETE MUST NOT COME IN DIRECT CONTACT WITH ABUTMENT CONCRETE.

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ABUTMENT SECTIONS 1

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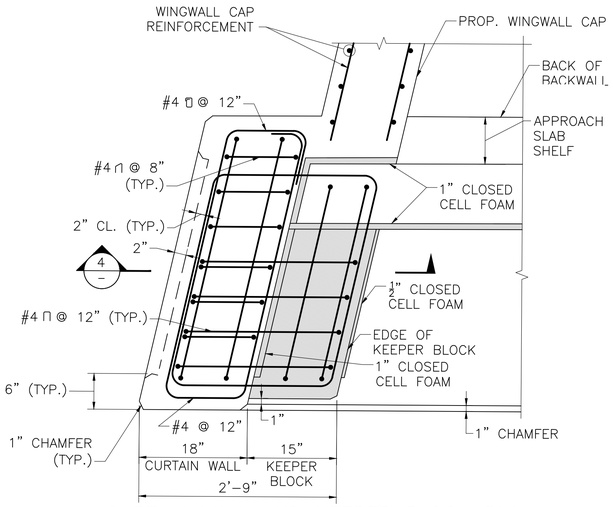
PROJECT FILE NO.	609185		

ABUTMENT SECTIONS 2



CURTAIN WALL AND KEEPER BLOCK PLAN

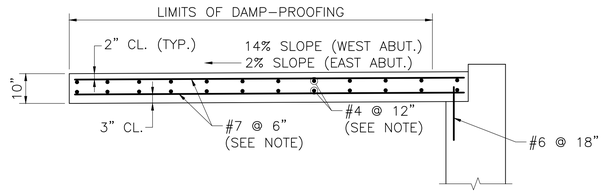
SCALE: 1" = 1'–0"

NOTES:

1. TOP OF KEEPER BLOCK SHALL BE TROWELED SMOOTH PARALLEL TO PROFILE GRADE.
2. ABUTMENT REINFORCEMENT BELOW CONSTRUCTION JOINT HAS BEEN OMITTED FOR CLARITY.

SECTION 4 –

SCALE: 1" = 1'–0"

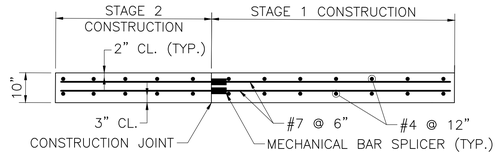


NOTE:

PLACE LONGITUDINAL REINFORCEMENT PARALLEL TO CENTERLINE OF CONSTRUCTION. PLACE TRANSVERSE REINFORCEMENT PARALLEL TO ABUTMENT.

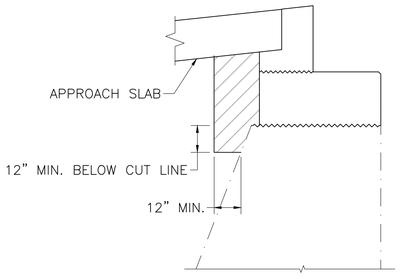
APPROACH SLAB DETAILS

SCALE: ½" = 1'–0"



APPROACH SLAB CONSTRUCTION JOINT DETAIL

SCALE: ½" = 1'–0"



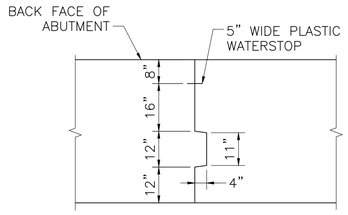
ABUTMENT

NOTE:

HATCHED AREA INDICATES LIMITS OF GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES.

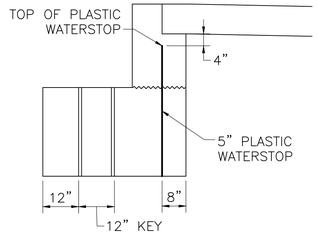
LIMITS OF GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES

SCALE: ⅜" = 1'–0"



SECTION 2 15/16

SCALE: ½" = 1'–0"

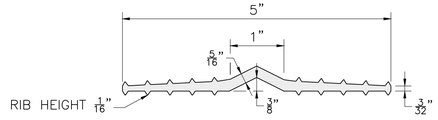


NOTE:

REINFORCEMENT SHALL BE CONTINUOUS THRU CONSTRUCTION JOINTS.

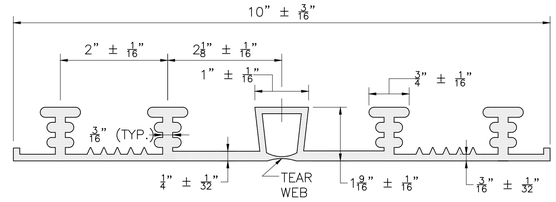
VERTICAL SECTION THRU CONSTRUCTION JOINT

SCALE: ½" = 1'–0"



5" WATERSTOP

NOT TO SCALE



10" WATERSTOP

NOT TO SCALE

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WORCESTER
LAUREL STREET OVER I-290

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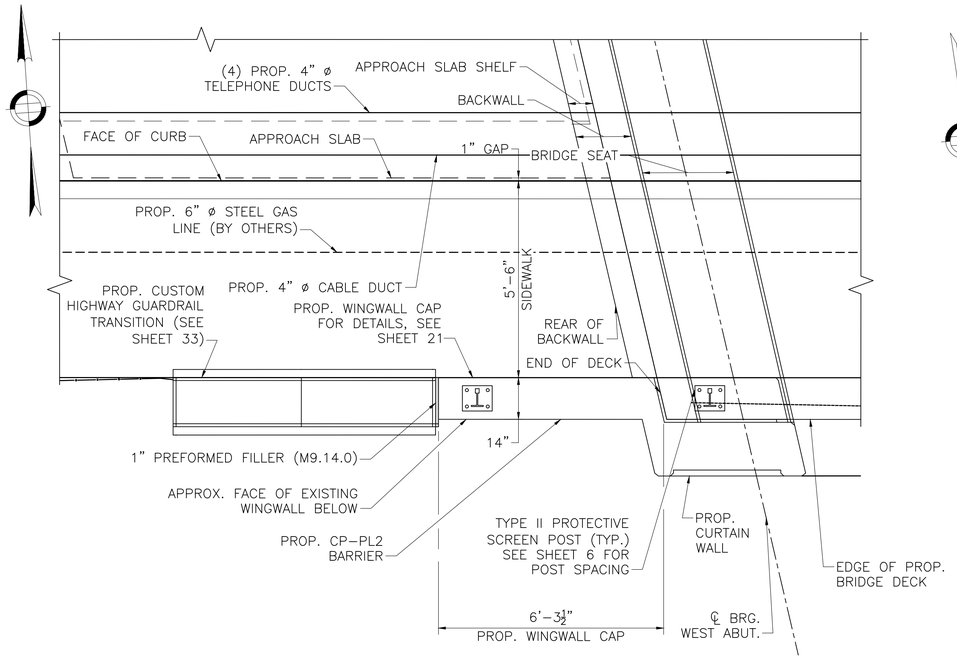
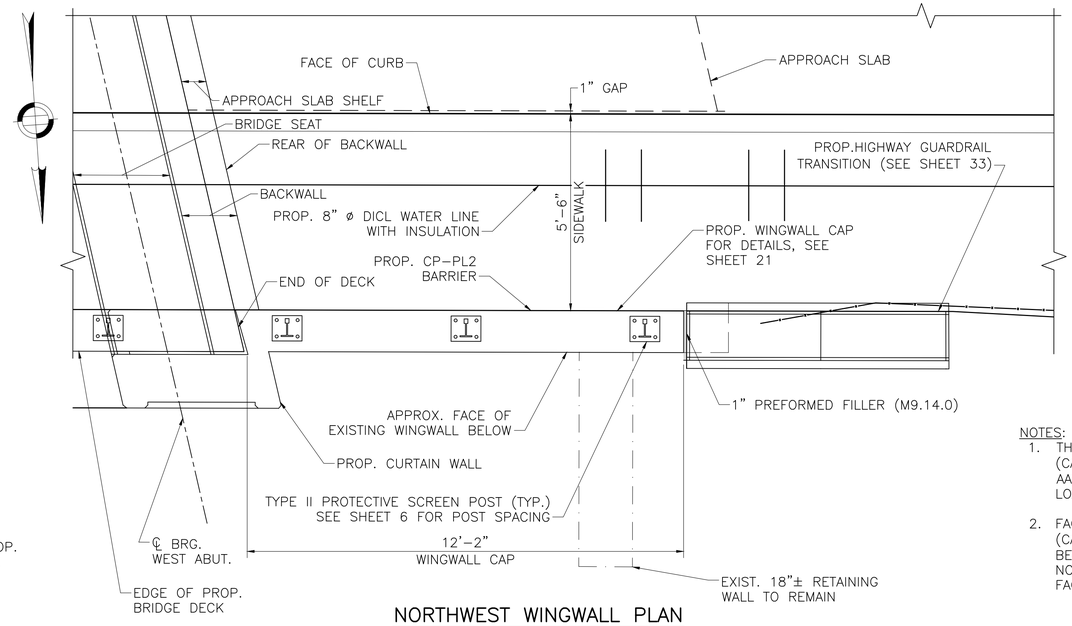
PROJECT FILE NO.	609185		

WINGWALL PLAN AND ELEVATION 1 OF 3



SOUTHWEST WINGWALL PLAN

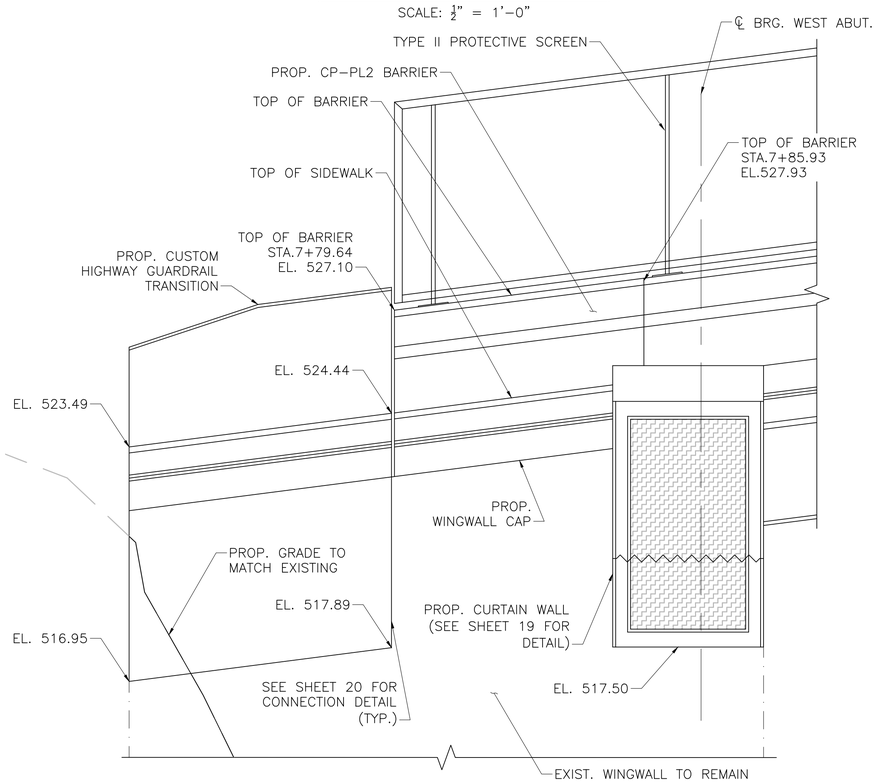
SCALE: ½" = 1'-0"



NORTHWEST WINGWALL PLAN

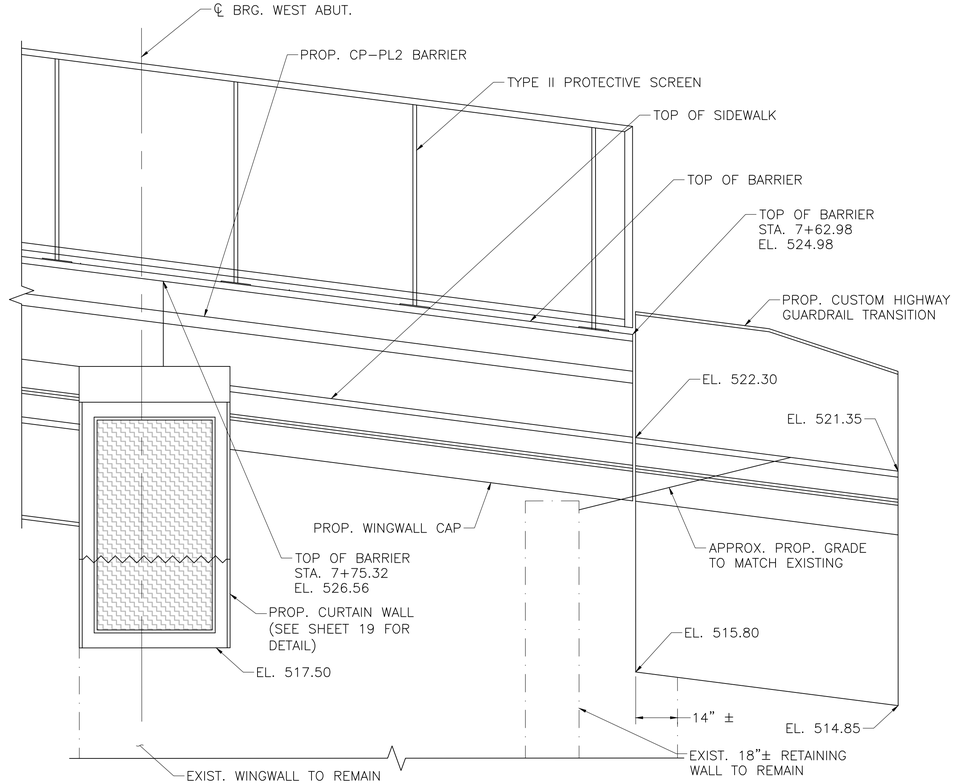
SCALE: ½" = 1'-0"

NOTES:
1. THE FACTORED BEARING PRESSURE = 10.21 (CANTILEVER) & 6.33 (GRAVITY) KSF AS PER AASHTO BRIDGE DESIGN SPECIFICATIONS STRENGTH 1 LOAD COMBINATION.
2. FACTORED BEARING RESISTANCE = 105.93 (CANTILEVER) & 86.67 (GRAVITY) KSF. FACTORED BEARING RESISTANCE IS THE PRODUCT OF THE NOMINAL BEARING RESISTANCE AND RESISTANCE FACTOR OF 0.55.



WINGWALL ELEVATION – SOUTHWEST WINGWALL

SCALE: ½" = 1'-0"



WINGWALL ELEVATION – NORTHWEST WINGWALL

SCALE: ½" = 1'-0"

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WORCESTER
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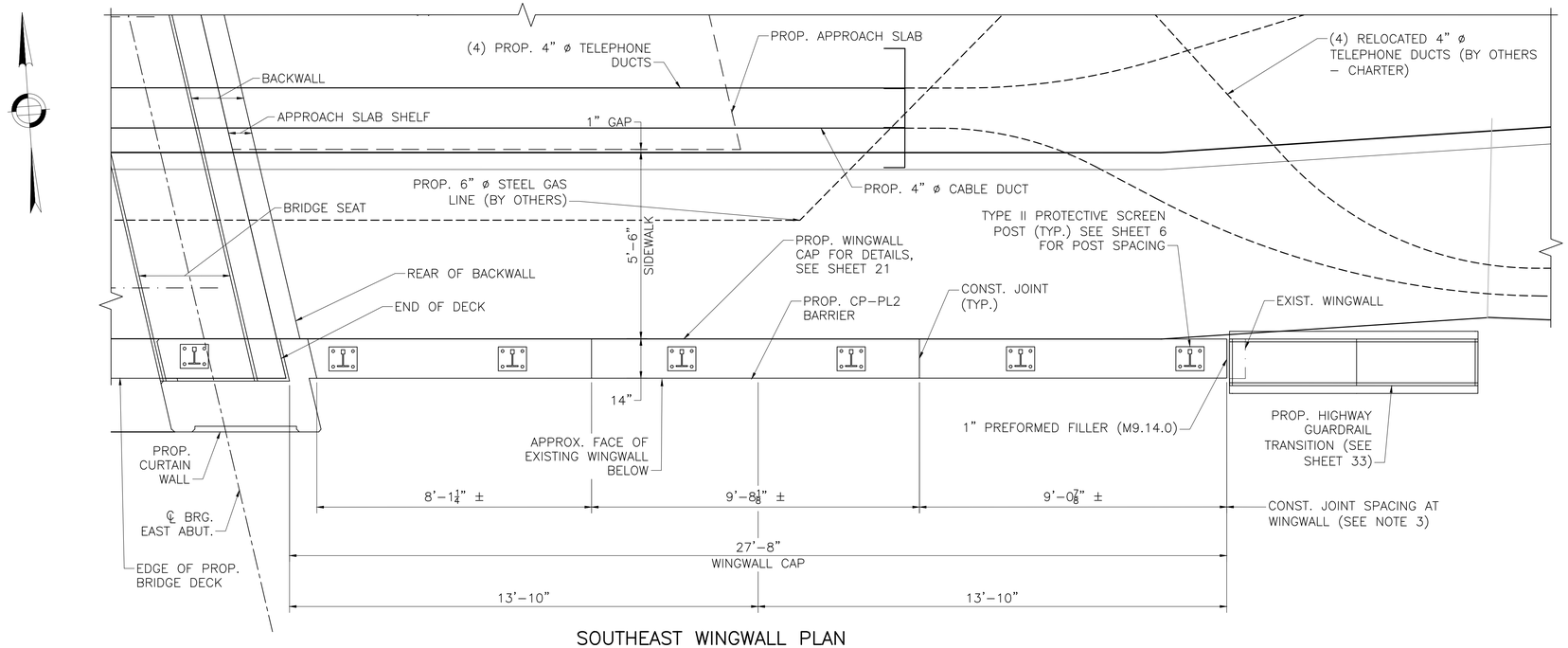
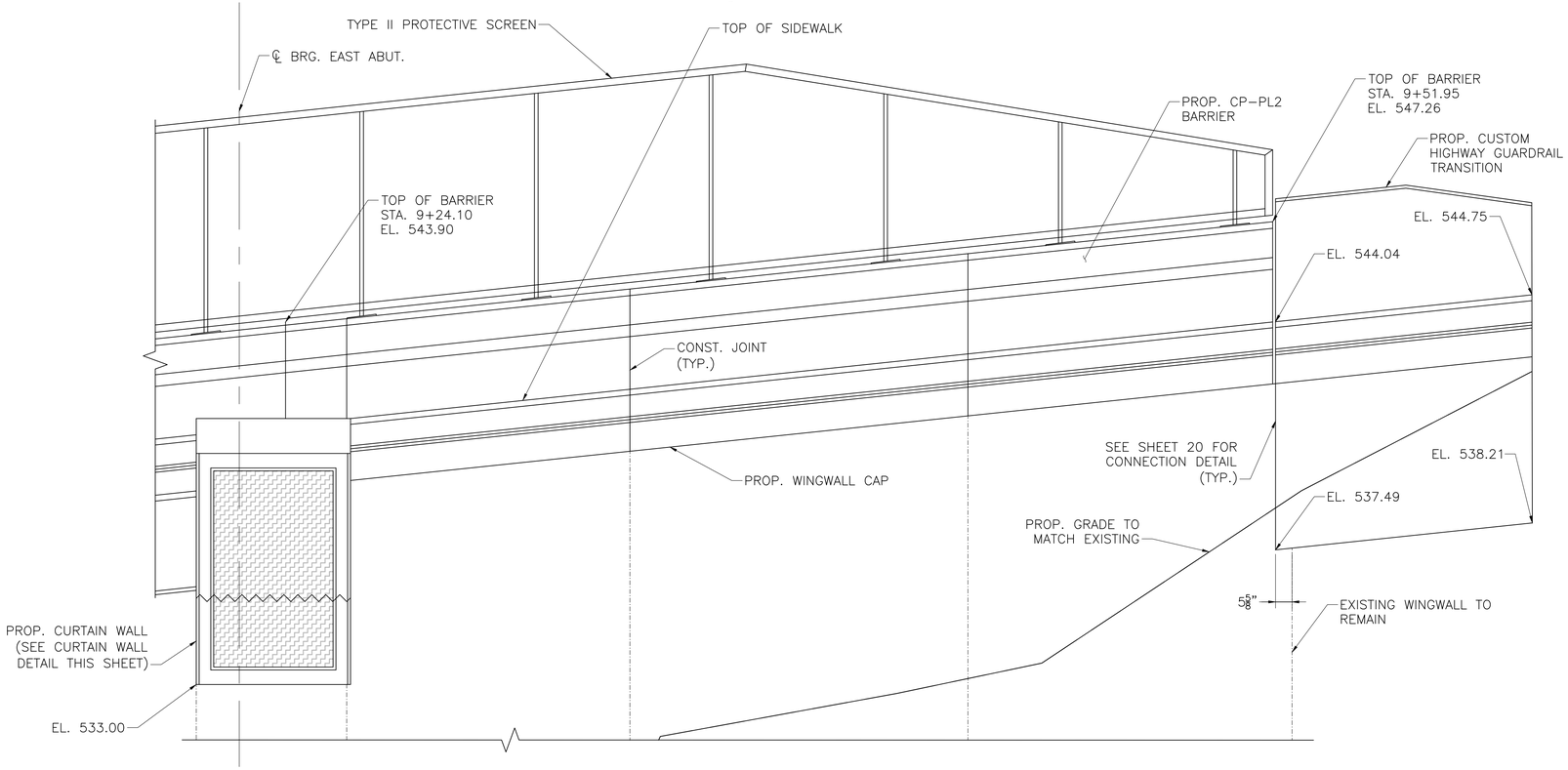
WINGWALL PLAN AND ELEVATION 2 OF 3



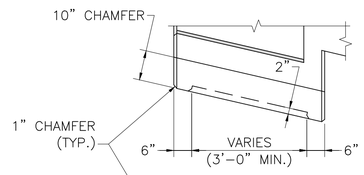
SOUTHEAST WINGWALL PLAN

SCALE: ½" = 1'–0"

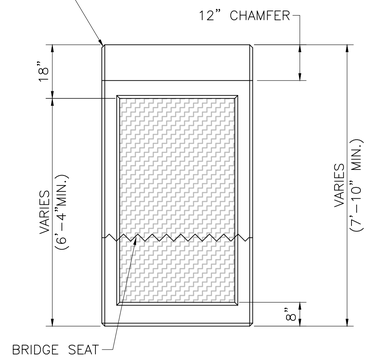


WINGWALL ELEVATION – SOUTHEAST WINGWALL

SCALE: ½" = 1'–0"



PLAN



ELEVATION

CURTAIN WALL DETAILS

SCALE: ½" = 1'–0"

NOTES:

1. THE FACTORED BEARING PRESSURE = 10.21 (CANTILEVER) & 6.33 (GRAVITY) KSF AS PER AASHTO BRIDGE DESIGN SPECIFICATIONS STRENGTH 1 LOAD COMBINATION.
2. FACTORED BEARING RESISTANCE = 105.93 (CANTILEVER) & 86.67 (GRAVITY) KSF. FACTORED BEARING RESISTANCE IS THE PRODUCT OF THE NOMINAL BEARING RESISTANCE AND RESISTANCE FACTOR OF 0.55.
3. PROPOSED CONSTRUCTION JOINTS SHALL BE AT THE EXISTING CONSTRUCTION JOINTS. DIMENSIONS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED.

DATE	DESCRIPTION
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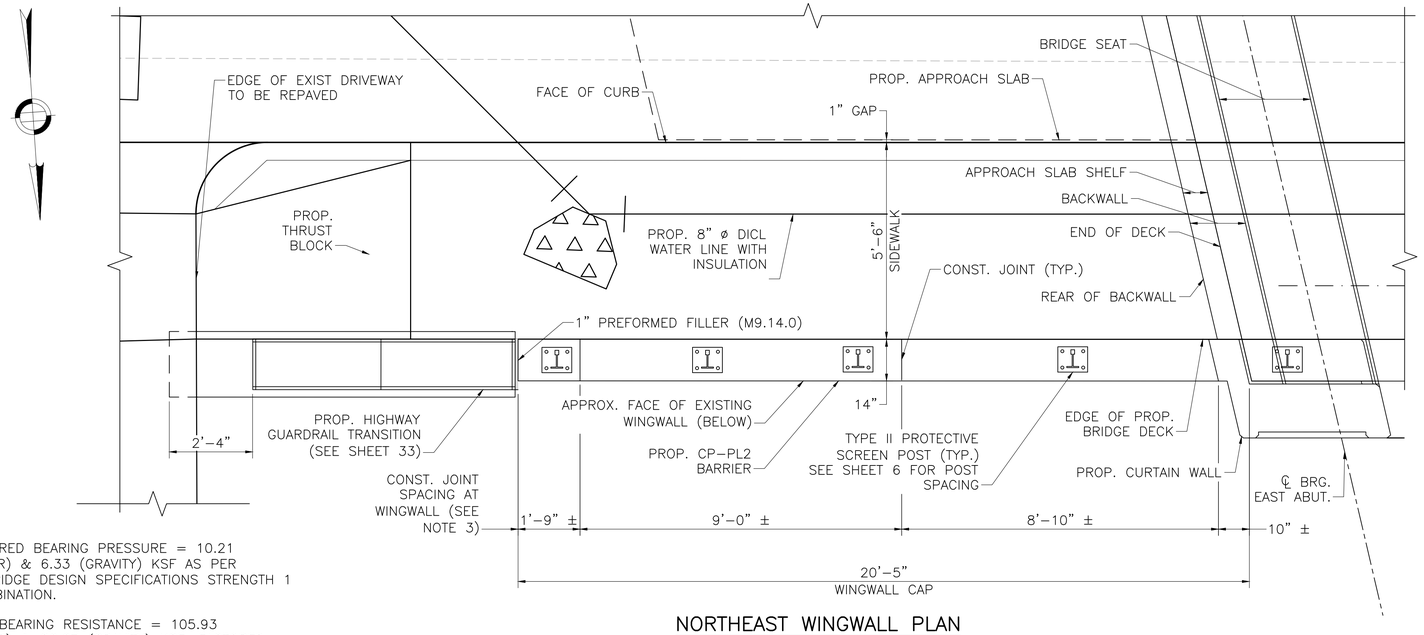
WINGWALL PLAN AND ELEVATION 3 OF 3

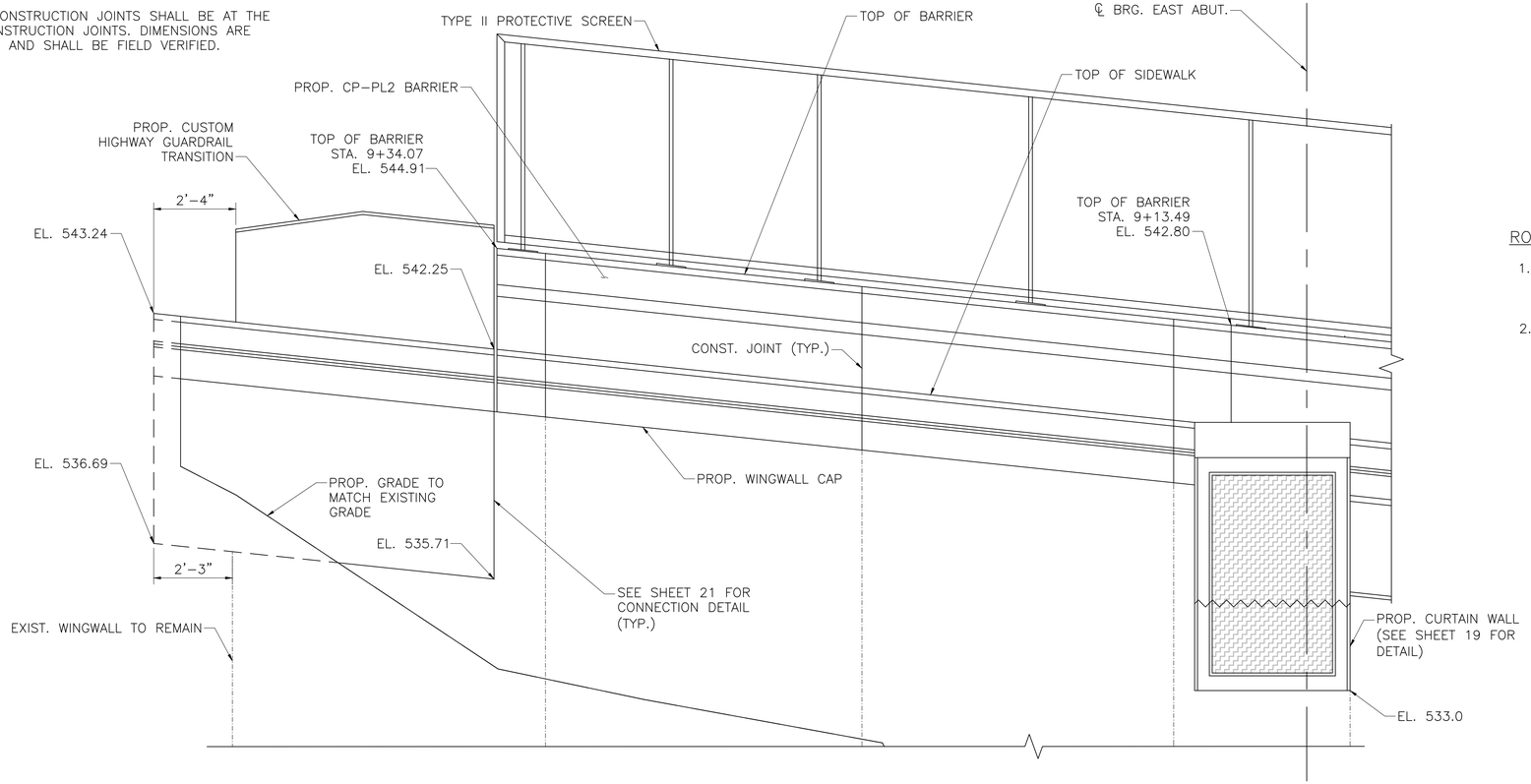


NORTHEAST WINGWALL PLAN

SCALE: ½" = 1'-0"

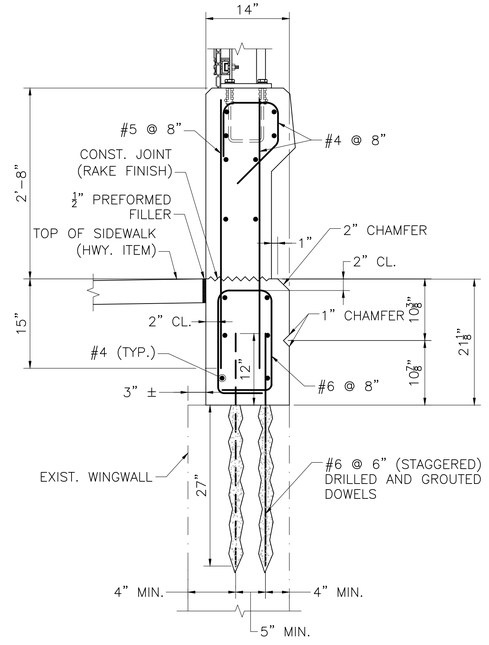
NOTES:

1. THE FACTORED BEARING PRESSURE = 10.21 (CANTILEVER) & 6.33 (GRAVITY) KSF AS PER AASHTO BRIDGE DESIGN SPECIFICATIONS STRENGTH 1 LOAD COMBINATION.
2. FACTORED BEARING RESISTANCE = 105.93 (CANTILEVER) & 86.67 (GRAVITY) KSF. FACTORED BEARING RESISTANCE IS THE PRODUCT OF THE NOMINAL BEARING RESISTANCE AND RESISTANCE FACTOR OF 0.55 (CANTILEVER) & 0.45 (GRAVITY).
3. PROPOSED CONSTRUCTION JOINTS SHALL BE AT THE EXISTING CONSTRUCTION JOINTS. DIMENSIONS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED.



WINGWALL ELEVATION – NORTHEAST WINGWALL

SCALE: ¼" = 1'-0"



TYPICAL WINGWALL CAP AT CP-PL2 BARRIER

SCALE: 1" = 1'-0"

ROADWAY/SIDEWALK SECTION NOTES:

1. PRIOR TO PLACEMENT OF GROUT AND REINFORCING STEEL, THE DRILL HOLES SHALL BE CLEANED AND PREPARED IN ACCORDANCE WITH THE CHOSEN GROUT MANUFACTURER'S WRITTEN SPECIFICATIONS.
2. FIELD CUT ENDS OF BARS SHALL BE TOUCHED UP WITH AN APPROVED EPOXY COATING PAINT.

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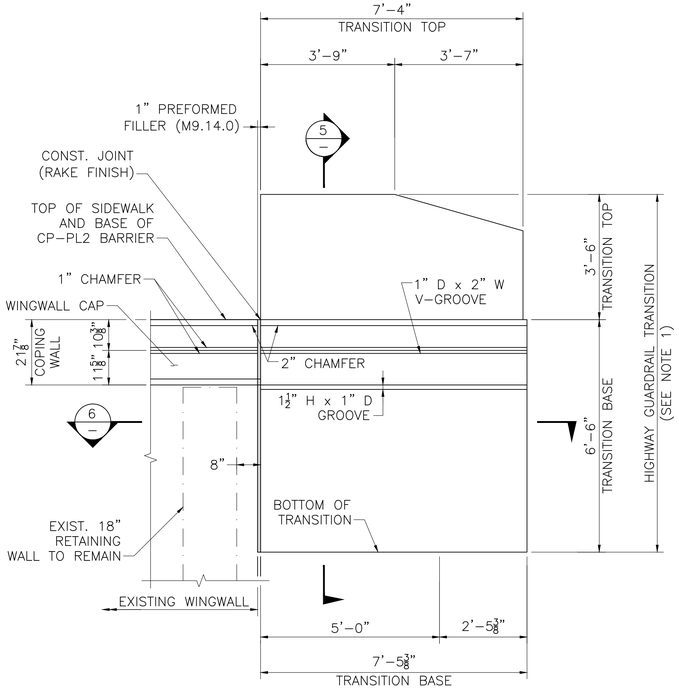
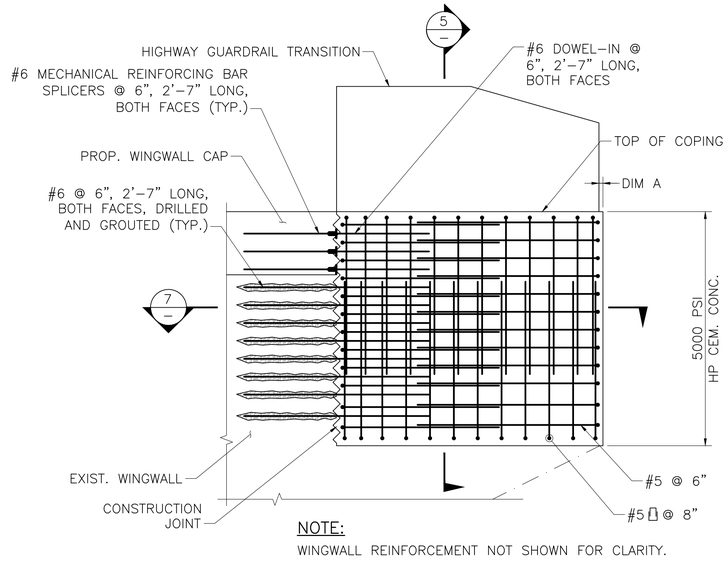
GUARDRAIL TRANSITION BASE DETAILS

HIGHWAY GUARDRAIL TRANSITION BASE LENGTH			
LOCATION	DIM A	DIM B	DIM C
SE, SW	$1\frac{3}{8}$"	7'–$5\frac{3}{8}$"	2'–$5\frac{3}{8}$"
NE	2'–4"	9'–8"	4'–8"



GUARDRAIL TRANSITION ELEVATION AT NORTHWEST CORNER

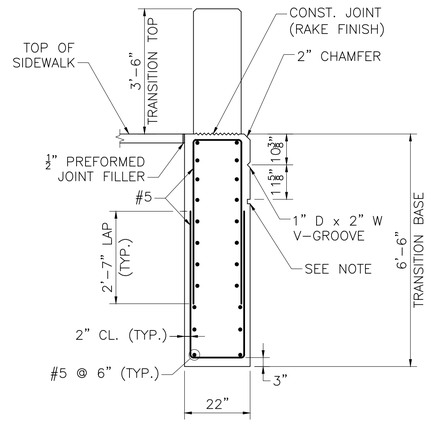
SCALE: ½" = 1'–0"



NOTE:
WINGWALL REINFORCEMENT NOT SHOWN FOR CLARITY.

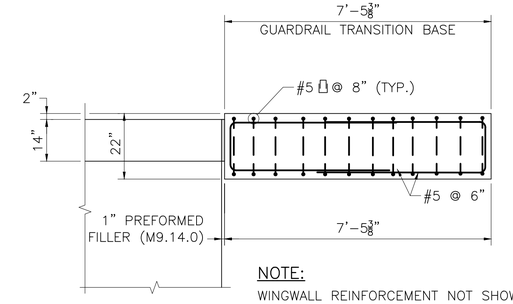
FLYING GUARDRAIL TRANSITION ELEVATION AT NORTHEAST, SOUTHEAST AND SOUTHWEST CORNER

SCALE: ½" = 1'–0"



NOTES:

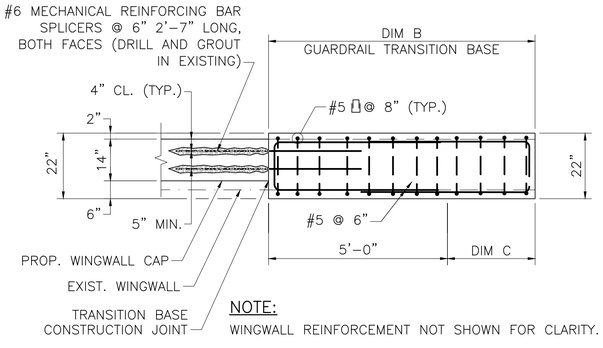
1. 1½" H x 1" D GROOVE. ALIGN WITH GROOVE AT TOP OF STRIATIONS.
2. REINFORCEMENT OF THE TRANSITION TOP IS NOT SHOWN FOR CLARITY.



NOTE:
WINGWALL REINFORCEMENT NOT SHOWN FOR CLARITY.

SECTION 6

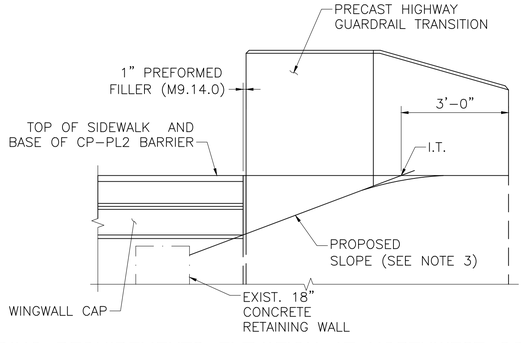
SCALE: ½" = 1'–0"



NOTE:
WINGWALL REINFORCEMENT NOT SHOWN FOR CLARITY.

SECTION 5

SCALE: ½" = 1'–0"

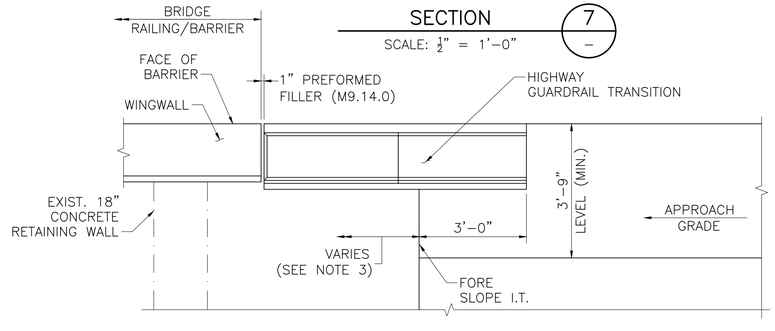


GRADING REQUIREMENTS ELEVATION AT NORTHWEST CORNER

SCALE: ½" = 1'–0"

NOTES:

1. GUARDRAIL TRANSITION SHALL BE 5000 PSI, ¾ IN, 685 HP CEMENT CONCRETE.
2. THE SOIL SHALL BE EXCAVATED TO THE GRADE OF 3" (MIN.) BELOW THE INTENDED BOTTOM OF THE GUARDRAIL TRANSITION BASE AND TO A HEIGHT OF 2'–0" (MIN.) ON ALL SIDES OF THE TRANSITION BASE TO FORM A TRENCH IN WHICH TO SET THE TRANSITION.
3. FOR PROPOSED SLOPE GRADE AT THE GUARDRAIL TRANSITIONS, SEE SHEETS 18, 19 AND 20.



GRADING REQUIREMENTS PLAN AT NORTHWEST CORNER

SCALE: ½" = 1'–0"

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DATE	DESCRIPTION

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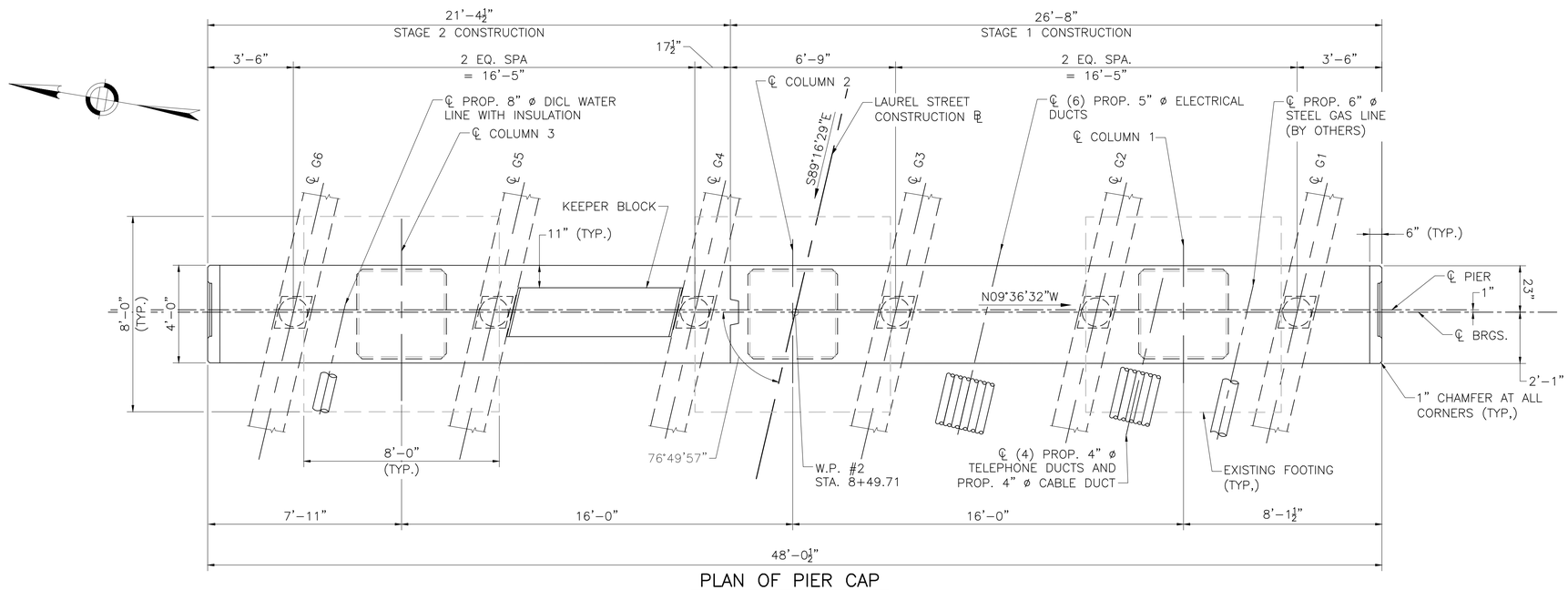
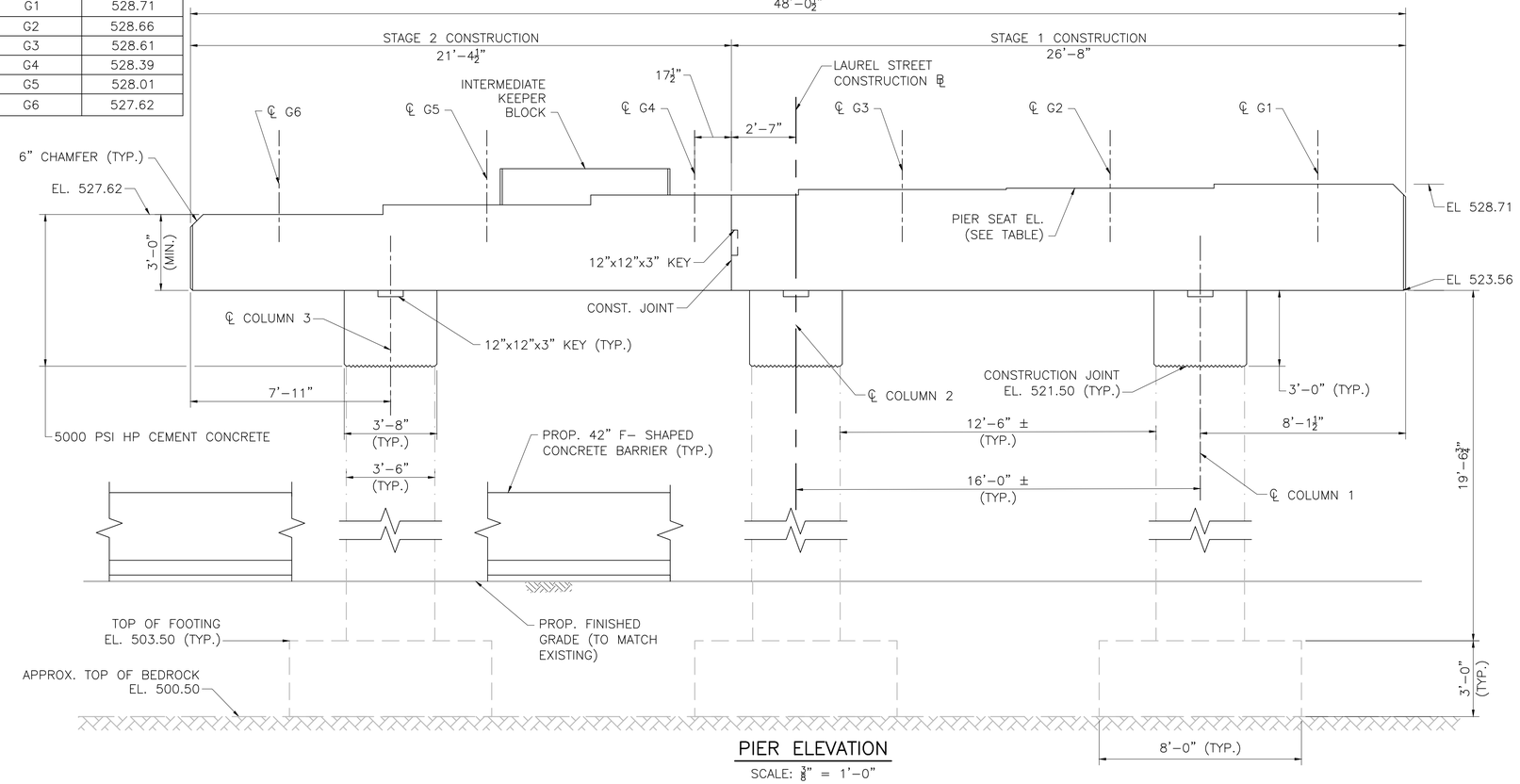


PLAN OF PIER CAP

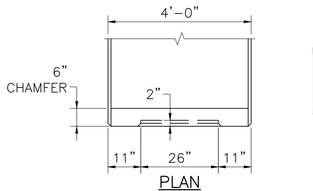
SCALE: ⅜" = 1'–0"

PIER SEAT ELEVATIONS	
G1	528.71
G2	528.66
G3	528.61
G4	528.39
G5	528.01
G6	527.62

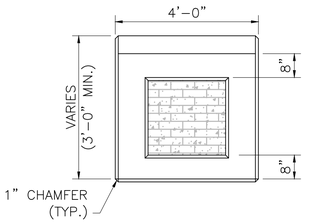


PIER ELEVATION

SCALE: ⅜" = 1'–0"



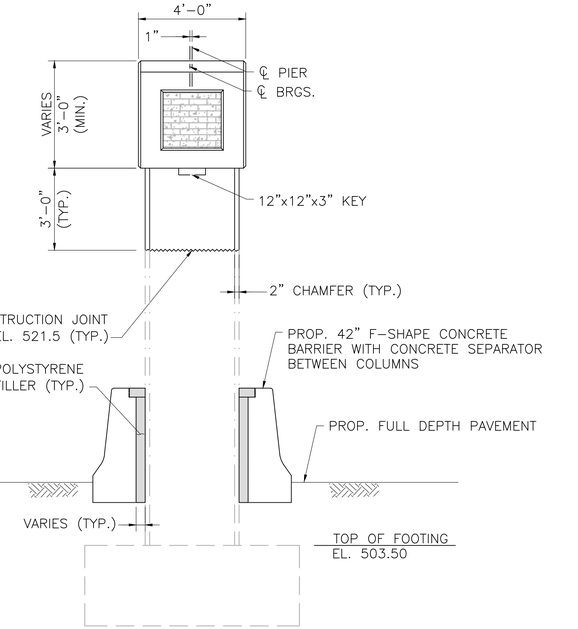
PLAN



ELEVATION

PIER CAP ENDS

SCALE: ½" = 1'–0"



PIER SIDE ELEVATION

SCALE: ⅜" = 1'–0"

WORCESTER
LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	145	169
	PROJECT FILE NO. 609185		

PIER PLAN AND ELEVATION

NOTES:

1. FOR BEARING LAYOUT AND DETAILS SEE SHEET 28.
2. THE FACTORED BEARING PRESSURE IS 11.70 KSF AS PER AASHTO STRENGTH I LOAD COMBINATION.
3. THE FACTORED BEARING RESISTANCE IS 86.7 KSF AND IS THE PRODUCT OF THE NOMINAL BEARING RESISTANCE AND A RESISTANCE FACTOR OF 0.45.

12/28/2024	ISSUED FOR CONSTRUCTION
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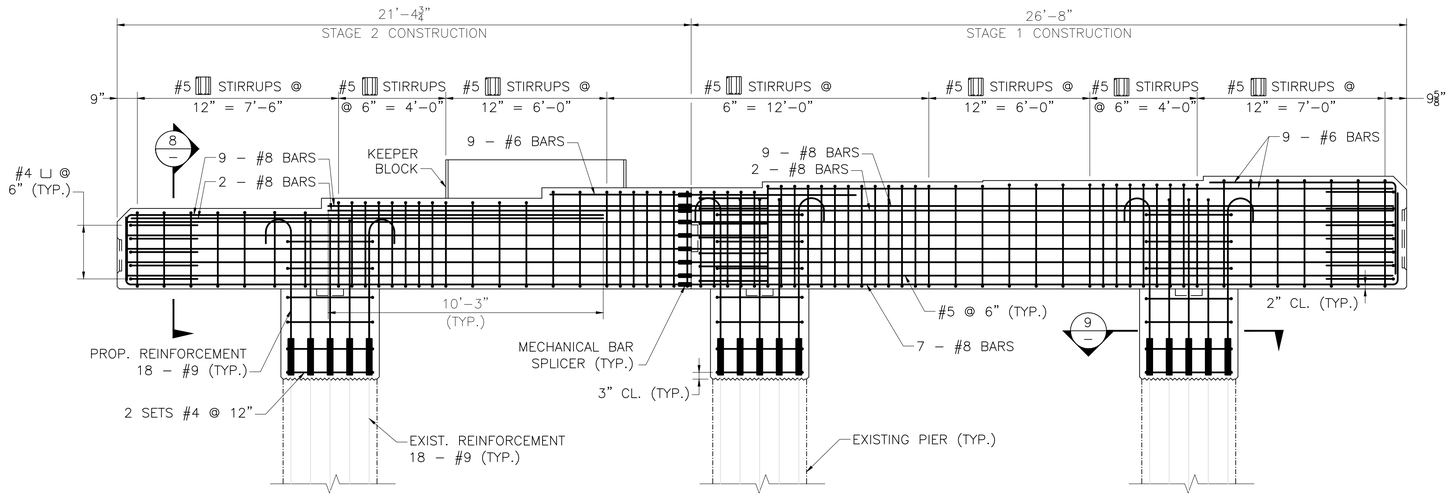
WORCESTER
LAUREL STREET OVER I-290

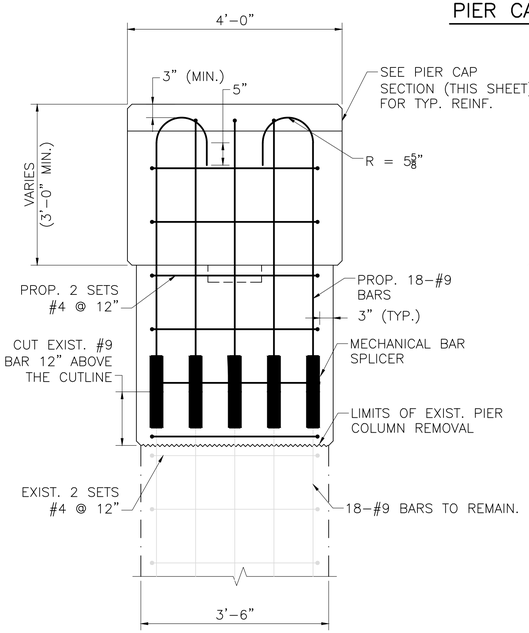
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	146	169
	PROJECT FILE NO. 609185		

PIER SECTIONS AND DETAILS



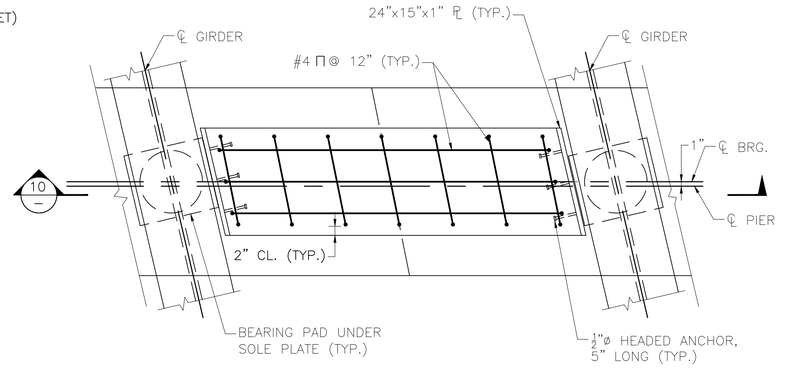
PIER CAP AND COLUMN ELEVATION – REINFORCEMENT DETAILS

SCALE: ⅜" = 1'–0"



PIER SIDE SECTION

SCALE: ¼" = 1'–0"

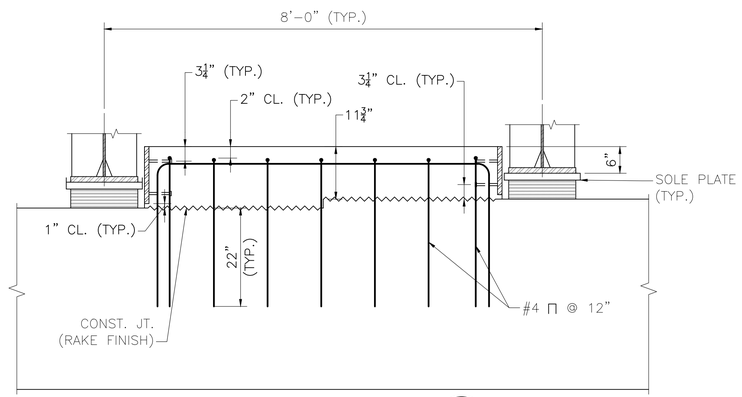


NOTES:

1. KEEPER BLOCKS SHALL BE CAST BEFORE BEAMS ARE SET.
2. STEEL PLATES EMBEDED IN KEEPER BLOCK SHALL BE HOT–DIP GALVANIZED.

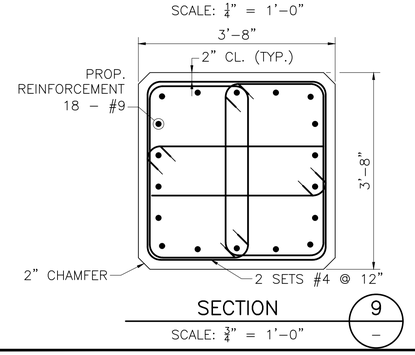
PLAN OF KEEPER BLOCK

SCALE: ¾" = 1'–0"



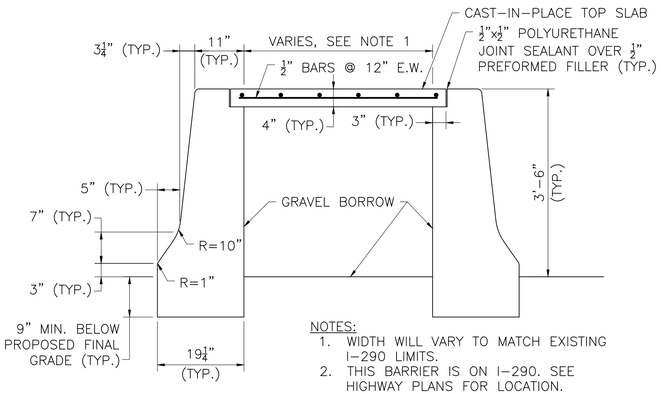
SECTION 10

SCALE: ¾" = 1'–0"



SECTION 9

SCALE: ¾" = 1'–0"

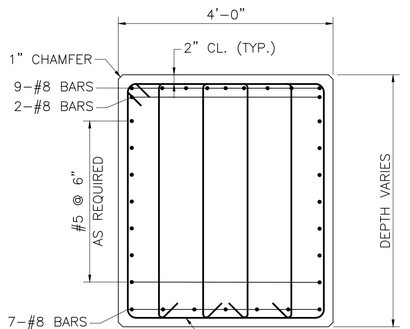


NOTES:

1. WIDTH WILL VARY TO MATCH EXISTING I–290 LIMITS.
2. THIS BARRIER IS ON I–290. SEE HIGHWAY PLANS FOR LOCATION.

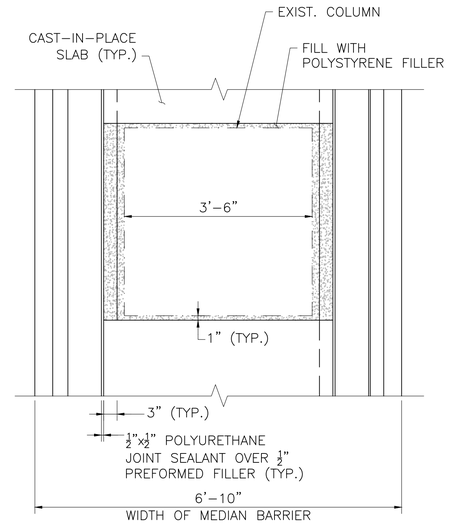
TYPICAL SECTION THRU F–SHAPE MEDIAN BARRIER WITH CONCRETE SEPARATOR (HIGHWAY ITEM)

SCALE: ¾" = 1'–0"



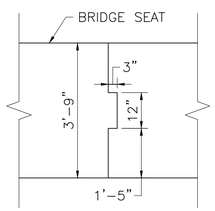
SECTION 8

SCALE: ¾" = 1'–0"



MEDIAN BARRIER AT PIER COLUMN PLAN

SCALE: ¾" = 1'–0"



SHEAR KEY DETAIL

SCALE: ½" = 1'–0"

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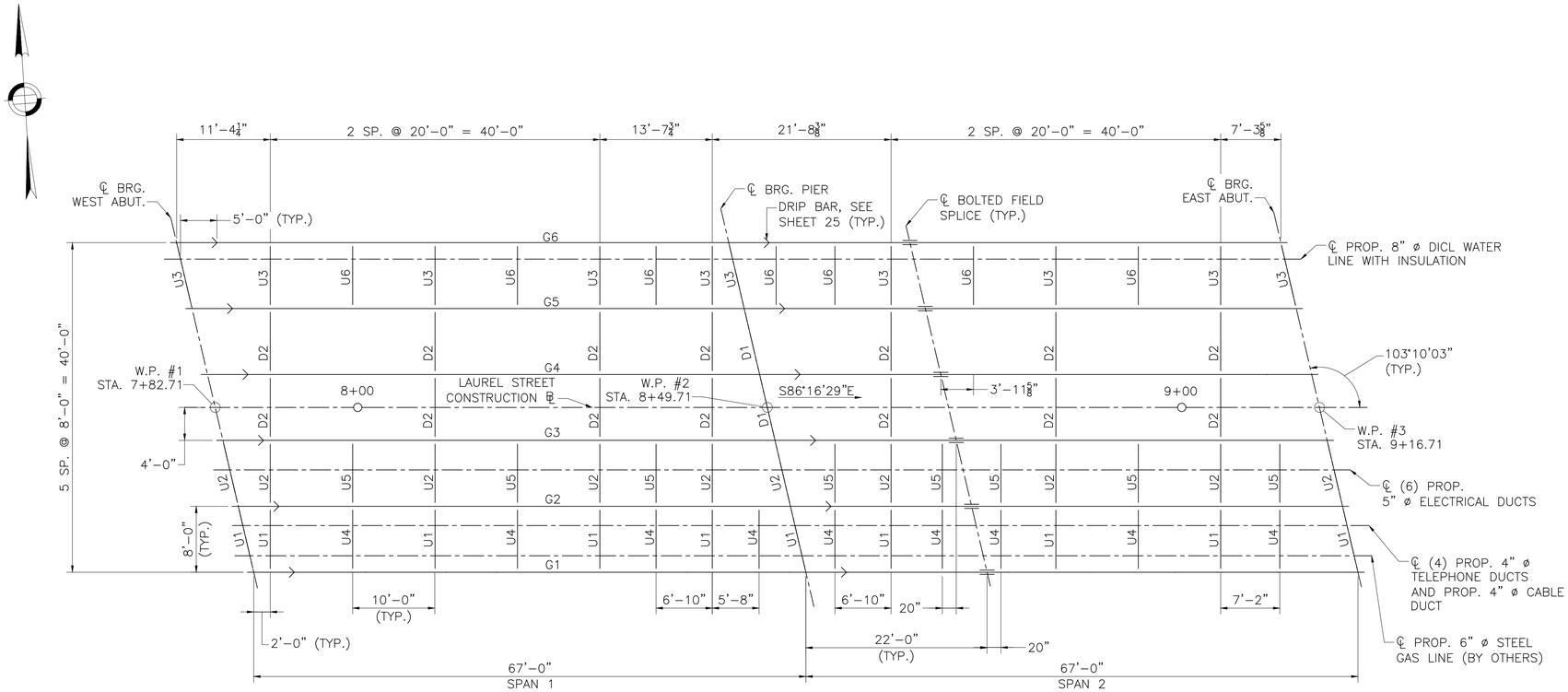
WORCESTER
LAUREL STREET OVER I-290

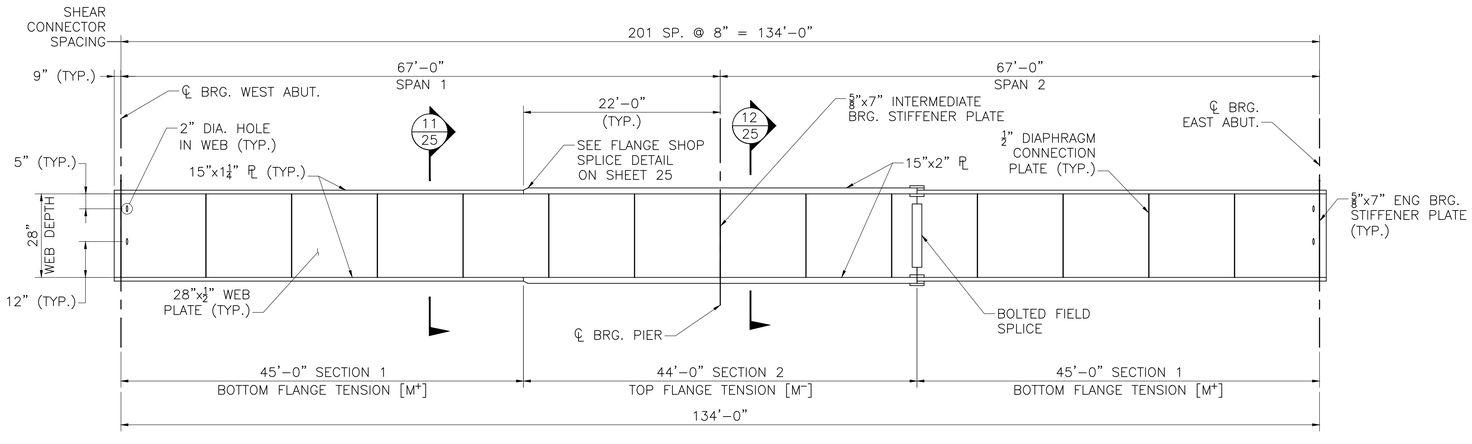
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	147	169
PROJECT FILE NO.	609185		

FRAMING PLAN AND TYPICAL GIRDER ELEVATION



FRAMING PLAN

SCALE: ⅛" = 1'-0"



TYPICAL GIRDER ELEVATION

HORZ. SCALE: ⅛" = 1'-0"
VERT. SCALE: ½" = 1'-0"

NOTES:

1. D1 = TYPICAL END DIAPHRAGM
   D2 = TYPICAL INTERMEDIATE DIAPHRAGM
   U1, U3 = TYPICAL UTILITY SUPPORT AT END AND INTERMEDIATE DIAPHRAGMS UNDER SIDEWALK
   U2= TYPICAL UTILITY SUPPORT AT END AND INTERMEDIATE DIAPHRAGMS UNDER ROADWAY
   U4, U5, U6 = TYPICAL UTILITY SUPPORT BETWEEN DIAPHRAGMS
2. SEE SHEET 27 FOR DIAPHRAGM AND UTILITY SUPPORT DETAILS.
3. THE MAIN LOAD CARRYING MEMBERS ARE PLATE GIRDERS G1 THROUGH G6.
4. ALL STEEL SHALL CONFORM TO AASHTO M 270 GRADE 50.
5. ALL STEEL SHALL BE METALIZED IN ACCORDANCE WITH THE SPECIAL PROVISIONS FOR ENVIRONMENTAL ZONE 3 WITH THE FOLLOWING EXCEPTION:

   DIAPHRAGMS AND UTILITY SUPPORTS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.
6. FASCIA GIRDERS (G1 AND G6) AND ALL ATTACHED PLATES EMBEDDED IN THE END DIAPHRAGM AND WITHIN 12 INCHES OF THE END DIAPHRAGM SHALL BE METALIZED AND PAINTED. ALL PAINTING SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, AND THE FINISH COAT COLOR SHALL BE ASM STANDARD 595A COLOR NUMBER 14223 OF THE FEDERAL STANDARD 595B.
7. HARDWARE FOR STRUCTURAL STEEL CONNECTIONS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M 232. FASTENERS OR OTHER HARDWARE ON THE EXTERIOR FACE OF THE FASCIA GIRDERS SHALL BE GALVANIZED AND PAINTED CONSISTENT WITH THE PROJECT'S COATING AND COLOR REQUIREMENTS FOR FASCIA GIRDERS. SURFACES OF HOT-DIP GALVANIZED COATED STEEL HARDWARE SHALL BE PREPARED FOR PAINTING IN ACCORDANCE WITH ASTM D6386.
8. ALL INTERMEDIATE STIFFENERS SHALL BE PERPENDICULAR TO THE WEB AND TO THE GIRDER FLANGES.
9. ALL BEARING STIFFENERS SHALL BE PLUMB.
10. ENDS OF GIRDERS SHALL BE FABRICATED SO THAT UNDER FULL DEAD LOAD THE ENDS WILL BE PLUMB.

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WORCESTER
LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	148	169
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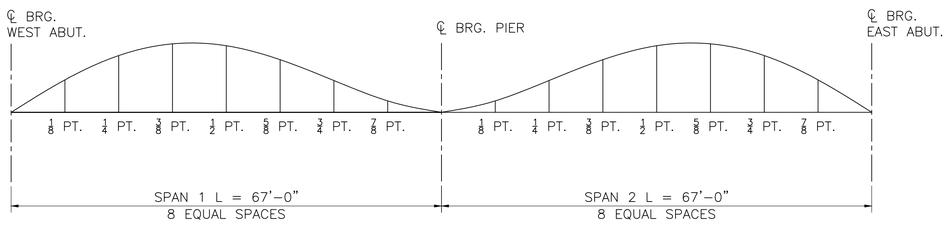
GIRDER DETAILS 1 OF 2

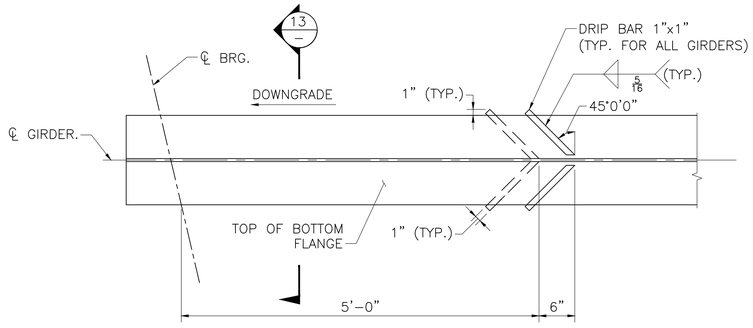
CAMBER TABLE (INCHES)

GIRDER NO.		SPAN 1								SPAN 2							
		℄ BRG. W. ABUT.	1/8 PT.	1/4 PT.	3/8 PT.	1/2 PT.	5/8 PT.	3/4 PT.	7/8 PT.	℄ BRG. PIER	1/8 PT.	1/4 PT.	3/8 PT.	1/2 PT.	5/8 PT.	3/4 PT.	7/8 PT.	℄ BRG. E. ABUT.
G1 & G6	STEEL DL DEFLECTION	0	0.081	0.141	0.168	0.161	0.122	0.070	0.022	0	0.025	0.077	0.132	0.170	0.176	0.146	0.084	0
	CONC. DL DEFLECTION	0	0.260	0.453	0.543	0.517	0.394	0.225	0.072	0	0.072	0.225	0.394	0.517	0.541	0.453	0.260	0
	S.D.L. DEFLECTION	0	0.151	0.265	0.317	0.305	0.235	0.136	0.044	0	0.044	0.136	0.235	0.305	0.318	0.265	0.151	0
	VERT. CURVE CAMBER	0	0.530	0.909	1.136	1.212	1.136	0.909	0.530	0	0.530	0.909	1.136	1.212	1.136	0.909	0.530	0
	ADDITIONAL CAMBER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL CAMBER	0	1.022	1.768	2.164	2.195	1.887	1.340	0.668	0	.671	1.347	1.897	2.204	2.171	1.773	1.025	0
G2–G5	STEEL DL DEFLECTION	0	0.080	0.139	0.167	0.160	0.122	0.070	0.061	0	0.025	0.076	0.130	0.168	0.175	0.144	0.082	0
	CONC. DL DEFLECTION	0	0.260	0.453	0.541	0.517	0.394	0.225	0.072	0	0.072	0.225	0.394	0.517	0.543	0.453	0.260	0
	S.D.L. DEFLECTION	0	0.076	0.133	0.158	0.152	0.118	0.068	0.021	0	0.021	0.068	0.118	0.152	0.158	0.133	0.076	0
	VERT. CURVE CAMBER	0	0.530	0.909	1.136	1.212	1.136	0.909	0.530	0	0.530	0.909	1.136	1.212	1.136	0.909	0.530	0
	ADDITIONAL CAMBER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL CAMBER	0	0.946	1.634	2.002	2.041	1.770	1.272	0.684	0	0.648	1.278	1.778	2.049	2.012	1.639	0.948	0



CAMBER DIAGRAM

NOT TO SCALE

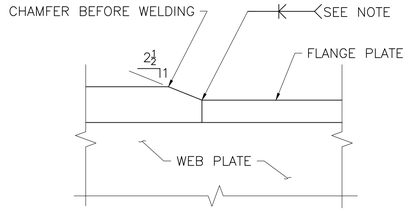


NOTE:

DRIP BARS SHALL BE LOCATED ON THE LOW END OF EACH SPAN FOR ALL GIRDERS.

DRIP BAR DETAIL

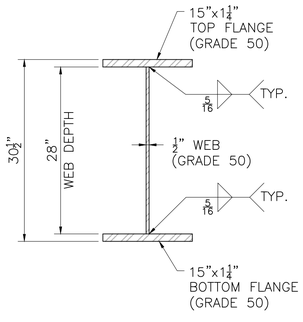
SCALE: 1" = 1'–0"



NOTE: ALL FLANGE SPLICE WELDS SHALL BE GROUND FLUSH ON BOTH SIDES. THE FINISH GRINDING SHALL BE PARALLEL TO THE DIRECTION OF STRESS.

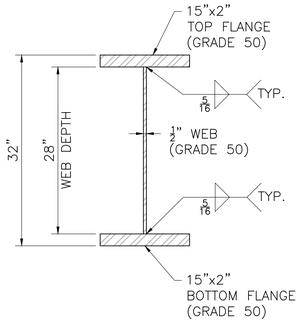
FLANGE SHOP SPLICE

SCALE: 3" = 1'–0"



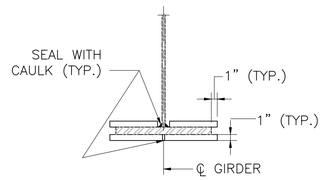
SECTION 11

SCALE: 1" = 1'–0"



SECTION 12

SCALE: 1" = 1'–0"



SECTION 13

SCALE: 1" = 1'–0"

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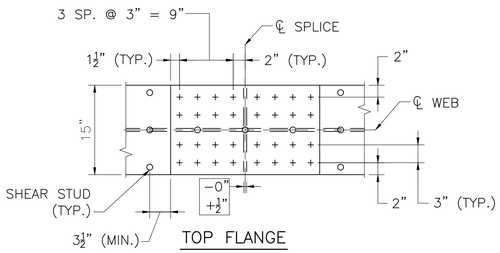
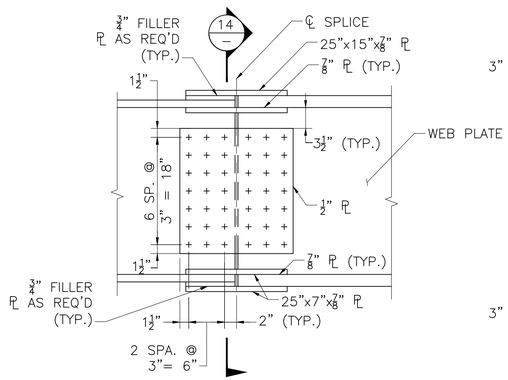
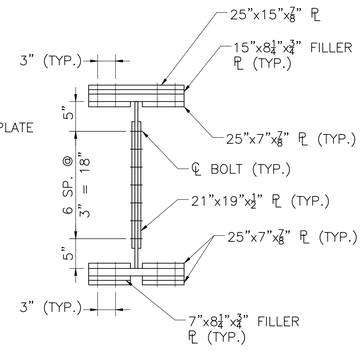


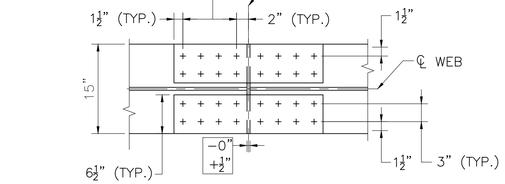
TOP FLANGE



ELEVATION



SECTION 14 — —



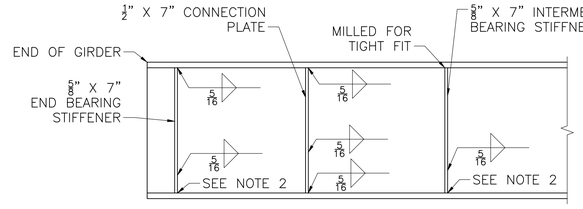
BOTTOM FLANGE

NOTES:

1. BOLTED FIELD SPLICES SHALL BE CONSIDERED SLIP CRITICAL CONNECTIONS WITH CLASS B FAYING SURFACES.
2. + DENOTES ⅞" ø ASTM A325 HIGH STRENGTH BOLT IN $1\frac{5}{16}$" ø HOLE.
3. FILLER PLATES SHALL CONFORM TO AASHTO M 270 GRADE 50 OR ASTM A606.
4. ONE ROW OF STUD SHEAR CONNECTORS, SPACED AT 6", SHALL BE PLACED ALONG THE CENTERLINE OF THE TOP FLANGE SPLICE PLATE.

BOLTED FIELD SPLICE DETAILS

SCALE: 1" = 1'−0"

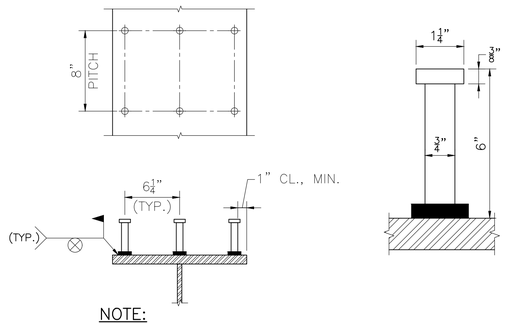


NOTES:

1. SEE CLIP DETAIL ON THIS SHEET.
2. BEARING STIFFENER PLATE AT BOTTOM FLANGE SHALL BE MILLED FOR TIGHT FIT AND WELDED WITH $\frac{5}{16}$" FILLET WELDS BOTH SIDES OF PLATE.

STIFFENER ATTACHMENT DETAILS

SCALE: ¾" = 1'−0"

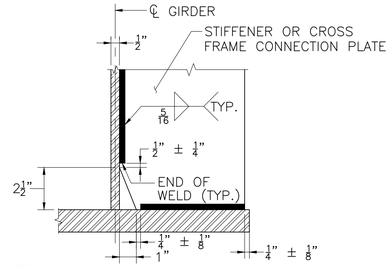


NOTE:

⅞" ø STUDS MAY BE SUBSTITUTED FOR ¾" ø STUDS BY ADJUSTING THE PITCH TO PROVIDE AN EQUIVALENT CROSS−SECTIONAL AREA PER FOOT.

STUD SHEAR CONNECTORS

NOT TO SCALE



NOTE:

AT STIFFENER LOCATIONS, MODIFY THE PLATE ATTACHMENT TO THE FLANGES AS SHOWN IN THE TYPICAL STIFFENER ATTACHMENTS THIS SHEET.

CLIP DETAIL

NOT TO SCALE

WORCESTER
LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	149	169
PROJECT FILE NO.	609185		

GIRDER DETAILS 2 OF 2

12/28/2024	ISSUED FOR CONSTRUCTION
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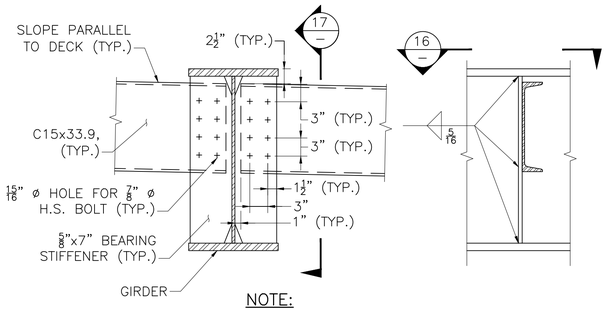
WORCESTER
LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	150	169
PROJECT FILE NO.	609185		

DIAPHRAGM AND UTILITY SUPPORT DETAILS

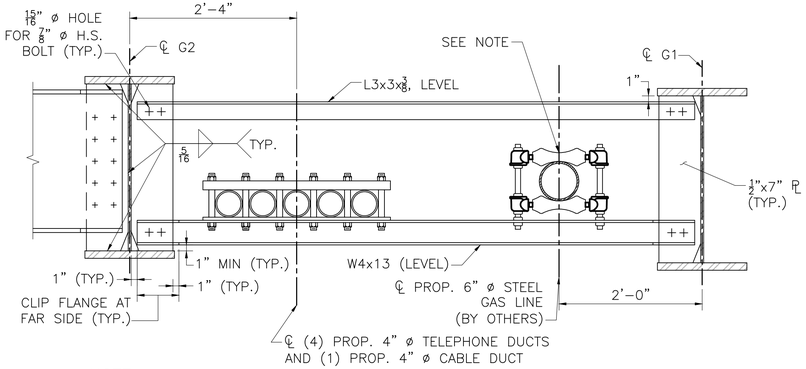


NOTE:
SEE CLIP DETAILS ON SHEET 26.

ELEVATION VIEW SECTION 17

D1 END DIAPHRAGM DETAILS

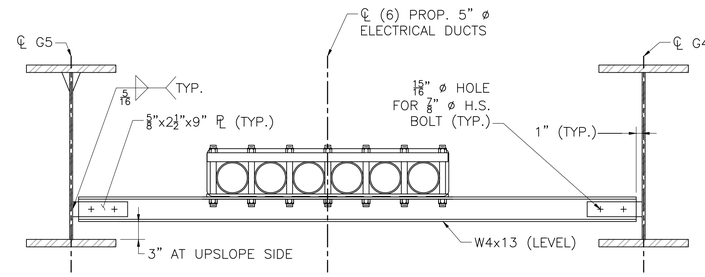
SCALE: 1" = 1'–0"



NOTE:
CONTRACTOR TO INSTALL BRACKETS AND ROLLERS (PER EVERSOURCE SPECIFICATIONS) FOR GAS LINE. EVERSOURCE TO INSTALL PIPE WITH SUPPORT OF MASSDOT CONTRACTOR. EVERSOURCE GAS TO SUPPLY BRACKETS, ROLLERS, PIPE, AND CASING END SEALS.

U1 END AND INTERMEDIATE UTILITY SUPPORT DETAILS AT DIAPHRAGMS UNDER SIDEWALK

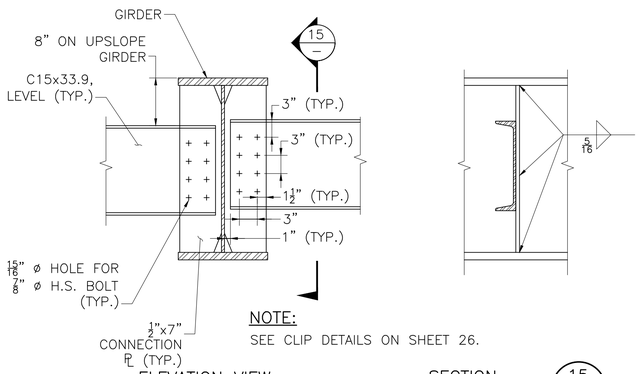
SCALE: 1" = 1'–0"



NOTE:
UTILITY SUPPORT DIAPHRAGM U5 SHOWN. UTILITY SUPPORT BETWEEN DIAPHRAGMS U1 AND U3 SIMILAR.

U4, U5 AND U6 UTILITY SUPPORT DETAILS BETWEEN DIAPHRAGMS

SCALE: 1" = 1'–0"

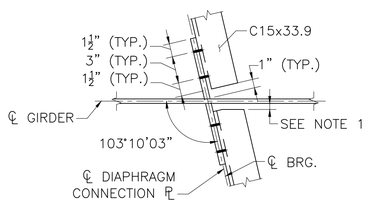


NOTE:
SEE CLIP DETAILS ON SHEET 26.

ELEVATION VIEW SECTION 15

D2 INTERMEDIATE DIAPHRAGM DETAILS

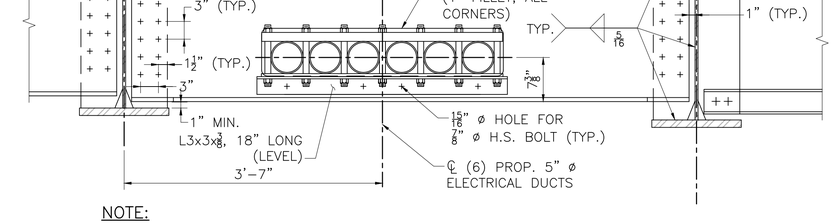
SCALE: 1" = 1'–0"



NOTE:
1. FLANGE OF CHANNEL MAY BE CLIPPED TO AVOID INTERFERENCE WITH WEB.

SECTION 16

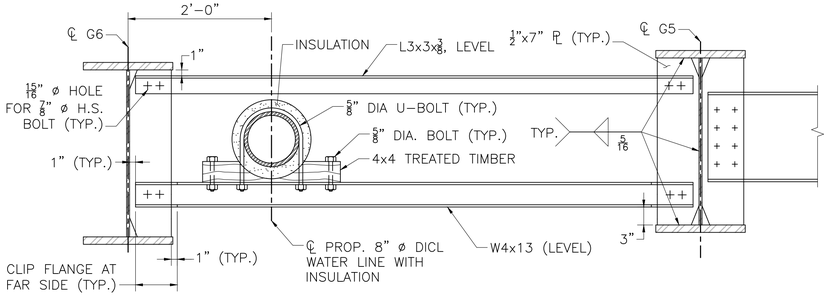
SCALE: 1½" = 1'–0"



NOTE:
CONTRACTOR TO COORDINATE WITH UTILITY COMPANY FOR UTILITY HANGER SPECIFICATIONS.

U2 END AND INTERMEDIATE UTILITY SUPPORT DETAILS AT DIAPHRAGMS UNDER ROADWAY

SCALE: 1" = 1'–0"



U3 END AND INTERMEDIATE UTILITY SUPPORT DETAILS AT DIAPHRAGMS UNDER SIDEWALK

SCALE: 1" = 1'–0"

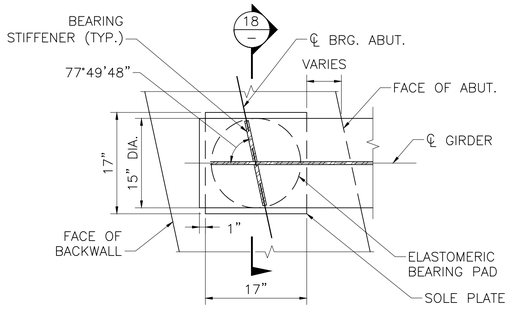
DATE	DESCRIPTION
12/28/2024	ISSUED FOR CONSTRUCTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

WORCESTER
LAUREL STREET OVER I-290

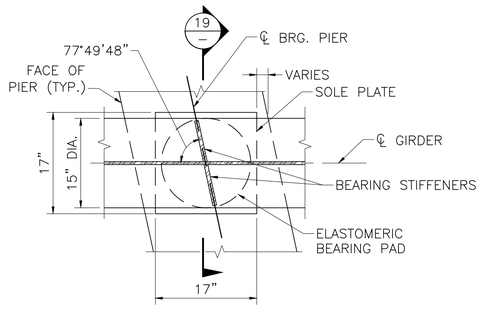
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	151	169
	PROJECT FILE NO. 609185		

BEARING DETAILS



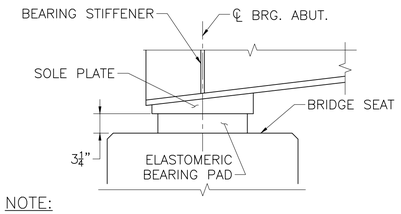
BEARING PLAN AT ABUTMENT

SCALE: 1" = 1'–0"



BEARING PLAN AT PIER

SCALE: 1" = 1'–0"

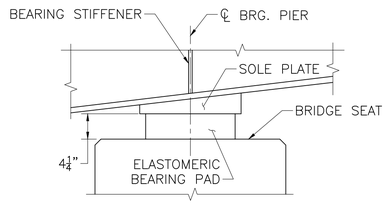


NOTE:

WEST ABUTMENT SHOWN, EAST ABUTMENT SIMILAR.

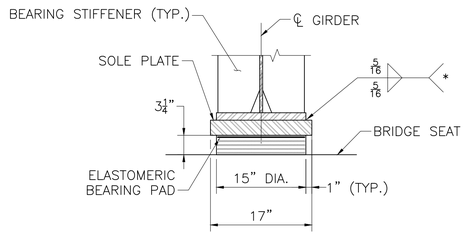
BEARING ELEVATION AT ABUTMENT

SCALE: 1" = 1'–0"



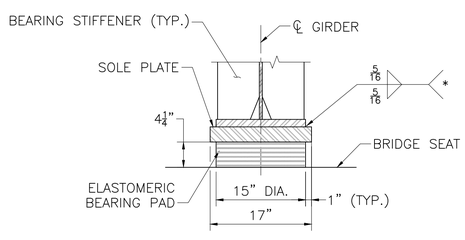
BEARING ELEVATION AT PIER

SCALE: 1" = 1'–0"



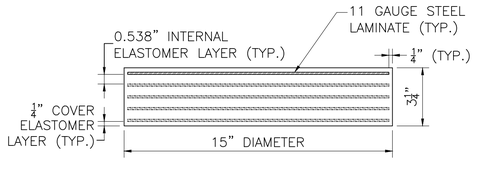
(*) – WELDS SHALL TERMINATE ¼" FROM EDGE OF PLATE.

SECTION 18 — SCALE: 1" = 1'–0"



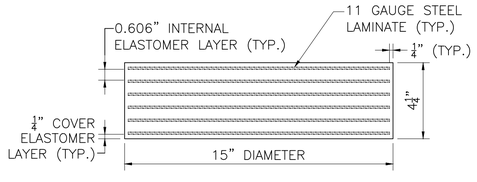
(*) – WELDS SHALL TERMINATE ¼" FROM EDGE OF PLATE.

SECTION 19 — SCALE: 1" = 1'–0"



ELASTOMETRIC BEARING PAD AT ABUTMENT

SCALE: 3" = 1'–0"

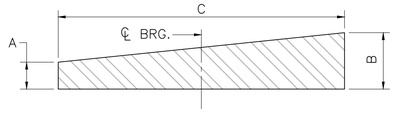


ELASTOMETRIC BEARING PAD AT PIER

SCALE: 3" = 1'–0"

BEARING NOTES:

1. ELASTOMER SHALL HAVE A SHEAR MODULUS OF 0.160 KSI.
2. STEEL LAMINATES SHALL CONFORM TO ASTM A 1011 GRADE 36.
3. THE COMPRESSIVE DESIGN LOAD ON THE ABUTMENT BEARING PAD IS 107.33 KIPS. THE COMPRESSIVE DESIGN STRESS IS THE RESULT OF DIVIDING THE COMPRESSIVE DESIGN LOAD BY THE AREA OF THE PAD AND IS EQUAL TO 0.152 KSI.
4. THE COMPRESSIVE DESIGN LOAD ON THE PIER BEARING PAD IS 262.45 KIPS. THE COMPRESSIVE DESIGN STRESS IS THE RESULT OF DIVIDING THE COMPRESSIVE DESIGN LOAD BY THE AREA OF THE PAD AND IS EQUAL TO 0.371 KSI.
5. ELASTOMERIC BEARING PAD SHALL NOT BE VULCANIZED TO THE SOLE PLATE.
6. STEEL SOLE PLATE SHALL CONFORM TO AASHTO M 270 GRADE 36 AND SHALL BE HOT–DIP GALVANIZED.
7. CENTER THE ELASTOMERIC PAD UNDER THE SOLE PLATE DURING BEAM ERECTION.
8. BEAMS SHALL BE ERECTED WHEN THE AMBIENT TEMPERATURE IS BETWEEN 50 °F AND 77 °F. IF BEAMS ARE ERECTED AT OTHER AMBIENT TEMPERATURES, THEY WILL HAVE TO BE JACKED AND THE ELASTOMERIC BEARINGS RECENTERED WHEN THE TEMPERATURE RETURNS TO THAT RANGE.



BEVELED SOLE PLATE THICKNESS			
LOCATION	A	B	C
WEST ABUT.	1½"	3⅝"	17"
PIER	1½"	3⅜"	17"
EAST ABUT.	1½"	3⅜"	17"

SOLE PLATE DETAIL

SCALE: 3" = 1'–0"

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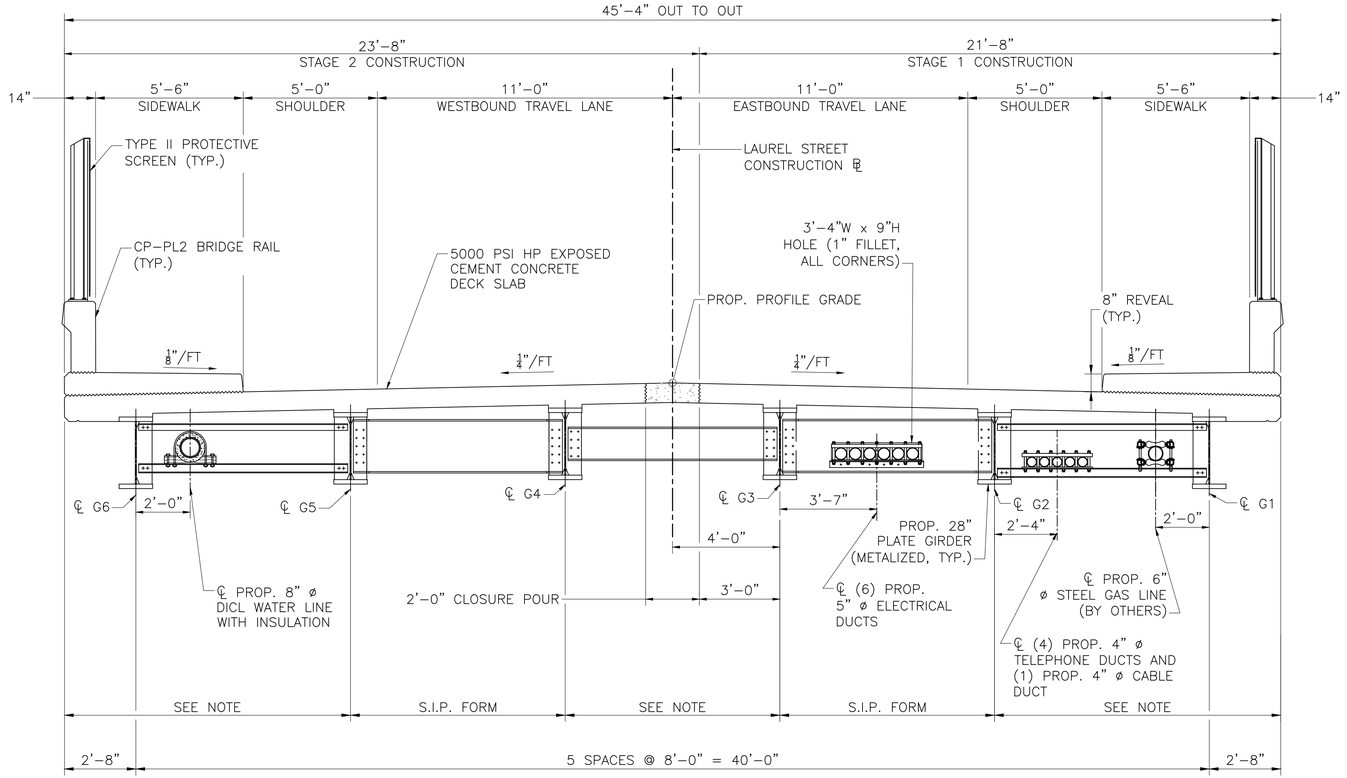
WORCESTER
LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	152	169
	PROJECT FILE NO. 609185		

TRANSVERSE BRIDGE AND SIDEWALK SECTIONS

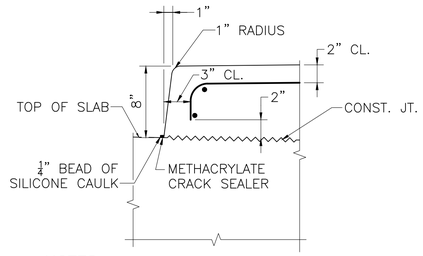


NOTE:

USE REMOVABLE FORM IN THESE BAYS

TYPICAL TRANSVERSE SECTION

SCALE: ⅜" = 1'–0"

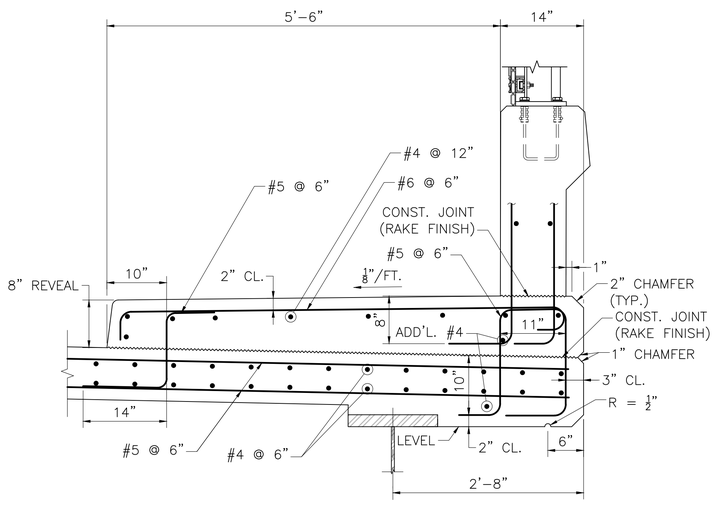


NOTES:

1. METHACRYLATE CRACK SEALER SHALL BE APPLIED AFTER SIDEWALK CURING PERIOD IS COMPLETE AND IN ACCORDANCE WITH REQUIREMENTS OF MANUFACTURER AND THE STANDARD SPECIFICATIONS.
2. BEFORE SEALING, THE CONCRETE AT THE INTERFACE OF DECK AND CURB SHALL BE SWEPT CLEAN AND BLOWN OFF USING OIL FREE COMPRESSED AIR IMMEDIATELY PRIOR TO APPLYING THE SEALER.
3. APPLY ¼" HIGH BEAD OF SILICONE CAULKING COMPOUND ABOUT ¼" FROM THE FACE OF CURB.
4. METHACRYLATE SHALL THEN BE POURED INTO THE ¼" WIDE GAP BETWEEN THE FACE OF CURB AND THE BEAD OF CAULK.
5. CURB AT SIDEWALK SHOWN.

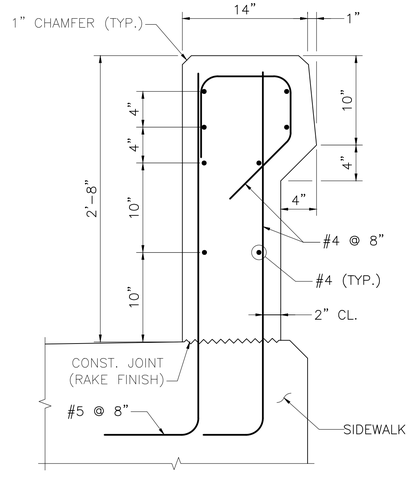
FACE OF CURB DETAILS

SCALE: 1½" = 1'–0"



SECTION THRU SIDEWALK

SCALE: 1" = 1'–0"

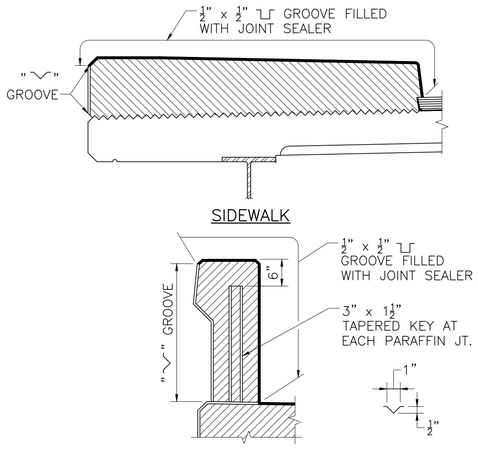


NOTE:

FOR SIDEWALK REINFORCEMENT SEE SECTION THRU SIDEWALK.

SECTION THRU CP–PL2 BARRIER AT SIDEWALK

SCALE: 1½" = 1'–0"



PARAFFIN JOINT NOTES:

1. ALL CONCRETE ABOVE SLAB SHALL BE POURED IN ALTERNATING SECTIONS WITH NOT LESS THAN 3 DAYS BETWEEN POURS.
2. DO NOT CARRY LONGITUDINAL BARS THROUGH THE PARAFFIN JOINTS. END THE REINFORCEMENT 2" CLEAR OF JOINT.
3. JOINT SHALL BE SQUARE TO FACE OF CURB

PARAFFIN JOINT DETAILS

SCALE: ¾" = 1'–0"

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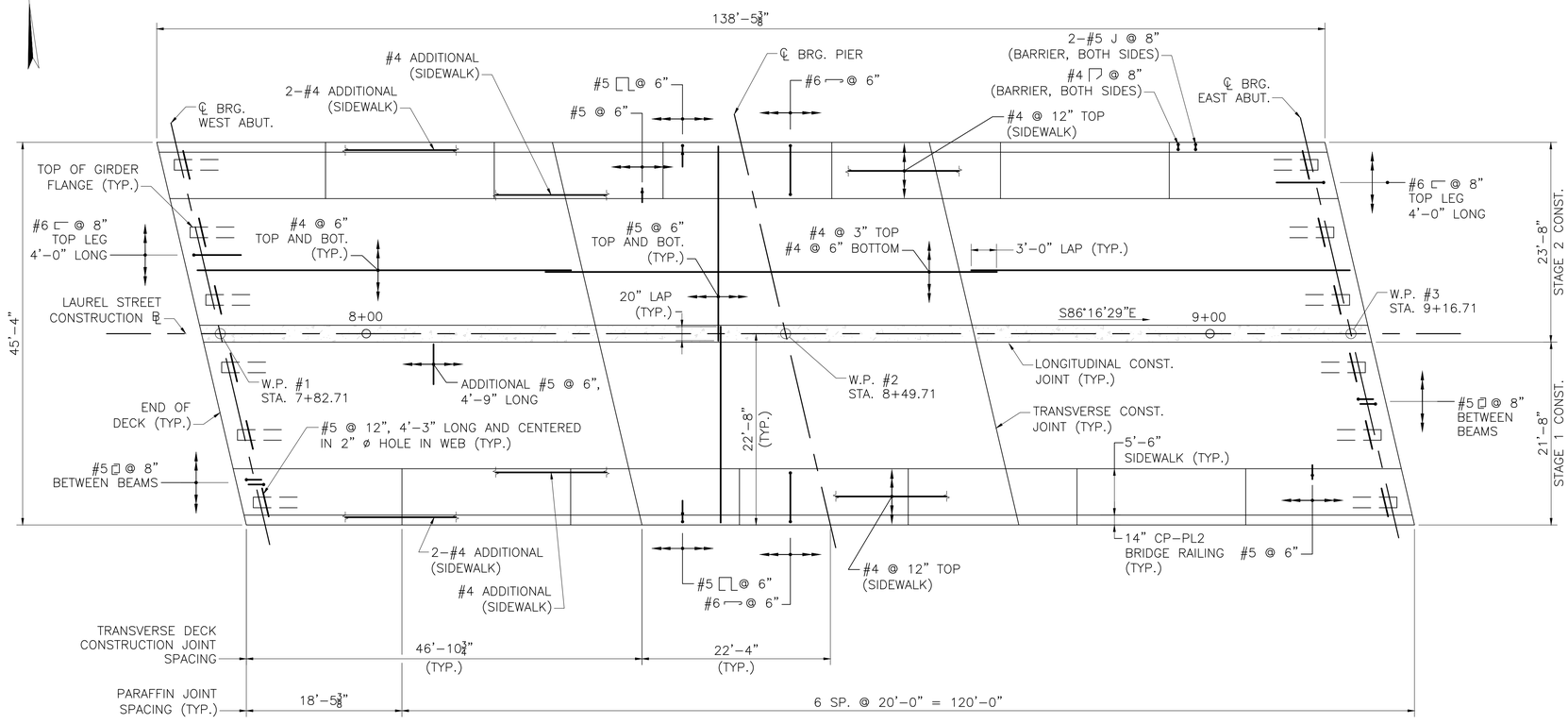
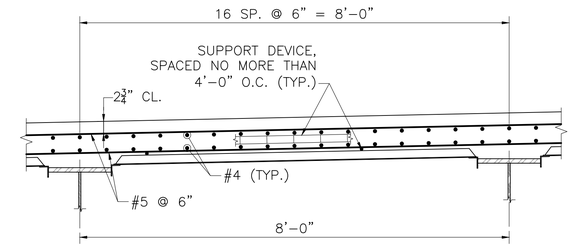
DECK PLAN



DECK PLAN

SCALE: ⅛" = 1'–0"

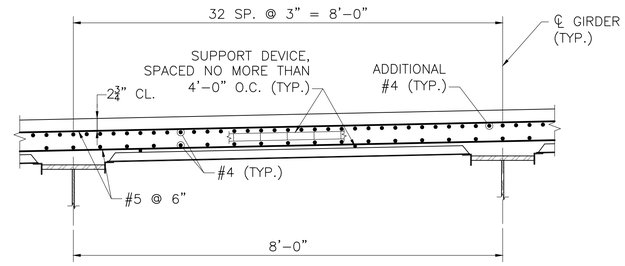


NOTE:

1. ROADWAY DECK SLAB SHALL BE 5000 PSI HP CEMENT CONCRETE.
2. LONGITUDINAL REINFORCEMENT SHALL BE PLACED PARALLEL TO THE ℄ OF CONSTRUCTION. TRANSVERSE (PRIMARY) REINFORCEMENT SHALL BE PLACED PERPENDICULAR TO THE ℄ OF CONSTRUCTION.
3. ALL REINFORCEMENT AND SUPPORT DEVICES SHALL BE COATED.
4. BRIDGE DECK SHALL BE GROOVED TRANSVERSELY USING MULTI–BLADED SELF–PROPELLED SAWCUTTING EQUIPMENT.

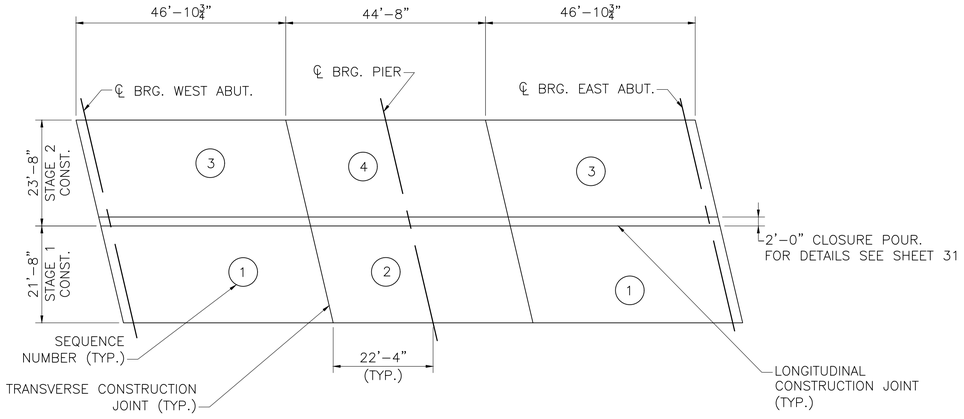
TYPICAL DECK REINFORCEMENT

SCALE: ¾" = 1'–0"



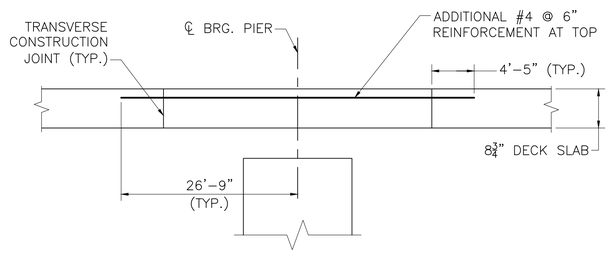
TYPICAL DECK REINFORCEMENT AT PIER

SCALE: ¾" = 1'–0"



SUGGESTED DECK POURING SEQUENCE

NOT TO SCALE



SECTION AT PIER

NOT TO SCALE

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WORCESTER
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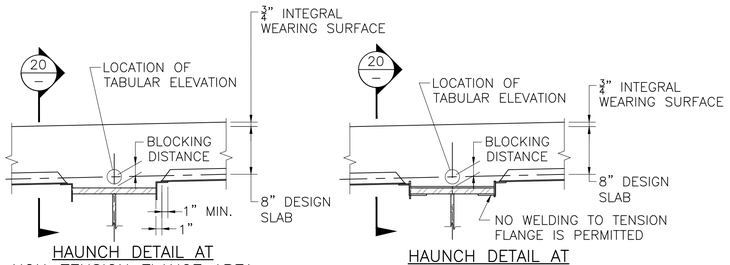
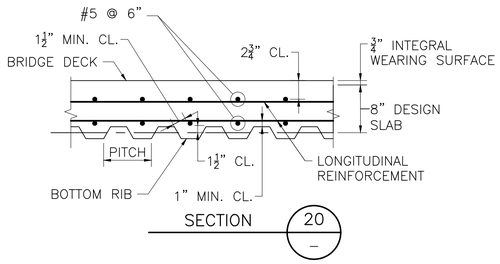
DECK DETAILS



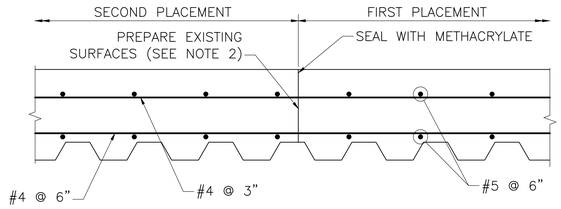
HAUNCH DETAIL AT NON–TENSION FLANGE AREA

HAUNCH DETAIL AT TENSION FLANGE AREA



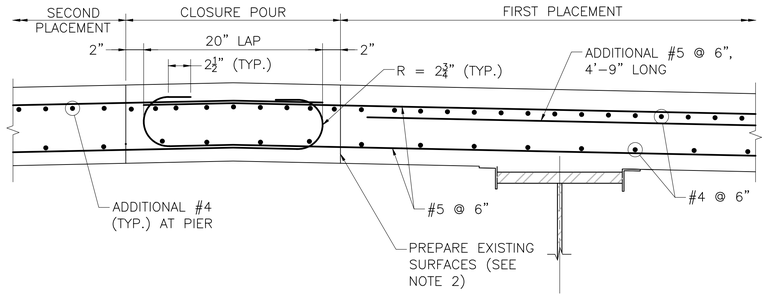
STAY–IN–PLACE FORM DETAILS

SCALE: 1" = 1'–0"



TRANSVERSE CONSTRUCTION JOINT DETAIL IN DECK SLAB

SCALE: 1½" = 1'–0"



LONGITUDINAL CONSTRUCTION JOINT DETAIL IN DECK SLAB

SCALE: 1½" = 1'–0"

CONSTRUCTION JOINT NOTES:

1. BRIDGE DECK SLAB SHALL BE PLACED IN ACCORDANCE WITH THE PLACEMENT SEQUENCE SHOWN ON THE PLANS. POSITIVE MOMENT REGIONS SHALL BE PLACED PRIOR TO NEGATIVE MOMENT REGIONS AND A MINIMUM OF 72 HOURS SHALL PASS BETWEEN PLACEMENTS.
2. THE SURFACE OF THE PREVIOUSLY CAST CONCRETE SHALL BE BLAST CLEANED, ROUGHENED, WETTED WITH CLEAN WATER, AND THEN FLUSHED WITH A MORTAR COMPOSED OF EQUAL PARTS OF THE CEMENT AND SAND SPECIFIED FOR THE NEW CONCRETE, BEFORE NEW CONCRETE IS PLACED ADJACENT THERETO. NEW CONCRETE SHALL BE PLACED BEFORE MORTAR HAS TAKEN INITIAL SET.
3. IN LIEU OF THE MORTAR, AN EPOXY ADHESIVE SUITABLE FOR BONDING FRESH CONCRETE TO HARDENED CONCRETE FOR LOAD BEARING APPLICATIONS MAY BE USED. THE EPOXY ADHESIVE SHALL CONFORM TO AASHTO M 235 TYPE V AND SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
4. THE CONTRACTOR MAY SUBMIT A PROPOSAL DETAILING THE ELIMINATION OF THE CLOSURE POUR FOR THE APPROVAL OF THE ENGINEER. THE PROPOSAL SHALL DETAIL THE CONTRACTOR'S MEANS AND METHODS FOR ACCURATELY CONSTRUCTING THE DECK SLAB TO THE LINES, GRADES, AND THICKNESS SHOWN ON THE PLANS WITHOUT LEAKAGE OF CONCRETE.
5. DOWEL BAR SPLICERS SHALL BE USED WHERE USE OF LAP SPLICES IS NOT FEASIBLE.

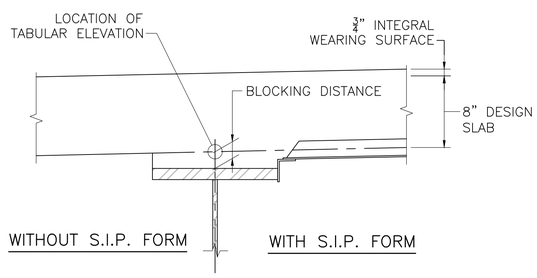
STAY–IN–PLACE FORM NOTES:

1. FOR 2" S.I.P. FORM, SET BOTTOM OF FORM 1" BELOW ELEVATION GIVEN IN TABLE. FOR 3" S.I.P. FORM, SET BOTTOM OF FORM 1½" BELOW TABLE ELEVATIONS.
2. FORM ENDS SHALL BE CRIMPED CLOSED IN A TAPERED MANNER. SEPARATE END CLOSURE PIECES WILL NOT BE ALLOWED.
3. SUPPORT ANGLES SHALL BE PLACED IN THE "LEG DOWN" POSITION WHERE POSSIBLE. WHERE "LEG UP" POSITION IS NECESSARY, THE UPPER MOST PORTION OF THE ANGLE SHALL NOT PROJECT MORE THAN 1" ABOVE THE TOP FLANGE OR COVER PLATE. THE CONTRACTOR SHALL HAVE AN ASSORTMENT OF ANGLES OF VARIOUS SIZES AVAILABLE ON THE SITE TO CONFORM TO THIS REQUIREMENT.
4. ALL MAIN STEEL REINFORCEMENT IN THE LOWER MAT SHALL BE CENTERED OVER THE VALLEY OF THE S.I.P. FORM.
5. CONTRACTOR SHALL DESIGN AND DETAIL ALL ELEMENTS OF THE FORMING SYSTEM AND SHALL SUBMIT TO THE ENGINEER FOR APPROVAL.
6. IN CASES WHERE STANDARD 2" OR 3" DEEP S.I.P. FORMS DO NOT SATISFY DESIGN REQUIREMENTS AN ALTERNATIVE FORMING SYSTEM CONSISTING OF DEEPER S.I.P. FORMS OR REMOVABLE FORMS SHALL BE DESIGNED AND DETAILED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR APPROVAL. THE DESIGN THICKNESS OF THE SLAB SHALL NOT BE REDUCED.

GIRDER NO.	TOP OF FORM ELEVATIONS FOR DECK SLAB PRIOR TO PLACEMENT OF CONCRETE																
	SPAN 1 INCREASING STATIONS →								SPAN 2 INCREASING STATIONS →								
	℄ BRGS. W. ABUT.	1/8L	1/4L	3/8L	1/2L	5/8L	3/4L	7/8L	℄ BRGS. PIER	1/8L	1/4L	3/8L	1/2L	5/8L	3/4L	7/8L	℄ BRGS. E. ABUT.
G1	523.91	525.01	526.08	527.13	528.15	529.15	530.13	531.10	532.07	533.04	534.01	534.97	535.91	536.82	537.71	538.57	539.42
G2	523.84	524.93	526.01	527.06	528.08	529.09	530.07	531.05	532.02	532.99	533.96	534.92	535.86	536.78	537.67	538.54	539.39
G3	523.76	524.86	525.94	526.99	528.02	529.03	530.01	530.99	531.97	532.94	533.91	534.87	535.82	536.74	537.63	538.51	539.36
G4	523.52	524.62	525.70	526.76	527.79	528.80	529.79	530.77	531.75	532.73	533.70	534.66	535.61	536.53	537.43	538.31	539.16
G5	523.11	524.22	525.30	526.36	527.39	528.41	529.40	530.38	531.36	532.34	533.32	534.29	535.24	536.16	537.07	537.94	538.80
G6	522.71	523.81	524.90	525.96	527.00	528.01	529.01	529.99	530.98	531.96	532.94	533.91	534.87	535.80	536.70	537.58	538.44

NOTE:

AFTER THE BEAMS ARE ERECTED BUT BEFORE THE FORMS ARE BUILT, ELEVATIONS ON TOP OF THE FLANGE OF THE BEAMS ARE TO BE OBTAINED AT THE POINTS INDICATED IN THE TABLE. THE DIFFERENCE BETWEEN THE ELEVATIONS OBTAINED AND THOSE SHOWN IN THE TABLE GIVES THE ACTUAL BLOCKING DISTANCE FROM THE TOP OF BEAM TO THE BOTTOM OF THE SLAB AT CENTER LINE OF BEAM.



HAUNCH DETAIL

TOP OF FORM DETAILS

NOT TO SCALE

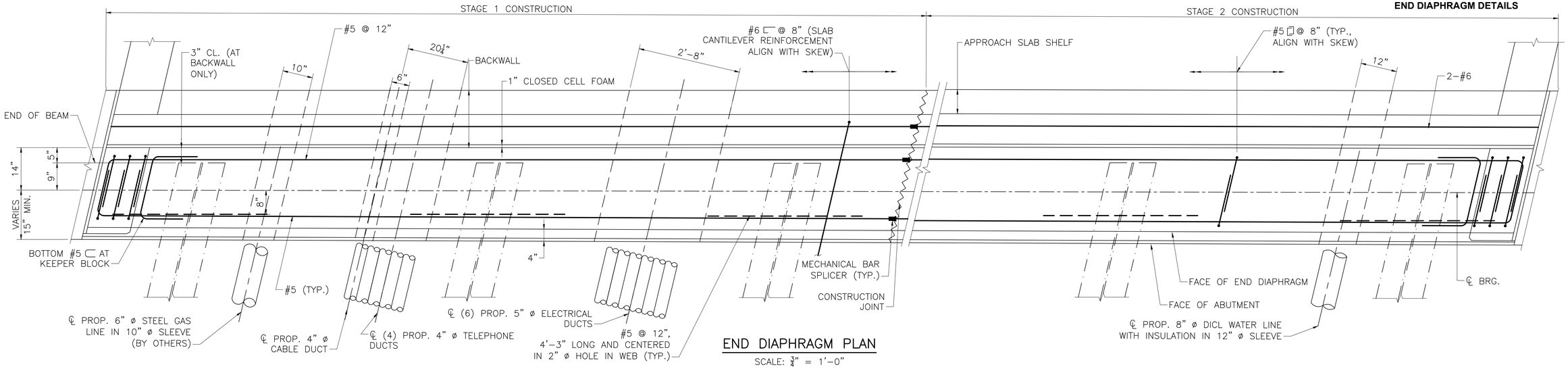
DATE	DESCRIPTION
12/28/2024	ISSUED FOR CONSTRUCTION

THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE

WORCESTER
LAUREL STREET OVER I-290

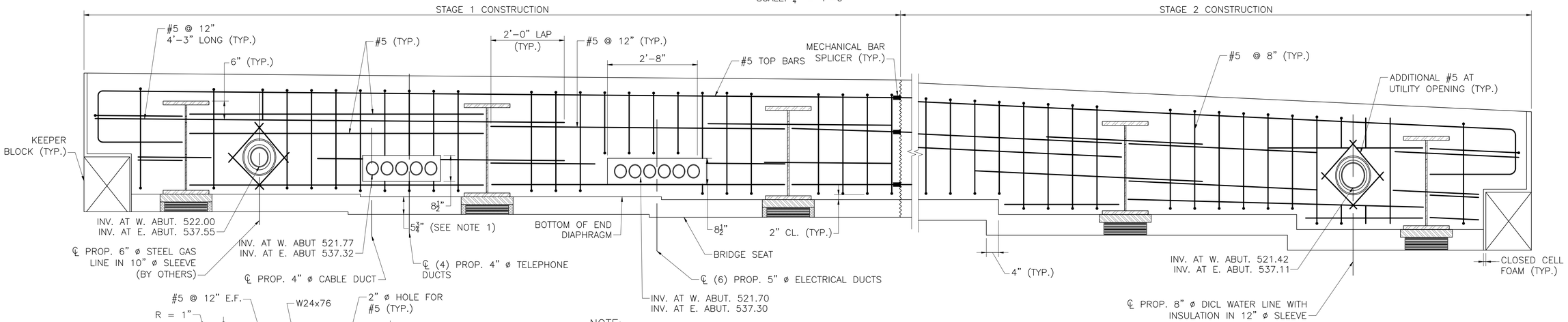
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	155	169
PROJECT FILE NO.	609185		

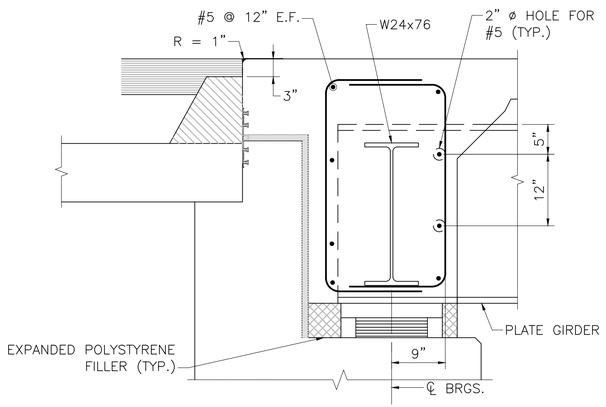
END DIAPHRAGM DETAILS



END DIAPHRAGM PLAN

SCALE: ¾" = 1'-0"





DETAILS AT ABUTMENT – ROADWAY SECTION

SCALE: 1" = 1'-0"

NOTE:

1. CONTRACTOR MAY USE EXPANDED POLYSTYRENE FILLER OR A REMOVABLE FORM TO FORM THE BOTTOM OF THE END DIAPHRAGM.
2. WEST ABUTMENT SHOWN, EAST ABUTMENT SIMILAR.
3. CONTRACTOR MAY USE CLOSED CELL FOAM OR EXPANDED POLYSTYRENE FILLER ALL AROUND THE CONDUITS AND ANY OTHER UTILITY OPENINGS TO PREVENT THE WATER LEAKING BEHIND THE BACKWALL INTO PROPOSED ABUTMENT FACE.
4. INVERT ELEVATIONS SHOWN ARE TAKEN AT THE CENTERLINE OF BEARING.

END DIAPHRAGM ELEVATION

SCALE: ¾" = 1'-0"

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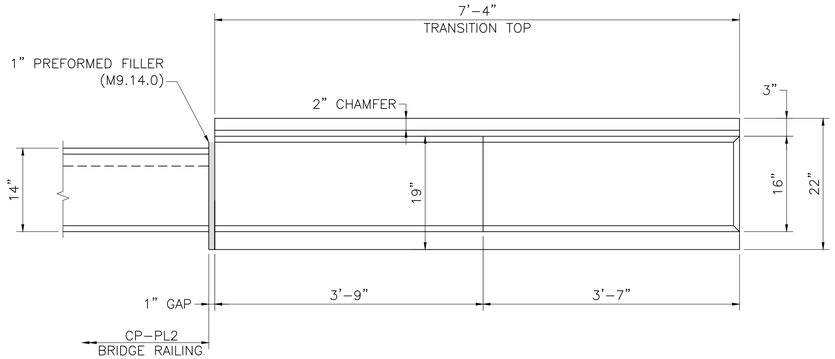
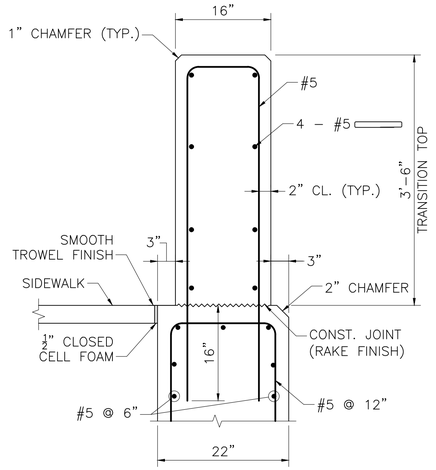
MA	STP(BR-OFF)-003S(815)X	156	169
	PROJECT FILE NO. 609185		

HIGHWAY GUARDRAIL TRANSITION DETAILS



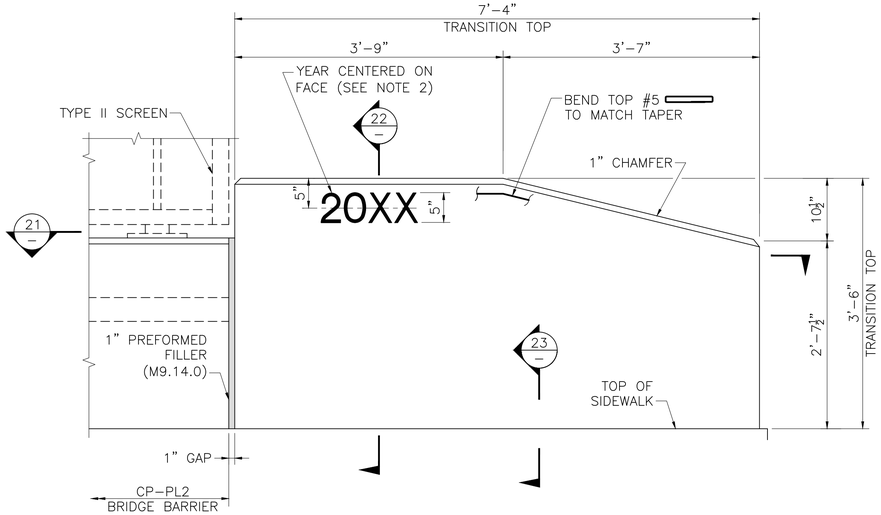
NON-STANDARD HIGHWAY GUARDRAIL TRANSITION PLAN

SCALE: 1" = 1'-0"



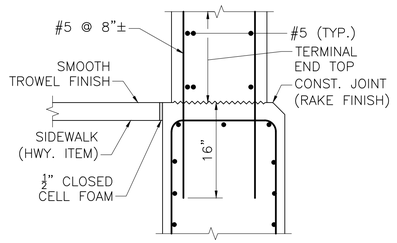
SECTION 22 / –

SCALE: 1" = 1'-0"



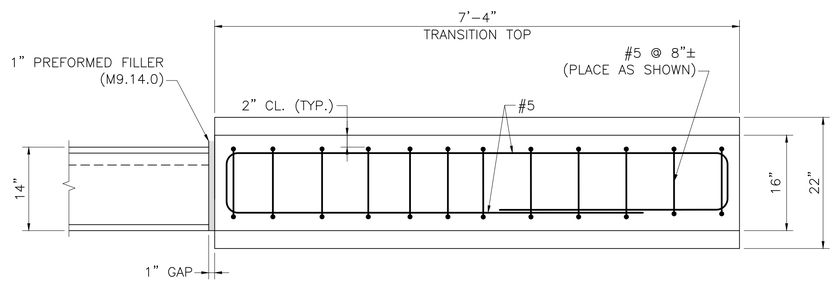
NON-STANDARD HIGHWAY GUARDRAIL TRANSITION ELEVATION

SCALE: 1" = 1'-0"



SECTION 23 / –

SCALE: 1" = 1'-0"



SECTION 21 / –

SCALE: 1" = 1'-0"

NOTES:

1. PROPOSED SOUTHWEST NON-STANDARD HIGHWAY GUARDRAIL TRANSITION SHOWN, NORTHEAST IS SIMILAR. SOUTHEAST AND NORTHWEST ARE SIMILAR AND OPPOSITE.
2. USE LATEST CONTRACT COMPLETION YEAR IN EFFECT WHEN THE FIRST GUARDRAIL TRANSITION IS CAST. USE THIS YEAR FOR ALL GUARDRAIL TRANSITIONS.
3. ALL CONCRETE FOR THE CAST-IN-PLACE HIGHWAY GUARDRAIL TRANSITION SHALL BE 5000 PSI, ¾", 685 HP CEMENT CONCRETE.
4. FOR AN APPROACH GRADE IN EXCESS OF 3%, THE TRANSITION TOP AND THE TOP OF THE BRIDGE BARRIERS SHALL FOLLOW THE APPROACH GRADE. THE HEIGHT OF THE TRANSITION TOP SHALL VARY PROVIDED THAT THE MINIMUM DIMENSIONS SHOWN ON THE CONSTRUCTION DRAWINGS ARE MET. THE BOTTOM OF THE TRANSITION BASE SHALL BE SET LEVEL WITH THE MINIMUM EMBEDMENT DEPTH SHOWN.

12/28/2024	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

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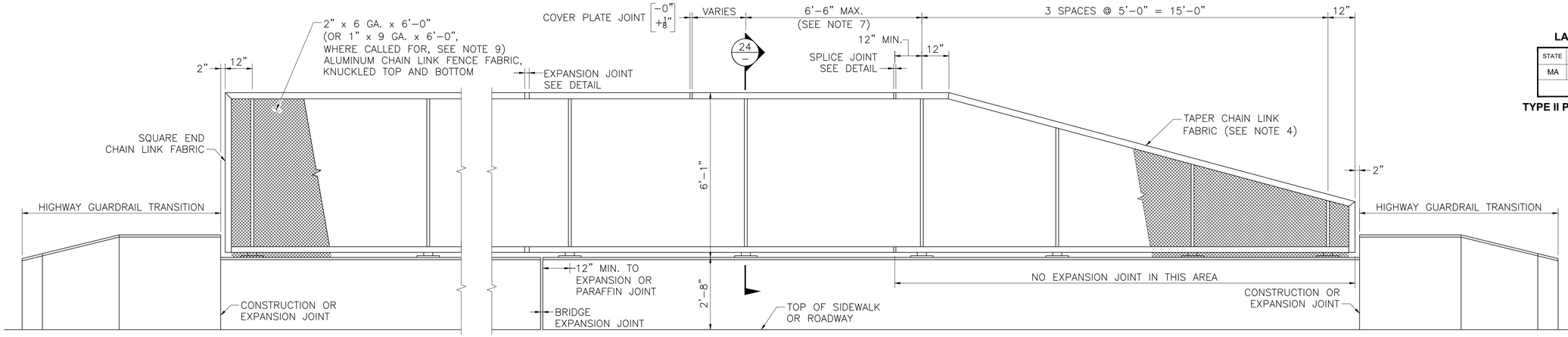
WORCESTER
LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	157	169
	PROJECT FILE NO. 609185		

TYPE II PROTECTIVE SCREEN DETAILS 1



RAILING AT WEST/NORTHEAST END

RAILING AT SOUTHEAST END

GENERAL NOTES:

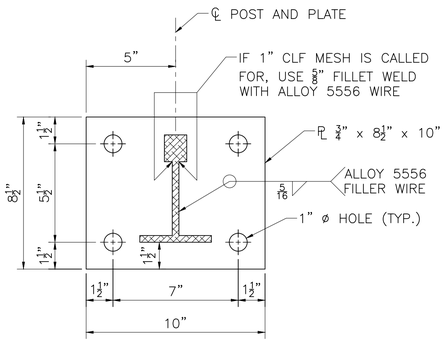
1. RAILS SHALL BE CONTINUOUS OVER A MINIMUM OF FOUR POSTS, IF POSSIBLE.
2. RAILS SHALL HAVE AN EXPANSION JOINT IN THE PANEL OVER A BRIDGE EXPANSION JOINT AND AT 30 FOOT MAXIMUM SPACING ELSEWHERE.
3. BOTTOM OF POST BASE PLATE TO BE SET ON A $\frac{1}{8}$" MOLDED FABRIC BEARING PAD (M9.16.2). THE THICKNESS OF THE PAD SHALL BE IGNORED BY THE DETAILER.
4. 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.
5. WHERE THE R.O.W. FENCE MUST MEET THE SCREEN, USE THE SQUARE END TO HIGHWAY GUARDRAIL TRANSITION DETAIL.
6. THE SCREEN END TREATMENT TO BE USED (SQUARE OR TAPERED) IS SPECIFIED ELSEWHERE ON THE CONSTRUCTION DRAWINGS.
7. POST SPACING SHALL BE UNIFORM BETWEEN TAPERED ENDS.
8. SET POSTS PERPENDICULAR TO GRADE FOR GRADES UP TO 3%. SET POSTS PLUMB FOR GRADES GREATER THEN 3%.
9. USE 2" x 6 GA. FABRIC EXCEPT OVER MBTA RAPID TRANSIT LINES WHERE 1" x 9 GA. FABRIC SHALL BE USED.

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 $\frac{1}{4}$" ø COVER PLATE BOLTS TO BE COLORED TO MATCH THE ANODIZED EXTRUSIONS.

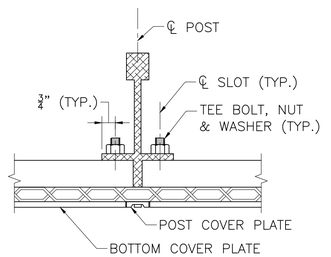
PROTECTIVE SCREEN ELEVATION

SCALE: $\frac{1}{2}$" = 1'−0"



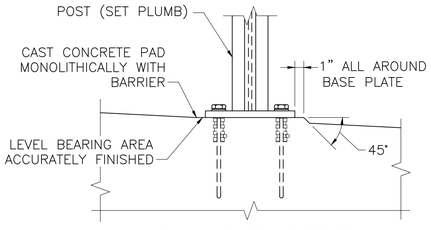
BASE PLATE DETAIL

SCALE: 3" = 1'−0"



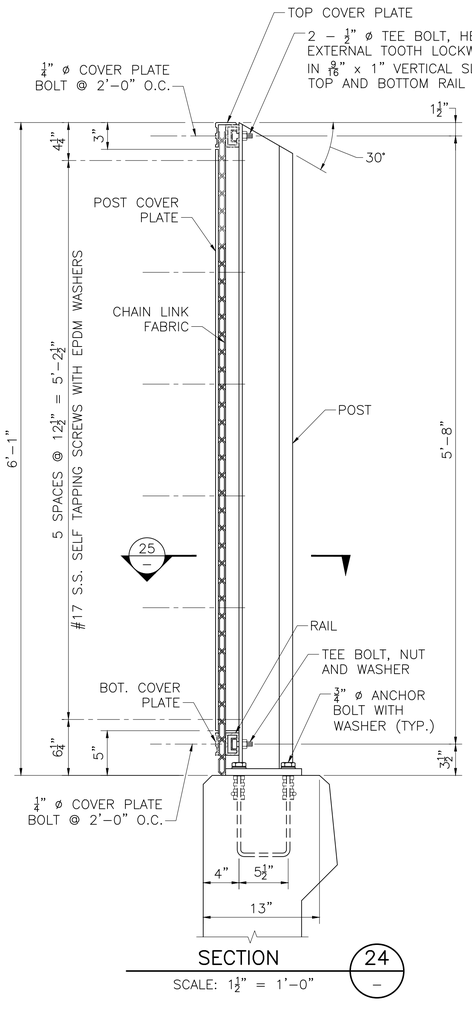
SECTION 25

SCALE: 3" = 1'−0"



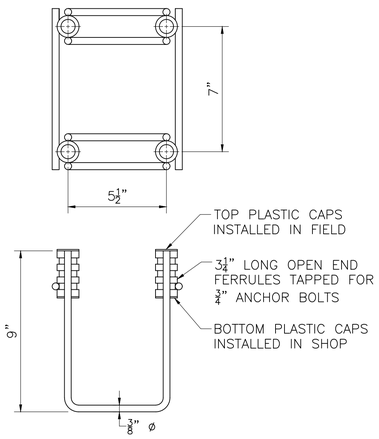
SETTING OF POSTS (PROFILE GRADE OVER 3%)

SCALE: 1½" = 1'−0"



SECTION 24

SCALE: 1½" = 1'−0"



NOTE:
GALVANIZED OR ELECTROPLATE FINISH.

ANCHOR CAGE

SCALE: 3" = 1'−0"

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 ¼" 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

TYPE II PROTECTIVE SCREEN (SHEET 1 OF 2)

DATE	DESCRIPTION
12/28/2024	ISSUED FOR CONSTRUCTION

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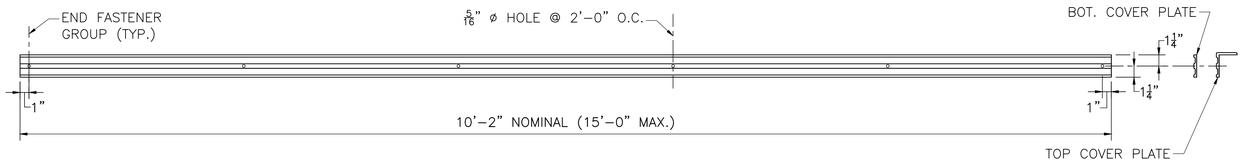
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER

USE ONLY PRINTS OF LATEST DATE

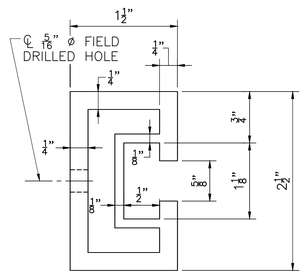
WORCESTER
LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	158	169
	PROJECT FILE NO. 609185		

TYPE II PROTECTIVE SCREEN DETAILS 2



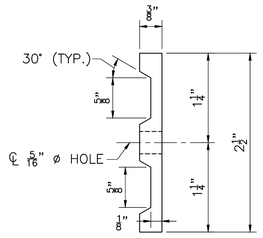
TOP AND BOTTOM COVER PLATE
SCALE: 1½" = 1'-0"



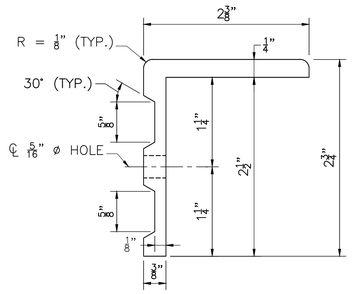
NOTE:

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

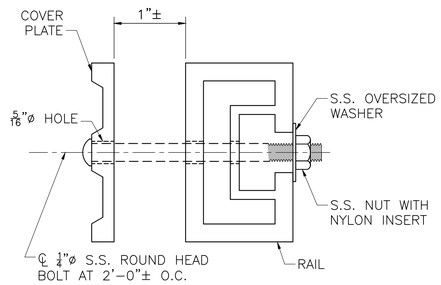
RAIL EXTRUSION
FULL SCALE



BOTTOM COVER PLATE EXTRUSION
FULL SCALE



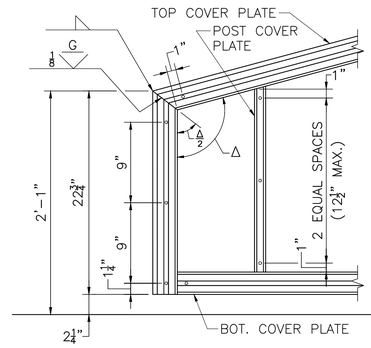
TOP COVER PLATE EXTRUSION
FULL SCALE



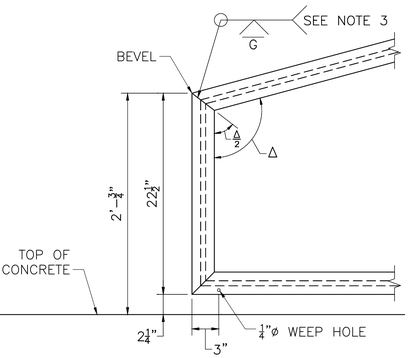
NOTE:

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

RAIL AND COVER PLATE DETAIL
FULL SCALE



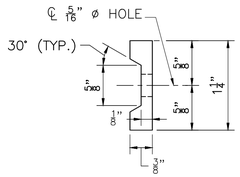
COVER PLATE DETAILS



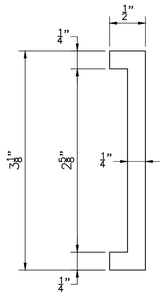
RAIL DETAILS

NOTES:

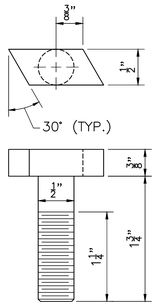
1. WELDING OF TOP COVER PLATE AND RAILS OF NON-TAPERED END IS SIMILAR.
2. WELDS AND MITERING TYPICAL FOR ALL ANGLED CORNERS.
3. WELD TYPICAL FOR TOP AND BOTTOM END CORNERS OF RAIL. INTERRUPT WELD AT SLOT IN BACK OF RAIL.



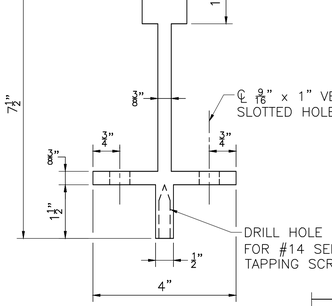
POST COVER PLATE EXTRUSION
FULL SCALE



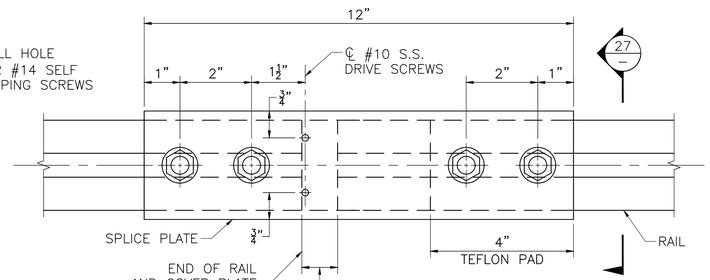
SPLICE PLATE EXTRUSION
FULL SCALE



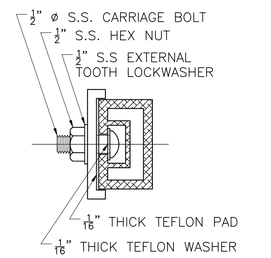
TEE BOLT
FULL SCALE



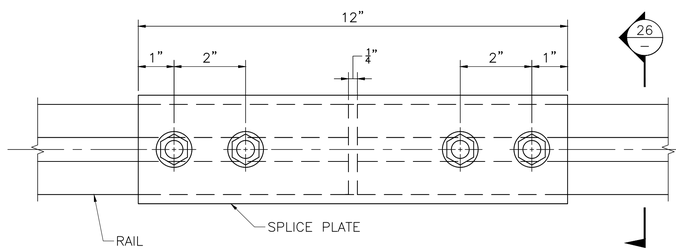
POST EXTRUSION
SCALE: 6" = 1'-0"



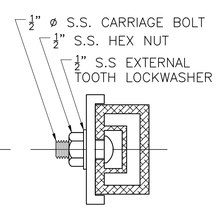
DETAIL AT EXPANSION JOINT
SCALE: 6" = 1'-0"



SECTION 27
SCALE: 6" = 1'-0"



DETAIL AT SPLICE JOINT
SCALE: 6" = 1'-0"



SECTION 26
SCALE: 6" = 1'-0"

COVER PLATE NOTES:

1. COVER PLATES MAY BE CONTINUOUS OVER A RAIL SPLICE. COVER PLATES SHALL BE FIELD CUT AS REQUIRED TO CLEAR THE EXPANSION JOINT. SEE DETAIL AT EXPANSION JOINT.
2. 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.
3. FIELD PAINT THE FIELD CUT ENDS OF THE COVER PLATES TO MATCH THE ANODIZED COLOR.

TYPE II PROTECTIVE SCREEN (SHEET 2 OF 2)

DATE	DESCRIPTION
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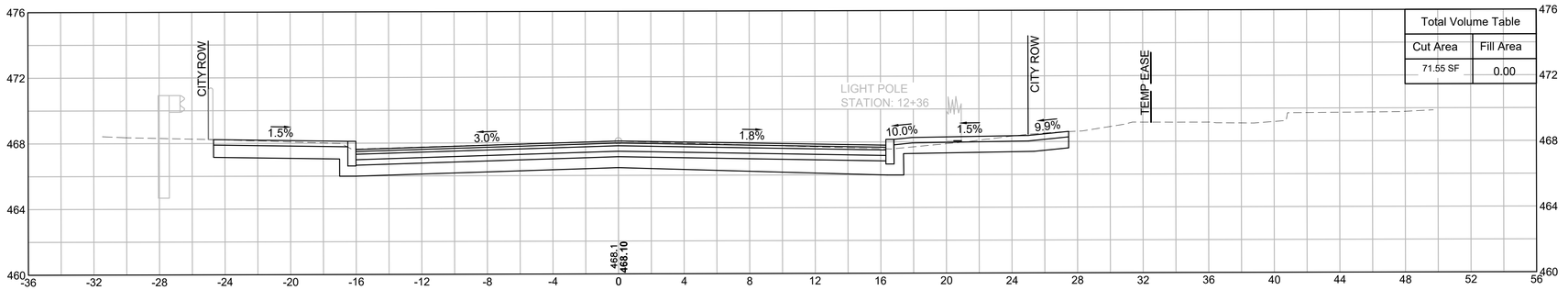
USE ONLY PRINTS OF LATEST DATE

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	159	169
PROJECT FILE NO.	609185		

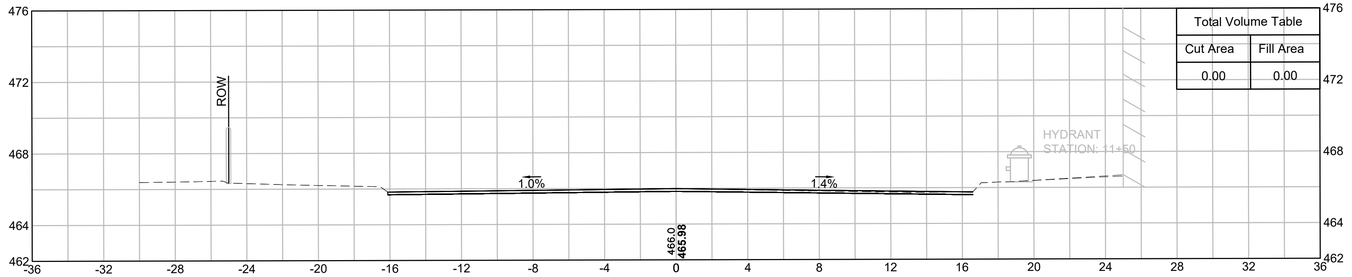
HARRISON STREET CROSS SECTIONS

12+00



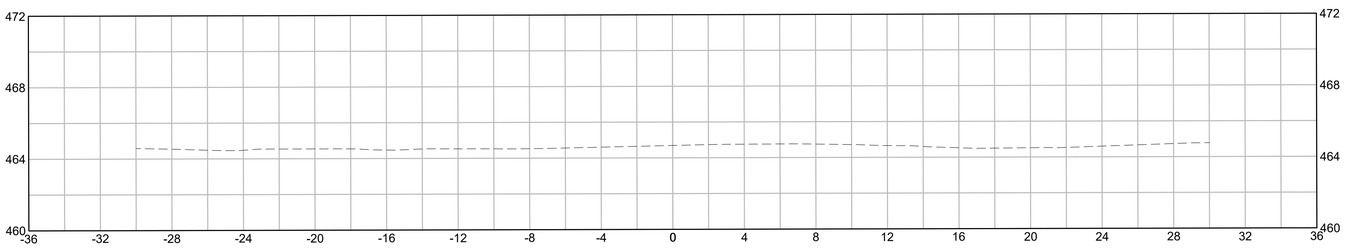
Total Volume Table	
Cut Area	Fill Area
71.55 SF	0.00

11+50



Total Volume Table	
Cut Area	Fill Area
0.00	0.00

11+00



HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

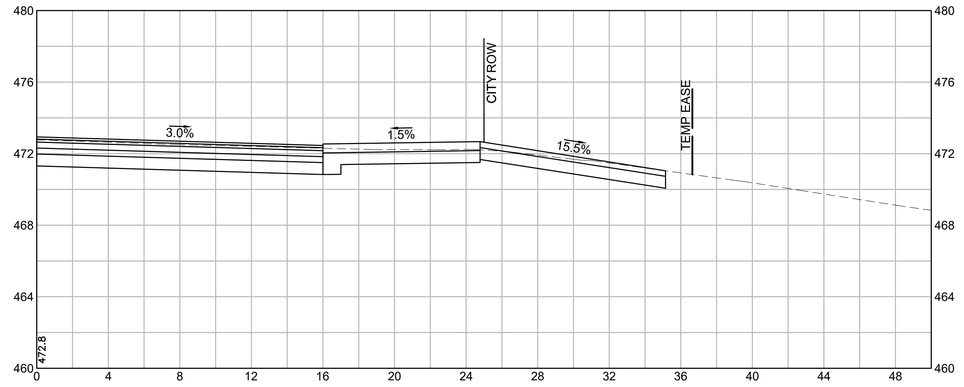
WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	160	169
PROJECT FILE NO.	609185		

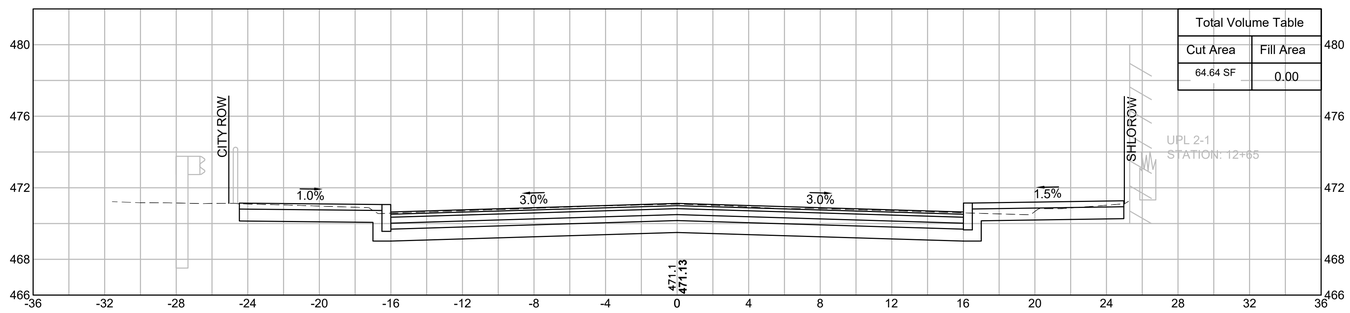
HARRISON STREET CROSS SECTIONS

609185_HDXX (CROSS SECTIONS).DWG Plotted on 20-Nov-2024 3:55 PM

12+74



12+50



Total Volume Table	
Cut Area	Fill Area
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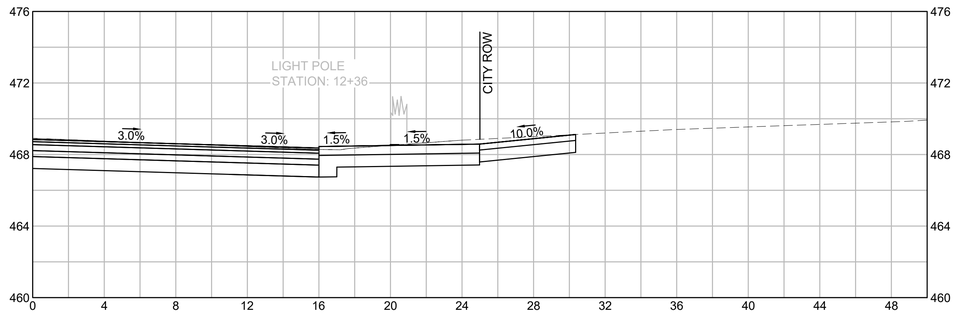
12+14



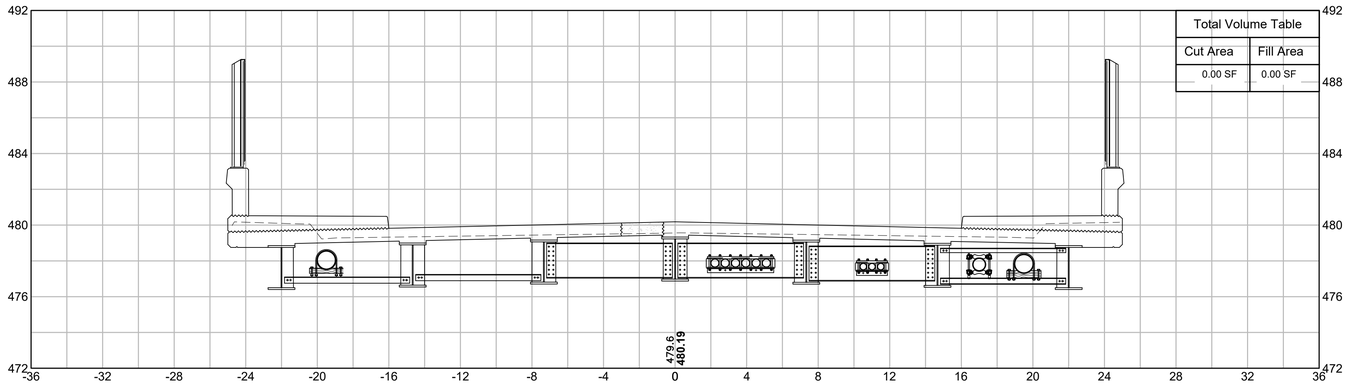
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

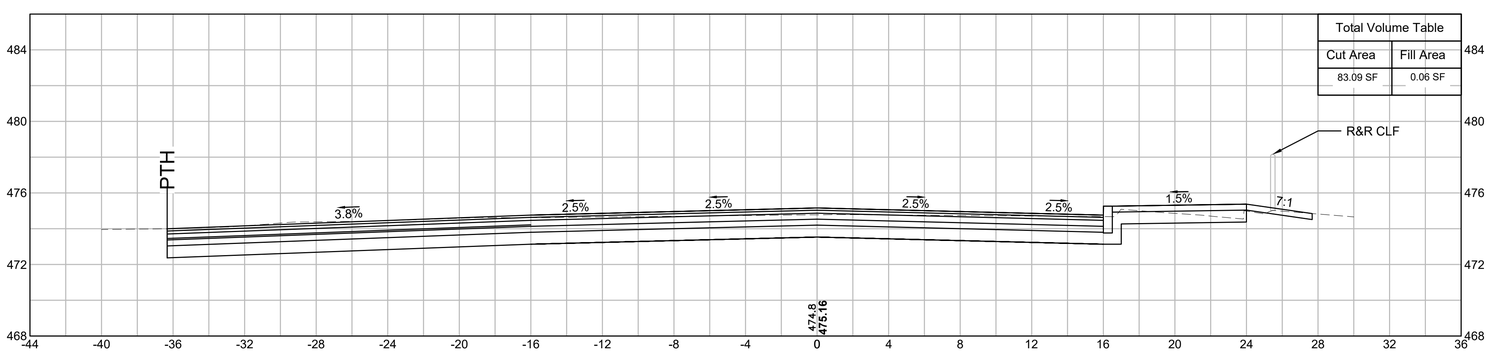
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	161	169
PROJECT FILE NO.	609185		

HARRISON STREET CROSS SECTIONS

13+50



13+00



HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

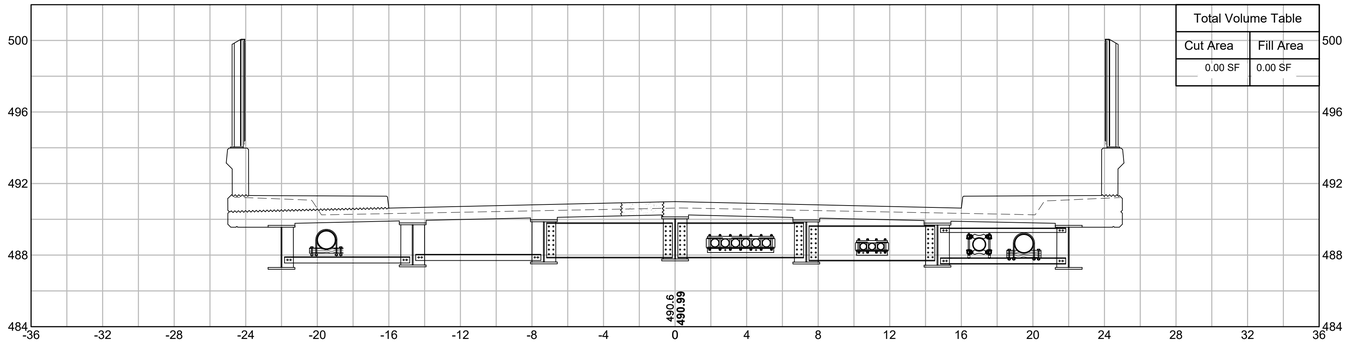
609185_HDXX (CROSS SECTIONS).DWG Plotted on 20-Nov-2024 3:55 PM

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

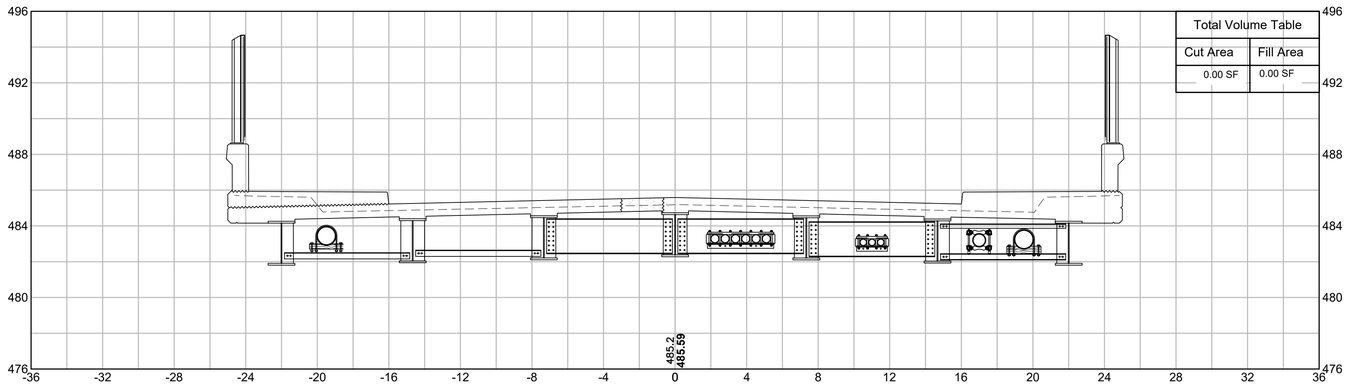
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	162	169
PROJECT FILE NO.	609185		

HARRISON STREET CROSS SECTIONS

14+50



14+00



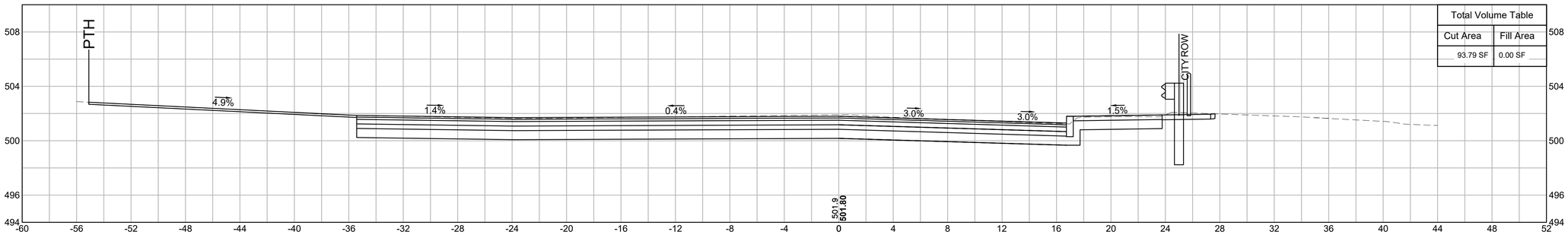
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	163	169
PROJECT FILE NO.	609185		

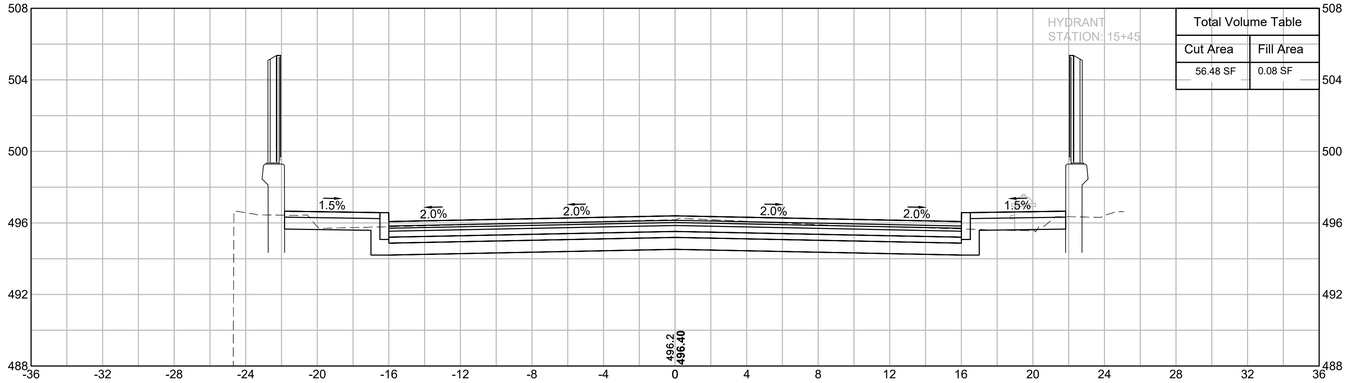
HARRISON STREET CROSS SECTIONS

15+50



Total Volume Table	
Cut Area	Fill Area
93.79 SF	0.00 SF

15+00



Total Volume Table	
Cut Area	Fill Area
56.48 SF	0.08 SF

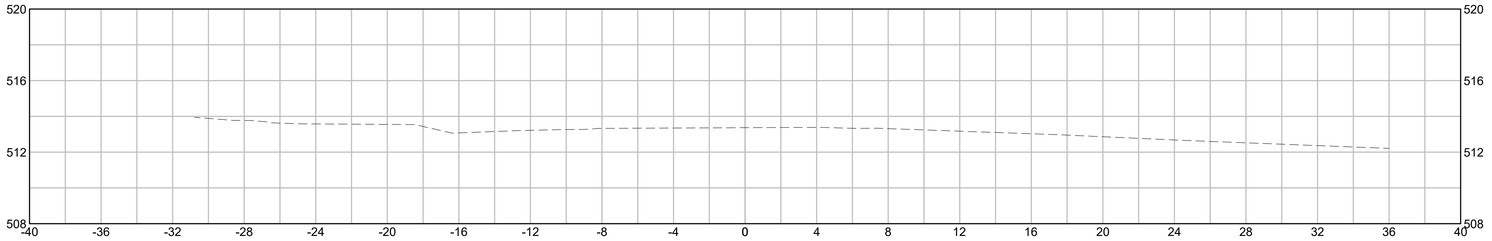
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

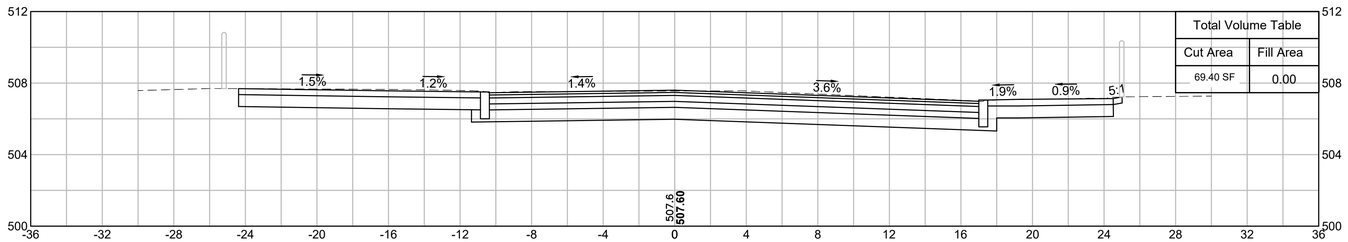
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	164	169
PROJECT FILE NO.	609185		

HARRISON STREET CROSS SECTIONS

16+50

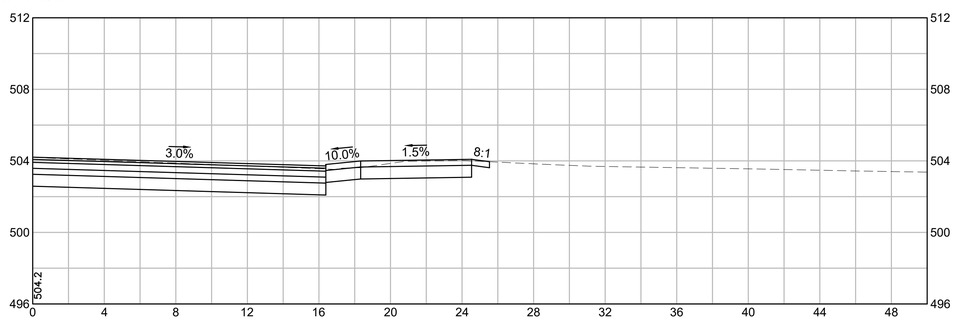


16+00



Total Volume Table	
Cut Area	Fill Area
69.40 SF	0.00

15+70.07



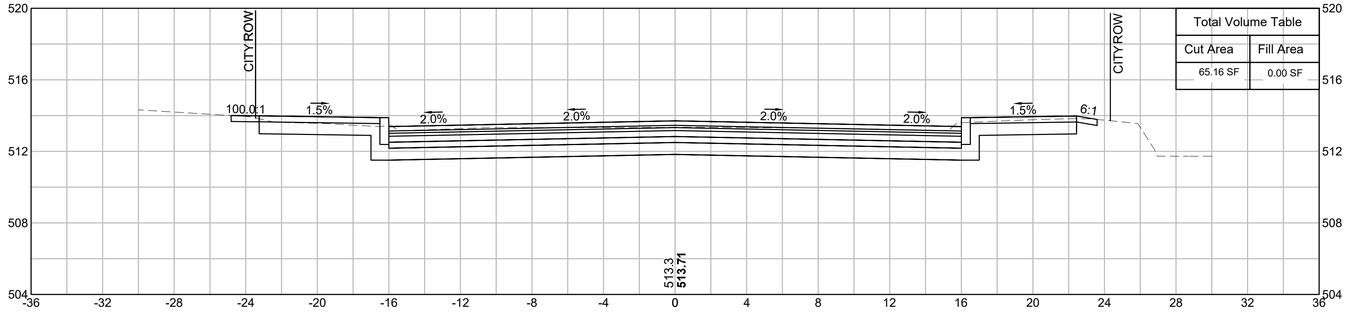
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

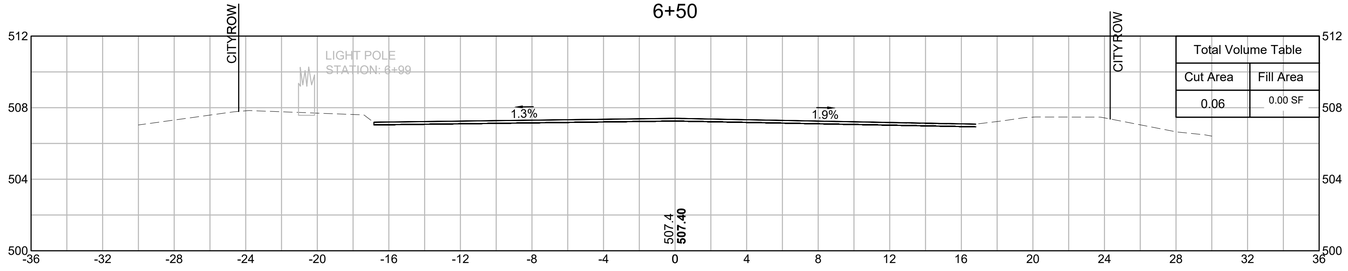
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	165	169
PROJECT FILE NO.	609185		

LAUREL STREET CROSS SECTIONS

7+00



6+50



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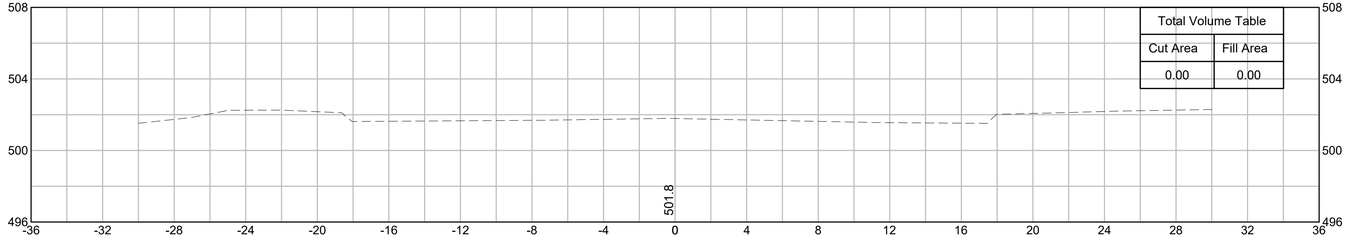


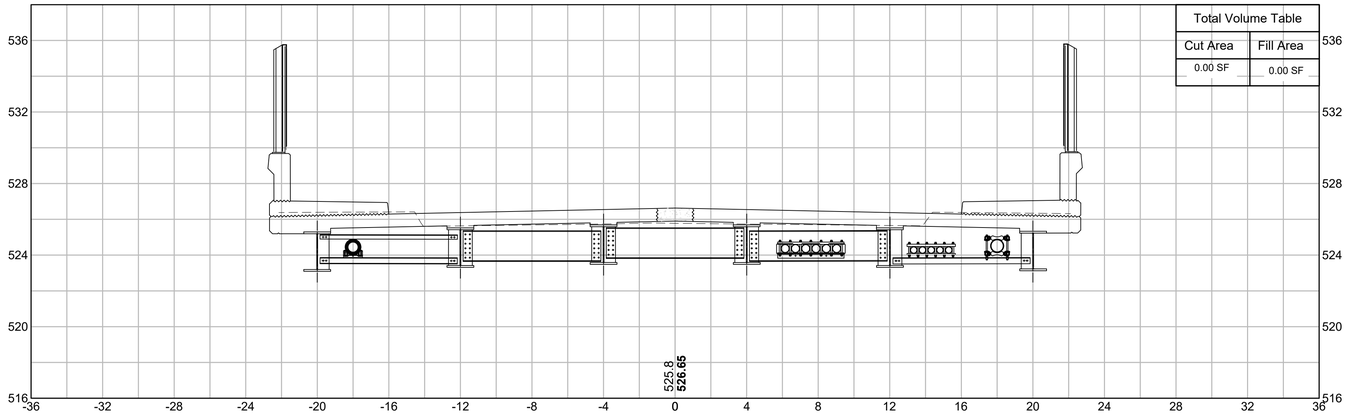
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

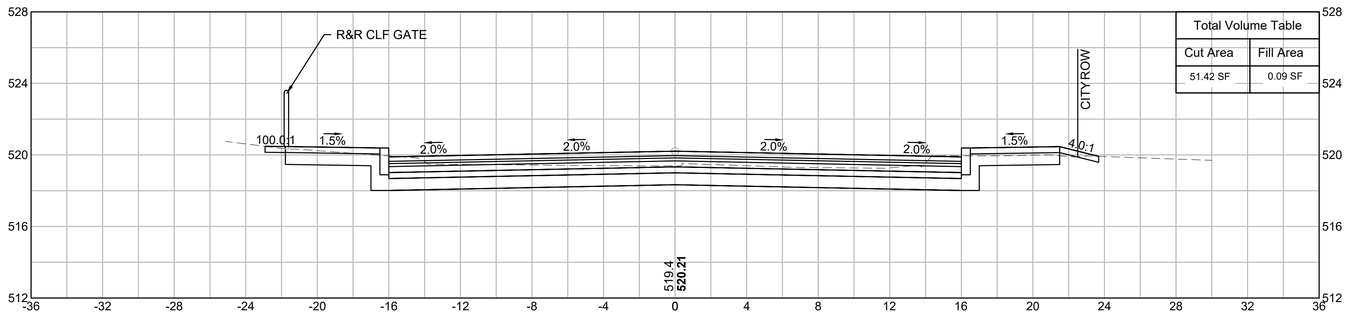
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	166	169
PROJECT FILE NO.	609185		

LAUREL STREET CROSS SECTIONS

8+00



7+50



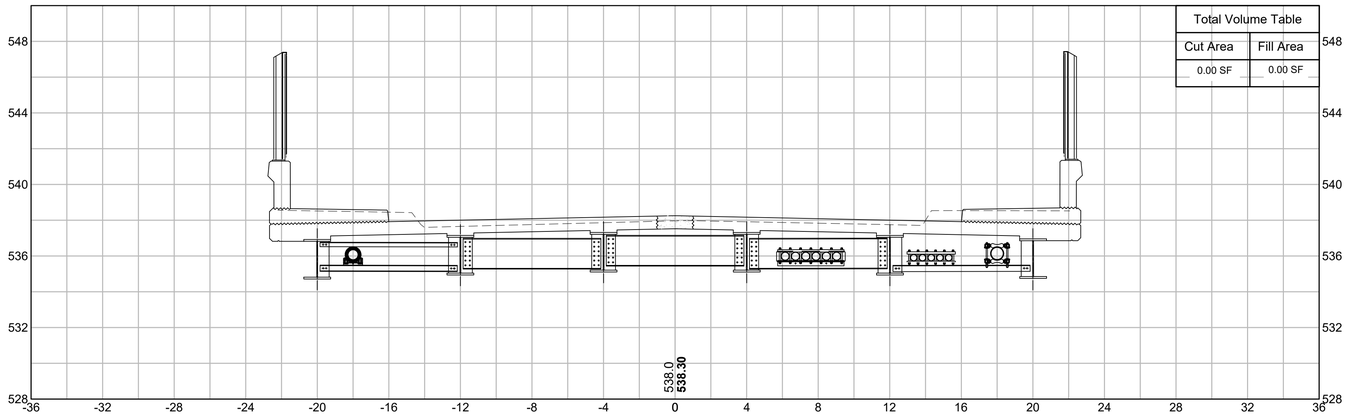
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

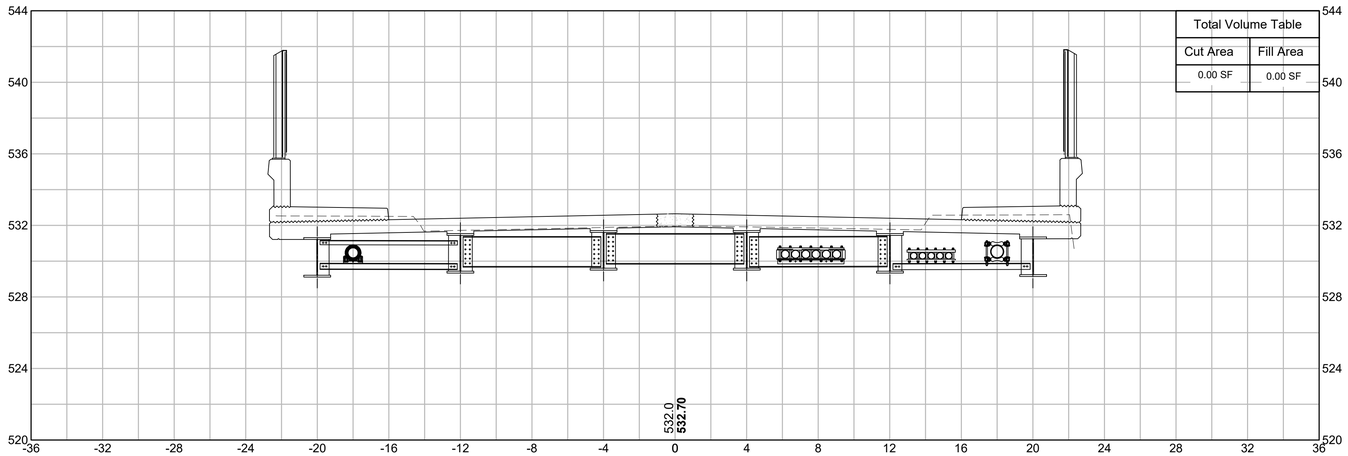
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	167	169
PROJECT FILE NO.	609185		

LAUREL STREET CROSS SECTIONS

9+00



8+50



HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

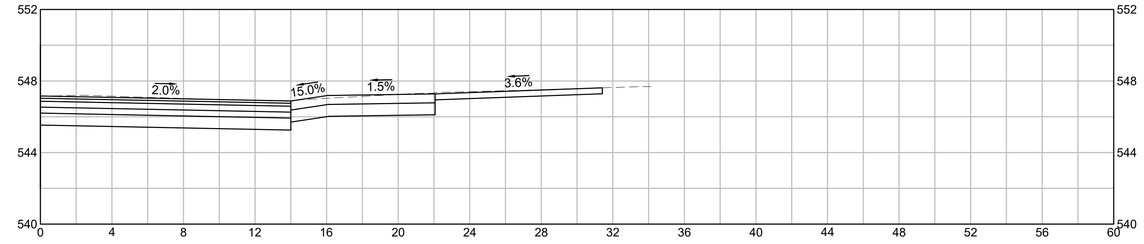
609185_HDXX (CROSS SECTIONS).DWG Plotted on 20-Nov-2024 3:56 PM

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

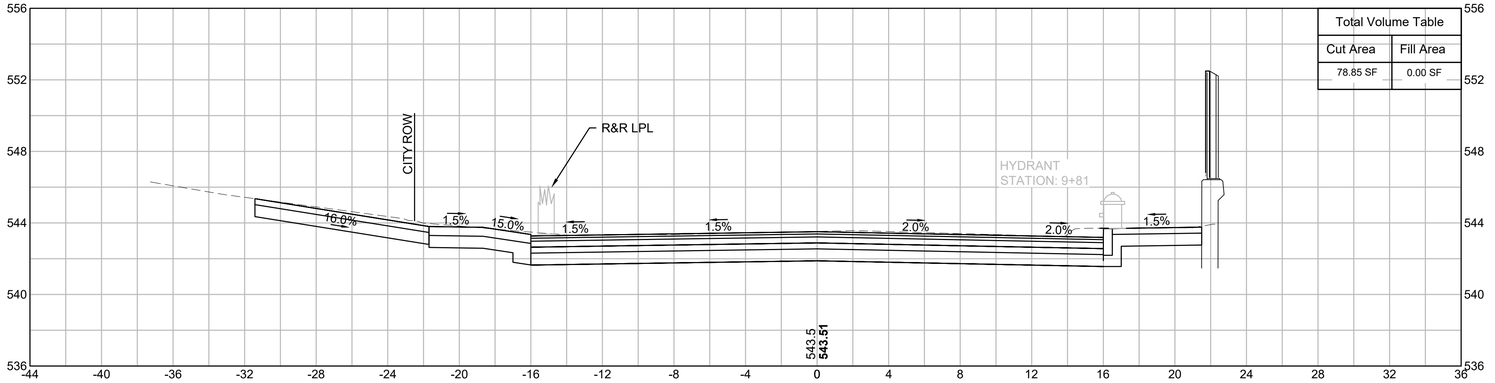
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	168	169
PROJECT FILE NO.	609185		

LAUREL STREET CROSS SECTIONS

9+88.61



9+50



HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

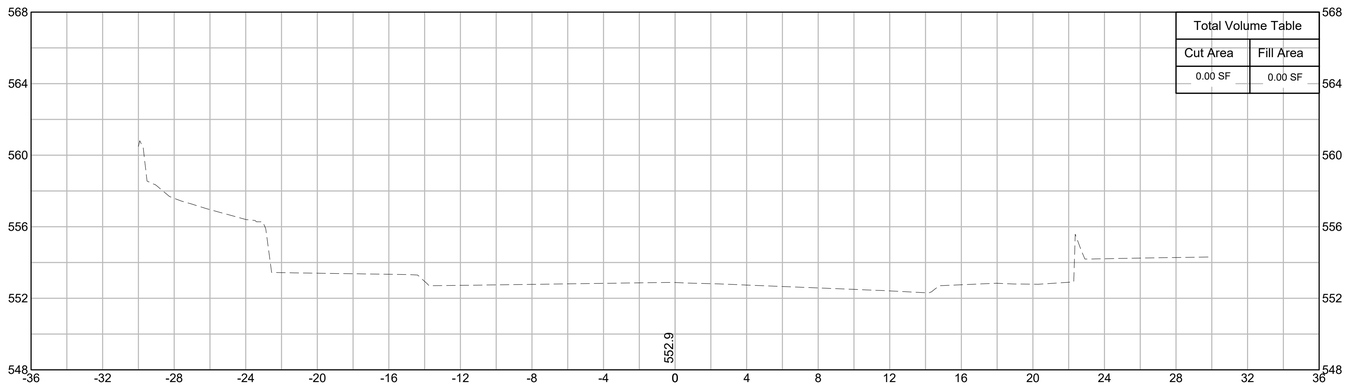
609185_HDXX (CROSS SECTIONS).DWG Plotted on 20-Nov-2024 3:56 PM

WORCESTER
HARRISON STREET & LAUREL STREET OVER I-290

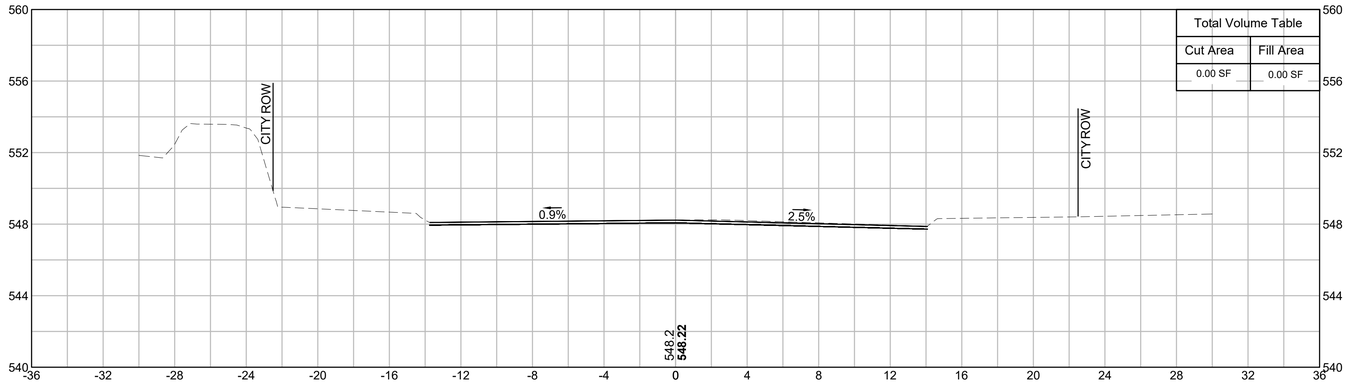
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP(BR-OFF)-003S(815)X	169	169
PROJECT FILE NO.	609185		

LAUREL STREET CROSS SECTIONS

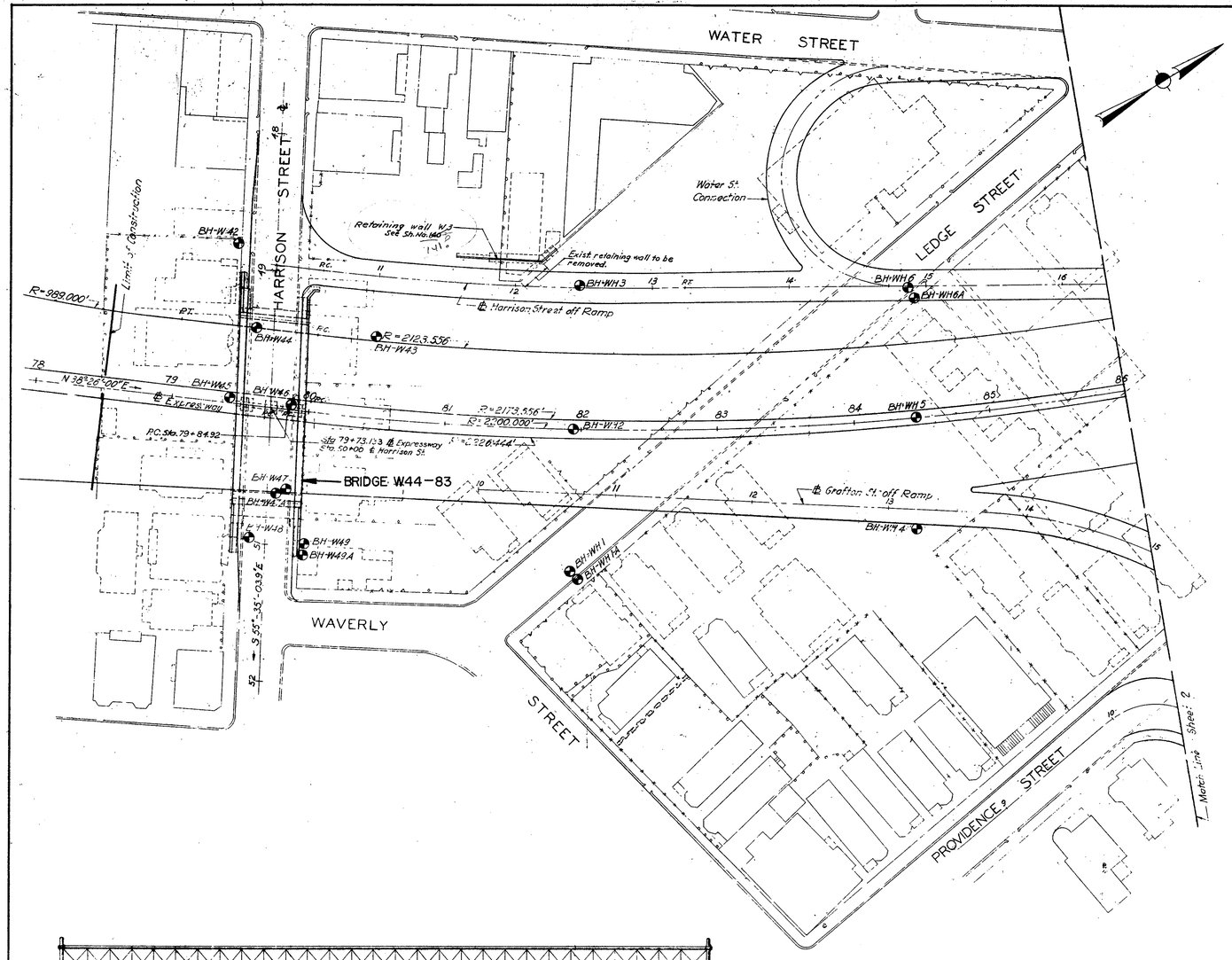
10+50

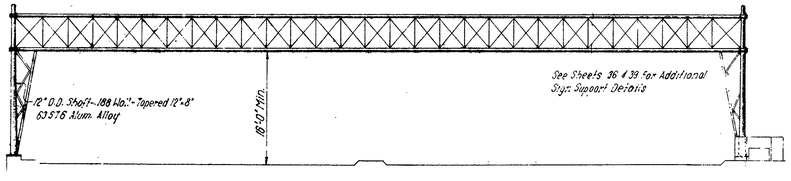


10+00



HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET





OVERHEAD SIGN SUPPORT
Scale 1" = 10' - 0"

PLAN
Scale 1"=40'-0"

BRIDGE No. W-44-82
ESTIMATED QUANTITIES
(NOT GUARANTEED)

Description	Quantity	
Bridge Excavation	8,900	c.y.
Class 'B' Rock Excavation	5	c.y.
Gravel Borrow	3,570	c.y.
Class I Bituminous Conc. Pavement Type I-1	3,100	Tons
Steel Sheeting	82,200	lb.
Class "A" Cement Conc. Masonry	5	c.y.
Steel Piles 14 BP 89	36,000	l.f.
Steel Piles 12 BP 53	9,500	l.f.
Steel Pile Splices 14 BP 89	55	Each
Steel Pile Splices 12 BP 53	10	Each
Bridge Structure (W-44-82)	1	L.S.
Electrical Substation (Structure Only)	1	L.S.
Overhead Destination Sign Support	1	L.S.
Bridge Lighting	1	L.S.

BRIDGE W-44-83
ESTIMATED QUANTITIES
(NOT GUARANTEED)

Description	Quantity	
Bridge Excavation	140	c.y.
Class 'B' Rock Excavation	630	c.y.
Gravel Borrow	1,100	c.y.
Class I Bituminous Conc. Pavement Type I-1	100	Ton
Class 'A' Cement Conc. Masonry	590	c.y.
Class 'B' Cement Conc. Masonry	320	c.y.
Steel Reinforcement for Structure	57,000	lbs
Bridge Structure (W-44-83)	1	L.S.
Bituminous Damperoofing	600	s.y.

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-I93-3(3)	1958	142	194

I-I90-1(3)95 Contract B

GENERAL NOTES

1. Design
In accordance with the current specifications of the A.A.S.H.O. 1953 as modified for:
a. Viaduct - H20-S16-44
b. Harrison Street over Expressway H20-44

2. Foundations
Foundations may be altered if necessary with approval of Engineer, to suit conditions encountered in construction, except those foundations which are designated to be placed on piles.

3. Date & Seal
Viaduct - To be placed on the Northwesterly and Southeasterly end posts. Harrison Street Over Expressway - to be placed on the Northeasterly and Southwesterly end posts. A sheet showing size and character of numerals will be furnished by the Commonwealth.

4. Reinforcement
All bars shall have deformations conforming to A.S.T.M. Designation A 305. Unless otherwise shown on the plans, reinforcing bars shall be lapped 20 diameters; to make a splice, except that main reinforcing bars near top of slabs and beams having more than 12" of concrete under the bars shall be lapped 35 diameters to make a splice.

5. Structural Steel
℄ girder stringers, W beams without cover ℄'s or splices, diaphragms, gusset plates and all other material except as noted shall be Structural Carbon Steel A.S.T.M. Designation A-7. W stringers with cover ℄'s, the cover plates and stringers with splices shall be carbon steel A.S.T.M. Designation A-373.
All field connections except those designated as welded shall be riveted. High strength bolts may be used in lieu of rivets at the discretion of the Engineer where location warrants use of bolts.
All welding shall be in accordance with the specifications set forth by the American Welding Society for Welded Highway and Railway Bridges.

Field splices shall be riveted to develop 100% of the strength of the connected parts. Details & location of splices shall be submitted by Fabricator to Engineer for approval.
All rivets shall be 7/8" ø; holes 15/16" diameter unless otherwise noted.
Where no dead load deflection diagram or camber is shown beams shall have natural mill camber turned up.

6. Shear Connectors
The Contractor has the option of using stud reinforcement for shear connector as detailed on plans, in lieu of spirals. Studs shall be automatically end welded. Spirals or studs may be either field or shop welded.

7. Bench Marks & Alignment Details
A-19 N.E. cor. Gas Gate Frame, in walk, W. side Water St. 40'± N of Harrison St. El. 965.252
For bridge No. W 44-83
For additional Bench Marks & Alignment data see highway Dwgs.

8. Piles
All piles shall be driven to practical refusal.

9. Maintaining Highways during Construction (At Base of Carriageway, Walks and Vaults)
The cost of furnishing and installing and removing temporary curbs as shown on plans shall be included in the cost of the Reinforced Concrete Waterproofing.

SEPT. 3, 1958	SHEET #21 FOUNDATION PLAN-PIER V-10 REVISED.
AUG. 18, 1958	SHEET #38 CROSS SLOPE REVISED
AUG. 18, 1958	SHEETS # 10, 11, 12, 15, 16, 18, 19, 21, 22, 23, 24 & 25 ELEVATIONS REVISED
MAY 31, 1958	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

USE ONLY PRINTS OF LATEST DATE

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS
100 NASHUA STREET BOSTON, MASSACHUSETTS

WORCESTER EXPRESSWAY
SECTION I

STRUCTURAL PLANS

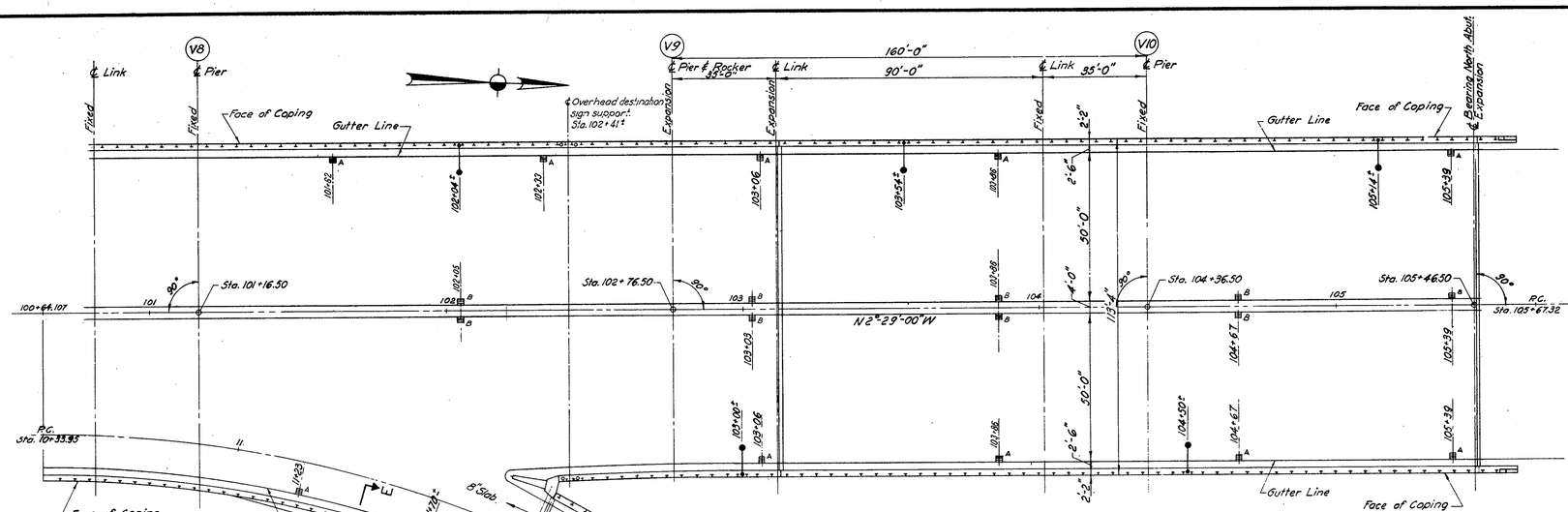
C. A. MAGUIRE & ASSOCIATES — ENGINEERS — BOSTON, MASSACHUSETTS

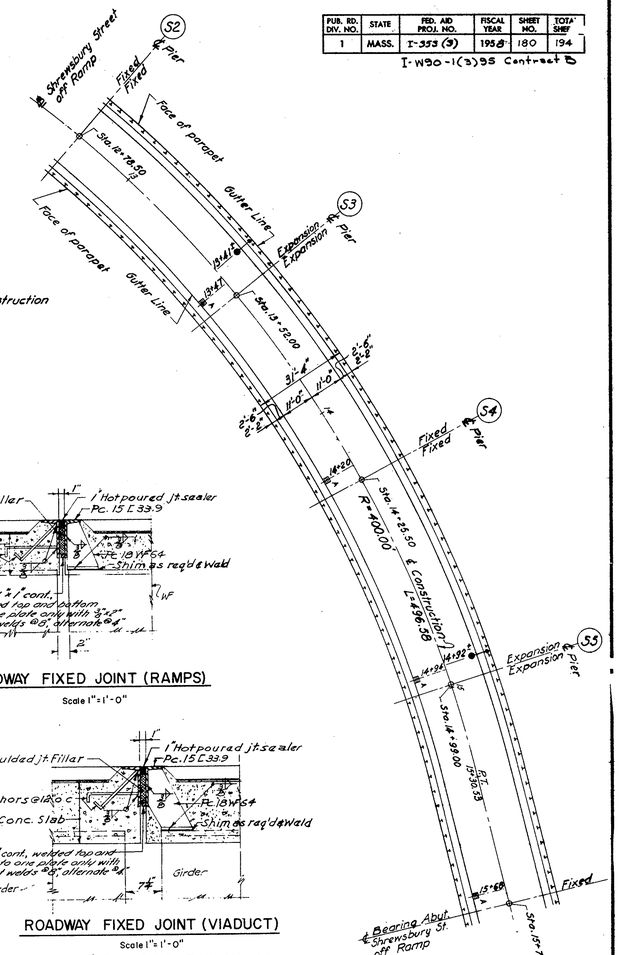
APPROVED DATE MAY 1958
J. F. Kane ACT. BRIDGE ENGINEER
E. J. McCarthy CHIEF ENGINEER

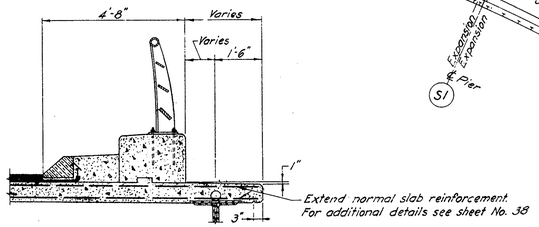
SHEET 1 OF 53 SHEETS BRIDGE NO. W-44-82 W-44-83

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-353(3)	1958	180	194

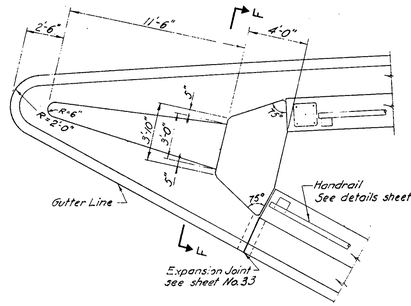
I-W30-1(3)95 Contract B



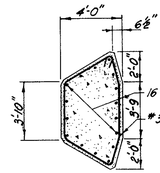




SECTION E-E
Scale 1/2"=1'-0"



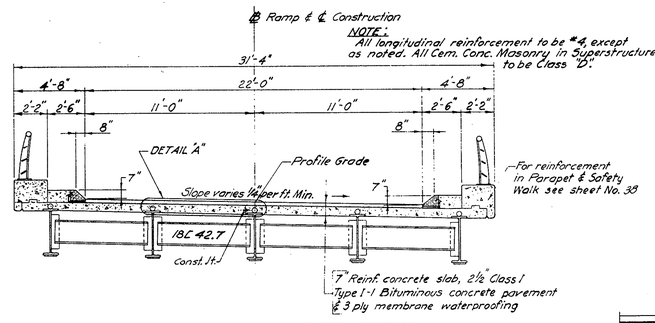
PROW PLAN
Scale 1/4"=1'-0"



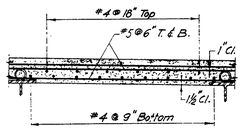
SECTION G-G
Scale 1/4"=1'-0"

ROADWAY FIXED JOINT (RAMPS)
Scale 1"=1'-0"

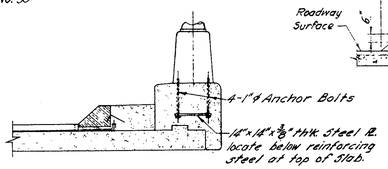
ROADWAY FIXED JOINT (VIADUCT)
Scale 1"=1'-0"



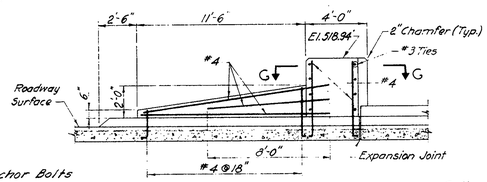
TYPICAL RAMP CROSS SECTION
Scale 1/4"=1'-0"



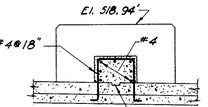
DETAIL "A"
Scale 1/2"=1'-0"



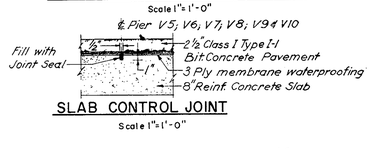
ANCHOR BOLT DETAIL FOR LIGHT STANDARD
Scale 1/2"=1'-0"



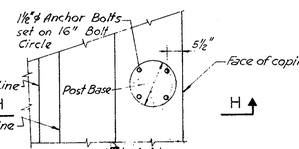
PROW ELEVATION
Scale 1/4"=1'-0"



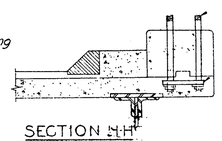
SECTION - F - F
Scale 1/4"=1'-0"



SLAB CONTROL JOINT
Scale 1"=1'-0"



PLAN



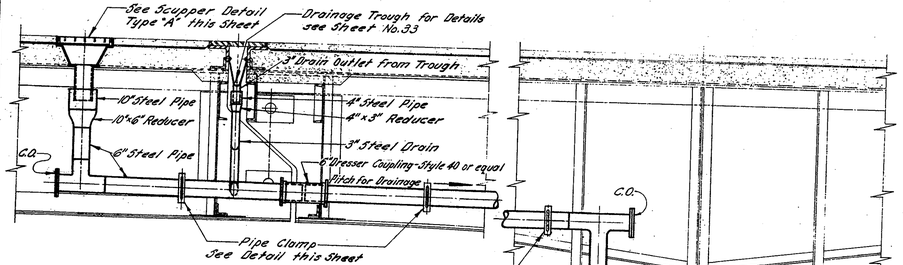
SECTION H-H

ANCHOR BOLT DETAIL FOR SIGN POSTS
Scale 1/2"=1'-0"

DATE	DESCRIPTION
MAY 31, 1958	· ISSUED FOR CONSTRUCTION ·
	· USE ONLY PRINTS OF LATEST DATE ·

PUR. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.		1958	181	194

I-W90-1(3)95 Contract D

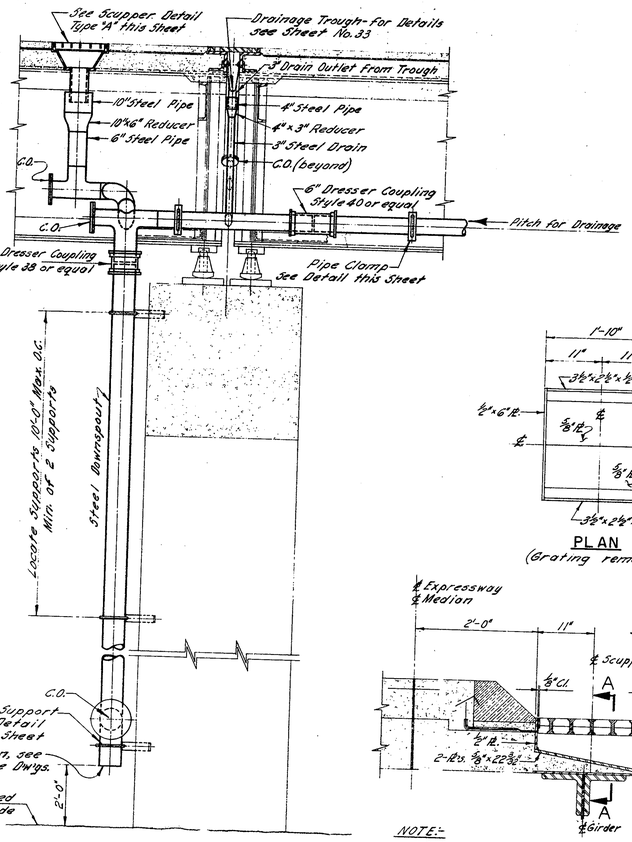


DETAIL AT LINKAGE

Scale 1/2"=1'-0"

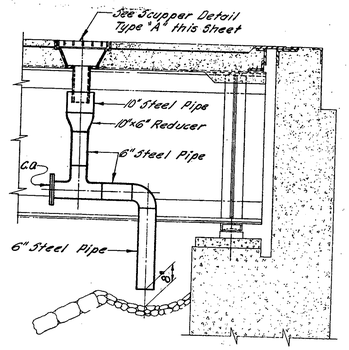
ELEVATION AT PIER

Scale 1/2"=1'-0"



ELEVATION AT PIER

Scale 1/2"=1'-0"

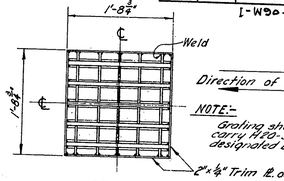


DETAIL AT NORTH ABUTMENT

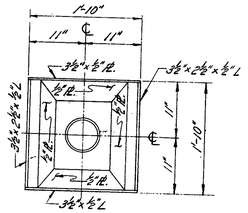
Scale 1/2"=1'-0"

PLAN

(Grating removed)

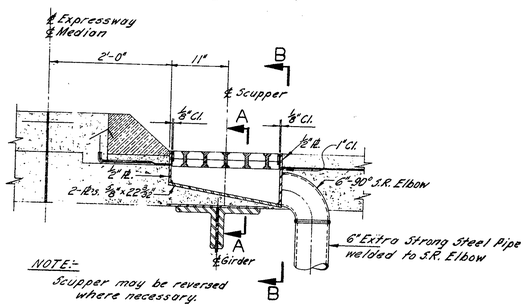


PLAN OF GRATING

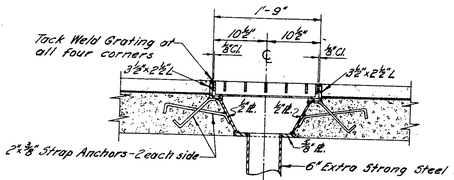


PLAN

(Grating Removed)



SCUPPER SECTION AT MEDIAN STRIP

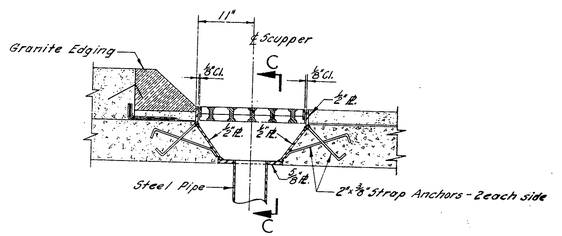


NOTE:-

All Welds are continuous ⅛" Fillet or Bead

For additional Reinf. at Scuppers see Sheet No.37

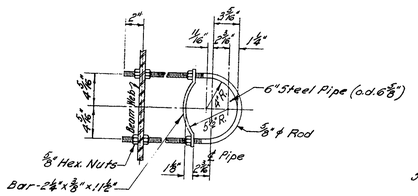
SECTION C-C



SCUPPER SECTION AT CURB

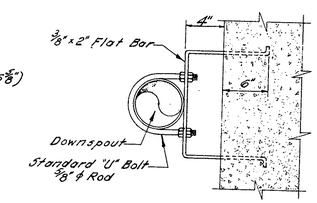
SCUPPER DETAILS-TYPE "A"

Scale 1"=1'-0"



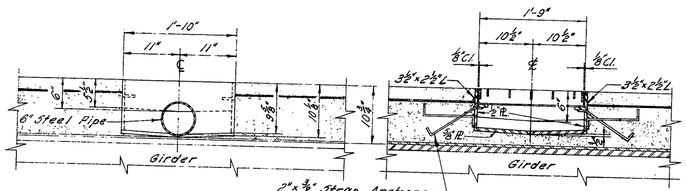
SCUPPER PIPE CLAMP

Scale 1 1/2"=1'-0"



DETAIL OF PIPE SUPPORT FOR CONCRETE BENTS

Scale 1 1/2"=1'-0"



SECTION B-B

SECTION A-A

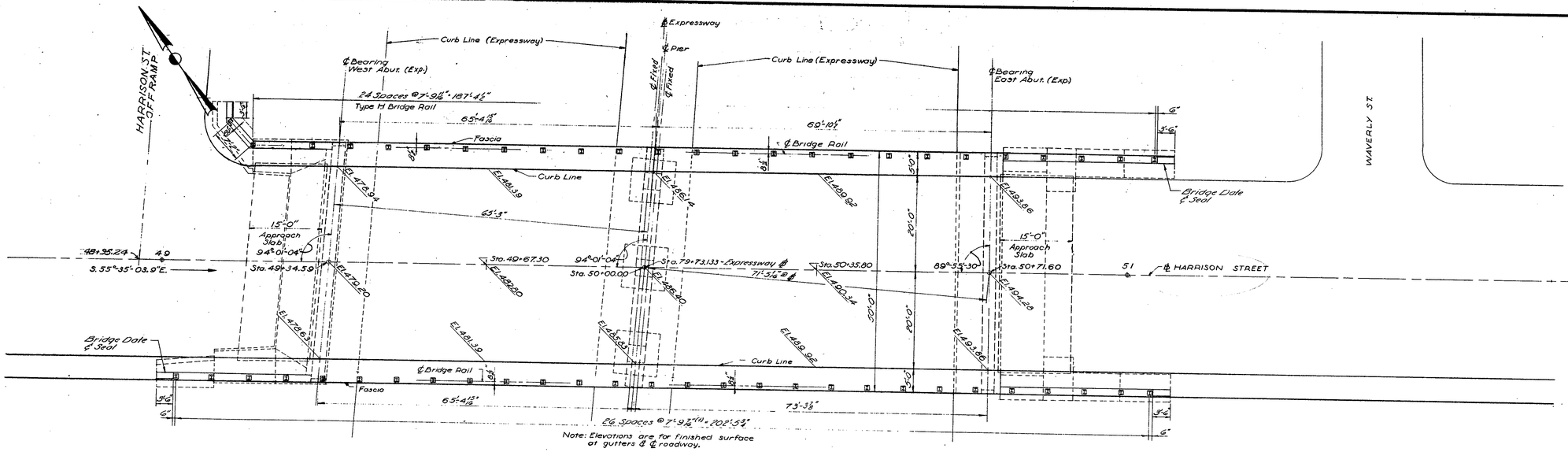
SCUPPER DETAILS-TYPE

Scale 1"=1'-0"

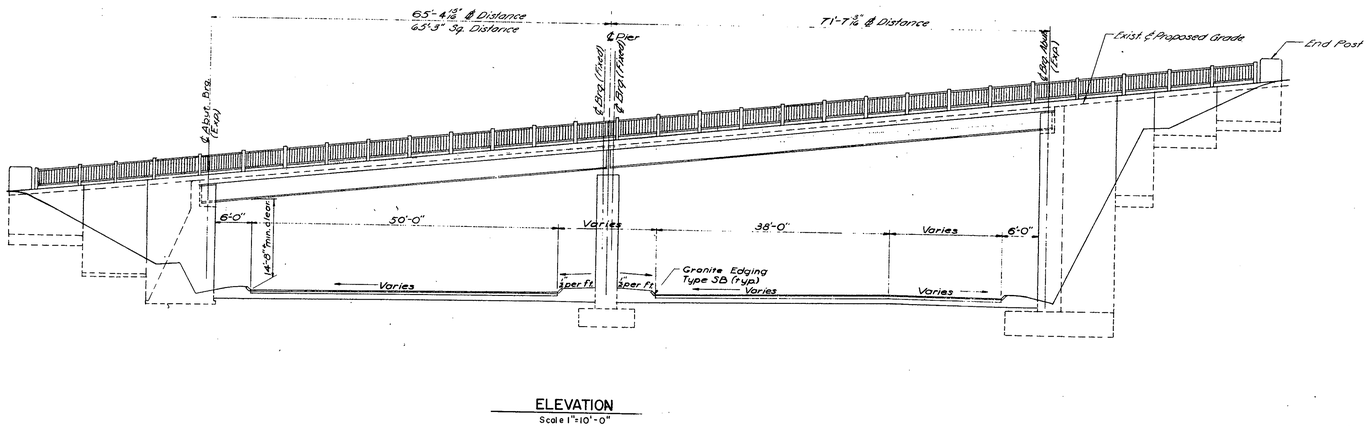
DATE	DESCRIPTION
MAY 31,1958	· ISSUED FOR CONSTRUCTION ·
	· USE ONLY PRINTS OF LATEST DATE ·

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-353(3)	1958	182	194

I-W90-1(3)95 Contract B



DECK PLAN
Scale 1"=10'-0"

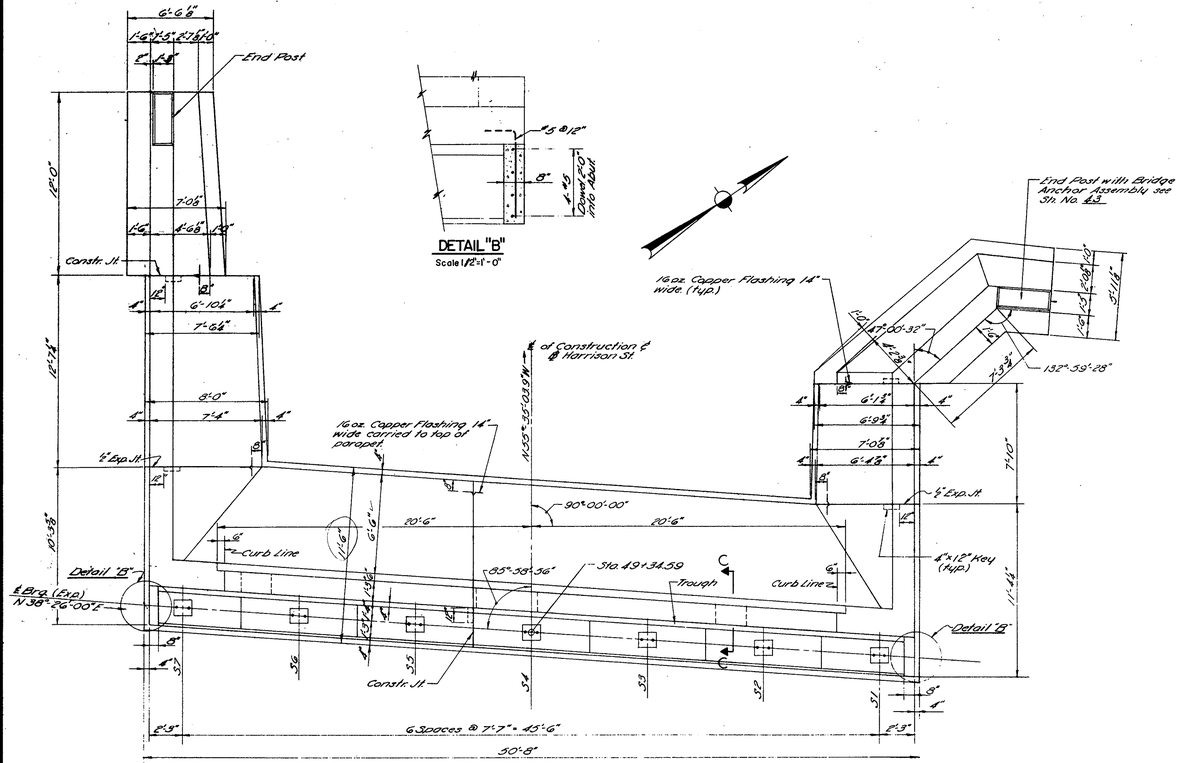


ELEVATION
Scale 1"=10'-0"

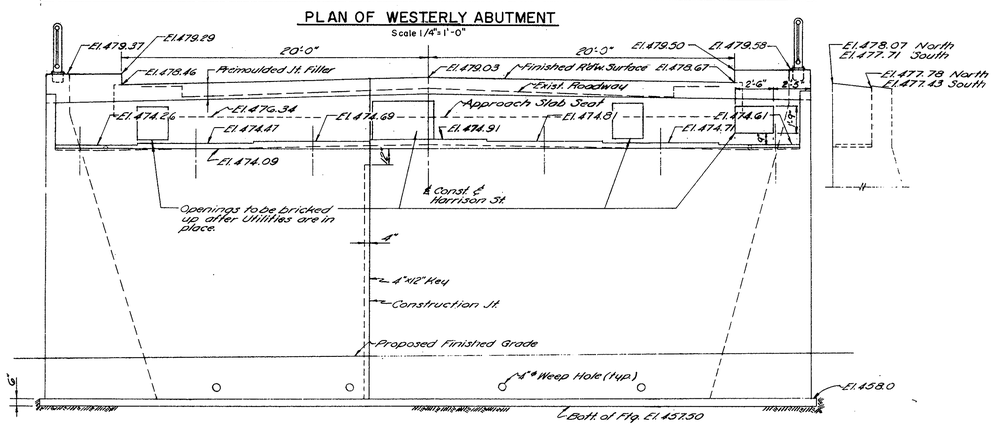
DATE	DESCRIPTION
MAY 31, 1958	• ISSUED FOR CONSTRUCTION •
	• USE ONLY PRINTS OF LATEST DATE •

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.		1958	183	194

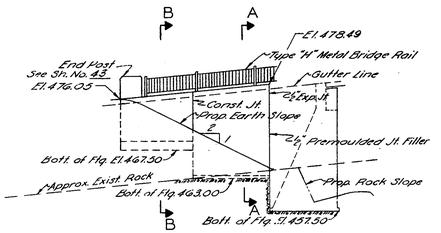
I-W90-1(3)95 Contract B



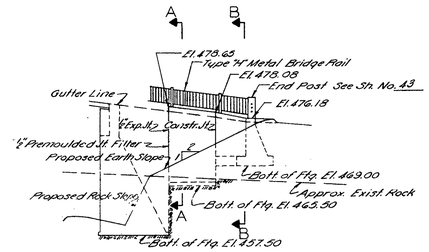
PLAN OF WESTERLY ABUTMENT
Scale 1/4"=1'-0"



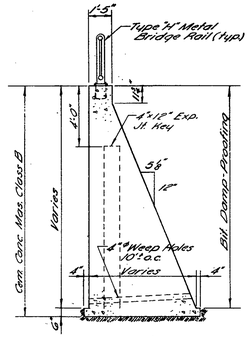
ELEVATION OF WESTERLY ABUTMENT
Scale 1/4"=1'-0"



ELEVATION SOUTH WING WALL
Scale 1"=10'-0"

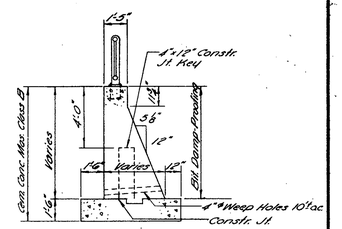


ELEVATION NORTH WING WALL
Scale 1"=10'-0"



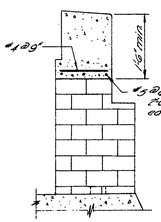
Max. Soil Pressure = 2920 lbs. per Sq. Ft.

SECTION A-A
Scale 1/4"=1'-0"

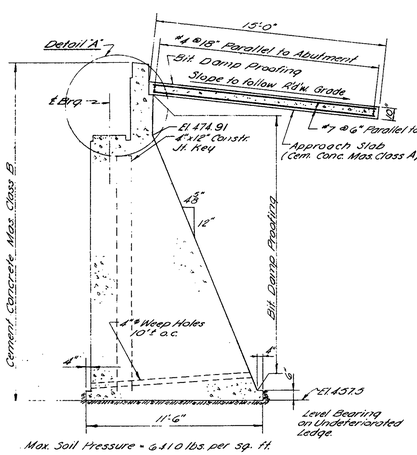


Max. Soil Pressure = 2580 lbs. per Sq. Ft.

SECTION B-B
Scale 1/4"=1'-0"

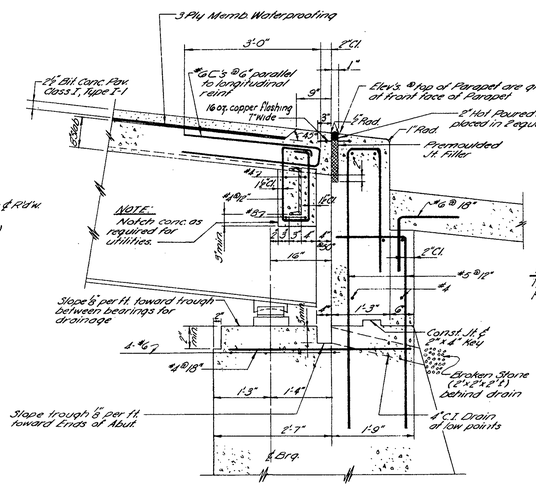


SECTION C-C
Scale 3/4"=1'-0"



Max. Soil Pressure = 6410 lbs. per Sq. Ft.

TYPICAL ABUTMENT SECTION
Scale 1/4"=1'-0"



Detail "A"
Scale 3/4"=1'-0"

NOTE:
If Ledge is Cut More Than 12" Below Proposed Footing Grades, Reinf. Steel Should Be Redesigned.

DATE	DESCRIPTION
MAY 31, 1958	• ISSUED FOR CONSTRUCTION •
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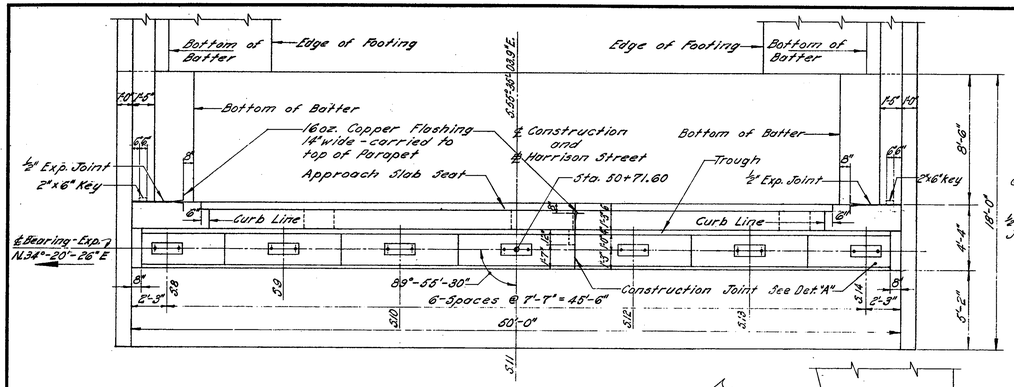
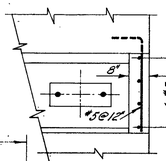
FUR. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-359 (3)	1958	184	194

I-W190-1(3)95 Contract B



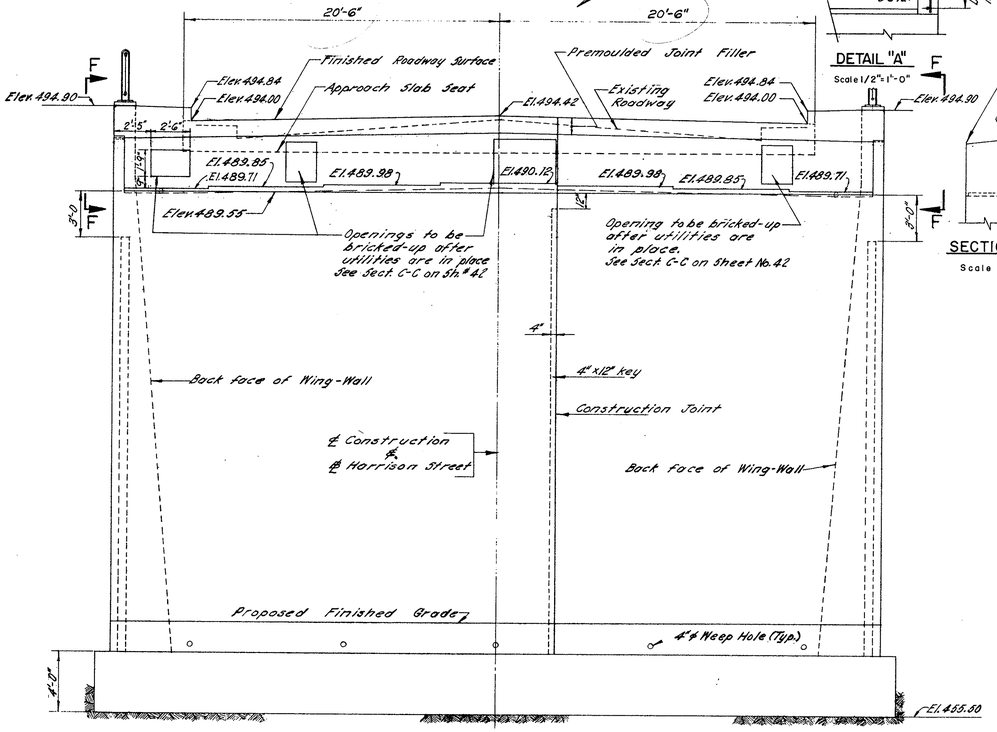
PLAN OF EASTERLY ABUTMENT

Scale 1/4"=1'-0"



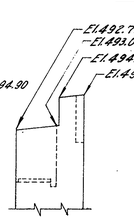
DETAIL "A"

Scale 1/2"=1'-0"



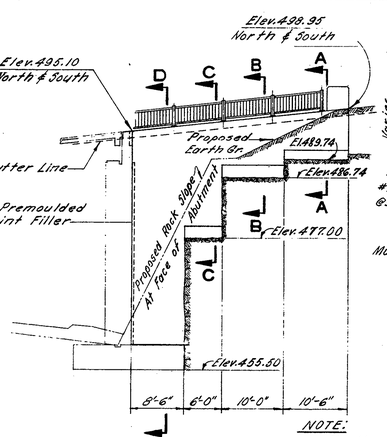
ELEVATION OF EASTERLY ABUTMENT

Scale 1/4"=1'-0"



SECTION F-F

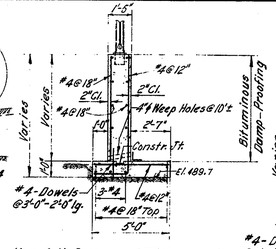
Scale 1/4"=1'-0"



ELEVATION SOUTH WING-WALL

Scale 1"=10'-0"

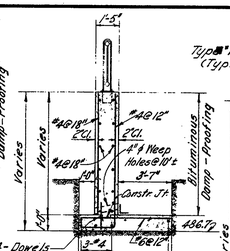
NOTE:
North Wing Wall similar but to opposite hand.



Max. Soil Pressure = 1,710 lbs. per sq. ft.

SECTION A-A

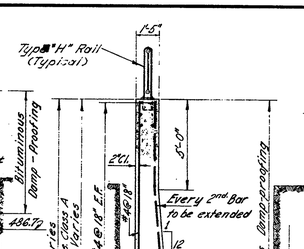
Scale 1/4"=1'-0"



Max. Soil Pressure = 2,450 lbs. per. sq. ft.

SECTION B-B

Scale 1/4"=1'-0"



Pay Line for Rock Excavation. Typical at Abutment and Wing Walls.

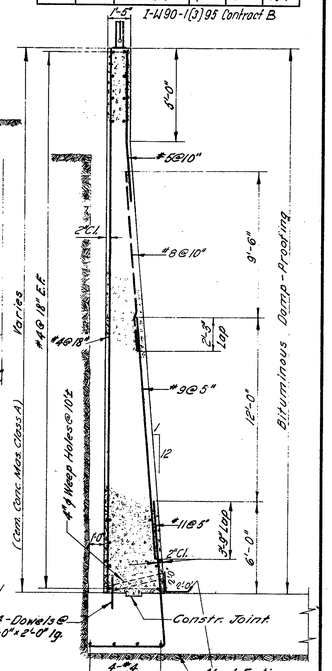
#4-Dowels @ 3'-0" x 2'-0" lg.

Constr Jnt.

Max. Soil Pressure = 4,140 lbs. per. Sq. Ft.

SECTION C-C

Scale 1/4"=1'-0"



SECTION D-D

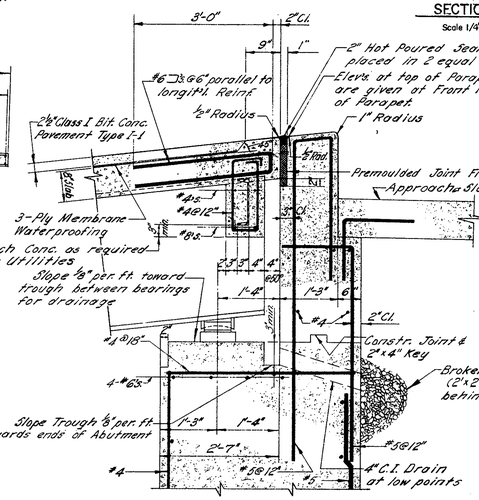
Scale 1/4"=1'-0"

3 Ply Memb. W.P. with reinf. mortar protective course. (Typ. for all Walls shown on this Sheet)

Max. Soil Pressure = 9,050 lbs. per. Sq. Ft.

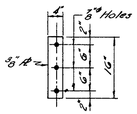
TYPICAL ABUTMENT SECTION

Scale 1/4"=1'-0"



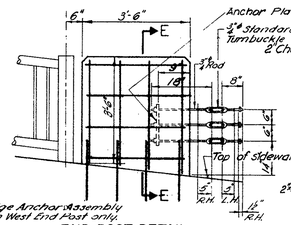
DETAIL "B"

Scale 3/4"=1'-0"



ANCHOR PLATE DETAIL

Scale 3/4"=1'-0"



NOTE:
Bridge Anchor Assembly for North West End Post only.

END POST DETAIL

Scale 1/2"=1'-0"

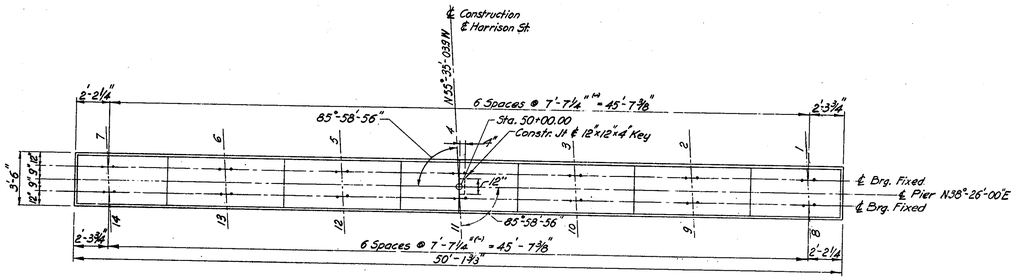
SECTION E—E

Scale 1/2"=1'-0"

DATE	DESCRIPTION
MAY 31, 1958	· ISSUED FOR CONSTRUCTION ·
	· USE ONLY PRINTS OF LATEST DATE ·

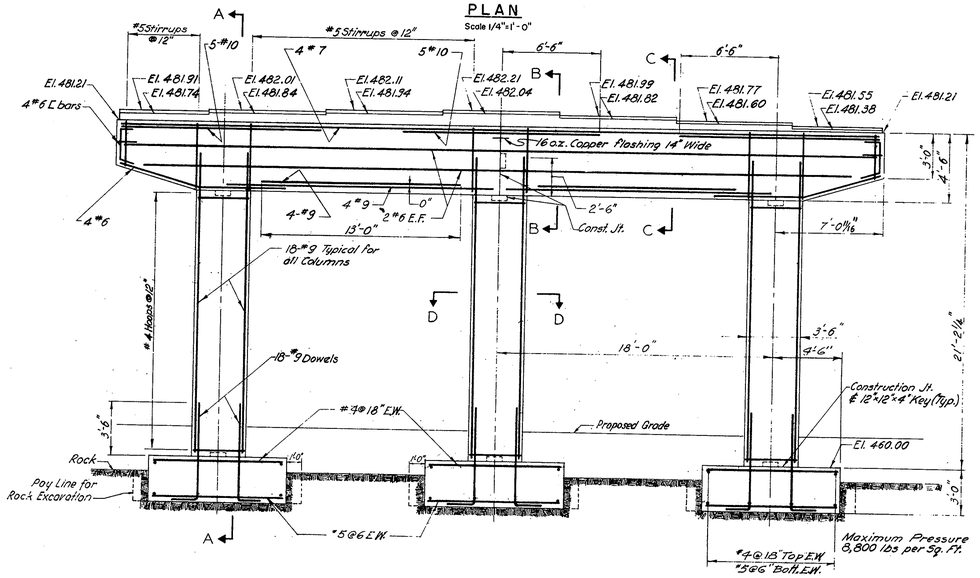
PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-353(3)	1958	185	194

I-W190-1(3)95 Contract B



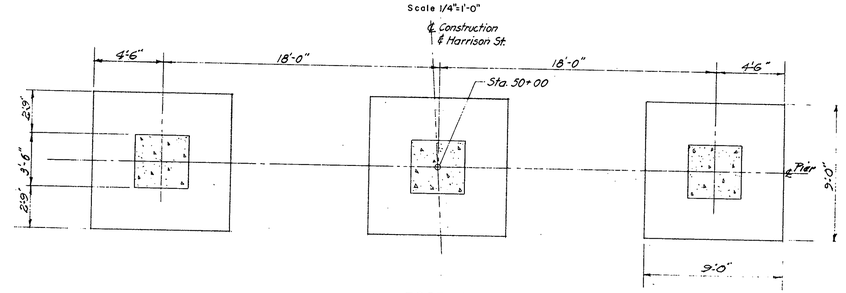
PLAN

Scale 1/4"=1'-0"



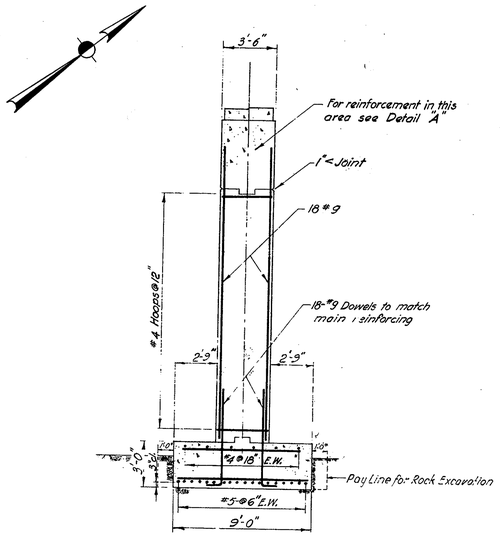
ELEVATION

Scale 1/4"=1'-0"



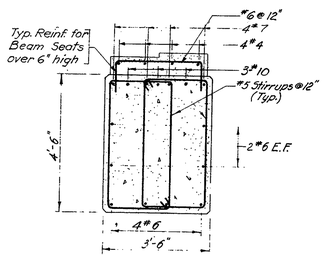
FOOTING

Scale 1/4"=1'-0"



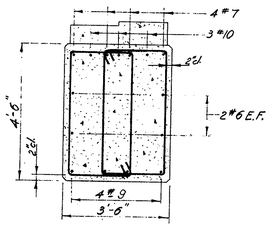
SECTION A-A

Scale 1/4"=1'-0"



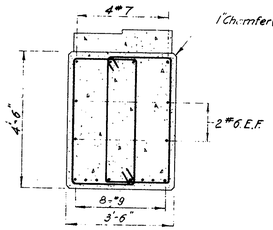
DETAIL "A"

Scale 1/2"=1'-0"



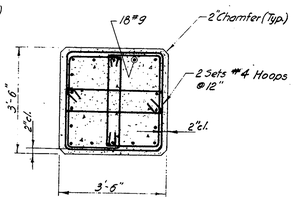
SECTION B-B

Scale 1/2"=1'-0"



SECTION C-C

Scale 1/2"=1'-0"



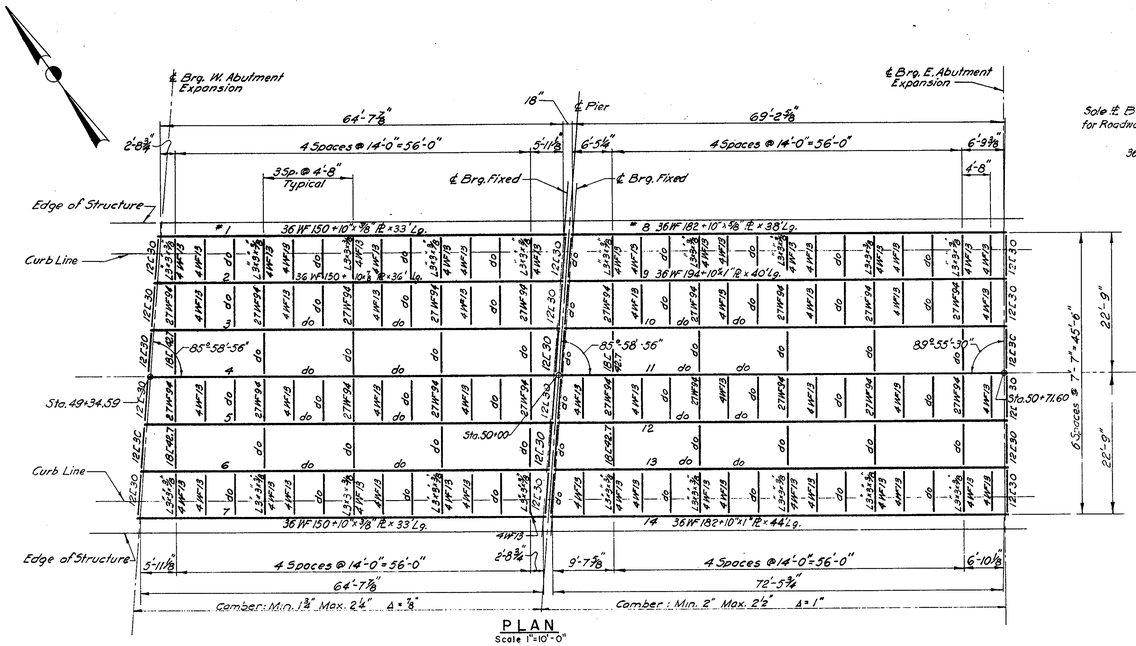
SECTION D-D

Scale 1/2"=1'-0"

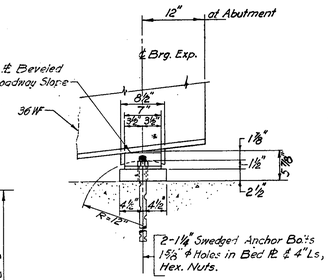
DATE	DESCRIPTION
MAY 31, 1958	· ISSUED FOR CONSTRUCTION ·
	· USE ONLY PRINTS OF LATEST DATE ·

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-333(3)	1958	186	194

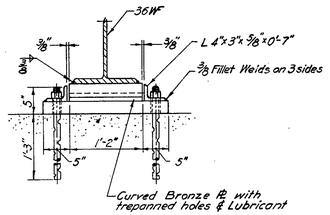
I-W90-1(3)95 CONTRACT B



PLAN
Scale 1"=10'-0"

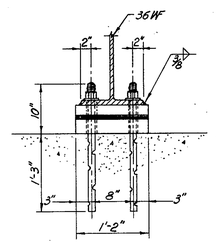


SIDE VIEW

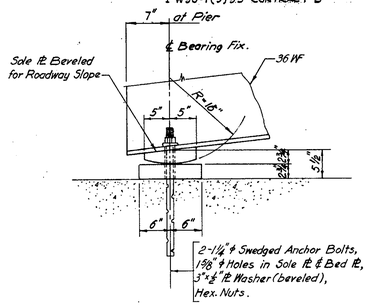


END VIEW

EXPANSION BEARING DETAILS
Scale 1"=1'-0"

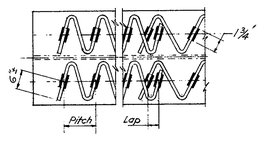


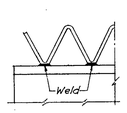
END VIEW

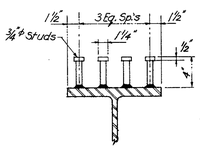


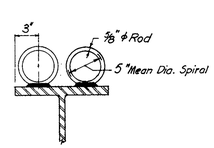
SIDE VIEW

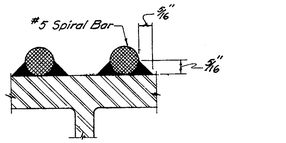
FIXED BEARING DETAILS
Scale 1"=1'-0"

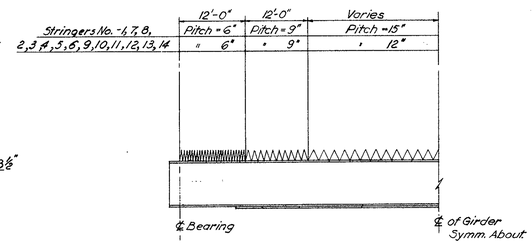








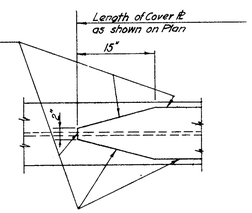




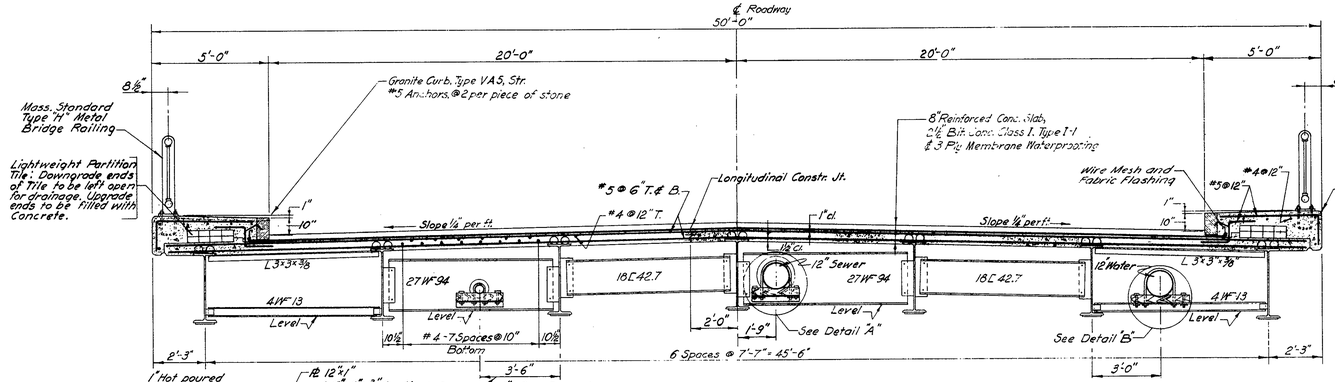
SPIRAL DETAILS
No Scale

Conversion Table

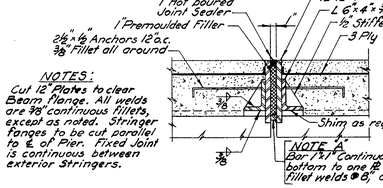
Pitch for 2-⅝"ϕ Spirals	Pitch for 4-¾"ϕ Studs
6"	7"
9"	10"
12"	14"
15"	17"



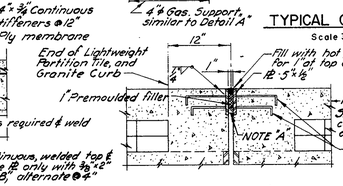
COVER ℓ DETAIL
Scale 1"=1'-0"



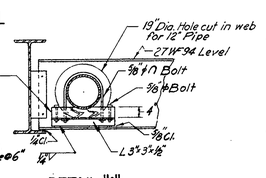
TYPICAL CROSS SECTION
Scale 3/8"=1'-0"



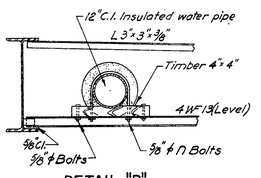
ROADWAY FIXED JOINT
Scale 1"=1'-0"



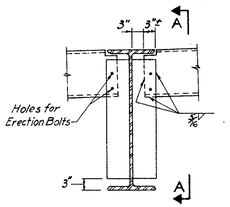
SIDEWALK FIXED JOINT
Scale 1"=1'-0"



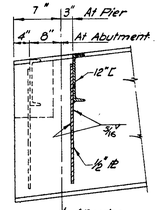
DETAIL "A"
Scale 1/2"=1'-0"



DETAIL "B"
Scale 1/2"=1'-0"

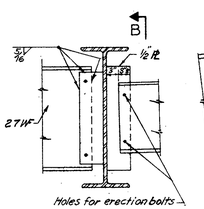


ELEVATION

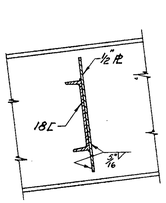


SECTION A–A

END DIAPHRAGM



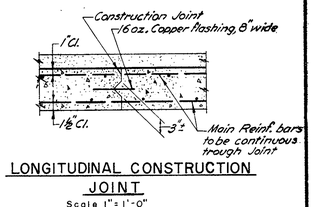
ELEVATION



SECTION B—B

INTERMEDIATE DIAPHRAGM

DIAPHRAGM DETAILS
Scale 3/4"=1'-0"



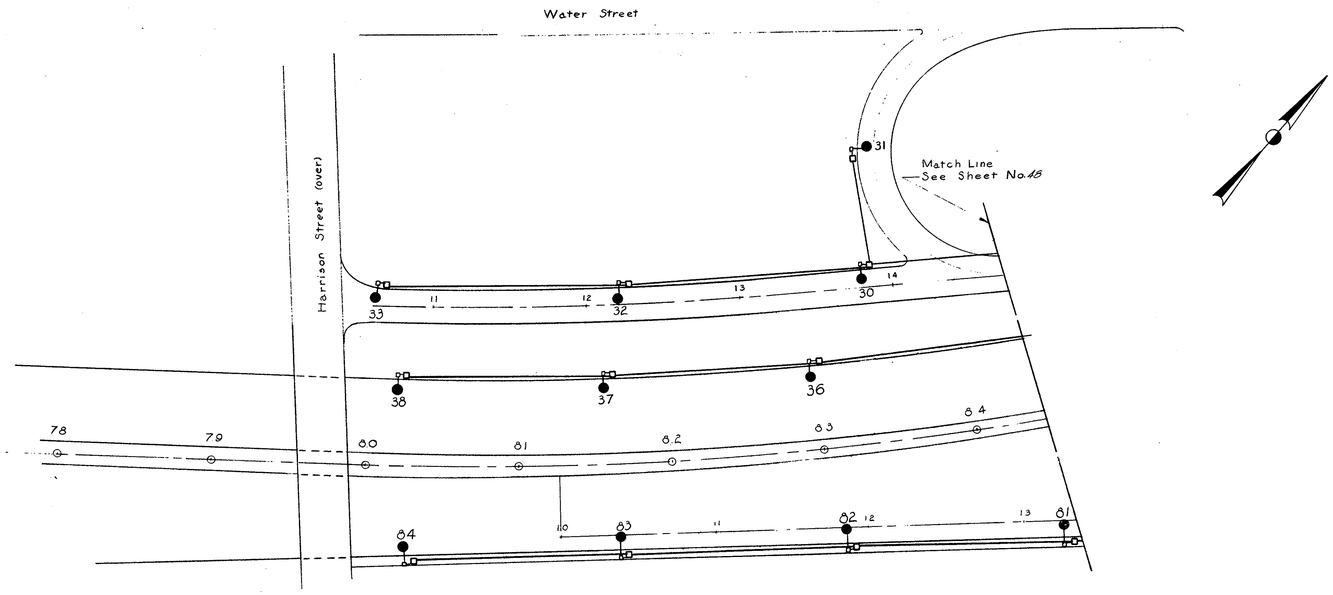
LONGITUDINAL CONSTRUCTION JOINT
Scale 1"=1'-0"

Note -
1. Δ = deflection due to wt. of conc. deck only.

DATE	DESCRIPTION
MAY 31, 1958	· ISSUED FOR CONSTRUCTION ·
	· USE ONLY PRINTS OF LATEST DATE ·

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-353(3)	1958	188	194

I-W90-1(3)95 Contract B

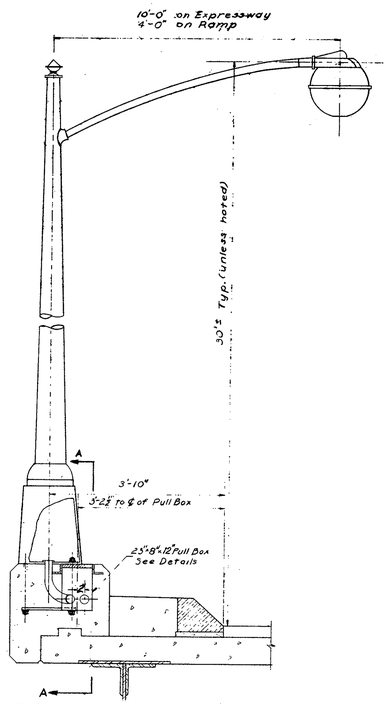


ELECTRICAL

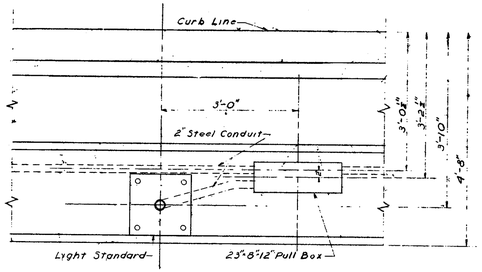
DATE	DESCRIPTION
MAY 31, 1958	· ISSUED FOR CONSTRUCTION ·
	· USE ONLY PRINTS OF LATEST DATE ·

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-353(3)	1958	194	194

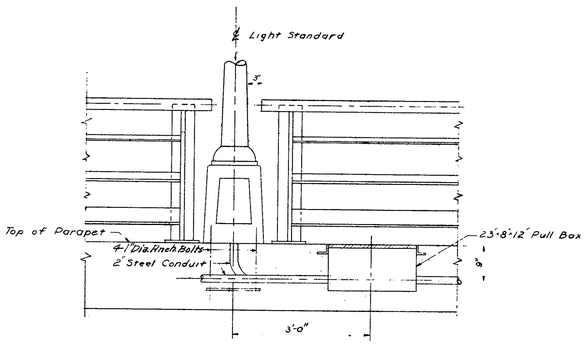
I-W90-1(6)35 Contract 5



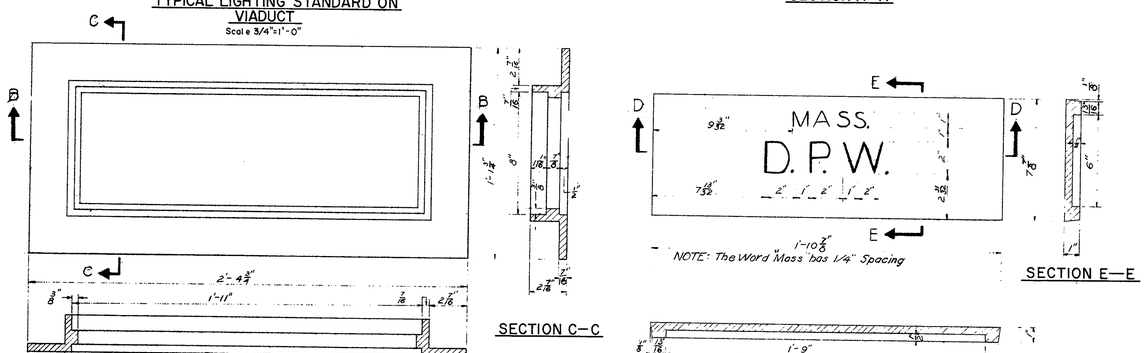
TYPICAL LIGHTING STANDARD ON VIADUCT
Scale 3/4"=1'-0"



PLAN ON VIADUCT



SECTION A—A



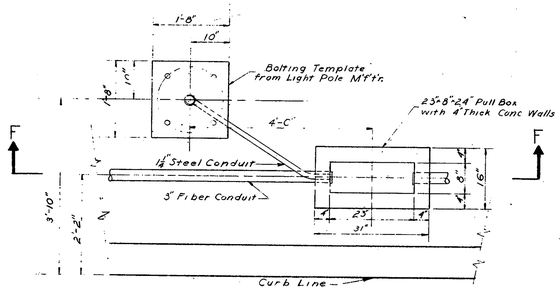
SECTION B—B
FRAME

SECTION C—C

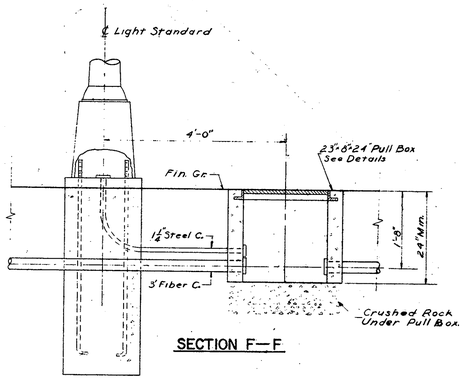
SECTION E—E

SECTION D—D
COVER

PULL BOX DETAILS
Scale 3"=1'-0"

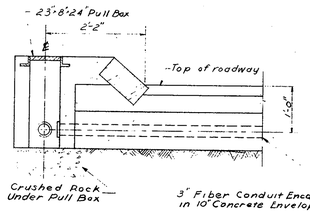


PLAN

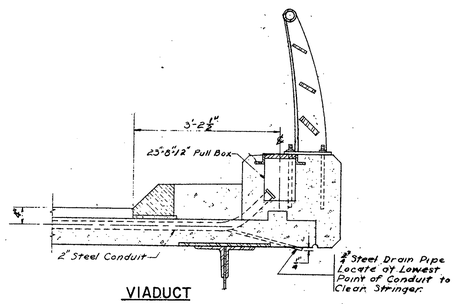


SECTION F—F

TYPICAL LIGHT STANDARD GRADE
Scale 3/4"=1'-0"



GRADE



VIADUCT

TYPICAL ROAD CROSSING PULLBOX
Scale 3/4"=1'-0"

NOTES:
1. For Light Standard Anchor Detail on Viaduct See Sheet No.
2. Pull Boxes 24" Deep on Fill 12" Deep on Viaduct
3. 2" Steel Conduit Shall Be Used Throughout the Viaduct Section unless Otherwise Noted, Type II
4. 3" Fiber Conduit Shall Be Used from Pull Box to Pull Box on Grade Section. 1¼" Steel Conduit from Pull Box to Lighting Standard.
5. Lighting standards, steel conduits and metal boxes on viaduct shall be solidly grounded to viaduct steel framing.

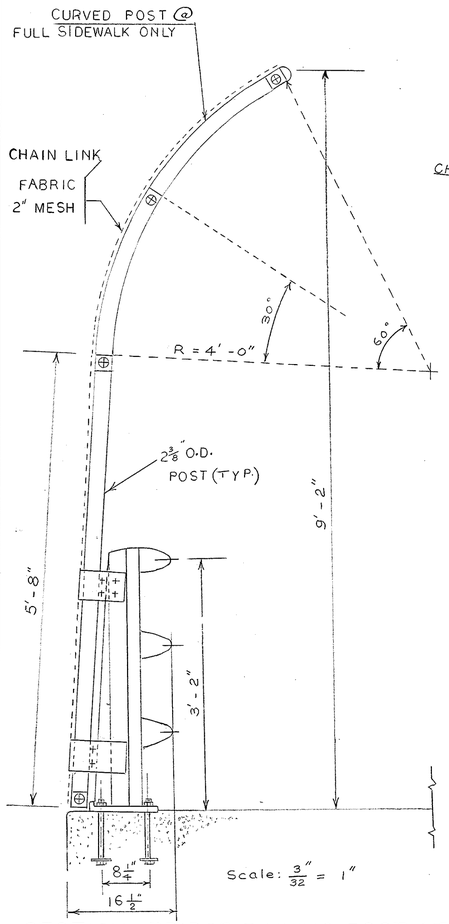
ELECTRICAL

DATE	DESCRIPTION
MAY 31, 1958	ISSUED FOR CONSTRUCTION
	USE ONLY PRINTS OF LATEST DATE

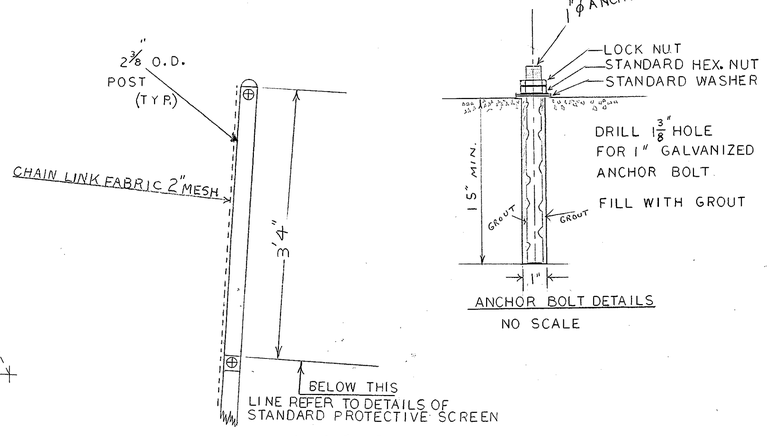
SHEET 53 OF 53 SHEETS · BRIDGE NO. W-44-82 W-44-83

PUB. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-290-5(36)97		2	12

WORCESTER



SECTION - BRIDGE RAILING POST (TYPE AL-3)
ALUMINUM POST FOR PROTECTIVE SCREEN



DETAIL TOP OF POST @ SAFETY WALK SIDE

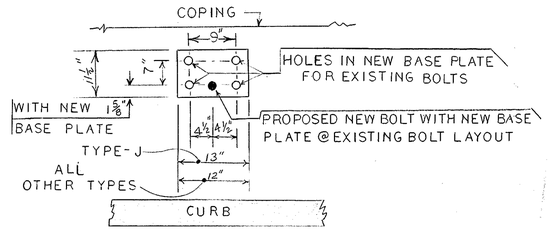
Note: THIS DETAIL APPLIES FOR SCREEN INSTALLATION AT SAFETY WALK FOR ATTACHMENT TO 3-RAIL ALUMINUM BRIDGE RAIL ONLY.

Note: (1) 6" GAUGE ALUMINUM CHAIN LINK FABRIC 2" MESH 10' WIDE.

(2) USE 6" GAUGE TIES 12" O.C. TO ALL POSTS AND TOP THREE RAILS. SPACE TIES TO BOTTOM RAIL AT 6" O.C.

(3) FOR DETAILS OF METAL BRIDGE RAILINGS TYPE AL-3; SEE STANDARDS DATED MARCH, 1968.

ANCHOR BOLT DETAILS
NO SCALE



PROPOSED BASE PLATE LAYOUT
NO SCALE

~ GENERAL NOTES ~

DIMENSIONS:

ALL DIMENSIONS AND DETAILS SHOWN FOR THE EXISTING STRUCTURES SHALL BE CHECKED IN THE FIELD BY THE CONTRACTOR.

WELDING:

WELDING SHALL BE PERFORMED BY METAL INERT GAS ("MIG") PROCESS. ALL WELDING SHALL CONFORM TO THE SPECIFICATIONS FOR STRUCTURES OF ALUMINUM ALLOYS, ALUMINUM CONSTRUCTION MANUAL, SECTION A, PUBLISHED BY THE ALUMINUM ASSOCIATION NEW YORK, N.Y.

BASE PLATE LAYOUT:

THE CONTRACTOR IS CAUTIONED THAT SOME VARIATION EXISTS BETWEEN ACTUAL FIELD DIMENSIONS AND THOSE DIMENSIONS SHOWN ON THE PLANS, CONCERNING BOLT LAYOUT FOR RAILING BASE PLATES. A FIELD CHECK SHOULD BE MADE FOR VERIFICATION. IT IS INTENDED WHERE EXISTING BOLTS ARE TO BE USED WITH NEW BASE PLATES, THAT SUFFICIENT CLEARANCE SHALL EXIST BETWEEN BOLT HOLES AND EDGES OF PLATES. ANY BASE PLATE ALIGNED SUCH THAT ITS ANCHOR BOLTS ARE NOT SECURELY IMBEDDED IN CONCRETE OR GROUT SHALL BE PROPERLY REALIGNED TO CORRECT THIS DEFICIENCY. ALSO, THE FULL THREADED SURFACE OF THE NUTS SHALL ENGAGE COMPLETELY WITH THE EXISTING AND/OR NEW BASE PLATE BOLTS, OTHERWISE THE BOLTS SHALL BE REPLACED.

PLANS:

PLANS OF ORIGINAL CONSTRUCTION ARE ON FILE AT THE OFFICE OF THE BRIDGE ENGINEER, ROOM 610, DEPT. OF PUBLIC WORKS, 100 NASHUA ST., BOSTON, MASS.

PROTECTIVE SCREEN:

SEE DEPARTMENT STANDARD PLANS DATED DECEMBER, 1971 FOR DETAILS OF STANDARD PROTECTIVE SCREEN. ALSO SEE SHEETS 1, 2 & 3.

~ TOTAL ESTIMATED QUANTITIES ~
(NOT GUARANTEED)

PROTECTIVE SCREEN (CHAIN LINK)	2576 L.F.
METAL BRIDGE RAIL (3 RAIL) TYPE AL-3 MODIFIED	2063 L.F.
CHAIN LINK PANELS (REMOVED & STACKED)	81 EA.
METAL BRIDGE RAIL (REMOVED & STACKED)	2063 L.F.
CUTTING AND GRINDING BOLTS	60 EA.
DRILLING AND GROUTING ANCHOR BOLTS	334 EA.

~ DETAIL SHEETS ~

STANDARD PROTECTIVE SCREEN ATTACHMENT TO METAL BRIDGE RAILING TYPE AL-3 (SHEET 2 & 3).

METAL BRIDGE RAIL (3 RAIL) TYPE AL 3 MODIFIED - SEE SHEET #4

~ VARIOUS BRIDGES OVER I-290 IN WORCESTER ~

NUMBER	LOCATION (STREET)	REF SHEET NO
W 44-83	HARRISON ST.	5
W 44-85	VERNON ST.	6
W 44-93	LAUREL ST.	7
W 44-94	BELMONT ST.	8
W 44-97	BURNCOAT ST.	9
W 44-99	MILLBROOK ST. - OVER RAMP "B"	10
W 44-112	MARSH AVE.	11

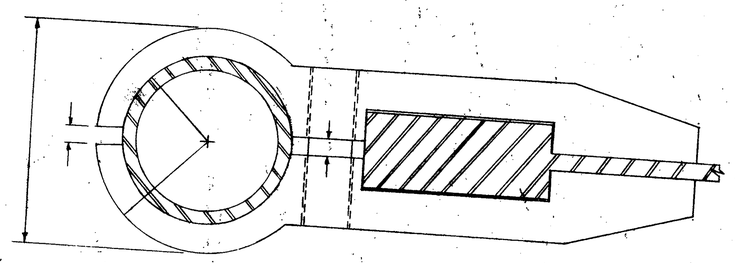
DESIGNED BY	SEPT. 22, 1973 — ISSUED FOR CONSTRUCTION
STEPANIAN	THE COMMONWEALTH OF MASSACHUSETTS
DRAWN BY	PROPOSED ALTERATION
STEPANIAN	WORCESTER
CHECKED BY	INSTALLATION OF PROTECTIVE SCREEN ON
DAIOPULOS	VARIOUS BRIDGES OVER ROUTE I-290
APPROVED FOR DESIGN	SCALES AS NOTED
PERNA	OFFICE OF
	DEPARTMENT OF PUBLIC WORKS
SPECS	100 NASHUA ST., BOSTON, MASS.
FORTE	SEPT. 1973 — BRIDGE ENGINEER — CHIEF ENGINEER

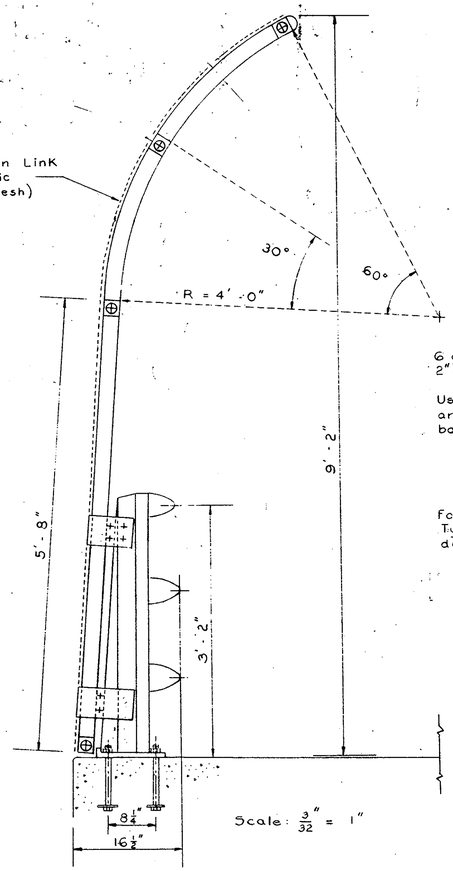
PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-290-5(36)97	19	3	12

WORCESTER

MATERIAL NOTES:

Posts, Rails, Tension Bars, Rail Splices, ~~Upper Clamps,~~ Washers ⚠1	ASTM B221 Alloy 6061-T6
Fabric & Ties	ASTM B211 Alloy 6061-T94 - 6 Gage
Lower Clamps,	⚠1 ~~ASTM B221 Alloy 6061-T4~~ ASTM B26 OR B108 ALLOY 356-T-6 ⚠1
Tension Bands	ASTM B221 Alloy 6063-T5
Bolts	ASTM B316 Alloy 2024-T4
Nuts	ASTM B316 Alloy 6061-T6
⚠1 UPPER CLAMPS	⚠1 ASTM B221 ALLOY 6061-T6 OR ~~6063-T6~~





Scale: $\frac{3}{32}$" = 1"

6 gauge Aluminum Chain Link Fabric 2" mesh (10' wide)

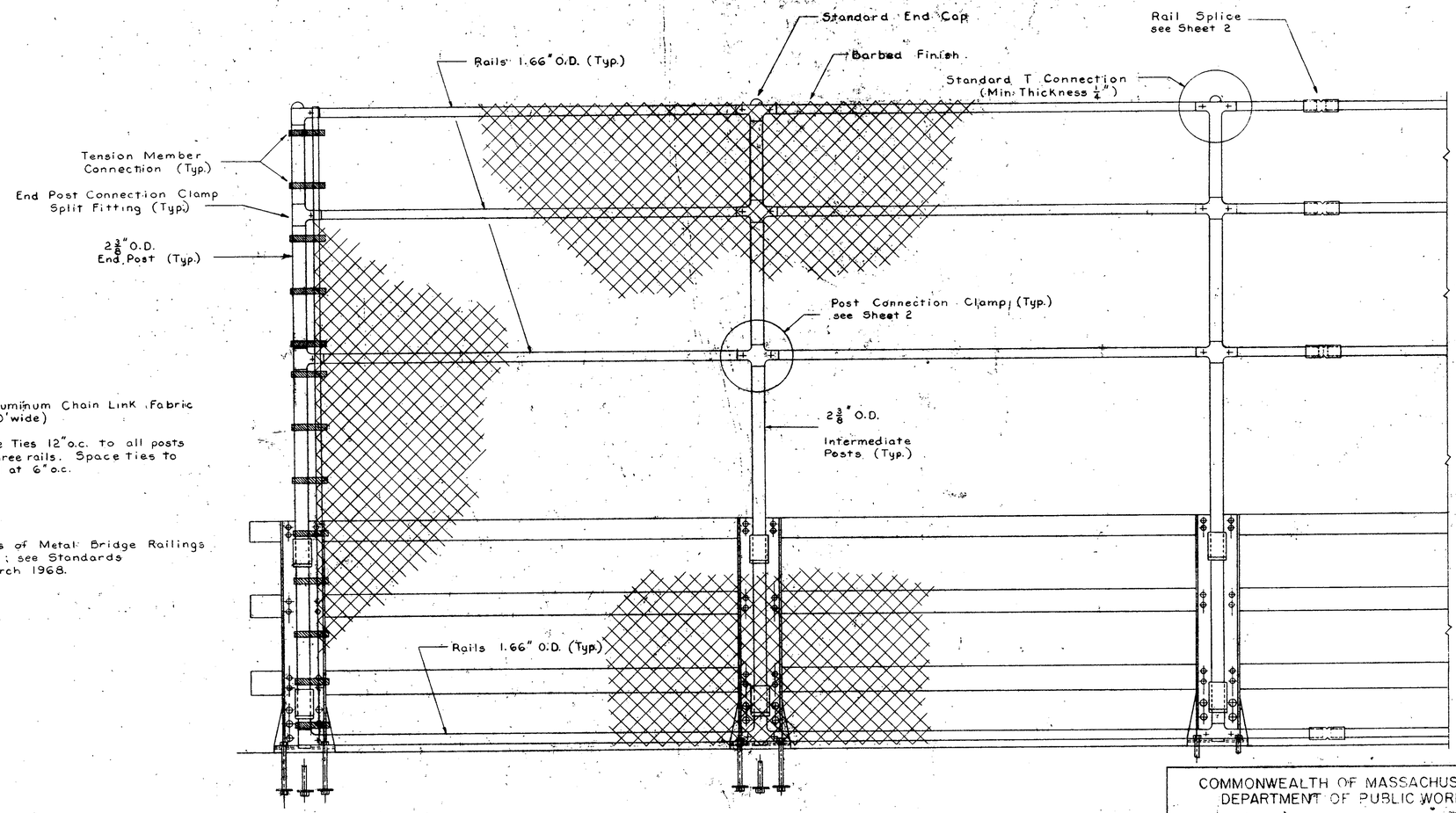
Use 6 gauge Ties 12" o.c. to all posts and top three rails. Space ties to bottom rail at 6" o.c.

For details of Metal Bridge Railings Type AL-3 ; see Standards dated March 1968.

SECTION - BRIDGE RAILING POST (TYPE AL-3)

ALUMINUM POST FOR PROTECTIVE SCREEN

Provide splices at each Bridge Deck Joint and at approximately 20 foot intervals



⚠1 MATERIAL NOTES REVISED: MAY 2, 1972

DATE	DESCRIPTION
SEPT. 22, 1973	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

SHEET NO. 2 OF 11 SHEETS

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS

STANDARD PROTECTIVE SCREEN

ATTACHMENT TO METAL BRIDGE RAILING TYPE AL-3

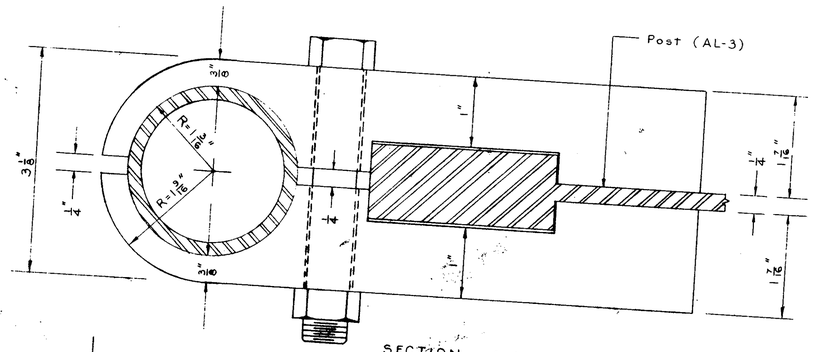
DECEMBER 1971

BRIDGE ENGINEER

CHIEF ENGINEER

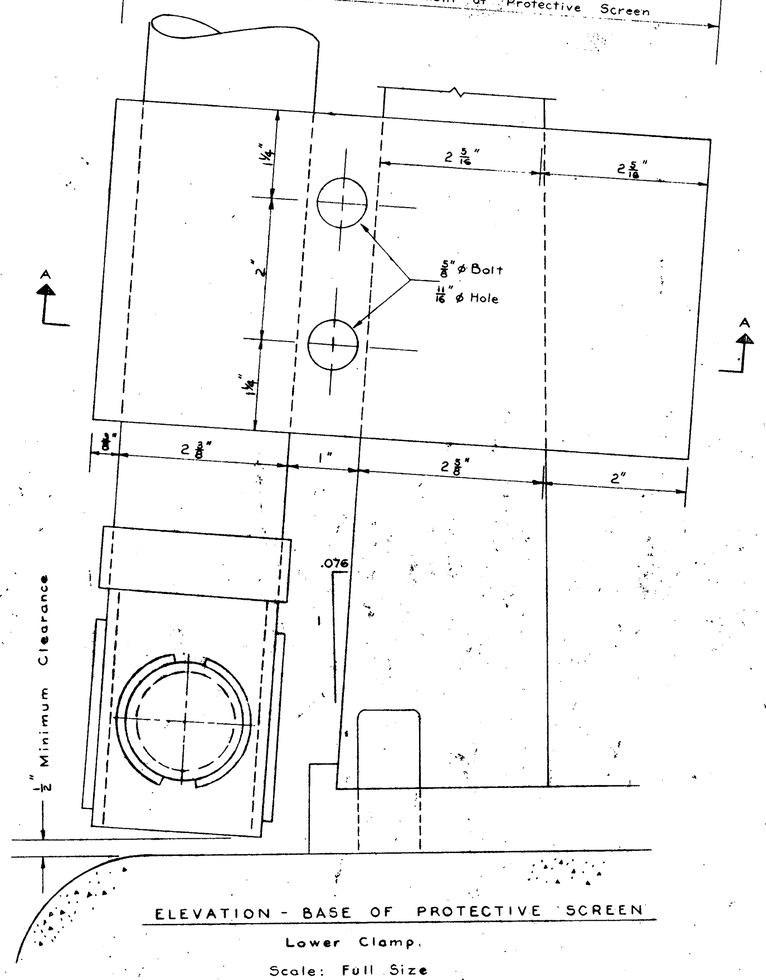
PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-290-5(36)97	19	4	12

WORCESTER



SECTION A-A

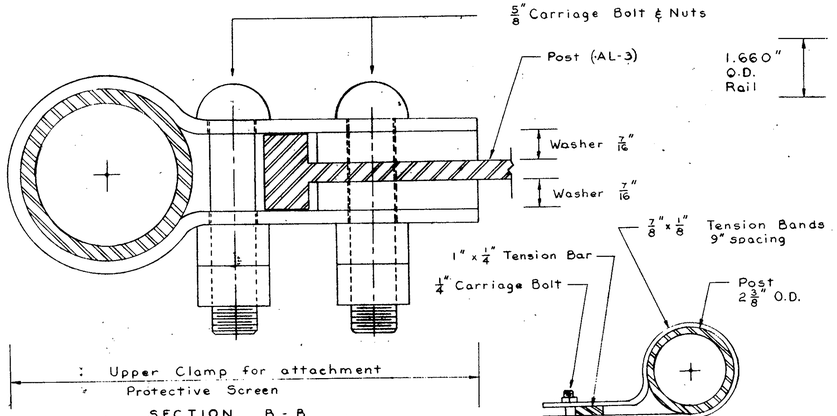
Lower Clamp for attachment of Protective Screen



ELEVATION - BASE OF PROTECTIVE SCREEN

Lower Clamp.

Scale: Full Size

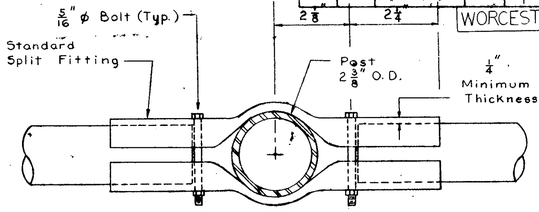


: Upper Clamp for attachment Protective Screen

SECTION B-B

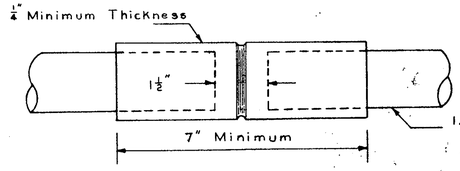
PLAN OF TENSION MEMBER CONNECTION

Scale: Half Size



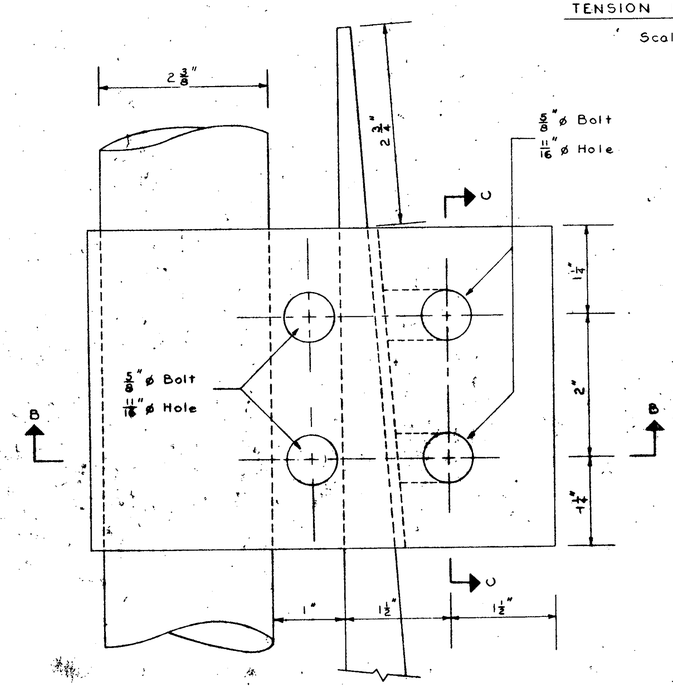
PLAN OF POST CONNECTION CLAMP

Scale: Half Size



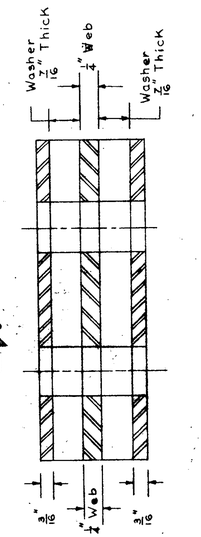
RAIL SPLICE DETAIL

Scale: Half Size

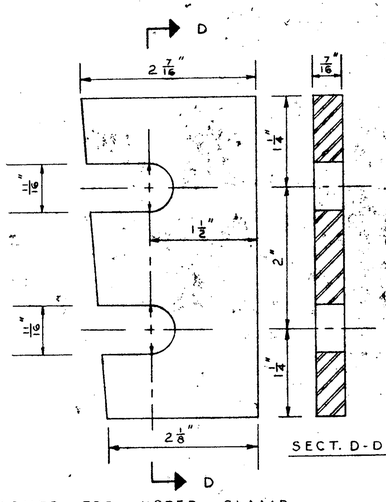


ELEVATION - UPPER CLAMP

Scale: Full Size



SECTION C-C



SECT. D-D

WASHER FOR UPPER CLAMP

Scale: Full Size

DATE	DESCRIPTION
SEPT. 22, 1978	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS

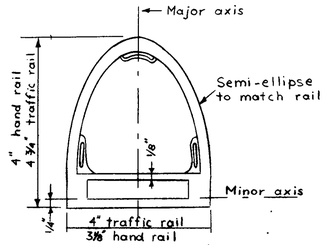
STANDARD PROTECTIVE SCREEN

ATTACHMENT TO METAL BRIDGE RAILING TYPE AL-3
CLAMP AND CONNECTION DETAILS
DECEMBER 1971

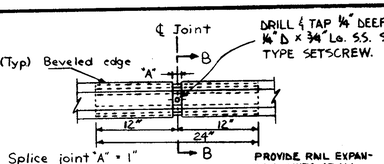
SHEET NO 3 OF 11 SHEETS

PUB. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-290-5(36)97		5	12

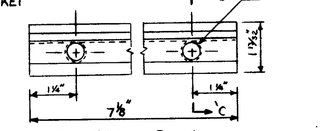
WORCESTER



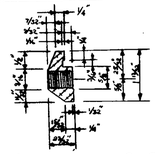
Rail End Cap
Scale ½" = 1"



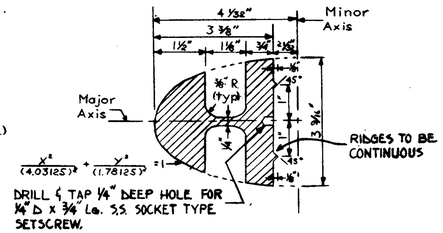
Railing Joint
NOT TO SCALE



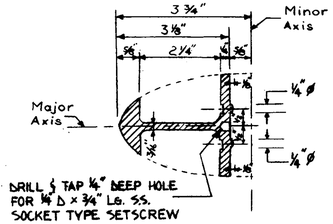
Traffic Rail
Clamp Bar Detail
Scale ½" = 1"



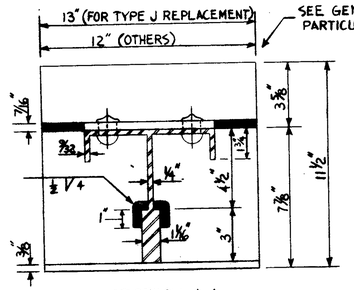
Section C-C
Scale ½" = 1"



Traffic Rail Splice Extrusion
Scale ½" = 1"

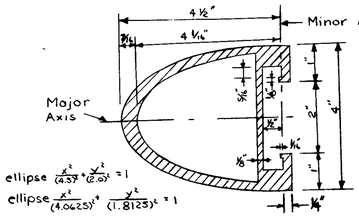


Hand Rail Splice Extrusion
Scale ½" = 1"

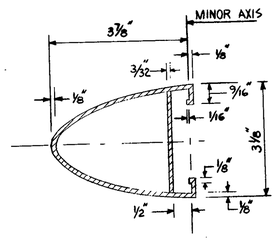


SECTION A-A
SCALE: 1½" = 1"

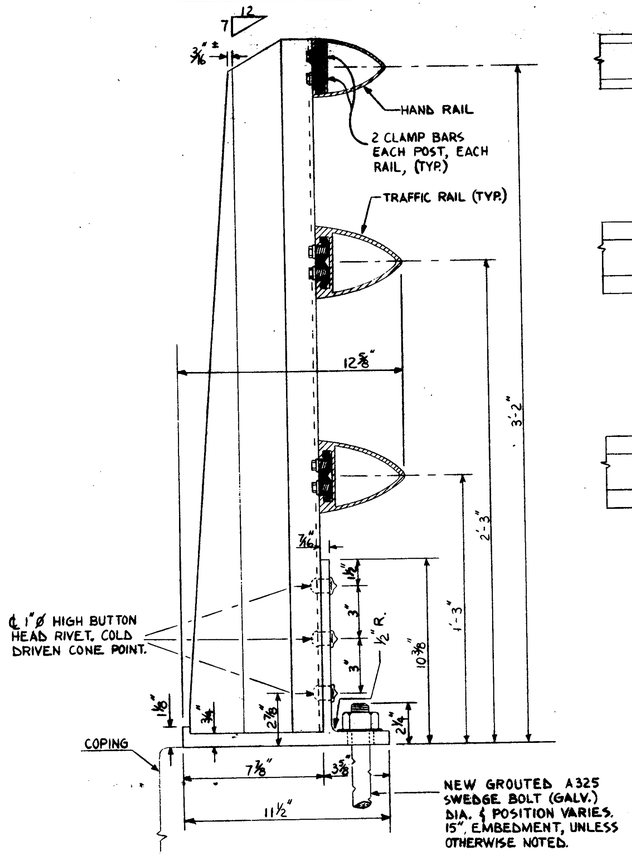
SECTIONS B-B



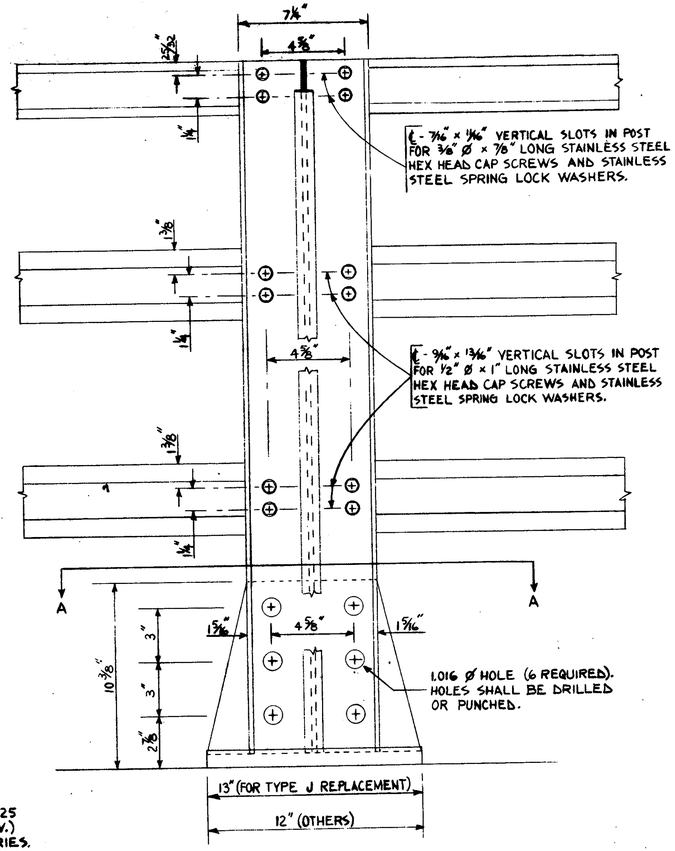
Traffic Rail Extrusion
Scale ½" = 1"



HAND RAIL EXTRUSION
SCALE: ½" = 1"



SIDE ELEVATION
SCALE: ¼" = 1"



OUTSIDE ELEVATION
SCALE: ¼" = 1"

NOTES:

METAL BRIDGE RAIL - - (3 RAIL) TYPE AL-3 MODIFIED:

ALL RAILING IS TO BE FABRICATED AND ERECTED SO THAT THE RAIL IS PARALLEL TO THE CURBING. SINCE THE FINISHED RAILING MUST MEET ALL REQUIREMENTS OF FIT, ALIGNMENT AND GRADE TO THE FULL SATISFACTION OF THE ENGINEER, IT IS SUGGESTED THAT COMPLETE FIELD MEASUREMENTS BE MADE BEFORE ANY SHOP FABRICATION IS PERFORMED.
ALUMINUM RAILS, POSTS, POST BASES, CLAMP BARS INCLUDING STAINLESS STEEL CAP SCREWS AND LOCK WASHERS, RAIL SPLICES, RIVETS, END CAPS, PINS, RAIL TERMINAL ENDS, ALUMINUM CAULKING COMPOUND, ANY NECESSARY SHIMS, ANY NECESSARY PAINTING OF BOLTS AND ANY NECESSARY BUSH-HAMMERING TO LEVEL THE CONCRETE UNDER THE POST BASES SHALL BE PAID FOR UNDER THE RAILING ITEM.
THE PROVISION OF ANCHOR BOLTS, NUTS AND WASHERS AND THE DRILLING AND GROUTING OF HOLES NECESSARY TO RECEIVE THE ANCHOR BOLTS SHALL BE PAID FOR UNDER A SEPERATE ITEM.
RAILS SHALL BE CONTINUOUS OVER A MINIMUM OF THREE POSTS.
ALUMINUM RIVETS SHALL BE COLD DRIVEN.
MATERIALS USED IN THE MANUFACTURE OF THIS RAILING SHALL CONFORM TO THE REQUIREMENTS AND/OR SPECIFICATIONS LISTED BELOW:

PIECE	ASTM DESIGNATION	COMMERCIAL ALLOY & TEMPER
ALUMINUM EXTRUSIONS (POSTS, POST BASES, RAILS, RAIL SPLICES, CLAMP BARS, AND RAIL TERMINAL ENDS)	B 221	6061-T6
ALUMINUM RIVETS	B 316	6061-T6
ALUMINUM PLATE SHIMS	B 209	1100-0
ALUMINUM RAIL END CAPS	B 26	43F OR 356F
STEEL BOLTS, NUTS AND WASHERS (GALV.)	A 325	

EXISTING BOLTS:

WHERE GALVANIZING IS DAMAGED, THE DAMAGED AREAS SHALL BE THOROUGHLY CLEANED AND GIVEN ONE COAT OF ZINC DUST-ZINC OXIDE PAINT CONFORMING TO THE REQUIREMENTS FOR TYPE III AS SPECIFIED IN FEDERAL SPECIFICATION TT-P-641B.
ANY BOLTS THAT ARE DETERMINED BY THE RESIDENT ENGINEER TO BE DAMAGED BEYOND UTILIZATION SHALL BE REMOVED AND REPLACED WITH NEW BOLTS.

NEW BOLTS:

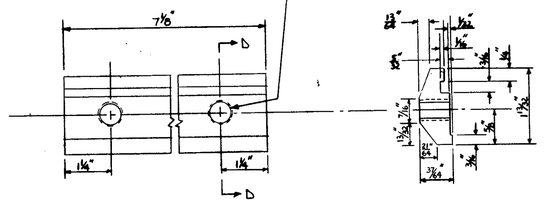
ALL NEW BOLTS TO BE DRILLED AND GROUTED SHALL BE THE SAME SIZE AS THOSE OF THE EXISTING BOLT LAYOUT UNLESS OTHERWISE NOTED. THEY SHALL BE SWEDGED THROUGHOUT THE BOTTOM 9" OF THE IMBEDDED PORTION AND CONFORM TO THE ASTM DESIGNATION INDICATED ABOVE.

SPACING:

WHERE ENTIRELY NEW BOLT LAYOUTS ARE TO BE INSTALLED, MAXIMUM POST SPACING SHALL BE 8'-0".

TRANSITION:

THE NEW RAILS SHALL BE BENT TO MAKE A SMOOTH TRANSITION WITH THE EXISTING END POSTS UNLESS INDICATED OTHERWISE.



HANDRAIL CLAMP BAR DETAIL
NOT TO SCALE

SECTION D-D
NOT TO SCALE

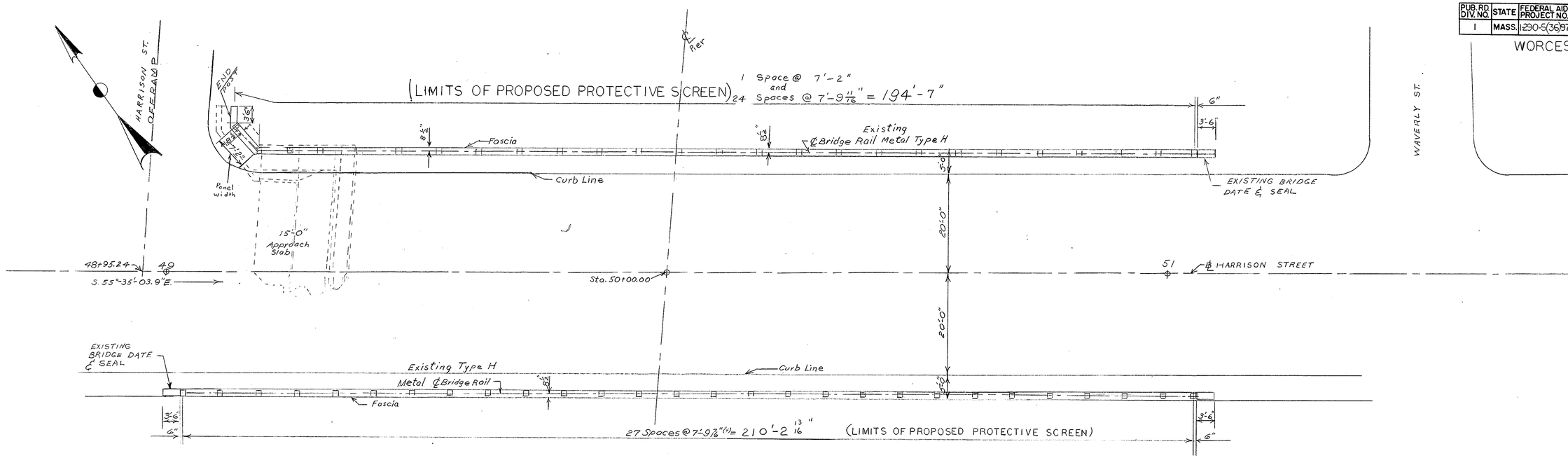
DATE	DESCRIPTION
SEPT. 22, 1970	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

METAL BRIDGE RAIL (3-RAIL) TYPE AL-3 MODIFIED

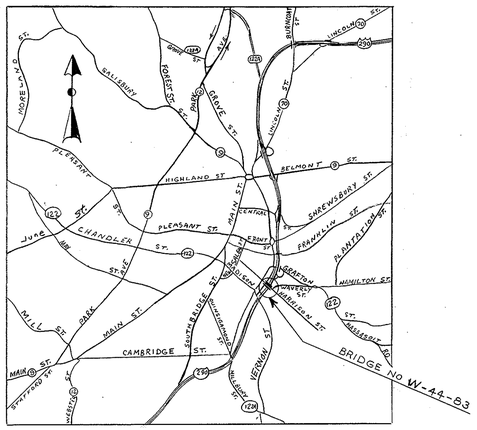
PUB. RD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-290-5(36)97		6	12

WORCESTER



PLAN
Scale 1"=10'-0"

W-44-83



LOCUS PLAN
SCALE 1"=3750'

~ESTIMATED QUANTITIES~
(NOT GUARANTEED)

PROTECTIVE SCREEN (CHAIN LINK) - - - - - - - - - - 400 L.F.
METAL BRIDGE RAIL (3 RAIL) TYPE AL-3 MODIFIED - - - - 400 L.F.
METAL BRIDGE RAIL (REMOVED & STACKED) - - - - - - - 400 L.F.
CUTTING & GRINDING BOLTS - - - - - - - - - - - - - - - 12 EA.
DRILLING & GROUTING ANCHOR BOLTS - - - - - - - - - - - 66 EA.

~GENERAL NOTES~

DIMENSIONS:

ALL DIMENSIONS AND DETAILS SHOWN FOR THE EXISTING STRUCTURE SHALL BE CHECKED IN THE FIELD BY THE CONTRACTOR.

PROTECTIVE SCREEN:

SEE DEPARTMENT STANDARD PLANS DATED DECEMBER 1971 FOR DETAILS OF STANDARD PROTECTIVE SCREEN. ALSO SEE SHEETS 1, 2 & 3.

BRIDGE RAILING:

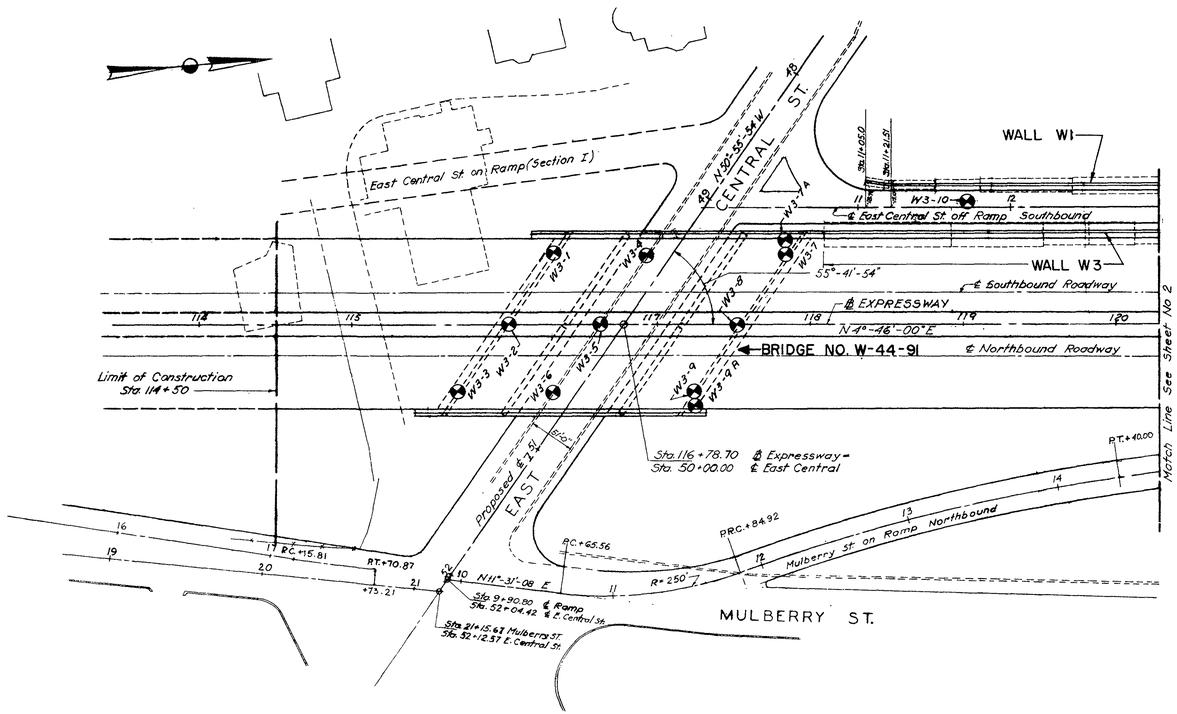
SEE SHEET #4 FOR DETAILS OF METAL BRIDGE RAIL (3 RAIL) TYPE AL-3 MODIFIED

EXISTING RAILING:

ALL EXISTING BRIDGE RAILING & POSTS (TYPE H) TO BE REMOVED & STACKED. SEE SHEET #1 FOR PROPOSED BASE PLATE LAYOUT.

DESIGNED BY STEPANIAN	SEPT. 22, 1973 — ISSUED FOR CONSTRUCTION
DRAWN BY STEPANIAN	THE COMMONWEALTH OF MASSACHUSETTS
CHECKED BY DAIOPULOS	PROPOSED ALTERATION
APPROVED FOR DESIGN PERNA	WORCESTER
	I-290 UNDER HARRISON STREET
	INSTALLATION OF PROTECTIVE SCREEN
SPECS FORTE	SCALES AS NOTED
	OFFICE OF
	DEPARTMENT OF PUBLIC WORKS
	100 NASHUA STREET, BOSTON, MASS.

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-N90-5(6)97	1958	92	117



PLAN
Scale 1" = 40'

INDEX

Bridge No. W-44-91 Expressway over East Central Street____ Sh. 1,4&6-12
Bridge No. W-44-92 Expressway over Prospect Street_____ Sh. 2,4&13-15
Bridge No. W-44-93 Laurel Street over Expressway_____ Sh. 2,4&16-20
Bridge No. W-44-94 Belmont Street over Expressway_____ Sh. 3,5&21-26

GENERAL NOTES

1) Design.
In accordance with the current specifications of the A.A.S.H.O. 1957
a) Expressway over East Central St. L120-516-44
b) Expressway over Prospect St. L120-516-44
c) Laurel St. over Expressway L120-44
d) Belmont St. over Expressway L120-44

2) Foundations.
Foundations may be altered if necessary, with approval of Engineer, to suit conditions encountered in construction, except those foundations which are designated to be placed on piles.

3) Dats and Seal.
Dats and Seal are to be placed on end posts as indicated on deck plans. A sheet showing size and character of numerals will be furnished by the Commonwealth.

4) Reinforcement.
All reinforcing steel bars shall conform to A.S.T.M. specification A 305.

5) Structural Steel: All steel stringers and their cover plates shall conform to ASTM A-373. All other steel shall conform to ASTM A-7 Copper bearing steel will not be Requir. In either case.
All welding shall be in accordance with the specifications set forth by the American Welding Society for Welded Highway and Railway Bridges.
All splices shall be welded, and shall develop 100% of the strength of the connected parts.
All field splices shall be located as shown on plans.

6) Shear Connectors.
The Contractor has the option of using stud reinforcement for shear connectors as detailed on plans in lieu of spirals. Studs shall be automatically end welded. Spirals or studs may be field or shop welded.

7) Bench Marks.
Bridge No. W-44-91
B.M. A-35 Sta. 117+70', Right 215' ± High Point on Gran. Bd. E. St. Line Mulberry St. 15'± of House #66 Elev. 500.34.
Bridge No. W-44-92
B.M. A-48 Sta. 122+75±, Right 15'± S.E. Corner Top Concrete Wall. N. Side Prospect St. at Walk Side House #45 Elev. 482.60
Bridge No. W-44-93
B.M. A-53 Sta. 128+01±, Left 205'± High Point Granite Bound @ S.W. Corner of Carroll & Laurel Sts. Elev. 506.87
Bridge No. W-44-94
B.M. A-63 Sta. 138+95±, Right 70'± 2'± S. of N.E. Corner Granite Step of Church @ N.E. Corner Belmont & Clayton Sts. Elev. 515.25.
Bench marks are referred to U.S.C. & G.S. datum. Sea level, datum of 1929.

DATE	DESCRIPTION
OCT. 14, 1958	GENERAL OVERALL REVISIONS MADE (ALL SHEETS)
SEPT. 4, 1958	SHEETS 17, 19, 22 & 24 UTILITY OPENING ENLARGED - REVISED SHEETS 20 & 26 ELECTRICAL DUCTS ADDED - REVISED
JULY 31, 1958	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS
100 NASHUA STREET BOSTON, MASSACHUSETTS

WORCESTER EXPRESSWAY
SECTION III-A

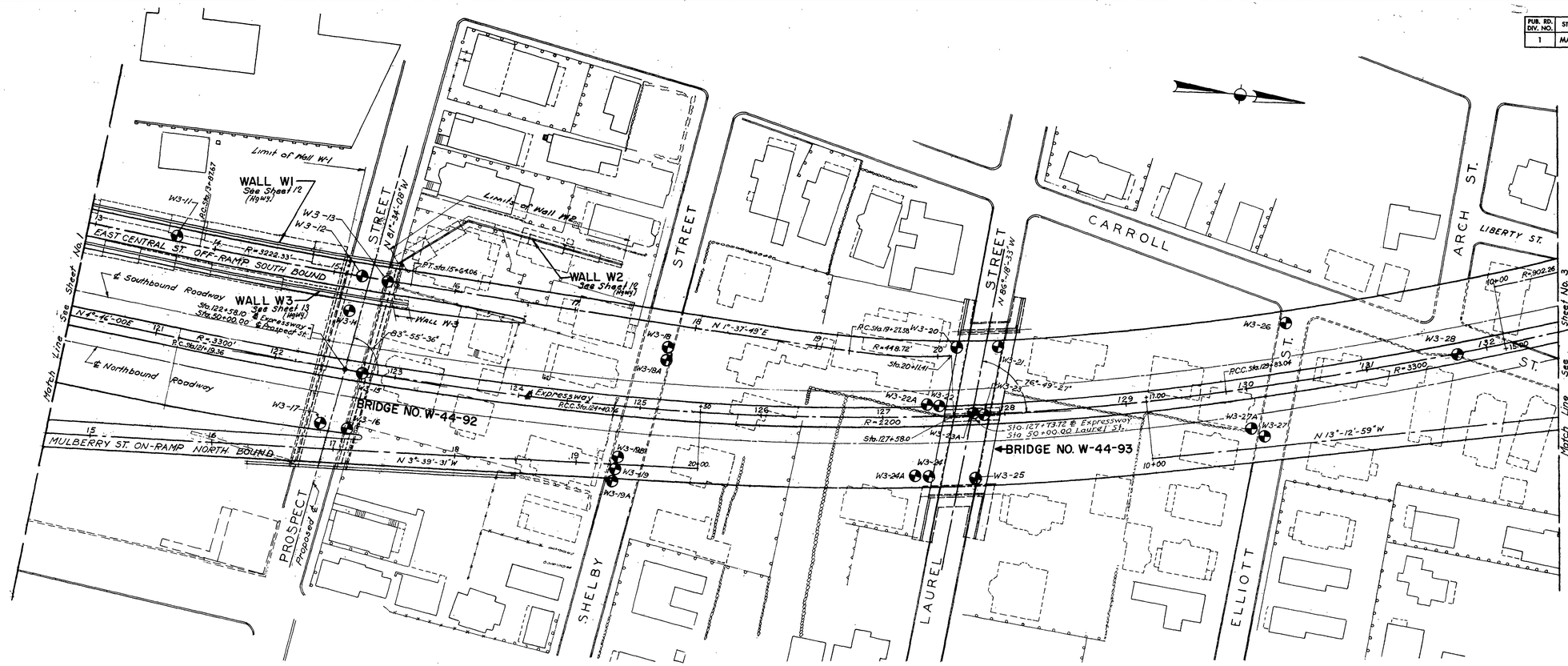
STRUCTURAL PLANS

C. A. MAGUIRE & ASSOCIATES
— ENGINEERS —
BOSTON, MASSACHUSETTS

APPROVED J. H. Kane, BRIDGE ENGINEER
E. J. McCarthy, CHIEF ENGINEER
DATE JULY 1958

SHEET 1A OF 26 SHEETS BRIDGE NOS W-44-91 to W-44-94

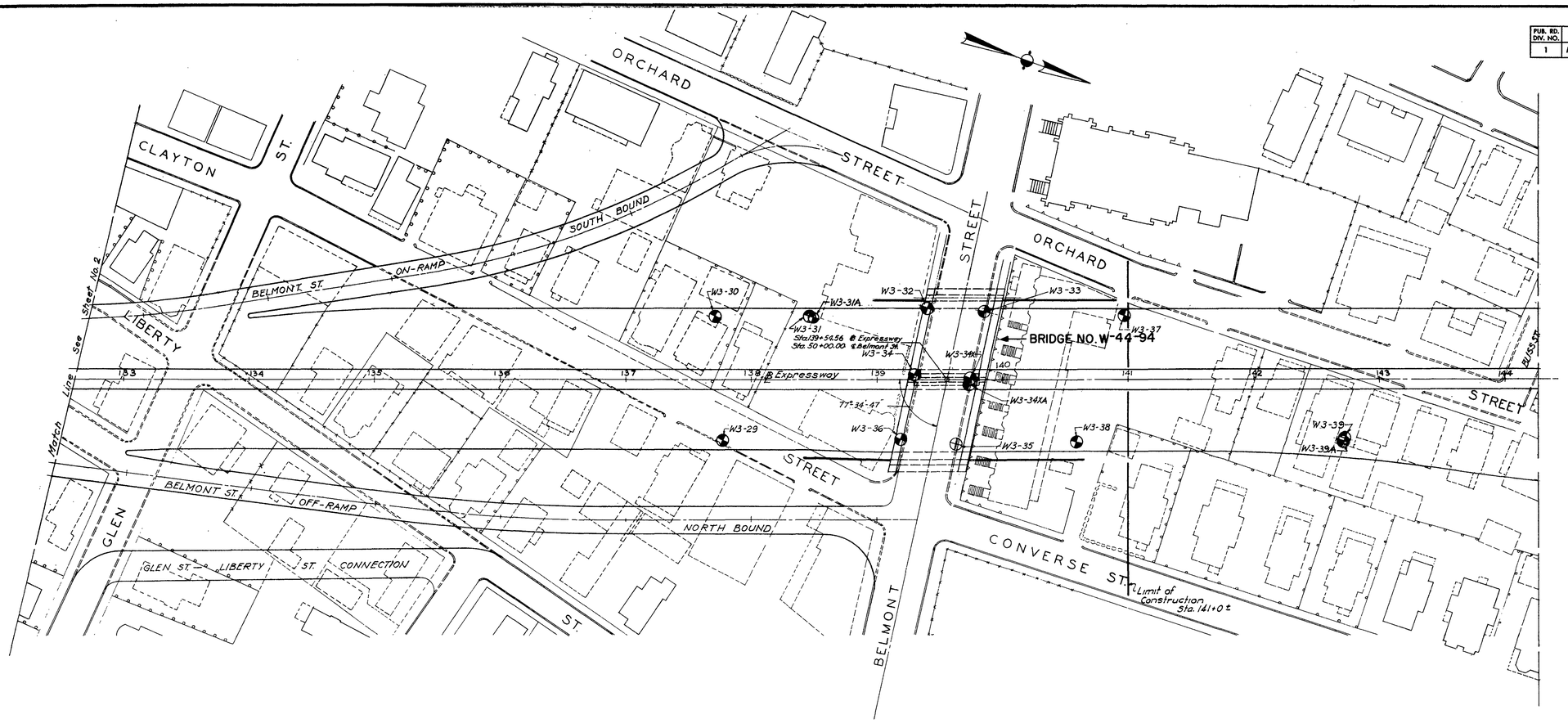
PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-N90-1(89)97	1958	93	117



PLAN
Scale 1"=40'

Oct. 14, 1958	REVISED SHEET: REPLACES SHEET No. 2
JULY 31, 1956	· ISSUED FOR CONSTRUCTION ·
DATE	· DESCRIPTION ·
· USE ONLY PRINTS OF LATEST DATE ·	

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	F-N90-5(16)97	1958	94	117



PLAN
Scale 1" = 40'

DATE	DESCRIPTION
OCT. 12, 1958	REVISED SHEET: RAILROAD CROSSING No. 3
JULY 31, 1958	· ISSUED FOR CONSTRUCTION ·
	· USE ONLY PRINTS OF LATEST DATE ·

· SHEET 3A OF 26 SHEETS · BRIDGE NOS. W-44-91 to W-44-94

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-N90-5(62)97	1958	95	117

Bridge No. W-44-91

W3-1

El. 501.40
Bottom of Footing South Abut. El. 493.50
Pile Cutoff S. Abut. El. 494.0
8 Mixed Fill.
El. 489.40
12 Fine firm sand & gravel. Some clay.
El. 484.40
17 Fine, coars, firm sand & gravel. Some clay
El. 477.40
40 Fine, coarse, compact sand & gravel.
El. 474.90
75 Very compact, fine sand. Some gravel. Refusal at 33'
El. 468.40

W3-2

El. 500.30
Bottom of Footing South Abut. El. 493.50
Pile Cutoff S. Abut. El. 494.0
10 Mixed Fill
El. 490.30
15 Fine firm sand & some gravel.
El. 488.30
25 Fine hard sand & gravel.
El. 481.30
40 Fine compact sand & gravel. Some clay
El. 478.30
El. 477.30 80 Very compact fine sand & gravel. Trace of shale. Refusal at 23'

W3-3

El. 498.0
Pile Cutoff S. Abut. El. 494.0
5 Mixed Fill.
El. 493.0
10 Mixed Fill
El. 486.0
12 Firm fine sand
El. 484.0
22 Fine hard sand & gravel
El. 480.0
El. 478.50 106 Hard pan Refusal at 19.6'

W3-4

Bottom Footing South Pier El. 481.0
El. 488.83
10 Mixed Fill
El. 484.83
30 Hard fine sand & gravel.
El. 477.83
75 Very compact, fine sand & gravel.
El. 475.83
100 Very compact, fine sand & gravel. Refusal at 15'
El. 473.83

W3-5

Bottom Footing South Pier El. 481.0
El. 489.36
12 Mixed Fill
El. 484.36
18 Fine, firm sand & some gravel.
El. 482.36
30 Hard, fine sand & gravel.
El. 478.86
70 Very compact, fine sand & gravel.
El. 475.36
El. 474.36 100 Very compact, fine sand & gravel.
Refusal at 15'

W3-6

Bottom Footing South Pier El. 481.0
El. 489.34
9 Mixed Fill
El. 485.84
3 Loose, fine sand.
El. 483.84
18 Firm, fine sand.
El. 481.34
23 Hard, fine sand & gravel.
El. 479.84
55 Very compact, fine sand & gravel.
El. 476.34
El. 475.84 120 Very compact, fine sand & gravel. Refusal at 14'

W3-7

Bottom of Footing North Abut. El. 482.50
El. 486.10
3 Sandy loam.
El. 483.60
22 Hard, fine sand & gravel.
El. 480.60
85 Very compact fine sand, gravel & stone. Refusal at 8'
El. 478.10

W3-7A

El. 486.10
3 Sandy loam.
El. 483.60
20 Hard, fine sand & some gravel
El. 480.60
120 Very compact, fine sand & gravel stone. Refusal at 8'-6"
El. 477.60

W3-8

Pile Cut off N. Abut. El. 496.0
El. 485.90
3 Sandy loam
El. 482.90
35 Hard, fine sand & gravel.
El. 479.90
40 Compact, fine sand & gravel.
El. 477.90
El. 476.40 110 Very compact, fine sand, gravel & stones. Refusal at 9'-6"

W3-9

Pile Cut off N. Abut. El. 496.0
El. 486.20
4 Sandy loam
El. 483.20
Refusal

Bridge No. W-44-91

W3-9A

Pile Cut off N. Abut. El. 496.0
El. 486.20
4 Sandy loam
El. 483.20
8 Loose, fine sand & some gravel.
El. 480.70
40 Compact fine sand & gravel.
El. 477.20
El. 475.70 95 Very compact, medium sand & gravel. Refusal at 10'-6" Bent spoon at 10'-6"

W3-10

El. 481.40
4 Sandy loam.
El. 476.40
20 Very fine, hard sand.
El. 470.40
El. 466.90 85 Very compact fine sand & gravel. Refusal at 14'-6"

W3-11

El. 478.90
3 Sandy loam
El. 473.90
6 Loose fine sand & some gravel.
El. 469.90
30 Hard fine sand & gravel.
El. 465.90
50 Very compact, fine sand & gravel.
El. 459.90
40 Compact fine & medium sand & gravel.
El. 452.90
El. 451.90 100 Very compact fine sand & gravel. Refusal at 27'

Bridge No. W-44-92

W3-12

Bott. Ftg. El. 472.0
El. 479.27
5 Mixed Fill.
El. 473.77
El. 472.27 9 Firm fine sand. Some gravel.
20 Hard fine sand.
El. 468.27
35 Hard fine sand & gravel.
El. 464.27
50 Compact fine sand & gravel.
El. 462.27
70 Very compact fine sand & gravel.
El. 455.27
El. 453.27 45 Compact fine sand & gravel.
El. 451.77 120 Very compact fine sand & gravel: trace of blue shale. Refusal at 27'-6"

W3-13

Bott. Ftg. El. 472.0
El. 479.45
8 Mixed Fill.
El. 476.45
10 Firm fine sand.
El. 470.45
30 Hard fine & coarse sand & gravel.
El. 465.45
45 Compact fine sand & gravel.
El. 461.45
25 Hard fine sand & gravel
El. 457.45
20 Hard fine sand & gravel.
El. 453.95
60 Very compact fine sand & gravel
El. 450.45
El. 448.45 100 Very compact fine sand & gravel. Refusal at 31'

W3-14

Bott. Ftg. El. 473.50
El. 481.64
6 Mixed Fill.
El. 475.64
6 Loose fine sand.
El. 473.64
20 Fine hard sand
El. 471.64
55 Compact fine sand & gravel.
El. 466.14
El. 464.64 Hard pan.

W3-15

Bott. Ftg. El. 477.0
El. 485.53
12 Mixed Fill.
El. 481.53
30 Fine hard sand & gravel.
El. 478.53
El. 477.03 40 Fine hard sand & gravel.
El. 475.53 80 Very compact fine sand & gravel.
El. 473.53 55 Very compact fine sand & gravel.
El. 471.53 35 Fine hard sand.
El. 469.03 40 Hard fine sand. Refusal at 16'-6"

W3-16

Bott. Ftg. El. 482.50
El. 490.24
El. 485.74 4 Mixed Fill.
El. 485.24 5 Firm fine sand.
El. 483.24 30 Hard fine sand & gravel.
El. 480.24 85 Very compact fine sand & gravel.
El. 478.24 100 Hard pan. Refusal at 12'

W3-17

Bott. Ftg. El. 482.50
El. 489.82
5 Mixed Fill.
El. 485.82
El. 484.82 10 Firm fine sand.
El. 482.82 28 Hard fine sand & gravel.
El. 479.82 80 Very compact fine sand & gravel.
El. 478.32 100 Hard pan. Refusal at 10'-6"

W3-18

El. 496.38
5 Mixed Fill.
El. 493.38
12 Firm fine sand & gravel.
El. 491.38
30 Hard fine sand & gravel.
El. 488.88
El. 487.88 170 No sample recovered. Refusal at 8'-6"

Bridge No. W-44-93

W3-18A

El. 496.38
6 Mixed Fill.
El. 493.38
35 Hard fine sand & gravel.
El. 490.38
El. 489.98 85 Very compact fine sand & gravel. Refusal at 6'-6" Bent spoon.

W3-19

El. 500.15
20 Mixed Fill
El. 494.65
El. 493.15 90 Very compact fine sand, gravel. Refusal at 7'

W3-19A

El. 500.40
20 Mixed Fill. Refusal at 5' Bent spoon.
El. 495.40

W3-19B

El. 499.90
20 Mixed Fill.
El. 494.90
El. 493.90 100 Very compact fine sand & gravel. Refusal at 6'

W3-20

El. 523.37
El. 523.37 10 Mixed Fill
El. 522.37 65 Very Compact Fine Sand & Gravel. Refusal at 3' Cored 3' Granite Recovered 46"
Bott. Ftg. W. Abut. El. 501.25

W3-21

El. 525.35
El. 522.85 6 Mixed Fill. Refusal at 2'-6" Boulder or ledge.
Bott. Ftg. W. Abut. El. 501.25

W3-22

El. 530.40
El. 529.40 1 Mixed Fill.
El. 528.40 6 Sandy loam. Refusal at 2'
Bott. Ftg. Pier El. 500.50

W3-22A

El. 530.15
El. 527.15 6 Mixed Fill. Refusal at 3'
Bott. Ftg. Pier El. 500.50

W3-23

El. 532.29
El. 530.29
El. 529.79 6 Mixed Fill. Sandy loam & gravel Refusal at 2'-6"
Bott. Ftg. Pier El. 500.50

W3-23A

El. 532.04
El. 529.54 5 Mixed Fill. Refusal at 2'-6" Boulder or ledge: Bent spoon.

W3-24

El. 539.0
El. 537.50 6 Mixed Fill
El. 534.0 25 Hard fine sand & gravel.
El. 533.50 40 Very compact fine sand & gravel. Refusal at 5'-6"
Bott. Ftg. E. Abut. El. 502.75

W3-24A

El. 538.75
4 Mixed Fill.
El. 535.75 20 Hard fine sand & gravel.
El. 532.75 42 Very compact fine sand & gravel. Refusal at 6'-3"
El. 532.50
Bott. Ftg. E. Abut. El. 502.75

W3-25

El. 538.37
El. 536.37 15 Mixed Fill Refusal at 2' Dug Hole: 2' Deep 2' Wide 3' Long Could not use Casing. Cored 3' Granite Recovered 46"
Bott. Ftg. E. Abut. El. 502.75

BORING NOTES

1. Location of Borings Show on Plan thus ⊕ W3-1
2. Borings Taken for Purposes of Design & show Conditions at Boaring Points Only but do not Necessarily Show Nature of Materials to be Encountered During Construction.
3. Figures in Columns Indicate Blows per Foot on 1" Pipe Produced by 30" Fall of 140 # Hammer.
4. Boring Samples Maybe Seen at the Dept's. Laboratory in the Maintenance Building on Route #9 in Wellesley, Mass.
5. "W" Indicates Water Table.
6. Borings Taken by John J. Boyle & Martin Rd. Milton, Mass. Date: (11/57 - 3/58)

GENERAL NOTES

1. Unless otherwise specified, Water Tables shown were taken at completion of borings and are not necessarily permanent.
2. Level Datum: U.S.C. & G.S. Mean Sea Level Sea level datum of 1929.

Scale 1/8" = 1'-0"

DATE	DESCRIPTION
OCT. 14, 1958	REVISED SHEET: REPLACES SHEET No. 4
JULY 31, 1958	• ISSUED FOR CONSTRUCTION •
DATE	• DESCRIPTION •
	• USE ONLY PRINTS OF LATEST DATE •

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-N90-5(68)97	1958	96	117

Bridge No. W-44-94

W3-26

El. 511.48
El. 509.48 — 5 — Mixed Fill.
15 — Firm fine sand & gravel.
El. 505.48
El. 504.48 — 10 — Compact fine sand & gravel.
El. 503.48 — 12 — Firm fine sand & gravel. Trace of clay.
35 — Hard fine sand & gravel.
El. 498.98 — Refusal at 12'-6".
Boulder or ledge.
Bent spoon.

W3-27

El. 530.04
El. 527.04 — 6 — Mixed loam.
El. 526.54 — 12 — Firm fine sand & gravel & stone.
Refusal at 3'-6"
Ledge or boulder.

W3-27A

El. 529.14
3 — Mixed Fill.
El. 524.14 — 30 — Refusal at 5'-0"
Ledge or boulder.

W3-28

El. 508.53
6 — Mixed Fill
El. 502.53 — 30 — Hard fine sand & gravel
El. 499.53 — 38 — Hard fine sand & gravel.
El. 495.53 — 60 — Very compact fine sand & gravel.
25 Refusal at 13'-6"
Ledge or boulder.
Trace of water at 6'

W3-29

El. 505.14
El. 504.14 — 18 — Black top and granite block.
5 — Loose mixed till.
El. 496.14 — 18 — Firm fine sand & gravel.
El. 493.14 — 90 — Very compact fine sand & gravel.
El. 492.14 — 120 — Very compact fine sand & gravel.
El. 489.14 — 30 — Compact fine sand & large gravel.
El. 484.14 — 15 — Firm fine sand & gravel.
El. 482.14 — 30 — Compact fine sand & gravel & some clay.
El. 481.14
40 — Compact fine sand gravel & clay.
El. 472.14 — 110 — Very compact fine sand and gravel & clay.
El. 468.14
Stopped by Eng'r.
Sufficient depth.

W3-30

El. 501.90
3 — Mixed Fill.
El. 498.90 — 40 — Compact fine sand & gravel.
El. 498.50 — 75 — Hard pan.
12 — Firm fine sand & some gravel.
El. 486.90
14 — Firm fine coarse sand & gravel
El. 472.90
43 — Compact fine sand & gravel.
El. 476.90
20 — Hard fine-coarse sand & gravel.
El. 473.90 — 50 — Very compact fine sand & gravel. Trace of clay.
El. 471.90 — 90 — Very compact fine sand, gravel and clay.
El. 468.90
Refusal at 33'

W3-31

El. 507.0
3 — Mixed Fill
El. 498.0
8 — Loose medium sand & gravel.
El. 495.0 — 60 — Very compact fine sand & gravel.
El. 493.0
Refusal at 14' (75-0")

W3-31A

El. 507.0
3½ — Mixed Fill.
El. 503.5
7 — Loose med. sand & gravel.
El. 495.0 — 60 — Very compact fine sand & gravel.
El. 492.0
30 — Compact fine sand & gravel.
El. 487.0
10 — Firm fine sand & gravel.
El. 482.0 — 8 — Loose Med. sand & gravel.
El. 480.0
12 — Firm fine sand
El. 475.0 — 40 — Compact fine sand & gravel & clay.
El. 472.0
Boring stopped by engineer

W3-32

Bott. Ftg. W. Abut. El. 490.50
El. 516.91
3 — Mixed Fill.
El. 509.91
8 — Fine loose sand & gravel.
El. 502.91
8 — Fine loose sand.
El. 496.41 — 28 — Hard fine & coarse sand & gravel.
El. 491.91 — 38 — Hard fine & coarse sand & gravel.
El. 489.91 — 21 — Firm fine & coarse sand & gravel.
El. 486.91 — 40 — Compact fine sand, gravel & clay.
El. 484.91
65 — Very compact fine sand, gravel & clay.
El. 476.91 — 28 — Hard fine sand & gravel & clay.
El. 473.91 — 90 — Very compact fine sand, gravel and clay.
El. 470.91 — 180 — Very compact fine sand, gravel & clay.
El. 468.91 — 200 — Very compact fine sand, gravel & clay.
El. 467.91
Refusal at 49'

W3-33

Bott. Ftg. W. Abut. El. 490.50
El. 516.59
El. 516.09 — 15 — Concrete
El. 512.59 — Mixed fill
5 — Mixed fill
El. 503.59
15 — Firm fine sand, gravel & clay.
El. 498.59
— W —
45 — Compact fine sand & gravel.
El. 491.59 — 25 — Hard fine sand & gravel
El. 488.59 — 17 — Firm fine sand. Trace of clay & miker.
El. 485.59 — 65 — Very compact fine sand, gravel & clay.
El. 483.59 — 95 — Very compact fine sand, gravel & clay.
El. 480.59 — 90 — Very compact fine sand, gravel & clay.
El. 476.59

W3-34

Bott. Ftg. Pier El. 489.50
El. 516.17
4 — Mixed Fill.
El. 506.17
10 — Fine firm sand, gravel & clay.
El. 503.17
8 — Fine loose sand & gravel.
El. 498.17
15 — Fine firm sand, gravel & clay.
El. 495.17 — 60 — Very compact fine sand & gravel.
El. 493.17 — 25 — Fine hard sand & gravel.
El. 490.17
40 — Compact fine sand & gravel.
El. 485.67
30 — Fine hard sand, gravel & some clay.
El. 481.17
55 — Compact fine sand, coarse sand & gravel.
El. 475.17
125 — Very compact fine coarse sand and gravel.
El. 468.17 — 290 — Very compact fine sand, gravel and clay.
El. 465.17
Refusal at 51'
Bent spoon.

Bridge No W-44-94

W3-34X

Bott. Ftg. Pier El. 489.50
El. 516.45
4 — Mixed Fill.
El. 509.45
8 — Firm fine sand, gravel & clay.
El. 501.45 — 34 — Hard fine sand & gravel. Bent spoon. Slid off boulder at 16'.
El. 498.45
Refusal at 18', with casing broke at end of casing.

W3-34XA

Bott. Ftg. Pier El. 489.50
El. 516.45
7-8 — Mixed Fill.
El. 509.45
9 — Firm fine sand, gravel & clay.
El. 500.95
30 — Hard fine sand & gravel.
El. 485.45
80 — Compact fine & coarse sand and gravel, clay and stone.
El. 481.45
220 — Very compact fine sand & gravel.
El. 469.45
Refusal at 47'
Trace of water at 22'

W3-35

Boring not taken

W3-36

El. 515.19
8 — Mixed Fill.
El. 507.45
8 — Fine sand & gravel, and some clay.
El. 502.45 — 15 — Firm fine sand & gravel. Trace of clay.
El. 500.95
18 — Firm fine & coarse sand & gravel.
— W —
El. 493.95
30 — Hard fine sand.
Bott. Ftg. East Abut. El. 490.50 — El. 490.95
42 — Compact fine sand & gravel.
El. 483.95
25 — Hard fine & coarse sand & gravel.
El. 478.95
80 — Very compact fine & coarse sand. Trace of clay.
El. 475.95 — 160 — Very compact fine sand, gravel & clay.
El. 473.95 — 100 — Very compact fine sand, gravel & clay.
El. 472.95
Refusal at 43'

W3-37

El. 518.26
20 — Mixed Fill
El. 513.26
15 — Firm fine sand, gravel & clay.
El. 509.26
35 — Hard fine and medium sand and gravel.
El. 504.26 — 80 — Very compact fine sand & gravel.
El. 502.26 — 200 — Hard pan.
Refusal at 17'
Trace of water at 16'-4"

W3-38

El. 517.04
5 — Mixed Fill.
El. 510.04
7 — Mixed Fill.
El. 504.04
5 — Mixed Fill.
— W — El. 500.54 — 60 — Very compact fine sand & gravel.
El. 499.04 — 50 — Very compact fine sand & gravel.
El. 497.04
30 — Hard medium sand & gravel.
El. 492.04
60 — Very compact fine & coarse sand, gravel.
El. 486.04 — 125 — Very compact fine sand & gravel. Some clay.
El. 484.04 — 190 — Very compact fine sand. Some gravel. Trace of clay.
El. 483.04
Refusal at 34'

W3-39

El. 519.0
5 — Mixed Fill
El. 515.0
3 — Loose fine sand, gravel & clay.
El. 512.0 — 20 — Hard fine sand & gravel
El. 511.0
Refusal at 8' (50-0")

W3-39A

El. 519.0
5 — Loose Fill
El. 515.0
4 — Loose fine sand, gravel & clay.
El. 511.0
23 — Hard fine, sand & gravel.
El. 510.0
30 — Hard medium sand and gravel.
El. 502.0
70 — Very compact fine sand & gravel.
El. 499.0
75 — Very compact fine sand & gravel & clay.
El. 491.0
70 — Compact fine sand, gravel & clay.
El. 485.0
90 — Very compact fine sand, gravel and clay.
El. 478.0
Refusal at 41' (50-0")

W3-41

El. 520.20
3-4 — Mixed Fill.
El. 517.20
El. 515.70 — 15 — Firm fine sand, gravel & clay.
El. 514.20 — 90 — Very compact fine sand, gravel.
70 — Very compact fine sand and gravel.
El. 510.20 — 100 — Hard pan.
El. 509.20
Refusal at 11'
Bent spoon.

W3-41A

El. 520.20
5 — Mixed Fill.
El. 516.70
El. 515.20 — 17 — Firm fine sand, gravel & clay.
El. 513.20 — 70 — Very compact fine sand & gravel.
El. 510.20 — 95 — Very compact fine sand and gravel.
Refusal at 10'

W3-42

El. 511.89
5 — Mixed Fill.
El. 508.89
20 — Hard Fine Sand & gravel.
El. 505.89
35 — Hard fine sand & gravel.
El. 501.89
El. 500.89 — 75 — Hard pan. Boulders.
El. 498.89 — 40 — Compact fine sand & gravel.
Very compact fine sand & gravel.
El. 494.89 — 65 — Very compact fine sand & gravel.
El. 491.89
El. 490.89 — 150 — Very compact fine sand & gravel.
Refusal at 21'
Bent spoon at 10'
Trace of water at 13'

W3-43

El. 508.45
El. 506.95 — 3 — Fill
15 — Firm fine sand & gravel. Some clay.
El. 501.45
18 — Stiff yellow clay. Some gravel and sand.
El. 495.45 — 40 — Hard fine sand, gravel, clay.
El. 493.45 — 75 — Very compact fine sand, gravel & clay.
El. 487.45
El. 486.45 — 250 — Very compact fine sand, gravel & clay.
Refusal at 22'

W3-44

El. 511.0
5 — Mixed till.
El. 507.0
25 — Hard fine sand & gravel.
El. 503.0 — 40 — Compact fine sand & gravel. Very compact fine sand & gravel.
El. 500.0 — 75 — Compact fine sand & gravel & clay.
El. 498.0 — 40 — Compact fine sand & gravel.
El. 495.0
El. 494.0 — 45 — Very compact fine sand & gravel.
El. 491.0 — 65 — Compact fine sand, gravel. Trace of shale.
El. 488.0 — 40 — Refusal at 23'-0" cored 5' Shale rock. Recovered 96".

W3-45

El. 502.2
12 — Firm fine sand & gravel.
El. 499.2 — 17 — Compact fine sand & gravel.
El. 497.2 — Encountered boulder at 3'. Broke shoe of casing.

W3-45A

El. 502.2
10 — Firm sand & gravel.
El. 499.2 — 40 — Compact fine sand & gravel.
El. 496.2 — 12 — Firm fine sand & gravel.
El. 494.2 — 90 — Hard fine sand, gravel & clay.
El. 490.2 — Very compact fine sand & gravel.
El. 488.7 — Trace of shale.
Refusal at 13'-4". Cored 5' Shale Rock. Recovered 40"

W3-46

El. 510.90
10 — Fill
El. 508.40 — 50 — Very compact fine sand, gravel, stone
El. 505.90 — 190 — Hard pan & boulders.
El. 502.90
Refusal at 8'
Bent spoon twice 5'-8"

W3-46A

El. 510.90
10 — Fill
El. 507.90 — 60 — Very compact fine sand, gravel & stone
El. 505.90 — 300 — Hard pan.
El. 504.90
Refusal at 6'

W3-47

El. 492.56
El. 491.56 — Fill
El. 487.06 — Shale rock. Washed sample
Refusal at 1'-6"
Recovered 35"
19.50'
Bott. Ftg. W. Abut. El. 473.0

W3-47A

El. 494.06
Cored 25' shale rock.
Recovered 245"
No casing required on this hole.
El. 471.06

W3-48

El. 513.20
4 — Sandy loam.
El. 509.20 — 60 — Very compact fine sand & gravel.
El. 505.20
Refusal at 4'

W3-48A

El. 513.20
4 — Sandy loam.
El. 509.20 — 50 — Very compact fine sand & gravel.
El. 505.20 — 120 — Hard pan.
El. 501.20
Refusal at 6'

W3-49

El. 494.50
20 — Concrete side wall, sand & gravel. fill.
El. 491.50
43 — Compact fine sand & gravel.
El. 487.50
El. 486.50 — 60 — Hard pan.
El. 486.25
Refusal at 8'-3"
Ledge or boulder.
21.50'
Bott. Ftg. W. Abut. El. 473.0

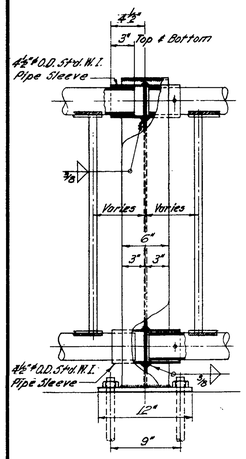
NOT IN THIS CONTRACT

NOTE:
For Boring Notes see Sheet No 4
For Borings No. W3-40 and W3-40A see Sh. No. 4

DATE	DESCRIPTION
OCT. 14, 1958	REVISED SHEET 5 REPLACES SHEET No. 5
MAY 31, 1958	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-NBO-5(36)97	1958	107	117

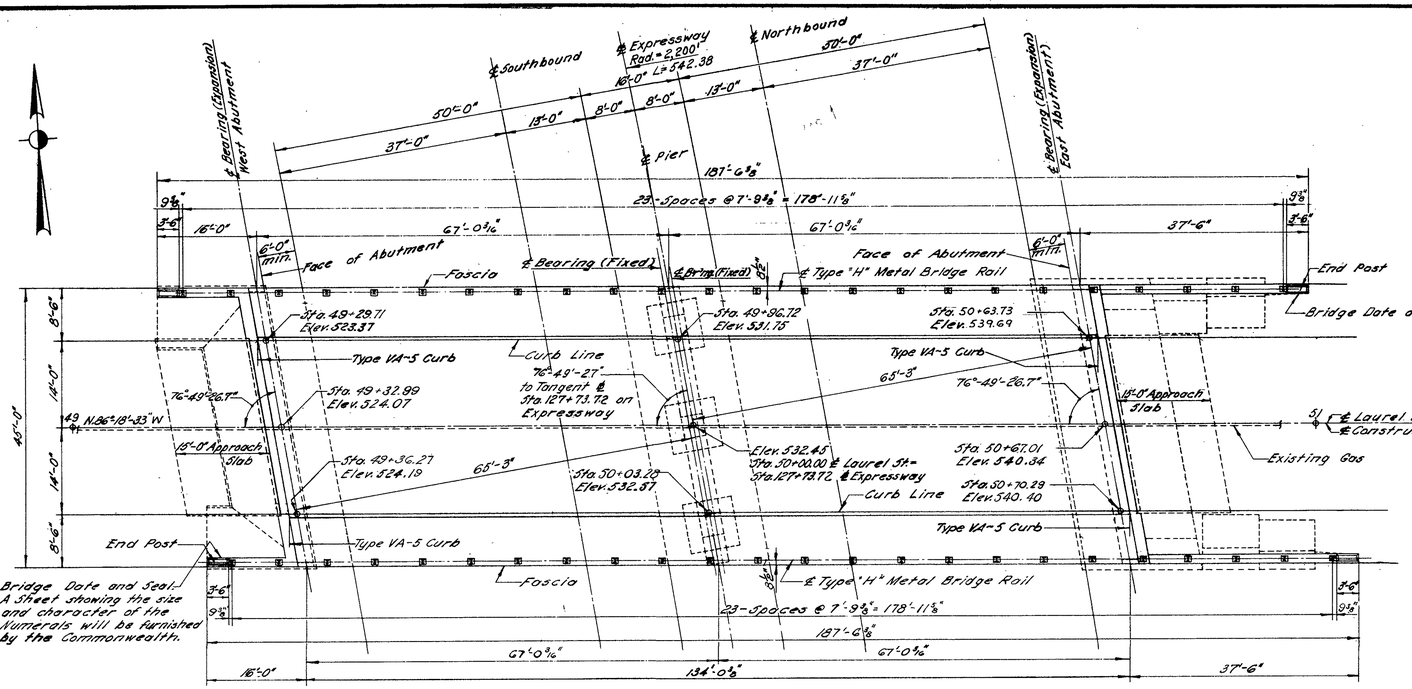


DETAIL FOR EXPANSION PANEL ONLY

Scale: 1½" = 1'-0"

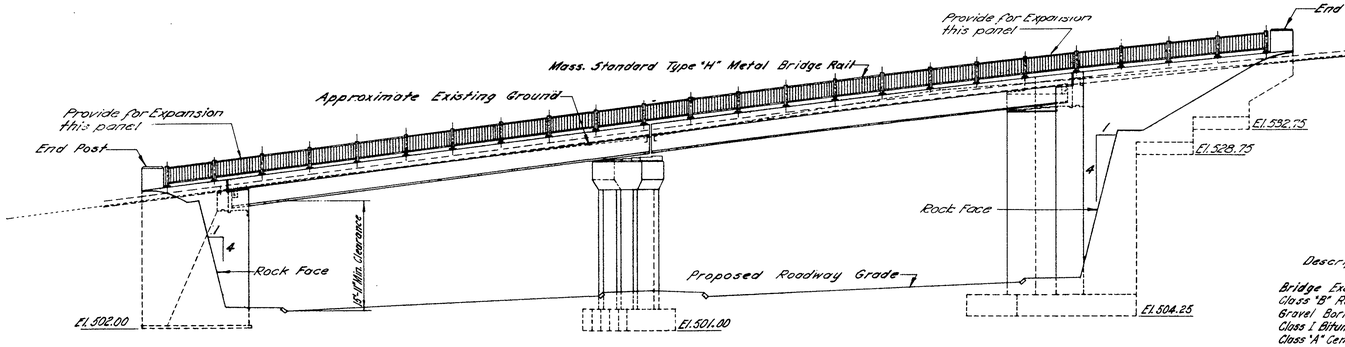
W-44-93 LAUREL ST. OVER EXPRESSWAY

SH. 2	GEN. PLAN
SH 4	BORINGS
SH.16	DECK PLAN
SH.17	WEST ABUT.
SH.18	PIER
SH.19	EAST ABUT.
SH. 20	FRAMING PLAN



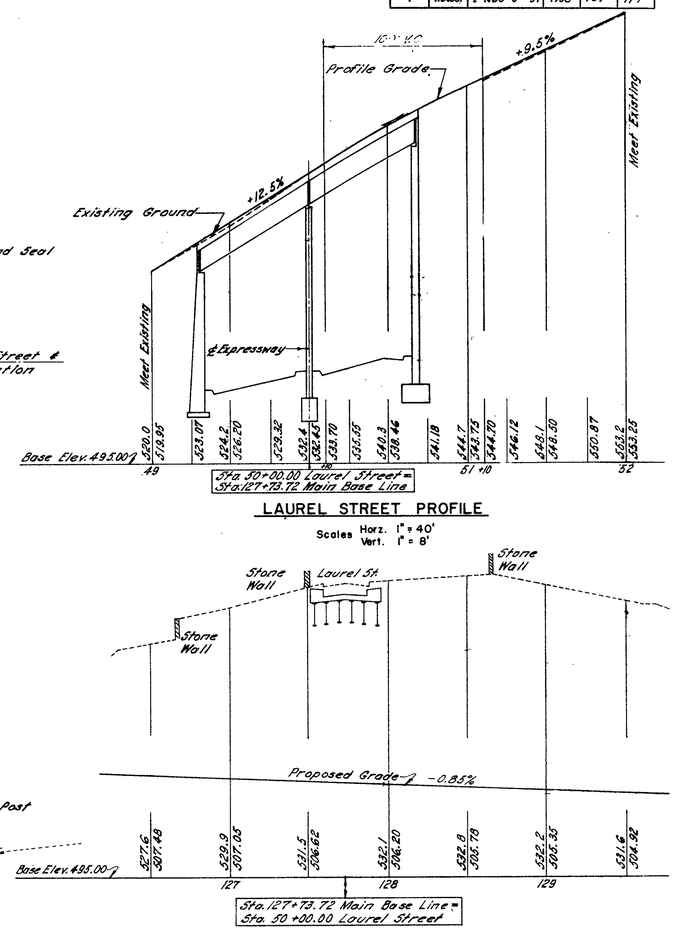
DECK PLAN

Scale 1" = 10'



ELEVATION

Scale 1" = 10'



LAUREL STREET PROFILE

Scales Horz. 1" = 40'
Vert. 1" = 8'

MAIN BASE LINE PROFILE

Scales: Horiz. 1" = 40'
Vert. 1" = 8'

BRIDGE W-44-93

ESTIMATED QUANTITIES

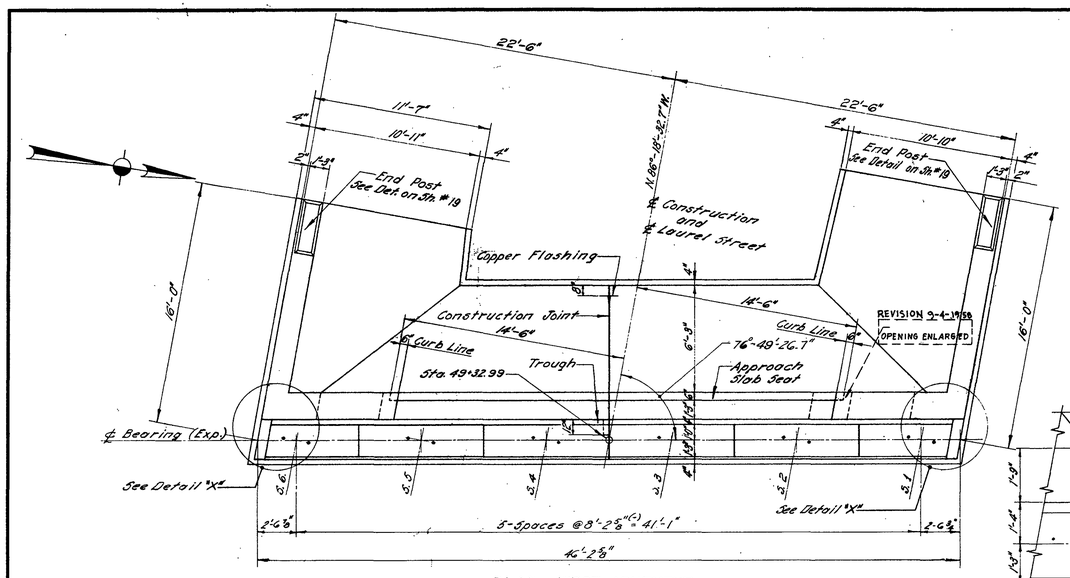
(NOT GUARANTEED)

Description	Quantity
Bridge Excavation	95 C.Y.
Class "B" Rock Excavation	634 C.Y.
Gravel Borrow	958 C.Y.
Class I Bituminous Concrete Pavement Type I-1	65 Tons
Class "A" Cement Concrete Masonry	601 C.Y.
Class "B" Cement Concrete Masonry	309 C.Y.
Steel Reinforcing for Structure	54,000 Lbs.
Class "G" Cement Concrete Masonry	5 C.Y.
Bituminous Damp-proofing	493 S.Y.
Bridge Structure (W-44-93)	1 L.S.

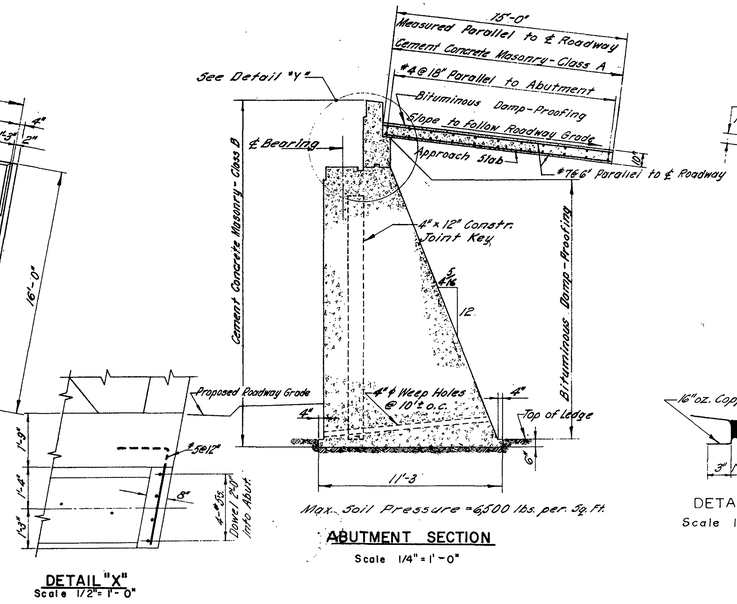
DATE	DESCRIPTION
OCT. 14, 1958	REVISED SHEET: REPLACES SHEET NO. 16
JULY 31, 1958	· ISSUED FOR CONSTRUCTION ·

· USE ONLY PRINTS OF LATEST DATE ·

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-N90-5(62)97	1958	108	117

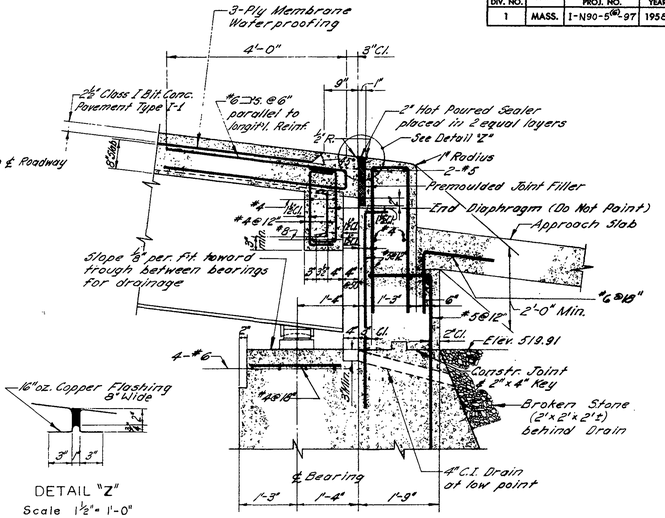


PLAN—WEST ABUTMENT
Scale 1/4" = 1'-0"



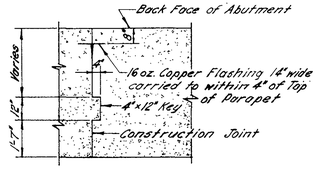
ABUTMENT SECTION
Scale 1/4" = 1'-0"

DETAIL "X"
Scale 1 1/2" = 1'-0"

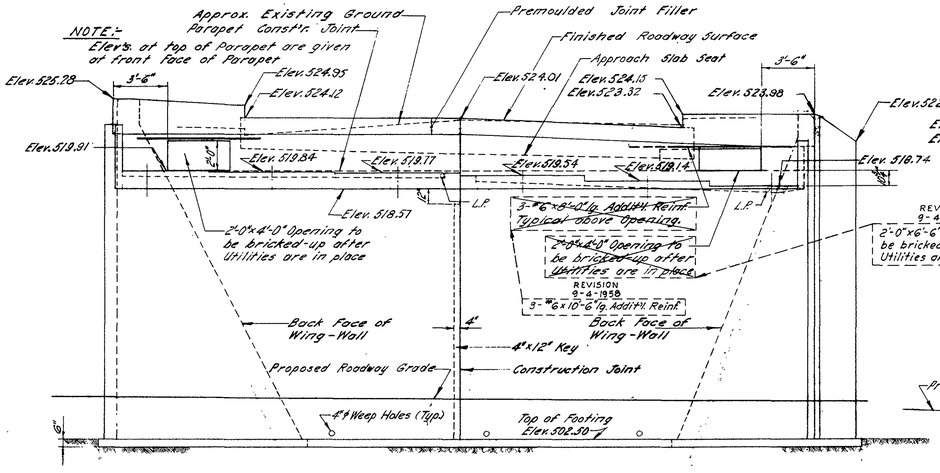


DETAIL "Z"
Scale 1½" = 1'-0"

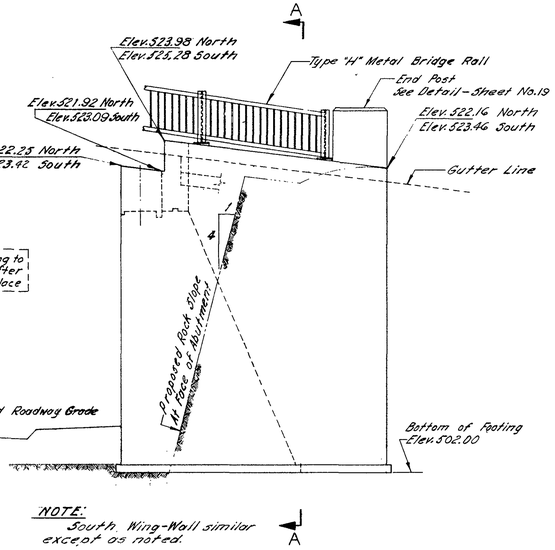
DETAIL "Y"
Scale 3/4" = 1'-0"



CONSTRUCTION JOINT DETAIL
Scale 3/8" = 1'-0"

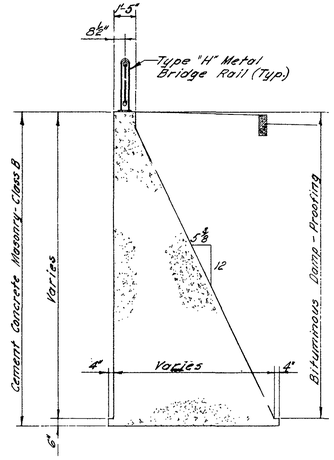


ELEVATION
Scale 1/4" = 1'-0"



NOTE:
South Wing-Wall similar except as noted.

NORTH WING WALL ELEVATION
Scale 1/4" = 1'-0"

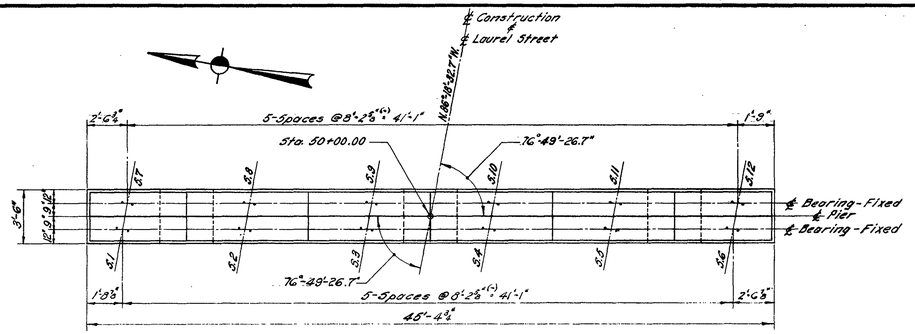


Max. Soil Pressure = 5,800 lbs. per Sq. Ft.

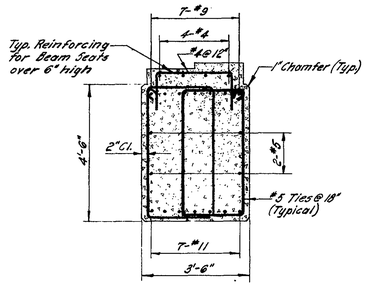
SECTION A-A
Scale 1/4" = 1'-0"

DATE	DESCRIPTION
OCT. 14, 1966	REVISED SHEET: REPLACES SHEET No. 17
SEPT. 4, 1958	REVISION - UTILITY OPENING ENLARGED - REVISED
JULY 31, 1958	• ISSUED FOR CONSTRUCTION •
	• USE ONLY PRINTS OF LATEST DATE •

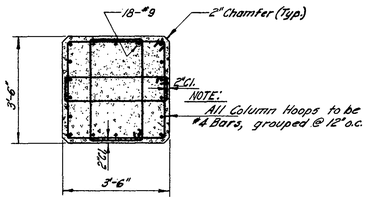
PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-N90-5(60)-97	1958	109	117



PLAN
Scale 1/4" = 1'-0"

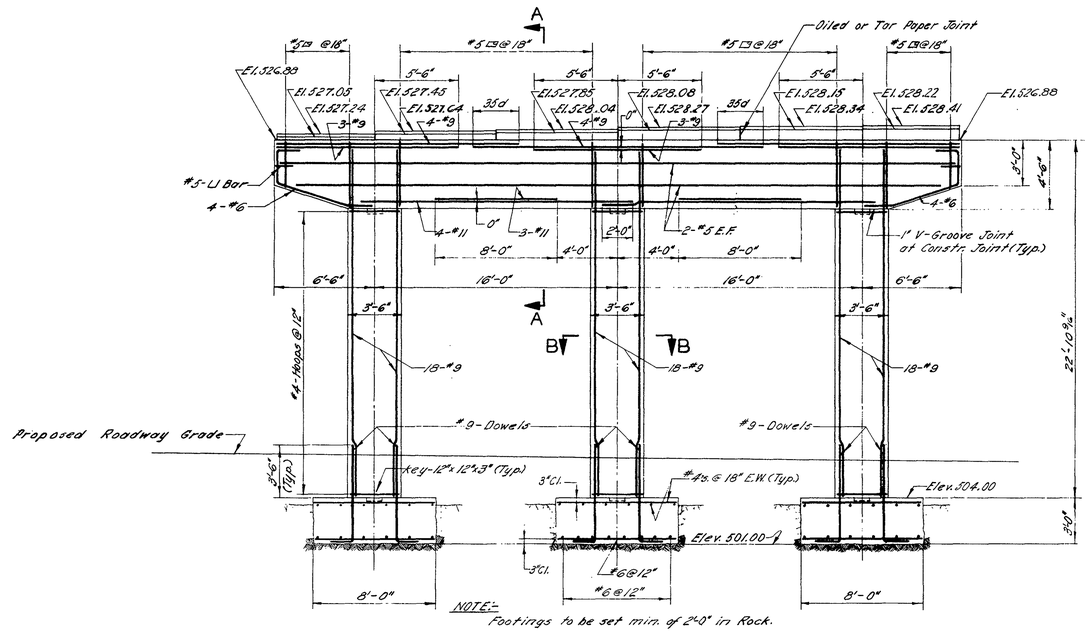


SECTION A—A



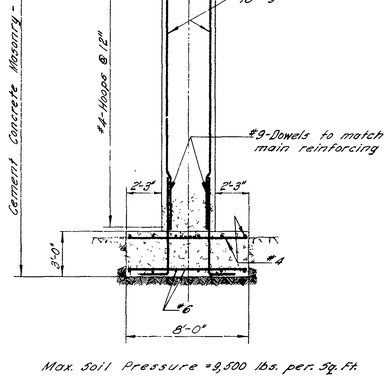
SECTION B—B

Scale 1/2" = 1'-0"



NOTE:- Footings to be set min. of 2'-0" in Rock.

ELEVATION
Scale 1/4" = 1'-0"



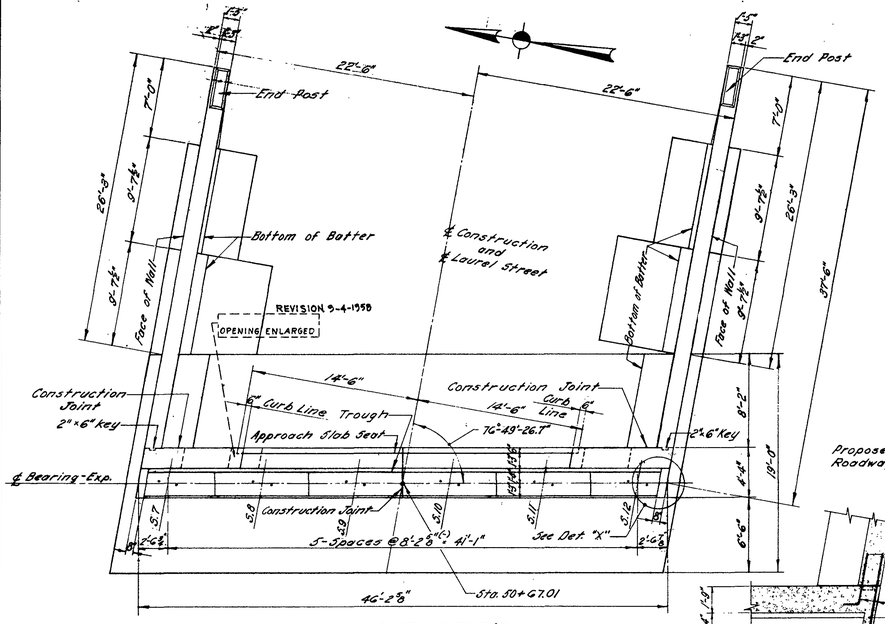
Max. Soil Pressure = 9,500 lbs. per Sq. Ft.

SECTION THRU COLUMN
Scale 1/4" = 1'-0"

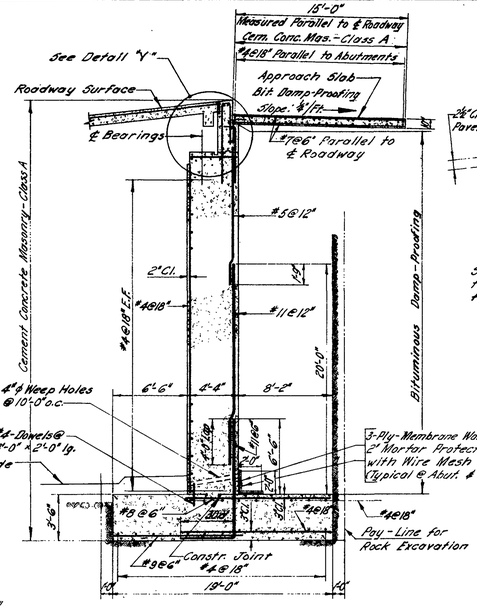
DATE	DESCRIPTION
OCT. 14, 1958	REVISED SHEET: REPLACES SHEET NO. 18
JULY 31, 1958	• ISSUED FOR CONSTRUCTION •
DATE	• DESCRIPTION •

• USE ONLY PRINTS OF LATEST DATE •

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-N 90-5(82)-97	1958	110	117

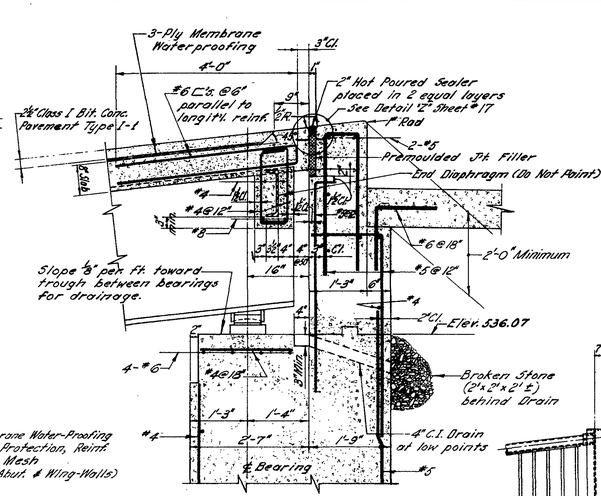


PLAN — EAST ABUTMENT
Scale 3/16"=1'-0"

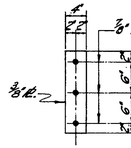


Max. Soil Pressure = 6,300 lbs. per Sq. Ft.

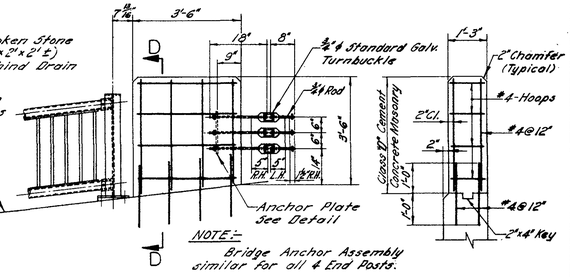
TYPICAL ABUTMENT SECTION
Scale 3/16"=1'-0"



DETAIL "Y"
Scale 3/4"=1'-0"

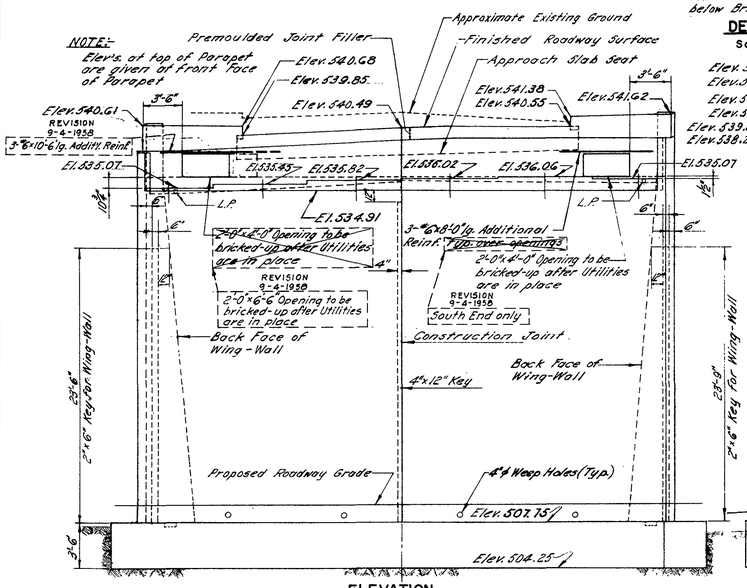


ANCHOR PLATE DETAIL
Scale 1"=1'-0"

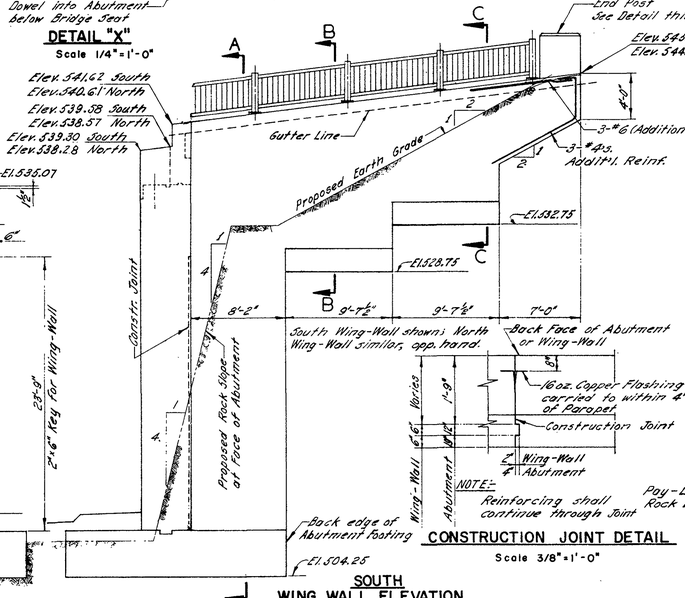


END POST DETAIL
Scale 1/2"=1'-0"

SECTION D-D
Scale 1/2"=1'-0"

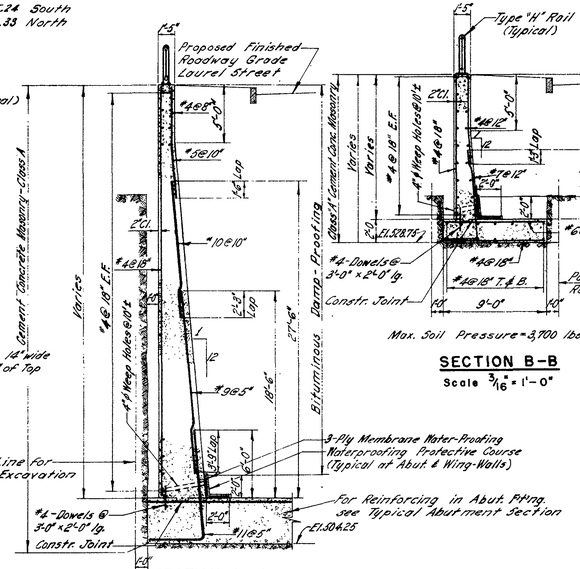


ELEVATION
Scale 3/16"=1'-0"



CONSTRUCTION JOINT DETAIL
Scale 3/8"=1'-0"

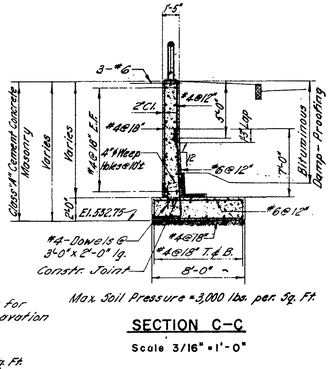
SOUTH WING WALL ELEVATION
Scale 3/16"=1'-0"



SECTION A-A
Scale 3/16"=1'-0"

Max. Soil Pressure = 3,700 lbs. per Sq. Ft.

SECTION B-B
Scale 3/16"=1'-0"



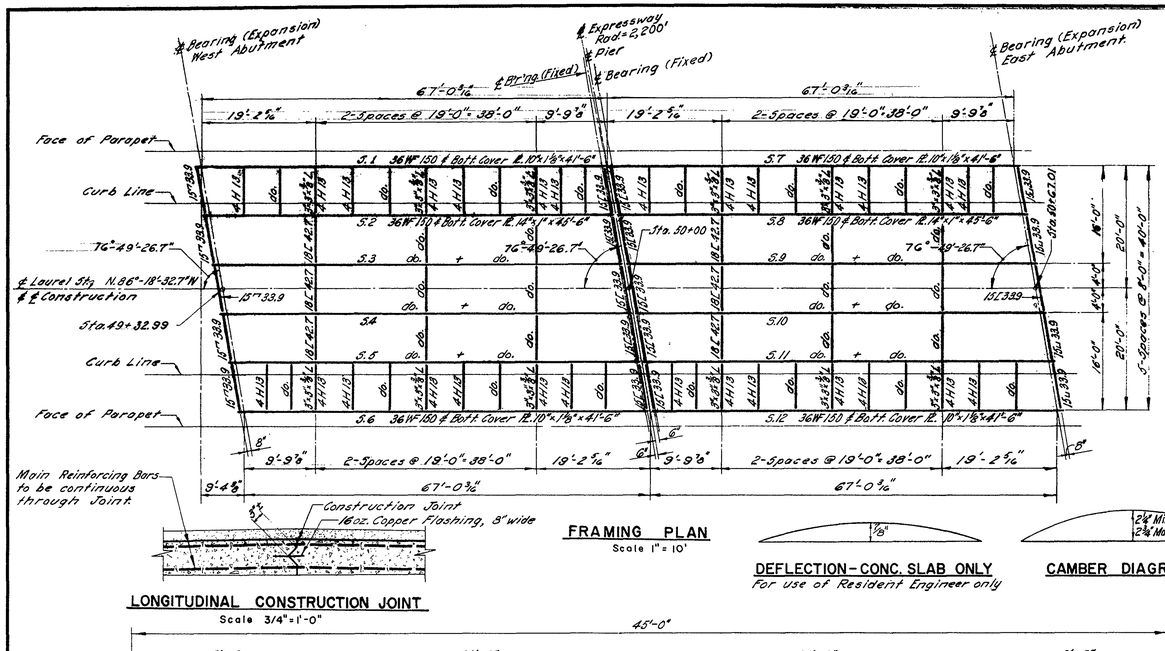
Max. Soil Pressure = 3,000 lbs. per Sq. Ft.

SECTION C-C
Scale 3/16"=1'-0"

DATE	DESCRIPTION
OCT. 14, 1958	REVISED SHEET 1 REPLACES SHEET No. 19
SEPT. 4, 1958	REVISION-UTILITY OPENING ENLARGED-REVISED
JULY 31, 1958	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-N 90-5(60) 97	1958	111	117

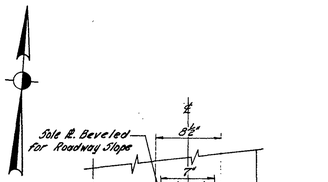


LONGITUDINAL CONSTRUCTION JOINT
Scale 3/4"=1'-0"

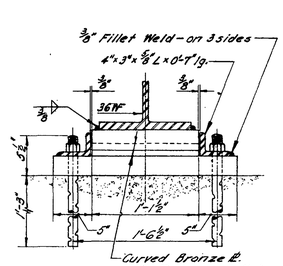
FRAMING PLAN
Scale 1"=10'

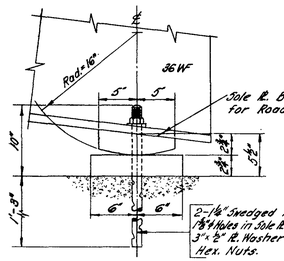
DEFLECTION – CONC. SLAB ONLY
For use of Resident Engineer only

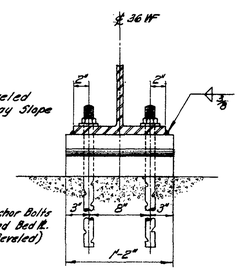
CAMBER DIAGRAM



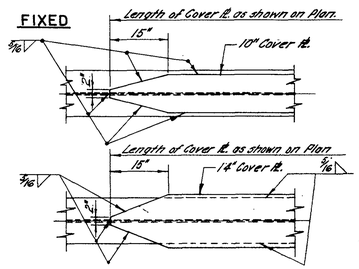
EXPANSION



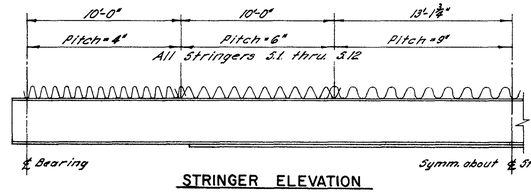




BEARING DETAILS
Scale 1 1/2"=1'-0"

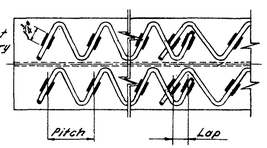


COVER PL. DETAIL
Scale 3/4"=1'-0"

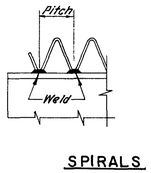


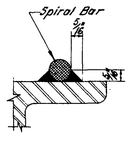
STRINGER ELEVATION

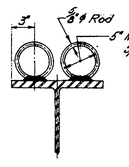
CONVERSION TABLE	
Pitch for 2-7/8" ϕ Spirals	Pitch for 4-3/4" ϕ Studs
4"	6"
6"	8"
9"	13"

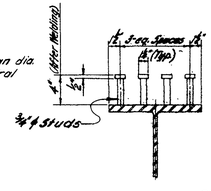


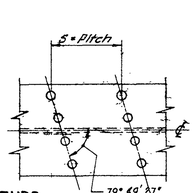
SPIRALS





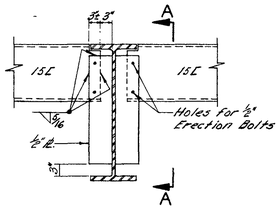




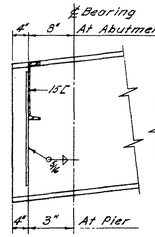


STUDS

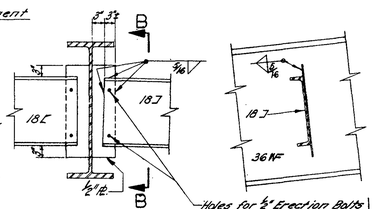
SHEAR CONNECTOR DETAILS
No Scale



END DIAPHRAGM



SECTION A–A



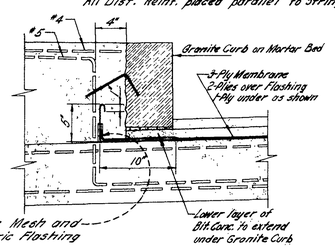
SECTION B–B

INTERMEDIATE DIAPHRAGM

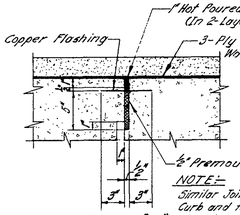
DIAPHRAGM DETAILS
Scale 3/4"=1'-0"

NOTE:-
All Main Reinf. placed parallel to Abutments.
All Dist. Reinf. placed parallel to Stringers.

CROSS SECTION
Scale 3/8"=1'-0"

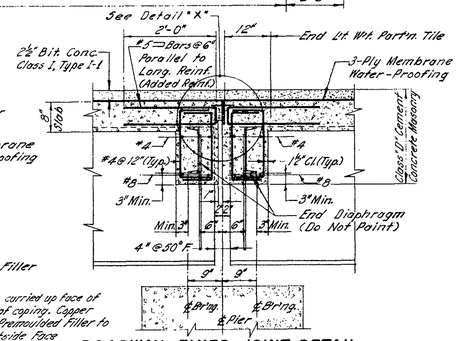


DETAIL UNDER CURB
Scale 1 1/2"=1'-0"



DETAIL "X"
Scale: 1 1/2"=1'-0"

NOTE:-
Similar Joint to be carried up face of Curb and to face of coping. Copper Flashing and 1/2" Premoulded Filler to end 2" From outside face of Structure

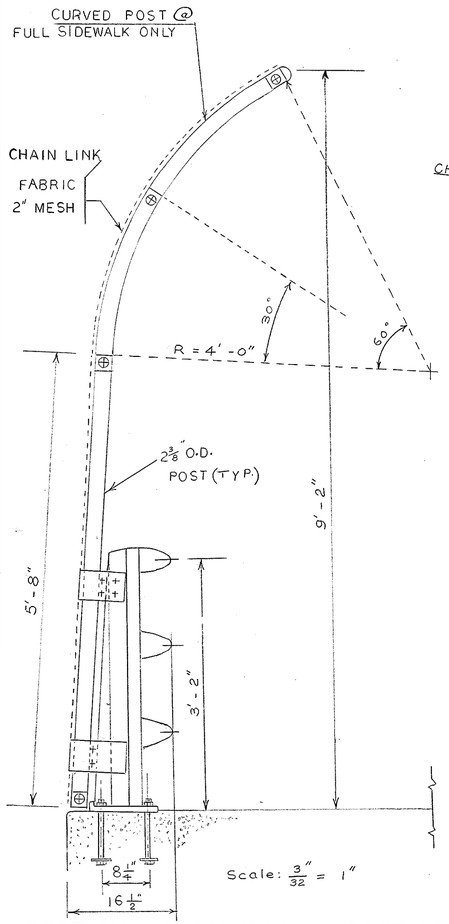


ROADWAY FIXED JOINT DETAIL
Scale: 3/4"=1'-0"

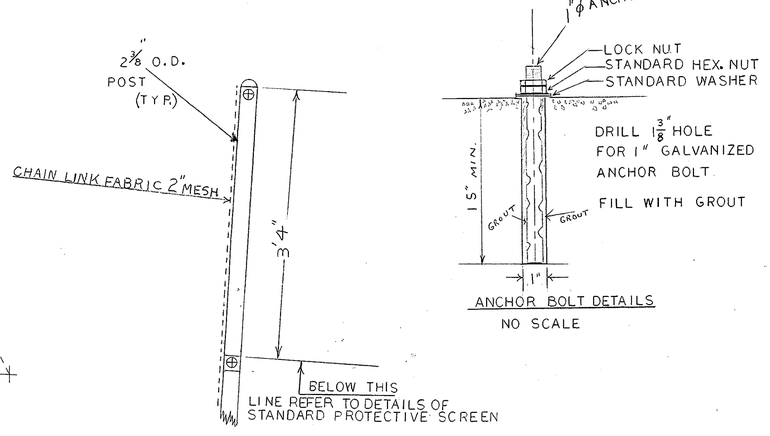
DATE	DESCRIPTION
OCT. 14, 1958	REVISED SHEET: REPLACES SHEET No. 20
SEPT. 4, 1958	REVISION – ELECT. DUCTS HAVE BEEN ADDED UNDER LT. CURB
JULY 31, 1958	• ISSUED FOR CONSTRUCTION •
	• USE ONLY PRINTS OF LATEST DATE •

PUB. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-290-5(36)97		2	12

WORCESTER



SECTION - BRIDGE RAILING POST (TYPE AL-3)
ALUMINUM POST FOR PROTECTIVE SCREEN



DETAIL TOP OF POST @ SAFETY WALK SIDE

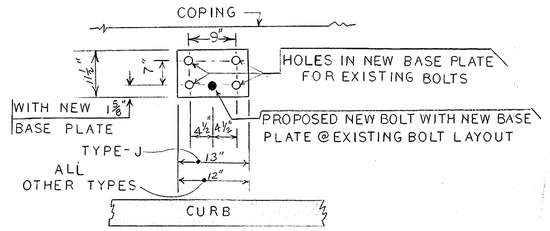
Note: THIS DETAIL APPLIES FOR SCREEN INSTALLATION AT SAFETY WALK FOR ATTACHMENT TO 3-RAIL ALUMINUM BRIDGE RAIL ONLY.

Note: (1) 6" GAUGE ALUMINUM CHAIN LINK FABRIC 2" MESH 10' WIDE.

(2) USE 6" GAUGE TIES 12" O.C. TO ALL POSTS AND TOP THREE RAILS. SPACE TIES TO BOTTOM RAIL AT 6" O.C.

(3) FOR DETAILS OF METAL BRIDGE RAILINGS TYPE AL-3; SEE STANDARDS DATED MARCH, 1968.

ANCHOR BOLT DETAILS
NO SCALE



PROPOSED BASE PLATE LAYOUT
NO SCALE

~ GENERAL NOTES ~

DIMENSIONS:

ALL DIMENSIONS AND DETAILS SHOWN FOR THE EXISTING STRUCTURES SHALL BE CHECKED IN THE FIELD BY THE CONTRACTOR.

WELDING:

WELDING SHALL BE PERFORMED BY METAL INERT GAS ("MIG") PROCESS. ALL WELDING SHALL CONFORM TO THE SPECIFICATIONS FOR STRUCTURES OF ALUMINUM ALLOYS, ALUMINUM CONSTRUCTION MANUAL, SECTION A, PUBLISHED BY THE ALUMINUM ASSOCIATION NEW YORK, N.Y.

BASE PLATE LAYOUT:

THE CONTRACTOR IS CAUTIONED THAT SOME VARIATION EXISTS BETWEEN ACTUAL FIELD DIMENSIONS AND THOSE DIMENSIONS SHOWN ON THE PLANS, CONCERNING BOLT LAYOUT FOR RAILING BASE PLATES. A FIELD CHECK SHOULD BE MADE FOR VERIFICATION. IT IS INTENDED WHERE EXISTING BOLTS ARE TO BE USED WITH NEW BASE PLATES, THAT SUFFICIENT CLEARANCE SHALL EXIST BETWEEN BOLT HOLES AND EDGES OF PLATES. ANY BASE PLATE ALIGNED SUCH THAT ITS ANCHOR BOLTS ARE NOT SECURELY IMBEDDED IN CONCRETE OR GROUT SHALL BE PROPERLY REALIGNED TO CORRECT THIS DEFICIENCY. ALSO, THE FULL THREADED SURFACE OF THE NUTS SHALL ENGAGE COMPLETELY WITH THE EXISTING AND/OR NEW BASE PLATE BOLTS, OTHERWISE THE BOLTS SHALL BE REPLACED.

PLANS:

PLANS OF ORIGINAL CONSTRUCTION ARE ON FILE AT THE OFFICE OF THE BRIDGE ENGINEER, ROOM 610, DEPT. OF PUBLIC WORKS, 100 NASHUA ST., BOSTON, MASS.

PROTECTIVE SCREEN:

SEE DEPARTMENT STANDARD PLANS DATED DECEMBER, 1971 FOR DETAILS OF STANDARD PROTECTIVE SCREEN. ALSO SEE SHEETS 1, 2 & 3.

~ TOTAL ESTIMATED QUANTITIES ~
(NOT GUARANTEED)

PROTECTIVE SCREEN (CHAIN LINK)	2576 L.F.
METAL BRIDGE RAIL (3 RAIL) TYPE AL-3 MODIFIED	2063 L.F.
CHAIN LINK PANELS (REMOVED & STACKED)	81 EA.
METAL BRIDGE RAIL (REMOVED & STACKED)	2063 L.F.
CUTTING AND GRINDING BOLTS	60 EA.
DRILLING AND GROUTING ANCHOR BOLTS	334 EA.

~ DETAIL SHEETS ~

STANDARD PROTECTIVE SCREEN ATTACHMENT TO METAL BRIDGE RAILING TYPE AL-3 (SHEET 2 & 3).

METAL BRIDGE RAIL (3 RAIL) TYPE AL 3 MODIFIED - SEE SHEET #4

~ VARIOUS BRIDGES OVER I-290 IN WORCESTER ~

NUMBER	LOCATION (STREET)	REF SHEET NO
W 44-83	HARRISON ST.	5
W 44-85	VERNON ST.	6
W 44-93	LAUREL ST.	7
W 44-94	BELMONT ST.	8
W 44-97	BURNCOAT ST.	9
W 44-99	MILLBROOK ST. - OVER RAMP "B"	10
W 44-112	MARSH AVE.	11

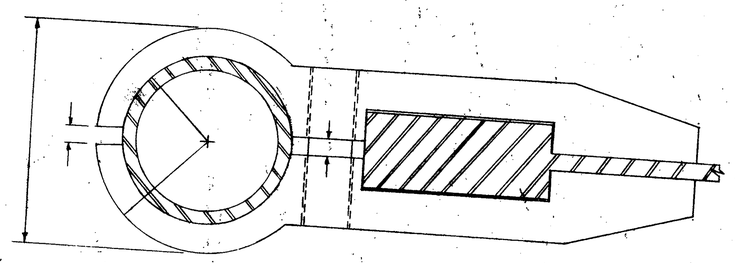
DESIGNED BY	SEPT. 22, 1973 — ISSUED FOR CONSTRUCTION
STEPANIAN	THE COMMONWEALTH OF MASSACHUSETTS
DRAWN BY	PROPOSED ALTERATION
STEPANIAN	WORCESTER
CHECKED BY	INSTALLATION OF PROTECTIVE SCREEN ON
DAIOPULOS	VARIOUS BRIDGES OVER ROUTE I-290
APPROVED FOR DESIGN	SCALES AS NOTED
PERNA	OFFICE OF
	DEPARTMENT OF PUBLIC WORKS
SPECS	100 NASHUA ST., BOSTON, MASS.
FORTE	SEPT. 1973 — BRIDGE ENGINEER — CHIEF ENGINEER

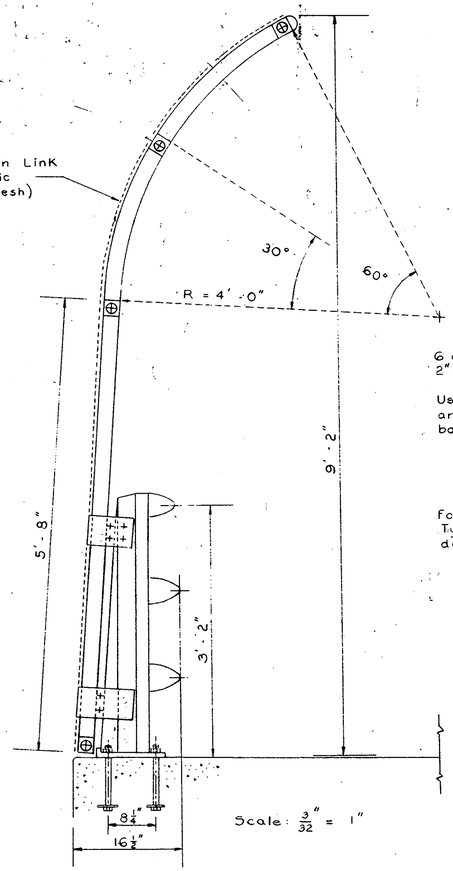
PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-290-5(36)97	19	3	12

WORCESTER

MATERIAL NOTES:

Posts, Rails, Tension Bars, Rail Splices, ~~Upper Clamps,~~ Washers ⚠1	ASTM B221 Alloy 6061-T6
Fabric & Ties	ASTM B211 Alloy 6061-T94 - 6 Gage
Lower Clamps,	⚠1 ~~ASTM B221 Alloy 6061-T4~~ ASTM B26 OR B108 ALLOY 356-T-6 ⚠1
Tension Bands	ASTM B221 Alloy 6063-T5
Bolts	ASTM B316 Alloy 2024-T4
Nuts	ASTM B316 Alloy 6061-T6
⚠1 UPPER CLAMPS	⚠1 ASTM B221 ALLOY 6061-T6 OR ~~6063-T6~~





Scale: $\frac{3}{32}$" = 1"

6 gauge Aluminum Chain Link Fabric 2" mesh (10' wide)

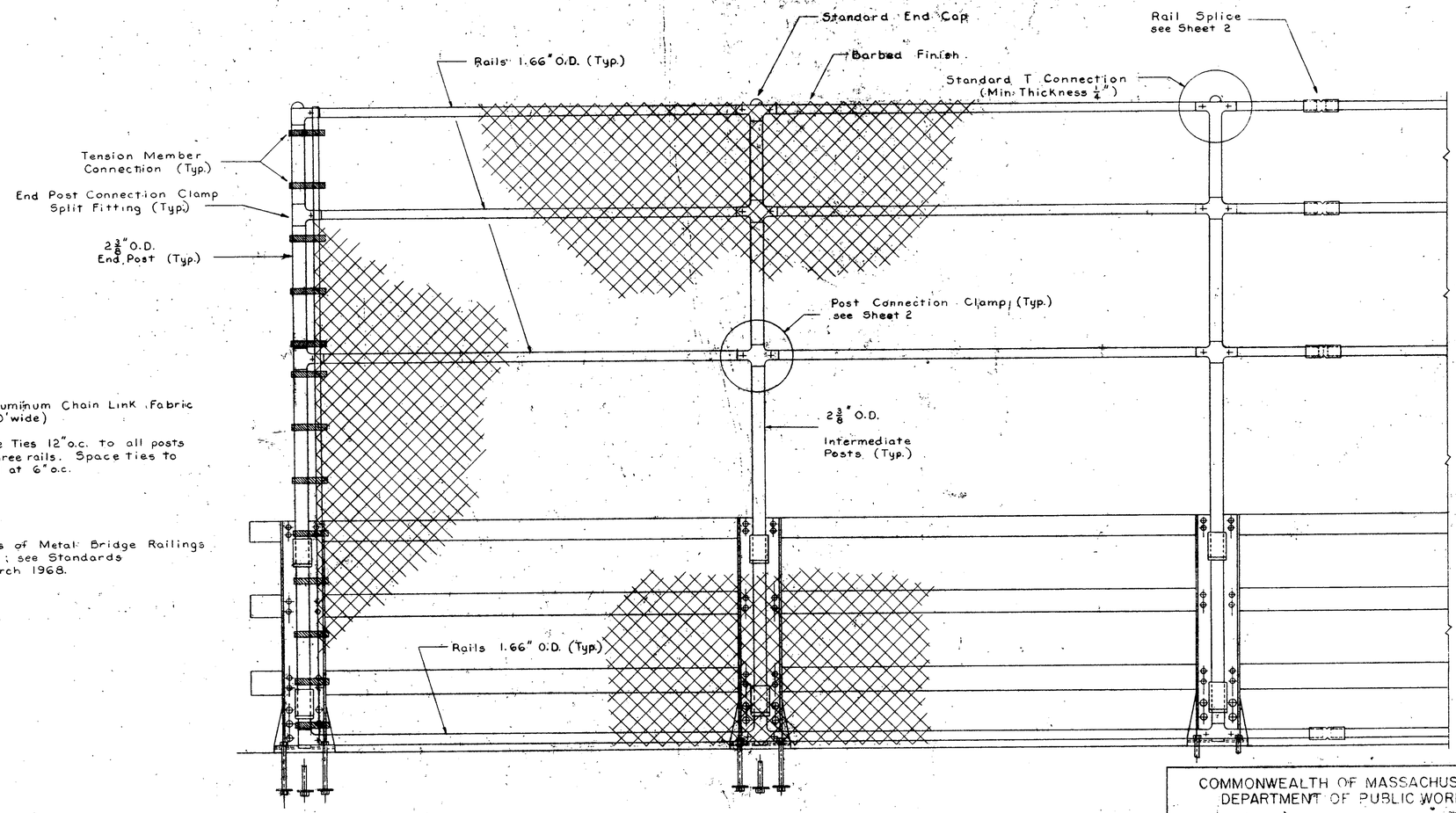
Use 6 gauge Ties 12" o.c. to all posts and top three rails. Space ties to bottom rail at 6" o.c.

For details of Metal Bridge Railings Type AL-3 ; see Standards dated March 1968.

SECTION - BRIDGE RAILING POST (TYPE AL-3)

ALUMINUM POST FOR PROTECTIVE SCREEN

Provide splices at each Bridge Deck Joint and at approximately 20 foot intervals



⚠1 MATERIAL NOTES REVISED: MAY 2, 1972

DATE	DESCRIPTION
SEPT. 22, 1973	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

SHEET NO. 2 OF 11 SHEETS

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS

STANDARD PROTECTIVE SCREEN

ATTACHMENT TO METAL BRIDGE RAILING TYPE AL-3

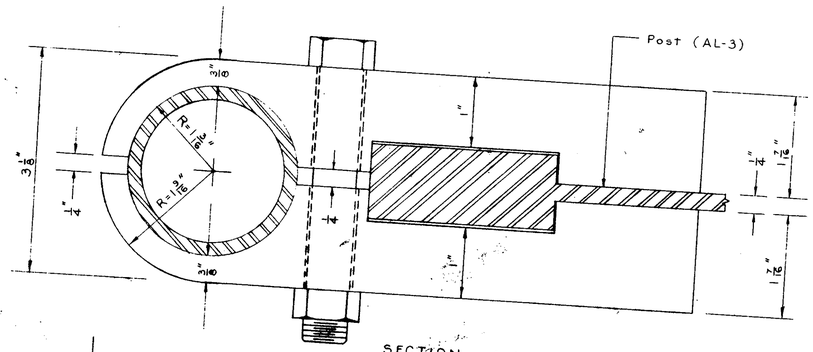
DECEMBER 1971

BRIDGE ENGINEER

CHIEF ENGINEER

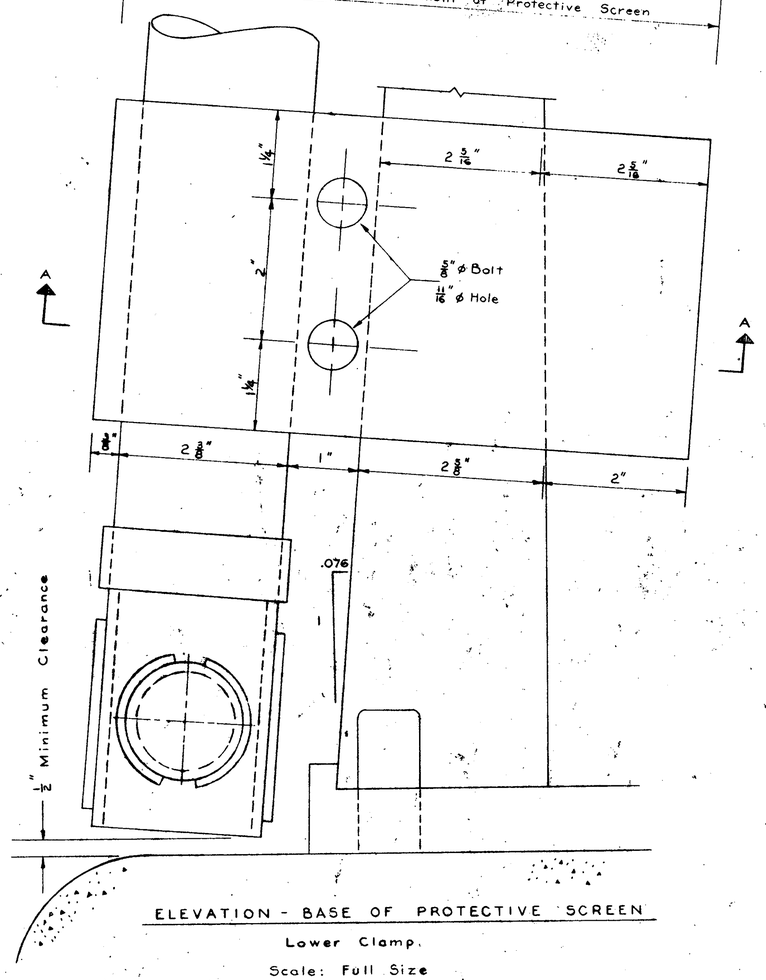
PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-290-5(36)97	19	4	12

WORCESTER



SECTION A-A

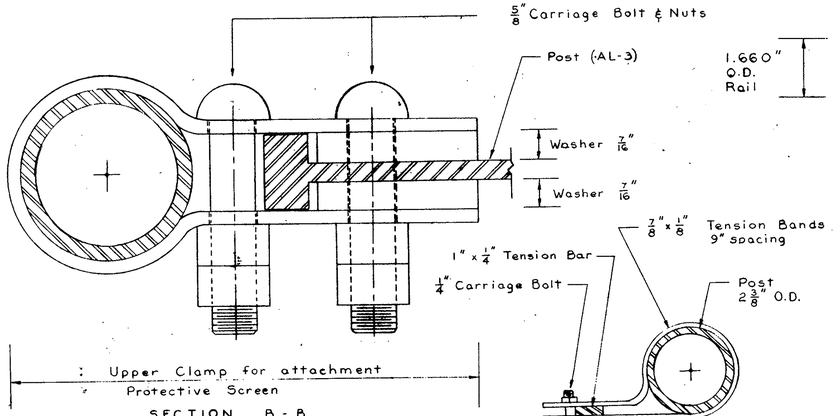
Lower Clamp for attachment of Protective Screen



ELEVATION - BASE OF PROTECTIVE SCREEN

Lower Clamp.

Scale: Full Size

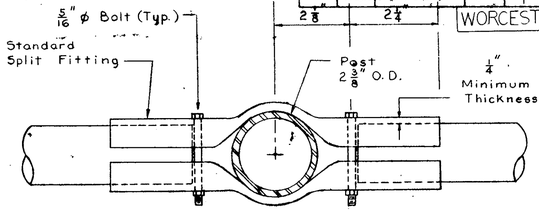


: Upper Clamp for attachment Protective Screen

SECTION B-B

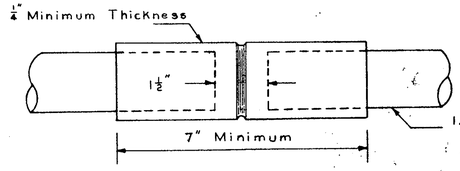
PLAN OF TENSION MEMBER CONNECTION

Scale: Half Size



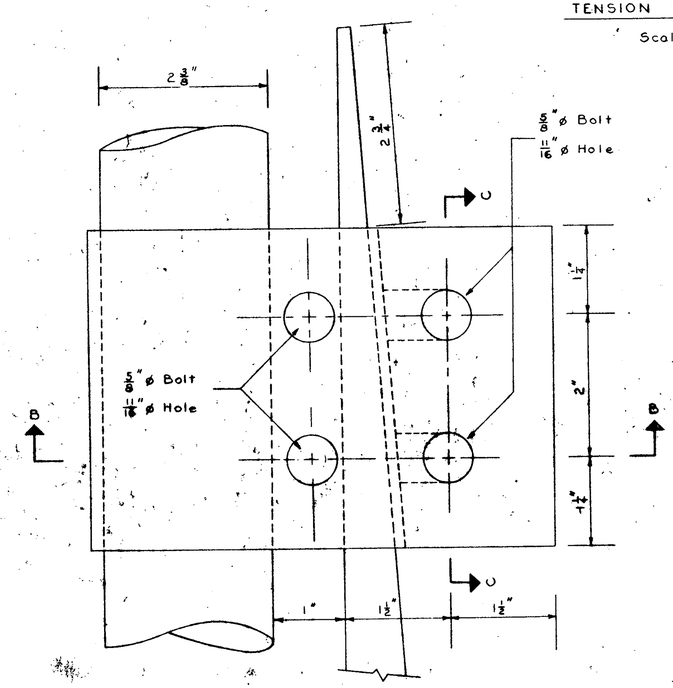
PLAN OF POST CONNECTION CLAMP

Scale: Half Size



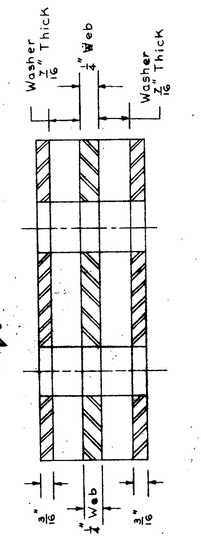
RAIL SPLICE DETAIL

Scale: Half Size

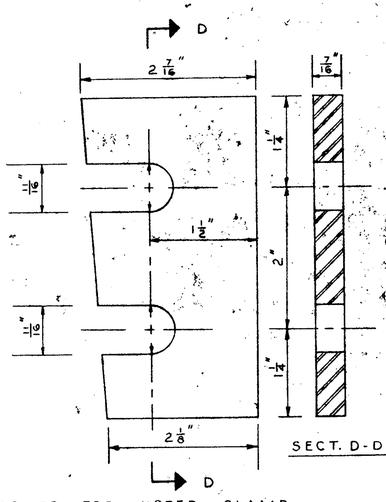


ELEVATION - UPPER CLAMP

Scale: Full Size



SECTION C-C



SECT. D-D

WASHER FOR UPPER CLAMP

Scale: Full Size

DATE	DESCRIPTION
SEPT. 22, 1978	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS

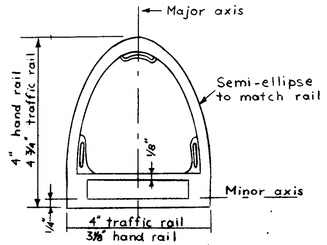
STANDARD PROTECTIVE SCREEN

ATTACHMENT TO METAL BRIDGE RAILING TYPE AL-3
CLAMP AND CONNECTION DETAILS
DECEMBER 1971

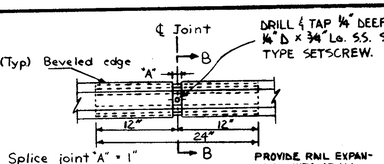
SHEET NO 3 OF 11 SHEETS

PUB. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-290-5(36)97		5	12

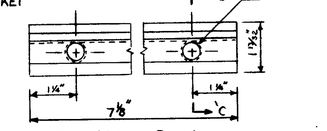
WORCESTER



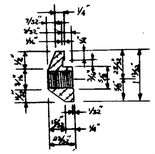
Rail End Cap
Scale ½" = 1"



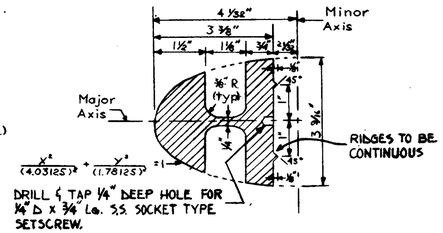
Railing Joint
NOT TO SCALE



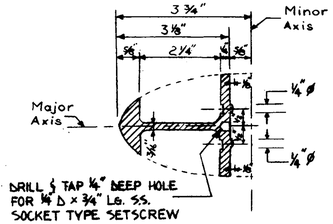
Traffic Rail
Clamp Bar Detail
Scale ½" = 1"



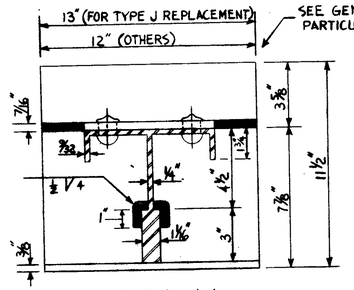
Section C-C
Scale ½" = 1"



Traffic Rail Splice Extrusion
Scale ½" = 1"

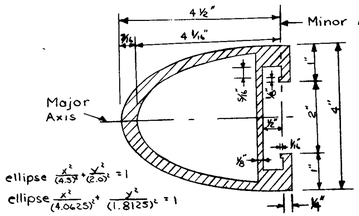


Hand Rail Splice Extrusion
Scale ½" = 1"

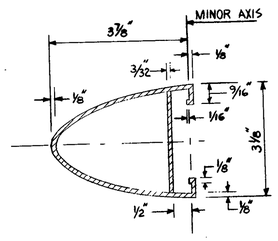


SECTION A-A
SCALE: 1½" = 1"

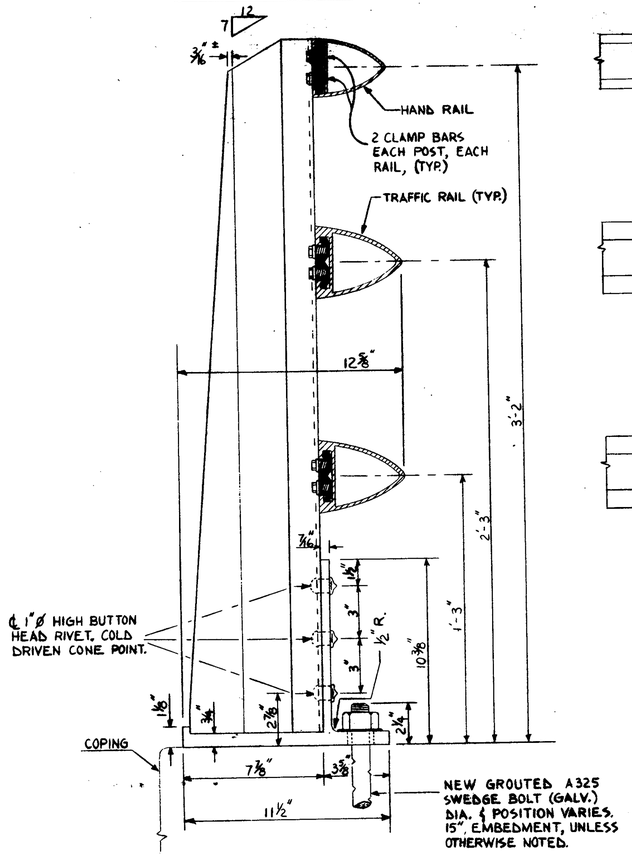
SECTIONS B-B



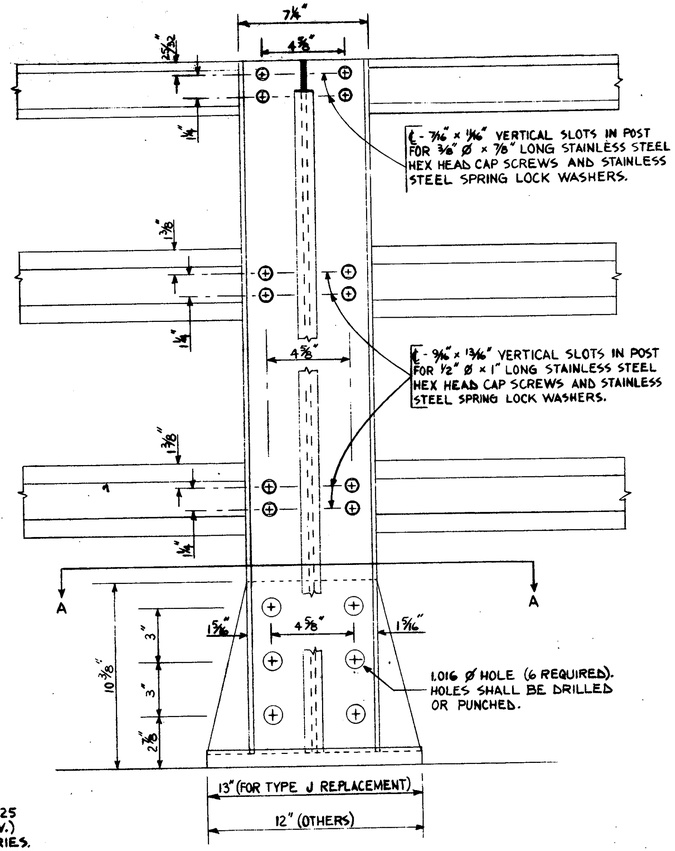
Traffic Rail Extrusion
Scale ½" = 1"



HAND RAIL EXTRUSION
SCALE: ½" = 1"



SIDE ELEVATION
SCALE: ¼" = 1"



OUTSIDE ELEVATION
SCALE: ¼" = 1"

NOTES:

METAL BRIDGE RAIL - - (3 RAIL) TYPE AL-3 MODIFIED:

ALL RAILING IS TO BE FABRICATED AND ERECTED SO THAT THE RAIL IS PARALLEL TO THE CURBING. SINCE THE FINISHED RAILING MUST MEET ALL REQUIREMENTS OF FIT, ALIGNMENT AND GRADE TO THE FULL SATISFACTION OF THE ENGINEER, IT IS SUGGESTED THAT COMPLETE FIELD MEASUREMENTS BE MADE BEFORE ANY SHOP FABRICATION IS PERFORMED.
ALUMINUM RAILS, POSTS, POST BASES, CLAMP BARS INCLUDING STAINLESS STEEL CAP SCREWS AND LOCK WASHERS, RAIL SPLICES, RIVETS, END CAPS, PINS, RAIL TERMINAL ENDS, ALUMINUM CAULKING COMPOUND, ANY NECESSARY SHIMS, ANY NECESSARY PAINTING OF BOLTS AND ANY NECESSARY BUSH-HAMMERING TO LEVEL THE CONCRETE UNDER THE POST BASES SHALL BE PAID FOR UNDER THE RAILING ITEM.
THE PROVISION OF ANCHOR BOLTS, NUTS AND WASHERS AND THE DRILLING AND GROUTING OF HOLES NECESSARY TO RECEIVE THE ANCHOR BOLTS SHALL BE PAID FOR UNDER A SEPERATE ITEM.
RAILS SHALL BE CONTINUOUS OVER A MINIMUM OF THREE POSTS.
ALUMINUM RIVETS SHALL BE COLD DRIVEN.
MATERIALS USED IN THE MANUFACTURE OF THIS RAILING SHALL CONFORM TO THE REQUIREMENTS AND/OR SPECIFICATIONS LISTED BELOW:

PIECE	ASTM DESIGNATION	COMMERCIAL ALLOY & TEMPER
ALUMINUM EXTRUSIONS (POSTS, POST BASES, RAILS, RAIL SPLICES, CLAMP BARS, AND RAIL TERMINAL ENDS)	B 221	6061-T6
ALUMINUM RIVETS	B 316	6061-T6
ALUMINUM PLATE SHIMS	B 209	1100-0
ALUMINUM RAIL END CAPS	B 26	43F OR 356F
STEEL BOLTS, NUTS AND WASHERS (GALV.)	A 325	

EXISTING BOLTS:

WHERE GALVANIZING IS DAMAGED, THE DAMAGED AREAS SHALL BE THOROUGHLY CLEANED AND GIVEN ONE COAT OF ZINC DUST-ZINC OXIDE PAINT CONFORMING TO THE REQUIREMENTS FOR TYPE III AS SPECIFIED IN FEDERAL SPECIFICATION TT-P-641B.
ANY BOLTS THAT ARE DETERMINED BY THE RESIDENT ENGINEER TO BE DAMAGED BEYOND UTILIZATION SHALL BE REMOVED AND REPLACED WITH NEW BOLTS.

NEW BOLTS:

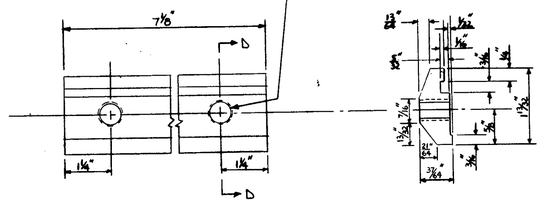
ALL NEW BOLTS TO BE DRILLED AND GROUTED SHALL BE THE SAME SIZE AS THOSE OF THE EXISTING BOLT LAYOUT UNLESS OTHERWISE NOTED. THEY SHALL BE SWEDGED THROUGHOUT THE BOTTOM 9" OF THE IMBEDDED PORTION AND CONFORM TO THE ASTM DESIGNATION INDICATED ABOVE.

SPACING:

WHERE ENTIRELY NEW BOLT LAYOUTS ARE TO BE INSTALLED, MAXIMUM POST SPACING SHALL BE 8'-0".

TRANSITION:

THE NEW RAILS SHALL BE BENT TO MAKE A SMOOTH TRANSITION WITH THE EXISTING END POSTS UNLESS INDICATED OTHERWISE.



HANDRAIL CLAMP BAR DETAIL
NOT TO SCALE

SECTION D-D
NOT TO SCALE

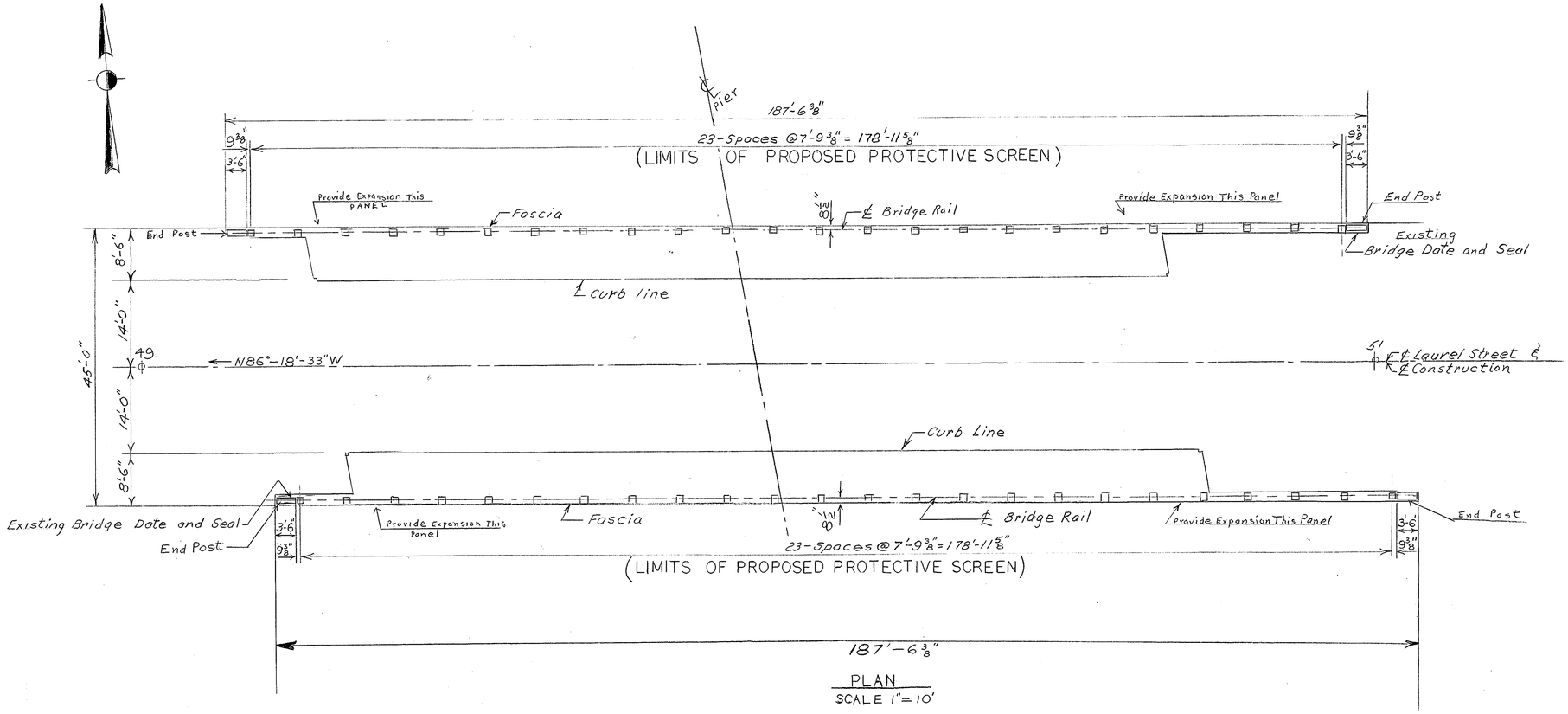
DATE	DESCRIPTION
SEPT. 22, 1970	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

METAL BRIDGE RAIL (3-RAIL) TYPE AL-3 MODIFIED

PUB. RD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-290-5(36)97		8	12

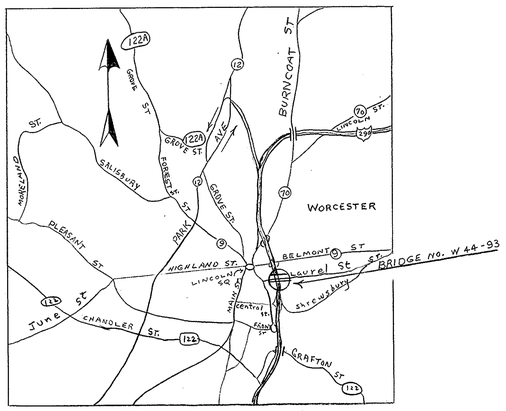
WORCESTER



PLAN

SCALE 1" = 10'

W-44-93



LOCUS

PLAN

SCALE 1" = 3750'

~ESTIMATED QUANTITIES~

(NOT GUARANTEED)

PROTECTIVE SCREEN (CHAIN LINK)	362 L.F.
METAL BRIDGE RAIL (3 RAIL) TYPE AL-3 MODIFIED	362 L.F.
METAL BRIDGE RAIL (REMOVED & STACKED)	362 L.F.
CUTTING & GRINDING BOLTS	10 EA.
DRILLING & GROUTING ANCHOR BOLTS	58 EA.

~GENERAL NOTES~

DIMENSIONS:

ALL DIMENSIONS AND DETAILS SHOWN FOR THE EXISTING STRUCTURE SHALL BE CHECKED IN THE FIELD BY THE CONTRACTOR.

PROTECTIVE SCREEN:

SEE DEPARTMENT STANDARD PLANS DATED DECEMBER 1971 FOR DETAILS OF STANDARD PROTECTIVE SCREEN. ALSO SEE SHEET 1, 2 & 3.

BRIDGE RAILING:

SEE SHEET # 4 FOR DETAILS OF METAL BRIDGE RAIL (3 RAIL) TYPE AL-3 MODIFIED

EXISTING RAILING:

EXISTING METAL BRIDGE RAIL & POSTS (TYPE H) TO BE REMOVED & STACKED. SEE SHEET # 1 FOR PROPOSED BASE PLATE LAYOUT.

DESIGNED BY STEPANIAN	Sept. 22, 1973 — ISSUED FOR - CONSTRUCTION
DRAWN BY STEPANIAN	THE COMMONWEALTH OF MASSACHUSETTS
CHECKED BY DAIOPULOS	PROPOSED ALTERATION
APPROVED FOR DESIGN PERNA	WORCESTER I-290 UNDER LAUREL STREET INSTALLATION OF PROTECTIVE SCREEN
SPECS FORTE	SCALES AS NOTED OFFICE OF DEPARTMENT OF PUBLIC WORKS 100 NASHUA STREET, BOSTON, MASS.